



Gorilla Journal

Journal of Berggorilla & Regenwald Direkthilfe

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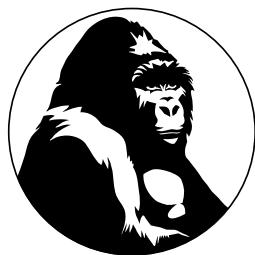


**A Brief History
of Habituated
Gorillas in Bwindi**

**Gorilla Habitua-
tion and Eco-
tourism – a Social
Perspective**

**Using Technology
To Save Gorillas**

**Bushmeat
Trafficking – Not
Just an African
Problem**



BERGGORILLA & REGENWALD DIREKTHILFE

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Nadja Morf has combined her interests in wildlife conservation and genetic research to work on bushmeat analyses at the Zürich Institute of Forensic Medicine. Previously she has also done research into the population genetics of Bornean orangutans.

Radar Birhashirwa Nishuli has been working in the Kahuzi-Biega National Park since 1985. He was the Head of the Environmental Education Unit and is now Provincial Director and responsible for the Kahuzi-Biega National Park.

Dr. John Bosco Nkurunungi studied the gastro-intestinal parasites of gorillas and humans as well as the behavioural ecology of mountain gorillas in Bwindi. He now works at Makerere University, Uganda.

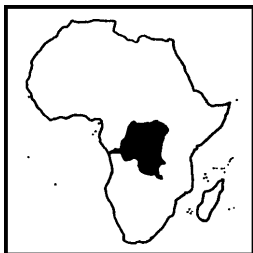
Dr. Martha Robbins, a research associate at the Max Planck Institute for Evolutionary Anthropology, has been studying the behavioural ecology of gorillas since 1990. Since 1998, she has been studying the socioecology and reproductive strategies of mountain gorillas in Bwindi.

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Dr. Kathy L. Wood has studied the genus *Mandrillus* and is involved in conservation efforts that will address the issues affecting these and other primate species within their natural habitat. She is the co-director of Tengwood Organization.



D. R. CONGO

Getting off the “in Danger” List: a Priority for Kahuzi-Biega

The Kahuzi-Biega National Park (KBNP) has been a UNESCO World Heritage Site since 1980. Since 1997, it has been on the list of World Heritage Sites in Danger (<http://whc.unesco.org/en/list/137>). To ensure that efforts are made to return endangered sites to their original status, UNESCO recommends certain actions, the so-called corrective measures, to the countries within which the sites fall. The KBNP is currently responding to corrective measures on behalf of and with the full support of the Government of the Democratic Republic of the Congo.

Among the corrective measures suggested by UNESCO to remove the KBNP from the list of World Heritage Sites in danger is an inventory of the main wild animal populations in the low-altitude sectors of the park. This

needs to be carried out as soon as possible to permit an evaluation of the state of universal value of the park and the establishment of a timetable for its rehabilitation.

To date, only the high-altitude sector of the park has been surveyed due to long-standing insecurity in the low-altitude part. Now that security is slowly being re-established in this part, the park has commenced the required surveys. Two sectors, Nzovu and Itebero, were visited by survey teams during the last two quarters of 2013.

This important work was carried out by specialist field staff from the KBNP and WCS, and supported financially by WCS and the ARCUS Foundation. The surveys lasted 68 days: 31 in Itebero and 37 in Nzovu. The aims of the surveys were to:

- determine the size of the ape populations, particularly of the eastern lowland gorilla, and the incidence of human activities in the Kahuzi-Biega

National Park,

- collect data on amphibians and reptiles in order to determine the level of amphibian and reptilian biodiversity and potential impacts of climate change.

The team was subdivided into two sub-teams to optimize efficiency on the ground. Observations were made at a total of 661 geographical coordinates. The team used the “occupancy” method, which is still in its trial phase. The technique involves the collection of data on the diagonal of the quadrant surveyed: recent gorilla tracks found on the diagonal are followed to record 3 different nest sites for the tracked group. At each site, the team counted the total number of nests and measured the diameter of gorilla droppings for each nest in order to estimate the sex and the age of the individuals. In addition, the team used the “distance” method of transect surveys to estimate population size.

Results

Itebero: The two sub-teams surveyed 7 transects of 3 km each (transect 68, 74, 75, 86, 88, 99 and 100) totalling 21 km, as well as 7 km of diagonal in 4 quadrants (3977, 4086, 4191 and 4295) totalling 28 km.

Observations of animals: The team found 5 recent nest sites, 12 sites with dry nests and one old site. They also observed 3 eastern lowland gorillas in the study area. The average size of the nest groups varied between 1 and 4.5, with a maximum number of 11 individuals. Chimpanzees are also present in the study area: 15 nesting sites were recorded. Other primate species were also observed directly or indirectly; among them were blue monkey (*Cercocebus mitis*), red-tailed monkey (*C. ascanius*), Dent’s mona (*C. denti*) and owl-faced monkey (*C. hamlyni*).

Human activities: The war has been going on for too long in these sectors



A poacher camp in the Kahuzi-Biega National Park

Photo: ICCN



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and has prevented the rangers from operating properly. During the period of insecurity a number of villages have become established inside the park. The survey teams visited five of them. The main activity of the villagers is poaching.

Access to Itebero remains an enormous problem both for patrols and survey teams. Equipment and bushmeat is transported by motorcycle, which is a very costly form of transportation.

Nzovu: The survey team covered 7 transects of 3 km each, 21 km in total, in the forest area between the town of Nzovu and Katusi village, and one diagonal of 7 km in a single quadrant. It had also been planned to visit the Luyuyu Swiza zone, but because of the insecurity created by two armed groups in conflict with each other, this was not possible.

Observations of animals: Only 4 nest sites were found for the eastern lowland gorilla, 3 were recent and one was old. The average size of the nest

groups was between 1 and 4.6 with a maximum of 8 individuals. The droppings of a baby gorilla were found. 17 chimpanzee nests confirmed the presence of this primate.

Human activities: Signs of human activity are present throughout Nzovu. Signs of certain activities, such as the cutting of firewood with machetes, were found so frequently that they were not recorded. Signs that were recorded were trails made by people (10), traps (100), poachers' camps (9), miners' sites (7) and 12-calibre cartridges (11). The traps were dismantled and the camps were destroyed; talks were held with poachers encountered during the survey to explain the role of the park.

A total of 123 amphibians and reptiles were collected (46 at Itebero and 77 at Nzovu).

Conclusions

In both sites, the continued presence of apes was confirmed. A wider survey

is planned for 2014 in order to provide monitoring data on the park's overall conservation goals. We are still waiting for the results of the detailed data analysis which is being carried out by WCS in the USA.

Radar Nishuli

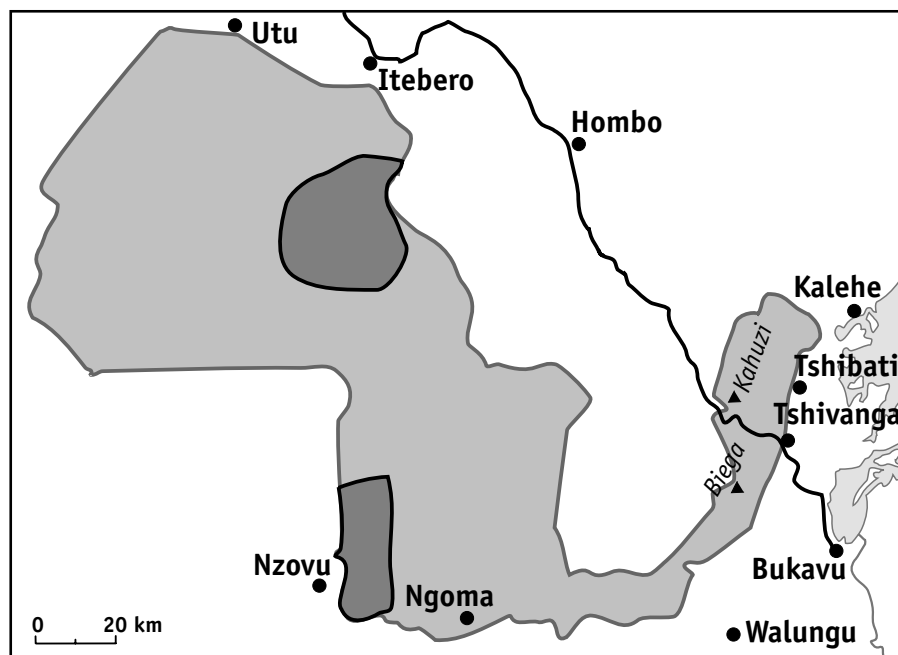
We are very grateful to our team on the ground, namely Guillain Mitamba, Raymond Tokunda, Teddy Kalikunguba and the Itebero and Nzovu communities who joined the ICCN team to make these surveys possible.

Conservation Activities in the Sarambwe Reserve Return to Normal

The Sarambwe Reserve is located in the Democratic Republic of the Congo, adjacent to Bwindi Impenetrable National Park in Uganda. Since the arrival of the M23, the reserve has been besieged by armed groups: first the Mai-Mai and then the Nyatura. The latter carried out operations in nearby villages and, after having committed their atrocities, entrenched themselves in the forest or at the forest edge. Several times, the caretakers of the reserve were targeted by these armed men for their weapons and other valuable goods – mattresses, saucepans, clothes, kitchen utensils, backpacks, sleeping bags, raincoats, etc.

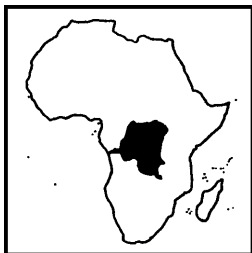
After two bloody attacks during which one ranger received serious bullet wounds, the ICCN decided to evacuate the rangers from Sarambwe and to take them to Lulimbi in the central sector of the Virunga National Park. With the reserve abandoned, timber cutting, crop cultivation and grazing of domestic animals started up again.

A project for monitoring activities inside the reserve was then put in place. Its objective is to gather information on illegal activities inside the reserve, to prepare for the resumption of activities when the situation returns to normal



The Kahuzi-Biega National Park with the surveyed areas (dark)

Map: adapted from maps by Radar Nishuli, ICCN, by Angela Meder



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(i.e. when peace has been restored) and to allow for patrols of rangers, troops and trackers inside the reserve. Two mixed patrols were in the reserve between October and December 2013. As an outcome of these patrols and the many data collected by the trackers, the ICCN deployed a team of park rangers to reoccupy the Sarambwe Reserve in February 2014. Since then, regular patrolling has taken place. During March alone, 11 patrols were carried out. The patrols reported the following:

Concerning encroachment:

- Control of the entire reserve has been re-established, notably within the areas previously occupied by

Ugandans who had claimed that these areas were a part of Uganda (the areas called Rusura, Kabumba and Chongo, with a total surface area of 40 ha).

- 6.5 ha of banana plantations were destroyed.
- 4 ha of cassava, 2 ha of beans and 0.5 ha of sweet potatoes were destroyed.
- 4 camps and 30 traps for Gambian rats and small mammals were destroyed.
- 5 m³ of wood destined for charcoal making were destroyed.

Concerning conservation:

Gorillas, guenons, black-and-white colobus monkeys and baboons were ob-

served and tracks of bush pigs and giant forest hogs were found. The Sarambwe Reserve forms part of the range of 3 gorilla groups: the Kahanga group, which consists of 10 animals, the Mukali group with 8 individuals and the Rushegura group with 18 (see also page 8). The latter regularly travels between the DRC and Uganda; at the time of writing, they were in Uganda.

Concerning management and community development:

- 7 km of trails in the reserve and 3 km of aisles to mark the reserve boundary have been re-opened.
- The area surrounding the ranger post has been maintained.

Restoration in Eastern Congo

The rebel group M23 stopped fighting in November 2013 and gave up. Conservation activities could then start again in the affected areas. One of them is the Sarambwe Reserve. Our representative Claude Sikubwabo visited the Sarambwe patrol post and inspected the situation there. He saw that much has to be done to restore the reserve. Most urgent are the following measures:

- compensation of the trackers who stayed there for the past months to guard the reserve until the rangers can start working there again
- restoration of the patrol post (which is in very bad shape since it had been occupied by rebels)
- re-marking of the reserve boundary

We already transferred funds for the trackers so that they can continue to monitor the gorillas

and human activities in the reserve. However, we do not have the funds for the restoration of the patrol post – it would cost US\$ 2,534.

Help us to restore the conservation of the forests in eastern Congo! Apart from humanitarian aid, the region also needs support for protected areas – this will help to save the gorillas and other wildlife as well as support the human population.

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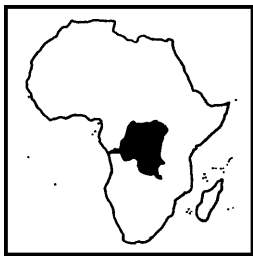
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Damage that the fights caused in the Sarambwe patrol post

Photo: Claude Sikubwabo

You are also very welcome to donate via PayPal if you prefer this: <http://www.berggorilla.org/index.php?id=66&L=1>



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- Repairs were made to 50 m of the central water pipe from the reserve to villages close to Sarambwe and a water pipe to the Sarambwe post (this was funded by the EAZA Ape Conservation Fund).

The achievement of these results after only one month of patrols indicates that conservation activities in the Sarambwe Reserve and in its surrounding areas have mostly returned to normal. In large part this is due to the efforts made by *Berggorilla & Regenwald Direkthilfe*: the organisation continually searches for ways to make the conservation of the mountain gorillas and their habitat in the DRC possible – even in times of war.

Claude Sikubwabo Kiyengo



A path in the Sarambwe Reserve after trackers started to clear it

Photo: Claude Sikubwabo Kiyengo



The water for the Sarambwe patrol post is flowing!

Photo: Claude Sikubwabo Kiyengo

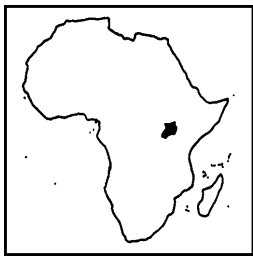
Assault on Emmanuel de Merode

The Director and Chief Warden of the Virunga National Park, Emmanuel de Merode, was ambushed on 15 April, 2014 while he was driving roughly 30 km north of Goma on the Goma–Rutshuru road. He was alone in the jeep bound for the Rumangabo station. The three assailants, whose identity and motives are not known, fired five bullets into the car; three hit him on the right side of his abdomen. A few minutes later, he was found by soldiers of the Congolese army and taken to the Heal Africa Hospital in Goma where he was immediately administered first aid with the assistance of MONUSCO surgeons, and thanks to this he was soon out of danger. A few days later, he was brought to Nairobi to be close to his family.

A full investigation is now underway by the authorities. Emmanuel de Merode asks people to refrain from speculation prior to the findings of the enquiry. He returned to work on 20 May.

Summaries of a press release from the Provincial Directorate of ICCN on 16 April and of a press statement from Emmanuel de Merode, 20 April 2014

Website of the Virunga National Park: www.virunga.org



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A Brief History of Habituated Gorillas in Bwindi Impenetrable National Park

Habituation of wild gorillas has long been a useful tool for research and conservation programs. Decisions to habituate gorillas typically reflect a balance of the benefits gained and the costs/risks. In general, the benefits include that it: generates revenue through tourism for governments, local communities, and businesses; enables detailed research on feeding ecology and social behaviour; provides daily protection for the groups monitored; enables gorilla health monitoring; provides a mechanism for examining trends in population dynamics by monitoring births, death and dispersal patterns. In contrast, the costs of habituation are that it: increases risk of disease through exposure to humans in close proximity; increases risk of

poaching due to loss of fear of humans; requires financial resources and staff to monitor habituated gorillas as a lifelong commitment. Both the costs and benefits can be illustrated in all locations where gorillas have been habituated. For example, several habituated Grauer's gorillas were killed during the political instability in Kahuzi-Biega National Park, Democratic Republic of the Congo (Yamagiwa 2003) and evidence of a virus transmitted from humans was found in Virunga mountain gorillas suffering from respiratory disease (Palacios et al. 2011). The economic benefits derived from gorilla tourism can be large, but may come to a halt due to political instability, which is the current situation in Dzanga-Sangha National Park, Central African Republic.

Conservation and research efforts in Bwindi Impenetrable National Park, Uganda, which contains about half of the remaining mountain gorillas in the world, did not begin in earnest until the

early 1990s following it being gazetted as a national park in 1991. This is in contrast to the mountain gorillas of the Virunga Massif, which have been the focus of intense efforts since the last 1960s. Over the past two decades Bwindi Impenetrable National Park has experienced many changes, notably an increase in the number of habituated groups from 3 to 12, which we describe here. Among the many conservation strategies that have been developed by Uganda Wildlife Authority (UWA), gorilla tourism was at the top of the list for generating funds for conservation activities and also creating alternative sources of income for local communities, a move intended to create a win-win situation for conservation and development. Overall, gorilla habituation in Bwindi can be viewed as occurring in three phases.

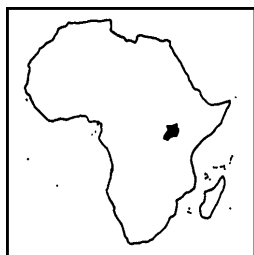
The first phase of habituation occurred in the early 1990s with the Katendegere Group and Mubare Group, both ranging around Buhoma. Habituation of both groups started in 1991 and they were opened for tourism in 1993. The Katendegere Group initially contained 11 gorillas, but by 1998 it had decreased to only 3 gorillas. At this time, the group crossed into the Sarambwe Game Reserve in the Democratic Republic of the Congo (contiguous with Bwindi) and the group could no longer be monitored by UWA. There are reports of mountain gorilla groups in this area, but the fate of the Katendegere group is unknown. The Mubare Group initially contained 13 gorillas and had only 5 gorillas at one point. The silverback that led the group when first contacted, Ruhondeza, had an impressively long tenure of more than 20 years and died in 2012. The group has gone through a variety of changes in recent years and currently contains 10 members.

Concurrent to gorilla habituation for tourism, one group was habituated for research purposes. Habituation of the

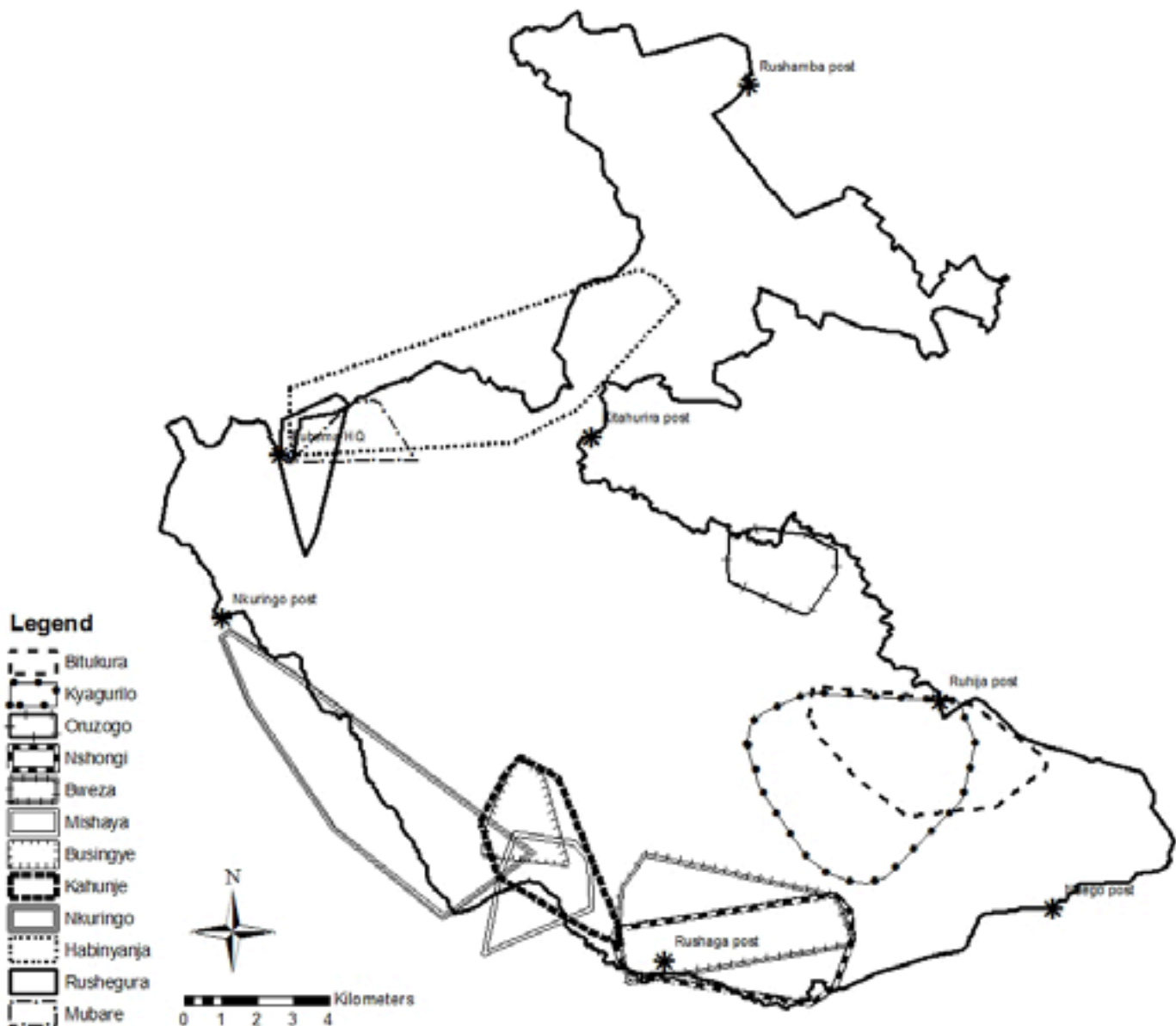


Members of the Kyagurilo group

Photo: Martha Robbins



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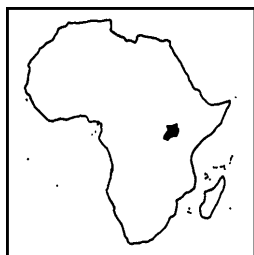


Map of Bwindi indicating home ranges of habituated groups in 2013

Kyagurilo Group began in the early 1990s in the Ruhija area of Bwindi, as part of research efforts of the Institute of Tropical Forest Conservation. In 1995 this group suffered a poaching attack, resulting in the death of 4 group members. Intense research efforts on this group by the Max Planck Institute of Evolutionary Anthropology

have been ongoing since 1998. The group size dipped as low as 10 members in 2010, but it currently contains 18 individuals. Since 2012 this group also has been used for tourism during times of peak demand. The second phase of gorilla habituation occurred in the mid-1990s, following a growth in the tourism mar-

ket. Since the Katendegere Group had become so small, another group was habituated in the Buhoma area. The Habinyanja Group contained more than 25 gorillas in 1997 and it fissioned into two groups in 2002. The smaller group initially consisted of only 8 gorillas and was named the Rushegura Group.



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Additionally, in an effort to spread the growing benefits of gorilla tourism and improve conservation efforts in other regions of the park, it was decided that gorilla tourism would be expanded outside Buhoma. As a result, habituation of the Nkuringo Group in the southern region of Bwindi began in 1997. However, due to various challenges including the need for infrastructure development, the group was only opened for tourism in 2004.

The third phase of gorilla habituation was the result of persistent growth in demand for gorilla tourism and the urge to introduce gorilla tourism elsewhere around the park as means of enhancing conservation and development. Gorilla tourism was earmarked as a major revenue earner and notable employer of numerous local people. Thus, initiatives to equitably distribute such opportunities around the entire protected area took centre stage and

Summary of the status of all habituated gorilla groups

Group name	Year Habituation Began
Katendegyerere	1991
Mubare	1991
Kyagurilo	1990
Habinyanja	1996
Nkuringo	1997
Rushegura	fissioned from Habinyanja in 2002
Bitukura	2006
Nshongi	2006
Oruzogo	2008
Kahungye	2008
Mishaya	fissioned from Nshongi in 2010
Bweza	fissioned from Nshongi in 2012
Busingye	fissioned from Kahungye in 2012



more gorilla groups were habituated in various sectors of the park.

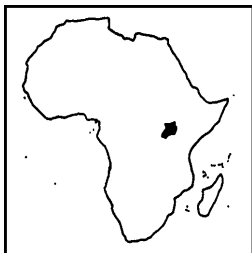
The habituation of Bitukura Group (in the northeastern region around Ruhija) and Nshongi Group (in the southern sector of the park) began in 2006 and both groups were opened for tourism in 2008. Based on the results of the 2006 park-wide gorilla census, the Nshongi group was the largest group in the park with more than 30 members. However, in 2014 it contains only 8 gorillas. The dramatic change in group size is largely the result of two fission events. First, in 2010 the silverback Mishaya moved out with 8 other group members. In 2012, the silverback Bweza separated from the group with 9 individuals. Both resulting groups go by the names of these silverbacks. Mishaya died suddenly in early 2014, and according to UWA a new silverback took over the group.

Habituation of two additional groups began in 2008 and both were opened for tourism in 2010. The Kahungye Group ranges in the southern sector of the park, near the Nshongi Group.

It also was initially a very large group, containing nearly 30 gorillas. In March 2012, the group fissioned with 9 members splitting off to form the Busingye Group. The Oruzogo, ranging to the west of the Ruhija area initially contained about 20 gorillas, but has reduced in size slightly due to emigrations.

The group fissions, births, deaths, emigrations and immigrations observed in the habituated groups all reflect natural demographic processes that are typical for a species that lives in social groups. Gorillas are one of only a few primate genera in which both males and females may either remain in or disperse from the group in which they were born.

Males seek to attain the dominant silverback position of a group by either queuing for alpha status in the natal group or becoming solitary to attempt to attract females to form a new group. As a result, we see both one-male and multimale groups, with the latter sometimes fissioning into two groups. Understanding these demographic pro-



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cesses is largely possible by monitoring habituated groups. By regularly collecting data on the habituated gorillas we have also been able to determine that Bwindi gorillas had a lower birth rate and a longer inter-birth interval than the Virunga gorillas (5 years compared to 4 years), which suggests that the overall growth rate of the population is likely lower in Bwindi (Robbins et al. 2009). Such information can be used concurrently with studies on gorilla health and ecological conditions to best understand this species' biology and contribute to conservation management strategies.

The most recent park-wide census conducted in 2011 estimated that a minimum of 400 gorillas live in 36 social units in Bwindi. At that time, the 168 gorillas in the 10 habituated groups represented 42% of all the gorillas and 28% of all the groups in the park. In contrast, this value is much lower than the 349 habituated gorillas out of 480 detected (73% of the population; 24 of 36 social groups) found at the time of the 2010 census in the Virunga Massif (Gray et al. 2013). Most of the remaining unhabituated groups in Bwindi live in the interior of the park that is not accessible as a day trip and there-

fore would be unsuitable for tourism. The number of tourists viewing gorillas in Bwindi has increased from approximately 3000 per year in the 1990s to more than 15,000 in recent years.

Peter Kabano, Joseph Arinaitwe and Martha M. Robbins

The details described in this article are a result of dedicated efforts from various stakeholders in mountain gorilla conservation over the past decades, spearheaded by Uganda Wildlife Authority (UWA), and include the International Gorilla Conservation Programme (IGCP), Mountain Gorilla Veterinary Project (MGVP), Wildlife Conservation Society (WCS), Conservation Through Public Health (CTPH), Max Planck Institute for Evolutionary Anthropology (MPI-Evan), and the Institute of Tropical Forest Conservation (ITFC).

Two Leading Silverbacks Die

Mishaya, the leader of the Mishaya group, died on 3 February, 2014 at the age of 28 years after a short illness. Preliminary results indicate that his death resulted from a coiling of the intestines. Mishaya was known as a fighter who often started interactions with other groups. He suffered very serious injuries during a fight with another group in April 2011, when he had deep wounds on the upper lip and left eyebrow, a swelling on the left upper eyelid, on the right elbow, both hands and below the ankle of the right foot. Despite the severity of these injuries, he recovered without interventions.



Mwirima, the leader of the Rushegura group, died on 3 March, 2014. He was probably about 35 years old. During the last two weeks of his life, his health was visibly becoming poorer; he was not feeding well and lagging behind. When his condition deteriorated, the Gorilla Doctors were called for an urgent intervention. During this intervention, the veterinarians discovered a wound in Mwirima's mouth which had made it difficult for him to feed. After his death the Rushegura group was led by the blackback Kabukojo, assisted by the blackback Kalembezi.

Summaries of UWA information and the Gorilla Doctors blog

Mwirima

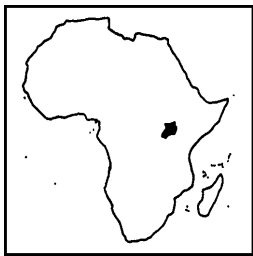
Photo: Uwe Kribus

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Gorilla Habituation and Ecotourism Sustainability in Bwindi – a Social Perspective

Gorilla tourism and conservation cannot be sustained if it is not supported by fringe communities around the parks. Gorilla ecotourism areas are experiencing intensification of land use and tourism/habituation related conflicts, all of which could threaten the existence of this critically endangered population of the great apes. In Bwindi Impenetrable National Park (BINP),



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mountain gorilla habituation, coupled with reduced food inside the park and increased availability of herbaceous foods outside the park, has increased gorilla foraging on private land where they raid crops and deprive the affected people of their right of free access to their land and property.

Additionally, patterns of traditional land use in fringe areas of BINP have changed due to creation of physical infrastructure resulting in landscape fragmentation and increased influx of people who hope to benefit economically from tourism, enhancing human-gorilla interactions at park-community interfaces and so fuelling human-gorilla conflicts.

In September, 2012, the International Gorilla Conservation Programme (IGCP) sanctioned a study on the “assessment of the impacts of mountain gorilla habituation and tourism on their sustainable conservation”. One of the objectives of the assignment was to generate data to be used to address the ecological and anthropogenic conflict drivers that threaten sustainability of gorilla habituation for tourism development and conservation around BINP, Mgahinga Gorilla National Park (MGNP) in Uganda and Volcanoes National Park (VNP) in Rwanda. To achieve this objective, community perspectives (likes and dislikes) regarding gorillas and tourism were analysed through open discussions. Responses from communities about their perspectives about gorillas and tourism are indicated in the table on page 12.

Although the dislikes about gorillas and visitors are fairly significant, it is clear that communities do not hate gorillas or tourism activity per se. However, community members are aggrieved, angered and frustrated by the following:

- tracking gorillas on community land when they are not benefiting from the tourism activity,



Gorilla tourist souvenir shop

Photo: Rolf Brunner

- continued loss of land and crops to gorillas,
- harsh treatment for ‘simple’ offences from park authorities,
- corruption and inequitable distribution of benefits from gorilla tourism (Revenue Sharing and Gorilla Levy Funds),
- ineffective interventions in community problems,
- indifferent response by park authorities to communities’ core needs.

Communities feel they are not recognized for the role they play not only in conservation but also giving a helping hand in maintaining roads or rescuing tourists among others. The situation is exacerbated by the fact that park authorities seem to misinterpret the core needs of communities.

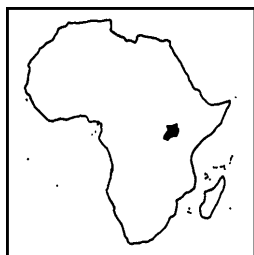
Gorillas and other animals destroy our crops and entire survival. But the park does not even show sympathy. Tourists get stuck and they encourage us to go and help. But some of these wardens

will not even take a woman in labour pains to hospital ...

Nkuringo, January 2013.

The most sensitive challenge though is the community wildlife conflict underpinned by the local community’s unmet economic expectations from gorilla tourism, coupled with ineffective collaborative mechanisms (that do not adequately provide inclusiveness in negotiation and equitable sharing of costs and benefits of gorilla tourism and conservation) and failure to address crop raiding and gorilla foraging outside the protected areas. Accordingly, there is increased animosity between park management and the local people who suffer losses, amidst clear knowledge of the economic returns that gorillas fetch, and yet they have to be punished for simple offences:

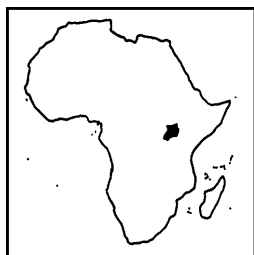
... their animals destroy entire gardens for a whole season but when our goat, just goats, even if it is one, are caught, they are immediately arrested. Some-



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Community perspectives on gorillas and tourism related activities

Likes	Dislikes
Perspectives on gorillas	
increased community pride – opened up their rural areas to the rest of the world; security (the presence of the gorillas has increased security forces around the park which has provided security to the community surrounding the park); development of social infrastructure, like schools, hospitals, roads	raid crops of the communities; they cause injuries to some individuals and no medication is given to them and no compensation is given; have caused displacement of the local population; destroy Mauritius thorn hedge that are used to control problem animals
Perspectives on park staff and researchers	
interpret the products made by the locals to the visitors; they make gorillas closer and friendly to people (habituation); some guides are from within the community and salaries earned are distributed in the community; promote conservation; provide employment; offer lifts (provide free transport)	stop visitors from giving them gifts and tips once they perform any activity; refuse to take clients to the local performers; since they have more money, they sexually engage children and wives thus increasing HIV/AIDS, family breakdown, disempowerment and loss of self-worth among men, unwanted pregnancies and social tension including bar fights; are sometimes selfish, they do not share knowledge with the local people; rangers usually harass the community and even beat them if they complain of their crops and attempt to chase animals like gorillas and buffaloes in their gardens; park guides and rangers also give false information to the wardens worsening the relationship between the park administration and community members; take tourists to track gorillas in community gardens and threaten to arrest communities when they try to send them away; they destroy local hand crafts like art crafts that are meant for sale; all park staff just concentrate on tourists, they even do not bother to understand us, our problems, our products etc; researchers just extract information but never return to share results and never take any action: they disappear
Perspectives on tourism business operators	
employment; market for produce; sharing revenue generated from camps that support schools and other community projects; facilitate fundraising especially in churches and ceremonies; they provide training experience to our children especially those who are on vacation	poor pay to the locals that are employed; exploitation since they have no option in terms of market; untimely suspension of workers especially the locals without a genuine reason; some engage in immoral behaviours (prostitution, drugs); reckless driving
Community perspectives on visitors	
support vulnerable groups like the orphans; education and international exposure (they have increased international relationships whereby tourists take their children to study abroad once given scholarships)	have poor dress code that has undermined our culture; they just take photos without community consent and they always take only the pictures of poorly dressed children and women with dirty clothes from the garden; they do not respect their culture; poor disposal of wastes especially in the forest; since they started visiting gorillas, communities were restricted from using forest resources



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times these rangers act so irrationally. Here we cannot be sure of our life or wellbeing. Any time the park staff will come to your home claiming that you have illegal timber. Even when we quarrel over simple social issues, they will implicate you and threaten to arrest you.

This has rendered mountain gorillas more vulnerable as expressed through emotion-driven killings, poaching and deliberate habitat destruction. Notably, mountain gorillas being flagship species stand out as targets and victims of violence (direct and indirect) as ransom from the disgruntled local people around park/community interface. Affected local people direct their vengeance at gorillas or their habitat to seek justice, demonstrate resistance against crop raiding with no compensation and free gorilla viewing on private land. To express their bitterness, some community members revealed that:

If the park authorities keep a deaf ear, we know what the gorillas eat. We shall poison them. At least let us both lose. The park gets a lot of money at the expense of our livelihoods, our children have dropped out of school, and the animals have deprived us of our gardens and crops. Now you tell us that they are important, how?

*Community member in Nkuringo,
January 2013*

Generally, the communities feel disenfranchised, disempowered and neglected in favour of gorillas and tourists who fetch lots of money for the government.

On the other hand, the reality is that park authorities are not deliberately indifferent and they are aware of the communities' plight. Particularly, there is no explicit policy on compensation in the case of crop raiding by animals in Uganda. Therefore, without clearing such false allegations, the conflict goes

beyond the gorillas and spills over to the park staff, who are the legal custodians of the gorillas. It is possible that the sustainability of gorilla conservation and the future of the forests that accommodate them cannot be guaranteed if such conflicts persist.

In conclusion, these findings indicate that there is no major direct threat to gorillas from a social perspective. In fact, all key threats are indirect, accruing from unmet needs. The fact that communities do not hate the gorillas by their nature implies that once they are managed and kept within the forest boundaries, the possibility of communities harming gorillas would be greatly minimized. Other social issues could be managed if there are no major losses amidst clear knowledge of the economic returns that the gorillas fetch. However, if the situation persists, the next step would be for communities to put into action their threats, rendering sustainable gorilla conservation very fragile.

Recommendations

- In absence of the compensation policy in Uganda, there is need to negotiate and agree with land owners/affected farmers on fees for gorilla viewing on private land, otherwise forceful gorilla trekking on private property without compensation is infringing on the communities' rights and should be stopped.
- Use conservation awareness creation and participatory approaches when negotiating community quid pro quo for conservation support and tolerance. Communities must be made to understand that improvement to their livelihoods cannot depend solely on the park and gorilla ecotourism. Managing expectations will be achieved by making realistic promises and fulfilling these promises to the communities.
- Although there are complaints (coercion, military conduct, heavy fines,

bribery, soliciting for tips etc.) by local communities against law enforcement officers, any laxity in law enforcement abets crime and can be devastating to gorillas thus undermining their conservation. Law enforcement must be further strengthened by improved intelligence systems to stop poaching, bushmeat networks, and other illegal activities in gorilla parks. There is need to increase vigilance and to institute more deterrent punishments against wildlife offenders. A participatory approach that involves local communities is necessary to justify and popularize the value of law enforcement and so render law enforcement officers and their actions acceptable by the resident communities. On the other hand, law enforcement must maintain good public relations with communities and show high professional and ethical conduct. Quality assurance and staff appraisal should be enhanced to maintain standards. Training of park staff in ethics of wildlife management and conservation is hereby recommended.

- There is need to pro-actively create elaborate actions for promoting pro-poor gorilla conservation and tourism. Alternative survival strategies for vulnerable communities such as adopting ecotourism linked enterprises, organic farming, family planning, education, etc. should be promoted to curtail poverty and promote sustainable conservation and development. This helps to create a positive attitude towards gorillas and their ownership, and to support their conservation.

*John Bosco Nkurunungi and
Christine Ampumuza*

*Original report:
Nkurunungi, J. B. & Ampumuza, C.
(2013) Assessment of the Impacts of
Mountain Gorilla Habituation and Tour-*



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ism on their Sustainable Conservation. Report of a consultancy for the International Gorilla Conservation Programme.

Effectively Conveying Conservation Messages Through the Use of Films

Conservation education acts as a bridge between researchers and community members by taking research and turning it into fun and engaging information that inspires action. Unfortunately given limited time, funding and available resources, creating a successful conservation education program can be challenging. One way to mitigate these challenges is the use of conservation films that address conservation topics specific to a region, incorporating culture and local language.

The Great Ape Education Project (GAEP) in Uganda is designed to educate children and rural communities about the threats to great apes: habitat loss, snaring and bushmeat. A collaboration of three well-established Uganda-based organisations – the North Carolina Zoo's UNITE for the Environment (UNITE) program, the Kasiisi Project, the Max Planck Institute for Evolutionary Anthropology (MPI-EVAN) and the Dutch NGO Nature for Kids (NfK) – the project has developed and distributed a series of 3 ape-focused conservation films and a range of supporting educational materials (student magazines, posters and brochures) and programs designed to be accessible to local people and which are sensitive to cultural beliefs and traditions. The project has been underway since 2012 and impacts communities surrounding two thirds of Uganda's chimpanzee population and almost half of the world's mountain gorillas.

The focus of GAEP is educational outreach relevant to the conserva-

tion of the great apes. Providing students, teachers and community members with an effective and compelling way to learn more about great apes will allow them to better understand how human behaviour, the survival of great apes, and the environment which they all share are closely linked. Through innovative educational outreach, and by providing conservation solutions that individual rural people can undertake, GAEP promotes both attitudinal and behavioural change to secure the survival of great apes in Uganda. A key strength of GAEP is the long-term involvement of the participating organisations in great ape conservation. Each of our organisations has worked both individually and collaboratively for many years in Uganda, employing a range of diverse yet complementary approaches to conservation education. By fostering positive attitudes towards apes and ape conservation GAEP helps to ensure the long-term survival of these critically endangered species.

Films developed as part of this program were created with input from great ape experts and Ugandans who provided cultural advice for the story lines.

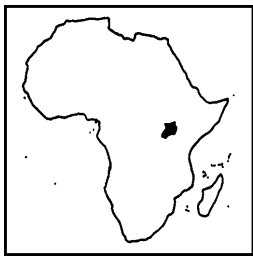
The films are made particularly relevant to the communities in which we work, because they were shot on location in Uganda using local actors. Our extensive experience with conservation education, the broad range of expertise of our staffs, and the use of tailor-made conservation films makes this project unique among ape conservation initiatives in Uganda, even among initiatives in other African great ape countries. While the films were made in Uganda they are general enough to be used in all African ape range countries.

To date, UNITE staff have trained 100 teachers working in 33 primary schools, 5 Uganda Wildlife Authority (UWA) rangers and 2 UWA Community Conservation Wardens during 3 three-day teacher trainings. Teachers and UWA staff were trained how to use the films as an educational tool in schools and each school developed an outreach plan appropriate for their community and schools. The plans include showing the movies as well as implementing great ape themed activities to enhance the films' key messages. By training teachers to use the films and carry out supporting activities for



Proud to be a great ape superhero

Photo: Michelle A. Slavin/NC Zoo UNITE



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their students, GAEP has been able to reach approximately 16,000 students surrounding Kibale and Bwindi Impenetrable National Parks.

The response to the films has been overwhelmingly positive. Students in the 33 schools were able to relate to the films because the characters look like them, talk like them and face the same conservation challenges as them. Students frequently cheered on the main characters, Ajani and Nantale, encouraging them to do the right thing and save the great apes found in their communities. The film's key messages were very clear: chimpanzees and gorillas are similar to humans in the way they look as well as in the way they feel and communicate; poaching is indiscriminate and dangerous; and of course, eating bushmeat is also very dangerous as humans can contract certain diseases from the meat. Despite living near world renowned great ape habitats, most students have never seen these animals and the films provided students their first opportunity to see a great ape. Student magazines, posters and brochures, created as part of GAEP, were given out after each film showing and have been a great way for students to share with their parents and grandparents what they learned at school and create a space for dialogue about great apes in Uganda.

After the film showings students were excited to take part in the activities their teachers had chosen at their training. The teachers had been given a list of great ape-themed activities and asked to choose at least two activities for each film showing that would best suit their school needs. For example, for some very rural schools creating a community garden was more feasible than doing a radio broadcast, while others chose to focus on expanding awareness about great ape conservation through newsletters or dances. In total each school chose at least six activities to be completed during the

lifetime of the project, and some very motivated schools chose to do more. Schools chose a variety of activities to implement including making posters, art projects, building keyhole gardens (gardens designed to maximize small plots of land), forest walks and showing other great ape films. In the last two years, schools have completed three great ape-themed sporting events for netball and football, two radio broadcasts, 22 keyhole gardens and more posters in trading centers than we can count. But by far, the most popular outreach activity was debates – Ugandans love to debate! Of 21 debates conducted, topics have included: "Population in Uganda has affected the great apes' survival", "Great apes are our relatives and should not be snared", "Should we protect great apes in zoos or forests?"

The Great Ape Education Project has not only provided both teachers and students with the opportunity to learn about the great apes they live so near but know so little about, but also to take pride in their country's wildlife. By using NfK's "edutainment" model (films + resource materials + activities) the great ape films are far more powerful than they would have been alone. The great ape-themed activities emphasize the key messages found in the films, allowing students to more deeply explore the conservation threats to chimpanzees and mountain gorillas. Given that the standard teaching practice in Uganda is lecturing, this program's focus on inquiry-based teaching methods and student-led projects has also helped to improve teaching practices, and has been both challenging and exciting for the teachers who are implementing it.

The project has not stopped with the schools: in 2013 all three organisations showed the films to community members in order to reach a wider audience and are planning more community film shows for 2014. Additionally GAEP staff has been able to share information about GAEP at special events

such as the Zoos and Aquariums Committing to Conservation (ZACC) conference in the US, the Gorillas Across Africa Workshop in Rwanda and Ugandan Earth Day events in 2012 and 2013.

Personally, it has been wonderful to walk around the villages where GAEP schools are located and see students on bicycles wearing chimpanzee masks, waste management and anti-snaring posters in trading centers, and meeting school children in hiking areas who ask my opinion about the need for conservation of great apes. These films have created a sense of pride in local wildlife, particularly great apes, and have motivated and inspired students to conserve the great apes found in their national parks – which is exactly what Africa's great apes need.

Michelle A. Slavin

If you would like to learn more about the Great Ape Education Project please visit our website at: <http://www.greatapeeducation.com>. The films are available for download online at: <http://www.natureforkids.nl/what-do-we-do/our-projects/project/23/uganda-great-ape-protection-programm>



Bigodi progressive film showing

Photo: Michelle A. Slavin/NC Zoo UNITE

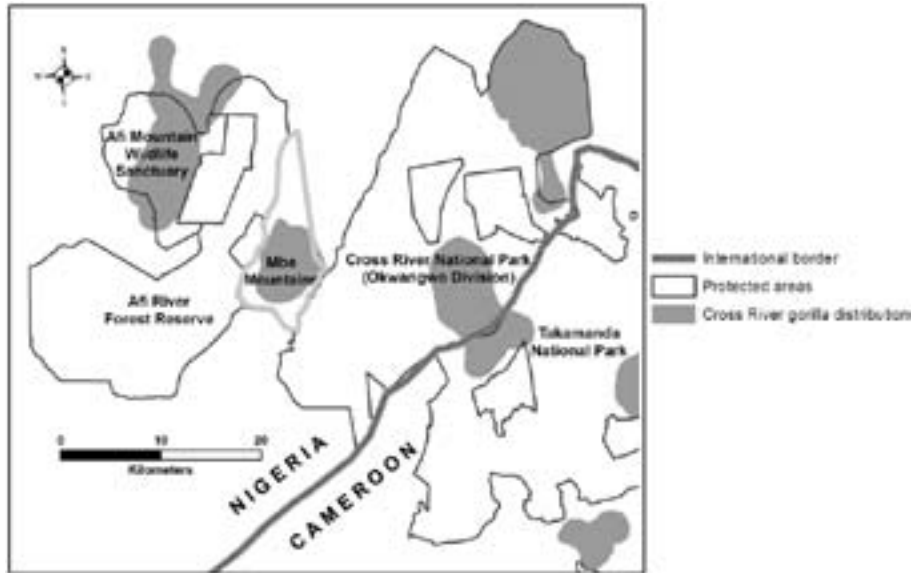


CROSS RIVER

Using Technology to Save Gorillas in the Mbe Mountains

The Mbe Mountains form part of an important habitat corridor linking Afi Mountain Wildlife Sanctuary to the Okwangwo Division of Cross River National Park and other Cross River gorilla sites to the east. The Mbe Forest is managed by a community conservation association, the *Conservation Association of the Mbe Mountains* (CAMM) with support from the *Wildlife Conservation Society* (WCS). A team of 13 eco-guards managed by WCS and CAMM carry out anti-poaching and gorilla monitoring patrols in the Mbe Forest.

Though there is a high sense of ownership and commitment among the communities to protect the Mbe forest there is low technical capacity within CAMM to do so. Continued support from WCS has facilitated the manage-



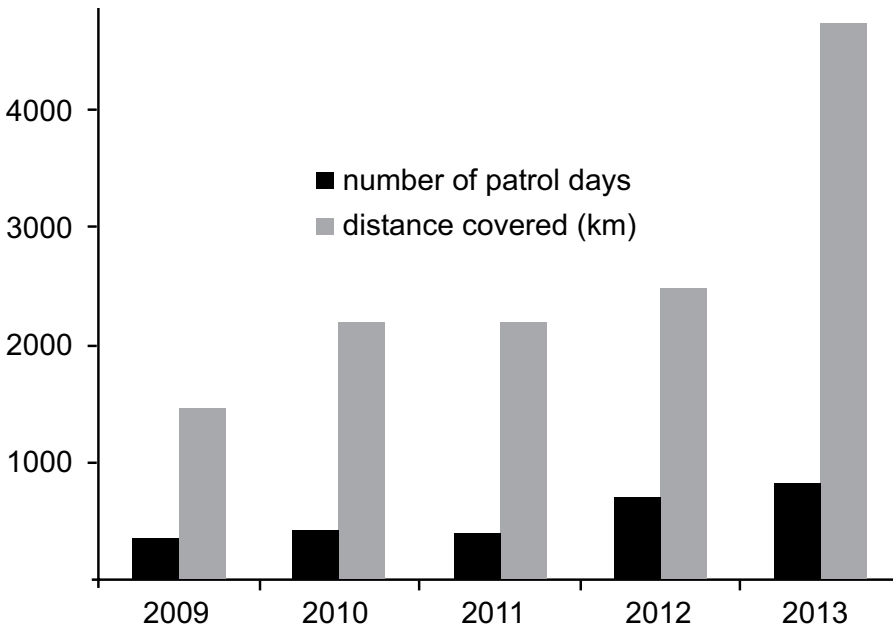
Location of the Mbe Mountains in relation to other protected areas in the region Map: WCS

ment of the Mbe Mountains by CAMM. With technical assistance from the North Carolina Zoo and with funding support from the Great Ape Conser-

vation Fund of the *United States Fish and Wildlife Service*, WCS introduced CyberTracker-based law enforcement and monitoring system in the Mbe Mountains in 2009. The system uses the CyberTracker software run on ruggedized handheld computers with GPS capabilities for field data collection.

Data collected with this system can be downloaded directly to computers and quickly analyzed allowing timely production of feedback for patrol planning and implementation. Introduction of the CyberTracker-based system has allowed more systematic data collection, improved the quality of data collected by eco-guards, better performance monitoring, and increased their motivation. Since the introduction of the CyberTracker-based system there has been steady improvement in monitoring and law enforcement effectiveness at this site and others.

Patrol effort has increased since the launch of the CyberTracker project from 343 patrol days/year in 2009 (by two patrol teams) to 830 patrol days/year in 2013 (by three patrol teams). There has also been an overall decrease in hunt-



Patrol effort (2009–2014) measure as number of patrol days completed by three teams of eco-guards in the Mbe Mountains and total kilometers walked Drawing: WCS



CROSS RIVER

ing pressure and a steady increase in great ape observations reflecting the increased patrol effort.

Levels of hunting in the Mbe Mountains are relatively low compared to adjacent protected areas such as Afi Mountain Wildlife Sanctuary and Cross River National Park. Levels of wildlife abundance are also relatively higher in the Mbe Mountains, and there have been no reports of hunting of gorillas or chimpanzees in Mbe in nearly 30 years. It is believed that this has been achieved through strong community support for conservation which has facilitated law enforcement. Against many challenges, the communities of Mbe continued to pursue, and achieved in 2013, the legal registration of CAMM to facilitate the management of the Mbe Mountains. With increasing conservation efforts, there is potential for the Mbe Mountains to become a model of successful community-based conservation, complementing efforts of government and NGOs. However, for long-term conservation of the Mbe Mountains a number of actions are essential:

- official gazettelement of the Mbe Mountains as a community wildlife

Comparison of patrol effort and hunting pressure in the mountains from 2009 to 2013

Encounter rate of human activity (per 10 km)	2009	2010	2011	2012	2013
Wire snares	1.3	3.02	0.6	2.48	0.27
Gunshots heard	0.45	0.29	0.15	0.16	0.02
Expended cartridges	1.56	0.68	0.34	0.41	0.08
No. of hunting camps destroyed	0.05	0.02	0.05	0.03	0.002
No. of rangers per 10 km ²	1.1	1.4	1.4	1.4	1.4
Great ape observation					
No. of gorilla groups sighted	4	4	12	13	22
No. of chimpanzee groups sighted	4	7	9	16	15
No. gorilla nest sites recorded	29	38	31	77	80
No. chimpanzee nest sites recorded	3	3	16	19	53
Unidentified great ape nest sites	1	29	7	17	27

- sanctuary to afford the area greater protection,
- building the capacity of CAMM and seeking sustainable long-term funding for conservation activities,
- completion of the process of developing a management plan for Mbe Mountains,
- creating increased conservation awareness and support for alterna-

- tive livelihoods for local communities,
- development of tourism in the Mbe Mountains,
- review of current boundaries to include a wider corridor to the Okwangwo Division of Cross National Park and permanent demarcation of the boundary.

Inaoyom Imong, Jonathan Eban and Celestine Mengnjo



Ranger training

Photo: WCS

WCS is grateful to the 9 landlord communities surrounding the Mbe Mountains as well as the Cross River State Forestry Commission, the legal custodian of all forests and wildlife in Cross River State, for their support and cooperation. Thanks to Rich Bergl of the North Carolina Zoo who introduced CyberTracker in Nigeria in 2009. We are immeasurably grateful to the Great Ape Conservation Fund of the United States Fish and Wildlife Service and acknowledge the importance of the cooperative agreement signed between the USFWS and WCS for the conservation of Cross River gorillas in 2010. We are also grateful to all other donors who support our work in the Mbe Mountains including the Ape Conservation Fund of the European Association of Zoos and Aquaria (EAZA), UNEP Convention on Migratory Species, the Save our Species Fund (IUCN), North Carolina Zoo, Cleveland MetroParks Zoo, Kolmården Fundraising Foundation and Berggorilla & Regenwald Direkthilfe.



GORILLAS

28 Gorilla and Chimp Skulls Seized in Cameroon

On 21 May 2014, wildlife officials in Cameroon's capital city, Yaounde, carried out an operation that resulted in the seizure of 7 gorilla and 11 chimpanzee skulls, a consignment that is considered by experts to be one of the biggest seizures of primate trophies in Africa. The man who was tracked from Ebolowa, a town located some 157 km from Yaounde, in the south of Cameroon, travelled on board a private car to the capital city and was arrested during his attempts to sell the skulls and an elephant jawbone to a client.

The operation was carried out with the collaboration of a team of policemen and with technical support from LAGA, a non-governmental organisation specialised in wildlife law enforcement. Batoukini Pierre II, a senior forestry engineer from the wildlife office, who headed the operation, declared "we got reliable information from our LAGA collaborators that someone was about to traffic gorilla and chimpanzee parts in Yaounde and we set up a team that cornered and arrested the suspect."

The 37-year-old suspect, who is a father of three, is presently behind bars and is believed to be a seasoned trafficker in primate parts. Sources close to the case say he bought most of the ape skulls in villages around some major cities in the south of the country and was expecting to make a huge profit after selling them in the capital city.

The arrest comes just two weeks after two men were arrested in the east of the country by the wildlife officials for illegal possession and commercialisation of 10 gorilla skulls. This brings the total number of skulls seized by wildlife officials in the country to 28 within a two-week period. The two decided to use a hired bike, on May 8, 2014, from

a small locality deep inside the Congo Basin forest, some 24 km from Bertoua, the regional capital, to ferry the illegal consignment. The choice of a bike instead of a regular public transport car for their movements was a tactic to avoid detection at police check points.

This tactic was equally employed by the dealer who left Ebolowa for Yaounde by boarding a private car rather than using a public transport car for the transportation of his illegal consignment of gorilla and chimpanzee skulls. The reason why traffickers in Cameroon avoid public transport vehicles is simple; they take advantage of a loophole within the law enforcement system in the country where police and gendarme officers seem to concentrate on checking public transport vehicles and national identity cards of passengers, while private cars carrying even more dangerous and illicit cargo and passengers pass through without any control.

Increased sophistication by wildlife criminals is posing a serious threat to

great apes in a country where these animals are mainly killed for meat. But these arrests shine light on a hitherto little known illegal trade in skulls. Without improved and adequate response to this phenomenon, gorillas and chimps in the forests of Cameroon may be bracing themselves for a final showdown with traffickers and poachers. The information provided by the dealers who were arrested in Bertoua that they could provide up to 50 skulls is alarming and many are now watching the government to see what it shall be doing to step up the fight against wildlife law enforcement. In a bid to explain government policies on wildlife trafficking, Batoukini Pierre II says "the layman may not understand the value of these animals, he sees only meat and bones, but they play a far bigger role in our ecosystem and therefore need our protection through laws and regulations." Effective wildlife law enforcement seems to be the only way for countries like Cameroon, if they are to fight the battle on the side of the great apes and hopefully stem the tide. To be able to actually win the war, the country passed a law in 1994 that gives a maximum sentence of 3 years to offenders.

Eric Kaba Tah



Arrested dealers with primate skulls

Photo: LAGA

Bushmeat Trafficking – Not Just an African Problem

Illegal meats for human consumption are smuggled daily into airports worldwide and some of this meat originates from wild species, including primates. The international movement of wild meat out of Africa and into countries in Europe, the USA, Asia and other economically growing regions is part of a black market trade that has not been well-documented. A study by Chaber et al. (2010) was one of the first systematic attempts to quantify species and amounts arriving at the



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Charles de Gaulle airport in Paris, France and estimated that up to 270 tonnes of bushmeat arrives annually in this one European airport. Our study was modeled after the Chaber study, with a goal of identifying those species at risk from the bushmeat trade in Switzerland.

What began as an independent effort by *Tengwood Organization* (www.tengwood.org), a non-profit conservation initiative registered in Switzerland, became a collaborative effort with the University of Zürich's Institute of Forensic Medicine, and representatives from the Swiss Federal Agencies responsible for monitoring the trafficking of wild species. Federal Veterinary Authorities (FSVO), Swiss Customs, and CITES

facilitated the collection of tissue samples from suspected bushmeat confiscations arriving in two international airports in Switzerland: Flughafen Zürich and Genève Aéroport. Data were collected over an approximate one-year period (from September 2011 to January 2013). We also participated in controlled exercises at both airports to monitor illegal wildlife trafficking, and samples from all meats were collected on these days to characterize smuggled meats and provide a rough estimate of the scale of the problem in Swiss Airports. This article presents a brief overview of some of the findings in our study.

At the time of confiscation, passengers provide information to Customs

officers about the origin of seized meats. While wild meats from any region were considered "bushmeat", Africa was the origin of 98.5% of the wild meat arriving in Swiss airports – only 1.5% of the total kilograms arrived from regions outside of Africa (Asia and the Middle East).

While a number of African countries were represented, the majority of bushmeat confiscated in Switzerland originated in West or Central African countries (91%), and Cameroon was by far the most frequent country of origin. The Chaber et al. (2010) study also found that the majority of the estimated 5 tonnes of bushmeat arriving weekly in Paris comes from Cameroon, suggesting that this country may be a hub for bushmeat exports to Europe. Our study also revealed an additional "cryptic" element to bushmeat smuggling into Europe; while in the Chaber study data were collected only from *direct* flights from West or Central African countries, Switzerland has very few direct flights from Africa. We looked at the departure point for all flights that carried bushmeat and found that most arrived with transit passengers on flights from *within Europe*, with Brussels, Belgium and Paris, France being the most frequent departure points.

Customs officers in ports of entry worldwide are on the frontlines of detecting and tracking the smuggling of wild meats. However, bushmeat is not always easy to recognize. Even when the origin of a meat is suspected to be non-domestic/wild, identification *to the species level* is difficult. For example, while some bushmeat arrived in Swiss airports as whole or partial carcasses, the majority arrived as *pieced* meat, making species recognition especially difficult. Also complicating identification is that most arrived smoked, which removes hair and further obscures identifying features. Close to half the sampled bushmeat arrived as *smoked meat pieces*.



***Cercopithecus* head that arrived as bushmeat at a Swiss airport**

Photo: Tengwood Organization/FVO



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Because of these issues, one of the main goals of our study was to identify species at risk from the bushmeat trade through the use of mitochondrial DNA, currently the most accurate standardized method of species identification in wildlife forensics (Hsieh et al. 2001). The use of DNA for species identification of seized meats is not routine in any country and illegal meats coming in at ports of entry are routinely destroyed to reduce the risk of disease introduction. In the process, important information about species threatened by the trade is being lost. In addition to species identification, we also documented some of the more generic characteristics of bushmeat that can help to predict if meat originates from a wild species and a booklet describing these features was created as a joint project of *Tengwood Organization* and the Federal Food Safety and Veterinary Offices to aid Border agencies in bushmeat identification (Federal Food Safety and Veterinary Office, *Tengwood Organization*, in press; available in English, German and French).

To identify species at risk from the bushmeat trade into Switzerland, tissue samples were collected from confiscated meats and analyzed at the University of Zürich, Institute of Forensic Medicine. Details of the methodology are available in Morf et al. (2013). We used primates as an indicator species in this study as all species of primates are listed in the CITES Appendices and we therefore propose that consistently finding them in developed world airports implies that the international component of the bushmeat trade could be having a substantial impact on vulnerable species. Due to the primate tendency to live in social groups, a large number of individuals may be killed at one time by hunters, making them particularly lucrative (Linder & Oates 2011). Great apes are especially vulnerable to the bushmeat trade because of their large body size

and a suite of life-history characteristics that result in low reproductive rates (Kappeler & Pereira 2003). Primate bushmeat is also a known concern in regard to emerging diseases (Smith et al. 2011) and imports of meat into developed world countries can have serious implications for human public health by increasing the risk of disease introduction.

Surprisingly, approximately *one-third* of the bushmeat found during the study was identified in our DNA analysis as coming from *CITES-listed species*. Primates were indeed found as bushmeat in Swiss airports; while no great apes were recorded, at least 3 species of guenons (*Cercopithecus* spp.) were confiscated during the study. These were identified only to the genus level, as *Cercopithecus* species are underrepresented in the online gene databanks. Most are not well-studied in the wild and information to assess the level of threat to many species is inadequate, but a number of guenons are considered vulnerable or endangered by IUCN (2013). Despite protective measures, primates were the fourth most frequently found animal group in our study and represented 6% of the total bushmeat kilograms collected in Switzerland. All arrived on flights originating in Cameroon, where market studies show from 1 to 16.9% of market catch to be primates (Nasi et al. 2011; Fa et al. 2006). To find primates in seizures of wild meats in Switzerland, in proportions similar to those in some local Cameroonian markets, is troubling.

Besides primates, other CITES-listed species found during the study include African pangolins, which were the most frequently found CITES-listed species in our study – at least 14 individuals and approximately 28 kg of pangolin were recorded in a one-year period. Pangolins are utilized for both their meat and body parts (scales, organs, etc.), used in traditional medicines in both Africa and Asia. The situ-

ation for pangolins is particularly dire, with international trade mirroring that for rhinos. There is some evidence that African pangolins are beginning to be smuggled to Asia, where pangolins are diminishing due to over-exploitation (Challender & Hywood 2012).

Duikers were also frequently found as bushmeat in Swiss airports, represented by all 3 genera (*Cephalophus*, *Philantomba*, and *Sylvicapra*) and 7 different species confiscated during the one-year period of this study, including two CITES-listed species (*Philantomba monticola* and *Cephalophus dorsalis*). Other CITES-listed species included tortoises (*Kinixys erosa*), and otters (*Aonyx capensis*). A number of non-CITES species were also found, including rodents (55% of the total kg), wild pigs, small carnivores, other antelope, reptiles, birds, and invertebrates.

Bushmeat is no longer a problem confined only to Africa. The demand by consumers in developed world countries is a key component driving the trade. While some of the meat smuggled into Europe is on a small scale (i.e. for personal consumption), some is likely being smuggled on a larger, trade scale, to be sold in specialty markets or restaurants; this part of the bushmeat trade is financially lucrative, as certain species or types of meat can bring much higher prices in Europe than they do in Africa. A market demand for vulnerable species guarantees that as they become rarer in forests (and subsequently markets), they are likely to become more expensive, and therefore more rewarding for hunters to procure, creating a harmful cycle for threatened species. A recent study by Brashares et al. (Brashares et al. 2011) defined the complex economics of bushmeat; stated simply, the further meat travels from the forest, the more expensive it becomes. The Chaber study looked briefly into Paris markets and found that bushmeat was part of an organized trade and considered a lux-



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ury item for buyers. For example, prices for a 4 kg monkey in a Paris market were *20 times higher* than if the same monkey was bought in Cameroon – approximately € 100 in France, compared with € 5 in Cameroon (Chaber et al. 2010; Chaber 2009).

There may even be a preference in the developed world bushmeat consumer for primates; Brashares' ongoing study of underground markets in developed world cities such as Paris, Brussels, London, New York, Los Angeles, Toronto, and Montreal estimated that primates may represent as much as 30% of the black market bushmeat for sale (Elton 2013) – a figure much higher than that recorded in most African markets. Chaber also noted that cane rats and porcupines were available in Paris for € 40, crocodiles for € 20–30 per kg, and bushmeat could be found in Paris restaurants. The BBC uncovered sales of illegal wild meat in London's markets (Lynn 2012) and Ogden (2009) priced cane rats there at £ 80/kg. Others have reported bushmeat in markets and restaurants in Europe and the USA and, while a list is not provided here, virtually every major international airport in Europe and the USA has recorded seizures of bushmeat. In Swiss airports, passengers smuggling wild meats carried 6–7 kg on average, while passengers who smuggled domestic meats tended to carry between 1–3 kg; confiscations of bushmeat weighed significantly more than all other types of meat confiscations.

Why is bushmeat from Africa being illegally smuggled into developed world countries? Growing immigrant populations contribute to the trade, as does the current trend in developed world consumers towards eating "exotic" meats. In Europe and the USA, it has become "trendy" to eat antelope steaks, kangaroo, lion, crocodile, etc. and exotic meats can be found in restaurants, shops, and online. While much of this

meat is legal or farmed, lines can easily become blurred, especially in light of high profits. The recent scandal in Europe found horsemeat substituted for beef in numerous products and countries (U.K. House of Commons 2013), and seafood studies in the USA uncovered that a high proportion of fish in supermarkets, restaurants and sushi bars were not the fish labeled on the packaging (Buck 2010). These and other studies demonstrate that meat origin can be difficult to ascertain. The mislabeling of meats is currently a widespread problem, and while bushmeat is not commercially packaged, the growing popularity of "exotic" meats may make the smuggling of bushmeat more difficult for law enforcement to detect. Current penalties for smuggling bushmeat in most countries are minimal and need review. The trade is influenced by the same type of high profits that can be garnered for other types of illegal wildlife smuggling and have resulted in the involvement of more organized criminal elements (Haken 2011; Dalberg/WWF 2012). Profits for smuggled bushmeat may be worth more than the cost of the fines if caught, with the likely result being increases in the amounts being smuggled.

In comparison to other countries in Europe, Switzerland is a relatively small country. At the end of 2012, when this study was conducted, Switzerland's permanent resident population approximated 8 million people (Swiss Federal Statistical Office 2013) and airport volumes are correspondingly small; approximately 24 million passengers moved through Flughafen Zürich and 13 million through Genève Aéroport (Flughafen Zürich 2012; Genève Aéroport 2012). These volumes are smaller than, for example, the Charles de Gaulle Airport, where 61.6 million passengers were recorded arriving in the Paris urban area in 2012, where approximately 10 million people reside. From data collected during our

study, we created a model to estimate the amount of bushmeat imports into Switzerland; preliminary results from our most conservative model suggest that even in this one, small European country at least 40 tonnes are likely to be arriving annually. The details of our findings are currently being written up for scientific publication.

The international smuggling of bushmeat out of source countries and into developed world countries is contributing to the problems of species conservation in country, and could be having a substantial impact on animal populations of trafficked species, especially those already at risk inside Africa. While there is current international focus on the illegal trade in some high value wildlife products, such as rhino horn and elephant ivory, there is much less awareness of wild meat as a globally traded commodity. We hope this study will encourage similar studies in other airports and border points in Europe and worldwide. We further hope it acts as impetus for change in some of the policies and penalties in place for the protection of species at border points, and results in closer monitoring of the worldwide trade in wild meat.

Kathy L. Wood, Bruno Tenger, Nadja Morf and Adelgunde Kratzer

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Christian Nellemann, Rune Henriksen, Patricia Raxter, Neville Ash and Elizabeth Mrema (eds.)

The Environmental Crime Crisis – Threats to Sustainable Development from Illegal Exploitation and Trade in Wildlife and Forest Resources. A UNEP Rapid Response Assessment. United Nations Environment Programme and GRID-Arendal, Nairobi and Arendal,

www.grida.no, 2014. 129 pages. ISBN 978-82-7701-132-5

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Howard W. French

China's Second Continent: How a Million Migrants Are Building a New Empire in Africa. New York (Knopf) 2014. 304 pages. Hardcover, US\$ 17.68. ISBN 978-0307956989

New on the Internet

Virunga National Park has a new website. The site was redesigned completely; the new site features images and video more prominently.

<http://www.virunga.org>

DLA Piper

Empty Threat: Does the Law Combat Illegal Wildlife Trade? A ten country review of legislative and judicial approaches. February 2014. 286 pages. <http://www.dlapiperprobono.com/export/sites/pro-bono/downloads/pdfs/Empty-Threat---Does-the-law-combat-illegal-wildlife-trade---Full-Report-2014.pdf>

Greenpeace

Licence to Launder. How Herakles Farms' illegal timber trade threatens Cameroon's forests and VPA. May 2014. 17 pages.

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Médecins Sans Frontières

Everyday Emergency. Silent suffering in Democratic Republic of Congo. Amsterdam 2014. 66 pages.

Group of Experts on the Democratic Republic of the Congo

Final report of the Group of Experts on the Democratic Republic of the Congo. UN Security Council, January 2014. 276 pages. S/2014/42



BERGGORILLA & REGENWALD DIREKTHILFE

General Meeting Held in Basel

April 2014: *Berggorilla & Regenwald Direkthilfe* invited its members to Basel for the general members' meeting, which took place in the "Zolli" operations building ("Zolli" is the nickname given to the Basel Zoo by the people of Basel).

The Board of the organisation and many of its members travelled from Germany and Switzerland for the meeting, which took place over two lovely spring days. Olivier Pagan, the Director of Basel Zoo, participated, accompanied by his wife. On the first day, Angela Meder reported on the current status of the eastern and western gorillas and on B&RD's activities on the ground. Marlene Zähler, a Swiss veterinarian, showed a film about the congohounds, which are used against poachers in the Virunga National Park (www.congo-hounds.ch). Adrian Baumeyer, curator in the zoo, reported on how the keeping and breeding of gorillas in Basel Zoo has developed over time, giving the example of Goma, the 55-year-old female gorilla who was the first gorilla born in Europe. Andreas Klotz gave a presentation on the donation of an x-ray machine to a hospital near Bwindi Impenetrable National Park. The meeting was honoured by a surprise visit by gorilla researcher Jörg Hess.

On the second day, the treasurer's report was received and approved, the actions of the Board were formally approved, and the Board was re-elected. A highlight of the meeting was a guided tour through the gorilla enclosure with Adrian Baumeyer. He reminisced, with many anecdotes, on the difficult conversion of the ape house that was carried out in 2011/12. Gorillas, chimpanzees and orang-utans now have the run of enlarged inside rooms and outside enclosures secured with overhead netting. The tour participants were introduced to individual members of the gorilla group. They

also learnt that some animals are suffering from dangerous parasites and how this is treated.

Marieberthe Hoffmann-Falk



Ravid Aloni with Jörg Hess and his latest book *Photo: Ravid Aloni*



Adrian Baumeyer explains the construction of the gorilla outdoor enclosure *Photo: Angela Meder*

Finances

Income in 2013

Subscriptions	20,650.00 euro
Donations	38,363.69 euro
Sales	953.40 euro
Currency differences	-102.00 euro
Refund from meeting	-692.80 euro
Total	59,182.29 euro

Expenses in 2013

Administration	1,856.53 euro
<i>Gorilla Journal</i>	2,761.99 euro
Items for sale	298.80 euro
Postage	2,536.39 euro
Pay/top-ups	6,500.00 euro
Sarabwwe	
Patrols	5,275.59 euro
Mt. Tshiaberimu	
School tree nurseries	3,980.48 euro
Gorilla monitoring	1,392.85 euro
Bwindi	
X-ray machine (donat.)	5,000.00 euro
ITFC employees	8,000.00 euro
Cross River area, Nigeria	
Renovation Afi headqu.	7,522.76 euro
Total	45,128.39 euro

Our Donors

From November 2013 to April 2014 we received major donations by Jörg Adler, ajoofa, Ravid Aloni, Apenheul, A. Bahr, Thorsten Bisschopinck, Ingrid Bröcker, Angelika Dickmann, Emmerich Exclusivbrillen, Elisabeth Engel, Marianne Famula, Ursula Fritz, Susan Götsch, Colin Groves, Peter Günther, Magdalena und Heinz Hertle, Cathrin Hoffmann, Marianne Holtkötter, Gabriele Holzinger, Helga Innerhofer, Sarah Kaufmann, Götz Kauschka, Matthias Klumpp, Hartmann Knorr, Kong Island Productions, T. Lissel, Karin Linke, H. Maiwald, Angela Meder, Milwaukee Zoo, Manfred Paul, Birgit Reime, Jan Oliver Reinhold, Alfred Roszyk, Erika Rüge, S. Ruhs, Eva Maria Schweikart, Frank Seibecke, Hans-Christian Ströbele, Juliane Ströbele-Gregor, Nina Sundermann, Tiergarten Heidelberg, Christof Wiedemair, Wigwam Tours, Heinz Zaruba and Zoo Krefeld.

Many thanks to everybody, including all the donors that could not be listed by name here! We are grateful for any support, and we hope that you will continue to support us.

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We present artists with a special interest in gorillas; one of them is Chisato Abe (p. 23).

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<http://www.berggorilla.de/index.php?id=82&L=1>
Selected references provide the most important articles and book related to gorillas, their conservation and the protected areas where we support gorilla conservation activities.

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