Gorilla Journal

Journal of Berggorilla & Regenwald Direkthilfe

No. 64, June 2022

Birth of Two Infants within Two Years at Mount Tshiaberimu

Community Reserves in Eastern D. R. Congo

Inspiring the Next Generation

Ecological Research in the Kivu Region

BERGGORILLA & REGENWALD DIREKTHILFE

CONTENTS

Gorilla Journal 64, June 2022
Editor: Angela Meder
Augustenstr. 122, 70197 Stuttgart, Germany
E-mail meder@berggorilla.org
Editing, translation and proofreading: Ann DeVoy, Bettina and Andrew Grieser Johns, Bronwen Hodges, Carla A. Litchfield (University of South Australia), Callum McCabe
Cover: A silverback Grauer's gorilla *Gorilla beringei graueri* captured by a camera trap located at the heart of the Nkuba Conservation Area
Photo: Dian Fossey Gorilla Fund

Bank Account:
IBAN DE06 3625 0000 0353 3443 15
BIC SPMHDE3E
Switzerland:
IBAN CH90 0900 0000 4046 1685 7
BIC POFICHBEXXX

Organisation Address:
Berggorilla & Regenwald Direkthilfe
c/o Burkhard Broecker
Juedenweg 3
33161 Hoevelhof, Germany
E-mail broecker@berggorilla.org
Website:
http://www.berggorilla.org

Authors of this Issue

Dr. Matti Barthel is a biogeochemist at the ETH Zürich at the Department of Environmental Systems Sciences. For various research projects he regularly participates in scientific expeditions to the Democratic Republic of the Congo.

Dr. Damien Caillaud is GRACE Scientific Advisor.

Laurie Cummins is GRACE Education and Community Engagement Manager.

Dr. Katie Fawcett is GRACE Program Director.

Jackson Kabuyaya Mbeke is GRACE D. R. Congo Director.

Kambale Kamaliro Josias is GRACE Communications Manager.

Honoré Kambale Masumbuko is GRACE Education Manager.

Benezeth Kambale Visando is GRACE Conservation Manager.

Jean Claude Kyungu Kasolene led an ecology NGO (SEPRONA). He headed the Tayna Gorilla Reserve and the Walikale Community Gorilla Reserve and was Project Manager for the Tshiaberimu Gorilla Project for The Gorilla Organization. In September 2008 he became conservator for the Mt. Tshiaberimu sector of the Virunga National Park. From 2017 to 2019, he was the Director of the Itombwe Reserve and in 2020 became the Chief of the Maiko National Park.

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

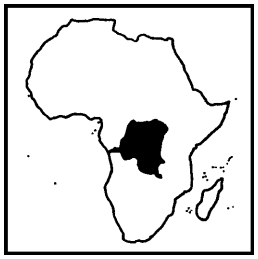
Liliane Nakayima joined IGCP in 2020 as a communications officer. She holds a bachelor's degree in in Mass Communication from Uganda Christian University. She is in charge of IGCP's effective communication to both internal and external publics, keeping them updated with information on mountain gorilla conservation in the region.

Claude Sikubwabo Kiyengo conducted a gorilla survey in the Maiko National Park, he worked for the ICCN in Goma and for the IUCN. He was chief conservator of the Parc National des Virunga, central sector, the coordinator of the NGO VONA, the PACEBCo expert for conservation and biodiversity in the Virunga region (COMIFAC), and since 2008 he has been our assistant.

Guy Simisi Mumbere is GRACE Educator.

Laura Summerauer at the ETH Zürich is a researcher in soil and agricultural sciences, with a particular interest in tropical (agro-)ecosystems and carbon and nutrient cycling. Currently, she is studying controls on soil ecosystem services in a highly eroding and degrading landscape of the Eastern Congo Basin. Furthermore, she is working on soil infrared spectroscopy and statistical modeling approaches.

Dr. Yntze van der Hoek earned his Ph.D. in biology and also holds degrees in forest and nature conservation from Wageningen University and Research Centre in the Netherlands, with thesis fieldwork in Gabon and Kenya. Although he has an affinity for the study of birds, he's also a specialist in statistical analysis, ecological modeling, analysis of large datasets, and other methods in quantitative ecology.



D. R. CONGO

Birth of Two Infants within Two Years at Mount Tshiaberimu

Mount Tshiaberimu is located in the southern part of the Northern Sector of Virunga National Park. At the beginning of January 2020, the team working in this area noticed an infant gorilla and assumed that this baby was born at the end of December 2019 or start of January 2020. There was a dramatic decline in the gorilla population in this part of the park, from 14 gorillas in 2002 to just 5 in 2019. The team had already lost hope in the survival or recovery of gorillas in this sector of the park. The birth of this baby gorilla came as a surprise to the eco-guards, trackers and managers who decided to name it "Espoir" (Hope).

Brief History of Gorilla Births and Deaths at Mount Tshiaberimu

Six gorillas were born between 2002 and 2009. Between 2002 and 2004, 3 baby gorillas were born: Kambula (now called Mwengeshali) was born in 2002; Musanganya, who disappeared shortly after birth; and Mwasananyinya (now called Mwasa). Musondoli was born in 2006 but has since died, and Mwavita was born in 2007 but died during infancy after an interaction between gorillas. In 2009, the young 7-year-old gorilla, Mwengeshali, gave birth to a baby, whom she unfortunately bit to death (see *Gorilla Journal* 60, June 2020 for more information).

Then for a period of 9 years, from 2009 to 2018, no further births were observed during gorilla monitoring at Mount Tshiaberimu. Instead, a drastic decrease in the number of gorillas was observed. In 2012, a family of 6 gorillas disappeared for a few months, and only 2 of them returned. By the end of 2012, 2 more gorillas disappeared, with only 7 individuals remaining at Mount Tshiaberimu.

Mwengeshali with her infant Espoir on her back

Photo: ICCN

The Bravery of the Trackers at Mount Tshiaberimu

Following the insecurity caused by Mai Mai militia, the Congolese Institute for the Conservation of Nature (Institut Congolais pour la Conservation de la Nature – ICCN) withdrew their staff at the end of 2016 and in 2017, and the gorilla trackers remained alone at the site. During this time, they only entered the forest occasionally, and were unable to go very far since they risked being captured or killed. The Mai Mai militia accused the trackers of being spies, reporting their positions to the military.

This situation lasted for 2 years. In 2016, a tracker was killed and another injured and hospitalized at Kyondo General Hospital. In 2017, the head tracker was attacked at home by armed men. He narrowly escaped, but was shot in the hand. The gorillas survived at Mount Tshiaberimu thanks to the presence of trackers during this period. A number of militia and politicians at this time pleaded for the remaining gorillas to be killed. These people believed that if there were no more gorillas, local communities could recover their land. This message became a political tool used by candidates to obtain votes in the election for the position of deputy.

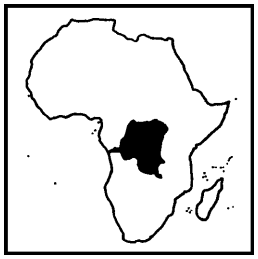
Resumption of Activities by ICCN and Recent Gorilla Births

Monitoring activities resumed at the beginning of 2018, and in March and April, the trackers observed a baby gorilla and 6 other individuals – a total of 7 gorillas. However, this infant was not seen again after May 2018. The number of gorillas remained at 6 individuals until March 2019. In January and February 2019, several interactions between the gorilla groups took place, which may account for the disappearance of 2 gorillas, Mwasa and Kitawite. In April 2019, only Mwasa returned, hence only 5 gorillas remained.

The birth of a baby in late December 2019 or early January 2020 represented a major event for the conservation of Mount Tshiaberimu gorillas. This baby was loved by its mother, Mwengeshali, and the two dominant males. The baby was named Espoir, as a way of representing the hope for the survival of Mount Tshiaberimu gorillas. Indeed, a project aimed at strengthening and revitalizing this non-viable population

Mwengeshali with her new baby

Photo: Katsuva Wasukundi



D. R. CONGO

The gorillas on Mt. Tshiaberimu

Katsavara family
Katsavara, male
Mukokya, female
Ndekesiri, female
Espoir, sex not yet known

Mwasa family
Mwasa, male
Mwengeshali, female
new baby, sex not yet identified

of gorillas has been planned for several years, and we feared that the gorillas would die before the project could be implemented.

The growth or development of Espoir seems to differ from the usual development of Grauer's gorillas. Born in late December 2019 or early January 2020, the baby started walking alongside her/his mother after 7 months and was seen eating from the age of 11 months. This observation was made in the forest, where s/he was seen feeding on plants, while supplementing this with breast milk – and it may have done this before the age of 11 months. At one year and 2 months, in February 2021, the baby gorilla's droppings started to disappear from the adults' nests. In May 2021, four baby droppings were recorded there, zero droppings were found in June, and one baby gorilla dropping was observed in July 2021 in the male, Katsavara's, nest. Since then, no more baby droppings have been found in the adult nests. Interactions between the gorilla groups took place in March, April and May 2021. In May 2021, Espoir separated from the mother, and has since remained with the Katsavara family.

No one realised that Mwengeshali was pregnant again, but at the end of December 2021 she was seen with a very small baby. This was only 2 years after the birth of her baby Espoir. The number of gorillas at Mount Tshiaberimu is now 7. As gorillas can live for up to 50 years, we hope that Mwengashali can give birth to more babies, and that Ndekesiri and Mukokya, the other female gorillas of Mount Tshiaberimu, can also become mothers. We hope that the project to strengthen and revitalise the population of Grauer's gorillas will succeed in increasing the number of gorillas in this small and isolated population at Mount Tshiaberimu.

Claude Sikubwabo

Community Reserves in Eastern D. R. Congo: the Future for Grauer's Gorilla Conservation and Research?

In 2012, the Dian Fossey Gorilla Fund International started a unique collaboration with local communities in eastern Democratic Republic of the Congo (DRC): to jointly protect over 2,600 km^2 of low-to-mid elevation (600 to 1000 m) primary rainforest for gorilla conservation while retaining community access and [sustainable] resource use. These efforts paid off last year (2021) when these forests, designated as

Support for Communities

We have already supported many projects, which have turned out to be very successful, for the people of Mt. Tshiaberimu. Other communities around the mountain are now also asking for our support. The communities are specifically asking for the following:

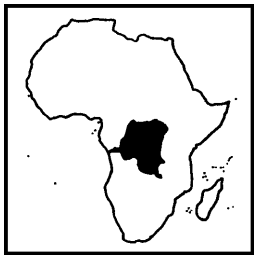
- improved water supply
- solar streetlights for public places
- training courses for production of energy-saving cooking stoves
- tree planting

Why do we support the communities around the Virunga National Park? After a long period of constant conflict between the park administration and the communities around Mt. Tshiaberimu, their relationship has become much more harmonious. A major reason for this is that the population now benefits from the park. When people realise that gorilla protection organisations are working to improve the lives of people in local communities, as well as to protect the park, they are more likely to work with the park rather than against it.

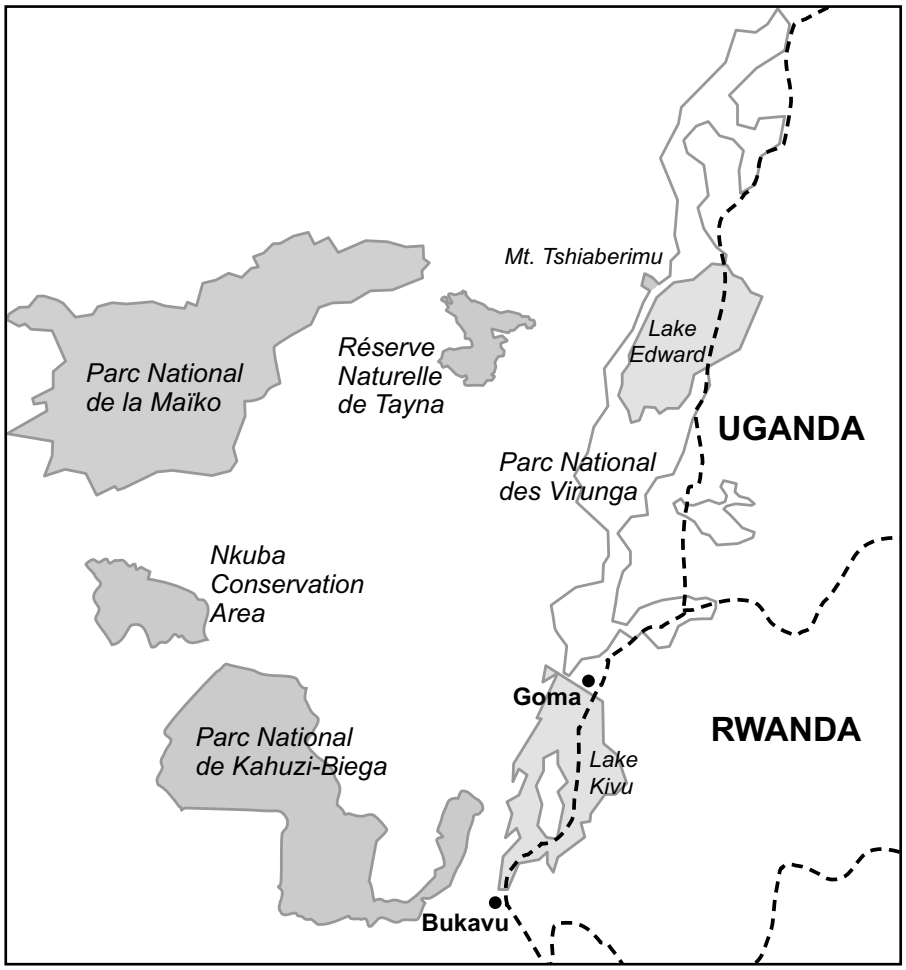
We want to continue to support this good cooperation – please help us!
You are also welcome to donate via PayPal if you prefer this:
http://www.berggorilla.org/en/help/donate

Bank Details:
IBAN: DE06 3625 0000 0353 3443 15
BIC SPMHDE3E
Switzerland: IBAN: CH90 0900 0000 4046 1685 7
BIC POFICHBEXXX

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



D. R. CONGO



Position of the Nkuba Conservation Area

Map: Angela Meder

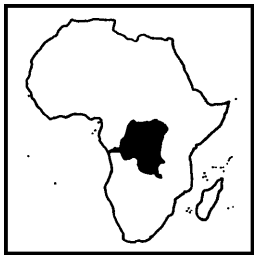
the Nkuba Conservation Area (NCA), were officially recognised as a 'CFCL', a community forest conservation concession, by Congolese authorities. Furthermore, the first research findings to come out of the NCA highlight the value of these efforts and provide the incentive for enhanced commitment and institutional involvement in the area.

The foundational idea behind the establishment of the NCA was to protect the critically endangered Grauer's gorillas (*Gorilla beringei graueri*) and endangered eastern chimpanzees (*Pan troglodytes schweinfurthii*) that inhabit these forests. Large portions of the global populations of both of these threatened great apes are found outside the current network of government protected areas in the DRC, and the forests of the NCA harbour hundreds of these apes. As the first talks with local community members sparked activities related to conservation of the area and its biodiversity, the Dian Fossey Gorilla Fund also started research on this unique and rather undisturbed rainforest. For Grauer's gorillas, this research represented some of the first studies on this subspecies in lowland forests after early studies by Yamagiwa and Schaller, as the majority of past studies have been centred on a few populations in highland habitats (e.g., Kahuzi-Biega National Park).

The first insights gleaned from these studies were basic but elementary baselines for future studies, which provided knowledge on the food and space requirements of Grauer's gorillas. While fellow Grauer's gorillas (as well as mountain gorillas) in highland habitats may consume mainly vegetative plant parts, found in their immediate surroundings, the gorillas in the NCA travel further to eat a larger variety of food items such as stems, leaves, pith, bark, roots, and a decent amount of fruit, belonging to well over a hundred different plant species. Indeed, gorillas in the NCA travel far greater daily distances than their highland counterparts, show a relatively large variation in their daily movements, and move particularly far in months when fruit consumption is high (the September–December rainy season).

These gorilla-focused studies provided valuable scientific and conservation-focused insights. But, truly effective conservation of the NCA and its biodiversity depends on a more comprehensive understanding of the broader ecosystem, the other species that inhabit these forests, their interactions, and their role in ecosystem processes and functioning (e.g., with regards to carbon storage). Thus, Dian Fossey Gorilla Fund's efforts quickly expanded to include efforts to verify the presence of other species. A first paper focused on the description of faunal communities, in particular those elusive forest-dwelling larger mammals that are often the first to be affected by hunting or human disturbances to habitat quality.

This endeavour, which encompassed collection and analysis of thousands of hours of camera trap footage, further emphasised the importance of this community forest for conserva-



D. R. CONGO

tion. Beyond the great apes, at least five other globally threatened species find a home in these forests: giant and white-bellied pangolins, leopards, African golden cats, and owl-faced monkeys. In addition, recent community-based participatory mapping exercises suggest that some globally threatened species still go undocumented – at least 22 additional larger-sized mammals and a 'plethora' of other biota. Clearly, these community forests in eastern DRC hold tremendous potential in terms of biodiversity conservation. Future research topics are almost limitless, since even the most basic aspects of ecology and behaviour of these species are unknown. These forests are important for conservation of gorillas, the species with which they share their habitats, and the complex ecosystem interactions that are key to a sustainable future for the Congo basin rainforests.

Yntze van der Hoek

Summary of:
van der Hoek, Y., Binyinyi, E., Ngobobo, U., Stoinski, T. S. & Caillaud, D. (2022): Diversity and diel activity patterns of terrestrial mammals in the Nkuba Conservation Area, Democratic Republic of the Congo. Oryx, 1–11

References

van der Hoek, Y. et al. (2021): Diet of Grauer's Gorillas (*Gorilla beringei graueri*) in a Low-Elevation Forest. Folia Primatologica 92 (2), 126–138
van der Hoek, Y. et al. (2021): Daily Travel Distances of Unhabituated Grauer's Gorillas (Gorilla beringei graueri) in a Low Elevation Forest. Folia Primatologica 92 (2), 112–125

A Brief Account of the CoCoSi of Maiko National Park

Activities in protected areas of the Democratic Republic of the Congo are carried out in accordance with an annual operational plan drawn up by the protected area management authority and submitted to the Co-ordination of Sites Committee (Comité de Coordination de Site, CoCoSi) for review before being implemented. When circumstances allow, the CoCoSi meets every six months; if this is not possible, it meets annually.

The mission of the CoCoSi can be summarised as follows:

– to plan, co-ordinate and ensure the evaluation and follow-up of the planned activities,
– to oversee the harmonisation of interventions and relationships between the site partners,
– to encourage the exchange of experiences between sites.

In accordance with their internal rules, the meetings of the CoCoSi of the Congolese Institute for the Conservation of Nature (ICCN) are chaired by the protected area manager with the ICCN director general and sector managers, provincial directors and various site partners in attendance.

The CoCoSi thus acts as an excellent framework whereby the key workers of a protected area can meet, not only to examine and evaluate the operational plan of the site, but also to discuss crucial points for improving site management and benefitting local development.

Overview of the 2021 CoCoSi Meeting

The Maiko National Park (MNP) is divided into northern, central and southern sectors. The twenty-first meeting of the CoCoSi took place at the head office of the southern sector at Tingi Tingi on 19 and 20 November 2021. This meeting was attended by 48 people, representing the institutions associated with the management of conservation and biodiversity of the park.

The objectives of the CoCoSi were:

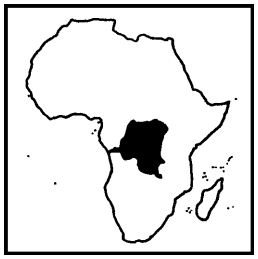
– to undertake lobbying activities and to strengthen the visibility of the park on a national and international level,
– to focus on the restoration of the State's authority in the park to rebuild efficient management and conservation of the unique biodiversity of the natural habitat and to guarantee a sustainable flow of ecological services providing benefits to local residents,
– to publish a book to commemorate the 50th anniversary of the park, to sustain interest and collaboration among the parties involved.

A key aim of the meeting was to evaluate ongoing activities as outlined in the operational plan for the anniversary year (from 20 November 2020 to 20 November 2021) with financial support from the following partners: Fauna & Flora International (FFI), the Jane Goodall Institute (JGI), Berggorilla & Regenwald Direkthilfe, and The Gorilla Organization (GO).

Attending the meeting were the Administrator of Lubutu Territory, represented by Ntuma Vava, senior staff of the MNP, Jean Claude Kyungu (park manager and chief conservationist), Amube Ndey, the deputy manager in charge of bio-monitoring and the principal conservationist, the heads of the southern and northern sectors, and the heads of the two programmes LAB and COCO.

NGO partners active in the conservation of MNP were also present: Jackson Mutume, JGI and John Bolingo, FFI, based at Lubutu, respectively; Gulain Mitavo, head of base at the Nkuba Conservation area (DFGF-I), Claude Sikubwabo Kiyengo for Berggorilla & Regenwald Direkthilfe and the two gorilla reserve co-ordinators Nestor Mayala of REGOMUKI (Mukingiti Gorilla Reserve) and Abusala Mbalaka of REGOLU (Lubutu Gorilla Reserve).

The Lubutu Territory authorities were represented by the chiefs of the



D. R. CONGO

Participants of the 2021 CoCoSi for the Maiko National Park in Tingi Tingi

Photo: ICCN

Obokote and Bitule sectors and four village grouping chiefs (Oso-Mandiba, Tingi Tingi, Peneluta and Osukwamalek). The ICCN director-general was not represented and the provincial director of ICCN Tshopo was represented by his deputy.

The meeting was started by Jean Claude Kyungu, manager of MNP, and facilitated by Jackson Mutume, the JGI/Lubutu coordinator. Mohindo Malikewa Franck, principal officer of the MNP rangers, Mme Donatienne Barubiyo, assistant to the provincial director of ICCN Tshopo, and Nyakudroma Dieumerci, secretary to the MNP southern sector, served as secretaries.

Progress and Overall Results of the Meeting

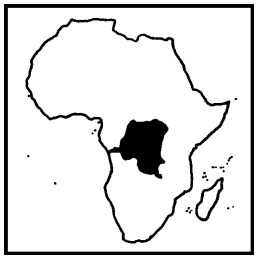
Opening Ceremony: There were five speakers. The head of the southern sector welcomed the participants and presented a report on the state of affairs in his sector. The park manager thanked all the participants for responding to the invitation to attend, underlined the importance of MNP, a World Heritage site, and exhorted all partners to help protect this important park. The representative of the provincial director praised the park manager for his work. The meeting was officially opened by the Lubutu Territory administrator, who declared that nature conservation was of great importance and the main reason for the development of his territory.

Participants' Presentations: The participants all introduced themselves and described the main objectives of their organisations, which include the conservation and protection of nature, raising public awareness of the importance of conservation, animal life in general, and gorillas, chimpanzees, elephants, and okapis in particular.

Report of activities in 2021: The report of activities in MNP for the period November 2020 to November 2021 was presented and adopted after some discussion. The report shows that 45 % of the activities planned for 2021 were implemented; details are given below. The activities which were not implemented were re-scheduled for 2022.

Evaluation of the achievements of the 2021 Operational Plan: Six activity focus areas were evaluated:

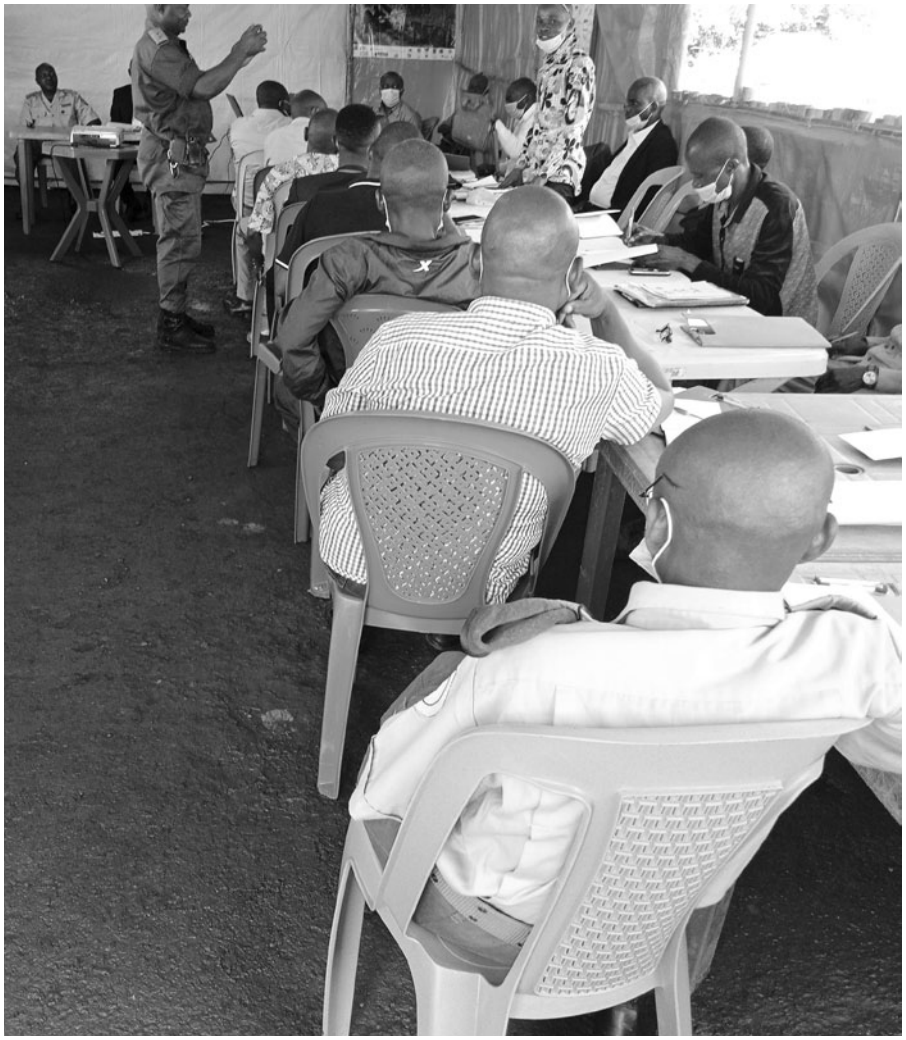
1. Lobbying for financial support for the MNP, the exit of rebels from the park and their demobilisation, the allocation of a website and raising public awareness of nature protection. 75 % of these lobbying activities took place.
2. Specific management goals for the 50th anniversary year. The ultimate objective for this year was control of the whole park. The actual level of cover by patrols was low, with 25 % of the northern sector covered, 30 % of the central sector and 65 % of the southern sector. There are insufficient staff and the present staff are aging. 27 % of the objective to increase the numbers from 108 to at least 500, and to provide housing for them, was achieved. The activities that were not implemented were



D. R. CONGO

deferred to 2022.

3. Drafting a plan to share benefits with the resident communities. This involves raising awareness and determining compensation for groups who are destroying the natural resources (hunters with 12-gauge shotguns, mine workers, fishermen etc.) and those who protect them, notably the grassroot organisations. Several hundred 12-gauge guns had been confiscated, the mining areas identified and marked on a map of the park, compensation mechanisms put in place such as support for fish farmers, as well as the allocation of mills, the construction of water supply wells, the installation of electric streetlights in the congested areas and informing people about conservation law. The actual achievement of this target was evaluated at 43 %.
4. Analysis of management tools, i.e., the research and monitoring plan, the surveillance plan, and the management plan. As well as these plans, evaluation of these plans was undertaken through collection of data and analysis. The first two plans had not yet been validated by the director general of the ICCN. The overall management plan has not yet been revised and must be updated.
5. Proofreading the draft of a book documenting 50 years of the MNP. A commission has been set up and is already working on this.
6. Implementing the security plan for the park. Activities in this focus area include increasing staff numbers, re-opening closed ranger posts, and disarming and demobilising the armed groups. The control of the park is still not possible because of insufficient staff, a lack of infrastructure, several ranger posts remaining closed and the general lack of security. The targets were rated at 27.7 %.



During the CoCoSi meeting

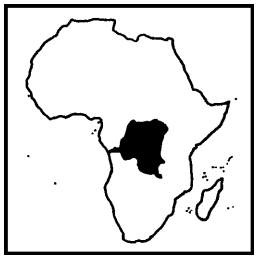
Photo: ICCN

Actions to include in the 2022 Operational Plan

The 2022 Operational Plan was adopted by the CoCoSi. It defines activities under the following focus areas:

– conservation, patrols and bio-monitoring – 12 activities
– conservation and security of the MNP – 6 activities
– promotion of tourism to finance the park's management of community conservation – 13 activities
– community conservation and development – 20 activities
– health and epidemiology (control of animal-borne diseases) – 6 activities
– assistance for personnel and administrative management – 6 activities
– institutional support – 2 activities
– justice and application of the law – 6 activities
– co-ordination with the director general – 2 activities

The 2022 Operational Plan for the MNP comprises a total of 73 activities



D. R. CONGO

which require appropriate funding. The CoCoSi has approved these activities and it is now incumbent upon the managers of the park to estimate the costs and get to work.

Claude Sikubwabo Kiyengo and Jean Claude Kyungu Kasolene

Report of an Arrest

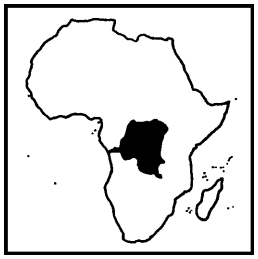
In view of the threats observed and documented in different areas, particularly in the Bafwasende area, central sector of the Maiko National Park MNP), strategies must be developed at different levels to mitigate their scope, extent and intensity. Insecurity in the park remains a priority for stabilisation of the region, with insecurity caused by exploitation of minerals and poaching, particularly of middle-sized monkeys and chimpanzees. Patrols confirm the presence of poachers under the protection of armed groups and certain elements of the security services.

It is in this context that a mission was planned to identify and analyse the root causes of illegal activities. In collaboration with the politico-administrative authorities, the state services, and the representatives of the local communities of the Bafwasende territory, a meeting was organised in Bafwasende and Opienge. The objectives of this meeting were the following: (1) sensitise the communities bordering the Maiko National Park on the protection of great apes and their habitat, particularly in the Bafwasende Territory around the park; (2) obtain the involvement of politico-administrative and customs authorities, local communities and that of state services in order to recover/confiscate 12-gauge hunting weapons, baby chimpanzees, and other protected animals that are illegally held; and (3) set up a commission for the voluntary handing in of 12-gauge hunting weapons. Here is my report of what happened there:

"On Monday, December 6, 2021 at 1 p.m., I received a phone call from the intelligence service (ANR, National Intelligence Agency) Tshopo based in Kisangani who asked me whether I invited a delegation of Mai Mai Luc to Kisangani, and I said no. He told me that he had just received a delegation from Luc in Kisangani at my invitation. I reaffirmed that no, but that in the meeting of November 10, 2021 on the sensitisation of the communities of the central sector of the MNP, it was recommended to constitute a commission which could meet Luc in order to study the modalities of its exit from the park and thus let ICCN/MNP do its work in the central sector. There was no question of a meeting in Kisangani. The Chief of Intelligence asked me to join him in Kisangani immediately on the orders of the Provincial Security Committee. I told him that I was in Oso, 340 km from Kisangani, and given the multiple occupations, I could only arrive on Friday, December 10 and I had to inform my hierarchy. He replied that it was a matter of extreme urgency to know whether it was the ICCN which invited the Mai Mai to Kisangani. Again I said no – if I had invited them, why would I still be in Oso and not in Kisangani?

In the meantime, I directly informed the wildlife Authorities in Kinshasa by email about this invitation. At 4 p.m., another call asked me if I was already on the way and I told him that I would come on Tuesday. I was waiting for the reaction to my emails sent to the hierarchy but without success. I thus tried to call first the Technical Director without success and the Operations Corps in the Parks and Related Natural Reserves without success; fortunately, I reached the Line Manager. The latter instructed me to ask the ANR for the official invitation and wait for the authorisation of my authority. Thirty minutes later, the phone call of my invitation was on the orders of all the members of the provincial security committee who found a real need to introduce me for such an important security issue. I also directly called the Provincial Director of ICCN to inform him of the situation. At 6 p.m., talking with a member of the Lubutu security committee, the latter told me that it would be difficult for the Governor to issue an invitation and if he did, it would be late, with the consequences that I could be accused first of boycotting the appeal and second of being in collusion with the armed groups. If I had not invited them, it was better to show up and confront them instead of them charging me with accusations which will be difficult to defend. I also spoke about it to the ICCN Provincial Director who asked me in this case to come to Kisangani and discuss it first before presenting myself to the ANR. It was at 7 p.m. now. I took the option of travelling to Kisangani by night to be in there on Tuesday at 9:30 a.m.

A strong team from the security committee arrived with 6 people including 4 delegates of Mai Mai Luc. I replied to all their questions and everything was recorded. Nevertheless, the Director of Military Intelligence put me in jail for investigations on December 7 but released me later that night. On December 8, I was asked to stay in the hotel until further notice. On December 22, the Intelligence Service called me back to tell me that the Regional Commander had given his agreement for me to return to work and that we had to meet him to discuss it. Instead of meeting the Regional Commander, I was taken to the military prosecutor's cell and transferred, on December 23, 2021 at 4 p.m., to the central prison of Kisangani without being notified of my guilt. In all this cacophony around my interrogation and that of the Mai Mai delegation, we can learn a lesson: the Mai Mai want to leave the park freely and lay down their arms. For them, the purpose of the delegation was to find guidelines for their surrender."



D. R. CONGO

Since I announced my state of arrest, several people started activities and contributed administratively, morally and financially to my release. I would like to extend my sincere thanks to them.

Jean Claude Kyungu

Illicit Trafficking of Baby Chimpanzees – a Scourge in Maiko

In 2020, the management of Maiko National Park set up a system to dismantle the network of traffickers of baby chimpanzees, particularly in Bafwasende Territory, in the central sector of Maiko National Park. With the help of eco-guards from Maiko National Park, 14 baby chimpanzees were confiscated in Opienge and transferred to the Lwiro Primates Rehabilitation Center in Bukavu. The criminals remain unidentified but the babies were confiscated from people known to authorities, although they deny being involved in poaching. A legal consultant from Maiko National Park is compiling a dossier on the confiscation and trafficking of these baby chimpanzees. Another two baby chimpanzees have recently been handed over to the park's eco-guards by a chief of Opienge, who recovered them from poachers. We value the involvement of this community leader who participated in our last meeting in Bafwasende. In this meeting, the management of Maiko National Park with support from Lubutu Territory, the provincial authority of Maniema Province and Bafwasende Territory, discussed the problem of trafficking in baby chimpanzees in Bafwasende and the need for people to voluntarily surrender their 12-gauge hunting weapons. On this same day, authorities in Lubutu Territory collected 265 of these 12-gauge weapons and handed them over to the Institut Congolais pour la Conservation de la Nature (ICCN). An SOS campaign has been launched to provide financial support for this process of tracking and confiscating baby chimpanzees, as well as recovering 12-gauge weapons.

Jean Claude Kyungu

Confiscated chimpanzees sent to Lwiro

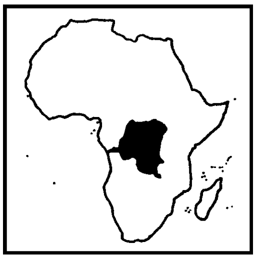
Photo: Nepo

Inspiring the Next Generation

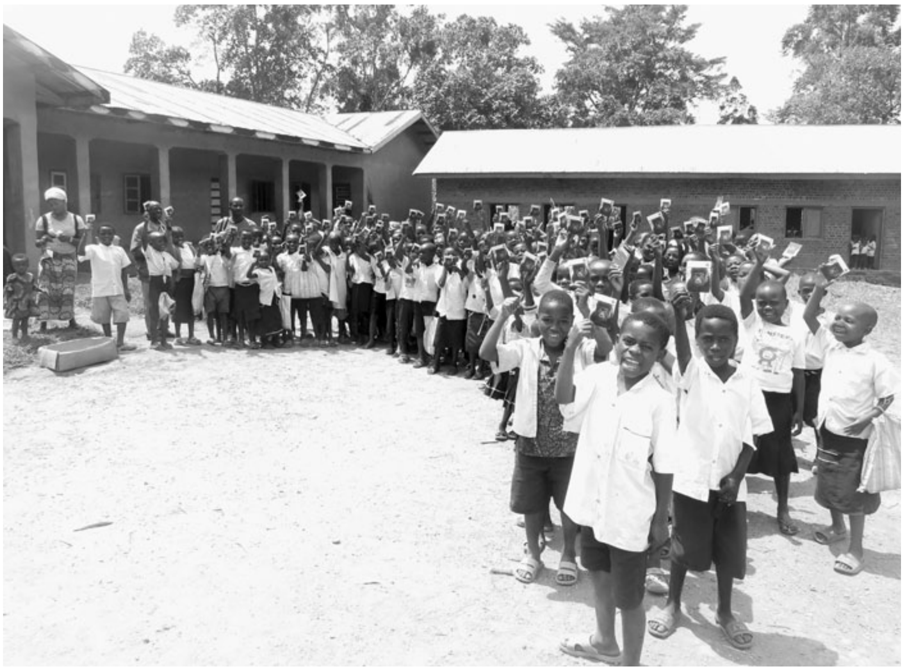
"What makes gorillas special?" It is a question each of us could answer in our own unique way. For some, it's the gorillas' gentle nature and human-like faces. For others, it's their superb intelligence and complex social bonds. But for children in Eastern Democratic Republic of the Congo, it's a question that will spark the beginning of an interactive learning experience they won't soon forget.

The Gorilla Rehabilitation and Conservation Education (GRACE) Center is located adjacent to the Tayna Nature Reserve (Tayna for short) in Lubero Territory, North Kivu. Tayna is a community managed reserve, home to a large swath of forest that makes up part of the Congo Basin. This biodiversity hotspot is home to endangered and endemic species, including eastern chimpanzees, African gray parrots, African golden cats, owl-faced monkeys, L'Hoest's monkeys, pangolins, and Grauer's gorillas. The people of Tayna have lived in harmony with nature and these forests for generations. More recently, they have also stepped up to protect it. By donating the land on which GRACE was built and helping to conduct the first ever great ape census in the region, communities near GRACE are making a difference. They are leaving a legacy for the next generation.

It is this next generation that GRACE seeks to inspire. GRACE is proud to employ a talented team of Conservation Educators who are collaborating with local schools to deliver programming for students in Primary Grades 3 and 6. After a three-year hiatus on in-person programming due to Ebola and COVID-19, the GRACE Education team relaunched our Primary 6 program last fall. This spring, we began a brand-new program for students in Pri-



D. R. CONGO



Primary 3 students gather outside their primary school after lessons with GRACE Educators

Photo: GRACE

mary 3. These programs were created in partnership with expert Education Advisors from Disney's Animal Kingdom. The intention is to build pride, foster empathy, increase knowledge, change attitudes, and inspire conservation action.

The GRACE Educators are trained in interpretive methods. They deliver these lessons in an interactive way that encourages self-discovery, student participation and self-reflection. All of the education materials are made from durable, weather-proof fabric or PVC board that can be transported between sites. Materials are created in a variety of languages and delivered by the GRACE Educators in the language that best suits each audience. For each program, GRACE Educators conduct pre/post evaluations to assess changes in students' knowledge, attitudes and behaviours.

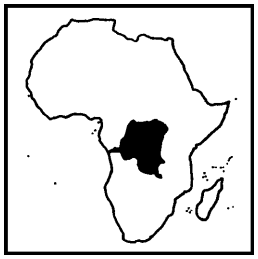
Primary 3 Program: Connecting Children with Animals

The Primary 3 program is designed for young learners. Through a series of three visits, GRACE Educators introduce students to the animal world. They learn that all animals need food, water, and shelter to survive; they discuss the important bonds a baby gorilla has with its mother; and they complete an interactive tree puzzle to learn what children and their families can do to help protect wildlife. The interactive tree puzzle includes actions such as learning more about animals, telling friends what they have learned, and planting trees. The students enjoy placing the puzzle pieces on the tree to build a complete picture. Together, they learn that simple choices can grow into more significant actions that help people and wildlife!

Engaging with Primary 3 students is incredibly important. Studies have shown that connecting children to na-

Guy Simisi Mumbere (GRACE Educator) with students, discussing what all animals need to survive

Photo: GRACE



D. R. CONGO

Photos of Hope from Tayna Nature Reserve

In last December's issue of the *Gorilla Journal* (no. 63), the Gorilla Rehabilitation and Conservation Education (GRACE) Center was thrilled to share our results from the first-ever Great Ape census in Tayna Nature Reserve. The survey, which took 70 days to complete, confirmed the presence of eastern chimpanzees and Grauer's gorillas in Tayna – a promising result for these endangered species!

This was just the beginning of GRACE's monitoring efforts. GRACE is committed to working hand in hand with communities and the local management authority, Réserve des Gorilles des Tayna (RGT). Together, we are making ongoing efforts to record and better understand the wildlife of Tayna Nature Reserve.

Recently, GRACE sent survey teams back into Tayna to learn more about its incredible wildlife (this region is a biodiversity hotspot). These survey teams have been monitoring gorilla populations continuously for over 100 days. As an added part of our monitoring and protection efforts, GRACE partnered with Wildlife Protection Solutions to place trail cameras throughout Tayna Nature Reserve.

Soon after installation, these trail cameras began to provide a rare glimpse into the lives of Tayna's animal residents. Chimpanzees, owl-faced monkeys, colobus monkeys, forest squirrels, black-fronted duiker, several unidentified bird species, an African golden cat, and Grauer's gorillas have all been caught on camera.

Even more special, one series of photos captured a mother Grauer's gorilla with her young infant, a first for Tayna! In addition to providing valuable scientific insight, these photos are offering a glimpse of hope for the conservation of species in D. R. Congo.

Katie Fawcett, Jackson Kabuyaya Mbeke, Benezeth Kambale Visando and Damien Caillaud

Gorilla mother with infant

Blue monkey

Colobus angolensis cottoni

Photos: GRACE, cameras courtesy of Wildlife Protection Solutions

ture at an early age, and sharing with them the wonder of the natural world, leads to environmentally conscious adults. This year, GRACE Educators have connected 781 students in 9 Primary schools to the world of animals, gorillas, and conservation. Pre- and post-evaluation data are still being analysed, but GRACE Educators report that the lessons were popular with students and teachers alike. Students from one primary school were so inspired that they even made their own drama about why they like gorillas, based on information they learned from GRACE Educators!

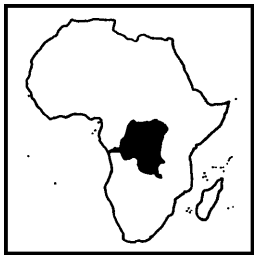
P6: Guy Simisi Mumbere discusses the positive action card with help from a student volunteer

Photo: GRACE

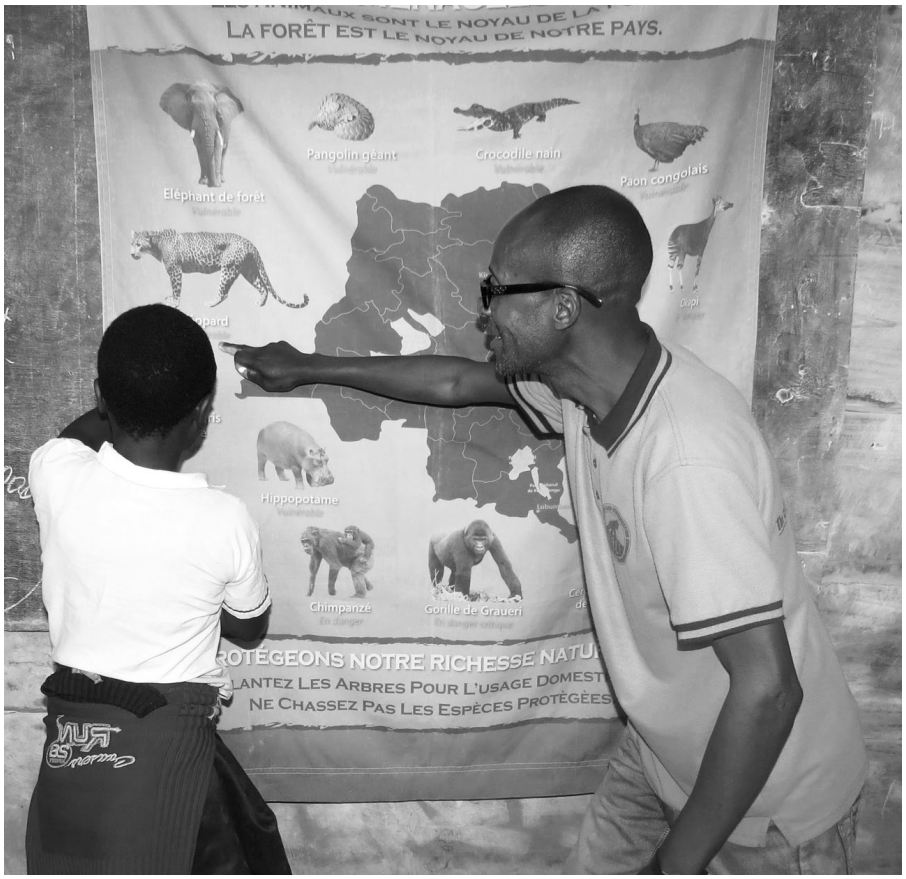
Primary 6 Program: Celebrating the Animals of D. R. Congo

Each fall, in alignment with school curriculum, students in Primary 6 also receive three visits from our GRACE Educators. These advanced lessons begin with a session on gorilla adaptations, including physical and behavioural traits that help gorillas survive in the forest.

Next, GRACE Educators teach students about the classification of primates, including similarities and differences between monkeys and apes. To foster empathy and build pride, students also learn about the unique wildlife of the Democratic Republic of the Congo, including endemic species



D. R. CONGO



Honoré Kambale Masumbuko (GRACE Education Manager) discusses the animals of D. R. Congo with a student

Photo: GRACE

such as Congolese peafowl, bonobos, okapi and Grauer's gorillas.

Students conclude their visits with an interactive lesson on how human actions impact the forest. Using a large, illustrated banner, GRACE Educators ask students to identify human actions that can pose challenges for wildlife (examples include poaching, cutting down trees, and littering). Students are given cards with examples of positive alternative actions to address each threat (raising livestock for protein, creating a woodlot, properly disposing of litter, and more). As each threat is discussed, students work to determine if their action card addresses that specific threat. If so, they place it on the banner. When all pieces are placed, the new illustration shows people and wildlife coexisting together near the forest.

Analyses of pre- and post-evaluation data is ongoing, but initial results show a change in knowledge as a result of these visits. Notably, 73 % of students reported that okapi are only found in D. R. Congo (compared to 38 % on the pre-evaluation); 80 % reported that gorillas care for their babies (up from 50 % on the pre-evaluation); and 74 % reported that Great Apes do not have tails (23 % on the pre-evaluation). For many students in D. R. Congo, Primary 6 is the last grade they attend, so participating in this program offers students an incentive to remain in school and enhances their knowledge in preparation for national exams. In 2021, GRACE Educators taught 267 Primary 6 students at 8 schools.

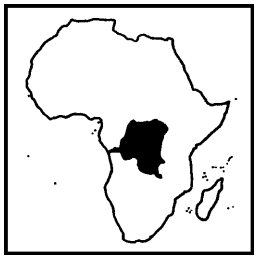
In total, GRACE Educators have brought conservation education to over 900 students in Kasugho and Katoyo since fall 2021. Thanks to our dedicated team of educators, that's 900 more young people who can answer the question, "What makes gorillas special?" So, while GRACE works to inspire the next generation, we are inspired too. This group of smart, enthusiastic, and dedicated students are already changing our world.

Laurie Cummins, Honoré Kambale Masumbuko, Guy Simisi Mumbere and Kambale Kamaliro Josias

For more information on GRACE's education programs and materials, please contact us at info@gracegorillas.org)

Guy Simisi Mumbere (GRACE Educator) leads students in a discussion on why gorillas are special

Photo: GRACE



D. R. CONGO

Joint Project of Trackers in Sarambwe: Rearing Chickens

In the last issue of the *Gorilla Journal* we reported on the efforts of the Sarambwe trackers to ensure the conservation of the reserve and asked for donations to thank them for the good work. When they received this special bonus for working without the support of eco-guards or soldiers, they got together and decided to use this financial bonus to create a common project. The project involved buying 60 high-quality chickens as well as the equipment necessary for housing and breeding them. The trackers renovated and adapted an old pigsty located at the ranger post to breed the chickens there. The financial cost for this project was US$ 3 for each chicken and US$ 60 for the chicken pen.

The chicken rearing and breeding project consists of raising chickens by feeding and caring for them as they grow. It was estimated that food and care costs would be US$ 3.50 per chicken for three months. At the end of three months, the value of each chicken would be US$ 10. This would result in a profit of US$ 2.5 per chicken, i.e. US$ 2.5 for every US$ 7.5 dollars invested.

However, another problem was encountered which led to an additional cost of US$ 0.80 per chicken thereby reducing the profit to US$ 1.7 per chicken. This additional cost is due to Sarambwe being located in a remote area: the chicken feed has to be transported from Kiwanja, which is 36 km away. The trackers travel there to buy food once a week, using the motorcycle which belongs to the Sarambwe Nature Reserve.

When the Sarambwe trackers received their second bonus, they bought 30 more chickens for US$ 90 and additional materials for US$ 10. This investment increased the profit to US$ 2 per chicken. Unfortunately, while the trackers were on patrol in the Sarambwe Nature Reserve, eight soldiers living at a nearby base were recalled to their headquarters, and they took 10 of the chickens with them.

Claude Sikubwabo

Chickens in the common project of the Sarambwe trackers

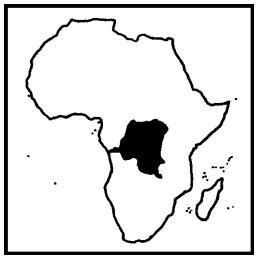
Photo: Getride Nzanzu

The Sarambwe trackers with new equipment

Photo: Getride Nzanzu

Electric Fence Reduces Human–Wildlife Conflict around Virunga National Park

"For the past ten years, we had given up on planting maize. Buffalos could raid our farms a few weeks to harvesting and we could make immense losses. However, that has changed. We have harvested maize twice since the electric fence was put in place," says Byibesho Baudouine, a resident of Jomba village in Mikeno Sector. Constructed between November 2020 and June 2021, the 60.1 km electric fence around Virunga National Park in Mikeno Sector is helping to significantly reduce incidences of crop raiding.



D. R. CONGO

Sign in front of the electric fence at the Mikeno Sector of the Virunga National Park

Photo: Altor Musema

According to Virunga National Park Authority, crop raiding incidences have dropped from around 194 cases recorded from November 2019 to November 2020 to zero cases from June 2021 to March 2022. This has enabled over 50,000 park-edge people to harvest more food and raise income from their farms.

Over 70 community members were employed to help in the erection of the electric fence. The individuals earned a daily wage of about US$ 5 each. On average, each person earned US$ 1200 for the 8 months of the construction, which enabled them to pay their individual and household bills including medical, food and school fees for their children. “Working on the electric fence helped me to pay school fees for my five children without having to sell one of my plantations as the initial plan was. I was also able to buy them new school uniforms, school bags and shoes. Heaven knows I had longed to buy items for so long but I was unable because of financial constraints,” says Bahati Kamanzi Chantal.

Involving park-edge communities in conservation actions helps them to understand and appreciate conservation better. It also allows for ownership of projects by the community and consequent sustainability of the same.

Commenting on the benefits of the electric fence, Emmanuel Bahati Lukoo, Warden In-Charge of the Southern Part of Virunga National Park, says the electric fence has improved and ensured the safety of both animals and people and as well improved park-community relations. “In the past, crop raids were detrimental. Many buffalos were killed, while some residents got injured by the vicious animals in self-defence. People resented the animals and the park in general. Thankfully this isn’t happening anymore, the fence has kept the animals at bay, and this has helped in restoring sanity” Emmanuel notes.

Crop raiding is mainly caused by buffaloes, but other animals such as elephants, monkeys and – rarely – gorillas have participated in the past. When the fence was newly erected, gorillas were seen trying to get under the electric wire; however, it did not take long for the highly intelligent primates to know that the fence was electrified and since then they have avoided it. The fence has kept all animals in the park and no animal has been reported to have been harmed by it. To ensure that the fence serves its purpose, there are some organised community groups who monitor it daily and chase animals which try to get too close, especially during the night.

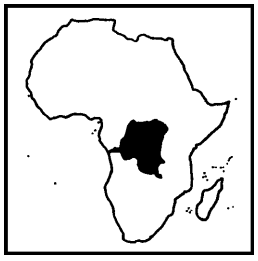
The erection of the electric fence was funded by International Gorilla Conservation Programme (IGCP) under the Water4Virungas project. Water-4Virungas is an Integrated Water Resource Management (IWRM) program in the Greater Virunga Landscape that contributes to the reduction of conflict and regional stabilization through increased access to quality water and improved watershed management at local, regional, and transboundary levels.

Human–wildlife conflict remains a challenge in and around several protected areas. Parks in collaboration with conservation partners have and continue to explore mitigation measures – these include, erection of stone walls, electric fences, planting of thorny hedges/fences, excavation of trenches along the park boundaries among others. Human–Gorilla Conflict Resolution (HuGo) groups have also been established (in Uganda and DRC) and have empowered local communities to manage problem animals and improve community–park relationships. However according to Altor Musema, IGCP Country Coordinator for DRC these mitigation measures are most effective when more than one measure is deployed. In Bwindi Mgahinga Conservation Area (BMCA) for example, *Erythrina* trees have been planted along the stone wall to reinforce it and prevent stubborn animals like buffalos from crossing over the fence.

Liliane Nakayima

Close-up of the electric fence

Photo: Altor Musema



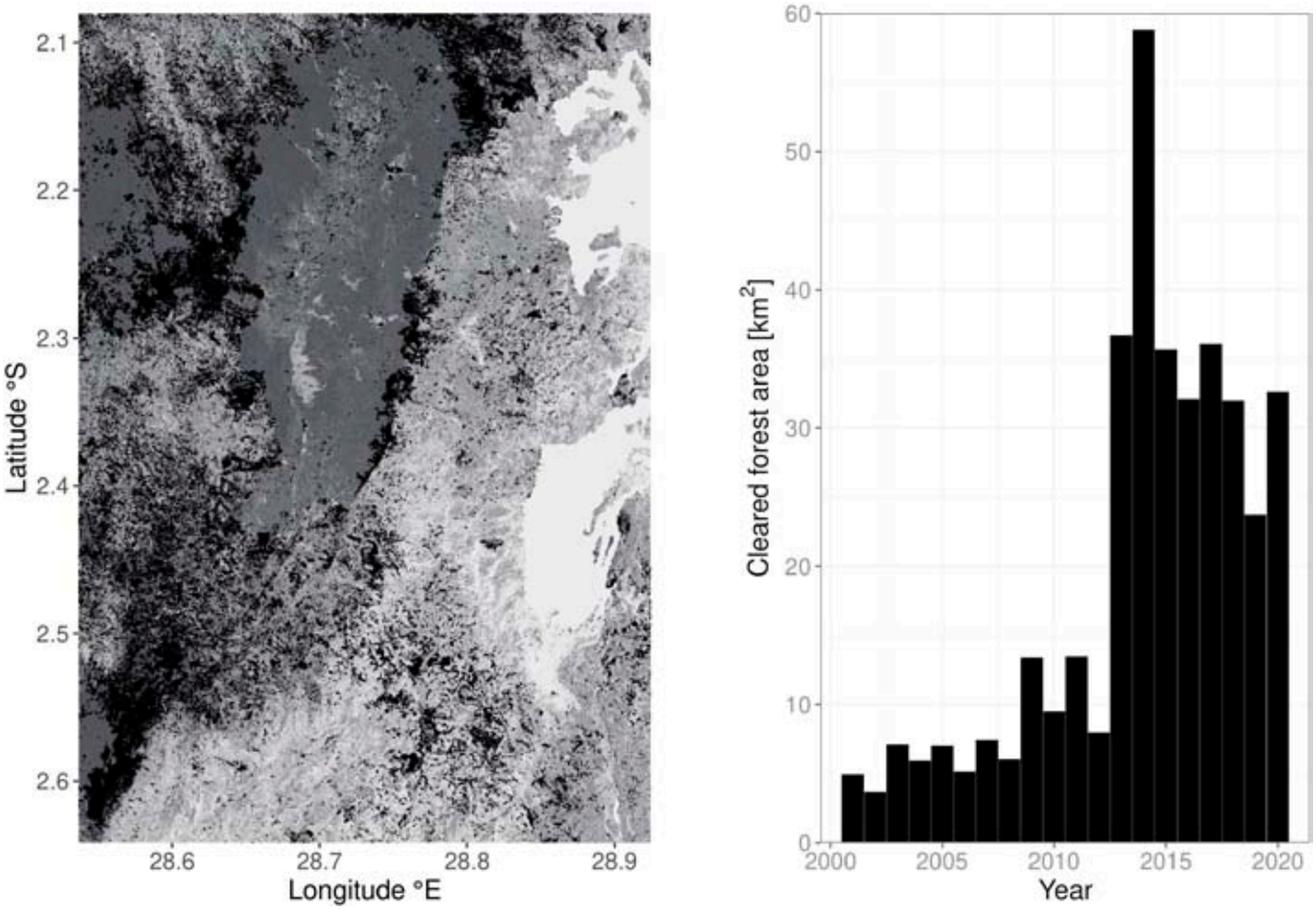
D. R. CONGO

Ecological Research in the Kivu Region

As we fly from Rwanda's capital Kigali to the Kivu region in eastern Democratic Republic of the Congo, our route stretches over a hilly landscape covered in a mosaic of small plots of cassava, corn, sweet potatoes, bananas, millet, beans, and vegetables, as well as large tea plantations. However, what looks beautiful from the air is often a different reality on the ground. Eastern Congo is one of the poorest regions in the world and has been marked by violent political unrest over the past 30 years (Rwandan Genocide, Congolese Civil War).

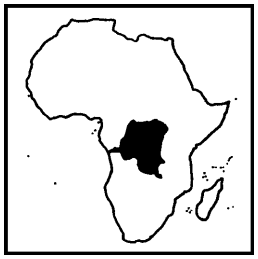
In the highlands of the Kivu region, the population density has risen sharply during these crisis years. This is especially evident along the eponymous Lake Kivu, where many smallholders live and practice subsistence farming. While most of the slopes in Rwanda have been terraced with financial support from government and international aid, little investment has been made in agriculture on the opposite side of the lake in the Democratic Republic of the Congo. As a result of the rising population pressure, deforestation and agriculture are carried out on very steep slopes, making the soil very susceptible to erosion. The fertile topsoil, enriched with organic carbon and plant nutrients, is eroded during heavy rains and washed out into the valleys below. What remains on the slopes for agriculture is often nutrient-poor subsoil. In steep fields, the entire subsoil can even erode down to the bedrock, making it almost impossible for crops to grow.

Herein exists a vicious cycle of deforestation and arable farming: due to bad or missing infrastructure, there is hardly any protection against erosion; the soils therefore often degrade quick-



Deforestation (black) of protected forest areas during the period of 2001 to 2020 in the eastern part of the Kahuzi-Biéga National Park

Source: Hansen et al. 2013, illustration: Laura Summerauer



D. R. CONGO

Agricultural land near the city of Bukavu (South Kivu, Democratic Republic of the Congo). The lack of arable land means even steep slopes are used for agriculture. Heavy rains can rapidly erode the unprotected soil. *Photo: Matti Barthel*

ly and yields fall. This in turn increases the pressure to clear more forest. Compounding the problem is the fact that charcoal is the primary energy source in households. The wood from trees in old-growth natural forests is particularly popular for making charcoal and fetches better market prices, which accelerates illegal logging. In addition to the negative impacts on human wellbeing, deforestation also has a large impact on functioning of local ecosystems and survival of wildlife. The logical consequence of increasing deforestation in mountain rainforest areas is the loss of habitat for the local gorilla populations (Grauer's gorillas and mountain gorillas) and the loss of biodiversity in general.

Given the intersecting and often incompatible goals of nature conservation, agriculture, and indigenous peoples, it is becoming increasingly difficult to find a satisfactory conflict-free solution for all parties involved. Unfortunately, this often means that the accelerated logging of protected forests continues unabated.

Scientific research in the area offers a window into potential solutions or at least variables to track the cascade of effects from deforestation and erosion. The exposed and deforested steep slopes are open to tropical torrential downpours, which are the main cause of soil erosion in the Kivu region. In a study published in *Progress in Physical Geography*, a research team led by the Goma Volcano Observatory and the Catholic University of Louvain, Belgium, has now for the first time been able to assess precipitation erosivity more accurately for the region. They found that both the amount of rainfall and the altitude of the affected areas are crucial (Bagalwa et al. 2021).

Another problem for deforested areas is that carbon compounds from deeper soil layers that are thousands of years old are microbially decomposed and released into the atmosphere as CO_2 (Drake et al. 2019). The consequences are far-reaching: the released CO_2 contributes to the greenhouse effect in the atmosphere and the decomposed organic matter is lost, which is also necessary for general soil health.

To better understand the soil processes in the humid African tropics and the effect of land use change, large-scale soil analyses present an important starting point. Infrared spectroscopy has become increasingly popular in recent decades as a low cost and simple method to measure carbon, plant nutrients, and many other mineral soil properties. Summerauer et al. (2021) have created a database of soil spectra for Central Africa to make future soil analysis cheaper, faster, and easier for the local research community to access.

In summary, erosion reduction and sustainable soil fertility management allow for already deforested areas to maintain crop production or even increase yields while staving off the need for further deforestation and land-use conversion. Meanwhile, investments in more efficient fuel sources for cooking need to be made in order to reduce the illegal harvesting of protected trees for charcoal production. Such measures are crucial to maintain biodiversity, ensure species protection and an increase in numbers, especially within gorilla populations.

Laura Summerauer and Matti Barthel

References

Bagalwa, R. M. et al. (2021): Spatial and seasonal patterns of rainfall erosivity in the Lake Kivu region: Insights from a meteorological observatory network. Progress in Physical Geography: Earth and Environment 45 (6), 866–884

Drake, T. W. et al. (2019). Mobilization of aged and biolabile soil carbon by tropical deforestation. Nature Geoscience 12, 541–546

Hansen, M. C. et al. (2013): High-Resolution Global Maps of 21st-Century Forest Cover Change. Science 342, 850–855

Summerauer, L. et al. (2021): The central African soil spectral library: a new soil infrared repository and a geographical prediction analysis. SOIL 7, 693–715

Mountain gorilla in Virunga National Park. Increasing deforestation destroys the gorillas' habitat and has far-reaching consequences for the soil.

Photo: Matti Barthel

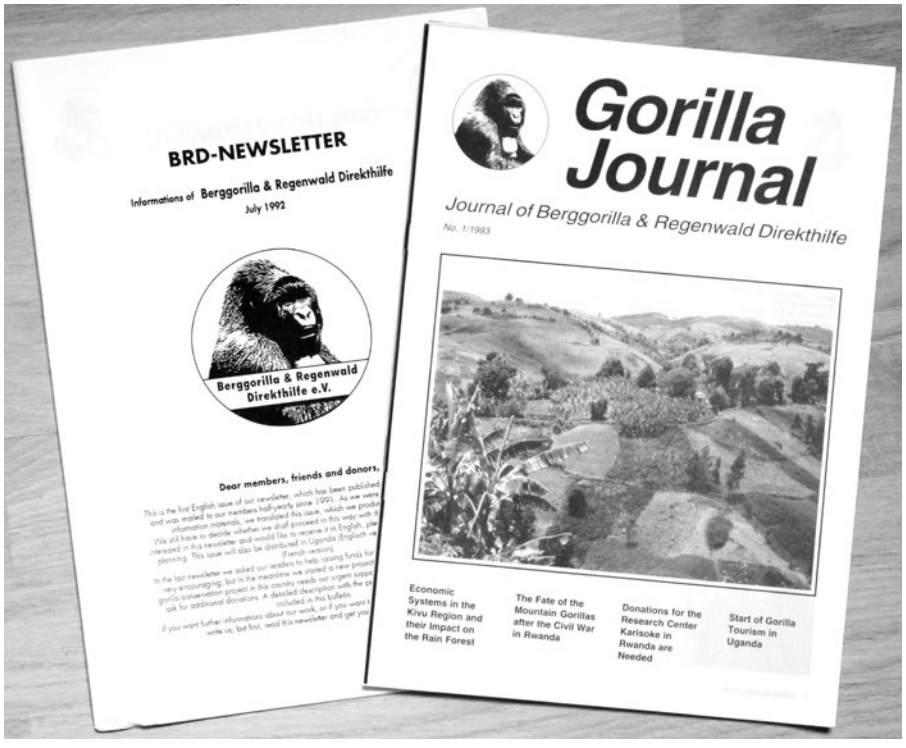
GORILLAS

30 Years – Gorilla Journal Anniversary

The first English issue of our newsletter was published in July 1992, and we are happy that it has continued to be issued twice per year ever since. We are extremely grateful to the 443 authors who have contributed to the English issues of the journal so far, and to all the photographers and illustrators. Special thanks to the translators, editors and proofreaders, especially Ann DeVoy, Bettina and Andrew Grieser Johns, the late Colin Groves, Callum McCabe and Jennifer Scott.

The very first German newsletter was edited by journalist Rüdiger Braun in 1989, and in 1991 I took over after he was unable to continue. Issues produced during this time were published under the name *BRD-Newsletter*. In 1993, Edwin Artho took on the task of creating a professional layout for the journal, which was then renamed *Gorilla Journal*. For the German issue, designer Ulrich Stübler created a new layout with colour on the cover in 1999, but the 1993 layout has been retained for the English issue, providing greater flexibility in terms of the number and length of contributions.

The topics covered in the first English issue continue to be relevant today: general reports on politics in Uganda and Zaire (now D. R. Congo), focused updates on our activities and conservation projects at Mgahinga, Bwindi, Rwanda, Kahuzi-Biega and Maiko, and reviews on interesting subjects, such as the taxonomy of Bwindi gorillas. The first issue also contained a proposal about a gorilla survey conducted in Maiko National Park by Claude Sikubwabo – who now manages our activities in DRC.



***The first English issue of our newsletter and the first issue with the official title* Gorilla Journal**

The first issue was photocopied, whereas the second one was already offset printed. Erwin Reisch, the director of Gentner Verlag, a publishing company, had also started a tour company in Uganda, and he offered to print the journal through his publishing company. At the beginning the journal was only distributed in printed format. It was sent to members and other people interested in gorillas and their conservation, and was distributed at various events, such as international congresses focused on non-human primate conservation.

For several years there was no final PDF version since photos, illustrations and other images were manually scanned and positioned in the text before printing. This changed in 1999, and since then the PDF files have been available on our website as free downloads. In 2009, Michael Matschuck, the director of the printing company druckpartner, offered to print the journal, and it has been produced there ever since. The print run increased to 2000 copies in 1999 and 2000 but has decreased since then because many readers preferred reading their PDF copies or printing it themselves. In 2021 we only printed 300 copies, as we have been unable to attend conferences in person due to the global COVID-19 pandemic.

For anyone interested in past issues of *Gorilla Journal*, we have some good news! We are very grateful to Martha Robbins and the Max Planck Institute of Evolutionary Anthropology who offered to scan any issues not yet available as PDFs. Many thanks to Martha and to Claudia Marstaller, who coordinated everything, and especially to Maximilian Groth who did the scanning. We have now uploaded these PDFs to our website. Just check https://www.berggorilla.org/en/journal/ and you will find them there!

Angela Meder

GORILLAS

The COVID-19 Pandemic and Mountain Gorilla Health

Respiratory illness outbreaks among wild mountain gorillas in Volcanoes National Park have declined since the start of COVID-19, according to a "Correspondence" report by authors from Gorilla Doctors and from the Rwanda Development Board in the journal *Nature*. Mountain gorillas are susceptible to human-transmitted respiratory pathogens, with respiratory illness being the second leading cause of death in wild, human-habituated populations.

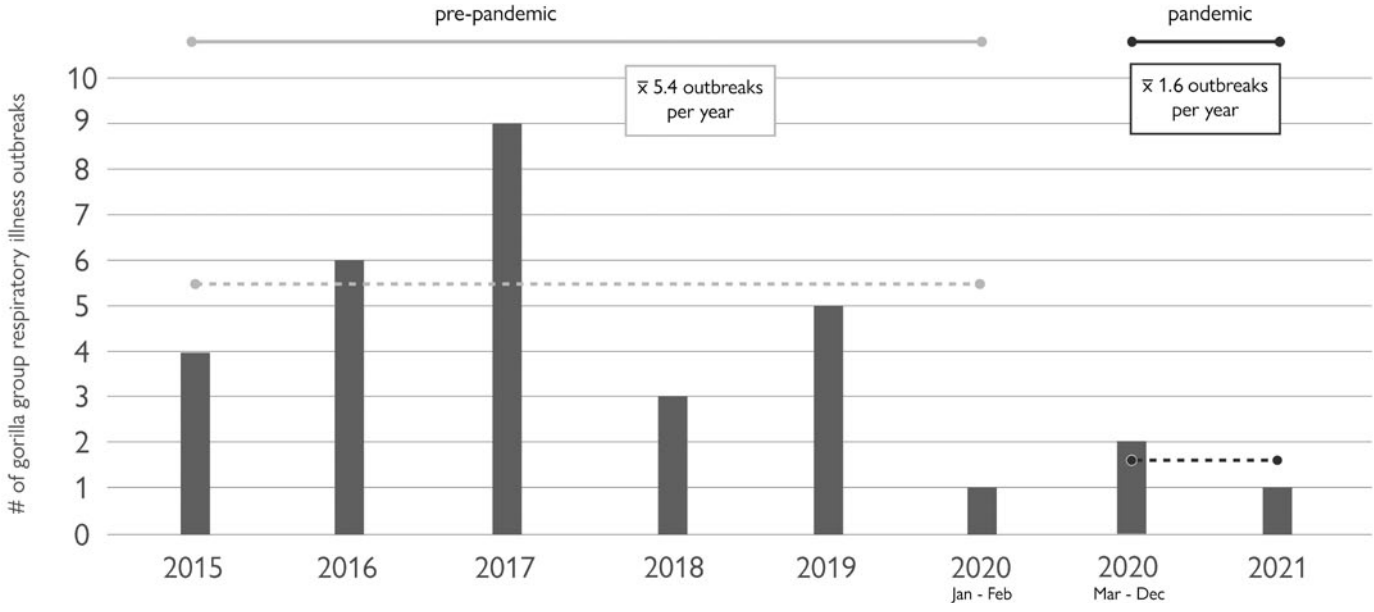
In the five years prior to March 2020, the Volcanoes National Park gorilla population averaged 5.4 respiratory illness outbreaks annually. In contrast, from March 2020 through December 2021, this population averaged 1.6 respiratory illness outbreaks each year. To date, SARS-CoV-2 has not been detected in samples collected from mountain gorillas with respiratory illness. This decline in respiratory illness outbreaks during the COVID-19 pandemic correlates with an overall reduction in the number of people coming into close proximity with the gorillas, and with additional health protection measures taken to reduce the risk of disease transmission from humans to gorillas. "Respiratory illness outbreaks are common in wild, human-habituated mountain gorillas, and considering that gorillas are susceptible to SARS-CoV-2, this preliminary analysis is such a welcome finding," said co-author Kirsten Gilardi, executive director and chief veterinary officer for Gorilla Doctors, and the director of the Karen C. Drayer Wildlife Health Center at the UC Davis School of Veterinary Medicine. "It is a testament to the early and decisive action of park authorities to help protect mountain gorillas and humans."

The additional safety measures are in accordance with the *IUCN Best Practice Guidelines for Health Monitoring and Disease Control in Great Apes*, which state: "… disease prevention should be regarded as a top priority … programs should be centred on monitoring health parameters, and modifying human activities accordingly, in order to reduce the risk of disease transmission to great apes." (Gilardi et al. 2015)

COVID-19 in Zoo Gorillas

In 2021, gorillas had positive test results for the SARS-CoV-2 virus in the zoos of San Diego, Prague, Atlanta and Kansas City; in February 2022 the Dallas Zoo was added to this list. Most of the positive gorillas had no noticeable symptoms and the rest had no severe symptoms.

Apart from primates, the virus was also found in some other mammals in zoos, especially in large cats.



Numbers of mountain gorilla groups experiencing respiratory illness outbreaks in Volcanoes National Park, Rwanda from 2015 to 2021

Illustration: Gorilla Doctors blog

Mountain gorilla family 2019

Photo: Skyler Bishop for Gorilla Doctors

Gorilla ecotourism was temporarily suspended at the start of the COVID-19 pandemic. The Rwanda Development Board mandated mask-wearing at all times when in close proximity to gorillas and increased the minimum distance from 7 to 10 meters, or nearly 33 feet.

Jean Bosco Noheri, a Gorilla Doctors field veterinarian who compiled the data for this comparison, cites other potential correlating factors to consider as additional lines of inquiry. "Variation in pathogenicity of viruses, gorilla group dynamics, climate conditions and a variety of other factors may also be impacting the decrease in respiratory illness outbreaks we have seen," Noheri said.

These findings illustrate the imperative for following best practice guidelines that minimise human disease transmission to great apes. Particularly in light of the omicron variant surge and the return of gorilla tourism, Gorilla Doctors and the Rwanda Development Board recommend these measures be made permanent.

Adapted from the Gorilla Doctors blog

References

Gilardi, K. & Uwingeli, P. (2022): Keep mountain gorillas free from pandemic virus. Nature 602, 211

Gilardi, K. V. et al. (2015): Best Practice Guidelines for Health Monitoring and Disease Control in Great Ape Populations. Gland, Switzerland (IUCN SSC Primate Specialist Group)

Palacios, G. et al. (2011): Human Metapneumovirus Infection in Wild Mountain Gorillas, Rwanda. Emerging Infectious Diseases 17 (4), 711–713

Multilevel Societies in Apes?

"Social system" is an umbrella term that encapsulates the social organisation (size and demographic composition of a social group), social structure (content, quality, and patterning of social relationships among group members), mating system and care system of and among the social units of a population or species. Primate social systems show considerable diversity.

Multilevel societies represent a particular primate social system that was first described for hamadryas baboons by Hans Kummer (1968); they consist of stable core units that form increasingly higher levels of grouping. Among primates, multilevel societies are best known from a few papionin (e.g., gelada, Guinea baboons, hamadryas baboons) and colobine (snub-nosed monkeys and Angolan colobus) species as well as humans. Recently, researchers have suggested that some of the gregarious apes could have multilevel social societies (see Grueter & Wilson 2021). Are such claims warranted?

The traditional view of ape social systems can be summarised as follows: orangutans are semisolitary; gibbons are pair-living; gorillas live in groups with one male and multiple females; and chimpanzees and bonobos live in communities with multiple males and females, but community members forage in compositionally fluctuating subgroups (fission-fusion dynamics). More recent studies showed that orangutans have differentiated social interactions, and in some populations gather in larger subgroups (Singleton & van Schaik 2002).

Recent studies have led to a reassessment of the canonical view of ape social systems (e.g., Pisor & Surbeck 2019, Furuichi 2020), particularly those intergroup encounters which are tolerant rather than aggressive. Instances of temporary intermingling, simultaneous exploitation of resources, and friendly relations between groups have been reported in some ape taxa. Some of these observations have been used as a basis to support the existence of multilevel societies in apes.

Western gorillas represent a curious yet unresolved case. They have

been known to often interact non-aggressively, feeding on the same resource, engaging in social play with out-group members, and occasionally they spend the night nesting together in close proximity. The results of Forcina and colleagues (2019) support a multilevel gorilla society, with several groups forming larger entities. Morrison and colleagues (2019), using data on co-visitation of forest clearings by groups or solitary gorillas on the same day detected two hierarchically nested tiers of social organisation. However, western gorilla groups typically spend only a tiny fraction of their time in clearings, and whether "associations" seen in those clearings are durable and extend into the gorillas' forest habitat is not well understood. It therefore seems premature to declare western gorilla societies as multilevel. These findings, in conjunction with research showing that peaceful coexistence among neighbouring groups may be mediated by a dispersed network of related males (Bradley et al. 2004), hint at the possibility of a "community"-level organisation in at least some populations.

A recent study of mountain gorillas in the Virunga Volcanoes (Mirville et al. 2018) found that roughly one-fifth of intergroup encounters were peaceful. The familiarity of interacting groups (i.e., whether they had split from a single group in the past) was the main determinant of peacefulness. In a follow-up study, Morrison and colleagues (2020) showed that the familiarity effect applies only when interacting groups are within the periphery of their home ranges; encounters within core areas were consistently aggressive. In the Bwindi population, the most common behaviour shown by the study group in the context of between-group encounters was mild to moderate aggression, followed by tolerance (Robbins & Sawyer 2017). Pacific intergroup encounters occur only occasionally and

A group of western lowland gorillas meets a young male (at the right) in a clearing.

Photo: Vidrige Kandza/WCS Congo

do not constitute a major part of the gorillas' daily social context, conditions that are incompatible with a multilevel social system.

In bonobos, encounters of communities can last for several days. The transfer of females between communities may influence the affiliative relationships subsequently seen when two communities meet, so females may be important mediators of peace between communities. Lucchesi and colleagues (2020) as well as Pisor and Surbeck (2019) state that the tolerance seen in bonobo intergroup interactions could be the basis for the formation of multilevel societies. Given the non-permanence of these associations it may be assumed that bonobos do not exhibit multilevel societies in the strict sense.

Claims of chimpanzees featuring multilevel societies exist in the literature. However, multilevel societies require core units to exhibit a high degree of spatio-temporal stability in composition. In chimpanzees, mothers and young offspring do represent stable units, but parties are not stable. That is, the frequent separating and coming together of individuals, or fission-fusion nature of chimpanzee social dynamics, are irreconcilable with multilevel societies. At Ngogo, male subgroup members tended to remain in spatial proximity to each other and engage in joint territorial boundary patrols (Mitani et al. 2003). Females formed distinct association clusters termed "cliques" within which affiliative interactions occurred more than expected by chance. The modularity among males seems to have been a precursor towards a split of the community into two distinct 'daughter' communities. The modular social configuration among chimpanzee males has not led to frequent or permanent association among subunits but instead to a complete fission or split of the community.

Classifying a species as having a multilevel social structure or not also affects the predictions we develop regarding various evolutionary processes and phenomena such as disease

and information transmission, cognitive ability, and sexual selection. For example, the busy and competitive environment that multilevel societies entail can be a strong selective force for the evolution of secondary sexual traits in both sexes. Multilevel societies can also reduce mating conflict in the form of infanticide, structure the flow of information/culture and possibly channel the transmission of pathogens and have been proposed to lower the cognitive load of its adherents. While the prerequisites for multilevel systems – substructuring and tolerant inter-group encounters – are indeed in place in some of the ape taxa, these are insufficient for a reclassification.

Grueter and Wilson (2021) stress that the term "multilevel society" should be used exclusively to refer to cohesive and compositionally consistent core units within a relatively stable larger society, as found in some papionins, colobines, and in humans. Expanding the term to include any sort of population-level substructuring makes the term vaguer and undermines its utility. They suggest that although the criteria for multilevel societies per se do not appear to be met in gregarious apes, the evidence accumulated thus far points to a possible higher-level organisation. Grueter and Wilson (2021) advocate the use of the term supra-group organisation to denote the existence of tolerant relationships between social groups that becomes manifest during intergroup encounters. Bonobos, mountain gorillas, western gorillas and gibbons may exhibit such a supra-group organisation. Tolerant intergroup relationships can be underpinned by a kinship network, as seen in western gorillas.

Summary of
Grueter, C. C. & Wilson, M. L (2021) Do we need to reclassify the social systems of gregarious apes? Evolutionary Anthropology 30 (5), 316–326

References

Bradley, B. J. et al. (2004): Dispersed male networks in western gorillas. Current Biology 14, 510–513
Forcina, G. et al. (2019): From groups to communities in western lowland gorillas. Proc R Soc B. 286, 20182019
Furuichi, T. (2020): Variation in intergroup relationships among species and among and within local populations of African apes. International Journal of Primatology 41, 203–223
Kummer, H. (1968): Social organization of Hamadryas Baboons: A field Study. The University of Chicago Press
Lucchesi, S. et al. (2020): Beyond the group: how food, mates, and group size influence intergroup encounters in wild bonobos. Behavioral Ecology and Sociobiology 31, 519–532
Mirville, M. O. et al. (2018): Low familiarity and similar 'group strength' between opponents increase the intensity of intergroup interactions in mountain gorillas (Gorilla beringei beringei). Behavioral Ecology and Sociobiology 72, 178
Morrison, R. E. et al. (2019): Hierarchical social modularity in gorillas. Proceedings of the Royal Society B 286, 20190681
Mitani, J. C. & Amsler, S. J. (2003): Social and spatial aspects of male subgrouping in a community of wild chimpanzees. Behaviour 140, 869–884
Morrison, R. E. et al. (2020): Inter-group relationships influence territorial defence in mountain gorillas. Journal of Animal Ecology 89, 2852–2862
Pisor, A. C. & Surbeck, M. (2019): The evolution of intergroup tolerance in nonhuman primates and humans. Evolutionary Anthropology 28, 210–223
Robbins, M. M. & Sawyer, S. C. (2007): Intergroup encounters in mountain gorillas of Bwindi impenetrable National Park, Uganda. Behaviour 144, 1497–1519
Singleton, I. & van Schaik, C. P. (2002):The social organisation of a population of Sumatran orang-utans. Folia Primatologica 73, 1–20

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).

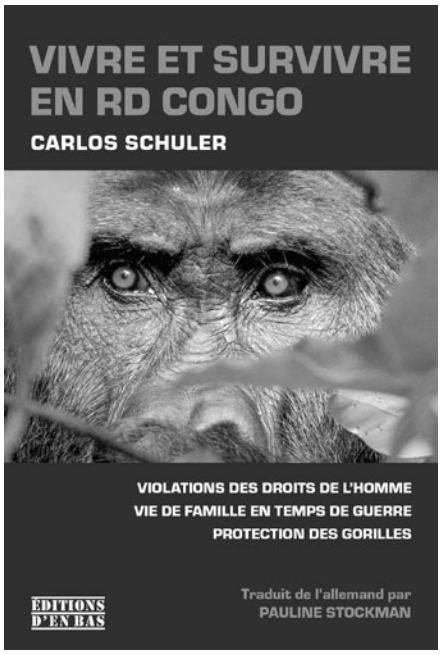
You can download this issue at:
www.berggorilla.org/fileadmin/user_upload/pdf/journal/journal-en/gorilla-journal-64+-english.pdf

as well as the German issue:
www.berggorilla.org/fileadmin/user_upload/pdf/journal/gorilla-journal-64-deutsch.pdf

and the French issue:
www.berggorilla.org/fileadmin/user_upload/pdf/journal/journal-fr/gorilla-journal-64-francais.pdf

Our website www.berggorilla.org is full of interesting information. Enjoy visiting it!

READING



Carlos Schuler:
Vivre et survivre en RD Congo. Translated from the German by Pauline Stockman. Foreword by Denis Mukwege. Lausanne (éditions d'en bas) 2021. 272 pages, paperback. ISBN 978-2-8290-0624-1. CHF 29, € 20
Written by Carlos Schuler, this book documents his experiences during the war in the Democratic Republic of the Congo (DRC).

Carlos Schuler is one of very few foreigners to have remained in the east of the DRC throughout the events of the last few decades. The book describes life under the dictatorship of Mobutu Sese Seko, his fall, the impact of the Rwandan genocide during which over two million Rwandan refugees fled to the east of the DRC, persons guilty of mass killings among them, and the incessant wars.

The book is a mixture of autobiography and eye-witness accounts, covering the endless battle for the protection of the gorillas of the Kahuzi-Biega National Park and the struggle to prevent violence against local populations, particularly women.

The book plunges you into the reality of an unjust war and the corresponding actions of the United Nations, sometimes expressing scepticism regarding the actions of NGOs in a post-conflict country, where everything is urgent and should be top priority.

Carlos also describes family life in the midst of war, living with his wife Christine and their two children in extreme conditions, the children keeping up their studies despite the armed conflict raging around them.

Dr Denis Mukwege, 2018 Nobel Peace laureate, writes in the preface: "I remember that [Carlos] didn't hesitate to negotiate with numerous rebel groups and the Congolese army to try to save our precious natural heritage from a war which started in 1996 and plunged the DRC into ruin and barbarism. Over and above his professional responsibilities, Carlos fervently supported his wife, Christine Schuler-Deschryver, the national director of V-Day, an international movement against gender-based violence, co-founder and director of 'City of Joy', which can be seen on Netflix, director of V-World-Farm and vice-president of the Panzi Foundation."

Jason K. Stearns
The War That Doesn't Say Its Name: The Unending Conflict in the Congo. Princeton (Princeton University Press) 2022. 328 pages. Hardcover, US$ 29.95, £ 25.00. ISBN 9780691194080

FAO
The State of the World's Forests 2022. Forest pathways for green recovery and building inclusive, resilient and sustainable economies. Rome (FAO) 2022. XXI, 141 pages. ISBN 978-92-5-135984-6
Download PDF (11.5 MB): http://www.fao.org/3/cb9360en/cb9360en.pdf

Rainforest Foundation UK
Roads to Ruin: the Emerging Impacts of Infrastructure Development in Congo Basin Forests. London (Rainforest Foundation UK), October 2021. Under the Canopy Series. 99 pages.
Download PDF (4.54 MB): https://www.rainforestfoundationuk.org/media.ashx/infrastructure-report

Maano Ramutsindela, Frank Matose, Tafadzwa Mushonga (editors)
The Violence of Conservation in Africa: State, Militarization and Alternatives. Cheltenham (Edward Elgar Publishing) 2022. Hardcover, US$ 137.54. 272 pages, ISBN 978-1-80088-560-8

Robert Flummerfelt
To Purge the Forest by Force: Organized violence against Batwa in Kahuzi-Biega National Park. London (Minority Rights Group International) April 2022. 89 pages
Download PDF (4.57 MB): https://minorityrights.org/wp-content/uploads/2022/04/To-Purge-the-Forest-by-Force_Online_ENG-pubpage.pdf

Colin Luoma
Fortress Conservation and International Accountability for Human Rights Violations against Batwa in Kahuzi-Biega National Park. London (Minority Rights Group International) May 2022. 67 pages.
Download PDF (1 MB): https://minorityrights.org/wp-content/uploads/2022/05/MRG_Rep_PNKB2_EN.pdf

New on the Internet

World Resources Institute
Forest Pulse: The Latest on the World's Forests. How much forest was lost in 2021? With interactive maps.
https://research.wri.org/gfr/latest-analysis-deforestation-trends

BERGGORILLA & REGENWALD DIREKTHILFE

Finances

Income in 2021	
Subscriptions	25,945.00 euro
Donations	140,625.21 euro
Sales, mobile phone recycling	2,562.06 euro
Total	***169,132.27 euro***
Expenses in 2021	
Administration	2,304.20 euro
Gorilla Journal	1,853.98 euro
Website	462.00 euro
Refund meeting	468.00 euro
Postage	2,199.60 euro
Pay/top-ups	11,500.00 euro
Sarambwe	
Support of trackers and kitchen personnel, equipment, replacement of livestock stolen in communities by rebels	36,365.00 euro
Mt. Tshiaberimu	
Tracker top-ups, equipment, water supply wells	24,766.00 euro
Itombwe	
Ranger top-ups, office rent	39,750.00 euro
Maiko	
Ranger top-ups and medical care	26,300.00 euro
Bwindi	
Gorilla research	9,600.00 euro
ITFC employees	8,000.00 euro
SaveBwindi	3,576.00 euro
Virunga Conservation Area	
Gorilla Doctors	2,000.00 euro
Total	***186,294.78 euro***

New equipment for the trackers on Mt. Tshiaberimu

Our Donors

From November 2021 until April 2022 we received major donations by: Antje Angeli, Arkon Metallbau e. K., atambo GmbH, Mike Baddenhausen, Fredrik Bakels, Felix Bayer, Michael Beutel, Marc Beyer, Ulrich Bommann, Bonhoeffer-Gemeinde, Andreas Bruck, Steffi Brückner, Joachim Buxan, Gareth Caldwell, Achim Christen and Rita Christen-Stuttgen, Julia Cissewski, Thorsten Bartberger, Ruth Dehio, Sabine Dehlwes, Sybille Eck and Jens Rottacker, Michael Enders, EnerControl GmbH + Co. KG, Susanne Engel, Maria Engert, Hanna Estel, Beatrice Faust de Flore, Hermann Ferling, Nadine Fischer, Timo Fischer, Pascal Fliegner, Corina Flores, Matthias Friedrich, Ursula Fritz, Gaia Nature Fund, Tobias Gawol, Sonja Geisendorf, Kerstin Genilke, Susan Goetsch, Gorilla Gym Hamburg, Monika Greipl, Christian Groesser, Uta Heidt, Hans Michael Henkst, Marieberthe Hoffmann-Falk, Julia Holzberg, Kai-Oliver Hügle, Hans-Hermann Huth, Infraserv GmbH, Helga Innerhofer, Marko Jankov, Anke Jordan, Birgit Höfer, Manuel Kaufmann, Sarah Kaufmann, Götz Kauschka, Christian Kleineidam, Heiner and Lydia Klös, Hartmann Knorr, Jutta and Erich Koch, Marc Koch, Dennis König, Martin Königsdorfer, Sandra Kolberg, David Korga, Angelika Krebber, Dirk and Manuela Kronwald, Ole Krutemeier, Ruth Klara Kuhner, Elisabeth Labes, Daniela Lachmund, Renee Läßig, Sabine Lange, Randolf Ledeboer, Thomas Lesemann, Sabine Levi, Reinhardt Lindenhahn, Karin and Manfred Linke, Christian Lobert, Marianne Lotsch, Lore Marholdt, Teresa Marksz, Sabine and Michael Matysek, Angela Meder, Inge Meder, Dirk-Ulrich Mende, Hannelore Merker, Pascal and Sabrina Mey, Milwaukee County Zoo, Walter Hermann Munz, Claudia Nemetz, Norddeutsches Draht- und Seil-Kontor A. Cordes e. K., Hannes and Katja Oppermann, Manfred Paul, Heidi Peter-Rocher, Carsten Peters, Anne Pfisterer, Jan Herrmann and Ursula Plath, Stefanie Prescher, Klaus Radermacher, Hanna Rank-Wetzel, Daniel Raulf, Birgit Reime, Michael Reinholz, Hans-Joachim Reuter, Martin Riedl, Konstantin Riemann, Beatrix Rosner, Alfred Roszyk, Erika Rüge, Gerhard and Brida Rubens, Petra Salvermoser, Daniel Salzer, Alois and Brigitte Schachinger, Sigrid Schacht, Schaperdot Erdbau GmbH, Michaela Scheer, Michael Schmidt, Michael Schmitz, Schmuckzeit Europe – Save Brave Schmuck, Birgit Schneider, Michael Johnne Schollweck, Martin Schorken, Grundstücksverwaltung Schrempp, Gernot Schröer, Stefanie Schulenberg, Thomas Schulz, Schwaben Park Kaisersbach, Eva-Maria Schweikart, Christine Schwarz, Elke Seeger, Frank Seibicke, Andrea Sell, Kurt Seppmann, Stephanie Skolik, SLF Scherm Logistik & Facilitymanagement GmbH, Hartmut Stade, Harald Steiner, Michaela Steinhauser, Heinz Stelter, Beatrice Renate Stock, Regina Stoschus, Stefan Striebinger, Hans Christian Ströbele, Andreas Strohmaier, Andrea Stütz, Klaus-Peter Stulla, Tiergarten Heidelberg, Susanne Töbelmann, Filipp Trottenberg, TSSB architekten, Susan Meryem Ulusans, Albert Vogg, Axel Vorhölter, Bernhard und Christine Voss, Hann-Jörg Walther, Christof Wiedemair, Wilhelma, der Zoologisch-Botanische Garten Stuttgart, Norbert Wimmer, Frigga Wirths, Ingo Wolfeneck, Hagen Woywod, wpi GbR, Klaudia Woede, Christine Woll, Brigitte Ellen Wullert, Sabine Wynands, Heinz Zaruba, Rebecca Zindler, Zoo Saarbrücken and Zoologischer Garten Rostock.

Many thanks to all donors, also to those we could not name here!