



# ***Gorilla Journal***

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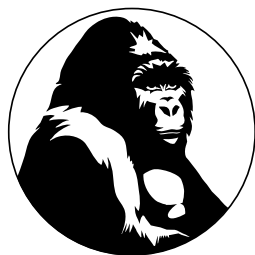


**A Population  
Estimate of Great  
Apes in Itombwe**

**Survey of the  
Cross River  
Gorilla at Tofala  
Hill**

**One of the Biggest  
Ape Traffickers of  
Africa Arrested**

**A Tribute to Colo**



# BERGGORILLA & REGENWALD DIREKTHILFE

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### Gorilla Journal 54, June 2017

*Editor:* Dr. Angela Meder  
Augustenstr. 122, 70197 Stuttgart, Germany  
Fax +49-711-6159919  
E-mail [meder@berggorilla.org](mailto:meder@berggorilla.org)  
*Translation and Proofreading:* Ann DeVoy, Bettina and Andrew Grieser  
Johns, Colin Groves  
*Cover:* Rangers in Itombwe  
Photo: ICCN-RNI

### Organization Address:

*Berggorilla & Regenwald Direkthilfe*  
c/o Burkhard Broecker  
Juedenweg 3  
33161 Hoevelhof, Germany  
E-mail [broecker@berggorilla.org](mailto:broecker@berggorilla.org)  
**Website:**  
<http://www.berggorilla.org>

## Authors of this Issue

<b>Gedeon Banswe</b> is the GIS and data base officer with the WWF Itombwe Program.	3
<b>Andrew Dunn</b> is Project Manager for the WCS biodiversity research program in southeastern Nigeria. He has been working on biological survey and conservation projects in Africa since 1989.	5
<b>Prof. Colin P. Groves</b> wrote his Ph.D. thesis on gorilla osteology and taxonomy. After working at American and British universities, he emigrated to Australia in 1974. Now he is retired, after teaching primatology and human evolution at the Australian National University for 40 years, but he is still doing research on various animals.	13
<b>Charlotte Houpline</b> completed degrees in ecology, wildlife management and nature protection. She is involved in conservation and anti-poaching activities in several West African countries. In 2010, she founded the NGO WARA Conservation in France.	14
<b>Dr. Inaoyom Imong</b> has conducted research on Cross River gorillas since 2004. He is the Director of the Cross River Gorilla Landscape Project of WCS in Nigeria.	17
<b>John Kahekwa Munihuzi</b> was a gorilla habituation officer in Kahuzi-Biega 1983–2004. In 1992 he founded the Pole Pole Foundation, POPOF, in order to link the local communities to the conservation of the park. He regularly visits the park as a consultant.	17
<b>Sebastian Linnarz</b> studied biology in Bonn, Germany. When he read about the volunteer program of ERuDeF on the internet, he travelled to Cameroon in 2012, where he visited ERuDeF and the Lebialem Highlands. In 2014 he	18
<b>Bank Account:</b>	22
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BIC SPMHDE3E	23
Switzerland:	24
IBAN CH90 0900 0000 4046 1685 7	25
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returned to Cameroon to collect data for his doctoral thesis on the Cross River gorillas.

**Dr. Miki Matsubara** took part in the gorilla census of Kahuzi-Biega in 1996 and of Petit Loango in Gabon in 1998. She studied social relationships of juvenile gorillas in the Howletts and Port Lympne Wild Animal Parks. Now she is an adjunct lecturer of Chukyo University.

**Menard Mbende** is the WWF DRC protected areas Program Manager. He has been involved in the 2015 Itombwe survey.

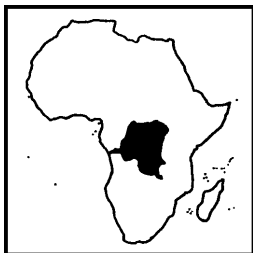
**Dr. Angela Meder** studied the behaviour and development of captive lowland gorillas for 10 years. Today she works as a book editor. Since 1992 she has been part of the Board of Directors of *Berggorilla & Regenwald Direkthilfe*.

**Audra Meinelt** is the assistant curator of the Congo Expedition region at the Columbus Zoo and Aquarium. She has worked with the gorillas for more than 20 years. She also manages the Colobus SSP population and is the vice coordinator for the bonobo SSP.

**Gentil Kisangani Milinganyo** works for the Institut Congolais pour la Conservation de la Nature (ICCN-RNI). He has been involved in the 2015 Itombwe survey as the deputy chief warden in charge of law enforcement.

**Dr. Leonard K. Mubalama** manages the WWF South Kivu Program in eastern DRC and is one of the IUCN World Commission on Protected areas as well as African elephant specialist group member. He has been involved in the Itombwe participatory gazettement process since 2010

**Claude Sikubwabo Kiyengo** conducted a gorilla survey in the Maiko National Park from 1989 to 1992. He worked for the ICCN and for the IUCN. From 2006 to 2007 he was the chief conservator of the Parc National des Virunga, central sector. In 2004 he became the coordinator of the NGO VONA and since 2008 he has been our assistant.



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### Conservation and Sensitization Activities at Sarambwe Reserve: April 2016 to March 2017

In the Sarambwe Reserve, conservation and sensitization activities have been carried out mainly by the trackers and the troops based in Sarambwe (a special unit that is collaborating with ICCN), with support from ICCN. The trackers have collaborated with FARDC soldiers in patrols and in making observations of the fauna and of illegal human activities or encroachments of the reserve. They have been working for an average of 22 days per month, i.e. 264 days during the one-year period. In addition, the trackers have been maintaining the guard post, including small construction projects. They have also been maintaining the demarcation between the reserve and the communities' fields, and they have

been maintaining the tracks required for monitoring.

**Camp maintenance:** The camp has been maintained by the trackers at regular intervals and is in good and clean condition. In June, the trackers constructed a latrine and a mud-walled kitchen for the Sarambwe post, which has improved the sanitary conditions of the camp. These constructions are, however, temporary solutions until the post can be reconstructed with durable materials; the construction of toilets and the kitchen from durable materials should be planned.

**Limitation of conflicts with the local population:** Potential conflicts concerning the reserve borders have been avoided by the construction of permanent border markers between the fields of the local population and the reserve. During the 12-month period, the trackers regularly maintained the 7-km long, 4-m-wide boundary track; this served its purpose of separating the reserve



**Maintenance of the reserve boundary with the highly visible Erythrina**

*Photo: Jean Paul Kambere*

from the fields of the local population so well that no boundary conflict arose during the past 12 months.

On one occasion, a banana plantation was observed to have been damaged, but this did not cause a conflict because the plantation was located within the reserve.

**Maintenance of tracks for monitoring:** All the reserve's tracks have been maintained at least four times, resulting in a total of approximately 120 km of maintained track.

**Observations of the fauna:** Amongst large mammals, bushpigs and 6 primate species are regularly observed in the reserve namely black-and-white colobus (*Colobus guereza*), the diademed or blue monkey (*Cercopithecus mitis*), the red-tailed monkey (*Cercopithecus ascanius*), chimpanzees (*Pan troglodytes*), baboons and gorillas. The reserve has also been visited by elephants from Bwindi Impenetrable Forest, a national park on the Ugandan side of the border, and by kob antelope. The trackers have also reported a hyena – but this might have been a genet or a civet.

Of all the large mammals, red-tailed monkeys were seen most often (48 times), followed by bushpigs (31



**Trackers and soldiers on patrol**

*Photo: Jean Paul Kambere*



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times), baboons (25 times), chimpanzees (23 times) and black-and-white colobus (22 times). These animals, and the gorillas, can be viewed as characteristic of this reserve. Other species of large mammals were observed at most one or two times.

The red-tailed monkeys move in groups consisting of 6–42 individuals; baboon groups number between 9 and 38 individuals. The highest number of individuals in a group of chimpanzees was 17. Two gorilla families and one solitary gorilla male visited the reserve during 10 of the last 12 months: in April, May, June, July, September, November and December of 2016, and in January, February and March 2017. The two groups are the Mukali family with 12 individuals including 2 juveniles, and the Gahanga group with 10 individuals.

**Illegal human activities:** Illegal human activities observed in the reserve included illegal movements of people

to set traps and to fish in the Evi River, agriculture, and pit-sawing. The two latter activities are carried out by the Ugandan population with the support of soldiers stationed on the country's border or in the neighbourhood. In addition to the known plantations of beans, manioc and wheat, people are also growing marrows and fruit trees such as the Japanese plum. The growing of bananas, which had decreased, has recently enjoyed increased popularity again. On one occasion, the cutting of timber for construction was observed.

A total area of 249 ha is used for agriculture according to the trackers' estimates. Of these, 49 ha are used for the growing of beans, manioc, bananas and eucalyptus and 200 ha for wheat. These are the areas that are encroached regularly. By contrast, no areas are known where the forest has been cleared to make way for new fields.

Nine pit-sawing sites were dismantled, with 15 boards confiscated in addition to crosscut saws. 13 traps were found, nine of which were constructed from metal wire, whereas four were made from lianas to catch rats and small rodents.

**Capacity-building activities:** In April 2016, the trackers were trained in GPS handling. They are now able to collect geo-referenced data. Data on trails and other boundaries are available and await processing such that a map can be produced.

**Sensitization and negotiation activities:** Regarding the new encroachments of the reserve by the Ugandans – who claim to be in Uganda and not in the Democratic Republic of the Congo – a small team of two trackers and two local chiefs have travelled from Sarambwe to Uganda to coordinate with the local chiefs and with the troops based near the Bwindi Impenetrable Forest National Park. The consultation took place in April 2016, with the support of Berggorilla & Regenwald Direkthilfe. Although all parties acknowledged that the Sarambwe Reserve had been encroached, particularly by the Ugandans, it took over six months to organise a larger meeting to discuss the problem with all the stakeholders – representatives of the Congolese administrations (Governor's office of North Kivu Province and the Rutshuru territory) and Ugandan representatives, as well as representatives of the ICCN, UWA, Bwindi Impenetrable Forest National Park, the Congolese and the Ugandan army. The encroachment of the Sarambwe Reserve by the Ugandans was known to all but there is a demarcation problem as the Ugandans seemed ignorant of the International border's exact location. We have every reason to be happy about this meeting as it facilitated the arrest of certain farmers and Ugandan poachers in the reserve.



**These two Ugandans were arrested for growing Japanese plums and tobacco in the Sarambwe Reserve.**

*Photo: Faustin Byarufu Kasiribindi*

*Claude Sikubwabo Kiyengo*



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### On the Road to Extinction? A Population Estimate of Great Apes in Itombwe

Periodic censuses of threatened wildlife populations of high profile species help us to understand their population dynamics, assess the success of conservation programmes aimed at ensuring their survival, and ensure that they receive continued attention from the global conservation community. During the IUCN World Conservation Congress in September 2016, updates in the Red List of Threatened Species were made public. Not surprising was that the Grauer's gorilla (*Gorilla beringei graueri*) – the largest living primate – is now listed as Critically Endangered, the highest category, while the eastern chimpanzee (*Pan troglodytes schweinfurthii*) remains categorized as Endangered on the IUCN Red List. These two subspecies have full legal protection under the law n° 14/003 governing wildlife conservation and the ministerial decree n° 20/CAB/MIN/ECN-EF/2006 ascertaining the list of totally protected species in the Democratic Republic of the Congo (DRC).

Grauer's gorilla and the chimpanzee have been severely affected by human activities, most notably poaching for bushmeat associated with artisanal mining camps and for commercial trade. This illegal hunting has been facilitated by a proliferation of firearms due to widespread insecurity in eastern DRC for the past 20 years. The forest has suffered considerable human disturbance in the past in the form of mining, timber extraction, firewood collection, charcoal production, human-induced fire and poaching. The full impact of civil strife, political turmoil and recent poaching events was unknown; due to insecurity in this region, a complete census had not been conduct-

ed since 1996, therefore, there was a need to have an accurate estimate of the entire population. Thus, there was an urgent need to confirm the current status of the great ape populations by carrying out a systematic survey of the Itombwe Nature Reserve.

As good conservation practice aims to preserve as much ecological, morphological, behavioural and genetic diversity as possible (Oates 2006), the conservation of subspecies and populations is important. An estimate of the size of various populations throughout their historical distribution in the Itombwe Massif is therefore crucial. The conservation of the world's primates demands basics, elusive and hard-to-get information. Enormous efforts are underway to accumulate this information. Besides a basic understanding of the status and distribution of primates, we need to know where they live; their geography and habitat requirements, and in what numbers. Only with such data is it possible to identify and evaluate the threats to their continued existence. Field research on particular aspects of primate ecology, behaviour, reproduction and demography provide an understanding of how great apes respond to these threats and what conservation measures will be possible, effective and appropriate. Baseline density estimates and subsequent monitoring of primate populations are essential for assessing the impact of particular threats and measuring whether conservation programmes are succeeding. Much has been done in recent years to improve protection and management to avoid the Itombwe great ape populations becoming doomed to extinction.

The aim of the survey carried out in December 2015 was to assess changes in the population since 1996 and to increase our understanding of gorilla population dynamics in Itombwe, and the levels of human disturbance and their impacts on the gorilla and the

effectiveness of conservation efforts. Gathering baseline information on the population size and long-term monitoring of a major great ape and umbrella or keystone species should be a priority for developing further management programmes that emphasize harvesting or habitat manipulation.

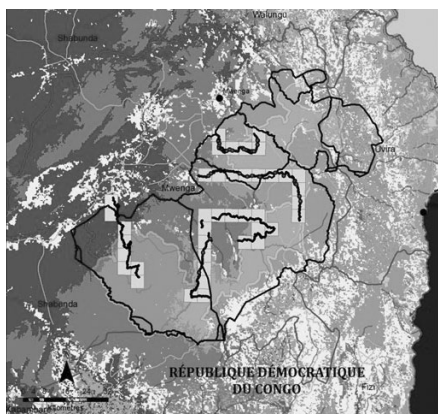
The Itombwe Massif, located in eastern DRC, to the west of the northern tip of Lake Tanganyika, holds the largest and most remote block of intact montane forest (> 1,500 m elevation) in Africa, and is one of the most diverse sites of the Albertine Rift. It extends between 2° 51.286' and 4° 0.690' south, and between 28° 09.889' and 28° 58.511' east. The Itombwe Mountains are thought to be one of the most important sites for biodiversity conservation in Sub-Saharan Africa (Stuart et al. 1990) and have been identified among DRC forests as a focus for the conservation of biodiversity and ecological processes (Doumenge 1990).

Itombwe's vegetation is very varied, ranging from low altitude to the highest summits (Doumenge & Schilter 1997, Mubalama et al. 2013). A diversity of vegetation types contributes to Itombwe's richness. Its forests include a continuum from lowland forest (less than 1,200 m), transitional forest (1,200–1,500 m), montane forest (1,500–2,200 m), bamboo forest and afro-montane forest vegetation (over 3,000 m). Above 1,500 m, approximately 8,500 km<sup>2</sup> of Itombwe is covered by montane forest, 1,500 km<sup>2</sup> by bamboo and 500 km<sup>2</sup> by gallery montane forest and grassland. Gallery montane forest and grassland hold some of the most beautiful and unique habitats of the region, including high elevation alpine meadows inter-digitated by tongues of forest, and large areas of upland savannahs which are nearly devoid of trees (Butynski et al. 1996).

Because of the sharply varied topography and the extent of the Itombwe Mountains, it is not simply a case of



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### **Field team survey effort in the Itombwe Nature Reserve in December 2015**

*Map: ICCN, WWF*

a single basic climate. There are considerable variations in rainfall patterns, humidity and temperature across the range, thus giving rise to numerous microclimates, which in turn have influenced the high biological diversity of the range. The hydrology of the mountains is complex, with an abundance of streams. The region is also ecologically important as a watershed, with the majority of the area falling within the catchments of the Ulindi and Elila rivers (Doumenge 1990).

### **Great Ape Survey Techniques**

As a matter of principle, protected area management should be based on appropriate levels of information (evidence-based if possible). A first step will be to determine the distribution and abundance of species in order to help orient the patrols and to determine the most appropriate location of eco-guard posts in the various sectors of the reserve. In order to comply with such a requirement, WWF along with ICCN launched a field expedition to conduct a biological survey in the Itombwe Reserve in December 2015; the survey was a follow-up of a pre-inventory exercise carried out in November 2015. The objective of each expedition was to

travel through a designated area and to record as much as possible of the large mammals and their signs as well as pertinent habitat, topographic features and human activity found along the path of travel.

The survey field teams' staff received hands-on data collection training on large mammal abundance and distribution. Initial reconnaissance was made to contact local authorities, and to recruit and assemble the team in Mwenga for training. Surveys in all the sectors lasted 3 weeks in December 2015, and were conducted by one or more field teams that included a principal investigator, a field team leader and a total of about 53 locally hired porters and guides who contributed occasional observations of animal signs.

Overall, the inventory was focused on the northern area of Kikuzi River with an emphasis on Zombe area, the south of Ulindi River, with an emphasis on Kakanga and Mount Ngusa/Mount Nolabi, and the area surrounding the Mwana River, especially Ibachilo-Ngomiano areas. A total of 1599 segments of 200 m divided into 14 cells of 25 km<sup>2</sup> was completed, thus covering an overall distance of 285 km of recce surveyed while using 911 men days protection effort. Field teams spent approximately 4.9–6.8 hours per day investigating the reconnaissance paths and recording data at a pace of 4.17 km per day. Fieldwork encompassed both the core zone and the multiple use zones of the reserve in Basile and Wamuzimu chiefdoms, and the Itombwe sector.

A simple data sheet was designed to enable standardized data collection on wildlife and habitat variables. As the surveys aimed to carry out a reconnaissance, it was decided that all signs, direct sightings of focal species and indirect evidence such as tracks and signs (including dung/pellets, night nests, evidence of feeding, trails, debarking) would be used to estimate relative abundance of large mammals in the

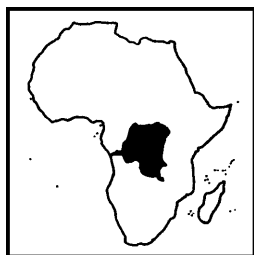
survey areas. Tracks and signs were classed as fresh and old, and as single animal or group (> 1). A method used was the reconnaissance walks termed *recce* (following the path of less resistance), and every effort was made to follow trails in different locations. Survey routes followed wildlife trails and human tracks to survey a large area thoroughly. Cutting disturbance of vegetation along reconnaissance walks was minimized to increase the distance that could be covered on a given day. Most reconnaissance routes followed paths that looped back to or near the starting point, and in many cases it was necessary to cut paths so that the reconnaissance route could achieve this configuration. On those occasions when it proved necessary to cut a path, team members chose the route of least resistance (i.e. least undergrowth or other obstacles) in the general direction in which they were heading (Wilson et al. 1996).

Each sector was searched by walking an irregular network of reconnaissance routes across the area. The actual route was determined largely by the terrain and the availability of exist-



**Rangers in the Itombwe Reserve**

*Photo: ICCN-RNI*



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ing trails, while ensuring that the routes were sufficiently dense so that no area was missed that could have been large enough for a gorilla group to spend more than one week in. Total distance walked on each trail was measured using a combination of a hip chain (topofil) with biodegradable thread, topographic maps, and global positioning system (GPS) readings. Each team mapped as accurately as possible all paths taken and gorilla trails followed. We used the grid method of area of occupancy representation and calculation, whereby a grid of individual cells of 5 x 5 km is overlaid on observation points. By covering the area in this way, mapping and dating all gorilla trails and nest sites and by marking nest sites once they had been counted, it was possible to ensure that all groups were found and that no one was counted twice, and to distinguish similarly sized but distinct gorilla groups found close to each other. Where signs of two groups of simi-

lar size were found in close proximity to each other, and the dates of the nest sites did not allow them to be confirmed as different groups, they were assumed to be from the same group.

At each nest site, nests were counted and dung size measurements, along with the presence of silvery hairs, were used to establish the age-sex composition of the group as: silverbacks, "mediums", adult females, juveniles, and infants. Young individuals constructing their own nest were always considered as the combined category juveniles/subadults, and assigned to the dung size class "juvenile". Smaller dung found within the nest of an older individual was recorded as that of an infant. In the absence of infant dung, adult female nests could not be distinguished from those of a comparable sized (blackback) male, and were therefore classified as "medium".

The reconnaissance trails walked while looking for gorilla trails covered

a large portion of the reserve and provided an opportunity to collect data on signs of human disturbance. Such signs were recorded, with the GPS location and estimated age of each. These included snares, paths and tracks of people, poachers' camps, bamboo and woodcutting, and any other signs of people using the forest illegally. Ages were categorised as recent, old, and very old. These survey methods were the same as those used for the pre-survey in November 2015, so that direct comparison could be made in the frequency and distribution signs of human disturbance over this period. Signs were analysed as encounter rates per km of reconnaissance trail walked. Total distance walked on each trail was measured using GPS readings.

For each sighting, the time, GPS position, altitude, mammal species or type of human sign identified, method of identification (sight, sound, dung, or nest), number of individuals iden-

### For the Protection of Itombwe

The Itombwe Nature Reserve is a key site for biodiversity in Africa. Although Grauer's gorilla numbers have declined drastically, there is still strong evidence that the Itombwe population will recover. The reserve was created in 2006, but the boundaries were not identified then; now they have been established, together with the communities, and conservation activities have started. This means that various activities need funding.

We agreed to support the following most urgent activities:

- support for patrols
- training of rangers in data collection and use of Cybertracker
- support for community meetings

But this is only a first step. Much more is needed to control and protect such a huge reserve to fight against poaching and other illegal intrusions. These are a few of the needs:

- forest equipment for the rangers
- community project support
- environmental education
- vehicles for the reserve
- border demarcation
- construction of a patrol post

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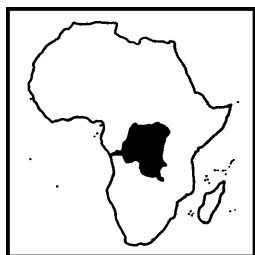
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**We promised to support the Itombwe Nature Reserve as much as we can, but we need extra funds. Please help us to secure the conservation of the Itombwe Massif and its gorillas!**

You are also welcome to donate via PayPal if you prefer this:  
<http://www.berggorilla.org/en/help/donate/>

#### Address:

*Berggorilla & Regenwald  
Direkthilfe*  
c/o Burkhard Broecker  
Juedenweg 3  
33161 Hoevelhof, Germany  
[www.berggorilla.org](http://www.berggorilla.org)



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tified, and sometimes habitat type where the species or sign was detected were noted. Sight was the most common method of identifying some mammals, including many primates. Clearly, however, with shy mammals such as chimpanzees, or nocturnal mammals such as bush pigs, sound, dung, tracks or nests were more common indicators of the species' presence (Plumptre et al. 2002). Throughout the study, our field teams consisted of experienced staff and several guides from the local community. Some guides were hunters, and their skills contributed a wealth of local natural history knowledge that provided the necessary foundation for making the assessment successful.

Levels of human pressure on the habitat and wildlife were assessed by recording distance to the nearest village, evidence of agricultural use in the vicinity, hunting signs (fresh and old), currently used paths through the study area and signs of recent mining. Signs of large mammals included fresh tracks, faeces, feeding, digging or territorial markings, animal parts, and other tangible evidence that mammal species were present. Animals were sometimes identified through vocalizations heard fortuitously. Some guides were adept at mimicking the calls of many local mammals, which allowed us to elicit responses or lure animals into a position for visual identification (Mubalama et al. 2008).

General information on the past and present status of large mammals' species and hunting methods was gathered in villages by interviewing hunters. Surveyors attempted not to ask leading questions and also verified the identification of species by asking for descriptions. Skins, trophies and other evidence were also examined whenever possible. An attempt was also made to assess the extent of hunting and trade in wildlife by talking to well-known hunters and local chiefs. Additional data on great ape group sizes and numbers

were obtained by following recent anecdotal information in different locations. Groups of nests differing in nest number were considered to belong to different groups of gorillas, especially because they build nests, both day and night nests, which can be counted instead of live animals.

Habitat quality was assessed using a developed protocol. When walking along the transect, a botanical team recorded observation on forest types, canopy cover, understorey, regeneration, and ground cover. Water availability was noted whenever it occurred along the transect. Information was systematically recorded on standardized daily log forms designed by WWF/Protected Areas Rehabilitation Programme (PARAP).

### Results and Discussion

The density of great ape populations was calculated and set respectively at 0.038 Grauer's gorilla per km<sup>2</sup> and 0.21 chimpanzee per km<sup>2</sup> in the Itombwe Nature Reserve. These densities are very low compared to encounter rates that were associated with a density

of 0.3 gorillas and 0.4 chimpanzees per km<sup>2</sup> in the Itombwe Massif 1996 (Omari et al. 1999); thus, the status of Grauer's gorilla is of particular cause for concern. The considerable survey effort undertaken and supporting information provided by socio-economic research all provide additional confidence in the estimate. While the population has plummeted, the results should be viewed with caution, not only because all known reduction during the last decade can be attributed to one subset of the population, but also because the region is still plagued by political unrest.

Building upon the calculated densities, 9 subpopulations of Grauer's gorilla (*Gorilla beringei graueri*) were identified across its geographic range and the estimated total population stands approximately at a minimum of 218 individuals. It is noteworthy to state that Grauer's gorilla was recorded with lower frequency during the inventory done on established paths across the forest. While some individuals may avoid paths, and other signs may be obliterated by human passage, the low-



Rangers in the Itombwe Nature Reserve

Photo: ICCN-RNI





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er rates of sightings are likely due to a more rapid pace of travel and less careful searching for signs by observers walking on a well-established track.

Our Grauer's gorilla estimate is at odds with an estimate performed recently with patrol data that came from eco-guards as well as local communities in Itombwe (Plumptre et al. 2015). Although a substantial part of the reserve was covered, we believe that some gorillas could have been overlooked because detection probability and reporting rate by villagers were not taken into account. In addition, some of the villages visited during the survey reported a daring foray by gorillas into a farm of ripe maize, feeding on banana pith; widespread and recurrent complaints about crop-raiding gorillas and chimpanzees typically viewed as a "pest", "weed", or "ecological dislocate" (Else 1991) reflect their abundance in the region, mostly solitary adult males in search of cultivated highly palatable crops. Ameliorating crop losses incurred by primates and elevating local tolerance for wildlife incursions will require a sophisticated blend of technical, social and economic interventions.

The total population size estimated at 218 gorillas can be pooled into 5 hotspots of confirmed occurrence, and one additional area of probable occurrence in the area surveyed, that are reproductively isolated from each other by large rivers (Mwana, Elila, Kiandjo, Kikuzi and Ulindi). The most frequently recorded gorilla signs were tracks, nests and feeding signs. These results show a 74.6% decline in Grauer's gorilla numbers between 1996 and 2015. The overall impression is that gorilla populations in Itombwe are well below their ecological carrying capacity, and in many areas there are no apparent geographical or ecological impediments to their increase in both numbers and range. The total Itombwe gorilla population therefore could be significant for conservation, in contrast to

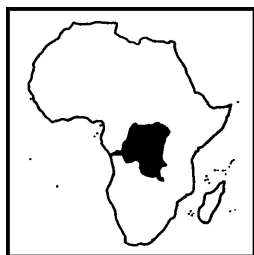
those in many other areas of the species' range. Successful conservation of Grauer's gorilla populations will necessitate a multi-disciplinary approach, including the exploration of creative alternatives to protect other forested communal lands. Surveys to assess the status of currently inaccessible populations, also focusing on the remote, steep hillsides that the Grauer's gorillas seem to prefer, including those in the Elila-Kiliza and Kiliza-Bitongo basins, as well as in Malenge area in the most southern part of the reserve where eco-guard presence is minimal, should be carried out as soon as security permits and survey funds are available.

The population of eastern chimpanzees in the Itombwe Reserve was estimated to be about 1,204 individuals at the time of the survey. This figure is consistent with recently estimated chimpanzee numbers from the occupancy analysis, set at 1,241 individuals (Plumptre et al. 2015). From that prospect, it is clear that the chimpanzee population has fared better in the Itombwe Reserve, increasing by about 9.4% (between 1996 and 2015) in numbers compared to a 74.6% loss of Grauer's gorillas. This is likely due to the social system of chimpanzees, which do not move in cohesive groups, but have a fission fusion social system and usually occur in small parties or alone. This makes it harder for poachers to track and find them, so they have not declined as rapidly (Plumptre et al. 2015). On the other hand, the association of Grauer's gorillas with inhabited villages and their near absence in adjacent mature forest supports the observations of Emlen & Schaller (1960) and Hall et al. (1998) that undisturbed montane forests represent low-quality habitat for Grauer's gorillas. The occurrence of gorillas across such degraded habitat, including recent fallow fields in the immediate outskirts of human settlements, could obviously increase the

threat by human pressure (Omari et al. 1999). This argues strongly for conservation efforts aimed at ensuring the survival of as many Grauer's populations as possible and the maintenance of potential corridors of forest habitat between them (Hall et al. 1998).

Great apes live in groups that number between 10 and 40 individuals. Dealing with groups and what you measure along line transects and recce is tricky when making surveys of primates because different studies have used different methods and there has been no test of which method performs best (Sterling et al. 2013). In addition, some species are very hard to detect from observations on the ground as they flee and hide when they observe you coming, especially during patrol deployment. The great apes belong to this category, and despite their large body sizes they can be remarkably elusive, partly because their densities are low in forests and partly because they spend time on the ground and are hard to observe when there.

How many populations of a target species are needed to sustain that species within the planning region over the long term? Given that gorillas have approximately a 4-year inter-birth interval (Watts 1991), population growth will be inherently slow even at its maximum potential rate, and because each census requires a considerable investment of time and money, population censuses to monitor changes should normally be carried out approximately every 5 years. Based on demographic data from the Virungas, under optimal conditions gorilla populations are capable of a 3–4% annual growth rate (Miller et al. 1998, Steklis & Gerald-Steklis 2001, Robbins & Robbins 2004). Recent analyses suggest that an effective population size of about 1,000 individuals is ideal to allow continued evolution, prevent the accumulation of harmful mutations (Allendorf & Ryman 2002) and avoid the negative effects of in-



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breeding depression and genetic drift (Soulé 1980).

Planners should exercise great caution when using this sort of rule of thumb, however, because genetic rules ignore uncertainty arising from a consideration of environmental and demographic factors. As a result, there are cases where viable populations will need to be much larger than suggested above. We still do not have data on the inter-birth intervals, birth rates, or mortality rates of the Itombwe gorillas to predict what the growth rate of the population could be. Obtaining such information requires decades of monitoring known individuals (Miller et al. 1998, Steklis & Gerald-Steklis 2001, Robbins & Robbins 2004). Possible factors that could constrain population growth include the availability of good gorilla habitat, disease and human disturbance. Little is known as yet about the quality of the vegetation in Itombwe for gorilla foraging; so there is a need to carry out research aimed at mapping the vegetation and investigating the gorillas' ecology and habitat requirements; this will provide us with a better understanding of the number of gorillas Itombwe could support.

Great apes are critically threatened and it is therefore important that their populations are monitored over time to assess how they are changing. Studies show however that the errors around primate survey data are such that it can be difficult to detect significant changes in the population unless they are fairly large. Plumptre (2000) showed that standard line transect techniques allow a change of only about  $\pm 10\text{--}30\%$  of the population to be detected in subsequent line transect surveys. In the case of surveys of indirect signs, such as nests, only  $\pm 30\text{--}50\%$  of changes in the population could be detected. In other words, the population would have to be almost halved before the results would reach significance at the 5% level (Sterling et al. 2013).

In order to improve the ability to detect more subtle changes in the population size, a myriad of suggestions can be made, including

- 1) increasing the number of transects to ensure that at least 20 are sampled in each study area;
- 2) spatial modeling of line transect data allowing shifts in the distribution of populations to be identified;
- 3) repeating the counts along the transects to ensure that at least 60–80% sightings of great ape groups are made, bearing in mind that, when analyzing repeated counts in distance, it is important to ensure that the repeated data from the same transect are entered as data from that transect and not as a new transect, and
- 4) focusing on one species would make it possible to stratify the sampling across the study area so that more transects are placed in an area where the density of that species is highest and fewer transects in areas where it is rare.

This can only be used on a species-by-species basis unless two species show the same pattern of abundance. In this regard, there is a need both to improve the rigor of existing methods and to develop new methods to improve the survey estimates of great ape populations as well as to determine group home range size depending on a thorough understanding of the extent of overlap between groups.

The negative effects of habitat clearance and fragmentation, as well as hunting pressures, will increase for all Grauer's gorilla and chimpanzee populations. Thus, the optimism offered by our remaining population size estimates as a core for conservation of the subspecies should not be accompanied by complacency. Continuation of the population reduction is expected because of the high levels of poach-

ing, loss of habitat, and deterioration of habitat quality caused by expanding human populations as well as ongoing civil unrest and lawlessness in the geographic range of this taxon (Plumptre et al. 2015).

From a pragmatic standpoint, and to overcome this challenge, there is a crucial need to get personnel in the right place at the right time for catching law breakers and deterring others from even considering illegal activities. Not only does the manager need to know where the animals are, but he also needs to know where poachers may be found, thus making better use of the limited human resources. In addition to local hunters who trap and shoot wildlife for personal consumption or local trade, well-armed renegade groups operate throughout much of the Itombwe Massif and are known to illegally kill protected species. Although enforcement effort has been inconsistent since the creation of the reserve due to the current minimal presence and ineffectiveness of the eco-guards, access and resource use by local people are inadequately prohibited by anti-poaching units. The primary means of poaching in the reserve is through the use of wire snares. Snares are relatively inexpensive, readily obtainable in most markets, and may be set up under cover of darkness, which reduces the chances of detection. There is a crucial need to recruit and train more eco-guards, relocate the reserve headquarters from Mwenga to the reserve borders and establish a network of patrol posts from where informed patrols will be launched.

By making good data immediately useful, the Spatial Monitoring and Reporting Tool (SMART) will be boosting motivation, increasing efficiency, and promoting credible and transparent monitoring of conservation efforts. In this regard, both ICCN and WWF are committed to providing effective, legal, and safe support to wildlife law



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enforcement in order to deliver on the Itombwe Reserve conservation goals through Zero poaching strategy. There are 6 pillars to the achievement of Zero poaching, including:

- 1) assessment implying conducting regular effectiveness assessments;
- 2) technology in using the best available tools and technologies;
- 3) capacity by increasing field staff ability to protect wildlife;
- 4) community through engagement with local communities;
- 5) prosecution by improving approaches for prosecution; and
- 6) cooperation through sharing information regionally and nationally.

It must be mentioned that past experiences from around the world have shown that these 6 pillars must be addressed simultaneously in order to be successful. The increase in great ape populations can be directly traced to the sheer dedication of field staff operating on the ground. Therefore, there is a need to assess the effectiveness of LEM (Law Enforcement Monitoring), based on regular ranger patrols, compared with targeted patrols based on intelligence information. Such long-term monitoring of keystone species should be an integral part of the development of a comprehensive conservation programme for great apes in the Itombwe Massif. Without such monitoring, it is impossible to assess the effectiveness of current conservation strategies and to plan for future interventions.

Law enforcement is vital to curb illegal exploitation of wildlife populations. If poverty stands as the major driver of illegal hunting as households vie for income and sustenance while human population densities continue to grow, it is unlikely that such a relatively lucrative enterprise as poaching will subside, even if significant increases in anti-poaching efforts are made (Knapp



*Rangers in the Itombwe Nature Reserve*

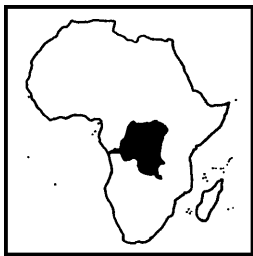
*Photo: ICCN-RNI*

2007). Until poachers perceive that the costs, recounted here as potential injuries, fines, and prison sentences, to be higher than the financial benefits, poaching will likely continue unabated in Itombwe. It bears keeping in mind, however, that although outside the scope of this study, bushmeat demand could plausibly increase if poverty decreases in the region giving households more access to revenue. Such a scenario would likely affect the current costs and benefits a poacher faces.

The increased levels of human disturbance found during this survey are clearly a cause for concern. While more detailed analysis of the impact of human disturbance on gorillas, as well as the capacity of the available habitat within Itombwe to support numbers of gorillas, is needed before we can firmly conclude that disturbance is a serious constraint on population growth, these findings highlight the need for increased law enforcement effort as well as developing further ways of working

with local communities to discourage illegal use of forest resources. Community scouts might also get more motivated to do their best, part of a new culture of accountability that ensures higher quality personnel, more productive patrols, and fewer opportunities for corruption. With more security and prospects for higher income, the community that established the reserve finally has a chance to realize the benefits they hoped it would bring. This approach is intended to reduce a great deal of the strain in the relationship between the reserve and local people in the hope that one day great ape population will become self-sustaining in the Itombwe Massif.

The long-term effectiveness of these measures depends heavily upon the interplay of three factors: the likelihood of detecting and arresting poachers, the severity of the punishment doled out, and the pecuniary and/or protein reward that the poachers may reap (Bennett et al. 2006). If the rewards



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poachers face are significantly greater than the financial, physical, and psychological risks involved, it is unlikely that the level of poaching in Itombwe will decrease appreciably. Understanding the magnitude of these factors is therefore critical to understanding and predicting future success of conservation initiatives.

### **Conclusion and Conservation Implications**

Grauer's gorilla numbers have declined drastically, but there is still strong evidence that the Itombwe population will be recovering despite persistent gloomy rumours about their fate following the recent drastic reduction in wildlife range. It remains unclear how great ape status and distribution will change over the forthcoming decades given the obvious continuing tensions in the Great Lake region. Without significant and sustained conservation efforts, the opportunity to ensure the conservation of the great ape populations will be lost, especially if the decline at an average rate of 5% per year continues (Plumptre et al. 2015). A number of practical actions in support of the conservation of the critically endangered Grauer's gorilla have taken place in recent months with the ongoing participatory elaboration of the Reserve Management Plan process.

In the near future, it is imperative that in-depth research continues as an essential monitoring service. The impact of poaching on the stability of the family social structure of great apes should be investigated in order to understand the dynamics. Our study emphasizes the need for coordinated surveillance and research efforts. Such a study requires a clear understanding of the social organization of Itombwe great apes, long-term observations, combined with a thorough knowledge of most individuals and groups and should be a clear research priority. As

funding becomes available, we intend to complete a census using the "sweep method" to estimate the population size and distribution of the gorilla in the large tracts of potential gorilla habitat that are located in proposed communities' forests of different chiefdoms. This is an effort to complete our current picture of great ape distribution.

While patterns in the distribution of large mammals are beginning to emerge, the distribution and status of essentially all other taxa remain to be discovered. Given the region's high annual rainfall and range in elevation, a high diversity of plants including endemics is to be expected. Of particular interest will be the vegetations of the massif that is preferred by great apes throughout the reserve. There are still many issues to be addressed and tested to improve great ape survey methods. Ideally, methods would be tested on a population of known size, including how to deal with groups in the field-testing methods that treat each individual detected separately versus those that record the location of a group or subgroup center and multiply group density by an average group size – or lure count methods for groups that respond to playback calls. Overall, there is a need both to improve the rigor of existing methods and to develop new methods to improve the survey estimates of great apes.

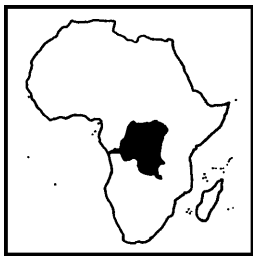
A crucial part of our programme, which often dovetails with the reserve creation focus, is our conservation education activities. Last year, we initiated an awareness campaign through radio broadcasting with work in remote villages surrounding the reserve, and in early 2017 we will be extending this programme to other communities close to the reserve. Activities will be conducted by our "outreach team" in both schools and general community settings, with the support of local organizations. We are contemplating to develop a number of materials that are

tailored to the local settings and conservation challenges.

The law enforcement world is moving more and more to the use of cameras to monitor sites. The technology is now available to have remote cameras that beam images in real time to the reserve headquarters, and these cameras can have a whole suite of sophisticated devices to reduce the chance of them being stolen or destroyed. There is a need to investigate the uses of such methods including fixed cameras. This would complement the eco-guard patrols and enable monitoring to take place at night as well as during the day. It is crucial to monitor progress to see where difficulties arise so that they may be tackled swiftly. A robust monitoring and evaluation system should be developed to ensure proper and timely roll out of Zero Poaching. There is a need to measure the deterrence effect of patrols at a site and to be able to assess the frequency of ranger patrolling that can effectively deter different illegal activities.

In summary, the census shows that it is possible for conservation efforts to succeed even under difficult conditions, while at the same time emphasizing the continued threats and challenges that this critically endangered population faces. These findings further highlight the need to strengthen conservation efforts as we look towards the future of improved reserve management and peace building in the region, and international support to provide increased protection for this unique, critically endangered Grauer's gorilla population. For many species, the only hope of maintaining such large populations is to increase the connectivity among geographically isolated populations (Al-lendorf & Ryman 2002).

Last but not least, bottom-up community-based initiative (CBI) programmes have made advances in community engagement and incentives for conservation, although there is a gap



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between these programmes in terms of wildlife crime. Therefore, enforcement programmes need to have positive engagement with communities and collaboratively work to identify problems and solve them together.

While community-based initiatives are well-intentioned, poverty remains at the root of poaching in western Itombwe. Lifting poachers and their respective households out of poverty through employment is essential for long-term conservation viability. For conservation to succeed in the short term, however, a maintained presence of anti-poaching enforcement should accompany such efforts to lift households out of poverty. For this to happen, local communities need to be part of developing strategies to reduce and prevent wildlife crime through addressing the following needs:

- 1) increasing the effectiveness of CBI in terms of reducing wildlife crime;
- 2) improving and strengthening the relationship and sense of service of enforcement programmes to communities;
- 3) using the best available science for understanding crime and criminal behaviour, and
- 4) moving toward poaching prevention.

Under current circumstances, the continued support of local traditional authorities for conservation activities is critical. Itombwe Nature Reserve has been through many ordeals, and has survived them all. Like the forest, its great ape populations have remarkable capacity for recovery and renewal.

*Léonard K. Mubalama, Menard Mbende, Gentil Kisangani Milinganyo and Gedeon Banswe*

*The survey was a large collaborative effort, only made possible through the help, support and participation of a large number of people. Special thanks to the traditional authorities and people of the Itombwe Massif for their hospitality, warmth, and support throughout the field trip process. We also extend profound grati-*

*tude to all team members and support ICCN staff, guides and porters who worked long hard hours under difficult conditions to complete the survey. A tremendous thank you, as well, to the acting Administrator of the territory of Mwenga for his commitment and FARDC and police officials for all their help and hard work. Finally, a deep thank you to WWF donors (Netherlands and USAID) for their faith, encouragement, and assistance; without their support this project would not have been possible.*

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## Adoption of Community Development Projects by the Population near Mount Tshiaberimu

**Adoption of projects:** The term 'adoption of projects' is understood to mean the acceptance of the projects and their integration into local and daily activities on the ground. At Mount Tshiaberimu, the project promoting the growing of passion fruit as part of reforestation and to improve the population's livelihoods has become well integrated in terms of generated



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**Claude Sikubwabo during a meeting with the local NGO SAGOT**

revenue and in terms of the population's commitment to the project (see Gorilla Journal 52). The reforested areas are maintained and the individual passion fruit plantations are becoming more and more visible.

The fish farming project funds terminated in June 2016. Currently, the project includes six pilot sites with six pilot ponds. While the management of the pilot ponds mostly benefited the local authorities, the population has created family ponds or individual ponds – currently, a total of 64 small ponds are being managed. Between September 2016 and the end of February 2017, another 17 families were added, resulting in a total of 81 family ponds. They are distributed among the eight villages of Vulambo, Kitolu, Ndekere, Luseke, Kasimi, Kasundi, Kitvya and Kisanga.

What purpose do all these ponds serve? As they are small, their products are for the consumption only of the families themselves. The fry alone is sold in the market, and only on order.

During our trip to Mount Tshiaberimu, at the end of January 2017, we held a meeting to evaluate progress with the pond project. One fish farmer informed us that he had already earned US\$ 1,500 by selling the fry, and four other people had earned about US\$ 200 each. Such a return is exclusively generated by the sale of fry, and the household's own consumptions and gifts to



**Claude Sikubwabo tastes fish that grew in one of the ponds.**

third parties are not included in this return.

*Claude Sikubwabo Kiyengo*

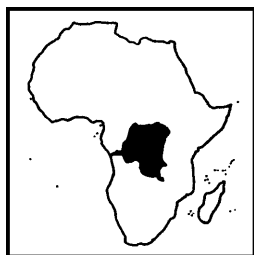
### **Community Conservation Is More Beneficial for the Park and Local Communities**

This is a quote regularly heard among communities around the Kahuzi-Biega National Park (KBNP) in the Democratic Republic of the Congo (DRC) after experiencing the approach of conservation and development by the Pole Pole Foundation "POPOF".

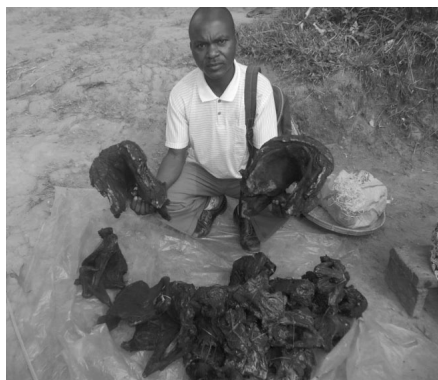
The Kahuzi-Biega National Park is surrounded by 7 different communities: Shi, Lega, Kano, Tembo, Twa, Nyanga and Havu. Although they have some shambas (small fields) to grow crops on to feed themselves on a subsistence level, they still rely on natural resources from within the protected area of KBNP. The natural resources are composed of fauna, flora and mineral mines. The fauna is used for eating bushmeat and for sale.

The flora is being devastated by the demand for fuel, charcoal, poles, and timber; it is removed in order to create arable land and farms. Medicinal plants, mushrooms and honey are collected. Mineral mining leads people to enter the park for ores (cassiterite, coltan, and gold) through the process of artisanal mining. The KBNP's law enforcement was established in 1970, under the control of the Congolese Wildlife Service (the Institut Congolais pour la Conservation de la Nature, ICCN).

Anti-poaching guards are recruited from the youth of the communities around the site. Patrols are carried out daily and some are done during the night to try to secure the park. Communities from both the highland sector and the lowland sector know the park well and watch the movement of the guards closely.



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**Bushmeat killed and smoked in the park**

*Photo: POPOF*

In general, if teams of rangers patrol in the eastern sector, people will move into the western sector to avoid them. Anyone who is found or arrested inside the park is automatically called a “poacher”.

Poachers use cables or wires to make traps for catching or killing antelopes and hogs or other game; unfortunately, young gorillas may get caught in these wire traps. Some die, while others lose limbs and survive.

People who enter the park also cut trees and bamboo, and set fires to clear areas and spur new grass growth to graze their cattle; they drop faeces as they have no proper sanitation in the park. During the patrols, rangers collect information on infractions, such as identifying and destroying snares stretched by poachers, and seeing where bushfires have been made and where tree cutting is taking place.

### Who Is Entering the Protected Area?

A number of categories of people enter the park illegally. Most of the women and girls who enter do so to collect wood, mushrooms and medicinal plants. Men and boys enter to cut trees and bamboo, for bushmeat trapping and for artisanal mineral digging. Bushmeat is sold to the local markets

in the surroundings of the park very secretly. A whole smoked hog will be sold for US\$ 100, or, when sold separately, a limb costs US\$25. An antelope male will cost US\$ 70–80 or a limb US\$ 10–15.

Rangers ambush and arrest people who enter the park and then lead them to the headquarters of the park to put them in jail. At times the number of arrested people may reach 45–50. They are all kept in a small room where it is hard to live together; the room has one tiny window and air for breathing is limited. They are given limited food, relying on family members to bring them extra sustenance. Every morning two or three rangers with guns take them to do labour, such as to cut grass, to carry stones for building, or to work in gardens until late afternoon.

It has been a great issue for the communities living around the park to find the money to pay fines due to the poverty they face. In general, when the jail term was finished and the guilty persons were not able to pay fines, they were released by the park authorities. In spite of the risk of jail and fines, people who have no other option than to

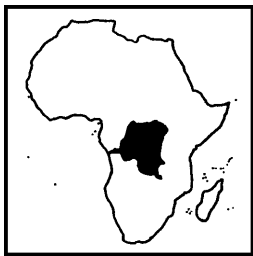
rely on the park for their survival continue to encroach on the park’s natural resources. There are some people who had been arrested more than ten times inside the park for different offences. Although they were released upon paying the fines, or after a longer period if they had not paid the fine, they returned into the park again.

The non-governmental organization Pole Pole Foundation, “POPOF”, a local NGO created by rangers of the KBNP in 1992, approached the communities in the highland sector in order to alleviate conflicts existing between park managers and surrounding communities. POPOF has begun several different activities through different departments such as community conservation, environmental education, scientific research, eco-tourism and the department taking care of women, children and family. Among the activities and the approach, POPOF has begun mobilizing people to plant trees in their own villages instead of being arrested for entering the park to collect wood.

The majority of people agreed with the POPOF team’s ideas and the tree nurseries started in 1993 in four group-

### **Park regulations on poacher penalties related to infractions in the 1980s, 1990s and 2000s**

Type of infraction in the park	Jail sentence	Amount in US\$ to pay as fine
Collecting dry wood, mushrooms, medicinal plants	2 weeks	10
Cutting down trees and bamboo	1 month	50
Bushfire	6 months	200
Trapping and killing an antelope or hog	3 months	300
Hunting by using dogs, nets, etc.	3 months and killing the dogs	300
Land encroachment for farming and cattle grazing	6 months	300
Digging for coltan	6 months	500
Digging for gold	6 months	600
Selling trophies	1 month	50



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**Eucalyptus trees distributed by POPOF used by inhabitants**

Photo: POPOF

ings surrounding the five habituated gorilla territories in the KBNP. Those groupings are Mudaka, Miti, Bugorhe, and Irhambi Katana. Trees take 7 years to grow until they can be used in the highland sector. Every time POPOF met with villagers and they discussed which tree species to plant in their areas. They said according to the dominance of red soil, the best option was to plant *Eucalyptus*, *Grevillea robusta*, *Spathodea* sp., *Markhamia lutea*, *Cu-*

*pressus* sp., etc.

*Eucalyptus*, *Grevillea* and *Cupressus*, once mature, are used for planks, charcoals, poles, and firewood while *Markhamia lutea* and *Spathodea* are used for wood carvings and fertilizers. Each tree nursery produced 300,000 seedlings that were distributed to inhabitants who planted those in their fields, gardens or to make boundaries with their neighbours' fields. After seven years (in 2000), inhabitants who benefited from the seedlings started to use these trees that had been donated to them by POPOF. They made planks, charcoal, poles and firewood or sold a whole tree for US\$20. They were able to earn money which could be used for buying food, clothing, to pay school fees for their children and to create small businesses. Other inhabitants who planted the tree species for carving were able to sell them to wood carvers who are former poachers converted to carvers by POPOF. One tree was sold for US\$ 5 and carvers made gorillas sitting or walking in different



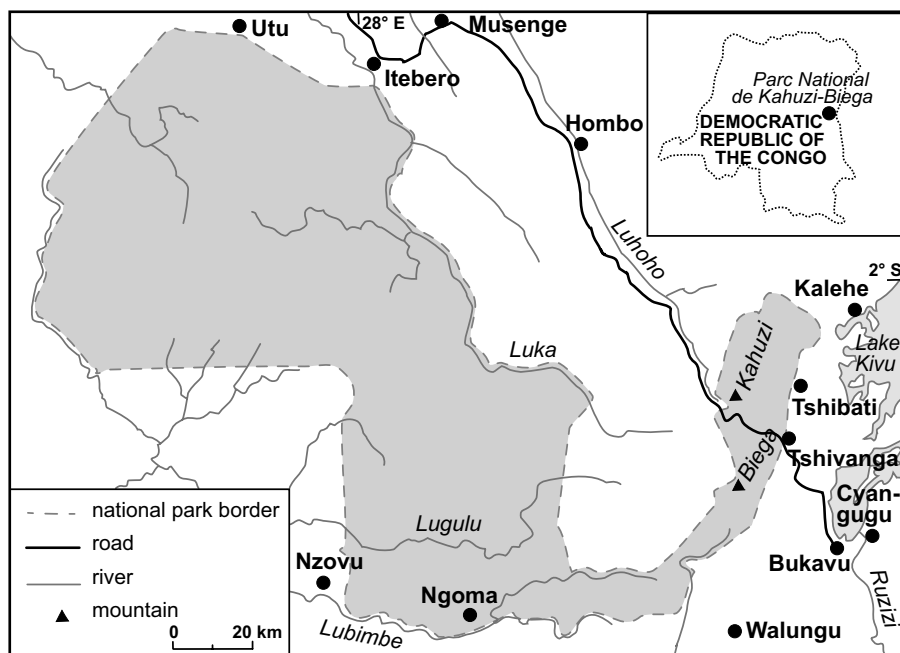
**A woman with a pig she had received from POPOF**

Photo: POPOF

poses to be sold to tourists. However, the lack of tourists in the area due to war and the ongoing post-conflict period means there is a shortage of buyers for these wood carvings.

This model approach created by the Pole Pole Foundation as a local NGO was created with input from the rangers of the KBNP and members of the surrounding communities. This is the model preferred by the communities in the neighbourhood of a protected area rather than locking up hungry, poor people in jail and making them pay fines when they are facing poverty. However, the lack of funds prevents POPOF from doing its effective work to involve communities in the common task of protecting KBNP, a world heritage site in peril, by benefiting surrounding communities to reduce threats to the park's flora and fauna. It is said that "if you give a man a fish he will eat for a day, but if you teach him how to fish he will eat for the rest of his life". We should all know that "it is not the hand which gives but rather the heart gives". If we can support surrounding communities rather than criminalising them, we can achieve much better conservation outcomes.

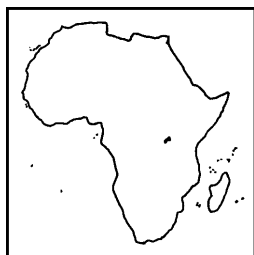
John Kahekwa Munihuzi



**Kahuzi-Biega National Park**

Map: Angela Meder





## RWANDA

### Cantsbee – a Gorilla Legend

Those who are familiar with the Virunga gorillas and read Dian Fossey's book *Gorillas in the Mist* surely know the silverback Cantsbee whose life was observed closely since his birth in the Volcanoes National Park 38 years ago. He was the last surviving silverback originally studied by Dian Fossey. The way he received his name is legendary. The researcher was startled when she heard about his birth – she exclaimed: "It can't be!" because she had thought his mother to be a male. Meanwhile, after 50 years of gorilla research, this sounds astonishing, but small wonders still happen.

One Monday in October 2016 trackers reported that Cantsbee was not in his group when they arrived for daily monitoring. Since he was elderly and the group has been traveling a lot, it was possible that he had been left behind. He was already far beyond the average life expectancy for gorillas that is somewhere in the 20s. Several teams conducted extensive and wider searches, but did not find evidence of his whereabouts or condition. No sign of him! At the Karisoke Research Center they knew that his disappearance would have a big impact on Pablo's group (still named after the former head of the group) leading to the formation of subgroups.

When an important silverback is lost, there are always many changes to observe and study. As expected it started with the emigration of two young silverbacks who were previously supported by Cantsbee, subgrouping took place. Nevertheless, the staff hoped that his son Gicurasi would be able to keep the group together and to form a strong team protecting it from threats, such as attacks from lone silverbacks or neighbouring groups.

Suddenly, on 4 January 2017, he was back. A closer look on the next

day provided evidence that Cantsbee was leading one of the subgroups – together with Gicurasi – involved in an intense interaction with intruders. He seemed to be in fine shape, running, displaying and smashing vegetation to show strength. After about an hour the whole group started to move away, with the females and youngsters following Cantsbee, just like they used to in the past. Nobody knew what happened and why he returned, where he went and whether he was back to stay. However, the researchers were extremely happy to see Cantsbee back in his family and that he was received enthusiastically without any aggression. What an opportunity to study how his return

would affect the group dynamics!

In March 2017 we were informed that Cantsbee was missing again. Of course everyone hoped that he might return from the mist once more ... But on 12 May, trackers spotted a partially decomposed gorilla body in a river while on their daily patrols. Examinations showed that it was very likely Cantsbee. We will keep his legend in our minds.

Meanwhile, the group split into two: 18-year-old Kureba is leading a new group of his own and 22-year-old Gicurasi leads the remaining members of the original group.

*Summary of blog entries of the Dian Fossey Gorilla Fund*

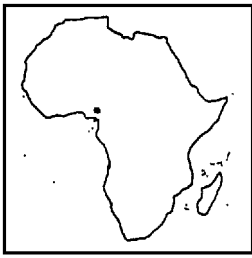
### Death of Three Silverbacks

**Ndahura**, Bwindi Impenetrable National Park (Uganda). On 18 December, 2017, Ndahura, a 28-year-old silverback and leader of Bitukura group, was reported having fallen from a tall tree. The fall had occurred while Ndahura was feeding on fruits and the tree branch he was perched on broke under his weight. Unfortunately, he failed to maneuver and grab other branches in order to break his fall. A broken tree branch also fell on top of him. His condition quickly deteriorated and he died after 30 minutes.

**Isabukuru**, Volcanoes National Park (Rwanda). Silverback Isabukuru died on 26 March, 2017. He was the 24-year-old half-brother of Cantsbee and caregiver to several orphaned juveniles in his group. Isabukuru had battled intermittent diarrhea for many months, but over the last few months, his condition deteriorated. A postmortem examination showed severe lesions in the gastrointestinal tract. Kubaha, the second silverback of the group, has taken it over and is now helping to take care of the three orphaned gorillas.

**Giraneza**, Volcanoes National Park (Rwanda). After going missing from his group for three days, trackers finally found silverback Giraneza on 7 May, 2017. By then he was already showing signs of being ill. On 12 May, trackers found him moribund in the morning, and he died shortly after. Based on the examination, the gross diagnosis is pneumonia with severe pleuritis. Giraneza led a challenging and rather aggressive life. He was born in Pablo's group. During his solitary life, he interacted with established groups a number of times. In 2014, he had a severe fight with Bwenge's group (leading to Bwenge's death) and in 2015 with Uganda's group (after which Uganda died). In August 2015, Giraneza interacted with Gushimira's group, followed by the silverback's death, and finally gained the females to form a small group.

*Summary of blog entries of Gorilla Doctors and Dian Fossey Gorilla Fund*



# CROSS RIVER

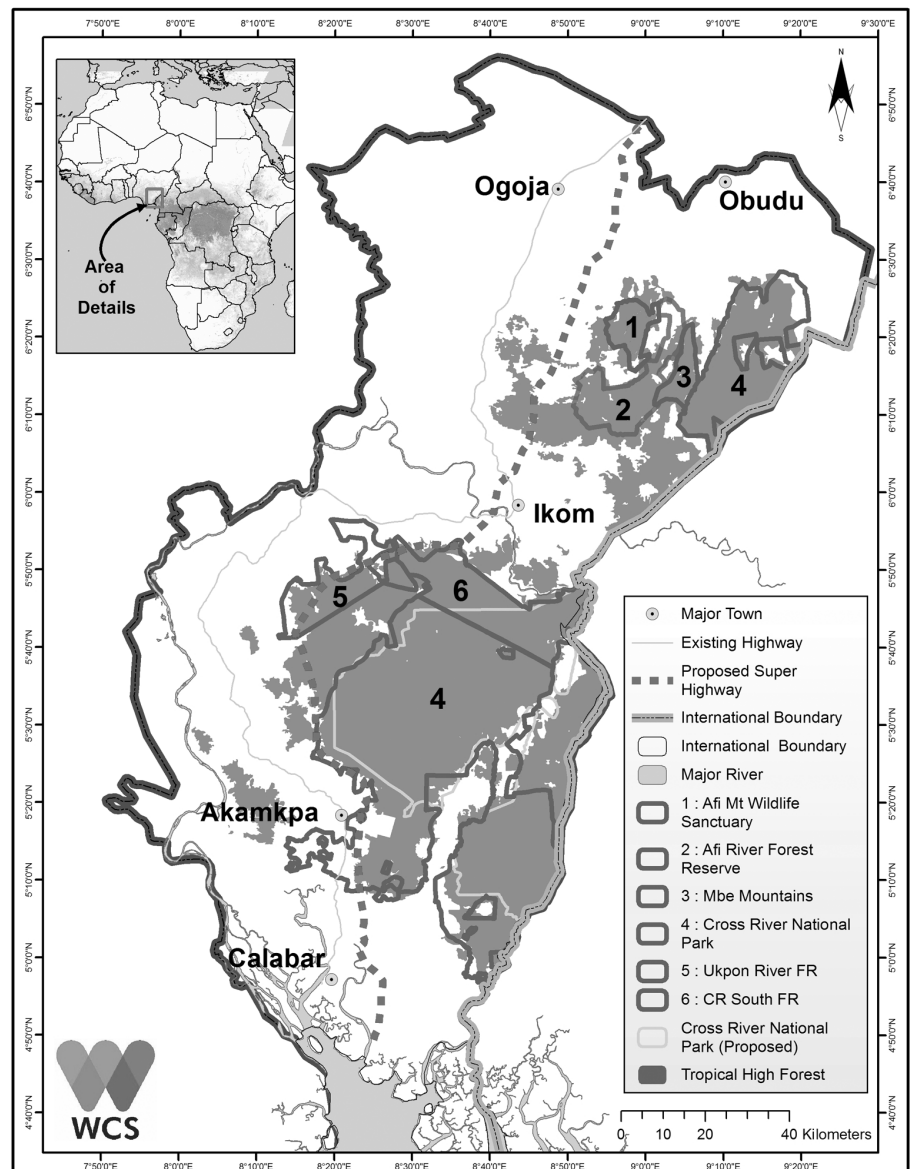
## A Brief Update on the Proposed Superhighway in Cross River State

In March 2016 the Federal Ministry of the Environment issued Cross River State a stop work order pending approval of an environmental impact assessment (EIA) for the superhighway. Since then, three different versions of the EIA have been submitted by the consultants on behalf of the Cross River State Government, and each one has been rejected in turn by the Federal Ministry of Environment. Such strict practices are almost unheard of in Nigeria and testament to the recent progress made in the country under President Buhari and in particular the strong personal leadership provided by the Minister of the Environment, Amina Mohammed. It is also likely that the vociferous international campaign against the superhighway helped convince the Federal Ministry of Environment that this was an issue of international importance which could not be easily overlooked. Although Amina Mohammed was recently appointed as the Deputy Secretary-General of the United Nations, her successor – the Minister of State for Environment, Ibrahim Usman Jibril – has shown himself to be equally determined to see that the environmental laws of Nigeria are fully respected.

Without an approved EIA, tension mounted and, amidst threats to resume work on the superhighway without approval by the federal government, in February 2017 the Cross River State Government announced that it was dropping all plans for the 10 km corridor either side of the highway. Such an immense corridor had always been our major concern since it would have potentially destroyed huge areas of rain-forest including important Cross River gorilla habitat. Getting the corridor cancelled was a major achievement – safeguarding important Cross River

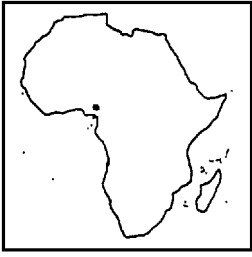
gorilla habitat in Afi Mountain Wildlife Sanctuary. But the route as proposed was still due to pass through some important community forests on the edge of Cross River National Park – communities such as Ekuri and Iko Esai, as well as Ukpon River Forest Reserve and Cross River South Forest Reserve. However, as international and local media campaigns gained momentum, the

Cross River State Government finally began to listen to these concerns and to consult with stakeholders. Options for the superhighway were discussed including re-routing around these forests, even though such modifications would make the highway slightly longer and would increase the overall cost. At a stakeholder forum convened by the Federal Ministry of Environment

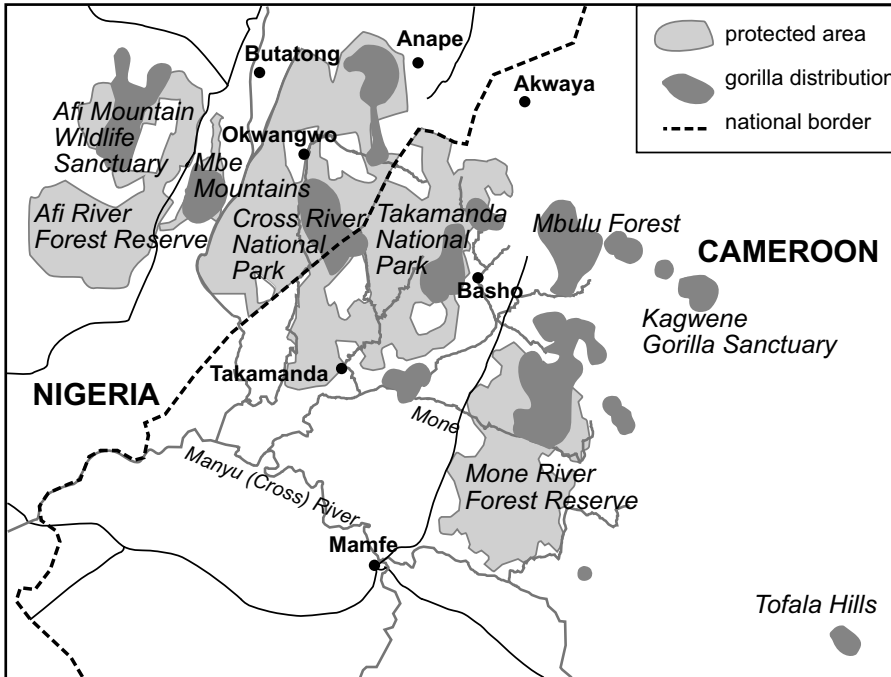


Route of the proposed superhighway, April 2017

Map: WCS



# CROSS RIVER



or farms destroyed, and there has been very little public consultation. It is imperative that the NGOs continue to stand together so that our campaign remains steadfast and resolute. With our support, the Federal Ministry of Environment can continue to insist on improvements to the EIA, and we remain hopeful that an improved EIA will yet include substantial measures such as an Environmental and Social Management Plan to mitigate potential impacts, as well as a biodiversity offset as part of an overall Biodiversity Action Plan.

*Andrew Dunn and Inaoyom Imong,  
April 2017*

## Survey of the Cross River Gorilla at the Tofala Hill Wildlife Sanctuary in Cameroon

In January 2014 I started to study the ecology of Cross River gorillas at the Tofala Hill Wildlife Sanctuary (THWS) in collaboration with the local NGO ERuDeF (Environmental and Rural Development Foundation), which has been responsible for the research in the area since 2004. The aim was

**Cross River gorilla distribution and protected areas in Nigeria and Cameroon**  
Map: Angela Meder, with information from Richard Bergl

in Calabar in March 2017, Governor Ben Ayade announced the willingness of Cross River State Government to re-route the highway around the Ekuri community forest. While this was welcome news, stakeholders continued to demand for the re-routing of the highway away from the Ukpon River Forest Reserve and Cross South Forest Reserve which border the Ekuri forest to west and to the north. Finally, in April 2017, the Cross River State Government agreed to re-route the highway away from most of the remaining forest. This is indeed a big win for our campaign, even though our preferred outcome was the rehabilitation of the existing highway.

The source of funds for the superhighway is still shrouded in secrecy and has not been disclosed. Although some potential investors are reported to have recently pulled out amidst the controversy, it appears that a number of Chinese investors are still interested

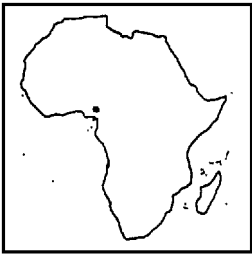
in the deep seaport and superhighway project, possibly as a long-term investment.

To date, no communities have been compensated for any of the trees felled



**View on the central part of the Tofala Hill Wildlife Sanctuary**

*Photo: Sebastian Linnarz*



# CROSS RIVER

to find information about the nesting and feeding behaviour of Cross River gorillas and to calculate their population size and density.

The Tofala Hill Wildlife Sanctuary became a protected area in September 2014, prior to which the area had no status of protection. This population of Cross River gorillas was discovered in 2004 during a survey by ornithologists. It is a very special population because it marks the most southeastern occurrence of the Cross River gorilla range; it is located 40 km from the next known gorilla population in the Mone Forest Block, and it was estimated that between 20 and 30 individuals were living in the sanctuary. Among the 14 Cross River gorilla subpopulations, the Tofala population is the only one about which no scientific data have been available, and the anthropogenic pressure exerted upon the gorillas living in the examined area is very high because there are ten villages adjacent to the area.

The area of the THWS is 8,087 ha. There are steep mountains rising from the western edge of the reserve to the eastern side of the area; elevation varies from 250 m around the villages of Besali and Bechati (in the West) to 1,900 m in Fossimondi (in the East). The vegetation is mainly tropical rainforest, changing into montane forest above 1,400 m, and above 1,800 m there is anthropogenic grassland. There is a long rainy season from March until November with an average rainfall of 2,420 mm.

There were 12 two-week expeditions to the THWS in 2014, 2015 and 2016. Data were collected from the early dry seasons (November) to the mid rainy seasons (June). It seemed that gorillas avoided the southern part of the reserve, since there is not much forest left; also the northern area of the sanctuary showed no signs of gorillas. The northern part is less hilly and does not have the steep and high mountains of the central part of the sanctu-

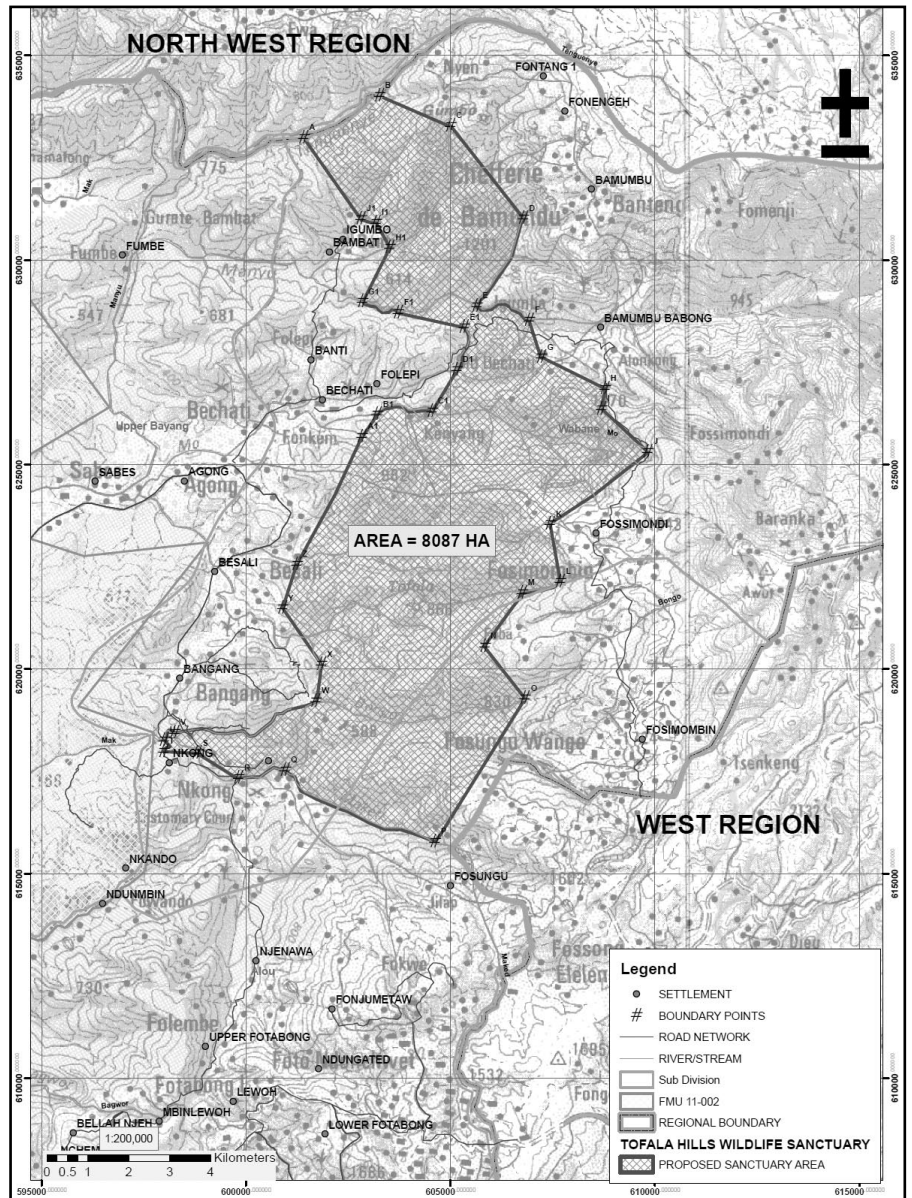
ary, which makes it more easily accessible for people, and all signs of gorillas were found in the central part of the THWS, in an area of 6.5 km<sup>2</sup>. Because the gorillas are rare and elusive, the data were collected based on following their trails.

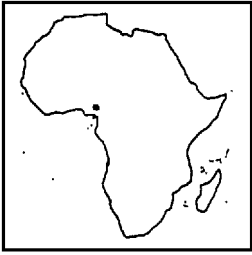
### Poaching and Farming

There are ten villages surrounding the area, hence, it is not surprising

that there was and still is much illegal farming and poaching inside the forest. 42 gun shells were found on 5 expeditions in 2014. In 2015 there was a decrease in hunting with rifles with only 20 gun shells found in the same area, but at the same time hunting with snares increased from 40 snares found in 2014 to 55 snare traps in 2015.

Talking to local hunters showed that most of them do not shoot gorillas be-





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cause of traditional beliefs of the people who are living west of the THWS. Some hunters from the highlands on the eastern side of the sanctuary do not share that view and do not hesitate to kill gorillas. In March 2013, a silver-back left the THWS and walked 14 km northeast. When it came close to the village of Pinyin, it was killed by an angry crowd of people. Law enforcement is difficult in a remote area like the Lebalelem Highlands, with low risk of prosecution.

Farming was another problem in the THWS. Before the area became a wildlife sanctuary, people were establishing new farms inside the forest at very high rates, using the slash and burn method to transform the rainforest into farmland. Since January 2014, at least 77 new farms were created within the reserve, with an average size of 1.8 ha. Most of the farms were located close to the communities, but people are starting to make their farms deeper and deeper inside the forest, so that even the most remote areas of the sanctuary are affected by farming. Many farmers do not know its boundary since there are no marks even today to show where the sanctuary begins.

### Nesting Ecology

There are different factors that affect the nest site choice of gorillas. Food, preferred nesting trees and predation risk can influence the selection of nest sites. 31 nest sites with a total of 52 gorilla nests were found. The gorillas at the THWS preferred to build their nests on steep slopes, with an angle of more than 45°. 74% (22 nests) were built on steep slopes, 23% (7 nests) were found at moderate slopes (25–45°) and only one nest was made in a flat area (3%). Steep slopes protect the gorillas from getting surprised by poachers, who mostly hunt during the night.

The number of nests per nest site varied from one to three nests, showing that the largest group size of goril-

las at the THWS is three. Compared to other Cross River gorilla populations this number is very small, although the average group size of Cross River gorillas in general is between four and seven individuals.

### Feeding Ecology of Gorillas at the THWS

The Tofala population of gorillas showed some special adaptations in their feeding behaviour compared to other Cross River populations. Normally Cross River gorillas show a diet comparable to the diet of western lowland gorillas. The gorillas of the THWS mainly fed on terrestrial herbaceous plants (61.5% of all feeding signs); fruits constituted 22.5% of the diet; and leaves were consumed in 16% of all feeding cases.

Gorillas at the THWS generally looked for food on farms that had been illegally established in the forest, and they frequently raided farms inside the forest to eat the stems of banana plants (*Musa spec.*), which was the most consumed plant species in Tofala during the study period. It might be possible that fruits make up a higher portion of the gorillas' diet during the late rainy season, but there were no expeditions between July and October.

It was in particular farms far away from the communities that were regularly visited by gorillas. Farmers placed human-looking puppets on the farms to prevent gorillas from raiding them, but the puppets seemed to have no impact, and did not stop gorillas from entering the farms.

### Population Size and Density

A three-month camera trap survey was conducted from January to April 2016 to calculate the population size and density of gorillas at the THWS. The camera traps were placed in a 2 x 2 km grid in the central part of the sanctuary, and there were eight stations of camera traps inside the forest. No gorilla was recorded while the cameras were in the

field for 76 days.

The only image of a gorilla at the THWS was recorded in January 2014, so nest counts were used to calculate the population size and density. The population size was calculated with the program "Presence". The results were shocking, indicating that there are only two to four gorillas left in the sanctuary, at a population density of just 0.03 gorillas per km<sup>2</sup>. The numbers seem to be realistic because the maximum nest group size was three nests and because no camera trap was able to picture a gorilla during the survey period. There have been three very short direct observations of gorillas by the guides and volunteers in 2014 and 2015; they saw one or two gorillas at these sightings.

### Outlook

The Tofala Hill Wildlife Sanctuary still houses a small population of gorillas. The feeding and nesting ecology was quite unique compared to the other known Cross River gorilla populations, and shows that there are special adaptations for each gorilla population in Cameroon and Nigeria. Understanding the behaviour and ecology of all Cross River gorilla populations is essential to prevent their extinction. The creation of the THWS might have come too late, given that the number of individuals is just two to four, and it seems very unlikely that the population will survive within the next 10–20 years. The sanctuary is very isolated and far away from other Cross River gorilla populations, which makes any connection to other gorilla groups not very likely. Nevertheless, there is still a forest corridor between the Mone population and the Tofala population, but the human pressure in the corridor area might be too great to allow any migration between the two populations.

*Sebastian Linnarz*



# GORILLAS

## One of the Biggest Ape Traffickers of Africa Arrested

Abdourahamane Sidibé, a major wildlife trafficker of Guinean nationality, was arrested on 18 February 2017 in Conakry in a special operation by Interpol NCB and the NGO WARA via its EAGLE-Guinea project. One of the most important ape traffickers on the African continent, Abdourahamane Sidibé was head of a crime family which had been operating for over 30 years.

In July 2016, Abdourahamane Sidibé was condemned in absentia to 5 years in prison at the same time as his son Abdoul Salam and the former corrupt CITES chief of Guinea Ansoumane Doumbouya, who was arrested in August 2015 following a WARA-EAGLE investigation. For years, Ansoumane Doumbouya had fraudulently issued CITES permits to Abdourahamane Sidibé, facilitating the illegal export of many endangered species including 130 chimpanzees and 10 gorillas to China, using CITES permits which falsely stated that the apes were bred in captivity.

The WARA investigation had continued tracking the Sidibé family for 5 years, as it was spread across the continent creating a vast and effective criminal network. Finally, the team managed to net the father and head of the criminal network. Abdourahamane Sidibé had spent the last year hiding in several African, Arab, and Asian countries. His arrest, of one of the most important traffickers of wildlife and great apes on the African continent, is a landmark in the fight against ape trafficking.

Abdourahamane Sidibé had been under an international arrest warrant issued by the Guinean Judiciary. An Interpol red notice was issued a few weeks before the arrest. He was hiding outside of Guinea since his conviction in absentia in July 2016. During our

investigation, we learned that he was to pass through Guinea. One Saturday night we went to his home with the Interpol team, arrested him, and then brought him directly to Conakry Central Prison.

Ansoumane Doumbouya had been convicted on the basis of overwhelming evidence and after issuing a CITES permit to a trafficker just before his arrest, even though he had no longer been a CITES official since 2013 and Guinea was suspended by CITES. During his trial he always denied having issued CITES permits to Abdourahamane Sidibé for the export of chimpanzees to China, despite the fact that hidden files were found on his computer containing these permits. After his arrest, Abdourahamane Sidibé confirmed that he received all these permits from Ansoumane Doumbouya.

The Sidibé network has been active in international trafficking for 30 years, amassing a lot of money; they exported many protected animals worldwide in violation of national laws and the CITES Convention, including chimpan-

zees, manatees, many other primates and birds.

Only a few weeks after the father's arrest, the criminal family was hit again: on 7 March Abdoul Salam Sidibé was arrested in Conakry. He is the son of Abdourahamane Sidibé. Abdoul Salam is a key element of the Sidibé network, and an international arrest warrant had been issued against him.

For a few years Abdoul Salam had been living in Ghana and his father in Ivory Coast, and they had both travelled to many African, Arab and Asian countries. Following their conviction, they were on the run abroad knowing that they were the subject of an arrest warrant.

After the father had been arrested, we quickly travelled to Ghana with an agent of Interpol Guinea NCB to organize the son's arrest and extradition in collaboration with the CID of Ghana Police. Because of our long-term investigations, we knew his habits and our investigators located him on the spot. Unfortunately, he fled by road to Burkina Faso and Mali, heading for Guin-



*Abdourahamane Sidibé after his arrest*

*Photo: WARA*



# GORILLAS

The **WARA** Conservation Project was founded and is directed by Charlotte Houpline and has active projects in Guinea, Senegal and soon in Ivory Coast. An EAGLE Network member, WARA is a wildlife law enforcement NGO that works with governments to investigate, arrest, prosecute and imprison major wildlife traffickers. [www.wara-enforcement.org](http://www.wara-enforcement.org)

**EAGLE** – Eco Activists for Governance and Law Enforcement – is a network across Africa of members who are replicating effectively a program and operational model to undertake wildlife law enforcement. The EAGLE Network currently operates in 9 African countries and keeps expanding. It is credited with bringing more than 1,500 major wildlife traffickers to arrest and imprisonment and is now doing that at a rate of one major trafficker arrested, prosecuted and imprisoned per day. [www.EAGLE-enforcement.org](http://www.EAGLE-enforcement.org)

ea; finally, Abdoul Salam was arrested in Conakry and brought directly to the central prison.

In 2013, when we started our investigations on Abdoul Salam, he was trying to get an order from a buyer to sell a manatee. He worked with Balla Doumbouya, the boss of DOUMBOUYA PET COMPANY IMPORT-EXPORT, who was on the run after the arrest of the former CITES chief; we located and arrested him in April 2016. A total of 5 international traffickers were arrested and convicted in this judicial case: Ansoumane Doumbouya, Thierno Barry, Balla Doumbouya, Abdourahmane Sidibé and Abdou Salam Sidibé.

For a long time, Guinea has been a central junction in the organized illegal

trade in apes. WARA, the group behind the arrest, worked hard for 6 years with the Guinean authorities to put behind bars the biggest of these traffickers and the highest corrupt officials that helped him. But there is still much more to be done. Several organized criminal families are driving great apes to extinction.

*Charlotte Houpline*

## A Tribute to Colo

On 22 December 1956, the Columbus Zoo made history with the birth of the first zoo-born gorilla. Eventually named Colo in honor of her birthplace, this 3¼-pound baby sent a wave of excitement through the zoological community. Over a million visitors came to see Colo during her first year and many more followed her story through daily updates in the New York Times. Her story was featured in both *Life* and *Time* magazines. During the first years of Colo's life she was dressed in frilly outfits with hats and treated like a princess. Though she spent most of her time in a nursery that had been built especially for her, she was taken over

to the main gorilla enclosure for visits with her parents. In 1958 Colo was paired with a 19-month-old (estimated) wild-born male named Bongo.

Colo and Bongo became parents on 1 February 1968 with the birth of a baby girl. The pair produced two more offspring together, before losing interest in breeding. Although she was not allowed to rear any of her offspring, Colo exhibited excellent maternal skills towards her granddaughter, Cora. She officially became a surrogate mother in 1987 when she raised Macombo II and Mosuba, the first gorilla twins to be born in the western hemisphere. Colo also acted as a surrogate for her grandson, named J. J. after Columbus' own Jungle Jack, the former director of the Columbus Zoo, as they share the same birthday. Although Colo had never had experience carrying an infant on her back, she allowed J. J. to climb on her and she carried him around the habitat. Colo equally enjoyed her role as a great-grandmother and was regularly seen caring for her great-grandsons, often carrying them into and from the outdoor habitat each day.

After many years of group life, in her mid-40s, Colo chose to leave group life behind by separating herself. She was kept next to her "chosen group" and enjoyed interacting with them through the barriers, often adding her voice to their disputes and even sharing items with her great-granddaughter. Over the years she would enjoy occasional visits from her daughter Toni and a male named Mumbah, but she was happiest to spend her time alone. Colo adored her keepers and regularly instructed them in the proper ways to do things. She also thoroughly enjoyed interacting with the visitors and would strut back and forth modeling her latest baseball cap for them.

Colo lived well beyond the median life expectancy for a female gorilla, turning 60 years old in 2016. The zoo celebrated the occasion with a birthday



**Colo**

*Photo: Graham S. Jones, Columbus Zoo and Aquarium*



# GORILLAS

party in her honor highlighted by many celebrity tributes. She currently holds the world record as the longest lived gorilla. After a full day delighting her visitors, Colo passed away peacefully in her sleep on 17 January. Her legacy lives on through her three children, 16 grandchildren, 12 great-grandchildren, four great-great-grandchildren and millions of fans. Her life helped to educate people about the struggles gorillas are facing in range countries and the actions we can take to help. She was an amazing ambassador for her species and friend to her keepers. Her impact will continue to be felt by those who knew her best.

*Audra Meinelt*

## The Dream of the Forest

Chisato Abe's exhibition of paintings of gorillas called "The Dream of Forest" was held at the Art Gallery located in the newly opened mega-department store, Daimaru Tokyo, in Japan from 30 November to 6 December 2016.

Chisato Abe is an artist who has specialized in gorillas for about 35 years. Her drawings were the result of



**A view of Chisato Abe's exhibition**

*Photo: Miki Matsubara*

her detailed observations of over 800 attractive gorillas and their family histories. These deeply felt and lovingly presented drawings went beyond the classical image of gorillas, showing adoring eyes cast at the family members and even visitors. The largest and most eye-catching of the paintings was a portrait of a silverback gorilla, Haoko, and his daughters Komomo and Momoka in the Ueno zoo, oil on canvas, 162 by 162cm with silver background. Visitors enjoyed the portraits of Colo, who passed away at age 60 in January in the Columbus Zoo, Kifu likes a prince in Howletts, the Jam-

bo family in Apenheul, baby Alike and meerkats in Artis, curious Bokito with red peppers and a cat, lovely Koko and her kitten, Kibabu in Taronga Zoo and his sons Haoko and Shabani on loan to Japan, and also eastern lowland gorillas, one of the world's 25 most endangered primates 2014–2016: Mushamuka and his family in the Kahuzi-Biega National Park of the Democratic Republic of the Congo.

On 2 December, the traditional Japanese wrestler (Likishi) Tosa-Yutaka visited the gallery with his wife. He was called "Gori-chain" by his fans, dressed in a traditional decorative costume with a gorilla face with open mouth on red background for ceremonies, and is now retired and re-named Ajikawa-Oyakata (Master). He loves gorillas, and always visited the silverback Taro in the Japan Monkey Center before his matches in Nagoya to pray for good results. Master Ajikawa visited the Japan Monkey Center to introduce his wife to Taro in July 2016. He received one of Chisato's gorilla drawings as a memento of his retirement. Chisato was excited to shake hands with him, and even forgot to take a photo with him!

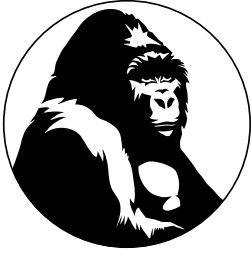
Chisato said that seeing the gorillas all over the world is the most wonderful event for her, so she would like to keep on drawing gorillas long into the future.

*Miki Matsubara*



**The gorilla painter Chisato Abe (left) in her exhibition that was shown at the end of 2016 in Tokyo. At the right gorilla researcher Miki Matsubara**





# GORILLAS

## 2017 Members' Meeting

The meeting of Berggorilla & Regenwald Direkthilfe in Krefeld Zoo was a resounding success, both for the Board, who had the opportunity to meet new members and touch base with old ones, and for the participants, who were privileged to listen to interesting talks and enjoy the warm hospitality of the zoo. However, the highlight for our organisation was a surprise cheque of euro 2000 for gorilla protection, which was handed over by the Zoo Director Wolfgang Dreßen. We thank Krefeld Zoo very much for this generous support of our work!

Peter Zwanzger organised the event perfectly. We commenced on Saturday afternoon with a welcome address from Wolfgang Dreßen and short updates from our projects. This was followed by a talk by Johannes Refisch, head of the UN's Great Ape Survival Partnership (GRASP) on "The conservation of apes: challenges and chances". After this talk, it was time for a coffee break.

Subsequently, curator Cornelia Bernhardt presented a history of apes in Krefeld Zoo and Yvonne Baur introduced her work on gorilla personalities. After a short introduction to our first regional group – Ostwestfalen-Lippe – Johannes Refisch gave a second talk entitled "Apes – Their Fate is Ours", including many photographs of apes he had taken during his travels. During dinner, which – like the coffee break – we were able to enjoy in the open air in front of the meeting room, we had opportunities for many interesting conversations.

We were also very lucky with the weather on Sunday morning, when we enjoyed our guided tour through the ape houses. We are very grateful to Benjamin Harr and Daniel Schmidt, who answered all questions patiently and had many interesting stories to tell.

*Angela Meder*



*Johannes Refisch explains GRASP's work*

*Photo: Angela Meder*

## Vast Peatland Discovered in the Congo Basin

A team of British-Congolese scientists has discovered huge peatlands in Central Africa's Congo Basin. With an area of almost 150,000 km<sup>2</sup> – an area larger than England – the Cuvette Central peatlands are the largest ones in the tropics.

The researchers of the British University of Leeds used data from US and Japanese satellites to map the swamp area and analyzed the soil with field measurements. The average depth of the peat layer is 2.4 m, but at its deepest it reaches 5.9 m. According to the scientists' results the peat has been building up under the waterlogged forest for more than 10,600 years and locked up more than 30 billion tonnes of carbon, three times as much as the annual carbon monoxide emissions set free by fossil fuels. The newly discovered peatlands hold nearly 30 % of the world's tropical peat carbon.

Peatlands are only a resource in the fight against climate change when left intact. But because the Cuvette Central peatlands were discovered only recently, they do not feature in conservation plans. They could face threats from drainage for agricultural plantations, especially for oil palms, as is happening in Southeast Asia. The peat's preservation is also prone to climatic changes through lower rainfall or if rising temperatures increase evaporation. The peatlands in the Congo Basin should be protected not only for ecological reasons, but also because they are vital refuge for many endangered species like the western lowland gorilla or forest elephant.

*Dargie, G. C. et al. (2017): Age, extent and carbon storage of the central Congo Basin peatland complex. Nature 542, 86–90*

***The peatland is in danger of being logged!***

[www.rainforestfoundationuk.org/norway-carbon-bomb-in-congo](http://www.rainforestfoundationuk.org/norway-carbon-bomb-in-congo)



## READING

**John E. Cooper and Gordon Hull**  
**Gorilla Pathology and Health, with a Catalogue of preserved Materials.** London (Academic Press) 2017. 666 pages. Hardcover, US\$ 140. ISBN 978-0-12-802039-5

This is a monumental achievement, a book of 637 pages. In the first of two sections, John Cooper describes the diseases that gorillas get, and discusses why, and illustrates with colour photos their anatomical and histological appearance. There are X-rays, CT scans, and illustrations of how to collect and handle samples, with detailed instructions. This makes the book an absolutely indispensable source for all medical and veterinary practitioners working with gorillas, both in the wild and in zoos.

In the second section, Gordon Hull provides what must be an exhaustive list of all preserved material. Mostly this concerns skulls, skeletons and skins, but it includes also anatomical and pathological specimens, microscope slides, and so on. All relevant information is given: locality of collection, collector, taxonomy (including type status), individual identity and history (mainly in the case of zoo gorillas), and any recorded measurements (height, girth, arm span and so on). When, in the early 1960s, I was going around Europe and the USA measuring and observing gorilla skulls and skeletons for my PhD, I was proud to have amassed a dataset of over 700 male and 400 female skulls – but this listing just about doubles that. How I wish I had had access to such a list then! Exciting for the taxonomist, but very sobering too: in the late 19<sup>th</sup> and early 20<sup>th</sup> centuries, every university zoology and anatomy department, and every little local museum, wanted to have its own gorilla skull or skeleton, and the consequent massacre of gorillas was appalling.

The two sections of the book might seem to sit uneasily together, but their combination is amply justified, and the

reader will find many overlaps. Both authors quite obviously have great respect for, even love of gorillas, and want to share their knowledge with readers, for the benefit of the species and each individual in it.

*Colin Groves*

**Richard J. Reid**

**A History of Modern Uganda.** Cambridge (Cambridge Univ. Press) 2017. Paperback, 426 pages. ISBN 978-1-107-67112-6, £ 18.99. Hardcover, 328 pages, ISBN 978-1-107-06720-2, £ 64.99.

**J. Oloka-Onyango and Josephine Ahikire**

**Controlling Consent: Uganda's 2016 Election.** Africa World Press 2016. Paperback, US\$ 39.95. ISBN 978-1569025024

### New on the Internet

**The Interactive Map of Artisanal Mining Areas in Eastern DR Congo – 2015 Update.** [www.ipisresearch.be/mapping/webmapping/drcongo/v4](http://www.ipisresearch.be/mapping/webmapping/drcongo/v4)

The Belgian research group IPIS collected data on 2026 artisanal mining sites in eastern DRC. IPIS observed an armed presence in more than half of the mines. In an interactive map, IPIS provides information about the on-site presence of armed groups and the Congolese army. It also shows whether mining sites have been 'validated' (licensed to operate) by the Congolese government or if they are covered by supply chain control mechanisms.

**Rainforest Foundation UK**

**Logging in Congo's rainforests: A "carbon bomb" about to be primed by the Government of Norway?** June 2017. 16 pages. Download PDF (2.9 MB): [www.rainforestfoundationuk.org/media.ashx/drc-carbon-bomb-briefing-2017.pdf](http://www.rainforestfoundationuk.org/media.ashx/drc-carbon-bomb-briefing-2017.pdf)

**FAO**

**State of the World's Forests 2016.** Forests and agriculture: land-use challenges and opportunities. Rome 2016. 126 pages. ISBN 978-92-5-109208-8. Download PDF (5.39 MB): [www.fao.org/publications/sofo/en/](http://www.fao.org/publications/sofo/en/), <http://www.fao.org/3/a-i5588e.pdf>

**United Nations Security Council**  
**Midterm report of the Group of Experts on the Democratic Republic of the Congo.** Document S/2016/1102. UN 2016. 90 pages. Download PDF (8.33 MB): <http://reliefweb.int/sites/reliefweb.int/files/resources/N1640170.pdf>

**Kahana Lukumbuzya and Cassian Sianga**

**Overview of the Timber Trade in East and Southern Africa: National Perspectives and Regional Trade Linkages.** Cambridge, TRAFFIC and WWF, February 2017. 53 pages. ISBN 978-1-85850-415-5. Download PDF (1.79 MB): [www.trafficj.org/publication/17\\_Timber-trade-East-Southern-Africa.pdf](http://www.trafficj.org/publication/17_Timber-trade-East-Southern-Africa.pdf)

**Global Witness**

**Under-Mined.** How corruption, mismanagement and political influence is undermining investment in Uganda's mining sector and threatening people and environment. June 2017. 88 pages. <https://www.globalwitness.org/en/campaigns/oil-gas-and-mining/uganda-undermined/>. Download PDF (3.33 MB): [https://www.globalwitness.org/documents/19074/Undermined\\_Report\\_Low\\_Res.pdf](https://www.globalwitness.org/documents/19074/Undermined_Report_Low_Res.pdf)

**Amnesty International**

**Report 2016/17.** The state of the world's human rights. London (Amnesty International) 2017. 409 pages. ISBN 978-0-86210-496-2. Download PDF (1.95 MB): <https://www.amnesty.org/en/latest/research/2017/02/amnesty-international-annual-report-201617/>



# BERGGORILLA & REGENWALD DIREKTHILFE

## Finances

### Income in 2016

Subscriptions	23,033.00 euro
Donations	47,179.22 euro
Sales	557.10 euro
<b>Total</b>	<b>70,769.32 euro</b>

### Expenses in 2016

Refund for meeting	190.60 euro
Administration	3,548.58 euro
<i>Gorilla Journal</i>	2,302.43 euro
Items for sale	83.59 euro
Postage	1,467.58 euro
Pay/top-ups	6,936.00 euro

### Maiko National Park

Training Park Director	3,950.00 euro
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### Sarambwe

Support of patrols, equipment ...	16,914.61 euro
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### Mt. Tshiaberimu

Border demarcation monitoring ...	11,141.35 euro
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### Kahuzi-Biega

Tree planting	1,800.00 euro
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### Bwindi

ITFC employees	8,000.00 euro
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### Cross River area, Nigeria

Radio program environmental education	8,826.90 euro
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Mbe Mountains, community educ.	8,867.61 euro
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<b>Total</b>	<b>76,029.25 euro</b>
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## Our Donors

From November 2016 to April 2017 we received major donations by Stefan Ablasser, ajoofa, Arkon Metallbau, Marion Arnoldi, Fredrik Hendrik Bakels, Nicole Benak, Martin Bettmann, Marc Beyer, Manuel Blatter, Gerda and Andreas Brunner, Monika Daub, Angelika Dickmann, Sybille Eck and Jens Rottacker, Michael Enders, Marianne Famula, Thomas Fesser, Birgit Gläser, Gorilla Gym Hamburg, Jens Hadler, Dietmar Hekers, Marieberthe Hoffmann-Falk, Helga Innerhofer, Rolf Jochen Kaiser, Götz Kauschka, Christian Kleineidam, Susanne Klin-

ger, Hartmann Knorr, Stefan Koch, Brigitte Kranz, Sabine Krummenerl, Albrecht Kühn, Karin and Manfred Linke, Maaß Industriebau, Andreas Maenz, Lore Marholdt, Hannelore Merker, Nico Naeve, Jörg Neidhardt, Oliver Nevi, Denise Nierentz, Manfred Paul, Anne Pfisterer, Alicia Pichlmeier, U. and K. Rathfelder, Klaus Reigber, Birgit Reime, Geraldine Reischl, Wolfram Rietschel, Alfred Roszyk, Erika Rüge, Peter Sailer, Colette Schwegler, Elke Seeger, Frank Seibicke, Sozial-Aktien-Gesellschaft Socialbay, Hartmut Stade, Hermann Starik, Heinz Stelter, Hans-Christian Ströbele, Andreas Strohmaier, Thomas Tiede, Tiergarten Heidelberg, Paul Vandendael, Hans-Jörg Walther, Christof Wiedemair, WIGWAM Naturreisen & Expeditionen, Jörg Wilhelm, Wilhelma, Zoo Krefeld and Heinz and Elisabeth Zaruba.

Moreover, the Schrempp family supported us with a donation instead of



**Presenting the 5<sup>th</sup> vintage of gorilla wine: Wolfram Rietschel, Angela Meder and Thomas Seibold, Fellbacher Weingärtner, who handed over a symbolic cheque**

sending Christmas gifts to the customers of their company. Apart from several zoos, the pupils of the Martin Luther School in Rimbach collected donations for us. And the winemakers Fellbacher Weingärtner donated 1,000 euros from the sale of their gorilla wine.

Many thanks to everybody, including all the donors that could not be listed by name here. We are grateful for any support!

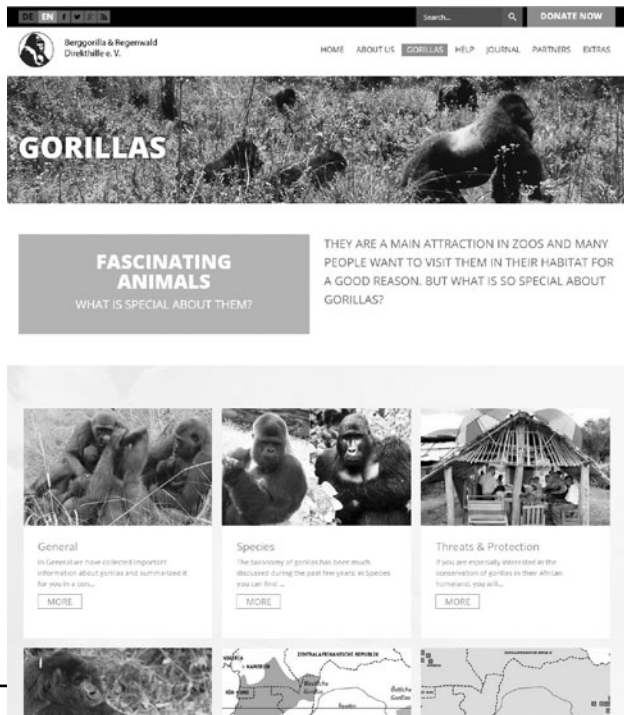
**Wolfgang Dreßen (in the middle), Director of Krefeld Zoo, and curator Cornelia Bernhardt (left) hand over a cheque to us during our members' meeting**

*Photo: Petra Schwinn*

## Do You Want to Become a Lifetime Member?

For the first time we offer the opportunity to become a lifetime member of Berggorilla & Regenwald Direkthilfe to overseas supporters. The lifetime membership fee is US\$ 1,000. As the regular transfer of membership fees from most countries to German bank accounts is not easy, this may be a good alternative if you want to support us and make sure that you receive our journal. If you are interested, please contact Burkhard Broecker at our organization address (see page 2 of this journal) or at [broecker@berggorilla.org](mailto:broecker@berggorilla.org)

## Do you know berggorilla.org? Visit our new site!



## Subscription to the *Gorilla Journal*

If you become a member, you will receive the journal regularly. If you want to receive the printed journal without becoming a member, we would be grateful if you could make a donation to cover our costs. The costs to send the journal overseas are about US\$ 20 per year.

If you do not need the printed version, we can include your email address in our mailing list and you will be informed as soon as the PDF files are available (contact: meder@berggorilla.org).

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Starting with the following date \_\_\_\_\_ I declare my membership in *Berggorilla & Regenwald Direkthilfe*

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I want to receive a printed copy of the *Gorilla Journal*

I want to be informed if the new issue is available on the internet. My e-mail: \_\_\_\_\_

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Date and signature \_\_\_\_\_

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Donor	<input type="checkbox"/> euro 100	<input type="checkbox"/> US\$ 180

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**Berggorilla & Regenwald Direkthilfe**  
 c/o Burkhard Broecker  
 Juedenweg 3  
 33161 Hoevelhof, Germany  
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Bank account:  
*Berggorilla & Regenwald Direkthilfe*  
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