



Gorilla Journal

Journal of Berggorilla & Regenwald Direkthilfe

No. 40, June 2010



**Conservation
Employee Health
Program**

**Notes from the
Latest Gorilla
Census in the
Virunga Massif**

**Monitoring Cross
River Gorillas in
Nigeria**

**Western Gorilla
Conservation and
Research in Bai
Hokou**



BERGGORILLA & REGENWALD DIREKTHILFE

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Organization Address:

Berggorilla & Regenwald Direkthilfe
c/o Rolf Brunner
Lerchenstr. 5
45473 Muelheim, Germany
E-mail brunner@berggorilla.org

Website:

<http://www.berggorilla.org>

Bank Account:

Account number 353 344 315
Stadtsparkasse Muelheim, Germany
Bank code number 362 500 00
IBAN DE06 3625 0000 0353 3443 15
SWIFT-BIC SPMHDE3E

Authors of this Issue

Dr. Augustin Kanyunyi Basabose studied the ecology of gorillas and chimpanzees in Kahuzi-Biega. He joined the IGCP in 2006 where he is the Conservation Science Officer leading the Ranger-based Monitoring Program, and also acting as the Country Representative in Congo.

Doug Cress has been the executive director of the *Pan African Sanctuary Alliance* (PASA) since 2002, and manages the day-to-day operations of the organization based in Portland, Oregon. Prior to this he served as the executive director of the *Great Ape Project*, and spent 20 years as a reporter.

Andrew Dunn, Manager for the WCS biodiversity research program in southeastern Nigeria, has been working on survey and conservation projects in Africa since 1989. He acted as advisor to the Gashaka-Gumti National Park and to Korup National Park.

Dr. Chloe Hodgkinson explored the integration of conservation and development in the Central African Republic. She is now working for *Fauna and Flora International* in Liberia and the D. R. Congo.

Inaoyom Imong has been working with WCS Nigeria as a research officer since 2004 and is currently planning a Ph.D. study of Cross River gorillas with the Max Planck Institute for Evolutionary Anthropology in Leipzig, Germany.

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Editor: Dr. Angela Meder
Augustenstr. 122, 70197 Stuttgart, Germany
Fax +49-711-6159919

E-mail meder@berggorilla.org
Translation and Proofreading: Ann DeVoy, Bettina and Andrew Grieser
Johns, Colin Groves

Cover: Augustin Basabose with an assistant during the gorilla census
Photo: Augustin Basabose

Michelle Klailova is a Ph.D. student at the University of Stirling, who is currently working on her thesis on silverback-group dynamics. She did her fieldwork at Bai Hokou.

Uwe Kribus became the first B&RD member from eastern Germany in 1988. He is a dermatologist. His main interests are behaviour research and nature photography.

Prof. Phyllis Lee is department head at the University of Stirling. She joined Stirling in 2005 after many years in Biological Anthropology at Cambridge. She has done field work on many primate species.

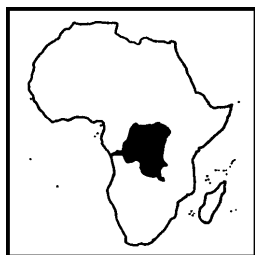
Dr. Shelly Masi started in 2000 to investigate in Bai Hokou how habitat and seasonal changes in food availability influence western gorilla feeding ecology. Currently she continues her research at the National Museum of Natural History in Paris.

Dr. Bethan Morgan is Head of the Central African Program at the *Zoological Society of San Diego's* Center for Conservation and Research for Endangered Species (CRES). She studies the ecology of primates, particularly drills, and other large mammals in Cameroon.

Claude Sikubwabo Kiyengo conducted a gorilla survey in the Maiko National Park and took part in a gorilla census in Kahuzi-Biega. He worked for the ICCN in Goma and for the IUCN and was chief conservator of the Parc National des Virunga, central sector. Since 2008 he is our assistant.

Jean de Dieu Vhosi is social assistant and responsible for the environmental communication in the project for the conservation of the Mt. Tshiaberimu gorillas.

Dr. Kathy L. Wood conducted her Ph.D. research at the Drill Rehabilitation and Breeding Center in Cross River State, Nigeria and is currently working with *Pandillus* on a planned re-introduction of drills to the Afi Mountain Wildlife Sanctuary.



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Conservation Employee Health Program Kahuzi-Biega

Historically, the *Mountain Gorilla Veterinary Project* (MGVP), in collaboration with host country national wildlife, natural resource and/or tourism organizations, has served the role of clinical caretaker of the mountain gorillas. This has been through continued field presence of veterinarians who coordinate clinical interventions and ongoing health monitoring efforts, focused clinical research, and participation in international meetings and other information sharing forums in addressing gorilla health issues.

The potential exposure to and transmission of human and livestock diseases to gorilla populations is the third highest threat to gorilla species in general but the largest threat to protected habituated gorillas. In 2000, the MGVP Advisory Committee and staff, along with other invited experts, produced a strategic plan for MGVP Inc. The plan included a focused mission statement to “improve the sustainability of the habituated gorilla populations” through a “one health” approach. Zoonotic (passing from man to animal and vice versa) diseases and emerging diseases are of primary concern and are particularly important when endangered great ape populations are involved.

Tourists and their potential role in transmitting novel diseases to the gorillas and/or trackers and guides is potentially a major critical-control point for reducing the risk of human-disease transfer within the gorilla population.

The conservation personnel (trackers and guides) have the greatest contact with the gorillas. Therefore this group appears to be the most cost-effective and efficient way to provide human-health interventions in a preventive fashion for both the humans and the gorillas. The MGVP Inc. Employee



A Kahuzi-Biega National Park employee during a EHP health check

Photo: Mountain Gorilla Veterinary Project

Health Program (EHP) was first established in Rwanda. The goals of the EHP are to assess and improve the health status of the trackers, guides, porters, researchers, veterinarians and other employees of the organizations working in the parks with gorillas thereby reducing the risk of zoonotic disease transmission between the gorillas and employees. Improving the health status of the employees reduces the number of sick days, increases on-the-job productivity, improves morale and can help enhance the overall health of the families of employees. The program is used to identify critical-control points for prevention of disease transmission between the gorillas and employees and to develop recommendations and guidelines for researchers, trackers and their families. Health education during these programs consists of training sessions and provision of literature. The components of the EHP include a survey questionnaire, medical history, a clinical examination, diagnostic tests, and necessary treatments and vaccinations. All of the information gathered is entered into relational databases to be used for:

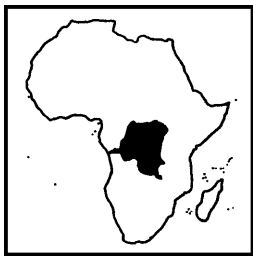
1. tracking employees who need follow-up for a health problem,

2. developing an epidemiological profile of employees and factors potentially affecting the health status of employees over time (e.g. occupational, social),
3. assessing risk of disease transmission between employees and mountain gorilla populations quantitatively, and
4. indicating the health profile of the general population in the surrounding area.

The EHP has identified cases of infectious disease in humans that are zoonotic, as well as some that are not, such as AIDS. Other incidental but interesting findings, which, through treatment, have improved the lives of the participants, are high blood pressure, diabetes and the need for eye glasses.

The program is now implemented at Parc National de Kahuzi-Biega, Parc National des Virunga and the original program in Rwanda and includes approximately 750 people. Basis of the program:

- In order to reduce the likelihood of disease transmission, new employees should be enrolled in an occupational health program before they are exposed to wildlife in a field setting. In the event that this is not possible, enrolment needs to be retroactive for current employees.
- An occupational health program should include a full medical history and a thorough physical exam by a qualified physician or nurse. Diagnostic examinations should include any tests deemed necessary by the physical examination to further a diagnosis plus screening, for human immunodeficiency virus (HIV) testing (consistent with local program standards) and appropriate vaccinations.
- Fecal screening for gastrointestinal parasites should focus on common



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parasites, such as hookworms, pinworms and tapeworms. Evidence of gastrointestinal parasites in any employee should result in immediate treatment. Periodic prophylactic treatment, especially for worms, may be called for, as well as routine fecal exams. Health and hygiene education should also be provided to reduce the incidence of GI parasites among employees.

- HIV testing should be at the discretion of host country health officials and should not be considered a contraindication for employment. In cases where HIV testing is offered, it needs to be done confidentially and those employees that are found to be positive should be monitored by the program clinician, with their duties adjusted according to their general health condition.
- Employee medical forms should be kept confidential and should be accessible only to persons responsible for administering the program locally. Employee informed consent should be obtained prior to any physical exam, sample collection, or testing. If any studies are to be conducted on the data, permission for their health results to be aggregated for analysis should also be obtained. There should be open communication between the employers, the employees and the program clinician, so that the employees feel comfortable to admit symptoms of illness and to provide samples. A clear policy regarding what will happen to people if they test positive on any screen, or the physical exam, should be developed so employees do not need to worry that if they participate, their employment will suffer. Also, clear policies need to be developed regarding what follow-up diagnosis and treatment is provided by the Employee Health Program, when employees will be referred to national health programs for fol-

low-up, and when employees will be expected to contribute themselves to their own treatment. Employees need to know how often they will be offered routine clinical services, how they will receive their results, and how they can contact the program physician if they should have any questions or concerns.

In the Kahuzi program a total of 104 employees, all of whom are men, participated in the program. Within this group, there is a large age range, with the majority of individuals falling within the 30–59 years age range. All employees of ICCN/PNKB complied with the members of the MGVP EHP team and hospital staff. All individuals were in favour of the program and made every effort to facilitate the work of MGVP. It is felt that MGVP has established a strong working relationship with ICCN/PNKB and the prospects for further compliance at the next upcoming Employee Health Program sponsored by *Bergorilla & Regenwald Direkthilfe* are good.

Mountain Gorilla Veterinary Project

Problems with Snares in Virunga National Park

Catching Poachers on Mount Visoke

Mount Visoke lies at the heart of mountain gorilla habitat – and so naturally the rangers of the Virunga National Park often venture onto the flanks of this mountain for anti-poaching patrols or to rid the area of the snares that threaten the mountain gorillas and other animals. In January 2010 a group of rangers tracked 4 poachers over a 2-day period. They came across traps and signs of poaching, including a dead antelope.

The rangers spent an uneasy night in the forest, and the next day managed to apprehend two of the poach-

ers. Unfortunately, the other two got away. But the two who were arrested, who come from a community not far from the patrol post of Bikenge, were brought to Rumangabo and charged.

Unfortunately these poachers are only 2 of many. This is why we must patrol the Gorilla Sector, and indeed all of the Virunga Volcanoes, to prevent any further destruction of the wildlife.

January 26th, 2010

by Innocent Mburanumwe

Baby Gorilla Caught in a Snare

Snares are one of the major threats to gorillas in the Mikeno Sector. They are laid by poachers who often seek to entrap antelope and other smaller rodents, but often gorillas get caught in them – and can lose a hand as a result, or worse. One of the main jobs of rangers in the forest during the gorilla patrols is to remove the snares that are found.

The juvenile gorilla Nsekanabo in the Kabirizi family was caught in a snare on February 5th. It was released by the rangers Innocent Mburanumwe and Sekibibi Bareke, but the injuries sustained to the face of the gorilla were so bad that Innocent was unable to recognize him. This can happen when go-



Nsekanabo on his mother's back

Photo: www.gorilla.cd

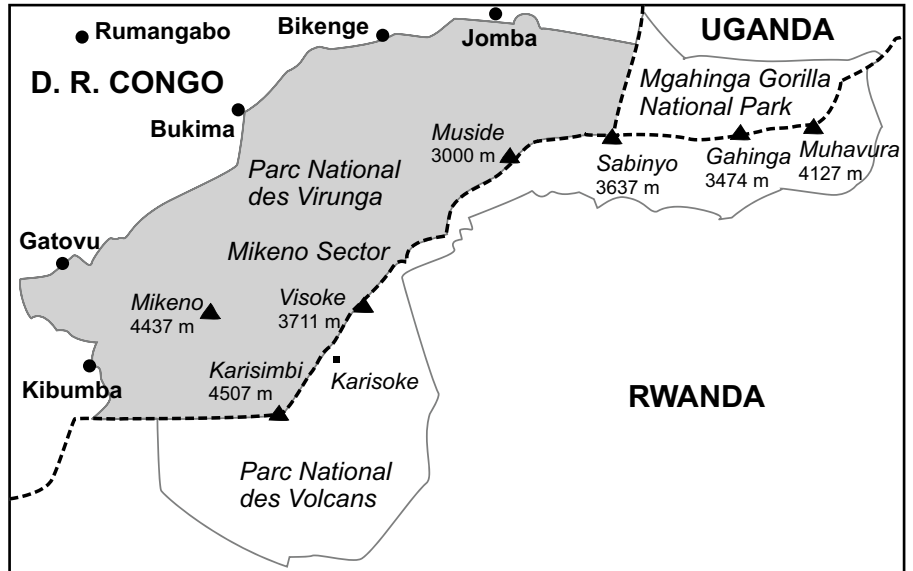


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rillas get caught in snares. The animals are injured, separated from their family, and very very frightened. In this particular case Innocent thinks some of the injuries were sustained when the juvenile tried to free himself from the snare, in a panic.

The Gorilla Doctors Magda Braum and Eddy Kambale and the rangers performed an urgent intervention on the juvenile February 7th. They sedated him and his mother Tumaini, and succeeded in removing the rest of the snare from Nsekanabo's left ankle, in addition to sewing up his face that was so badly damaged. But the next afternoon rangers reported that Nsekanabo was dead, but Tumaini was still carrying him around. As soon as she leaves Nsekanabo behind, the rangers will recover the body, and the Gorilla Doctors will be able to perform an autopsy.

*February 5th, 7th and 8th, 2010
by Samantha Newport*



A New Initiative to Remove the Threat of Snares from the Gorilla Sector

One thing we have learned in Virunga is that when you have a major setback,

you double your effort. Nsekanabo's killing was a catastrophic setback for us.

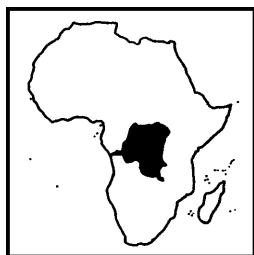
We worked in Bukima to strengthen the de-snaring effort. Our main problem is that we do not have the manpower to deploy enough patrols in the sector. We have 36 rangers across the sector, and at the moment we can carry out 8 patrols a day, every day. Although these patrols removed several thousand snares from the area in 2009, Nsekanabo's killing has shown that this is not enough to keep the mountain gorillas safe.

So we made the decision to work very closely with the local community to try to resolve this problem. We have established a unit of 40 "Community Scouts" who will help with the de-snaring operations. Instead of a patrol being made up of 4 rangers, a patrol will now be made up of 1 or 2 rangers accompanied by 2 or 3 Community Scouts. Their job will be surveillance and destroying snares. This will double our patrolling effort from 8 to 17 patrols a day. The Community Scouts are unarmed, but the security situation has improved enough to make this feasible. These are all young men from the local



Rangers with snares they collected in the Mikeno Sector

Photo: www.gorilla.cd



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community who are known to be supportive and who have volunteered their time to help us in the past. We will pay the scouts US\$ 30 a month. We held the meeting with the community leaders yesterday, and we agreed to launch the new approach on March 1st.

Over the next 2 weeks, we will be equipping them with new uniforms and giving them a basic training to work with the rangers. We are also working on a new feature on the "Protect the Park" page of our website, where every patrol is logged by GPS, and registered on the map. That way, you will be able to monitor their efforts. The sponsored areas will continue to be updated, but we are also trying to improve that feature as well.

February 17th, 2010

by Emmanuel de Merode

The 40 Community Scouts from the Human-Gorilla Conflict Resolution Program (HuGo) are hard at work. We pay them US\$ 30 per month with donations made via our website (mainly Protect the Park donations).

We are already seeing results. Just this week a patrol arrested a poacher near Bukima who had 1 metal snare, and 2 rope snares, intended to catch buffalo. This is the kind of snare that caught Nsekanabo. The HuGos most definitely help us to boost our effectiveness in the Gorilla Sector patrolling every inch. It is absolutely essential to do this if we want to protect the gorillas.

May 12nd, 2010

by Innocent Mburanumwe

From blog entries at the Virunga National Park's website, www.gorilla.cd

Mountain Gorilla Orphans Get a New Home

The two mountain gorilla orphans Ndeze and Ndakasi grew up in a house in Goma – a town full of dust and noise. These are certainly not suitable surroundings for gorillas, so

we constructed the Senkwekwe Centre close to the Rumangabo park station to house the orphans. The space of the enclosure is a rectangle of about 1 ha and the building where the gorillas are housed is about 12 x 4 m.

The centre is important for the community too, because it will give the people the chance to see gorillas, sometimes for the first time, and it will help to educate the next generation.

Move of the Orphans

On December 1st, 2009, Ndeze and Ndakasi moved to their new, lush, forest home in Virunga National Park – the Senkwekwe Center. The gorilla girls are now with André Bauma and the other carers in the 40 x 40 m holding facility, within their enclosure, a stone's throw from their habitat in the Gorilla Sector.

The gorillas were tranquilised to put them in a truck that had been parked for a week in the house, so they had had the chance to get used to it. They left Goma in a convoy of 3 cars that headed north to begin the 45 km journey to Rumangabo park station. No one knew the gorillas were in the truck; we had kept the moving date confidential.

Emmanuel de Merode parked at the top of the little path heading down toward the Senkwekwe Centre, and then Ndeze and Ndakasi got their first peek at the forest. André Bauma and the other carers carried them the short walk to their new home. Once inside, Ndeze and Ndakasi stuck to their carers and would not leave their side. But after a very short time – literally 5 minutes – they started to gain confidence in their new surroundings. Gradually they started to leave their carers' sides and explore...

In addition to the Congolese Wildlife Authority ICCN, the *Gorilla Doctors*, DFGFI, *Gearing Up 4 Gorillas* and many others, our biggest thanks go to Adam Murry at *The Murry Foundation* who has contributed over US\$ 100,000 to date, and also to a lady Canadian donor who donated \$ 30,000. Absolutely none of this would have happened without them. At the time of Ndeze's and Ndakasi's move, the perimeter wall of the plot was not yet finished. The wall and the visitor platforms, educational center and veterinary facilities still remain to be built.

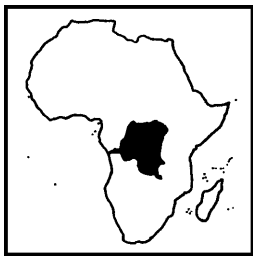
December 2nd, 2009

by Samantha Newport



Ndeze and Ndakasi in the Senkwekwe Center

Photo: www.gorilla.cd



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Ndeze and Ndakasi Thrive

The gorilla girls continue to adapt well to their new life in the forest. Monday is an important shopping day for gorilla food – mainly cauliflower and carrots. There are 3 markets relatively close by, but they all stock different things. Ndeze and Ndakasi both love forest food, and market food – so for now we must still supply both. Diddy Mwanaki is in charge of bringing the forest food from the Gorilla Sector – three times a week.

Ndeze & Ndakasi spend a lot of time playing on the climbing structures that were erected last week. At the edge of the wall there is electric fencing – so far neither of them have touched it! Undoubtedly they are much happier here than in Goma, and André and the other carers are very positive about this new environment.

All the gorilla girls do all day long is play, eat and sleep. As they should.

*December 14th, 2009
by Samantha Newport*

Construction to Start in March

Ndakasi and Ndeze will soon be able to fully enjoy life in a custom-built forest home with their four carers, André Bauma, Patrick Karabanga, Alfred Mijirima Ngendayimana and Richard Ndakasi Kambale. Now with additional funding we will be able to finish it. We will also be able to facilitate a comprehensive educational outreach program, especially for the communities living around the Gorilla Sector. In addition, we will ensure that para-veterinary facilities are provided to care for the gorilla orphans, and the other wildlife in Virunga.

The final push was thanks to *The Howard G Buffett Foundation*. Howard Buffett visited Rumangabo, the Headquarters of Virunga National Park, in December (he was in fact the first visitor on the viewing platform), and has since donated US\$ 80,250. These monies, combined with the funds raised on

our website, will be doubled by the *UN Foundation*.

*February 24th, 2010
by Samantha Newport*

Life is Good for the Gorilla Orphans

When the orphans first moved to the Senkwekwe Centre we thought the baboons might be a problem as they can be aggressive and there are lots of them here, but fortunately a few electric shocks from the wire fence have scared them off. The colobus monkeys have also been curious, but Ndeze has now started to try and chase them away, or shake the trees from which they are peering down.

Interestingly Ndeze has started building gorilla nests in the tree tops, thus exhibiting normal gorilla behaviour. Ndakasi's hair – which was a red-dy colour – is becoming more and more black. And neither orphan has suffered any health problems since they arrived here on 1st December 2009.

Today I gave the gorilla carers new uniforms that I brought from the UK; I purchased them last month with donations made on our website. They look extremely smart in their new forest green outfits. I also bought up a bicycle today from Goma to make it a bit easier for the carers to fetch their drinking water. Water for cleaning, cooking and washing comes from the roof of the gorilla house (it goes into a tank) but we need source water for human and gorilla consumption.

*March 10th, 2010
by Samantha Newport
From blog entries at the Virunga National Park's website, www.gorilla.cd*

Gorilla Rehabilitation and Conservation Education (GRACE) Center

The rumors began in early February 2010: Somewhere in eastern Democratic Republic of the Congo, an infant

gorilla was being offered for sale. Some said it was a pet. Either way, the situation was illegal and a very important life was at stake.

By the time the Congolese authorities had confiscated the gorilla, several weeks had passed. And the shivering, terrified, malnourished infant that was delivered into the arms of Eddy Kambale of the *Mountain Gorilla Veterinary Project (MGVP)* on February 26th faced a difficult battle for survival.

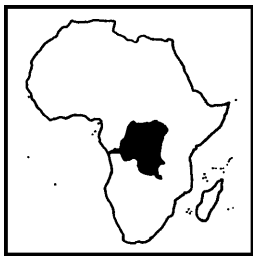
Gorillas are notoriously fragile animals, and the stress of capture, confiscation and rehabilitation is often too much for them to survive. But this gorilla – nicknamed “Ndjingala”, after the area in which she was confiscated from poachers – will not only receive the best care possible, she will ultimately get the opportunity to return to the wild.

The Gorilla Rehabilitation and Conservation Education (GRACE) center is a rescue facility specifically designed for the needs of East African gorillas and the first permanent sanctuary ever built for the species. Situated in the Kashugo region of the Democratic Republic of the Congo adjacent to the Tayna Nature Reserve, the GRACE will serve as the focal point of gorilla rescue and rehabilitation in the region and an important link between the *in situ* and *ex situ* conservation work in the region.

The GRACE center could not come at a more crucial time in the battle to



Construction of the GRACE Center
Photo: PASA/DFGFI/Disney/MGVP



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conserve East African gorillas. Eastern lowland gorillas (*Gorilla beringei graueri*) are classified as “endangered” and mountain gorillas (*Gorilla beringei beringei*) are identified as “critically endangered” by the 2007 World Conservation Union (IUCN) *Red List*, and experts consider both subspecies at high risk for extinction within several decades.

The GRACE center is the result of a partnership between the *Dian Fossey Gorilla Fund International* (DFGFI), the *Pan African Sanctuary Alliance* (PASA), Disney’s Animal Programs, and the Congolese Wildlife Authority (ICCN). Funded by a grant from the *U. S. Fish and Wildlife Service’s Great Apes Conservation Fund*, in association with the *Neu Family Foundation* and the *Disney Worldwide Conservation Fund*, the GRACE center grew out of discussions between key players at the 2008 Gorilla Workshop in Orlando, Florida, and quickly became a reality. “This is a critical opportunity for us to help many more young gorillas that have been victimized by unlawful activity or habitat destruction, and also to strengthen our partnership with the people who are the true stewards of the land and the animals”, said DFGFI president Clare Richardson. “All gorilla species are threatened with extinction. Both public education and rehabilitation services are critical to their chances for survival.”

Over the past decade, it is estimated that at least 25 orphaned gorillas were confiscated in East Africa, but died before they could get proper medical care. The creation of an interim quarantine facility in Rwanda in 2006 – which is a joint venture of DFGFI and MGVP, and ultimately came to care for a mix of eastern lowland and mountain gorillas – made it clear that a permanent facility was required.

After funding was sourced, the GRACE project broke ground on 370 acres of donated land in Tayna in January 2009, and is targeted for comple-

tion in May 2010. The initial phase of construction is designed to accommodate 15 gorillas, which is good since there are already 10 being cared for at sites in Congo and Rwanda.

The gorillas – which range in age from 1-year-old infants (such as Ndjingala) to 6 adolescents housed at an interim quarantine facility in Rwanda – will be brought together at the GRACE center through an airlift being coordinated in conjunction with the peacekeepers serving with the United Nations mission in the region, known as MONUC. “Caring for the Earth we all share is not just the job of governments”, said Alan Doss, head of MONUC. “It requires us to reach across boundaries and do things we would not normally expect to do.”

The land for the new center was donated by the Tayna Center for Conservation Biology (TCCB). The site is adjacent to approximately 222,000 acres of forest in a protected nature reserve.

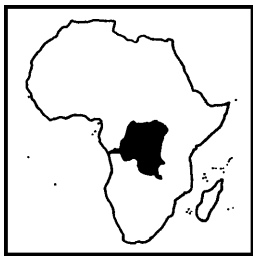
But the region is also situated in one of the most embattled areas in all of East Africa, and the long-running guerilla war between the government forces and the National Congress for the Defence of the People (CNDP) rebel militias of Laurent Nkunda had a heavy impact on the project. Although Nkunda’s arrest in late January 2009 seemed to indicate that the conflict would die out, military “sweeps” by the government forces in early 2009 to flush out rebel resistance swept through Kashugo on several occasions, forcing construction to be halted for extended periods and the temporary removal of construction coordinators to nearby Butembo for security reasons.

Brief military exchanges occurred during several of these clashes, and on February 11st, 2009, the rebel forces looted and burned the small radio station that operates from Tayna. On another occasion, a vehicle being used by the GRACE project was attacked and



Ndjingala

Photo: PASA/DFGFI/Disney/MGVP



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badly damaged by rebel forces. The military actions in the area also slowed the delivery of raw materials to the construction site.

The GRACE project also suffered a heavy blow through the unexpected death on May 29th, 2009, of DFGFI vice-president Alecia Lilly, who served as the director of the project from her base in Kigali, Rwanda. The loss of Lilly badly shook the project, and forced the partners to regroup and devise a new way forward. But the installation of Debby Cox, the former director of the *Jane Goodall Institute* (JGI) Uganda and a member of the PASA advisory committee, as the project director in January 2010 quickly put the GRACE center back on target. The project's handling facilities, veterinary block and staff housing are near completion, and a two-acre socialization yard is being fenced to allow the gorillas to establish social bonds.

The GRACE center was designed to accommodate either eastern lowland gorillas or mountain gorillas, but only the former will be coming for now. A small recovery facility for mountain gorillas was recently completed in Rumangabo (see page 6). Either way, all of the orphaned gorillas in Congo will be seriously considered for reintroduction, which is the act of returning animals to the wild, in accordance with guidelines established by the IUCN.

Although no East African gorilla has ever been successfully reintroduced, two PASA members in West-Central Africa – the *Projet Protection des Gorilles* (PPG) sanctuaries in Gabon and Congo – have returned western lowland gorillas to the wild with amazingly good results. The PPG projects have collectively reintroduced over 40 gorillas, with survival rates at approximately 84% and 10 wild births. But it will be many years before Ndjingala and the other gorillas leave the safety of the GRACE center and venture out into the forests.

Reintroduction is an extremely difficult, complex, political, expensive and emotional process, and although PASA member sanctuaries have found success with chimpanzees, bonobos, gorillas, and monkeys elsewhere in Africa, there is no need to rush. Having already suffered so much, orphaned gorillas in East Africa need to recover their health – both physical and mental – before proceeding on to the next phase of their lives.

Doug Cress

Three young females (Mapendo, Amani and Ndjingala) and a male named Kighoma – all eastern lowland gorillas – were flown by helicopter from Goma to Kasugho on April 27th. The requests for the transports were made by the ICCN and DFGFI, which along with other conservation supporters established the GRACE Center, the gorillas' temporary new home before they are released into the wild.

From a news release by UN News Service, April 29th, 2010

In mid-June, the UN will transport 6 more gorillas to the GRACE Center by helicopters.

From a news release by UN News Service, June 7th, 2010

School Tree Nurseries to Save the Gorillas of Mount Tshiaberimu

Mount Tshiaberimu is a site that is critical both for conservation and for the development of local communities. It is located in one of the most densely populated areas in Africa in the Virunga National Park. Its biodiversity, high degree of endemism, and typical afro-montane forest – a refuge for a small population of gorillas – are among the conservation assets which have led to Mount Tshiaberimu being incorporated into the Virunga National Park, a World Heritage Site.

The main threats to the gorillas and the forest are identified as: habitat loss due to deforestation, the local popula-



Photo: Jean de Dieu Vhosi



D. R. CONGO

tion's ignorance of the importance of the gorillas and the forest, overpopulation, soil erosion, poverty, and inadequate funding of the ICCN and *The Gorilla Organization* (GO) to support community projects. The gorilla habitat is surrounded by settlements with a very high population density of 203 inhabitants per km². The local people subsist on agriculture and the commercial exploitation of charcoal, which they market in Kyondo and Butembo (approximately 400 sacks of 70 kg each are produced each week by Buswagha village alone). If this exploitation of the timber right next to gorilla habitat is not mitigated by reforestation, it will endanger the survival of the gorillas.

There are ways to counteract this threat, however. The *Gorilla Organization* (GO) has expertise in environmental education, an excellent working relationship with ICCN, and very good collaboration with community-based organisations through a community development programme. For over 10 years, GO has been active at Mount Tshiaberimu, providing project support to ICCN. GO works with local com-



During germination, the seedlings are protected from the sun

Photo: Jean de Dieu Vhosi



Leucaena plants ready for distribution

Photo: Jean de Dieu Vhosi

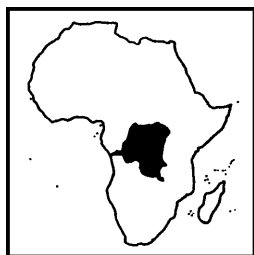
munities in its community programme, which it implements in collaboration with local development associations.

These associations have agreed to work together to form an association called "Solidarity of the Friends of the Gorillas of Tshiabirimu" (SAGOT). They have mobilised about 1,300 members to work on the sensitization of the local people to protect the gorillas and their habitat, and to conserve nature in general. SAGOT is supported by GO, in agricultural inputs, small livestock breeding and technical advice. It is represented in the five main villages around Mount Tshiaberimu (Bursi, Ngitse, Kitolu, Kyondo and Buswagha) and coordinated from Kyondo by a GO community representative.

However, in isolation the support provided by GO to local communities is not sufficient to counteract environmental problems effectively and to contribute to the improvement of the socio-economic conditions in which the people live. In order to contribute to the

conservation of gorillas and their habitat on Mount Tshiaberimu, the *Berggorilla & Regenwald Direkthilfe* has decided to finance the activities of a tree nursery which supplies seedlings both for farm forestry and for reforestation. This nursery produces 35,000 seedlings in each planting season – enough to re-plant approximately 20 hectares of forest or agricultural land. The direct beneficiaries are 80 members of the Buswagha SAGOT in the village that is located at the entrance to Mount Tshiaberimu, on the road connecting Kyondo and Bursi. The seedlings have been planted in fields belonging to SAGOT members. They serve as tools for the sensitization of beneficiaries and heighten awareness of the importance of preserving the soil and protecting the gorillas. The following species have been planted:

- *Eucalyptus maideni* or Maiden's Gum. The leaves are used as a medicine against flu, fever and cough-



D. R. CONGO

ing. The timber is used in the construction of houses, as firewood and to make charcoal. The bark is used to make ropes. Planting these trees will help to counteract the invasion of the park by people for the collection of wood and lianas.

- *Grevillea robusta* or Australian Silver Oak. This is a forest tree which is also used in agriculture. Its leaves serve as fodder for domestic livestock. Its deep roots and the leaves help to give back minerals and restore degraded soil such that it can be used for agriculture. The timber is used to produce boards for the construction of houses and canoes. Branches and twigs are used as firewood, to make trellises for beans and yam.
- *Acacia mearnsii* or Black Wattle. This is a bush used for agriculture and reforestation. The leaves restore degraded soil and are used as fodder for domestic livestock. The timber is hard and produces one of the best construction woods; it is also used to produce charcoal.
- *Leucaena* and *Calliandra* are true agro-forestry plants in the sense that they restore the humus layer of the soil, help to combat erosion and prevent the soil from drying out. The leaves are used as fodder for livestock and the bole is used both as timber for construction and as a trellis for trailing beans and yam.

What Else Needs to Be Done?

We believe that the young need to be involved in efforts to conserve the gorillas and their habitat, so as to foster a sense of responsibility where the management of natural resources is concerned.

One good strategy for sensitizing the young people, who will be the future guardians, is the establishment of educational tree nurseries in primary and secondary schools. These school nurseries need to be set up by and

for the students, supported by technical staff. Such a project will also contribute to the environmental education programme: the school nurseries will serve as tools to raise young people's awareness of how to manage natural resources and protect the forest. The seedlings produced in the nurseries will be planted by pupils and students, and will help to generate income – or, at the very least, they will help to improve the living conditions of the population resident in the vicinity of the gorillas' habitat. Further, the planted trees will help to mitigate climate change and to restore degraded soil. They will also contribute to the improvement of the relationship between the Park Management and the local communities.

*Jean de Dieu Vhosi and
Claude Sikubwabo*

Notes from the Latest Gorilla Census in the Virunga Massif

Recently, I spent 10 days in the field as part of a team counting mountain gorillas during a 2-month census which took place from 1st March to 25th April 2010 in the Virunga Volcanoes Massif shared between the Democratic Republic of the Congo, Rwanda and Uganda. The last census of gorillas in this site took place in 2003; it was therefore high time to redo the count to get an idea about the current state of conservation and the size of the population of mountain gorillas living in the Virunga Massif, after almost 7 years. Two years ago it had been planned to conduct a census, but because of the insecurity due to the war in the area, the exercise could not be done.

To properly carry out the census of mountain gorillas, the Virunga Massif had been divided into several sectors to facilitate the counting and communication between different teams participating in the census. I would like to

share my experiences during the 10 days of intense field activity I spent in counting different mountain gorilla families, living in two sectors nears Bukima and Bikenge ranger outpost between Mounts Karisimbi and Mikeno of the Virunga Massif, that were allocated to the team to which I belonged.

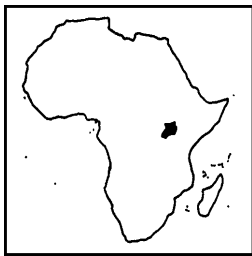
We arrived late in the afternoon of March 15th, 2010, at the edge of the gorilla habitat in Bukima ranger outpost, and we decided to spend the night at the ranger outpost to prepare for the long trip the following day to Mwinaniro camp, located at about 3 hours' walk in the forest, a site strategically chosen to facilitate counting in remote areas farther from the park edge.

The next morning we started our journey to Mwinaniro, around 6:30 a.m., after a quick breakfast, and we arrived at the camp around 10 a.m. Soon after arriving, we decided to do some field explorations. After a few minutes' rest, and having set up our tents, we divided into two teams of 5 persons as originally planned, and each team left to cover part of the chosen sector.

The census teams followed a reconnaissance route, using trails made by elephants, buffaloes or trackers until we discovered a fresh trail of gorillas that we followed to the nest site where we would count nests and assess the composition of the group. In each nest, we proceeded at the same time to collect fecal samples for DNA and parasitological analysis.

Gorilla census work is a very exciting exercise – and very tiring. It provides spectacular views from the mountains of the Virunga Massif, and requires great physical effort to climb the hills and mountains and slide down the broad valleys in search of gorilla nests. We used compasses, georeferenced maps and effective GPS to navigate and physically position ourselves throughout the census.

We left the camp very early in the morning, combing vast areas through-



UGANDA

out the day, and came back late in the evening exhausted. During these long walks in the forest, we found ourselves putting up with all the difficulties that the jungle had to offer – very painful itching leaves, irritating nettles, the bites of safari ants, and often being hijacked by buffaloes or elephants; when they blocked our route, we were obliged to slow down and wait until they went away in case aggressive males decided to defend their groups.

The Virunga Massif is well known for its aridity, with little streams and impounded water on the surface due to the high porosity of the volcanic soil with little surface water. Even during the rainy season, there are only small marshy areas that retain water. Water is therefore a scarce resource in the massif, and one is required to carefully manage the water supply to survive: in the jungle of the Virunga Massif, you may travel long distances for several hours without finding a single water source. Faced with a situation like this, park trackers have developed methods of coping while operating in the mountains.

During the rainy season, rainwater is retained in bamboo trunks through several pores hollowed by insects, and trackers use this water to slake their thirst. In the bamboo forest, I have often seen our trackers screening bamboo shoots and choosing those they knew would contain water. Using their machetes they would make a small slit in the trunk and drink before continuing onward on the fixed itinerary. I found this a very interesting experience, and used it as an adaptation skill in other sites without enough water sources.

During our 10-day stay in the field, our two teams sharing the same camp were able to identify 4 different gorilla families, each consisting of several individuals. The exact composition of each family is to be confirmed later by the DNA analysis of the fecal samples collected from different individu-

Heavy Rains Threaten Humans and Gorillas

In mid-May it rained heavily in the Virunga Volcanoes for several days. This led to floodings of several rivers and especially a huge landslide on the Congolese side of the volcanoes (between Mikeno and Karisimbi, outside the national park) that killed 46 people as well as livestock and destroyed 230 houses.

The extremely wet and cold weather was probably also the reason for the death of 4 mountain gorillas in Rwanda, 3 infants and an adult female. Three of them were from Pablo's group, one from Uganda's.

From various UN reports and a report by Julie McCord, DFGFI

als. After having identified them, the organizers of this census, led by IGCP (*International Gorilla Conservation Programme*) in collaboration with conservation partners, among them the authorities for protected areas (ICCN – *Institut Congolais pour la Conservation de la Nature* –, UWA – *Uganda Wildlife Authority* –, RDB – *Rwanda Development Board*) and international conservation NGOs and institutions involved in this census (DFGFI – *Dian Fossey Gorilla Fund International* –, MGVP – *Mountain Gorilla Veterinary Project* –, and the Max Planck Institute for Evolutionary Anthropology) will officially communicate the number of gorillas found in each sector.

Augustin K. Basabose

Nyakagezi in Mgahinga again

On November 18th, 2008, the Nyakagezi group crossed the border from Uganda

(Mgahinga Gorilla National Park) to Rwanda) and did not return for almost a year. On October 9th, 2009, the family returned to Mgahinga and stayed there – and they even have 2 new members now! An adult female had transferred from another gorilla group in Rwanda and joined the Nyakagezi group; she has a baby. The full family group now includes Nyakagezi, the leading silverback who is father to most of the group, 2 more silverbacks, brothers called Mark and Marfia, as well as 2 blackbacks who are also brothers and sons of Nyakagezi. Rukondo and his brother are typical curious young males, they love to pose and play in the trees. The two females both have young babies, one is a male of around 18 months, the other a girl of about 4 months.

The group has been back in the Mgahinga Gorilla National Park for several months now and it is thought that they will be reluctant to go back to Rwanda whilst they have sufficient food in Uganda. The last time they crossed into Rwanda they were involved in a fight with another gorilla group.

From an article by Gerald Tenywa in New Vision, October 2009, and a Volcanoes Safaris newsletter, May 2010

Two More Gorilla Groups Habituated in Bwindi

In November 2009 the UWA started to habituate 2 additional gorilla groups for tourism in Bwindi Impenetrable National Park: the Kahunje group that ranges between Nkuringo and Rushaga, and the Oruzogo group that lives west of Ruhija. With the addition of these two groups about 50% of the Bwindi gorillas will be habituated; UWA announced that after this they will stop habituating gorillas in Bwindi.



CROSS RIVER

Monitoring Cross River Gorillas in Nigeria

From March to August 2009, surveys were conducted to evaluate the status of gorillas and other diurnal primates and their habitat at four gorilla localities in Nigeria. In this article, we present a summary of the survey results and make recommendations for improving gorilla conservation and management of the sites.

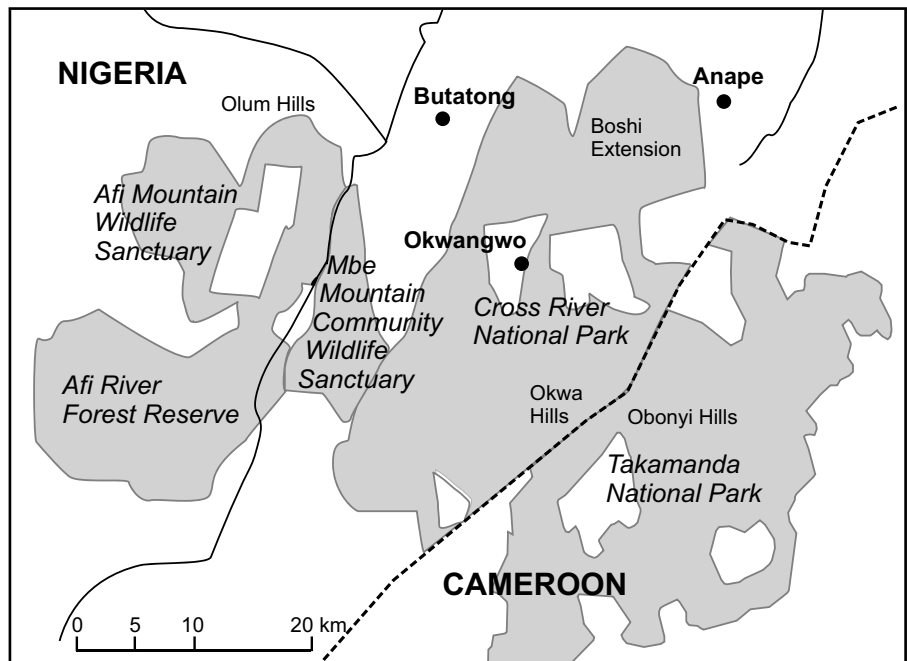
The surveys were conducted at three sites – the Afi Mountain Wildlife Sanctuary (AMWS), the Mbe Mountains Community Wildlife Sanctuary (MMCWS), and the Okwangwo Division of Cross River National Park (CRNP), where two gorilla localities (Boshi Extension and Okwa Hills) occur.

The “recce survey” method (White & Edwards, 2000; Kühl et al., 2008) was used at all sites. For the purpose of the surveys, each site was divided into smaller sectors for better coverage. The sectors were searched simultaneously at each site by teams of 3–4 persons.

Results

Gorillas: A total of 74 gorilla nest sites were recorded; 33 of these were recorded in CRNP, 24 in MMCWS and 17 in AMWS. One of the objectives of these surveys was to obtain current gorilla population size estimates for the four localities in Nigeria (based on analysis of nest count data collected during these surveys) to assess the population growth trend. The estimates presented here are rough; obtaining accurate gorilla population size estimates from nest count data is difficult due to a number of factors, and the application of genetic methods to determine gorilla population size has shown that nest-based methods are liable to produce inaccurate estimates (Guschanski et al. 2009).

The data suggest the presence of 25–35 gorillas in the AMWS, at least



20 gorillas in MMCWS, 11–23 gorillas in the Boshi Extension forest and 10–15 gorillas in the Okwa Hills during the survey period. These estimates are similar to estimates from previous surveys indicating that the gorilla populations at these sites have remained stable over the last 5 years.

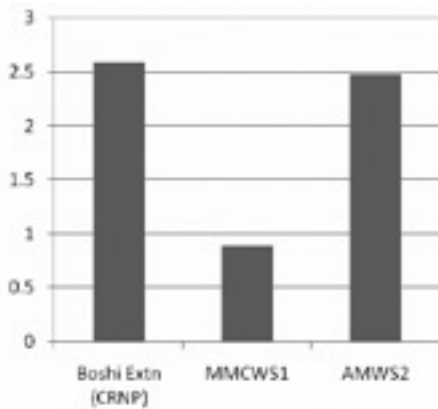
In AMWS fresh gorilla signs were limited to the north-eastern and south-central sectors of the sanctuary. No gorilla evidence was recorded in the north-western sector of the sanctuary, an area known to be used frequently by gorillas particularly during the dry season when fruit is scarce. The absence of any fresh or recent gorilla signs in that sector during the survey period (toward the end of the dry season in the Afi area) might be due to a recent bushfire that damaged large areas. In February 2008, one of the most severe wildfires since the creation of the AMWS occurred and affected the eastern, western and north-western sectors of the sanctuary. An earlier fire incident in 1997 damaged the northeastern part of the sanctuary and caused gorillas to

abandon the sector for several years returning to the area only in 2005.

In MMCWS gorilla signs were concentrated within the south-central portion of the sanctuary (which forms the core of the gorilla range in the Mbe Mountains) during this survey, a pattern of distribution that has been observed in a number of previous surveys. No fresh gorilla evidence was found in the western sector of the Mbe Mountains, an area which was previously exploited frequently by gorillas. In February 2009, feeling aggrieved, 2 of the 9 surrounding communities that have traditional ownership of the Mbe Mountains resigned their membership of the recently established Conservation Association of the Mbe Mountains (CAMP) – the community conservation association that manages the sanctuary. To give maximum impact to their withdrawal from the association, the two communities banned all conservation activities in their part of the mountains, disrupting the research and anti-poaching activities of WCS ecoguards in that sector of the mountains. As a



CROSS RIVER



Comparison of encounter rate of human sign (per km) in Boshi Extension, Mbe Mountains, and Afi Mountain Wildlife Sanctuary

consequence of the absence of eco-guards in the sector, hunting and other illegal activities increased considerably, and this increased level of disturbance in the area might have caused the gorillas to temporarily move out of the area into less disturbed areas. Efforts led by WCS, with support from the Cross River State Forestry Commission, to resolve the disagreement in CAMM resulted in the lifting of the ban and resumption of research and anti-poaching activities in the sector.

In CRNP fresh gorilla activity was concentrated in the central portion of the Boshi Extension forest and in the eastern part of Okwa Hills close to the border with Cameroon. The gorillas inhabiting the Okwa Hills area have a transboundary range, moving across the border between the Okwa Hills in Nigeria and the Obonyi Hills area of the contiguous Takamanda National Park in Cameroon. As this survey focused only on the Nigerian side of the border, it is possible that the population size estimate given here may not be representative of the whole group, part of which might have been ranging in the Obonyi Hills in Cameroon, which was not searched during this survey. A brief reconnaissance survey which was

limited to the Okwa Hills in April 2005 (NCF-WCS 2005) recorded a single nest site that contained 16 nests, but a recent survey of the Okwa Hills–Obonyi Hills transboundary area conducted in July 2008 (Imong & Warren 2008) estimated 1–3 gorilla sub-groups with a minimum population size of 16 individuals and a maximum of 33.

Other Diurnal Primates: Data from these surveys suggest the presence of at least two small chimpanzee (*Pan troglodytes ellioti*) groups in AMWS and at least one in MMCWS, at least one group in the Boshi Extension forest, and at least one group containing 7 individuals in the Okwa Hills. Their conservation status across all sites is thought to be precarious.

Evidence of drill presence was recorded at all sites, although disturbingly scarce in some. Drill (*Mandrillus leucophaeus*) signs were observed more frequently in the Mbe Mountains than at other sites. Estimated drill group size (based on foliage movement, dung, and litter disturbance) for MMCWS ranged from 30 to 60, although the number of individuals seen and counted during encounters ranged from 6 to 23. Drills were not sighted in AMWS, but other signs of their presence were observed. The data suggest the presence of 1–3 drill groups in AMWS and in MMCWS. In both the Boshi Extension and Okwa Hills areas of CRNP signs of drill were extremely scarce.

Olive baboons (*Papio anubis*) were recorded only in Boshi Extension where some savanna woodland habitat occurs on the northern fringes. Only a single observation (vocalization) of this species was made. Three guenons (*Cercopithecus mona*, *C. nictitans* and *C. erythrotis*) were observed to be more abundant in MMCWS and AMWS compared to Boshi Extension and Okwa Hills. The endangered Preuss' monkey was recorded only in Boshi Extension and Okwa Hills.

Human Disturbance: Illegal human activity was observed at all sites, but at a relatively lower frequency in MMCWS. Hunting pressure was particularly high in CRNP. Seven hunters and four active hunting sheds were recorded during the survey in addition to other evidence of hunting – gunshots heard, spent shotgun cartridges and wire snares. In AMWS, hunting and farm encroachment were major forms of human disturbance in addition to occasional bushfires. Hunting and farm encroachment in some areas were also the main forms of human disturbance in MMCWS.

At all sites, the presence of wire snares found in core gorilla areas is an indication that, although gorillas may not be targeted for hunting, they remain vulnerable since they are terrestrial and can get caught in snares with the possibility of sustaining potentially fatal injuries.

Recommendations

1. Across all sites, but particularly in CRNP and AMWS, a more efficient ranger-patrol monitoring system should be developed to ensure that planned patrols are implemented; and all areas within the park and sanctuary are patrolled regularly to reduce levels of hunting and other forms of human disturbance that are currently widespread in both areas. The cybertracker system currently in use at CRNP and MMCWS is ideal for this purpose and better use of them is encouraged. Through the use of the cybertracker system, relatively good monitoring is already in place in MMCWS and seems to be yielding good results as reflected in the lower level of human disturbance in the sanctuary compared to CRNP and AMWS.
2. Efforts to eliminate farms from AMWS should be intensified to curb the current high rate of farm encroachment. Ongoing discussions



CROSS RIVER

between the Cross River State Forestry Commission, NGO partners and local communities to agree a strategy to remove all farms from the sanctuary should be fast-tracked to ensure that the proposed farm elimination is achieved.

- The importance of the Olum Hills, adjoining the AMWS in the north-east, for gorillas and other species has long been recognized, a finding repeated by this 2009 survey. A review of the current AMWS boundary to include the Olum Hills is recommended.
- A rigorous annual fire prevention programme that includes cutting fire break trails in areas prone to bushfires around AMWS, and enactment and enforcement of stiffer laws against indiscriminate bush-burning,

should be developed with local communities at all sites.

- At all sites, the development of a management plan that reflects current realities is recommended to ensure that management is based on a clear understanding of the area, its purpose, resources and values; provides guidance for day-to-day operations and planning, identifies monitoring needs and provides more efficient use of resources by prioritizing management activities.

Inaoyom Imong, Kathy L. Wood and Andrew Dunn

We are grateful to the Great Ape Conservation Fund of the United States Fish and Wildlife Service for funding these surveys.

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Conservation education for Gorilla Guardian villages

The gorilla guardian network was established in 2008 in Cameroon. To date, most effort has been placed on improving our understanding related to the gorillas. To build conservation awareness and support in the 6 present gorilla guardian villages was not possible so far because no funds were available. Around the Takamanda National Park a conservation education programme is already established, and it is intended to use this programme for the gorilla guardian villages too. A local coordinator will be supported and materials will be produced and distributed. Some of these materials are very visual (local conservation films), while others are great fun (gorilla game) and together form a package that normally attracts the whole community to participate.

Main activities:

- Production of outreach materials
- Support to coordinator for implementing outreach activities
- Support to local porters for implementing outreach activities
- Support to evaluation of outreach activities

Funding needed: Euro 10,000

Please help us to support this essential conservation activity! It will help the Cross River gorillas to survive.

Bank Account:

Account number 353 344 315
 Stadtparkasse Muelheim/Ruhr
 Germany
 Bank code number 362 500 00
 IBAN DE06 3625 0000 0353 3443 15
 SWIFT-BIC SPMHDE3E



Address for cheques:

*Berggorilla & Regenwald
 Direkthilfe
 c/o Rolf Brunner
 Lerchenstr. 5
 45473 Muelheim, Germany*



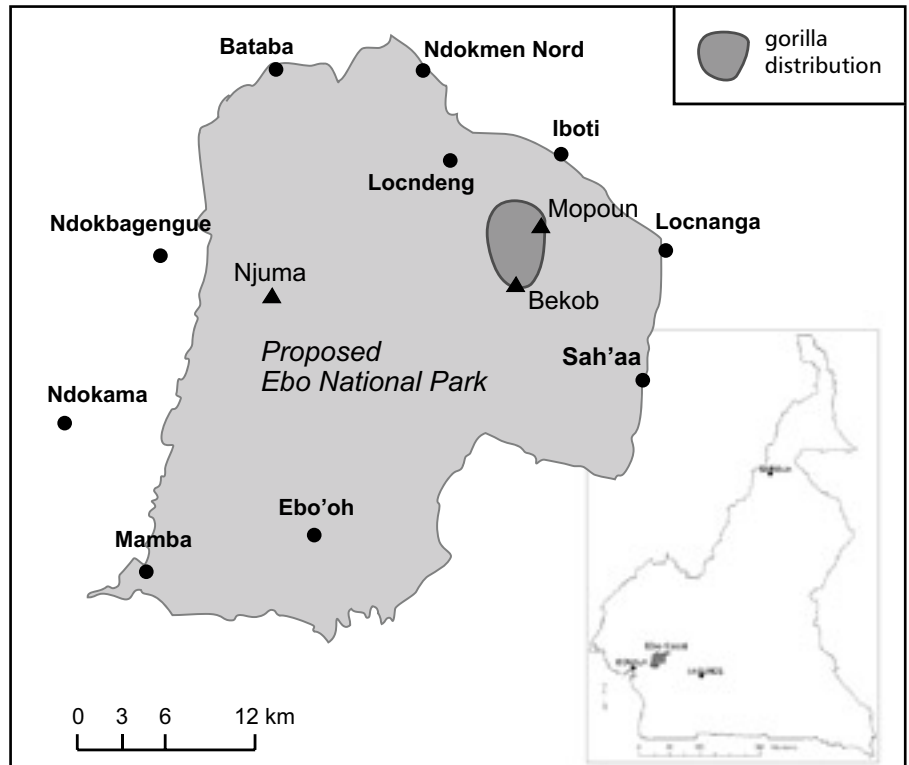
GORILLAS

The Gorillas of the Ebo Forest, Cameroon

In November 2002 a population of gorillas was “discovered” in the Ebo forest of southwestern Cameroon, less than 100 km north of the Sanaga River (Morgan et al. 2003). Previous to this, the only indications of possible gorilla presence in the Ebo forest were nests (Dowsett & Dowsett Lemaire 2001; Oates et al. 2003). The Ebo gorillas are an isolated, relict population – their nearest neighbouring gorilla populations to the north are the Cross River gorillas of the Cameroon-Nigeria border region (Morgan & Sunderland-Groves 2004), and the nearest surviving southern populations are western lowland gorillas (*Gorilla gorilla gorilla*) over 100 km south of the Sanaga river. As such, the Ebo gorillas really are a relict population of what might once have been a much more continuous distribution of gorillas over this region.

The Ebo Forest itself is something of an anomaly. It is one of the most important remaining tracts of closed-canopy forest between the Cross and Sanaga rivers thanks to its challenging topography, and it contains one of the most complete populations of a wide variety of forest mammals in Cameroon north of the Sanaga River despite its relative proximity to Douala, the largest port city in Central Africa and a major hub for both the logging industry and the commercial bushmeat trade. Ebo is home to a unique assemblage of primates: 11 diurnal species including one of the few remaining populations of the critically endangered Preuss's red colobus (*Piliocolobus preussi*), as well as one of the healthiest populations of Nigeria-Cameroon chimpanzees (*Pan troglodytes ellioti*) and drills (*Mandrillus leucophaeus*).

The San Diego Zoo's Ebo Forest Research Project has taken on a new phase in the past two years. We now have three permanently-manned re-



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

search stations in the Ebo forest. The first station to be established was at Bekob, in April 2005. Today, this station concentrates on the ecology and behaviour of the drill and chimpanzees, although botany research has been ongoing since 2005. The Mopoun research station was established in early 2008 to specifically concentrate on conserving and studying the small gorilla population. We now know that the gorillas only exist in a relatively small (c. 25 km²) area in this region of the forest. Finally, the Njuma research station was established in early 2009 to concentrate research on chimpanzees and Preuss's red colobus monkeys.

The range of the gorillas is very close to one of the largest villages in the region – Iboti. Approximately 200 people live in Iboti, which has a primary school and (currently non-functioning) health

centre. While there is a road leading to the village, it is seasonal, and regularly impassable due to rains and mudslides. No public transport operates to Iboti due to the tortuous mountainous nature of the road. Villagers must trek for 8 hours to reach the nearest neighbouring village to the west, from where a bush taxi is available twice a week. Despite this isolation, there is a thriving population, fuelled, for the most part, by the bushmeat trade. The trade has decreased since we established the Mopoun research station and have an increased presence and level of conservation activities in Iboti village, but there is still a good profit to be made from this trade and it is clear that financial motives still outweigh the few law enforcement deterrents that exist.

In November 2009 gorillas were attacked by a local man from Iboti, hunt-



GORILLAS

ing alone, who came across the gorillas opportunistically and killed one adult male. Before this, the last incidence of a gorilla killing was in early 2006 when we heard through our contacts that hunters from Locnanga had come across gorillas in the forest and “taken the opportunity” to kill a single female gorilla. In both cases, the carcasses were taken out of the forest immediately, and an attempt was made to cover up the details. Nonetheless, we obtained the information and passed it on to our colleagues at both MINFOF and WWF, and while no arrest has yet been made, an investigation is in progress and an arrest warrant has been issued for the alleged hunter.

Despite this incident, there are signs of hope. The reaction within the village to the hunter has been almost universal condemnation. It is clear that the conservation message, especially pertaining to gorillas, is getting through, and that it is no longer socially acceptable to kill gorillas.

In addition, we do see signs of other changes for the better. Some more farsighted villagers have started to plant farms of foods to be consumed in the village as well as exported. The eternal problem is that bushmeat fetches a higher price per unit weight than vegetable trade, and since all products have to be physically carried out of the village, bushmeat is still the most economically valuable commodity. It is clear that development initiatives must be linked with increased law enforcement if future pressure on the forest's resources is to decrease.

Since our first and second reports to *Gorilla Journal* (Morgan 2004; 2008) we have discovered that the gorilla population at Ebo is at least as much at risk than previously estimated, if not more so. We still believe that the population is restricted to a very small area of mountains and valleys covering about 25 km² in the north west of what will be the Ebo National Park. Quite why the

gorillas have chosen this area is not clear – it is relatively close to the village of Iboti.

We currently think that there are fewer than 25 individual Ebo gorillas remaining, and our best estimate is 15–25 animals. Tracking the gorillas is currently not possible, due to the rockiness of the forest and the lack of tracking knowledge. We are also reluctant to exert undue pressure on the remaining gorillas, and prefer to gather information from secondary sources, such as nest sites and fecal samples. All fecal samples are collected and analysed for dietary information, and genetic samples are also collected from fresh fecal remains. Those samples are currently being analysed for taxonomic, population and individual identification of gorillas by the Genetics Division at the San Diego Zoo's Institute for Conservation Research, as well as the State University of New York's Gonder lab, where the Ebo gorillas are being genetically compared to gorillas further to the east along the Sanaga river.

In 2008–2009 we installed a series of video camera traps in the forest. We have not yet been fortunate to capture the Ebo gorillas on camera, but we have captured moving images of chimpanzees, drill and forest elephants (*Loxodonta cyclotis*).

In terms of our education initiatives, we have expanded our previous programs of showing wildlife films in villages and bringing hunters to the Limbe Wildlife Center in Limbe, South West Province for wildlife conservation workshops. In late 2009 we started a 1-year pilot program in conjunction with the Limbe Wildlife Centre, studying two of the villages surrounding the Ebo Forest to understand the fine details of income generation and societal attitudes towards natural resource management. We intend this work to develop into a 3-year program, which would target specifically the villages that surround the gorilla population.

In addition, we have recently secured funds from *Berggorilla & Regenwald Direkthilfe* to produce posters to distribute in the three villages closest to the gorilla population (Iboti, Locnanga and Locndeng), to clearly set forth the reasons for conserving the remaining Ebo gorillas.

These educational activities are being conducted in parallel with continuing efforts to bring the Ebo Forest a new status of national park. The Ebo Forest was designated a “proposed protected area” by the Government of Cameroon in January 2003. Since then, the long and often difficult route towards eventual designation has been followed, but some major obstacles have hindered progress. Much of the Ebo Forest was inhabited until the period of civil unrest that troubled much of Cameroon in the 1960s. The remains of abandoned villages are evident in many of the valleys, and the village “elites” – well-to-do Cameroonians who were born in these villages but spent most of their lives away from the region – have raised concerns regarding the classification of what they regard as their land as national territory.

The delays to allow for discussions and debates on this subject have resulted in a final proposed boundary for the park which would include much of the current gorilla range. In early 2010 a helicopter flyover of the Ebo Forest allowed aerial visualization of the forest for senior Ministry of Forestry and Wildlife (MINFOF) officials and WWF, the technical advisers to the Government of Cameroon for this project.

Another major sign of the increasing public awareness of the Ebo forest as a future national park was the one-hour documentary on the Ebo Forest produced by CRTV (Cameroon Radio Television), the state broadcaster in Cameroon, in late 2009. The documentary, which has been broadcast nationally at monthly intervals, features interviews with members of the local communities



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and with MINFOF as well as Ebo Forest Research Project staff. Contacts within CRTV estimate that the documentary has been viewed by well over 50% of people in Cameroon who have access to a television, and has thus brought knowledge of the importance of the Ebo gorillas to the Cameroon population as a whole.

The final documents outlining the boundaries for the future Ebo National Park are currently awaiting signature by the Prime Minister, and we hope that this procedure will be completed in the coming months and the next priority will be the development of a long-term Management Plan with secured funding for the Ebo National Park.

We continue to seek strong support in the villages surrounding the Ebo Forest for our work, and tread a delicate line between striving to conserve the forest and its fauna whilst remaining understanding and sympathetic to the concerns of the local peoples. We believe it essential to have a strong physical presence in the forest, in the villages, and with the authorities of the region.

We expect a long period of slow and steady progress with setbacks and challenges at every stage, but we believe that the eventual demarcation of a national park, with effective management strategies accompanied by strong enforcement and education policies, will allow for the development of a protected area of immense long-term benefits for both humans and gorillas.

Bethan Morgan

We work in conjunction with the Government of Cameroon (MINFOF and MINRESI) and with WWF and WCS. This work is possible due to ongoing support from the Zoological Society of San Diego, Offield Family Foundation, USFWS Great Ape Conservation Fund, the Arcus Foundation and the Margot Marsh Biodiversity Foundation, to whom we are extremely grateful.

Gorillas in Congolese Protected Areas and Logging Concessions

The Ndoki-Likouala Conservation Landscape in northern Republic of Congo contains protected areas as well as logging concessions. To assess how large mammals (elephants, gorillas and chimpanzees) react to human activities, it is important to monitor their densities in order to plan effective conservation measures. In a large-scale study the densities of the three species were surveyed in various areas and the impact of conservation interventions was evaluated (see reference below).

In logged areas with no anti-poaching measures gorilla density is very low, but otherwise gorillas do not avoid areas with human activity. Chimpanzees are more sensitive to logging, and elephant densities in logging concessions are much lower (because they are hunted there); therefore, the Nouabalé-Ndoki National Park is an extremely important refuge for them. For gorillas the Lac Télé Community Reserve is much more attractive than Nouabalé-Ndoki – probably because of the vegetation (see the article on gorillas in Raphia swamp below). The very attractive vegetation may also be the reason why gorillas are more abundant in some logging concessions than in the Nouabalé-Ndoki National Park: after selective logging, secondary vegetation grows abundantly, and it contains some of the gorillas' most important food plants.

Summarized from the following publication: Stokes, E. J., Strindberg, S., Bakabana, P. C., Elkan, P. W., Iyenguet, F. C. et al. (2010): Monitoring Great Ape and Elephant Abundance at Large Spatial Scales: Measuring Effectiveness of a Conservation Landscape. PLoS ONE 5 (4), e10294. doi:10.1371/journal.pone.0010294

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Western Lowland Gorillas in Raphia Swamp

Gorillas live in high densities in swamp forest of the Republic of Congo, as several researchers found in the Likouala swamps in the northeast of the country about 20 years ago. There are also large swamp forests with high gorilla densities on the southeastern and eastern periphery of the Lac Télé Community Reserve and in the Sangha region. During the last few years surveys of large mammals were carried out in the Lac Télé Reserve and on its western periphery, and they confirmed that the swamp forest contained high ape densities. The results of the latest survey, carried out in 2007, have now been published (see reference below).



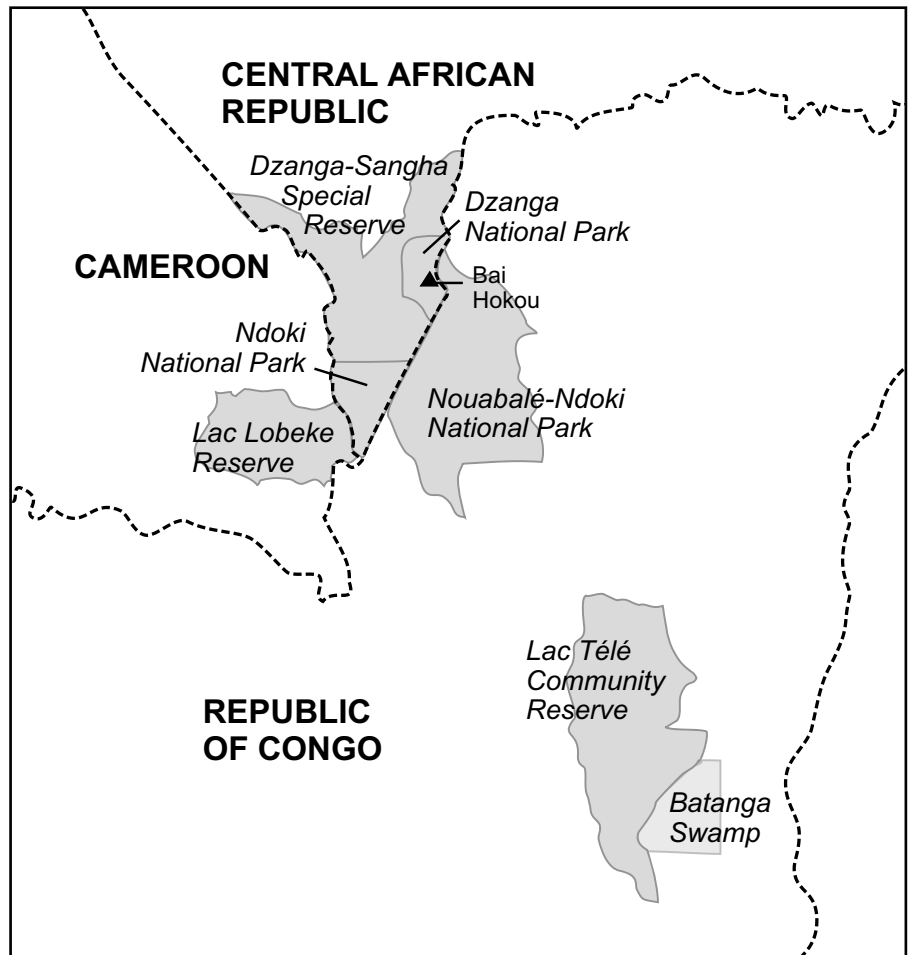
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The Likouala swamps are part of the largest wetland in Africa, covering 62,500 km² and the Lac Télé Community Reserve (with 90% swamp forest) is the only protected area in swamp forest in the Republic of Congo. The swamp forest is flooded seasonally or permanently. Much of the Likouala swamp forest has a sparse canopy with a dense understorey containing many monocotyledons such as *Raphia* spp., *Aframomum angustifolium* and *Pandanus candelabrum*. *Raphia* swamp forest is almost entirely composed of *Raphia* spp. and some other herbaceous monocotyledons. *Raphia* is an important food plant for the swamp gorillas, so the gorillas are concentrated in this forest type. Monocotyledons are available all the year in *Raphia* swamps, so this habitat may be especially attractive to gorillas and they may be sedentary there.

The gorilla density was estimated at 5.25 weaned individuals/km², which means that the potential gorilla population is 5,402 gorillas in an area of 1,029 km². This density is much higher than the figure estimated previously and one of the highest density estimates ever calculated for gorillas.

The reason why the gorilla population in the Batanga swamp is still high 15 years after the first survey, is perhaps its inaccessibility and remoteness. But the swamp forests are threatened by the construction of roads, hydrocarbon prospecting on the southwestern periphery, allocation of logging concessions and an increasing human population. Data from 2008 suggest that the remaining *Raphia* swamp may be affected by human activities. Currently, most *Raphia* swamp in northern Congo is found outside existing protected areas, and it should be protected. There is potential to enlarge the limits of Lac Télé Community Reserve.

Conservation activities in the Lac Télé Reserve are managed in partnership between the Ministère de



l'Economie Forestière and the *Wildlife Conservation Society*. They focus on the development of participative community management and the control of illegal hunting.

Summarized from the following publication: Rainey, H. J., Iyenguet, F. C., Malanda, G. A. F., Madzoke, B., Dos Santos, D., Stokes, E. J., Maisels, F. & Strindberg, S. (2010): Survey of Raphia swamp forest, Republic of Congo, indicates high densities of critically endangered western lowland gorillas Gorilla gorilla gorilla. Oryx 44 (1), 124–132

Western Gorilla Conservation and Research in Bai Hokou

The south-western region of the Central African Republic includes one of the most pristine tropical forests in the whole of Africa. Located in the Congo basin, it remains a paradisiacal habitat, harbouring an exceptional faunal diversity: forest elephants, forest buffaloes, sitatungas, bongos, several duiker species, two species of forest pigs, and 10 primate species besides gorillas and chimpanzees. This great biodiversity and the presence of so many species of large mammals are the treasures of



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this area. Large mammals are important flagship species that, when endangered and charismatic, have the potential to attract international attention for their conservation.

The gorilla is a perfect example, raising great international attention. Even though continuous efforts have been made towards its preservation, further action still needs to be taken to protect such a charismatic primate.

Throughout their range, western gorillas (*Gorilla gorilla*) are endangered not only by habitat destruction and poaching, but also by threats unrelated to human activities. As a consequence of the tremendous decline of western gorilla populations in Gabon and Republic of Congo due to Ebola outbreaks, the IUCN reclassified western gorillas as "critically endangered". Despite the great international attention, very little

information based on direct observation is available on western gorilla ecology, behaviour and natural history, creating a crucial necessity to fill this gap.

The south-western region of the Central African Republic is also characterized by the presence of natural forest clearings ("bai" in the local Pygmy language) of different sizes. These allow an easy observation of large mammals, including gorillas and elephants, since the animals are attracted by mineral rich soil, clay and aquatic plants. Acknowledging the high biodiversity and the high tourist potential of the area, a system of protected areas was officially created in 1990. Under the direction of the Dzanga-Sangha Project, today named Dzanga-Sangha Protected Areas, it consists of 1) the Dzanga-Ndoki National Park, integrally protected, and 2) the Dzanga-Sangha Dense Forest Special Reserve where local people can carry out legal forest activities. The project is a partnership between the *World Wildlife Fund* (WWF), the Central African Republic government, and, since 1994, the German Technical Cooperation (GTZ). The long-term goals of the project are: 1) to protect the forest ecosystem from changes in forest cover due to the increase in logging activities and illegal hunting, and 2) to promote sustainable development in the region through a rational use of natural resources. Until now, Dzanga-Sangha Protected Areas has greatly contributed to the protection of western gorillas and forest elephants, preserving their habitat and supporting ecological and behavioural studies.

Today the Dzanga-Ndoki National Park, together with the Lobéké National Park in Cameroon and the Nouabalé-Ndoki National Park in the Republic of Congo, is part of a larger system of protected areas called the Sangha Trinational Complex. The Trinational Complex is one of the best examples of organized conservation planning in the Congo Basin covering contiguous



Shelly Masi and Makumba, silverback of Group Makumba, feeding on aquatic plants in a bai

Photo: Ngombo Diedone, one of the best of the Ba'Aka trackers at Bai Hokou



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lowland tropical rainforest of critical biological significance, and supporting one of the most pristine blocks of protected forest in Central Africa.

One of the several forest clearings in the Dzanga sector of the Dzanga-Ndoki National Park is Bai Hokou, chosen as a camp site in the forest and the headquarters for research and tourist activities. At Bai Hokou, the Dzanga-Sangha Protected Areas created the "Primate Habituation Programme" under the direction of Chloe Cipolletta, now run by Angelique Todd. Its long-term objective is to develop eco-tourism based on viewing of gorillas and other primates. Gorilla tourism draws national and international attention to problems involved in protecting the ecosystem where gorillas live, and increases support for higher conservation efforts. Good examples are found in Rwanda and Uganda, where gorilla ecotourism has been contributing significantly to the conservation of mountain gorillas (*Gorilla beringei beringei*) and the livelihood of local people.

Developing gorilla ecotourism in Central Africa, however, has been more difficult since western gorillas have been particularly challenging to habituate to human presence, much more so than mountain gorillas. Difficulties are linked to the lowland forest habitat (limited visibility and unclear tracks left by western gorillas) and differences in gorilla sociality (wider group spread, and possibly higher rate of changes in group dynamics in western gorillas in comparison to mountain gorillas). In Bai Hokou, gorilla habituation was successful thanks to the unparalleled knowledge of the forest by the native Ba'Aka Pygmies, who retain their traditional lifestyle in this area.

However, when habituating animals, especially primates, risks associated with habituation must be taken into account. The success of Bai Hokou in habituating western gorillas is also due to rigorous application of rules aimed at



Portrait of Essekerende, a 6-year-old juvenile of the Makumba group while eating aquatic herbs

Photo: Shelly Masi

minimizing risks of disease transmission from humans to gorillas. In addition, the long-term action of the Dzanga-Sangha Protected Areas guarantees constant protection of the habituated gorillas that become more vulnerable to poachers, having lost their fear of approaching humans.

With respect to other Central African conservation projects, where gorillas are observed from platforms in open clearings, the unique advantage of Bai Hokou is that researchers and tourists can follow the daily life of this elusive primate deep into the forest and observe it in close proximity. The recent success of habituation of western gorillas is starting to gradually fill the gap in our knowledge of western gorilla socioecology. Until recently, information based on direct observation of gorilla behavioural ecology was limited to few specific habitats, such as forest clearings, or to the well studied population of mountain gorillas. Mountain and lowland habitats, and accordingly the socio-ecology of western and mountain gorillas, differ dramatically.

Long-term research and monitoring of habituated groups of western gorillas are fundamental to increasing our understanding of their nutritional and habitat requirements, their life history and their social dynamics, all critical in-

formation for their conservation. In Bai Hokou 4 western gorilla groups are currently identified and/or followed daily. Two groups are in the process of habituation; a third group, called "Mayele", is currently semi-habituated and almost ready to receive tourists and researchers; while the fourth group, "Makumba", is one of the only two groups of western gorillas in the whole of Africa fully habituated to human presence. The group was first located in 2001 by Angelique Todd, and since early 2002 it has been followed daily, becoming fully habituated only in 2007–2008. Thanks to the skilled Ba'Aka trackers this group is now located every day at the night nest site and followed closely from dawn to dusk, right up till the gorillas stop to build new nests for the coming night.

Since the commencement of the habituation, the group's composition has changed several times, including transfers of 3 subadult individuals, one death of a 1-year-old infant (of natural causes) and the ensuing transfer of his mother. Today group Makumba consists of 1 silverback, 3 adult females, 1 black-back, 3 juveniles and 3 infants.

In 2000, together with collaborators, I started to investigate in Bai Hokou how habitat and seasonal changes in food availability influence western gorilla feeding ecology, examining in particular gorilla food choice in relation to the nutritional and energetic value of available food. With my colleagues at the Max Planck Institute in Leipzig, we found that even though gorillas become more frugivorous when fruit is more available in the habitat, their energy budget and energy requirements do not change throughout the year. During periods of fruit scarcity western gorillas can still rely on high quality young leaves and herbs. Investigating the behavioural responses of gorillas to seasonal changes in food availability helps us to understand the diverse adaptations of apes to different environments, and provides us with insights



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into their resilience in response to habitat alteration associated with deforestation and forest degradation.

Currently I am collaborating with Sabrina Krief at the National Museum of Natural History in Paris to continue my research on western gorillas in the Central African Republic to obtain a complete picture of western gorilla food choice. We will integrate our previous data on nutritional and energetic values of gorilla food with new data from direct observations of gorilla feeding behaviour, with gorilla health monitoring (including fecal, urine and genetic analysis of each individual of group Makumba), and with phytochemical analyses of plants consumed by gorillas. Our aim is to understand whether gorillas choose plants also in relation to their health condition and the medicinal properties of plants, or only in relation to the nutritional value of plants. Our goal is also to investigate the ontogeny of food choice, focusing on possible social influences on young gorillas during acquisition of diet and information on plants.

Finally, we aim to quantify the overlap between gorillas and the native forest population of Ba'Aka Pygmies in the use of forest products. Preliminary results show that gorillas consume many plants used by the Ba'Aka in traditional medicine. Since this research requires the active involvement of the local Pygmy communities, we hope to increase awareness and understanding of the value of forest biodiversity for both local human and gorilla populations. One of the often quoted benefits of preserving tropical forests and its biodiversity both for apes and humans is its role as a reservoir of important medicinal components. This long-term research is part of a larger comparative project on great apes, supervised by Sabrina Krief, which will enhance our understanding of the interaction between our closest relatives and their habitat, providing important insights for

understanding human origins and co-evolution of great apes, humans, and diseases.

The success of habituating western gorillas in Bai Hokou has greatly contributed to their protection, and has permitted gorilla ecotourism as well as field research which has increased our knowledge of the species. A better understanding of socioecology, nutritional, energetic and habitat requirements provides useful information to improve conservation plans for this elusive species and can also help to inform gorilla management in captivity and in sanctuaries.

Shelly Masi

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Our sincere thanks go to the Ministries of Education and Water and Forests of the Central African Republic government for permission to conduct this research in the park, to the Dzanga-Sangha Protected Areas and the Bai Hokou staff for logistic facilities and administrative support. I am particularly grateful to the "Primate Habituation Program" directors C. Cipolletta and A. Todd for their support and great contribution. Thanks go to S. Krief and M. Robbins for their collaboration and supervision of the research projects. Special thanks go to the Ba'Aka trackers, for their incredible courage, for sharing their forest knowledge and for their dedication to their work. I especially thank my research assistant, Kemanda Bienvenu Florentin, a student of the University of Bangui, Central African Republic, who was trained in research methods and hopefully will play a long-term role in the future of the Dzanga-Sangha Protected Area projects. Cleveland Metroparks Zoo has greatly contributed to his training by providing funding for his salary in 2008 and 2009. My research was also funded during my PhD by the University of Rome "La Sapienza" (Italy), the Max Planck Society (Germany), and partially by the Zoos and Aquariums Italian Union (UIZA) and the Italian Primatological Association (API). My current research is part of a two-year post-doc supported by the Centre National de la Recherche Scientifique (CNRS) and the National Museum of Natural History (MNHN) in Paris (France).

Human Impact on Western Lowland Gorilla Behaviour

Western lowland gorilla tourism exists on a considerably smaller scale than that of the high profile mountain gorillas. Yet the successful habituation of several western lowland gorilla groups, combined with demand from international tourists and revenue expectations from local governments, have resulted in the expansion of western gorilla tourist programs and increasing research presence. A major concern of ape tourism is the heightened risk of human-ape disease transmission, which can have severe consequences for habituated ape populations. Chronic stressors may act to lower ape immunity and thus increase their susceptibility to disease. Guidelines have been designated to diminish these risks, such as a minimum observer-gorilla distance of 7 m. However, this distance limit is based mainly on mountain gorilla disease transmission risks and takes little account of the potential psychological impact of close human presence.

The Bai Hokou study site, located in the Dzanga-Sangha Protected Areas Complex of the Central African Republic, was selected in 1997 to develop a long-term gorilla habituation project for ecotourism and research. One of Bai Hokou's tenets is to monitor human impact when following western lowland gorillas, identify potential negative triggers, and through this process learn how to best minimize the disturbance caused by human observers following habituated or semi-habituated groups. This study forms the second stage of a longer-term project designed to evaluate human impact on one particular western gorilla group at different stages of the habituation process.

The preliminary study was conducted in 2006 on the same gorilla group



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at an earlier point in the habituation process, with results reported in issue 38 of the *Gorilla Journal*. It found that the presence of tourists and film crews were linked to a decrease in silverback resting behaviour and an increase in group aggressive behaviours. Here, we evaluate the impact of human group type (trackers, researchers, and tourists), size and observer-distance on the behaviour of the same western lowland gorilla group in the later stages of the habituation process. We also discuss whether the current 7 m distance limit is sufficient (particularly for western lowland gorilla groups who share a different social structure from mountain gorillas), considering the potential behavioural impact of close human presence.

Data were recorded over 12 months from January 2007 on the Makumba group, which consisted of 1 silverback (Makumba), 3 adult females (Bombe, Malui, Mopambe), and 8 immatures of varying age-sex classes. Final analyses were conducted over 258 sessions (morning or afternoon), on 1,885 silverback scans, with tourists present in 320 of these; 135 tourists visited the gorillas during the recording sessions. A maximum of 3 tourists were allowed in each 1-hour gorilla visit, and total group numbers (researchers, trackers and tourists) were not to exceed a 7 person maximum.

Our results show that observers spent more time within 6–10 m of the silverback when tourists were present. In addition, even though almost half of total observation time was spent within 6–10 m of the silverback, there were distinct decreases in human-directed silverback aggression at 10 m, with a plateau effect at 18 m. While aggression was almost entirely eliminated at 18 m, it is very unrealistic to expect quality viewing at this distance when the gorillas are on the ground. Again, given the dense habitats in which western gorillas live, quality viewing at 10 m

is not always possible, although in more open habitats viewing can easily be achieved when standing more than 10 m away from the focal gorilla. In denser sectors, approaches to 7 m may be necessary.

Almost one quarter of total aggressive events and over one third of all silverback aggression recorded was human-directed. It is important to note however, that 65% of silverback and 47% of group human-directed aggression were in the form of soft barks, which represent only low level aggression. This does not mean that they should be ignored, for they are warning signals that, if disregarded, can escalate into high level aggression and as such should be considered an important indicator of human-gorilla tension. The presence of tourists did not affect rates of aggression toward humans for any of the gorilla age-sex classes, nor did the number of people present in either research team or tourist group. However, one female in particular – Bombe – exhibited higher aggression rates as research team size increased. In fact, Bombe expressed

more human-directed aggression than any other gorilla in the group, including the silverback. We suggest that habituation, or lack thereof, was not the sole cause of her heightened human-directed aggression, and that personality also played an important role. Finally, results show that, as research team numbers increased, group feeding decreased while mixed behaviours increased. In addition, as human–silverback distance decreased, Makumba fed less and monitored humans more.

These data suggest that research teams may have a more pronounced effect on the behaviour of the Makumba group than do tourist groups. Although this difference may partly be due to lower tourist pressure at this site, management of research and tracker numbers needs stricter consideration. It is also important to note that the factors analysed in this research explained a maximum of 10% of the variance in the data. Biologically, there are many other non-human factors affecting the gorillas' behaviour. Human–gorilla distance, however, explains much more of the variance in the data than does



Leanne Van der Weyde viewing the gorillas.

Photo: Michelle Klailova



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human group type or size, further suggesting a need to re-examine the current distance rule of 7 m to incorporate the potential psychological stressors of close human presence.

Recommendations

1. Limit distance between observers and gorillas to more than 10 m where possible (i.e. in more open habitats where visibility can be easily achieved at these distances), but stand no closer than 7 m where necessary (i.e. very dense habitats).
2. Limit research team size to 5 observers, but make effort to reduce research team size to 3 as often as possible.
3. Limit total group size to 6 observers when tourists are present. If more trackers are needed to help guide tourists safely, they can split and wait safely away from the gorilla group while viewing is taking place.
4. When larger team sizes cannot be avoided, ensure a maximum of 3 people is allowed in the following observation session.
5. Limit tourist visits to one per day.

Due to the remoteness of western gorilla sites, tourists often arrive in large groups with strict timelines, which can make recommendation 5 challenging. However, tourist pressure is increasing; thus with careful consideration of logistics before problems arise, matched with an increase in the value/cost of gorilla visits, the one visit per day guideline can be feasible. Our results indicate that western lowland gorillas may require a different set of guidelines from those already in place at mountain gorilla tourist/research sites.

Even if we were to disregard the psychological stressors of large human groups observing the apes at close distances, the dense sectors of western gorilla habitat mean that researchers/tourists will struggle to obtain satisfactory viewing when there

are more than 3 tourists or 6 total observers present.

Our goal, above all, is to provide feasible recommendations and we hope that the implementation of these suggestions will not only benefit the gorillas in question but also the people, who have spent valuable time and effort to visit/study the group. Finally, Bombe's reactions illustrate that sometimes, even when applying strict guidelines, humans may still receive aggression from those who remain intolerant of their presence. In these circumstances, specifically pertaining to tourist safety, avoidance of those individuals may be an alternative strategy.

Ecotourism when conducted properly can conserve the environment and sustain the well being of local people. Although there are many factors that currently limit tourist numbers at western lowland sites (i.e. poor infrastructure, political instability, etc.), these programs can still benefit the gorillas, their habitat and the local human communities. Over 40 Ba'Aka trackers and 6 local assistants are employed at Bai Hokou, as are a large proportion of the local population who work for project headquarters in Bayanga (i.e. guards, etc.). Furthermore, although unquantified, there is considerable evidence that the presence of researchers and tourists in a gorilla range can act as a significant deterrent to poachers, as well as allow anti-poaching units to be alerted if illegal activities are detected.

The purpose of this article, however, is not to evaluate the success or value of gorilla tourism, but only to explore a specific facet – that of the impact human observers have on gorilla behaviour. By continuing to identify the potential negative triggers of close human presence to habituated and semi-habituated groups, we can learn how best to minimize our level of disturbance. This article forms part of a special edition on "Ethnoprimatology" – the consideration of human attitudes and behaviour on

all aspects of primate lives and survival – that will be released in print by the *American Journal of Primatology* at the end of the year.

Michelle Klailova, Chloe Hodgkinson and Phyllis Lee

*This article is a summary of: Klailova, M., Hodgkinson, C. & Lee, P. C. (2010): Behavioral responses of one western lowland gorilla (*Gorilla gorilla gorilla*) group at Bai Hokou, Central African Republic, to tourists, researchers and trackers. *American Journal of Primatology* 71, 1–10*

We are greatly indebted to the Makumba Group, Bai Hokou, the Dzanga-Sangha Project staff, trackers and volunteers for all their support throughout the study, which was made possible through the Central African Government and the World Wildlife Fund for Nature. A very special thanks goes to Angelique Todd, Bai Hokou Primate Habituation Advisor, whose constant support and encouragement has been vital to the completion of this project, as well as Leanne Van der Weyde who helped collect data in the final 4 months of the study. Acknowledgement of funding is owing to the Toronto Zoo, University of Stirling, the Natural Environment Research Council, and the Economic and Social Research Council.

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UN Year of the Gorilla Boosts Gorilla Conservation

The plight of gorillas in danger was brought home to millions last year through hundreds of Year of the Gorilla articles, interviews, lectures, conferences and films – more than through any similar global species campaign. In addition, the UN Year of the Gorilla 2009 generated Euro 100,000 for field projects to prevent critically endangered gorilla species from going extinct. The educational and awareness raising campaign was led by the UNEP *Convention on the Conservation of Migratory Species of Wild Animals* (UNEP/CMS). Member states to the Convention, members of the *World Association of Zoos and Aquariums* (WAZA), the *Great Apes Survival Partnership* (GRASP), conservation bodies and individuals at grass root level were all involved, and online donations helped to raise funds.

Protection of gorilla species and their vulnerable ecosystems cannot be achieved without the active involvement of people on the ground, and that is why the main focus is being placed on the participation of local communities that share gorilla habitat. Improving protection by involving communities and providing staff training, supporting the enforcement of wildlife law, preventing illegal logging, and reducing the use of firewood and charcoal – all are vital to reducing threats to the remaining populations of gorillas in the wild.

Because of the continuing civil war in the Democratic Republic of the Congo, rural and urban communities are highly dependent on firewood and charcoal; as a result, vegetation and gorilla habitat are continuously degraded. The situation has deteriorated; there are now more than 500,000 refugees in North Kivu. They use firewood and charcoal, which are primarily removed from the

Virunga National Park, a world heritage site home to the highly endangered mountain gorillas.

The use of fuel-efficient stoves as promoted by UNHCR, and of sustainably harvested timber and briquettes, has helped to contain damage to the environment. At the same time, tree nurseries have been developed and trees are planted in buffer zones around the parks to protect gorilla habitat.

In addition, a campaign has helped to reduce illegal charcoal trafficking significantly by use of aerial monitoring of camps for internally displaced people in the war torn eastern Democratic Republic of the Congo. Emergency aid enabled park rangers to continue daily monitoring of gorillas, ensure their protection and remove snares in gorilla habitat (see page 4).

The Cross River gorilla, with only 250–300 individuals remaining on the border between Nigeria and Cameroon, is critically endangered ac-

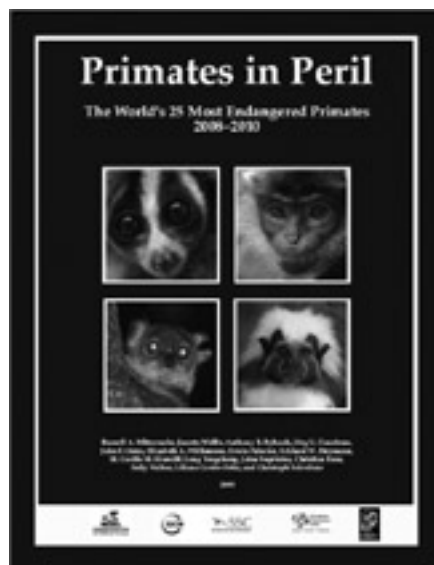
ording to the *IUCN Red List* and one of the 25 most endangered primates on earth. Hunting for bushmeat, expanding infrastructure and demand for farmland have pushed this rarest gorilla sub-species to the brink of extinction. A community-based anti-poaching project in this region led by the *Wildlife Conservation Society* has promoted training opportunities for government staff and biologists to help establish and successfully manage new protected areas for Cross River gorillas. By enforcing existing regulations concerning wildlife management in the gorillas' mountain range, the presence of park rangers also acts to deter poaching.

The UK based *Aspinall Foundation* runs two rehabilitation and reintroduction projects for western lowland gorillas that have been orphaned through illegal hunting for bushmeat and wildlife trafficking in the Republic of Congo and Gabon. In order to fight commercial poaching and trade in endangered species, government authorities in cooperation with the *Aspinall Foundation* will strive to increase effectiveness of wildlife law enforcement. The Year of the Gorilla supports the "Project to Apply the Law on Fauna" to reduce the overall level of illegal hunting and trade in the Republic of Congo.

During the Year of the Gorilla, governments, NGOs, zoos, wildlife agencies and individuals staged events in the African range states, Europe, the Americas, Asia and Australia to educate the wider public on gorillas and the threats they face.

As part of the awareness element of the campaign, Ian Redmond visited most of the 10 gorilla range states and reported on the status of the gorilla. A gorilla rapid assessment report was prepared by the *United Nations Environment Programme* and launched at the CITES conference in Doha on March 24th, 2010.

Convention on the Conservation of Migratory Species of Wild Animals



This publication lists the 25 most endangered primates; the Cross River gorilla is one of them. Download: http://www.conservation.org/publications/Pages/primates_in_peril_2008-2010.aspx



READING

Paul Raffaele

Among the great apes: adventures on the trail of our closest relatives. Washington, DC (Smithsonian Books) 2010. 384 pages. Hardcover, US\$ 26.99. ISBN 9780061671838.

Anne Innis Dagg

The Social Behavior of Older Animals. Baltimore (Johns Hopkins University Press) 2009. 240 pages. Hardcover, US\$ 35. ISBN 978-0-80189050-5

C. de Wasseige, D. Devers, P. de Marcken, R. Eba'a Atyi, R. Nasi and Ph. Mayaux (eds.)

The Forests of the Congo Basin – State of the Forest 2008. Luxembourg (Publications Office of the European Union) 2009. ISBN 978-92-79-13210-0, doi: 10.2788/32259

Constance McDermott, Benjamin Cashore and Peter Kanowski
Global Environmental Forest Policies. An International Comparison. 384 pages. London (Earthscan) 2010. Hardcover, £ 60.00. ISBN 978-1-84407590-4

Sue Stolton and Nigel Dudley (eds.)
Arguments for Protected Areas. Multiple Benefits for Conservation and Use. London (Earthscan) 2010. 304 pages. Paperback £ 24.99, ISBN 978-1-84407881-3. Hardcover £ 85, ISBN 9781844078806.

Anne M. Larson, Deborah Barry, Ganga Ram Dahal and Carol J. Pierce Colfer (eds.)
Forests for People. Community Rights and Forest Tenure Reform. London (Earthscan) 2010. 256 pages. Paperback £ 24.99, ISBN 978-1-84407918-6. Hardcover £ 85.00, ISBN 978-1-84407917-9.

Gerard Prunier
From Genocide to Continental War. London (Hurst Publishers) 2009. 529

pages. Paperback Euro 20.28, ISBN 978-1850656654. Hardcover, ISBN 978-1850655237.

Filip Reyntjens

The Great African War: Congo and regional geopolitics 1996–2006. Cambridge (Cambridge University Press) 2009. XI, 327 pages. Hardcover, US\$ 90, £ 40. ISBN 978-0521111287.

New on the Internet

C. Nellemann, I. Redmond and J. Refisch (eds.)

The Last Stand of the Gorilla – Environmental Crime and Conflict in the Congo Basin. A Rapid Response Assessment. United Nations Environment Programme, GRID-Arendal 2010. 86 pages. ISBN: 978-82-7701-076-2. Available as interactive e-book and in PDF format. It can be accessed at www.unep.org or at <http://www.grida.no/publications/rr/gorilla>

Global Witness

Lessons Unlearned. How the UN and Member States must do more to end natural resource-fuelled conflicts. 2010. 52 pages. ISBN 978-0-956457-0-0. For download: http://www.globalwitness.org/media_library_detail.php/919/en/lessons_unlearned_how_the_un_and_member_states_mus

Global Financial Integrity (GFI)
Illicit Financial Flows from Africa: Hidden Resource for Development (2009). For download: http://www.gfip.org/storage/gfip/documents/reports/gfi_africareport_web.pdf

Andrew J. Plumptre et al.
Eastern Chimpanzee (*Pan troglodytes schweinfurthii*): Status Survey and Conservation Action Plan 2010–2020. Gland, Switzerland (IUCN) 2010. 52 pages. <http://www.primat-sg.org/action.plans.htm>

General Meeting: February 20th/21st, 2010

This year's members' meeting took place in the Königswinter Workers' Centre near Bonn from February 20th to 21st. After the meeting had been opened and the participants had been welcomed by Rolf Brunner, Angela Meder reported on projects for the protection of the eastern gorilla populations and the political situation in Uganda, Rwanda and the Democratic Republic of the Congo.

Veronika Lenarz (CMS) informed us about activities initiated on the occasion of the Year of the Gorilla 2009.

Angela Meder then gave another talk, this time on the situation of the western lowland gorillas in general and the Cross River gorillas in particular, with special emphasis on the support B&RD is planning to provide in these areas. After the coffee break, Andreas Klotz transported us to Uganda with a multimedia presentation given as part of the introduction of his Mountains of the Moon Project. The audience witnessed the grandiose montane landscape of the Ruwenzoris and the colourful diversity of people, plants and animals, particularly the mountain gorillas of Bwindi Impenetrable National Park. Dinner was followed by a social get-together: members and other interested people watched videos about gorillas and exchanged news and ideas until late at night.

The official bi-annual General Meeting was opened on Sunday morning. Rolf Brunner submitted his report on





BERGGORILLA & REGENWALD DIREKTHILFE



The extended B&RD Board of Directors: Karl-Heinz Kohnen (Treasurer), Angela Meder, Peter Zwanzger, Rolf Brunner

Photo: Sylvia Jübermann

the organisational structure and the detailed finances of the organisation over the past two years. This was followed by a discussion of future B&RD projects, including several interesting ideas from the audience (establishment of regional groups, information exchange through *Facebook*, and annual members' meetings in-between bi-annual general meetings). At the end of the meeting, Karl-Heinz Kohnen was elected as the new Treasurer. All those present expressed their gratitude to Rolf Brunner, who had been Treasurer since the founding of the organisation, for his long-term, dedicated involvement. He will continue as a Board member of B&RD together with Angela Meder. The third member, and new addition to the Board, will be Peter Zwanzger. The election of all candidates was unanimous.

We would like to take the opportunity to express once again our heartfelt gratitude for the excellent organisation of the meeting to everybody who

helped in its preparation, and to thank all the members and sponsors who make an important contribution with their involvement in the protection of gorillas and their habitats.

Uwe Kribus

Finances

Income in 2009

Subscriptions	16,513.88 Euro
Donations	69,475.01 Euro
Members' Meeting	625.00 Euro
Sales	707.60 Euro
Total	87,321.49 Euro

Expenses in 2009

Administration	319.29 Euro
<i>Gorilla Journal</i>	4,110.32 Euro
Items for sale	662.16 Euro
Postage	2,014.49 Euro
Pay/top-ups	5,140.00 Euro
Office Congo	979.99 Euro
Virunga National Park	
Printer/copier/scanner	1,450.00 Euro

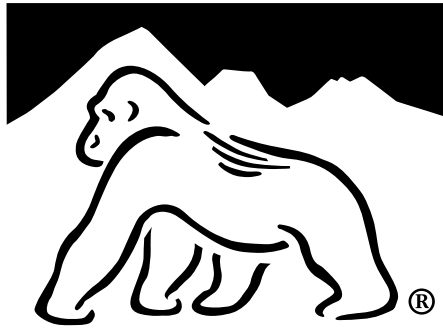
10 GPS devices	2,454.95 Euro
Compasses	599.00 Euro
Sarambwe	
Food for patrols	2,198.76 Euro
Motorcycle	3,238.64 Euro
Uniform badges	206.39 Euro
Training dialogue com.	5,035.00 Euro
Motorcycle for VONA	3,035.00 Euro
Congo Republic/CAR	
Bushmeat study	2,100.00 Euro
Total	33,337.60 Euro

Our Donors

From November 2009 to April 2010 we received major donations by Apenheul Primate Conservation Trust, Anna Eiler, Hans-Peter Elling, Elisabeth Engel, Michael und Ingeborg Erhardt, Marianne Famula, Susan Götsch, Colin Groves, Karl-Heinz Holfelder, Marianne Holtkötter, Gabriele Holzinger, Helga Innerhofer, Frank Jacobi, Götz Kauschka, Dr. Hartmann Knorr, Frank Lehwalder, Lions Club St. Augustin, Renate Mayer, Milwaukee Zoo, W. Past, Manfred Paul, Dr. Birgit Reime, Alfred Roszyk, Dieter Schmitz, Frank Seibicke, SOS Internet, Heinz Stelter, Julia Stoppel, Dr. Hans-Christian Ströbele, Juliana Ströbele-Gregor, Nina Sündermann, Cecile Vischer, Christof Wiedemair and Heinz Zaruba.

The Stuttgart Zoo Wilhelma donated 1,286.50 Euro from the recycling of mobile phones they had collected, the Plochingen high school collected 1,256 Euro for us during a party, the musician Lutz Hiller gave a benefit concert for us with his band *Die Drei*, and le Conservatoire pour la Protection des Primates of the French zoo La Vallée des singes donated the funds for the motorcycle that was handed over to the Congolese NGO VONA for their work to conserve the Sarambwe Reserve. Many thanks to all of them, and to the other donors as well! We are grateful for your support, and we hope that you will continue to support us.

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Please send to:

Rolf Brunner

Berggorilla & Regenwald Direkthilfe

Gerchenstr. 5

45473 Muelheim, Germany

Fax +49-208-7671605

Bank account in Switzerland:

Postscheckkonto Postfinance

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