



# ***Gorilla Journal***

*Journal of Berggorilla & Regenwald Direkthilfe*

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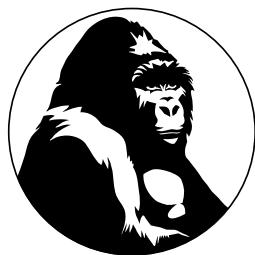


**Micro-Projects for  
Conservation and  
against Poaching  
and Deforestation**

**A One Health  
Approach to Go-  
rilla Conservation**

**Transboundary  
Conservation  
of Cross River  
Gorillas**

**Conserving Ebo  
Gorillas through  
Community  
Collaboration**



# BERGGORILLA & REGENWALD DIREKTHILFE

## CONTENTS

<b>D. R. Congo</b>	<b>3</b>
Micro-Projects for Conservation and against Poaching and Deforestation	3
Virunga Park Again Threatened by Oil, Links to SOCO	6
Three Rangers Killed in Virunga	7
Death of Silverback Noël	8
Batwa Shot Dead in Kahuzi-Biega	8
Bandits Kill an Itombwe Ranger	8
<b>Rwanda</b>	<b>9</b>
50 Years of Karisoke	9
<b>Uganda</b>	<b>10</b>
A One Health Approach to Gorilla Conservation	10
Tribute to Kanyonyi	13
<b>Cross River</b>	<b>14</b>
Strengthening Transboundary Conservation of Cross River Gorillas	14
Update on the Superhighway	15
<b>Gorillas</b>	<b>16</b>
Conserving the Ebo Gorillas through Community Collaboration	16
Silverback Sagas	20
Variation in Gorilla Behaviour – and Culture?	22
Colin P. Groves Obituary	25
<b>Reading</b>	<b>26</b>
<b>Berggorilla &amp; Regenwald Direkthilfe</b>	<b>27</b>

### **Gorilla Journal 55, December 2017**

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Photo: Wolfram Rietschell

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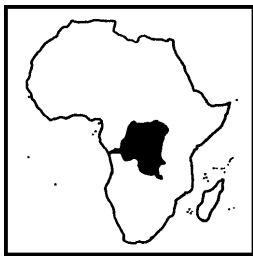
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**Claude Sikubwabo Kiyengo** conducted a gorilla survey in the Maiko National Park from 1989 to 1992, and in 1994 he took part in the gorilla census in Kahuzi-Biega. After that he worked for the ICCN in Goma, from 2000 to 2004 for the IUCN program PPP and in 2005 for the regional office of IUCN in Central Africa. From 2006 to 2007 he was 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. Since 2010 he is Director of the Institut Supérieur de Conservation de la Nature, Environnement et Tourisme (ISCNET) in Rumangabo, from 2011 to 2016 he was the PACEBCo expert for conservation and biodiversity in the Virunga region (COMIFAC).



# D. R. CONGO

## Can Micro-Projects Promote Conservation and Campaigns against Poaching and Deforestation?

The Sarambwe Reserve and Mount Tshiaberimu are two refuges for gorillas near the central and northern part of the Virunga National Park, conserving the mountain gorilla *Gorilla beringei beringei* in Sarambwe and Grauer's gorilla *Gorilla beringei graueri* on Mount Tshiaberimu.

The Sarambwe Reserve is a 900 ha area adjacent to the Bwindi Impenetrable National Park in Uganda. About one third of its area has been deforested; at least a part of it is regularly used for growing subsistence crops – mainly by Ugandans who pretend that the land is on the Ugandan side of the border.

Although its surface area seems rather small, the Sarambwe Reserve shelters a very rich and abundant fauna. This includes six species of primates: blue monkeys, red-tailed monkeys, baboons, chimpanzees, gorillas and black-and-white colobus monkeys, and one representative of the pig fam-



**Poacher with his dog arrested in the Sarambwe Reserve**

*Photo: Jean Paul Kambere*

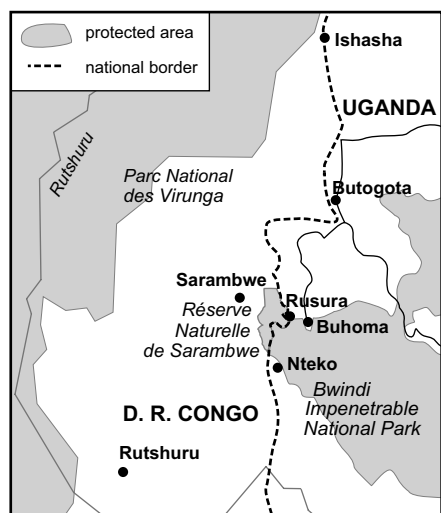
ily, the bush pig. There are 23 gorillas: one group of 12 individuals, a second group of 8 individuals, a recently arrived group of two, and a solitary male. The other primate species have been observed in impressively large groups over the last three months, with numbers per group up to 150 for baboons, 72 for red-tailed monkeys, 57 for black-and-white colobus, 49 for blue monkeys and 27 for chimpanzees. Such a large number of primates in a very small and badly invaded forest remnant can be explained as follows:

- the dietary habits of the local population: these people do not eat primate meat as primates are considered to be too close to humans;
- the closeness of Bwindi National Park, where the majority of primates move during the most difficult season, the dry season;
- above all, an abundance of fruit that

the primates can eat, such as figs and avocados.

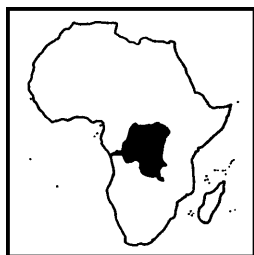
Since 2008, when our sustained interventions in the area around the Sarambwe Reserve were initiated, many forms of support have been delivered through micro development projects for the benefit of the local population and the schools (in addition to monitoring of the reserve). The beneficiaries of micro-projects have reported several cases of poaching and trespassing into the park to the trackers, and to the joint task force of army and ICCN. These denunciations have assisted the officers responsible for conservation in addressing intrusion into the reserve for the purpose of poaching, logging or agriculture. Unfortunately, these denunciations are occurring only on the Congolese side.

For the period June to September, it was estimated that 114 ha deforest-



**Sarambwe Reserve**

*Map: Angela Meder*



## D. R. CONGO

ed land was being cultivated, 14 ha of which are located within the part that is managed by the Congo, and 100 ha of which are located within the area where the boundary is disputed. The trackers destroyed 8 ha of beans and 5 ha of banana plantation. Three cases of pit-sawing have also come to light, with the arrest of one pit-sawyer and the confiscation of 25 planks. Bush fire destroyed 36 ha in an area that had been cultivated previously. Thanks to the denunciations noted above, 25 traps were dismantled and three poachers were arrested, one of whom had a dog. As a result of the severe dry season which gripped the region, pastoralists tried to take their cows into the reserve for grazing. Again thanks to the denunciations, 39 cows belonging to one herder were seized: the file was transferred to the ICCN for further action. Other pastoralists subsequently did not try to take their cows into the reserve.

We can rejoice that these poachers were arrested as we did not know that



***Pit-sawing in the Sarambwe Reserve – the planks were confiscated.***

*Photo: Jean Paul Kambere*

they had monitored the movements of the trackers and tried to find out about the patrol's itineraries in order to know

where to poach without encountering the trackers. At the moment, thanks to the population's enthusiasm for the micro-projects, people do not hesitate to denounce the poachers and even to divulge their plans. This is a basis for effective monitoring and protection of the Sarambwe Reserve.

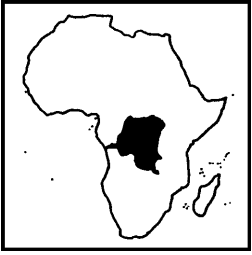
At the beginning of March 2017, several development activities were started in the vicinity of Sarambwe and Mount Tshiaberimu. These activities aimed to increase the income of the local population, to valorise local products, to reduce the pressure on certain vulnerable resources and to introduce new economic activities.

**A bee-keeping project** aimed to valorise the trees that were planted as part of the projects for tree nurseries for schools and for the trackers' wives – which were funded in past years – and to increase the beneficiaries' incomes. A total of 130 beehives have been manufactured and placed in trees: 50 on Mount Tshiaberimu and 80 in the Sarambwe Reserve. Of the 50 hives on Mount Tshiaberimu, 35 already con-



***Cows in the Sarambwe Reserve***

*Photo: Jean Paul Kambere*



## D. R. CONGO

tain bees, as do 72 hives out of the 80 in Sarambwe. In Sarambwe, honey was harvested for the first time from 30 hives, with an average 3.5 litres per hive, which is equivalent to USD 21 income per hive. It should be noted that the production of honey in the dry season is typically about half of that in the rainy season. A large production is thus expected for December 2017.

**Palm oil press project in Sarambwe.** This project has set up three palm nut presses in order to harvest the old oil palm plantations and thus to generate income for the beneficiaries

(recipients of oil palm presses, owners of oil palm plantations or of individual oil palms – and also for the consumers as the sale price of oil is lower due to a reduction in production costs). This is a project that benefits the entire population in the area. Three presses have been provided to the wives of the trackers, producing 40 litres of palm oil per press per week. This generates approximately USD 56 per press per week, supplementing income from daily activities.

**The fish-farming project in Sarambwe** is also going well. This is a

duplication of the fish-farming projects on Mount Tshiaberimu. At the start, the project encountered the problem of a lack of fry in the surrounding area. Fry were eventually located in Biruma, which is close to Rumangabo, approximately 75 km south of Sarambwe. The ponds were subsequently fully stocked.

**The bamboo-planting project** has been met with great enthusiasm. Due to the many ways of using bamboo, the population has subscribed to the project to such an extent that the demand cannot be fulfilled by the current project alone. The current project has



*One of the palm oil presses near Sarambwe*

*Photo: Jean Paul Kambere, Head Tracker, Sarambwe*



# D. R. CONGO



**Founders of the “Friends of the Bamboo” club in Vurusu**  
*Photo: Father Katembo André Mughunda, VONA*

secured 15,000 bamboo plants, but almost 2,350 persons have expressed the wish to have bamboo plants or cuttings. In view of the reduced size of the fields of most of the population, the bamboo will be planted in several

remoter fields. The inhabitants of the Kabeka and Vikuku villages have expressed their wish to establish a bamboo forest.

Furthermore, young people around Mount Tshiaberimu have just created a club called “Friends of the Bamboo”. The 15 founders of the club have asked for 200 cuttings each. They have received three footballs in support of their initiative to organize football matches at which they sensitize the population to the conservation of the gorillas and bamboo. The population’s passion for the bamboo project gives rise to the hope that searching for bamboo within the park will soon decrease significantly – or stop altogether.

In addition to the local population’s need for bamboo for domestic purposes, the local chiefs have expressed a need for bamboo planting to stabilize tracks on the steep slopes surrounding Mount Tshiaberimu.

*Claude Sikubwabo Kiyengo*



**Bamboo nursery**  
*Photo: Father André Katembo Mughunda, VONA*

## Virunga Park Again Threatened by Oil, Links to SOCO

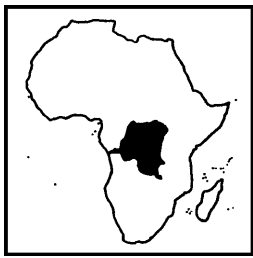
Conservationists had hoped that Virunga National Park has been granted a reprieve after the 2015 withdrawal of the oil company SOCO who had wanted to drill in the park. However, the relief was short-lived: Kinshasa just re-assigned the controversial permit to another offshore oil company.

Back in June 2014, the British firm SOCO International – bowing to intense pressure from environmentalists – announced the end of its activities in the UNESCO World Heritage site of Virunga National Park. In March 2015, on its website, the British firm announced that it no longer holds the licence of block V, an area of 7,529 km<sup>2</sup> of which 52 % is inside the park. The Worldwide Fund for Nature (WWF) proclaimed victory.

The park’s chief conservation officer, Belgian Emmanuel de Merode, and other conservationists fear that seismic exploration and possible oil exploitation could damage the rich but fragile biodiversity of the park. It is not only a refuge of the mountain gorillas – a population shared with the Rwandan Volcanoes Park, the Ugandan Mgahinga Gorilla National Park and the Impenetrable Forest – but also includes part of Lake Edward whose ecosystem provides livelihoods for more than 50,000 fishing families. All this would be threatened in the event of an oil spill.

### Many Coincidences ...

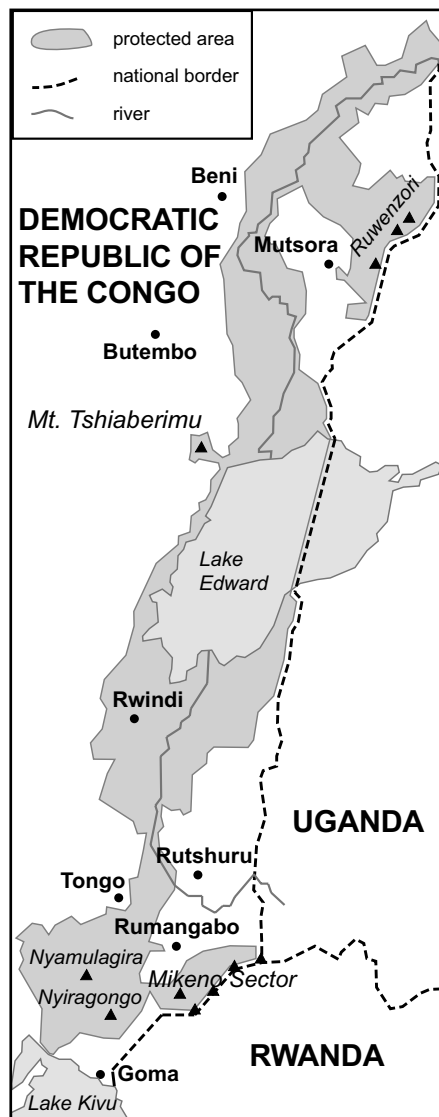
Two years after the departure of SOCO, the nightmare has resurfaced. The Parisian organization Africa Energy Intelligence (AEI) just revealed that the Congolese government has not ruled out oil exploitation in the park. The Congolese National Oil Company (Sonahydro) signed an “agreement in principle” to reassign SOCO’s license



# D. R. CONGO

to an unknown company named Oil Quest International, a subsidiary of Oil Quest Holdings, which is an offshore company registered in the Isle of Man and owned by Palestinian businessman Amjad Bseisu, Briton Tom MacKay, adviser of the London-based Gemini Oil & Gas, and Jon Ford, a former BP geologist.

The Director of this mysterious entity, Oil Quest International, is listed as



**Virunga National Park**  
Map: Angela Meder

Rui Miguel Léon-Suberbielle, a French national. AEI notes that Léon-Suberbielle is none other than the son of the current president of SOCO, Rui de Sousa – which is unlikely to be a coincidence. He himself is well known in the energy sector, being a former director of Gazprom Invest and president of Quantic Mining, a company trading mining and oil products, all of which have their headquarters in Beirut. A second coincidence, noted by AEI, is that Oil Quest’s man in the Congo is the former SOCO country representative, José Sangwa Kanyunzi. Put together, this is enough to raise suspicions that SOCO is aiming to recover block V through a new identity. Strangely, Rui de Sousa denies having any interests in the company run by his son.

What is certain is that an important resource is at stake. The geologists of SOCO and Oil Quest are well aware that over on the Ugandan side of the border the Irish firm Tullow Oil has discovered reserves of 1.7 billion barrels. There is a good chance that the five blocks of the Congolese Albertine Rift will also contain valuable resources: the geology suggests that the oil fields will extend on both sides of the border.

An exploitation project with this dubious background risks being invalidated sooner or later for legal reasons – quite apart from the risk to the operator of being vilified internationally as an enemy of endangered fauna and flora. It is precisely for this reason that in May

2013, the French giant Total, the holder of block III of the Congolese Albertine Rift, committed not to carry out exploration within the current limits of the park. Total was anxious to avoid a stigma such as that suffered by Shell due to the pollution of the Niger Delta.

During a meeting held at the European Parliament in October 2014, the Director of the park, Emmanuel de Merode, said: “The laws in the Congo are extremely clear. Oil exploitation is not permitted in a World Heritage Site”. He added: “Article 215 of the Constitution provides that any international agreement ratified by the (National) Assembly shall take precedence over national laws; and thus, it is unequivocally illegal to explore oil within the park under the current legislation”. Along the same lines, UNESCO’s former Director-General Irina Bokova has warned the Congolese authorities several times that the Virunga National Park would be withdrawn from the list of World Heritage Sites if they authorized drilling within the park.

Why then are Sonahydro and the oil minister Aimé Ngoy Mukena trying to revive the project? The film *Virunga*, shot with a hidden camera by director Orlando von Einsiedel, reveals corrupt practices on the part of SOCO. Are they trying to profit from dirty money? If so, at what level?

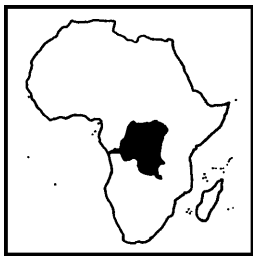
*Summary of an article by François Misser in La Libre Afrique*

**Three Rangers Killed in Virunga National Park**

Mai-Mai militia attacked a patrol of 18 rangers in the northern sector of Virunga National Park on August 14<sup>th</sup>. Within hours, the rangers Charles Paluku Syaira, Jonas Paluku Malyani and Pacifique Musubao Fikirini died. One more ranger disappeared.

This incident increased the total number of rangers killed in the line of duty to eight since the beginning of 2017. Over 160 rangers have sacrificed their lives protecting Virunga National Park in the last 20 years.

*From the websites of the Virunga National Park and Radio Okapi*



## D. R. CONGO

### Death of Silverback Noël

The young silverback of the Rugendo group, Virunga National Park, died in late November after extensive efforts to save his life. Noël, known for his antics and impressive displays, had seriously injured himself after falling out of a tree. When rangers reported that he was lethargic, the Gorilla Doctors visited him for a veterinary assessment. They found a swollen lower leg and extreme lameness; his injury appeared to be a severe sprain of the left ankle. They administered pain killers and anti-inflammatory medication. He walked a short distance that afternoon with the rest of the group but was found moribund in his nest the next morning.

The rest of the group had moved on and Dr. Eddy Kambale was able to walk up to him and attach a monitoring device to his ear as well as injecting him with a low dose of anesthetic. When anesthetized, a quick examination showed that the situation was far worse than originally thought. His whole leg was badly swollen and seemed to be full of fluid. A sample of the fluid showed a very severe infection. The wound was flushed, followed by the administration of antibiotics and fluids. He was extremely dehydrated and his kidney function had diminished severely. Over the next few days he was under intensive care with a tarp and blanket to protect him during the cold nights.

The wound was not healing despite regular draining and flushing. Unfortunately he took a turn for the worse following a seizure on the 25<sup>th</sup>. Noël's health continued to decline rapidly despite receiving the best possible around-the-clock care, and on the 27<sup>th</sup> he died.

A postmortem examination revealed that cellulitis had started in his mid-back region and extended down his left leg to his ankle, spreading across muscle groups. The condition in humans is

called dissecting fasciitis: it can start from a fairly minor wound, in humans around 40% of the cases result in death. The bacterium causing this con-

dition in Noël is the second most common bacterium seen in humans.

*Summary of blog posts by Gorilla Doctors and Virunga National Park*

### Batwa Boy Shot Dead in Kahuzi-Biega

Christian Mbone Nakulire, a Batwa boy was shot dead by eco-guards of the Kahuzi-Biega National Park on 26 August. He was with his father gathering medicinal herbs on ancestral lands within the park. There they came across four trackers, one of them opened fire and shot at the father, Munganga Nakulire, who was seriously injured in his right arm. He managed to escape, leaving behind his son who was shot while trying to hide.

In their patrol report the guards wrote: as the vegetation was very dense, they did not see the men and whether they were armed; to avoid surprises, one of the trackers fired. During the search they found the body of the Batwa boy whom they knew with his father as a recidivist poacher.

Indigenous peoples' organisations accused the park authorities that they have ignored the commitments they had made at the end of the 2014 Whakatane dialogue between the two parties. This roadmap had two key aspects: ensuring the immediate livelihood needs of the Batwa and ensuring that pilot areas of the park are returned to the Batwa where they can live and demonstrate that they can sustainably use and protect their forests.

The Batwa community demanded an investigation, punishment of the guard who shot at the two men and compensation of the victim's family.

*Summary of an article by the Forest Peoples Programme*

### Bandits Kill an Itombwe Ranger

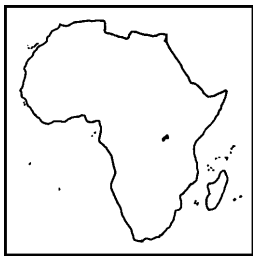
On 5 May, 2017 a convoy of conservation workers from the Itombwe Reserve was ambushed by an armed group. During this attack, a ranger was fatally injured and two other people were briefly abducted. The victim, Anselme Matabaro, was an ICCN staff member and deputy chief of the Itombwe reserve. He was seriously injured and died afterwards.

The bandits attacked and abducted the rangers, including representatives from the Wildlife Conservation Society (WCS) and World Wildlife Fund. The driver of the convoy was shot in the hand. Most of the group were released after a few hours.

Years of conflict in the region have also brought armed groups to Itombwe, who illegally exploit coltan, cassiterite and diamonds. They also generate money by kidnappings; abductions by armed rebel groups have increased in recent years in the DRC. Instability and conflict not only affect wildlife in protected areas but also those trying to protect them. Conservation areas across the country have been plagued by violence against rangers – most recently in Garamba. Across the world over 1,000 have been killed in the last decade, according to the Thin Green Line Foundation.

*Summary of an article by Naomi Larsson in The Guardian, London*





## RWANDA

### DFGF Celebrates 50 Years of Karisoke

It is 50 years now that Dian Fossey established the Karisoke Research Center to study the little known mountain gorillas in the Volcanoes National Park in Rwanda. She would have done everything to protect the gorillas she had known so closely during her many research years living near them. But she loved these animals more than humans. Stories go that she not only pursued the poachers without mercy, she was also rude with the staff who worked in the camp. Similarly, she was always in trouble with governmental representatives because she often announced to reveal facts about corruption and smuggling in the area. Therefore, local people feared rather than loved her. In the end, she paid the price. On 26 December 1985 the world famous scientist was killed in her remote cabin in the Virunga mountains. The crime has never been solved.

Dian Fossey was an American with no experience in studying wild animals. She worked as a therapist for children when the anthropologist Louis Leakey was looking for a brave young woman to study mountain gorillas in the late 1960s. Who would have believed that she was the right person to save this species? By 1973 the population of the famous great apes in the Virunga mountains had fallen below 275; today – thanks to extreme conservation measures – their number has risen to about 480. Dian Fossey laid the groundwork on which this success is based. Constant monitoring, intensive anti-poaching efforts, and emergency veterinary interventions have led to an increase in the mountain gorilla population. Studies at the research site Karisoke have transformed the world's understanding about gorillas and provided critical information for developing conservation strategies. After her death, the Dian Fossey Gorilla Fund

continued this work – to fulfil her legacy.

Not to forget is the impact of tourism. In the beginning of the 1980s Dian Fossey had to return to her old world because her visa had not been renewed by the Rwandan authorities. She used this time to give talks and spread the idea of saving the gorillas in Africa. Much money was needed for this aim and when the audience heard her happy or sad gorilla stories they pulled out their check books. When Dian came back to the Virunga mountains three years later, she was shocked to see so many tourists watching her wild friends. But these travellers brought dollars into the poor country. Gorilla trekking has become the mainstay of the Rwandan tourism industry, which brought in

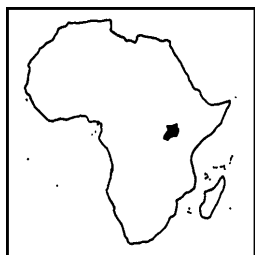
USD 367 million to the country in 2015. The park shares 10 percent of its revenue with local communities. Thanks to this revenue-sharing plan the Rwandan government fully supported gorilla protection. On the other hand, it is important that the local communities understand the value of the national park. The mountain gorilla numbers are still low – 880 individuals altogether – and they are among the most-endangered mammals. Therefore, it remains urgent to raise money and awareness to support wild gorilla conservation and to strengthen the international campaign for saving the big apes from extinction. For all of us.

*Summary of a blog post by DFGF and a National Geographic Magazine article*



**One of the Karisoke study groups: the Susa group**

*Photo: Cyril Grüter*



## UGANDA

### A One Health Approach to Gorilla Conservation

“One Health” is an approach that addresses human, animal and ecosystem health together. We founded Conservation Through Public Health (CTPH) in 2003 because we were concerned about disease transmission from people to gorillas, an issue that we identified as a threat to the gorillas when setting up the Uganda Wildlife Authority (UWA) veterinary unit from 1996 to 2000. In 1996, I led a team that investigated the first scabies skin disease outbreak in the critically endangered mountain gorillas that was traced to people living around the park who have limited access to basic health care and other social services.

In 2000, we held a meeting with gorilla conservation partners and a recommendation was made by International Gorilla Conservation Programme (IGCP) to start educating local communities about basic health and hygiene, where I was tasked to lead this initiative. This was when my “One Health” journey began by developing brochures in English and the local language about the risk of human–gorilla disease transmission. This was also my first introduction to community education where together with the UWA Community Conservation warden and rangers and subcounty health assistant, we spoke to over 1,000 people in 8 villages at greatest risk from human–gorilla conflict.

We thank the Gorilla Journal for supporting CTPH since being founded in 2003 as a Ugandan registered NGO and US registered non-profit. CTPH promotes biodiversity conservation by enabling people, wildlife and livestock to coexist through improving their health and livelihoods in and around protected areas in Africa. We envision people and gorillas living in balance, health and harmony with local communities acting as stewards of

their environment. CTPH’s three integrated programs are wildlife conservation, community health and alternative livelihoods.

In the wildlife conservation program, we set up a long-term gorilla health-monitoring program as an early warning system for disease outbreaks between people, gorillas and livestock. We train park staff to recognize and report clinical signs in gorillas and to collect monthly fecal samples from the night nests and trails; when the dung is abnormal from all habituated gorilla groups and during the gorilla census, which occurs every five years. We regularly analyze fecal samples from gorillas to prevent and control cross disease transmission between people, gorillas and livestock, where we also conduct comparative analysis with livestock and people.

We also work with community volunteers from the Human–Gorilla Conflict Resolution (HuGo) team set up by UWA and IGCP to safely chase gorillas back to the park. We train HuGo to monitor the health of gorillas when they forage on community land, a time when they are most likely to pick up diseases from people. Results from the analyses are shared with UWA, local NGO partners, local health centres and local veterinary offices for timely action and to guide health management. Sample analysis was first carried out at a Gorilla Research Clinic built in 2005 at Buhoma, Bwindi’s main tourist site, with funding from the MacArthur Foundation and it was later upgraded to a permanent Gorilla Health and Community Conservation Centre, with funding from Tusk Trust. We also promote the use of energy saving cook stoves



**Analysis of fecal samples in the CTPH laboratory: at the right Stephen Rubanga, one of the CTPH founders and chief vet technician, at the left students of the universities London and Dublin**

Photo: CTPH



# UGANDA



**CTPH founder Gladys Kalema-Zikusoka educating the community on conservation and public health**  
*Photo: CTPH*

control, family planning and good nutrition and refer suspected TB, HIV and scabies patients as well as those with diarrhea to the nearest health centres. They also promote gorilla and forest conservation, and report homes that are visited by gorillas, which reduces the response time of the HuGo and park staff.

In the alternative livelihoods program, we support VHCTs with group income generating livestock projects for each parish, where the money generated helps to sustain their volunteer activities and meet basic household needs. The VHCTs later reinvested the funds into Village Saving and Loan Associations, doubling their income. The VHCTs have continued to promote health and conservation beyond donor funding, where we have had no volunteer dropouts for 10 years. The VHCT and VSLA model led CTPH to win the first prize of the 2012 Global Development Network, Japanese most Innovative Development Project Award for

scaling social service delivery. In 2016, we used the same approach to make the HuGo community volunteer groups financially stable by giving them group livestock projects that bring them together and help them earn an income from livestock enterprises.

In 2015, with support from WWF Switzerland we founded Gorilla Conservation Coffee as a social enterprise of CTPH that trains farmers and buys good coffee from them at a premium price to reduce their dependence on the national park to meet basic needs for food and fuel wood. A donation from every coffee bag sold is given to continue CTPH's health work with the gorillas and local communities of Bwindi.

### Interventions Based on the Work

Within the first year of setting up the gorilla health monitoring program, we discovered that gorillas from Nkuringo gorilla group that were spending over 50% of the time on community land had the highest parasite burden. This

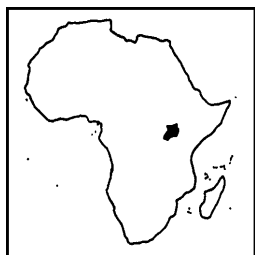
through our Village Health and Conservation Teams (VHCTs) to reduce deforestation and destruction of the gorillas' habitat.

In the community health program, we strengthen community based health care where we started off by consolidating Community Based Direct Observation of Treatment Short course therapy (CBDOTS) for Tuberculosis and then later added community based family planning through the formation of Village Health and Conservation Teams (VHCTs) in 2007. When we started to expand the program from Kanungu to Kisoro district, the Ministry of Health had started to recognize the Village Health Teams (VHTs) made up of community volunteers and we subsequently trained the most active VHTs to become VHCTs. Each VHCT is in charge of 50 households in their village. They promote good hygiene and sanitation, infectious disease prevention and con-



**Park ranger teaching a HuGo community volunteer how to collect gorilla fecal samples from a night nest at the CTPH training workshop**

*Photo: CTPH*



# UGANDA

together with the increased human-gorilla conflict prompted UWA to recruit more HuGo members in the southern sector of Bwindi.

We conducted fecal antigen ELISA tests on people, gorillas and livestock to test for *Giardia* and *Cryptosporidium* and found that there was a high incidence of *Giardia* in people admitted with diarrhea at the hospital. This promoted us to recruit an additional VHCT community volunteer in a larger village that had the most *Giardia* cases and poorest living conditions, and also where the gorillas often ranged in community land. The hospital also educated their patients to collect water from protected water sources.

When we conducted baseline surveys we also found that over 50 % of homes collect water from unprotected water sources and those who did were more likely to drink water from dirty containers. Though we found *Cryptosporidium* in the gorillas, people and livestock, they were not showing clinical signs. This made us increase our effort to prevent the gorillas from getting *Giardia*, which is much more pathogenic. UWA put the activity of monthly gorilla fecal sample collections by rang-



**CTPH Community Health Coordinator Alex Ngabirano with the new VHCTs and health centre staff at Mpungu Health Centre**

*Photo: CTPH*



**CTPH Community Health Coordinator Alex Ngabirano introducing the CTPH program to the new VHCTs and Mpungu Health Centre staff**

*Photo: CTPH*

ers and trackers in the annual operational plan for Bwindi.

Because of the behaviour change communication of VHCTs and additional encouragement from UWA, Bwindi community members around the park, particularly in the southern sector started to build pit latrines.

We started to conduct joint One Health research through memorandums of understanding with the Kanyungu and Kisoro District local governments and the NGO missionary hospital – Bwindi Community Hospital.

**Outcomes and Impact**

- reduced disease incidences in the gorillas
- reduced human-gorilla conflict
- improved conservation attitudes evidenced by increase in sustainable agriculture practices and use of energy saving cook stoves, a silver-back gorilla receiving more protection in community land, and prevent-

ing reduced poaching and illegal forest offtake, which is currently being measured through social impact evaluation research conducted with funding from the Darwin Initiative

- increased use of family planning methods from 20 to 60 %, above the 30% national average
- men getting more involved in family planning and women and youth more involved in conservation
- 50 % increase in hand washing facilities, anal cleansing material, clean water storage containers and drying racks
- significant increase in patients suspected to have TB, HIV and scabies referred to health centres

**Measuring our Impact**

In 2016, CTPH teamed up with researchers from Oxford University and the International Institute of Environment and Development (IIED) to conduct a social impact evaluation study



## UGANDA

to determine how health investments we have made over the past 10 years have contributed to outcomes for conservation and sustainable development. Recommendations from this study will be used to improve our programs and scale the model to additional parishes around Bwindi, in Mpungu subcounty and other protected areas. These include Budongo Forest led by the Jane Goodall Institute working closely with Budongo Forest Conservation Station and Mount Elgon National Park led by UWA working closely with District Environmental Officers.

### Future Plans

We plan to intensify research through partnerships with universities and other research institutions to measure and improve the effectiveness of our innovative One Health model and to scale our approach through implementing new programs in new locations in Uganda and other countries in Africa where we started a project at the Virungas. We also want to spread our impact by training others to implement our approach and influencing others through advocacy.

*Gladys Kalema-Zikusoka*

*We are very grateful to many donors and partners who have supported our work over the past 14 years.*

### Tribute to Kanyonyi

It is with great sadness to inform you about the loss of one of my favorite gorillas in Bwindi, Kanyonyi, the lead silverback of Mubare group. He died on 9 December. Kanyonyi first fell off a tree, but while he was recovering after treatment, a lone silverback fought with him because he wanted to take over his group. Kanyonyi in his weakened state was not able to put up a good fight, and sustained many injuries, which though they were healing, left him weaker than usual. When I last visited Kanyonyi he was eating quite well, but still limping and walking slowly, with one adult female gorilla, Karungyi and her baby keeping close by his side. He made a nest in front of us to take a comfortable morning nap, and we were able to record a brief video. I would like to thank the Uganda Wildlife Authority park staff and CTPH team who have kept a close watch over Kanyonyi to prevent him from having more interactions with the lone silverback until he was strong enough. Fighting amongst free ranging gorillas is considered to be part of their normal behaviour patterns and enables natural group succession. CTPH participated in the post mortem, which confirmed the major cause of his death to be an infection in the hip joint after the fall.

I have known Kanyonyi since he was a baby, when he was born 20 years ago. In 1998, I successfully operated on his older sister, then a juvenile gorilla called Kahara when she had a rectal prolapse. She was named Kahara because she liked to babysit him. Kanyonyi became the lead silverback of Mubare gorilla group in 2012, after his father, Ruhondeza died. Ruhondeza was the lead silverback of the first gorilla group to be habituated for tourism in Bwindi. Kanyonyi was a playful young silverback who liked interacting with human visitors. Over the past five years, he has kept the Mubare gorilla group together and enabled it to grow through attracting many females.

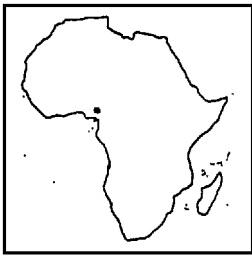
When we started the Gorilla Conservation Coffee social enterprise in 2015 to support farmers living around Bwindi, we decided to name our first coffee blend after Kanyonyi who symbolizes the gorilla conservation efforts at Bwindi Impenetrable National Park since tourism began in 1993. May his legacy continue through stories, memories and the Kanyonyi coffee blend.

*Gladys Kalema-Zikusoka*



**Kanyonyi**

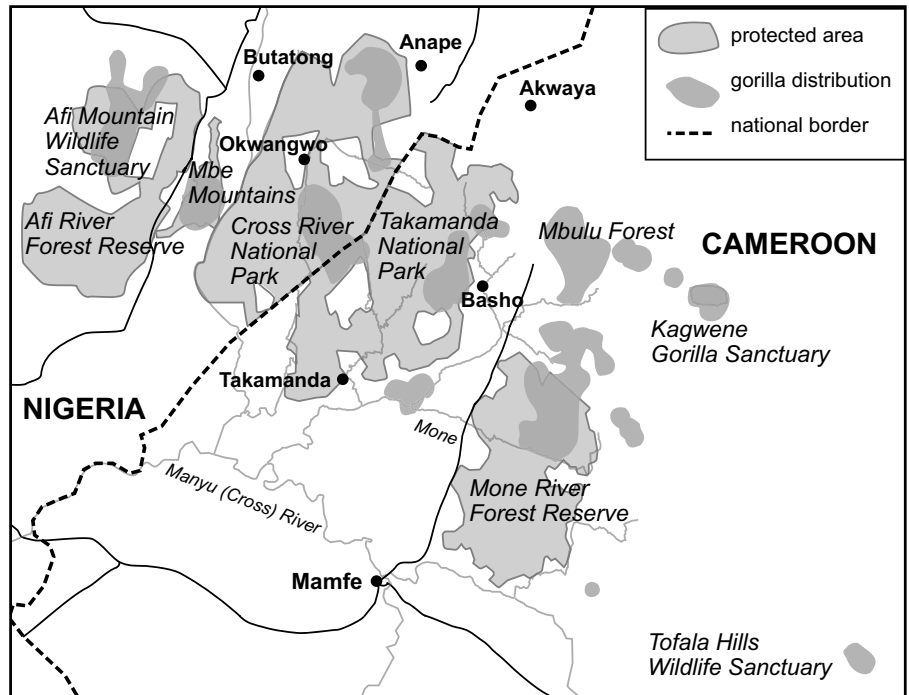
*Photo: Gladys Kalema-Zikusoka*



# CROSS RIVER

## Strengthening Transboundary Conservation to Protect Cross River Gorillas

Restricted to the rainforest region along the border between Nigeria and Cameroon, the Cross River gorilla *Gorilla gorilla diehli* is Africa's most threatened ape, with the total remaining population estimated to be less than 300. With a transboundary range, strengthening cooperation between the two range countries is important for improving their conservation management. About one-third of the known population of these gorillas lives in the transboundary area between the Okwangwo Division of Cross River National Park in Nigeria and Takamanda National Park in Cameroon which represents the largest and most



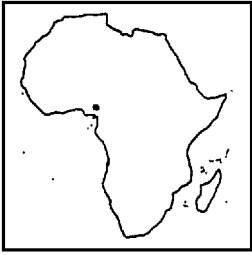
**Cross River National Park and Takamanda National Park rangers meet for a joint transboundary patrol**

Photo: WCS

important site for conservation of this western gorilla subspecies.

To mitigate threats such as cross-border poaching and logging as well as illegal transboundary trade in bushmeat, timber and non-timber forest products (NTFPs) collaboration between the two protected areas is essential. Improving transboundary collaboration can also strengthen national commitment to conservation when seen as a component of international cooperation. Transboundary cooperation between Nigeria and Cameroon has been strongly promoted in recent years with regular joint anti-poaching patrols in the Okwangwo-Takamanda area to deal with poachers and loggers operating across the international border, annual transboundary planning workshops, exchange visits organized to facilitate and enhance information sharing.

A framework cooperation agreement has been drafted between the governments of Nigeria and Cameroon for the joint implementation of transbound-



## CROSS RIVER



**Participants at the TBR Working Group meeting in Nigeria, 4th May, 2017**  
Photo: WCS

ary conservation and research activities. A process is ongoing to create a UNESCO Transboundary Biosphere Reserve (TBR) and a World Heritage Site (WHS) which will include the Okwangwo Division of Cross River National Park and Takamanda National Park. To facilitate this process a transboundary working group has been established, composed of stakeholders from Cross River National Park in Nigeria and Korup and Takamanda National Parks in Cameroon, as well as other relevant ministries and parastatals in Nigeria (Federal Ministry of Environment; National Commission for Museums and Monuments – a parastatal under Federal Ministry of Information and Culture) and Cameroon (Ministry of External Relations; Ministry of Economy, Planning and Regional Development; Ministry of Scientific Research and Innovation; Ministry of Arts and Culture Cameroon).

The working group met in May 2017 in Nigeria to discuss progress on the TBR and WHS nomination processes, with a particular focus on the need for dedicated funding for the TBR process and the need to fund community sensitization and consultation activities

in Nigeria. In Cameroon these activities have been supported by the KfW funded Programme for the Sustainable Management of Natural Resources (PSMNR) in the South West of Cameroon, while no similar programme exists on the Nigerian side. Representatives from the German embassies in Abuja and Yaoundé, as well as the KfW Country Director for Cameroon were present at the meeting. This was the fourth meeting of the working group facilitated by the Wildlife Conservation Society (WCS) Country Offices in Nigeria and Cameroon.

The first such meeting took place in Bamenda, Cameroon, in March 2016, resulting in identification of shared

### **A Brief Update on the Status of the Proposed Superhighway in Cross River State, Nigeria**

In March 2017 a stakeholder meeting was held in Calabar to review the third version of the environmental impact assessment (EIA) report for the proposed Cross River superhighway. The fourth version of the EIA and a Biodiversity Action Plan were submitted to the Federal Ministry of Environment in May 2017. Some significant improvements were noted such as the revocation of the 20 km corridor and rerouting of the superhighway to avoid important community forests and forest reserves on the edge of the national park. However, the quality of the data presented was extremely poor and therefore the proposed mitigation measures contained within the EIA could not be considered valid. Moreover the EIA failed to consider indirect long-term impacts of hunting and habitat loss on Cross River National Park due to its proximity to the superhighway and improved access to the forest. WCS recommended that both the EIA and Biodiversity Action Plan should be rejected.

In July 2017 the Federal Ministry of Environment issued *provisional* approval of the EIA required for the superhighway. This provisional approval specified no fewer than 23 conditions that needed to be addressed and requested that the EIA should be revised and resubmitted within two weeks. These conditions included the development of a biodiversity offset, a revised map clearly showing the new route, a resettlement action plan including a list of the communities affected and payment of compensation to communities already affected. As far as we know these conditions have not been met, the EIA has not yet been approved and no Environmental Impact Statement or EIA certificate has been issued by the Federal Ministry of Environment. However the threat remains, and as the dry season approaches we expect that the issue of the superhighway will rise once again.

*Andrew Dunn and Inaoyom Imong, October 2017*



# GORILLAS

management objectives and a proposed transboundary management structure and a tentative zoning plan. The second meeting took place in Calabar, Nigeria, in June 2016 where it was agreed to involve potential donor agencies in the next working group session and to pursue UNESCO World Heritage Site status in parallel with submitting nomination forms for the Biosphere Reserve process. Establishment of a joint coordination structure to steer the implementation of the Transboundary Biosphere Reserve nomination process was recommended, as well as a committee to coordinate management oriented research activities.

The third meeting took place in Yaoundé, Cameroon, in November 2016, at which the participants revised the proposed transboundary management structure and the proposed zonation of the Transboundary Biosphere Reserve.

Work is now on-going to develop a transboundary protected area management plan drawing upon the outputs of these working group meetings as part of the UNESCO nomination process.

*Inaoyom Imong and Andrew Dunn*

## Conserving the Ebo Gorillas through Community Collaboration

Cameroon is home to many primate species of high conservation value, including drills, Preuss's red colobus, and gorillas (Morgan et al. 2011). Both recognized subspecies of western gorilla (*Gorilla gorilla*) live in Cameroon: the western lowland gorilla (*G. g. gorilla*) living to the south of the Sanaga river, and the Cross River gorilla (*G. g. diehli*) ranging within the Cameroon-Nigeria border region to the north of the Sanaga river. Additionally, there is a small gorilla population in the Ebo forest, located around 60 km to the north of the Sanaga and 200 km south of the nearest Cross River gorilla population.

With an intermediate location between the extant gorilla subspecies in Cameroon, the small and isolated Ebo gorilla population is geographically and taxonomically interesting (Morgan

et al. 2003, Groves 2005). In addition to primates, the Ebo forest is home to many emblematic plant and animal species; a significant portion of the forest has been proposed as a national park, which unfortunately still awaits legalization by the government of Cameroon (Morgan et al. 2011, Dunn et al. 2014).

With local, national and international support, the Ebo Forest Research Project (EFRP) has been working with local communities and the government of Cameroon for the conservation of the rich biodiversity of Ebo forest through biological research and conservation outreach (Abwe & Morgan 2012). Through nest counts and video camera evidence we believe there are a maximum of 25 individual Ebo gorillas surviving in the forest, ranging in an area of around 25 km<sup>2</sup> (Morgan 2010). It is recognized that the Ebo gorilla habitat is close to a handful of remote villages where hunting and the commercial bushmeat trade represent an important source of income and animal



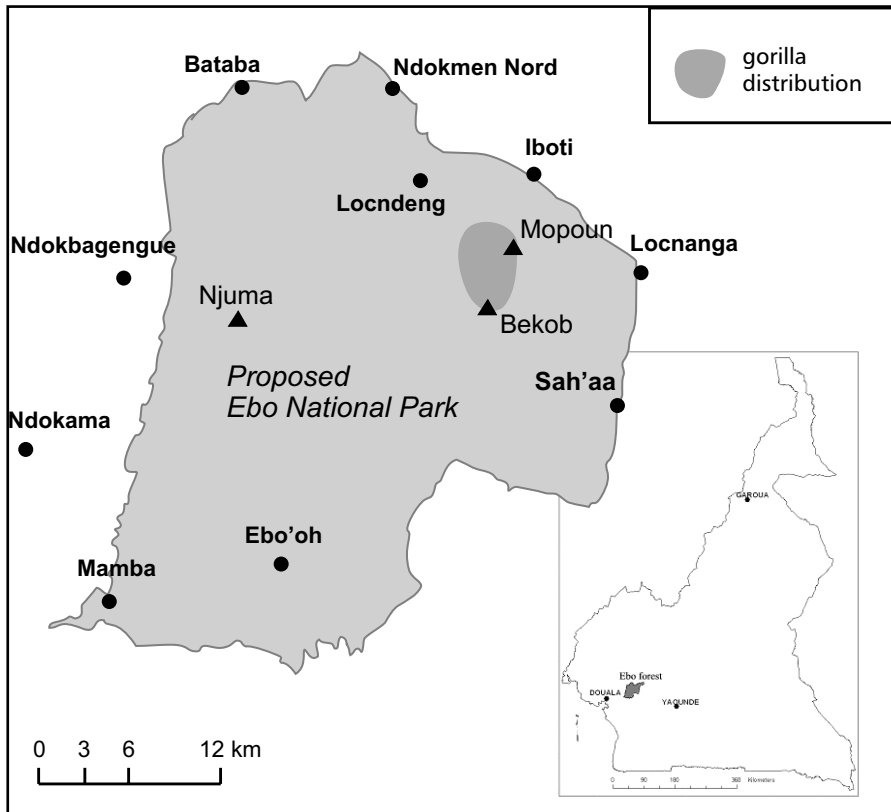
*Ebo forest view*

*Photo: Daniel Mfossa*





# GORILLAS



**The Ebo forest, location of the three Research Stations (Njuma, Bekob and Mopoun) and the approximate range of the gorilla population**

protein for community members (Morgan 2004).

Two local community-based associations (Club des Amis des Gorilles [CAG] and Association des Chefs Traditionnels Riverains de la Forêt d'Ebo – ACTRIFE) are working around the Ebo gorilla habitat to protect this small population as well as other species of conservation importance. The EFRP works in conjunction with the CAG to monitor the gorilla habitat on a monthly basis for threats to gorillas as well as gorilla and other large mammal signs. The CAG groups also conduct community sensitization and outreach activities within the communities. ACTRIFE are engaged in community sensitization, but are focusing on encouraging the creation of the Ebo National Park (ENP) with regular contact with rele-

vant government services as well as elites from the area. Since the creation of the ENP is long overdue, the EFRP together with the traditional chiefs of the area and with input from the CAG are working towards the creation of a “no-go zone” which would cover the majority of the current gorilla habitat. This community-enforced and sanctioned initiative aims to stop all disturbance to the gorilla habitat until effective law enforcement can be provided by the state. This “exclusion” approach is complemented by a strong suite of “inclusion” measures, including promoting knowledge of benefits of conservation activities through sensitization activities and improving local livelihoods through income-boosting and wellbeing initiatives. We summarise some of these initiatives in this article.

## Radio Broadcasting

Access to relevant information and knowledge of laws pertaining to natural resources management is limited in both rural and urban settings in Cameroon, due to limited access to print media, television and internet services. Since April 2016, the EFRP in collaboration with CAG, ACTRIFE and some elites (powerful individuals originating from the villages but who now reside in cities) from the Ebo area have sought to educate the wider public through weekly radio programs.

The conservation program “BIOLittoral” (*Biodiversité de la Région du Littoral*) is broadcast on the national-wide channel of the state broadcaster – Cameroon Radio Television (CRTV). BIOLittoral aims to promote sustainable resource management while simultaneously educating a broad range of stakeholders (local administration, elites, villagers, etc.) and stimulating their pride for local wildlife including gorillas. The programs themselves seek to educate the communities about the connections between humans and their environment, animal ecology, hunting and bushmeat trade crisis in the area, biodiversity degradation, wildlife law awareness, climate change, water availability, agriculture and of course biodiversity conservation.

BIOLittoral is hosted by Albert Logmo – a journalist and an elite originally from the Ebo forest region – and Louanga Esther, the president of an environmental students’ association at the University of Douala. Content is provided by a wide range of experts, including EFRP biologists, and is usually presented in a traditional format of a question-answer session between presenter and expert. The program airs every Saturday from 19.30 h to 20.00 h on FM 91.3 Mhz, and so hits a target audience in the rural communities, where radio is an important form of evening entertainment.



# GORILLAS

## Increasing Environmental Awareness in Local Schools

In the long term sustainability will depend on the current generation of children – investing in children today is clearly vital for positive conservation outcomes. EFRP has been working with school teachers in 23 schools around the future Ebo National Park since 2014. As a complementary approach, CAG members regularly visit schools in the communities around the gorilla habitat to educate school children and teachers about the uniqueness of Ebo gorillas. The children in these remote communities lack basic textbooks and other school materials. In May 2017, CAG and EFRP in collaboration with the education authority in Yingui Sub Division donated and distributed 200 textbooks to children in schools in the five villages closest to the gorilla habitat, covering topics such as environmental education, mathematics, science, literature and geography.

## Organising the Annual “Gorilla Cup” Soccer Tournament

The EFRP have been supporting an annual soccer tournament between the communities in the Ebo forest close to the gorilla population since 2012. With this event, the football matches forge unity amongst villagers living close to the Ebo gorilla habitat and we take the opportunity to explain and reinforce the communities’ understanding of the importance of conserving the Ebo gorilla population as well as the entire rich biodiversity within the Ebo forest.

We organize the event during the school summer holidays since many children and youths come back to their respective villages to assist their parents in their activities that include farming, hunting, fishing, and so on. The idea of a football event that brings youths together in one village near the gorilla habitat for some days is a strategy to animate the holiday for them and to keep youths and villagers out of the

forest at this period. The event provides an opportunity to educate and sensitize these “hunter-footballers” about the importance of the natural heritage of their forest.

Today the “Gorilla Cup” is one of the most popular tournaments in the entire region. More than 150 persons participate directly in this event every year, as well as hundreds of very vocal supporters! Since the launch of the tournament in 2012 we have been gradually adding supporting activities to the annual event.

During the 2017 tournament we held evening film shows, using a car battery and projector to cast wildlife films onto a large bedsheet to large populations, often with an accompanying voice over in the local language (Banan or Bassa) by an EFRP staff member. The local community hosted a “fashion show”, where local youths dressed in both traditional and modern dress, with points awarded for “originality”. 2017 also saw the first “music competition” and the crowning of “Miss Gorilla Cup” and “Mister Gorilla Cup” as shining ex-

amples of local youths involved in gorilla conservation.

This year’s tournament was organized with assistance from the local administration in Yingui and Association Sportif – HOPE (AS-Hope, based in Douala, its main mission being to promote sports and cultural activities from local communities to cities). This event not only helped us create ambiance, but participants also returned home full of conservation knowledge that they received through many different channels – and we believe that we have demonstrated how a single event such as a soccer tournament can improve the goodwill and openness to consider biodiversity conservation. We are now at a turning point with this football tournament, since other civil organizations are beginning to show interest in the event. The 2018 tournament is likely to be much larger through adding more activities, including story-telling sessions to encourage more active participation by village elders and athletics events, so that we can continue to increase awareness of the conser-



*Gorilla during the Ebo Gorilla Cup*

*Photo: Daniel Mfossa*



# GORILLAS

vation message through community-based events.

## Implementing Small-Scale Sustainable Livelihood Activities

The forest represents the main source of food and income for people in the Ebo communities (Morgan 2004). Communities traditionally use the forest not only for hunting (with snares and shotguns), but also to collect non-timber forest products (NTFPs). If Ebo natural resources are to be maintained under the increasing pressure, we need to consider supporting alternative sources of income in the local communities.

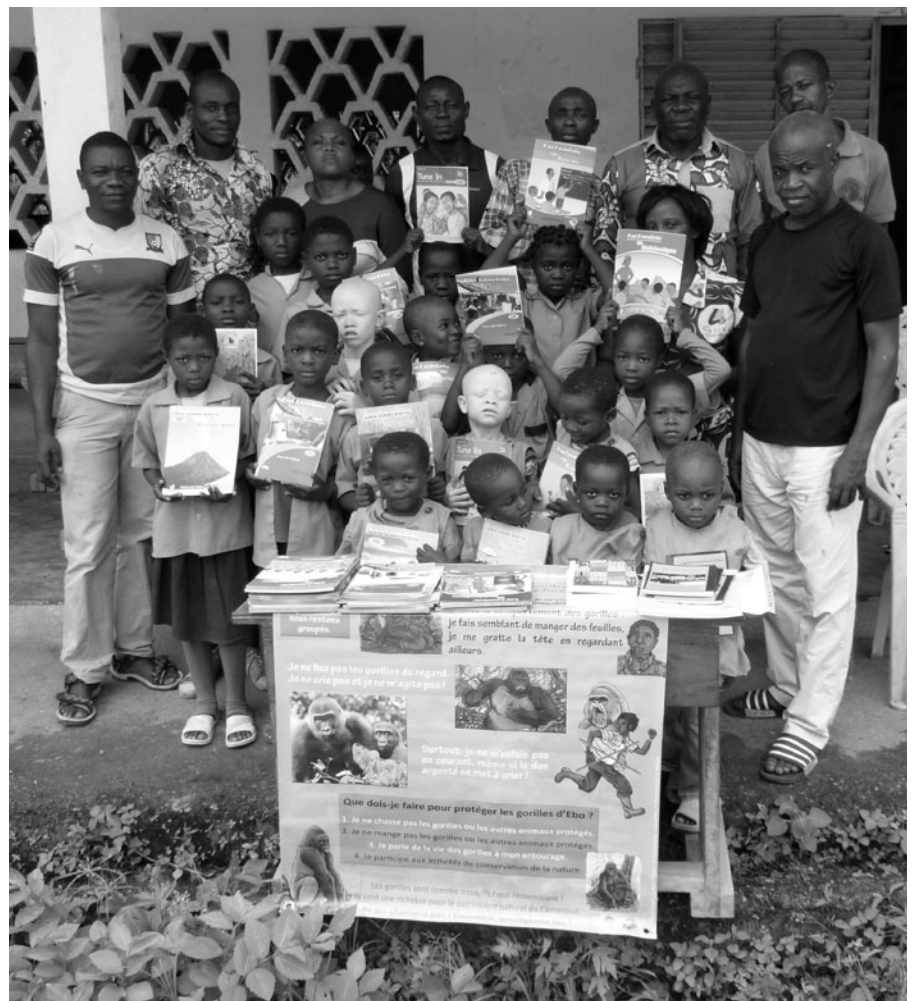
Clubs des Amis des Gorilles (CAG) committees in the three communities closest to the gorilla population are supported by the EFRP to encourage small-scale sustainable livelihood initiatives. The CAG general assemblies in each village opted to provide a cassava grinding mill to their respective communities. These machines are managed by a team of five persons appointed by the general assembly of each community.

The grinding mills facilitate the processing of raw food, leading to increased production of local food such as miondo (cassava paste wrapped in Marantaceae leaves), mitoumba (cassava paste with palm oil and spices wrapped in Marantaceae leaves), mikono (pumpkin or egusi paste, with meat or fish wrapped in banana leaves) and many more. In the past, villagers used mortars and stones to grind their food stuffs. This was very strenuous and time consuming, and led to a much lower production of commercialized miondo and mitoumba, consequently leading to lower incomes for these rural people. It should be noted that miondo and mitoumba – both manioc byproducts – are staple diets in these communities. Locally, mitoumba is sold at 100 F CFA while a bundle of miondo is sold at 350 F CFA.

Due to the increase in production, villagers have been able to expand cassava farming to satisfy local demands for these products as well as urban markets. These foods are particularly suitable for income generation in the urban environment since these processed food items have a long “shelf-life” – they are often still edible several weeks after production. Proceeds from the sale of these products are now used to cover daily family needs (such as soap, kerosene, clothes and food items), children’s education (such as school fees and stationary) and med-

ical attention (including hospital fees and medications). With the grinding mill facility at their disposal, some households gradually have achieved financial stability and even reduced the over-reliance on hunting or forest resources.

In addition to supporting increased local food production, the EFRP has also been supporting other enterprises in these communities. In May 2017, CAG members participated in a training workshop to learn how to make soap, either for personal use or for sale. Prior to the workshop, villagers bought soap from the closest town – the large city of



*Students in a community near the Ebo forest receive books.*

*Photo: Daniel Mfossa*



# GORILLAS

Douala – during their journeys to visit family or friends. The cost of visiting Douala is prohibitive – both financially (at least 7,000 F CFA each way) and in terms of time (minimum 1 day, often 2 days and with no transport from some communities during the rainy season). As a result, the cost of soap in the local villages used to be high – 500 F CFA for a 400g cube of soap, while the cost in Douala for the same soap was 300 F CFA. Now that villagers have been taught how to make this important resource locally, it will be easier for them to wash themselves, their clothes and utensils and finally to improve the standard of family health. We have calculated that with this training villagers can now make one bar of soap for 200 F CFA – a significant reduction – and this may allow for a small local trade in soaps at a more affordable price.

The EFRP strongly believe that wildlife conservation is no longer a domain best served by wildlife biologists alone. The sustainability of our work needs the support of local communities as well as the expertise from other disciplines such as sociology, education, anthropology, mass communication, and so on. We are gradually evolving our relationships with the local communities around the Ebo gorilla population to move in tandem towards an increasingly positive outlook for the gorilla habitat. While supporting the traditional authorities and elders to declare the gorilla habitat as a “no-go zone” for humans, as a solution to over hunting activities in the forest while awaiting the creation of the Ebo National Park and accompanying wildlife law enforcement, we believe that the survival of the Ebo gorillas also depends on the implementation of positive community-based initiatives to both increase knowledge, awareness and improve attitudes towards conservation.

*Daniel Mfossa, Ekwoge Abwe and Bethan Morgan*



**Daniel Mfossa conducting gorilla habitat monitoring**

*Photo: Zoological Society of San Diego*

*We are grateful to the Government of Cameroon for ongoing cooperation and research permission. We thank the USFWS Great Apes Conservation Fund, The Arcus Foundation, the Margot Marsh Biodiversity Fund, Fondation Bioparc, la Palmyre Zoo and the Zoological Society of San Diego for funding and ongoing collaboration in our efforts. This work would not be possible without the goodwill and hope of the traditional leaders, communities, elites and local administration in the Ebo region. Let us continue to work together to conserve the Ebo forest gorillas, their habitat and to leave a better world for our descendants.*

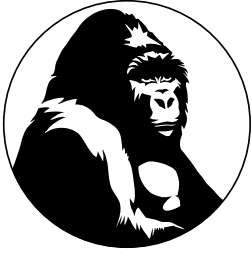
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## Silverback Sagas: Dominance Struggles Among Mature Male Gorillas

When powerful silverbacks jostle for dominance within a group, they can sustain very serious injuries with their long canine teeth. Over the last 30 years, Gorilla Doctors field veterinarians have watched these impressive males make miraculous recoveries, many times without the need of veterinary intervention. After an interaction, if any



## GORILLAS



**Deep head wounds of silverback male Kakono**

*Photo: Gorilla Doctors*

gorillas are wounded, our field vets will return to the group again and again to assess the injuries, deliver medical treatment if necessary, and ensure the gorillas recover fully.

Recently, an intra-group interaction between silverbacks Kakono and Rurehuka in Bwindi Impenetrable National Park's Bweza group occurred. The interaction left dominant silverback Kakono with two wounds on his head and second ranking silverback Rurehuka with superficial wounds on his back. Gorilla Doctors Uganda Field Veterinarian Dr. Fred Nizeyimana first trekked to the group with UWA rangers to assess the silverbacks' wounds and found the ten members of the group calmly feeding on *Mimulopsis* and tree ferns. It was a cold, clear morning in Bwindi and the silverbacks fed from the ground while the other group members took to the trees.

Even with subordinate silverbacks recently challenging his dominance, Dr. Fred reported that group leader Kakono was fully in charge of the group. Second ranking silverback Rurehuka

and young silverback Mucunguzi attempted to move close to the three females of the group during Dr. Fred's observation, sparking bouts of loud vocalizations while they chased one another away. Meanwhile, blackback Tindatine stayed on the periphery of the group, avoiding the fray. During Dr. Fred's initial assessment following the intervention, dominant silverback Kakono had two large wounds on his head, one on his shoulder and one on his left wrist. All of his wounds were clean and showing signs of healing, though the more serious laceration on his head would require further assessment. Rurehuka's wound on his back was small and already showing signs of healing.

When silverbacks are injured by their conspecifics, it most frequently occurs when a subordinate silverback challenges the lead male. In the last five years in the Democratic Republic of the Congo (DRC), Gorilla Doctors Head DRC Field Vet Eddy Kambale has reported multiple cases involving silverbacks injured through fighting for dominance. These dominance strug-

gles have resulted in the split of many habituated mountain and Grauer's gorilla groups in Congo.

For example, in Virunga National Park's Kabirizi group, young silverback Bageni was regularly interacting with the dominant silverback of the group, Kabirizi. Bageni's health began to suffer from stress and frequent fighting and he began to lose weight and seemed to age exponentially. Fortunately, a few months later, Kabirizi began allowing young silverback Bageni to have control of some of the group members and finally the group split completely in February 2013: Bageni took 20 of the 36 group members with him, including the vast majority of the females. Bageni group has since grown to 29 gorillas, a great indicator of Bageni's success as a group leader and father.

Unfortunately, silverback Kabirizi still has not been able to lead his group without challenges by subordinate males: In routine health checks in late 2014, "Drs. Martin and I began to observe the young silverback Masibo challenging Kabirizi and to this day, the game is still going on" says Dr. Eddy. "And now, young silverback Kanamaharagi is doing the same thing to dominant silverback Bageni ... it seems lead silverbacks never get a break." And it is not only Bageni and Kabirizi who have faced frequent challenges by subordinate silverbacks in Virunga National Park. Dr. Eddy reports that silverback Nyakamwe engaged in regular fights with silverback Humba until the group split in March 2014. Now, dominant silverback Humba is again facing a challenger in young silverback Mahindure, though the group remains intact for now.

Over the years, Gorilla Doctors field veterinarians have monitored and treated silverbacks with injuries ranging from deep bite wounds and lacerations to broken limbs. Time and time again, the silverback's remarkable healing power is made evident. But



# GORILLAS

sadly, there have been occasional cases of silverbacks succumbing to their injuries, despite Gorilla Doctors' best efforts to save their lives through medical intervention.

In 2012, a Grauer's gorilla silverback named Langa in Kahuzi Biega National Park interacted with another Grauer's silverback, Ganywamulume. Langa was an older silverback with a deformed left leg and he was severely wounded in the interaction. When Drs. Eddy, Martin and Jacques intervened to administer intravenous fluids, antibiotics and anti-inflammatory and pain medications, they saw a multitude of scars from years of fighting on the old silverback. Despite the medical intervention, Langa succumbed to his wounds and trackers created a stretcher to carry the silverback out of the forest for necropsy.

Another sad silverback loss occurred in July 2011, when young silverback Jeshi was seriously injured after interacting with two solitary silverbacks: young silverback Mukunda and older silverback Karateka. "These two silverbacks attacked the Kabirizi group trying to steal some of the group members and Jeshi was the one who stayed behind to fight them while the rest of the group fled" said Dr. Eddy. During this time, the M23 rebel group was occupying the Mikeno Sector of Virunga National Park, but Gorilla Doctors DRC Field Vet Dr. Martin and ICCN rangers were able to reach Jeshi to intervene. Jeshi had been badly bitten by silverback Mukunda in the interaction and had deep, infected lacerations on his knees, thighs and left foot. Despite the medical intervention, Jeshi died on July 10, 2011.

Gorilla Doctors only intervenes when an injury or illness is either human-induced (e.g. a poacher's snare) or life-threatening. A medical intervention can cause considerable stress within the group, and if the gorilla can heal on its own, our veterinarians would like to al-

low that to happen. Rwanda Field Vet Dr. Noel estimates that Gorilla Doctors observes roughly ten cases of injured silverbacks in a year, with only one or two considered "life-threatening" and thus, requiring medical treatment.

The lives of silverbacks and blackbacks are often marked by violence as male gorillas struggle to maintain power or overthrow others. This natural gorilla behaviour will continue to occur and our field veterinarians remain at the ready to intervene in life-threatening cases, in the hopes of preventing the loss of these magnificent silverbacks.

*Gorilla Doctors*

## Variation in Gorilla Behaviour – and Culture?

Culture is a large part of what makes us human. However, we are not the only species that exhibits culture. Culture in non-human animals, defined

as "group-typical behavioural patterns shared by community members that to some degree are reliant on socially learned and transmitted information" (Laland & Hoppitt 2003, Laland & Janik 2006), has sparked much interest among scientists, particularly because of the implications for understanding the origins of culture in humans (Laland & Janik 2006, Boesch 2003, Dean et al. 2014). Cultural traits in animals span the domains of diet, foraging techniques, tool use, and social interactions. Cultural social interactions may include "social conventions", which are defined as dyadic social behaviours or communicative behaviours which are unique to particular groups or cliques (Perry et al. 2006, Leca et al. 2010, Nakamura et al. 2000).

One can argue that a trait is cultural a) if it is customary (performed by most individuals of a particular age/sex class) or habitual (performed by several individuals of a particular age/sex class) in at least one site but absent in



*Virunga gorilla silverback with playing offspring (Amahoro group)*

*Photo: Wolfram Rietschel*



# GORILLAS

at least one site, b) if ecological and genetic explanations can be excluded as the explanation and c) if innovation and/or social learning can be inferred.

Among the great apes, the least amount of evidence for culture and social learning is available for gorillas (Byrne 2007, Whiten 2011). To consider if gorillas have cultural traits we started by looking at the behaviour of gorillas in different locations in the wild. We listed potential cultural traits in wild gorillas from five sites by examining variation in the occurrence of behavioural traits that could potentially be influenced by social learning and are not due to ecological or genetic variation.

Three groups of western gorillas (*Gorilla gorilla gorilla*) were observed at Bai Hokou, Dzanga-Ndoki National Park, southwestern Central African

Republic, three groups were observed at the Mondika Research Center which straddles the border of the Central African Republic and the Republic of Congo, and one group was observed in Moukalaba-Doudou National Park, Gabon. Regarding eastern gorillas (*Gorilla beringei beringei*), three groups of mountain gorillas at the Karisoke Research Center, in the Volcanoes National Park, Rwanda were observed and one group in Bwindi Impenetrable National Park, Uganda.

Of the 41 behaviours considered, 23 met the criteria of potential cultural traits, of which one was foraging related, nine were environment related, seven involved social interactions, five were gestures, and one was communication related. The remaining 18 traits could not be considered as potential

cultural traits, largely because they occurred to some level at all sites.

We observed variation in occurrence of behaviours among gorillas at the five field sites. The strong correlation between the behavioural dissimilarity and geographic distance indicates that a genetic influence cannot be ruled out as affecting the occurrence of the behavioural traits among the populations, particularly between the mountain gorillas and western gorillas, but it does not exclude the possibility of social learning. However the low similarity score between two western gorilla sites that are far from each other (Bai Hokou and Moukalaba), indicating that they have high similarity in the occurrence of traits, in comparison to Bai Hokou and Mondika, which are only 60 km apart from each other,

## Examples for varying behavioural traits

Behaviour	Karisoke	Bwindi	Moukalaba	Bai Hokou	Mondika
Staring at reflection in water	habitual	absent	absent	present	present
Sitting in water "basin"	absent	absent	customary	absent	absent
Putting both arms on other individuals' back while moving, sometimes several individuals in a row	customary	absent	habitual	present	customary
Tree slap – use hands to beat against a tree	absent	customary	customary	customary	present
Tapping head with hand	customary	present	absent	absent	absent
Cleaning fruit by rubbing it against arm or body	ecological	absent	customary	customary	customary
Bridge-making by breaking or bending branches and placing over water	absent	absent	absent	present	customary
Cupping hands, filling with water and drinking	absent	absent	customary	habitual	present
Hand clapping	absent	absent	customary	customary	customary
Splash displays	absent	absent	habitual	habitual	absent
Blowing raspberries	habitual	present	absent	absent	absent
Dipping arm into water, using it as a sponge	present	absent	present	present	absent



# GORILLAS

would argue against genetic influence.

We observed variation in the occurrence of half of the potential cultural traits between the two mountain gorilla sites, among the three western gorilla sites, and among all five sites. Half of the behavioural variants reflected differences between western gorillas and mountain gorillas, which are different species. The other half reflect differences within the mountain gorilla subspecies and the western gorilla subspecies. Despite the difficulty of removing the possibility of genetic influences on the occurrence of traits (Langergraber et al. 2011, Krützen et al. 2011), our results are consistent with evidence of potential cultural traits in both species of gorillas.

Several gestures and social traits were observed in one population of mountain gorillas, but not in the other (nor in the three western gorilla populations). This offers some of the strongest support for behavioural variants being cultural since these traits are by nature social (less likely to be environmentally influenced) and these two populations have been isolated from one another only relatively recently. Genty et al. (2009) suggest that a large majority of gorilla gestures are part of a species typical repertoire, but that their use may be based on contextual learning because they are used in a highly flexible manner; this could include the lack of using some gestures in some locations. This interpretation of gestural communication does not preclude the possibility that their use can be socially learned and transmitted and therefore be considered cultural rather than ecologically or genetically driven.

To further examine culture in gorillas, future studies should systematically record the occurrence of particular behaviours and search for variation among groups and possible routes of social transmission.

*Summary of an article by  
Martha M. Robbins and co-authors*

*Original article:*

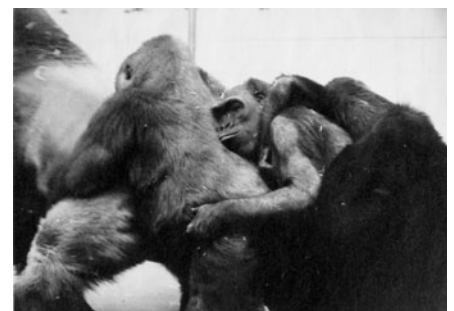
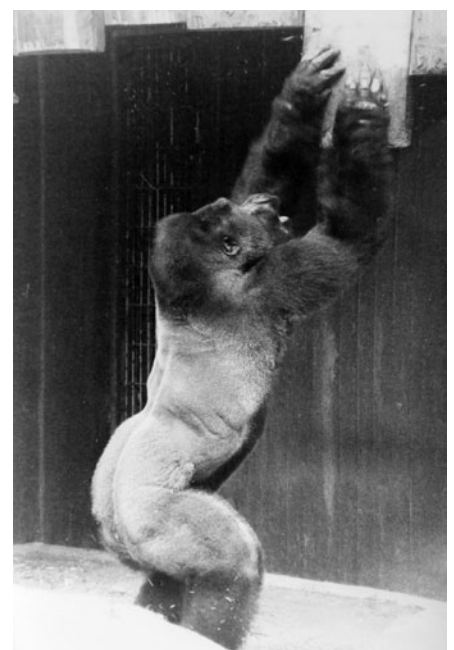
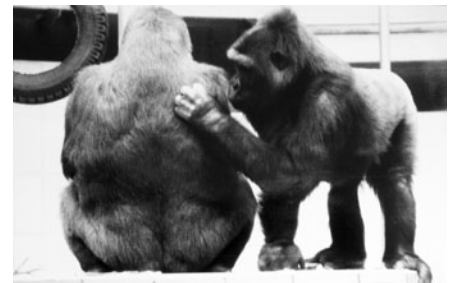
*Robbins, M. M., Ando, C., Fawcett, K. A., Grueter, C. C., Hedwig, D., Iwata, Y. et al. (2016) Behavioral Variation in Gorillas: Evidence of Potential Cultural Traits. PLoS ONE 11 (9): e0160483*

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**Zoo examples for behavioural traits listed in the study (from top): play between silverback and infant (Apeldoorn), female-female grooming (Frankfurt), slapping wood plank during display (Krefeld), putting both arms on other individuals’ back while moving in a row (Frankfurt)**

*Photos: Angela Meder*







# GORILLAS



## Colin P. Groves: 24 June 1942–30 November 2017

Anyone working with or interested in gorillas knows the name of Colin Groves. And anyone who not only knows the name but met the man himself knows that we have lost a very special, unique scientist and person.

His doctoral thesis set the standard for gorilla taxonomy and he was also substantially involved in later revisions. Although he was interested in many mammal species, gorillas always remained his passion. After completing his PhD in London in 1966 – and with some stops on the way – he arrived at the Australian National University in Canberra in 1973, where he conducted research and taught students for the rest of his life. In the course of his career he described over 50 species of animals.



I met Colin for the first time during a conference in Adelaide in 2001. I was privileged to get to know not only a great scientist but also an open-minded, widely-travelled man with many interests, a rich experience of life, lots of humour and a huge circle of colleagues, friends and admirers. He never rested on past experiences and merits but always remained curious and interested in new ideas, which he integrated into his work if they held up to his critical inspection.



In his last few years, Colin's activities were much restricted due to serious illness, but this did not prevent him from continuing his scientific work or from enjoying the exchange of ideas with colleagues and students until the end.



He was a good friend to many, including myself. He always had an open ear, and would help to the best of his abilities. He supported Berggorilla & Regenwald Direkthilfe – as well as other projects for the protection of mammal species at risk – with advice, support and donations, whenever he could. He greatly enriched our work, mainly with the critical reading of the English-language texts of the Gorilla Journal and through his own contributions. We will greatly miss him and his support.



Colin always finished his emails with a quote. To repeat one of the last of these: "A man is not dead while his name is still spoken" (Terry Pratchett).

*Angela Meder*





## READING

**Benjamin B. Beck**

**A History of Primate Reintroduction.** 2017. 250 pages. Download PDF (1.75 MB): <http://www.drbenjaminbeck.com/the-history.html>

This report is a scientific review of all known movements of primates from captivity to the wild or from one place in the wild to another place in the wild. The book documents 202 separate efforts that involved 22,999 prosimians, monkeys, and apes over five centuries. The most common reason for re-introduction was animal welfare: to return stolen primates to the wild, to relocate wild primates whose habitat is being destroyed, and to save primates that would otherwise be killed because of conflicts with people. Only a small proportion of the reintroductions were conducted for conservation purposes, and only 4 % involved captive-born primates.

The book includes stories about many of the people and animals involved, and a tabular summary is provided on the author's open-access website [www.drbenjaminbeck.com](http://www.drbenjaminbeck.com). He published the report on a website instead of as a conventional book for fast, wide, and free distribution. The lessons learned will hopefully make life easier for future reintroduction managers and the animals they will reintroduce.

**Daniel T. Blumstein, Benjamin Geffroy, Diogo S. M. Samia and Eduardo Bessa (eds.)**

**Ecotourism's Promise and Peril: A Biological Evaluation.** Springer 2017. XV, 185 pages, 44 figures. Hardcover euro 37.44, ISBN 978-3-319-58330-3. eBook euro 29.74, ISBN 978-3-319-58331-0

**Justus Muhanguzi Kampe**

**Eyes of a Journalist.** Part I: Realising my Journalistic Dream, Part II: Memoirs of the 1990–84 Rwanda War. Kampala (World of Inspiration (U) Ltd.) 2016. ISBN 9789970050185

### New on the Internet

**Global Witness**

**Regime Cash Machine.** How the Democratic Republic of Congo's booming mining exports are failing to benefit its people. London, July 2017. 40 pages. ISBN 978-1-911606-03-1. Download PDF (10 MB): [https://www.globalwitness.org/documents/19146/Regime\\_Cash\\_Machine\\_Report\\_Final\\_Single\\_pages\\_BXObnlm.pdf](https://www.globalwitness.org/documents/19146/Regime_Cash_Machine_Report_Final_Single_pages_BXObnlm.pdf)

**Christopher Sone Nkoke, Jean-François Lagrot, Stéphane Ringuet and Tom Milliken**

**Ivory Markets in Central Africa.** Market Surveys in Cameroon, Central African Republic, Congo, Democratic Republic of the Congo and Gabon: 2007, 2009, 2014/2015. TRAFFIC 2017. 116 pages. Download PDF (7.24 MB): [http://www.traffic.org/general-reports/Ivory-Markets-Central-Africa-Report\\_FINAL.pdf](http://www.traffic.org/general-reports/Ivory-Markets-Central-Africa-Report_FINAL.pdf)

**African Investigative Publishing Collective, Africa Uncensored and ZAM**

**The Plunder Route to Panama.** How African oligarchs steal from their countries. 37 pages. October 2017. Download PDF (4.76 MB): [https://www.zammagazine.com/images/pdf/documents/African\\_Oligarchs.pdf](https://www.zammagazine.com/images/pdf/documents/African_Oligarchs.pdf)

**UN Group of Experts**

**Final report of the Group of Experts on the Democratic Republic of the Congo.** Report S/2017/672. UN Security Council, August 2017. 111 pages. Download PDF (13.3 MB): <http://www.securitycouncilreport.org/un-documents/document/s2017672.php>

Armed groups continue to represent threats to peace and security in the Democratic Republic of the Congo. Concerning natural resources, the implementation of mineral traceability has considerably reduced instanc-

es of armed groups directly benefiting from the exploitation and trade, but the Group also documented breaches of the chain of custody for mineral trade.

**New York University and Human Rights Watch**

**Kivu Security Tracker.** Interactive map for violence in the eastern Democratic Republic of the Congo. <https://kivusecurity.org/map>

**Peer Schouten, Janvier Murairi and Saidi Kubuya**

**"Everything that moves will be taxed":** the political economy of roadblocks in North and South Kivu. IPIS/DIIS (Antwerp/Copenhagen), November 2017. 66 pages. Download PDF (2.16 MB): <http://ipisresearch.be/wp-content/uploads/2017/12/1711-DRC-roadblocks-English.pdf>

**Human Rights Watch**

**"Special Mission"** Recruitment of M23 Rebels to Suppress Protests in the Democratic Republic of Congo. December 2017. 81 pages. ISBN 978-1-6231-35508. Download PDF (14 MB): [https://www.hrw.org/sites/default/files/report\\_pdf/drc1217\\_web2\\_0.pdf](https://www.hrw.org/sites/default/files/report_pdf/drc1217_web2_0.pdf) and annex (2.78 MB): [https://www.hrw.org/sites/default/files/report\\_pdf/annex\\_drc.pdf](https://www.hrw.org/sites/default/files/report_pdf/annex_drc.pdf)

**Global Witness**

**Defenders of the Earth.** Global killings of land and environmental defenders in 2016. London, July 2017. 60 pages. ISBN 978-1-911606-01-7. Download PDF (4.7 MB): [https://www.globalwitness.org/documents/19122/Defenders\\_of\\_the\\_earth\\_report.pdf](https://www.globalwitness.org/documents/19122/Defenders_of_the_earth_report.pdf)



# BERGGORILLA & REGENWALD DIREKTHILFE

## Our Donors

From May to October 2017 we received major donations by Tino Ahlers, Hendrik Bakels, Emilio Garcia Barea, Birgit Behle-Langenbach, Manuel Blatter, Bündler Kaufhaus, Le Conservatoire pour la Protection des Primates, Frank Roland Deister, Angelika Dickmann, Michael Enders, ESG Edelmetall-Service, Jürgen and Irmgard Friedrich, Mark Gieseke, Gorilla Gym Hamburg, Uta Heidt, Marieberthe Hoffmann-Falk, Robert Hofmann, Philipp Hülsdonk, Helga Innerhofer, Brigitte Kranz, Isabella Löber, Angela Meder, Hannelore Merker, Milwaukee County Zoo, Michael Möhring, Ralf Neuhaus, Oliver Nevi, Anne Pfisterer, Pieterella Pols Fonds, Peter Puxkandl, Birgit Reime, Wolfram Rietschel, Alfred Roszyk, Hartmut Stade, Hermann Starik, Cornelia Warg-Rieke, Wilhelma, Lars Wohlers, Rebecca Zindler, Zoo Krefeld and Zoologischer Garten Saarbrücken.

The sneaker store asphaltgold in Darmstadt collected donations for mountain gorilla conservation with a special \*Heat-for-Need\* window. We received euro 7,000. Asphaltgold also sent us photos from their store during the campaign and we were really impressed!



For several years the amusement park Schwaben Park has collected donations for us with various activities of their chimpanzee colony. Now, visitors can throw coins in a distributor that releases walnuts into a maze; the chimps

can then use tools to retrieve the nuts from the maze.

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

**Symbolic handing-over of a check by the director of the Schwaben Park, Thomas Hudelmaier (right). At the left Wolfram Rietschel who cares for the chimps as a vet.**

*Photo: Marcel Bender*



## Primatologists Will Meet in Nairobi

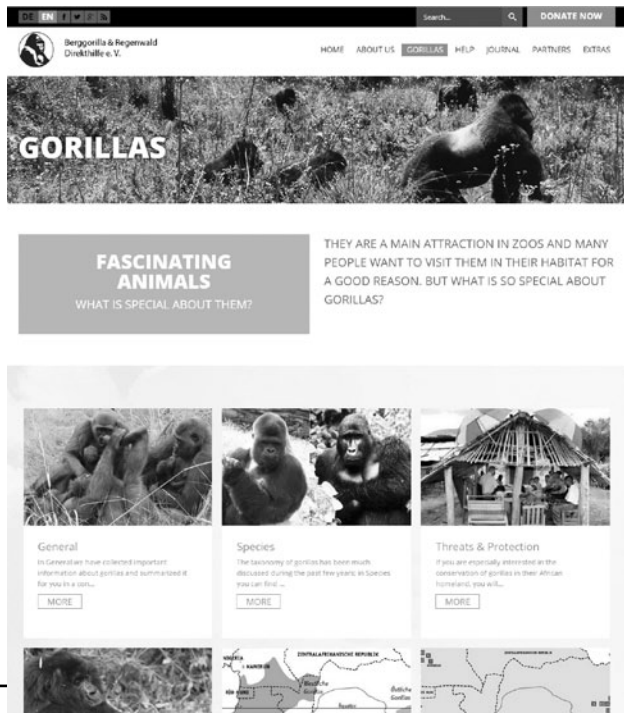
The XXVII<sup>th</sup> Congress of the International Primatological Society (IPS) will be held from August 19–25, 2018 in Nairobi, Kenya. All scientific and social sessions will be held at the United Nations Compound in Nairobi. Complete conference information is available at the Congress website: <http://www.ipsnairobi.org/>.

IPS is a multidisciplinary association of approximately 1400 professionals and students whose work is focused on nonhuman primates. In the last two decades, the biennial IPS Congresses have attracted between 650 and 1600 registrants. IPS members include veterinarians, geneticists, psychologists, physicians, neuroscientists, anthropologists, zoologists, conservation biologists, ethologists, zoo professionals, technical personnel, and field assistants.



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