



Gorilla Journal

Journal of Berggorilla & Regenwald Direkthilfe

No. 47, December 2013



**The Sarambwe
Reserve and the
War**

**A Series of
Landslides Hit Afi
Mountain Wildlife
Sanctuary**

**Can the Mayombe
Forest be Saved?**

Geriatric Gorillas



BERGGORILLA & REGENWALD DIREKTHILFE

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Cover: Mayombe region. The tree line clearly marks the border between Angola (Cabinda) and the Republic of Congo (Niari, in the front). Photo: Tamar Ron

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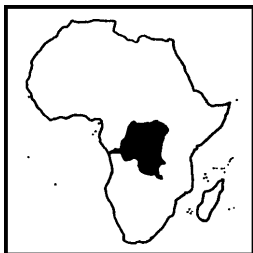
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D. R. CONGO

The Sarambwe Reserve and the War: Strategies for Conservation

It has been approximately two decades since Sarambwe Forest descended into chaos, with the potential to end in the degradation of its ecosystems or even its total destruction. As the forest was classified as a production forest, several timber traders obtained permits to cut timber for boards, and they use these permits to make charcoal, hunt, set traps and fish. At the same time agricultural activities are eating away at the reserve's borders.

At the start of 1996, the principal environmental authorities, particularly ICCN, were first made aware of the Sarambwe Reserve's biodiversity, after concerns were raised by local organisations active in environmental issues and nature conservation. Several international organisations showed in-

terest in the reserve, but few involved themselves directly in its conservation. In 1998, *Berggorilla & Regenwald Direkthilfe* funded a first workshop for the sensitization and mobilization of the local authorities, conservation stakeholders and NGOs. The purpose of the workshop was to analyse the status of the Sarambwe Reserve and to make a first step towards the conservation of the Sarambwe gorillas. The recommendations developed during this workshop have formed the basis for subsequent conservation efforts, and have assisted in the development of activities, programmes and management strategies for this protected area. The reserve will benefit from several forms of support, particularly staff training, infrastructure development, re-establishment of relationships with the communities, mobilization for development and environmental rehabilitation projects, interventions at schools, and the establishment of relationships with

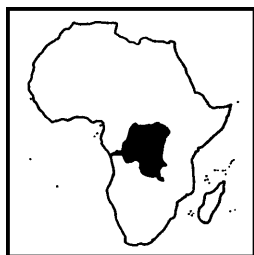
other conservation organizations in the region (Uganda and Rwanda). Essentially, the goal is to establish a basic integrated management process.

On 20 February 2012, the Virunga National Park authorities, central sector, requested support for the protection of the Sarambwe Reserve which is adjacent to the Bwindi Impenetrable National Park in Uganda. Sarambwe is a sanctuary for mountain gorillas (*Gorilla beringei beringei*), which are threatened by the expansion of agriculture and deforestation: logging, charcoal burning, pit sawing, fishing and poaching with traps. In particular, support was requested for the purchase of equipment for the rangers and for the construction of a water supply line for the Sarambwe post; the latter was funded by the European Association of Zoos and Aquaria. It was impossible to deploy this support immediately as the security situation turned out to be insurmountable.

For several years, the east of the Democratic Republic of the Congo has been in a state of almost permanent insecurity. Several armed groups operate in this part of the country, for reasons that remain unknown to the local population. The establishment of M23, an insurrection movement of certain cadres of the Congolese army, on 23 March 2012 provoked several wars with the regular army and caused the occupation of northern Goma, the Nyiragongo territory and a large part of the Rutshuru territory, effectively cutting these areas off from intervention by the Congolese Government. Several self-defence people's militias have formed in the areas not controlled by the Congolese Government. In order to maintain their resistance, these militias have several times attacked the reserve's rangers with the aim of seizing equipment (weapons and ammunition) and goods such as mattresses, beds, chairs and cooking pots. Another aim of the militias is to control the reserve



Claude Sikubwabo (the third from right) with Sarambwe rangers before the M23 occupied the Sarambwe area



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in order to exploit the forest for financial gain and to permit agriculture – in the hope that this will gain them the goodwill of the local population.

In May 2012, the Sarambwe ranger post was attacked twice and one ranger was shot and wounded. The ICCN was forced to pull out the rangers from the post and take them to Rwindi station and then to Lulimbi. Some days after the rangers were pulled out, two people were killed by Mai Mai militiamen in villages close to Sarambwe. The Chief of Kisharu District, who was also the president of the dialogue committee, also died as a consequence of the war. In view of this situation, the project was suspended and the reserve was left undefended from all these negative impacts. But what was to be done? We asked ourselves whether we should abandon the reserve with all the infrastructure, suspend the project and

wait for the return of peace. The immediate answer was NO, we cannot abandon the forest. So what strategy should be employed: what actions should be undertaken?

Between 1994 and 1998, during the peak of the fighting and when the threat of baby gorillas being trafficked in the Mikeno sector was at its highest, the strategy was to maintain the rangers in their posts. At the present time, this is impossible. After much deliberation, we have reached the conclusion that the first stage in saving the reserve is to acquire continuous information on the reserve that would permit us to develop strategies for actions to conserve it. So, our first action was to find a source of information. To this end, we first looked for members of the dialogue committee as they are true friends of conservation. Unfortunately none were found – they had all left the area.

Members of the NGO VONA seemed to be the next obvious choice. Two VONA members were located near the Sarambwe post at Kasarabande. We have succeeded in arousing their interest and they have agreed to provide us with information; but as they have no telephones, we did not receive any information. So we then decided to arrange for the information to pass through ICCN at Lulimbi or Rwindi. We have now at last started to receive reliable and useful information, particularly on the status of the patrol post, on illegal activities in the reserve, and on the people who now control the reserve. The analysis of this information has shown us a way of conducting ad-hoc activities in the reserve.

In the second stage, it was necessary to sensitize the local and military authorities to support the protection of the reserve, to set up an observation

Restoration in Eastern Congo

Perhaps you have already read about it – the rebel group M23 stopped fighting at the beginning of November and gave up. They had been fighting the Congolese army in eastern Congo for more than a year. Now the army and MONUSCO are trying to convince the other rebel groups also to stop their activities.

As M23 have withdrawn their troops from the areas they had occupied, conservation activities can now start again in the affected areas. One of them is the Sarambwe Reserve, but there are more protected areas in eastern D. R. Congo that had been almost inaccessible for a long time. So we now want to increase our activities in eastern Congo and support our partners there.

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

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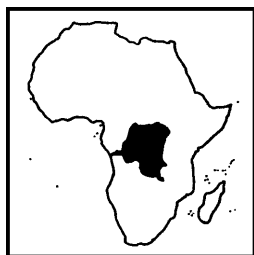
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Mishebere in Kahuzi-Biega National Park

Photo: Carlos Schuler



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View of the Sarambwe Reserve

Photo: Claude Sikubwabo Kiyengo

post, and to conduct ad-hoc activities in the reserve. The third stage consists of the return of the rangers to the reserve. Not only would these strategies help to lessen the destruction of the reserve and its infrastructure, but they would also help to demonstrate the Government's dedication to its protected areas. Human and financial resources were required to implement these steps.

With support from Berggorilla, the first two stages have been realised, i.e. the establishment of an observation post, the sensitization of the authorities and the launch of ad-hoc protection activities while waiting for the rangers to return. In fact, since July 2013, three trackers have been installed at Sarambwe and are monitoring the situation. They regularly send information on the reserve. Two joint patrols have been carried out in the reserve, one on 13 September 2013 and the other on 6 October 2013. The first patrol was conducted under the command of the chief conservator of the Virunga National Park central sector and Colonel

Kisembo, chief of the 809th commando regiment. It consisted of 8 rangers, 35 troops and 3 trackers. The second patrol consisted of 3 trackers and 30 FARDC (Congolese army) troops.

As a first result of these actions – the installation of the trackers and the launch of the first patrol – some calm has returned to the reserve. Destructive activities by Ugandan loggers are decreasing. The Sarambwe ranger post building is currently being monitored. It is intact, but it has already lost all its door locks and window panes. During the second patrol, a group of three Ugandan loggers were encountered; two were able to escape but one was caught. He has provided important information on the Ugandan loggers, which will allow us to control them. During the same patrol, fresh gorilla faeces were found, and an unidentified group of gorillas in a closed forest. The reserve boundaries are intact.

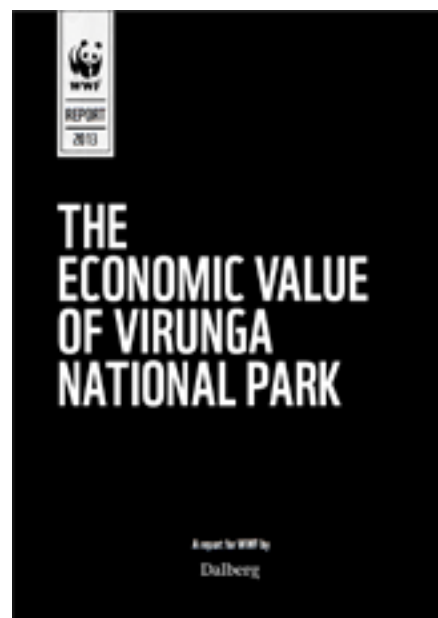
Observations from the observation post have determined that the Rushegura group travelled towards the Sarambwe Reserve at the level of Biz-

enga on 8 October 2013. It should be noted that Bwindi rangers and Ugandan troops followed them into the Sarambwe Reserve to make sure that they were protected. This event constitutes an auspicious moment for trans-border collaboration between Ugandan and Congolese rangers. We hope that ICCN will examine the possibility of re-opening the Sarambwe post in the near future and we would like to encourage the international NGOs to support conservation efforts in Sarambwe.

Claude Sikubwabo Kiyengo

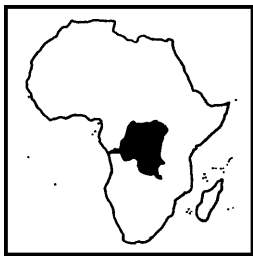
The Economic Value of Virunga National Park

In response to the granting of oil concessions in Virunga National Park (Virunga) in the Democratic Republic



Dalberg Global Development Advisors

The Economic Value of Virunga National Park. WWF, August 2013. 64 pages. http://assets.wwf.org.uk/downloads/the_economic_value_of_virunga_national_park_lr.pdf (3.3 MB)



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of the Congo (DRC), WWF launched a campaign to raise awareness of Virunga's economic value and the implications of oil development for local communities and the environment. As part of the campaign, WWF commissioned Dalberg Global Development Advisors to study Virunga's current and potential social and economic value and to indicate the implications of oil exploration and exploitation (http://www.wwf.org.uk/news_feed.cfm?newsid=6756).

Located in eastern DRC, Virunga is Africa's oldest national park. One of DRC's five United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Sites, the park is known for its wildlife-rich network of forests, savannas, rivers, lakes, marshlands, active and dormant volcanoes and permanent glaciers. It is also famous for being home to about 200 critically endangered mountain gorillas.

In December 2007, the DRC government granted oil concessions covering 85 % of the park. To date, SOCO International PLC (SOCO) is the only

oil company that has indicated that it will explore for oil within park boundaries. Despite DRC's law prohibiting environmentally harmful activities in protected areas, SOCO's exploration licence exploits an exemption in that law that allows for "scientific activities" in protected areas. SOCO's oil concession covers the Lake Edward, source of fish and income for 27,000 fishermen and home to endangered hippos.

Plans to develop oil expose the social and economic value of the park to risks, the likelihood and impact of which is demonstrated by cases such as the Bas Congo and Niger Delta. These risks include the following:

- Exploration activities, such as seismic surveys and exploratory drilling, have localized environmental impacts. Infrastructure requires clearance of vegetation and often leads to the development of illegal human settlements along access routes. This can set a precedent for activities that threaten conservation, and lead to the introduction of invasive plants, fragmentation of natural hab-

itats, and an increased likelihood of poaching, which threatens the survival of local species.

- Exploitation in an area prone to conflict and lacking systematic government legislation and enforcement would make pollution-free extraction extremely difficult, if not impossible to guarantee. The longer the pipeline and the more remote the location, the more difficult ensuring pipeline maintenance and protection becomes. Further, drilling close to Virunga's eight volcanoes

Editor's note

On 19 September, 2013, Rodrigue Katembo Mugaruka, the conservator of the central sector of Virunga National Park, was arrested by Congolese security forces. The arrest followed his protest against activities of SOCO employees inside the park for which they did not possess authorization. He was kept under arrest for 17 days.

The organisation Journalist in Danger reported that Gaius Kowene – an independent journalist and a correspondent for Radio Netherlands – was attacked on 4 October 2013 by 6 armed individuals. He had been reporting on oil exploration in Virunga National Park. The attackers stole his backpack and beat him up intensely before they disappeared.

On 7 October, 2013, WWF accused the British oil company SOCO of having violated the OECD Guidelines in the Virunga region.

If you want to stay up-to-date on the oil exploration in the Virunga National Park you can visit <http://savevirunga.com>

Virunga National Park is recognized globally for its rich wildlife, but it is much more than that. Virunga is also a vital resource to local residents living around Africa's oldest national park. WWF is urging governments, oil companies and non-governmental organizations focused on conservation, human rights and development to take immediate steps to protect the park from oil exploration.

DRAW THE LINE

Virunga is an UNESCO World Heritage Site and is known for its wildlife-rich network of forests, savannas, rivers, lakes, marshlands, active and dormant volcanoes and permanent glaciers

SOCO INTERNATIONAL PLC IS THE ONLY OIL COMPANY THAT HAS INDICATED THAT IT WILL EXPLORE FOR OIL IN VIRUNGA

THE OIL CURSE
Historical evidence in oil producing countries shows that rather than reducing poverty and inequality, oil has adverse social and economic effects and in many cases fuels conflict. Three processes are primarily responsible for this "natural resource curse".

- Exporting oil causes the local currency to appreciate making other exporting sectors less competitive
- The price of oil fluctuates leading to unpredictable revenues and causing severe economic disruptions making long-term planning challenging
- Oil revenues raise the value of being in power and provide politicians with more resources to influence the outcome of elections leading to higher levels of corruption

OIL DEVELOPMENT COULD ALSO THREATEN THE PARK'S STATUS AS A WORLD HERITAGE SITE

POTENTIAL OPPORTUNITIES

- 28,000 jobs in fishing
- 10,000 jobs in hydro-electric power
- 7,420 jobs in tourism

186 HOME TO 186 CRITICALLY ENDANGERED MOUNTAIN GORILLAS

85% In December 2007, the DRC government granted oil concessions covering 85 per cent of the park.

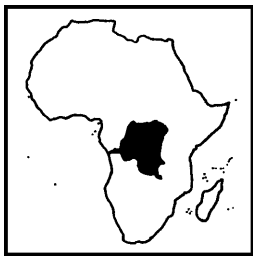
SOCIAL AND ECONOMIC VALUE

The Total Economic Value of the Virunga ecosystem is likely to be US\$48.9 million annually. If current challenges are addressed, the park's value has the potential to be as much as US\$1.1 billion per year

- Fisheries:** Fishing from Virunga's lakes currently brings in US\$30 million a year. Management is poor and enforcement weak which has led to over-fishing. By introducing sustainable management systems the current yield could triple raising income to US\$90 million and increasing job opportunities as well.
- Tourism:** Virunga has been closed to tourists since September 2012 for security reasons but used to be a valuable source of income for the park and local communities. The potential value of tourism in the future is US\$235 annually with increased job opportunities as well.
- Hydro-electric power:** Access to electricity is recognized as having substantial benefits for poverty reduction. The Mutungwe station, which uses water from inside Virunga, provides electricity for 10,000 inhabitants. Potential value from additional stations is over US\$40 million annually with increased job opportunities for locals.

VIRUNGA NATIONAL PARK'S RICH WILDLIFE

- 218 MAMMAL SPECIES
- 706 BIRD SPECIES
- 78 AMPHIBIAN SPECIES
- 109 REPTILE SPECIES



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- poses risks to the size and frequency of eruptions.
- Pollution from oil extraction is likely because minimum requirements for pollution-free drilling, such as pipeline maintenance and protection from sabotage, cannot be met in a conflict-prone area. Additionally, oil extraction is likely to fuel further conflict over resources and to hinder pollution mitigation efforts. Environmental degradation and human rights abuse can result from pollution.
 - Economic and social development could be impacted negatively due to the “oil curse” – a phenomenon resulting from oil exports. Under the oil curse, the source country’s currency appreciates causing a decline in the competitiveness of existing export sectors, oil price volatility destabilizes government revenues prohibiting long-term planning, and large cash flows increase the risk of misallocated resources. In the case of the Niger Delta, poverty and inequality indicators have worsened since the discovery of oil.

Oil development could also threaten the park’s status as a World Heritage Site, which if lost, could in turn have negative effects on the value of the park. In the current situation, Virunga’s value is approximately US\$ 48.9 million per year. In a stable situation characterized by the absence of conflict, secure access to the park, and sufficient resources to protect the ecosystem, the park could increase in value to more than US\$ 1.1 billion per year. The value of the park may be far higher if additional factors were to be taken into consideration.

DRC is not only home to Virunga, Africa’s most biodiverse park, but also contains four other World Heritage Sites recognized for their outstanding natural value, as well as a variety of other national parks. These protected

areas represent a long-term source of income if managed sustainably. Virunga alone has the potential to provide for the livelihoods of 45,000 people through the provision of job opportunities.

It is a unique place on Earth that we must all fight to protect. WWF thus launched a global campaign and calls for support from the international community to help ‘Draw The Line’ and

keep oil exploration out of Africa’s oldest national park. Every name helps to show governments and businesses how strongly people feel about protecting precious places like Virunga.

Please, help us fight for the protection of the Virunga National Park and add your name on panda.org/virunga.

WWF

Mt. Tshiaberimu Gorilla News

The small Grauer’s gorilla population in the isolated forest on Mt. Tshiaberimu was previously separated into two groups named Kipura and Katsabara (or Katsavara), but the 6 remaining individuals appear to have joined into one group recently. Silverback Tshongo (or Tsongo) disappeared 2 months ago.

“On Wednesday, November 27th, I trekked to Kipura group for a routine health check. I spoke with the ICCN trackers about silverback Tshongo and they informed me that more than 200 snares were found in the area at the time. Even during my visit, I observed many traces of poachers. The ICCN officer informed me that their team needs to be larger in order to cover all the patrols in the Tshiaberimu sector. ICCN is currently recruiting new rangers and after training, some individuals will be assigned to Tshiaberimu.

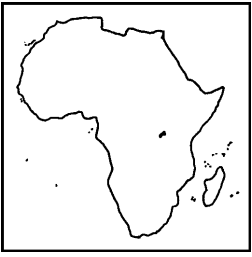
“The following day, [...] the gorillas were feeding when we arrived. Silverback Katsabara immediately charged us. Female Mwengesyalii began crying and moved quickly away from us with her infant clinging to her back. This reaction is to be expected, as these gorillas are not habituated to human presence. Silverback Katsabara remained behind with the three gorillas from Kipura group for a time, and then joined Mwengesyalii and her infant in the thick vegetation.”

Summary of a report by Martin Kabuyaya Balyanzu that was posted on 4 December, 2013, on www.gorilladoctorsblog.org



Katsabara (left) and Kambula (right)

Photos: Gorilla Doctors



RWANDA

The Work of Art of Conservation

Art of Conservation (AoC) is pleased to celebrate our first 7 years of successful creative learning and community development programs about biodiversity with a one-health focus, as well as announce the launch of the Rwanda-based Conservation Heritage – Turambe (CHT). CHT promotes one-health conservation, which focuses on overall human health, animal health, and ecosystem health through education and empowerment to communities bordering Rwanda's Volcanoes National Park.

CHT will build on 7 years of successful efforts by AoC in promoting one-health conservation in Rwanda, which simultaneously improves the health of humans, wildlife, and ecosystems. By helping to launch and providing ongoing support to CHT, AoC has ensured that locally led conservation successes can continue to grow, while proving our model and providing the opportunity for AoC to expand one-

health conservation to new locations.

During AoC's 7 years in Rwanda, we were able to share thousands of hours of one-health programming and activities with local school children as well as the broader community surrounding Volcanoes National Park. These lessons involved critical thinking and creative learning to give students opportunities for hands-on learning. Programs included themes of personal hygiene and health, sustainable ways of interacting with the local environment (e.g. tree planting), and introduction to native animal species (e.g. mountain gorilla). Other activities included beautification of public spaces (e.g. painting informative murals), tennis tournaments, 3K Gorilla Fun Runs, and open houses. All programming (in-school and otherwise) included local teachers and AoC's Rwandan staff so that they were effectively trained and thus able to carry on the one-health message themselves. The creation of CHT demonstrates the effectiveness of AoC's training methods.

"The creation of CHT is incredibly exciting," says Julie Ghrist, AoC Founder and Program Director, "when we launched our Rwandan program 7 years ago, we hoped to engage children in conservation, for the benefit of the mountain gorillas as well as for them, their communities, and the environment. We are so pleased to be able to leave a legacy in Rwanda and AoC will help support the work of the new CHT organization as it develops."

The name "Turambe," in Kinyarwanda means, "let us be sustainable," and this transition to local leadership alongside AoC's expansion signifies how sustainable our approach to one-health conservation has been. Sustainability has been a focus of AoC's programming while in Rwanda and included locally-based programs such as the installation of 10,000 liter capacity rain water collection tanks at several schools as well as the Save the Forest Briquette Initiative which worked with local communities to combat deforestation for charcoal.

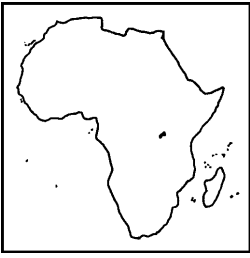
According to the leaders of CHT, their key objective is to conduct conservation and health programs for local people in communities bordering Volcanoes National Park, home to the Critically Endangered mountain gorilla. CHT staff has had over 6 years of intensive training, and they are excited as Rwandans to promote their own locally based conservation initiatives. Quoting the CHT team, "After following the Art of Conservation 'Code of Conduct' and principles, we understand the significance of sharing, learning and continuing important and inspiring work that has so evidently affected our community and country. Art of Conservation's work deserves to be perpetuated through our local organization. We owe it to our community and ourselves since we love the work we do!"

Art of Conservation has helped bring together entire communities in order to raise awareness that individual and



Singing Amahoro (peace) at Rushubi School in Musanze, Rwanda

Photo: AoC 2013



RWANDA

community health and sustainability have a direct impact on the surrounding environment. AoC's unique approach uses the arts and creative learning to

awaken, engage, and empower children about their health, the health of their environment and wildlife around them. AoC facilitates learning through creative expression, combining science-based lesson plans with visual art, poetry, song, dance, and sports. Our work is done in collaboration with other socially responsible partners, including conservationists, educators, and health professionals, all of whom AoC is extremely thankful for. Since its inception in 2006, AoC has engaged in conservation and health education with thousands of Rwandan children.

As part of our one-health approach to conservation, AoC promotes sustainability in everything we do. A key element to sustainability is ensuring that our model may be carried on by the local population, which is why we are so excited and grateful for CHT's decision to carry on this critical work with the communities in Rwanda's Volcanoes National Park. In doing so, CHT helps prove the long-term sustainability of our model, furthering our commitment to expanding our program globally.

AoC's Executive Team is actively researching potential locations and partners. "Our art-inspired lesson plans, activities, and leadership development programs have universal application," says Allison Hanes, Executive Director. "We are very grateful to all who supported our efforts in Rwanda and look forward to expanding AoC programs worldwide. Currently, we are investigating new opportunities to advance one-health conservation in Guyana, Panama, and Honduras. AoC is extremely proud of the accomplishments of the communities surrounding Volcanoes National Park, and is extremely grateful for all of their work in ensuring a healthy and sustainable environment for the mountain gorillas!"

Allison C. Hanes

www.art-of-conservation.org



Conservation Heritage – Turambe at Akagera National Park, Rwanda. Top left to right: Eusebe Mwizerwa, Valerie Akuredusenge, Innocent Uwizeye; bottom left to right: Eric Mutabazi, Olivier Habimana

Photo: AoC 2013



CROSS RIVER

A Series of Landslides Hits Afi Mountain Wildlife Sanctuary

The Afi Mountain Wildlife Sanctuary (AMWS) occupies approximately 100 km² in the north-western area of the Afi River Forest Reserve in the northern part of Nigeria's Cross River State. The forest reserve was created in 1930, while the wildlife sanctuary was gazetted in 2000 with the particular aim of protecting a sub-population of Cross River gorillas (*Gorilla gorilla diehli*), currently considered to number 25–30 individuals. AMWS includes the main massif of Afi Mountain, a rugged hill range with five main peaks (the highest of them reaches 1,318 m) separated by deep valleys, and an extensive lowland area to the west of the mountain (Oates 2009). Rivers form on either side of these valleys and flow east or west down to the lowlands through valleys that separate each main ridge (McFarland 2007). These rivers provide the main water source for the 16

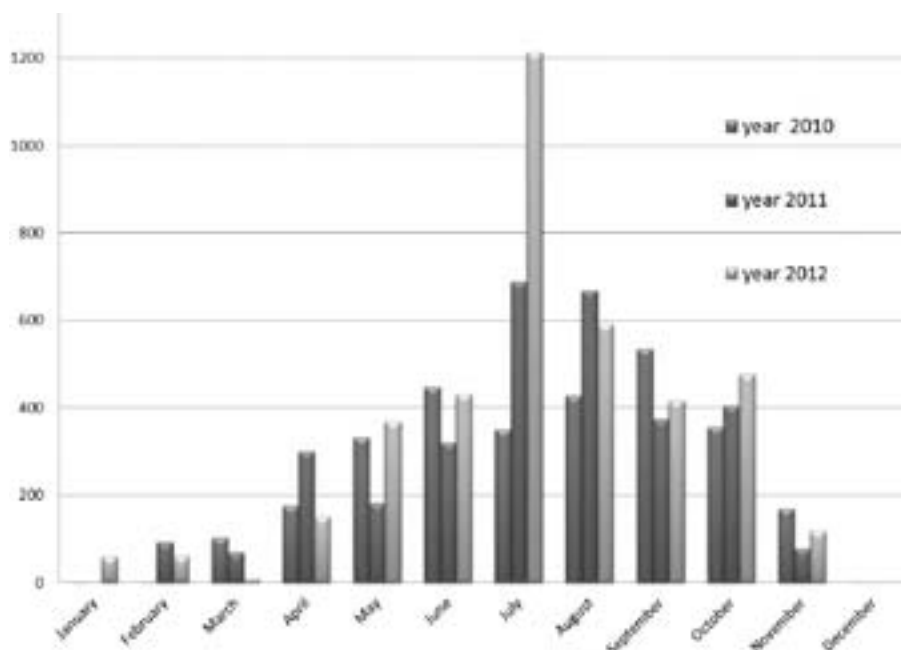


surrounding communities. The climate of Afi Mountain Wildlife Sanctuary is highly seasonal, with marked dry and rainy seasons. Substantial rain falls between May and October with the

heaviest rainfall in July and September. November through March is the dry season with very little or no rainfall.

The Afi forest is located within Nigeria's largest remaining block of rain forest that straddles the border between south-western Cameroon and south-eastern Nigeria and that forms the heart of a globally significant biodiversity hotspot with high species richness and high levels of taxonomic endemism (Oates et al. 2004). Afi is particularly notable for its fauna of endangered primates (Cross River gorilla, Nigeria–Cameroon chimpanzee, and drill) and is also an important site for biome-restricted birds.

On 14 July 2012, a series of severe landslides ravaged several portions of the central and southern axis of Afi Mountain Wildlife Sanctuary, eroding vegetation along mountain valleys and slopes, destroying many illegal farms and watersheds as well as polluting sources of drinking water and killing some wildlife. Large patches of land slid away in different locations, leaving these portions of the sanctuary bare



Total monthly rainfall on Afi Mountain 2010–2012

Drawing: WCS

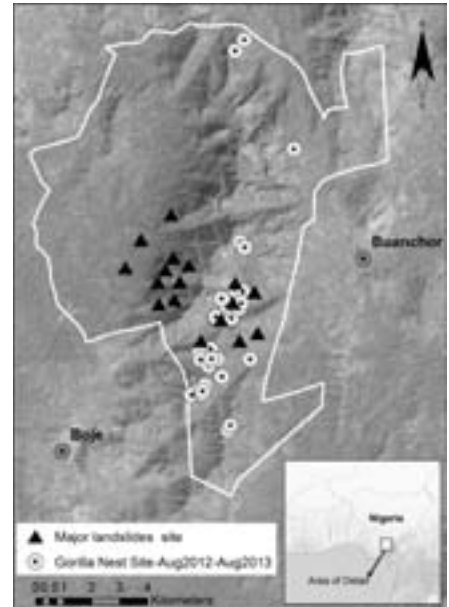
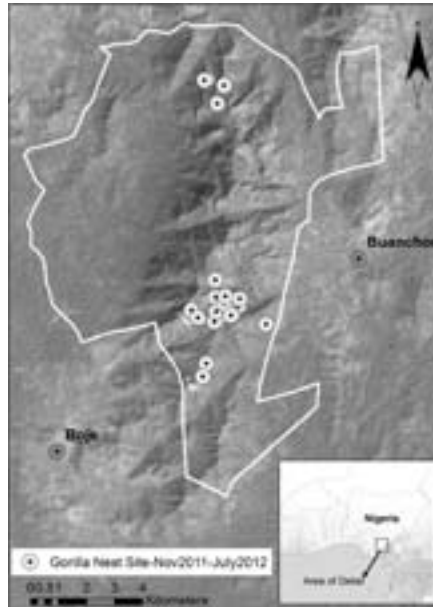


CROSS RIVER

and open to erosion. It is estimated that there could have been as many as 50 simultaneous landslides on the same fateful day.

The cause of these landslides is unknown. Local people have linked it with the wrath of the gods, but the presence of large numbers of illegal farms within the sanctuary and the unusually high rainfall experienced within the month of July are likely the causes. There are at least 600 illegal farms in the wildlife sanctuary (Morgan et al. 2011), mostly cocoa and banana farms, in both the lowland areas and the steep slopes of the mountains. A recent study revealed that the deforestation rate is very high in the Afi Mountain Wildlife Sanctuary and that the annual deforestation rate doubled from 0.37 % in 1998–2000 to 0.64 % in 2000–2010 (Okeke 2013).

At the same time rainfall patterns have become increasingly unpredictable and erratic; rainfall in July 2012 was unusually high (more than 1,200 mm), and twice that of the previous month (June) and that of August same year. In the period from 1998 to



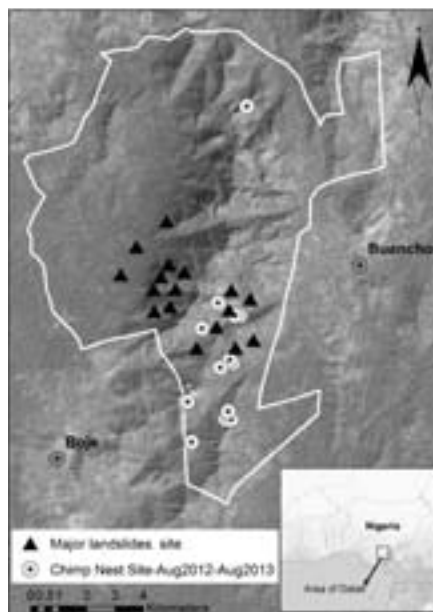
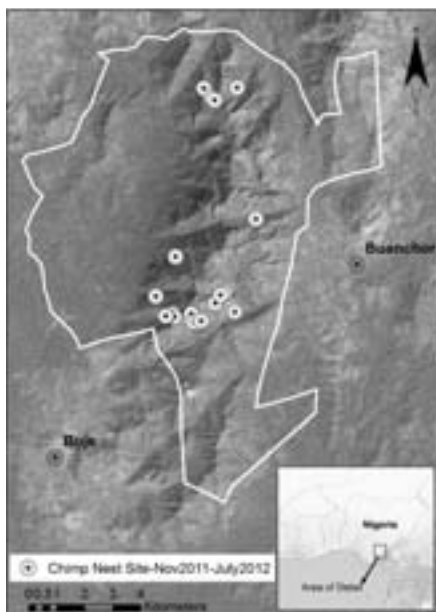
Gorilla nesting before and after the landslides. Before the landslides (Nov. 2011–July 2012), after the landslides (August 2012–August 2013)

Maps: WCS

2000, the mean annual rainfall ranged from 3,420 to 3,650 mm (McFarland 2007), whereas in the period from

2010 to 2012 it ranged from 2,890 to 3,895 mm.

The impact of landslides cannot be over-emphasized and their effects have been felt by both the surrounding communities and the wildlife community in the sanctuary. A number of buildings in 5 communities, as well as 3 major bridges, were totally destroyed. Watersheds along the valleys were totally eroded resulting in acute scarcity in the surrounding communities. Sources of drinking water were severely polluted while others were mud-filled and silted. Carcasses of wildlife species, mostly duikers, porcupines, snakes and hyraxes were found, and some sections of the sanctuary became inaccessible for months. No ape carcasses were found immediately after the landslides and it is believed that no apes were killed directly, although maps of the distribution of ape nests within the sanctuary indicate that they may have been temporarily displaced towards the southern boundary of the sanctuary,



Chimp nesting before and after the landslides. Left: before (November 2011–July 2012), right: after (August 2012–August 2013)

Maps: WCS



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and further towards the edges of the sanctuary where there are more farms. On 26 September 2012, during routine anti-poaching patrols, bones of two gorillas were discovered in a hunting shed on the southern edge of the sanctuary.

It is recommended that alternative sources of drinking water be provided to all the affected communities including ranger posts and base camps. All illegal farms should be eradicated and further encroachment discouraged.

Emmanuel Sampson Bassey and Francis Okeke

Acknowledgements

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References

- McFarland, K. L. (2007): Ecology of Cross River Gorillas (*Gorilla gorilla diehli*) on Afi Mountain, Cross River State, Nigeria. Ph.D. Thesis, City University of New York Graduate Center, New York
- Morgan, B. J. et al. (2011): Regional Action Plan for the Conservation of the Nigeria–Cameroon Chimpanzee (*Pan troglodytes ellioti*). IUCN/SSC Primate Specialist Group and Zoological Society of San Diego, CA, USA
- Oates, J. F. (2009): Biodiversity of the Afi Forest Complex, Cross River State Nigeria: A Desk study
- Oates, J. F. et al. (2004): Africa's Gulf of Guinea Forest Biodiversity Patterns and Conservation Priorities. Advances in Applied Conservation International, Washington D.C.
- Okeke, O. F. (2013): Land Cover Change Analysis in Afi-Mbe-Okwangwo Landscape Cross River State Nigeria. Unpublished Report to Wildlife Conservation Society

Bushmeat Hunting Changes African Rainforests

Hunting often devastates populations of large mammals, and this may have impact on other animal and plant

communities. In two recent studies (Effiom et al. 2013; Effiom et al. 2014) we assessed this impact in African tropical forests. We compared sites of hunted and protected rainforests in Cross River State, Nigeria, with respect to community composition of primates, other mammals, birds, plant seedlings, and mature trees.

In hunted sites populations of important seed dispersers – including the Cross River gorilla, *Gorilla gorilla diehli* – were drastically reduced while seed predatory mammals increased in abundance. However, the community composition of birds was similar in both types of forests. In protected forests seedlings of primate-dispersed plant species dominated, whereas in hunted forests the seedling community was shifted towards one dominated by abiotically dispersed species.

The change in the seedling composition was probably both a consequence of reduced seed dispersal by primates, and increased seed predation by e.g. rodents. The results predict a rarity of primate-dispersed trees in future tropical forest canopies – a forest less diverse in timber and non-timber resources. In recent decades, it has become clear that hunting is a severe threat to primate populations alongside habitat destruction. Increased hunting is caused by increased demand for meat due to growing human populations in the tropics, and improved infrastructure, partly as a consequence of logging in remote forest areas (Peres & Lake 2003). Better roads facilitate the transportation of hunted animals from the forest to urban consumers.

Large primates are among the largest frugivores in African forests, and play a significant ecological role through primary seed dispersal. They are particularly important dispersers of large-seeded plants and may be the sole dispersers of some tropical plant species. This means that seed dispersal and subsequent recruitment of

many plant species may be severely disrupted without the large primates. Our aim therefore was to quantify the effect of hunting on community composition of mammals, plant seedlings and birds. Secondly we wanted to know if the dispersal role of primates will be compensated by other frugivores, such as large frugivorous birds and rodents.

We established study sites in three different areas (Okwangwo division of the Cross River National Park, Mbe Mountain Community Wildlife Sanctuary, and Afi Mountain Wildlife Sanctuary) within a large more or less continuous evergreen forest expanse in Southeastern Nigeria (6° 10' N, 9° 0' E). Within each area we identified one study site that was relatively well protected from hunting and one that was not, and could thus make comparisons between the sites within each pair. These forests have high primate endemism including the most range restricted, critically endangered Cross River gorilla, and the newly recognized Nigerian-Cameroon chimpanzee, *Pan troglodytes ellioti*.

From 2009 to 2011 we made diurnal mammal and bird counts, and surveyed the mature trees along 4 km transects in each site, and the plant seedlings (≤ 1 m tall) in 12 plots of 5 x 5 m in each of the six sites. In total we observed three species of large primates (gorilla, chimpanzee, and drill, *Mandrillus leucophaeus*), and three species of smaller monkeys (putty-nosed monkey, *Cercopithecus nictitans*, Mona monkey, *C. mona*, and red-eared monkey, *C. erythrotis*). We also observed a number of other mammals, including rodents (squirrels, *Anomalurus* spp.; brush-tailed porcupine, *Atherurus africanus*; cane rat, *Thryonomys swinderianus*; giant rat, *Cricetomys* spp.) and ungulates (blue duiker, *Philantomba monticola*; red and yellow-backed duikers, *Cephalophus* spp.; red river hog, *Potamochoerus porcus*; rock hyrax, *Procavia capensis ruficeps*). A



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total of 131 bird species were recorded during surveys. We found 113 species of mature trees and species of 83 plant seedlings in the whole survey.

Our analyses showed that there were striking differences in the mammal and seedling communities between hunted and protected sites. In the hunted sites both large and small primates were strongly reduced. We observed three times as many groups of large primates and twice as many groups of small primates in protected forests, compared to the forest sites where hunting took place. The effects on the other mammals were also striking: we observed 14 times as many (groups of) rodents and twice as many groups of ungulates in the hunted forests. Thus, hunting clearly and dramatically shifts the mammal community from one where primates are common and important to one dominated by large rodents. Primates are probably the most preferred game, and they are known to be very sensitive to hunting, so their disappearance comes as no surprise. However, the higher abundance of the large rodents and the ungulates is perhaps more surprising, as many of these species are themselves being hunted.

Unlike the rodents, the species composition of birds, which are rarely hunted in this area, was not different between hunted and protected sites. That is, not even the large frugivorous birds, such as hornbills or turacos, responded to the change in primate abundance between sites, even though primates and these birds often exploit similar food resources.

Importantly, we found that the seedling community was radically changed in hunted sites. In the protected sites, the most commonly represented species on the forest floor are those with large fruits and seeds, which are eaten and dispersed by primates. Less common are species with other dispersal modes, i.e. dispersed vegetatively, by

wind, or other abiotic means (hereafter abiotic dispersal), or by birds or other non-primate animals. That is, the species composition of the seedlings in the protected sites is similar to the composition among the mature trees in the forests, which was the same in hunted as in protected sites. However, in the hunted sites the forest floor looked quite different. There, the species dispersed by other animals and by abiotic means were dominating, and primate dispersed species were in a minority.

We conclude that the difference in the seedling layer is caused primarily by the restricted seed dispersal of primate-dispersed species due to the paucity of large mammalian seed dispersers in the hunted sites, possibly in combination with the increase of large rodent seed predators in hunted sites. This conclusion concurs with the predictions generated by the Janzen-Connell model (Janzen 1970; Connell 1971). That model predicts that without effective dispersal agents most animal-dispersed plants will experience depressed recruitment as their seeds will mostly be clumped beneath parents where they are easily attacked by predators. Thus, in the protected forests where primates are still relatively abundant, large seeded primate-dispersed species are the most common and dominant among the seedlings, just as they are among mature trees. The opposite is the case in hunted forests, and the small, abiotically dispersed seeds are more evenly dispersed on the hunted forest floor and seem to escape predation to a greater extent.

Among the tree species, we can identify a number of winners and losers from hunting. Only 33 species appear to be winning from hunting (of which 33 % were primate dispersed whereas 42 % were abiotically dispersed), while 48 species are losers (of these, 65 % were primate dispersed and 15 % abiotically dispersed).

Our study highlights that key seed dispersal agents, as well as the primate-dispersed tree species, may become severely reduced even without direct effects of logging or other anthropogenic disturbances if the bushmeat crisis persists. Such loss of tree species would result in a less diverse range of food and fiber resources for both animal and human populations.

Lastly our results show that community composition of frugivorous birds was practically unaffected by hunting and the resulting lower abundances of primates. This also concurs with the conclusions of Poulsen et al. (2002) that the quantitative dietary overlap between primates and birds is rather small in forests with intact primate populations. Therefore at the moment it does not appear that the remaining dispersing animals (birds or mammals) compensate for the loss of primates and their effective seed dispersal role. That is, there is no indication that primates are redundant in this forest ecosystem.

Edu O. Effiom and Ola Olsson

References

- Connell, J. H. (1971): On the role of natural enemies in preventing competitive exclusion in some marine animals and in rain forests trees. In: Dynamics of populations (eds. P. J. den Boer & G. R. Gradwell), pp. 298–312. Wageningen, The Netherlands (Centre for Agricultural Publications and Documentation)
- Effiom, E. O. et al. (2013): Bushmeat hunting changes regeneration of African rainforests. *Proceedings of the Royal Society B* 280, no. 1759, 20130246
- Effiom, E. O. et al. (2014): Changes of community composition at multiple trophic level due to hunting in Nigerian tropical forests. *Ecography* 37, 001–011, doi: 10.1111/j.1600-0587.2013.00359.x
- Janzen, D. H. (1970): Herbivores and the number of tree species in tropical forests. *American Naturalist* 104, 501–528
- Peres, C. A. & Lake, I. R. (2003): Extent of nontimber resource extraction in tropical forests: Accessibility to game vertebrates by hunters in the Amazon basin. *Conservation Biology* 17, 521–535
- Poulsen, J. R. et al. (2002): Differential resource use by primates and hornbills: Implications for seed dispersal. *Ecology* 83, 228–240



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Can the Mayombe Forest be Saved?

The Mayombe¹ forest, stretching from the coastal area of the Democratic Republic of the Congo (DRC), through the Cabinda Province of Angola, along the western zone of the Republic of Congo and up to south-west Gabon, forms the southern-western margin of the Congo Basin's tropical rainforest in West and Central Africa, and of the distribution of a large variety of associated flora and fauna species. Among them are such outstanding species as the central chimpanzees, western lowland gorillas and forest elephants.

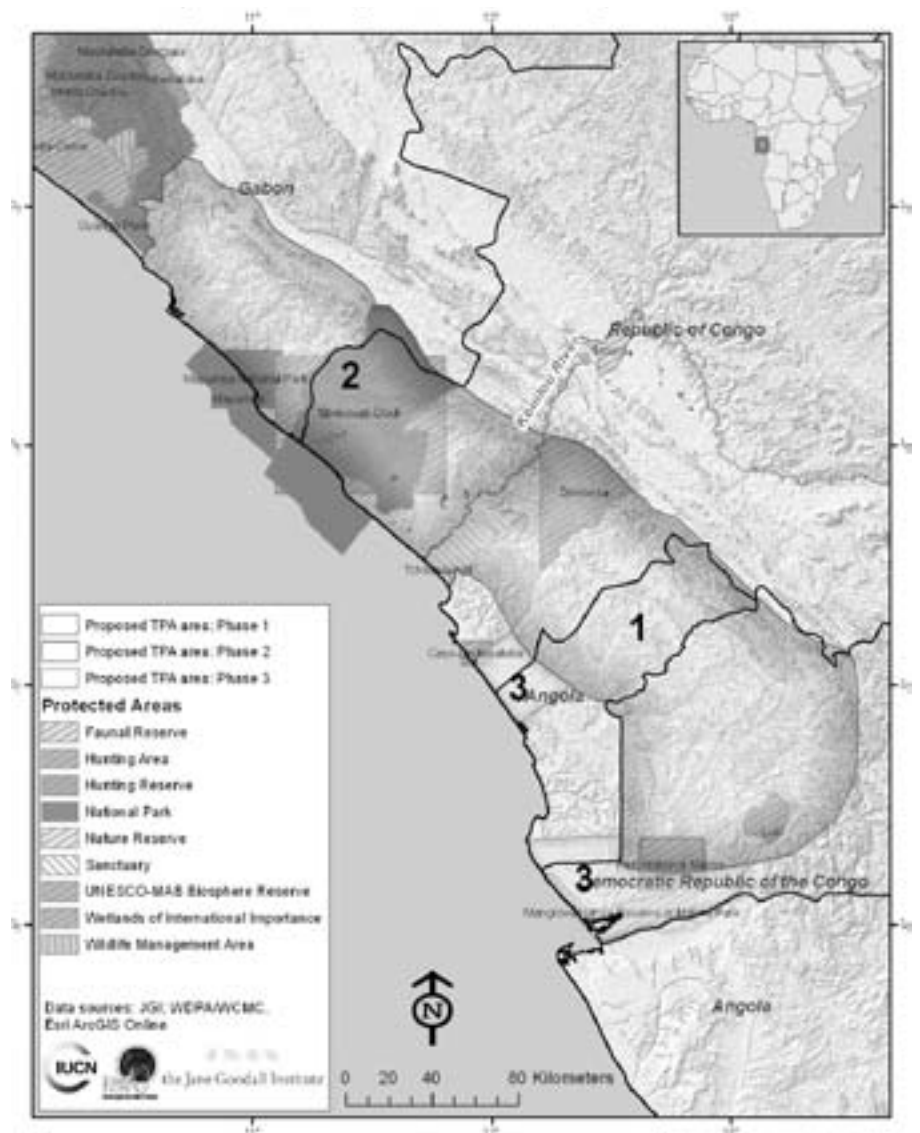
Despite its ecological importance, the Mayombe forest has been subjected to decades of intensive degradation and biodiversity loss through logging and encroachment, poaching, unsustainable development and mining, and invasive plant species. It still enjoys only very little protection, but recognition of its importance is growing among citizens and decision makers in the four countries that share it, as well as at the regional and global levels. Efforts for its protection are being promoted within the individual countries, as well as at the regional scale, and with international support.

Mayombe Forest Ecosystems Transfrontier Conservation Initiative

Initial Government conservation efforts of the Maiombe forest in the Cabinda Province of Angola, since 2000, with joint UNDP-NORAD support, were reported in the *Gorilla Journal* in 2005 (Ron 2005). These efforts were based mainly on stakeholders' sensitization and engagement, with focus on local communities, as well as on other prominent actors, such as the provincial

and local authorities and the private sector. A special intensive campaign has addressed the armed forces and resulted in hundreds of soldiers joining the "clubs of friends of nature", undertaking several commitments, among them "I do not eat bushmeat ... with the exception of extreme circumstances ...".

It was through consultations with the communities in these early days, that it became clear that for the conservation of this species-rich, but so fragile ecosystem, cooperation with the neighboring countries is essential. The striking difference in the level of degradation of the forest, within Cabinda and outside its borders, could not be sustainable.



The boundaries of the Mayombe Transfrontier Conservation Area, to be established in 3 phases: phase 1: the southern part; phase 2: extension to include the northern part; phase 3: future extension to include the coastal ecosystems.
Source: Ron et al. (2011); map: L. Pintea (JGI)

¹ "Maiombe" in Angola. "Mayombe" in Congo and DRC, and as agreed in the transfrontier context, and "Mayumba" in Gabon.



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Reported infiltration into Cabinda of loggers and poachers, supplying the illegal traffic networks, has been alarmingly on the increase. At that time, it was the insecurity created by the prolonged armed conflict that paradoxically protected the Maiombe forest of Angola from further degradation over several decades, but it was the same

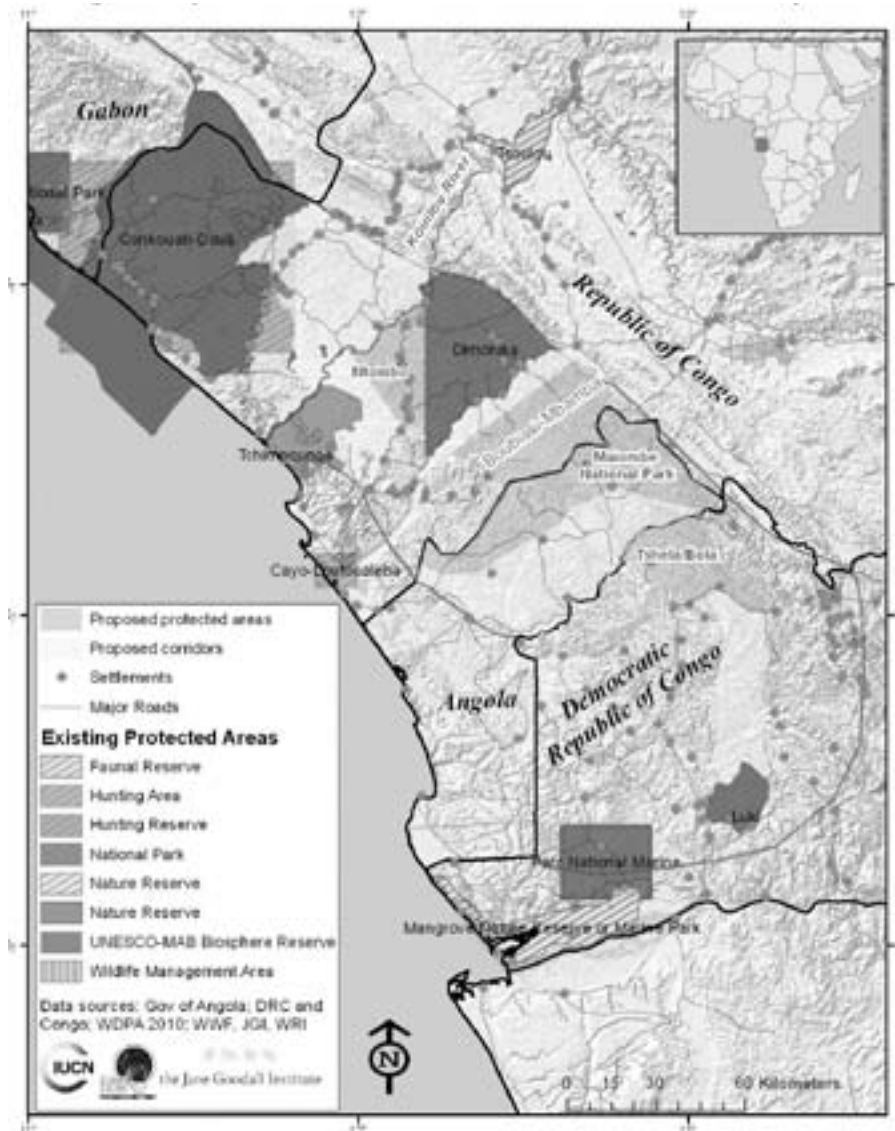
unfortunate circumstances that the cross-border traffickers found comfortable for carrying out their criminal activities.

It was in this same context that the Mayombe Transfrontier Conservation Initiative, aiming to protect and sustainably manage this globally important ecosystem complex, through coopera-

tion between the countries that share it (initiating from its southern part), and through a participatory approach with stakeholders' engagement, was conceptualized in Angola, some 13 years ago (Ron 2001).

The transfrontier conservation concept was first adopted by Angola, through the then Minister of Fisheries and Environment, H. E. Dra. Fatima Jardim (now Minister of Environment and actual President of the Maiombe Transfrontier Initiative). Two years later, on her initiative, a UNDP-NORAD supported mission was undertaken from Angola to the Republic of Congo, and resulted in the adoption of the initiative by this country, through the then (and actual) Minister of Forestry Economics, H. E. Henri Djombo (Ron 2002). Through a joint effort, both Ministers have convinced their counterpart, the then Minister of Environment, Nature Conservation and Tourism of the Democratic Republic of the Congo, H. E. Jose Endundo, to join the initiative, which first encompassed only the southern part of the Mayombe. In 2003 the concept was presented at the World Parks Congress (Ron 2003), and a preliminary proposal was distributed to potential partners and donors.

The Cabinda Declaration and MoU were signed between the Ministers of the Environment of Angola, Congo and DRC in July 2009. A preliminary project, based on the proposal from Angola, was supported by the Royal Government of Norway, through UNEP and IUCN, during 2009–2011. National funding has been committed since January 2012. Angola offered funding for the initiative's Secretariat, and some support since then is being mobilized from several additional partners such as UNDP and FAO, while several NGOs continue to support activities in specific parts of the area (namely, WWF, WCS, JGI, HELP-Congo, PALF, and locally-based small NGOs and associations).



Existing and potential protected areas and conservation corridors in the southern part of the Mayombe transfrontier initiative, between DRC, Angola and the Republic of Congo.

Source: Ron (2011); map: L. Pintea (JGI)



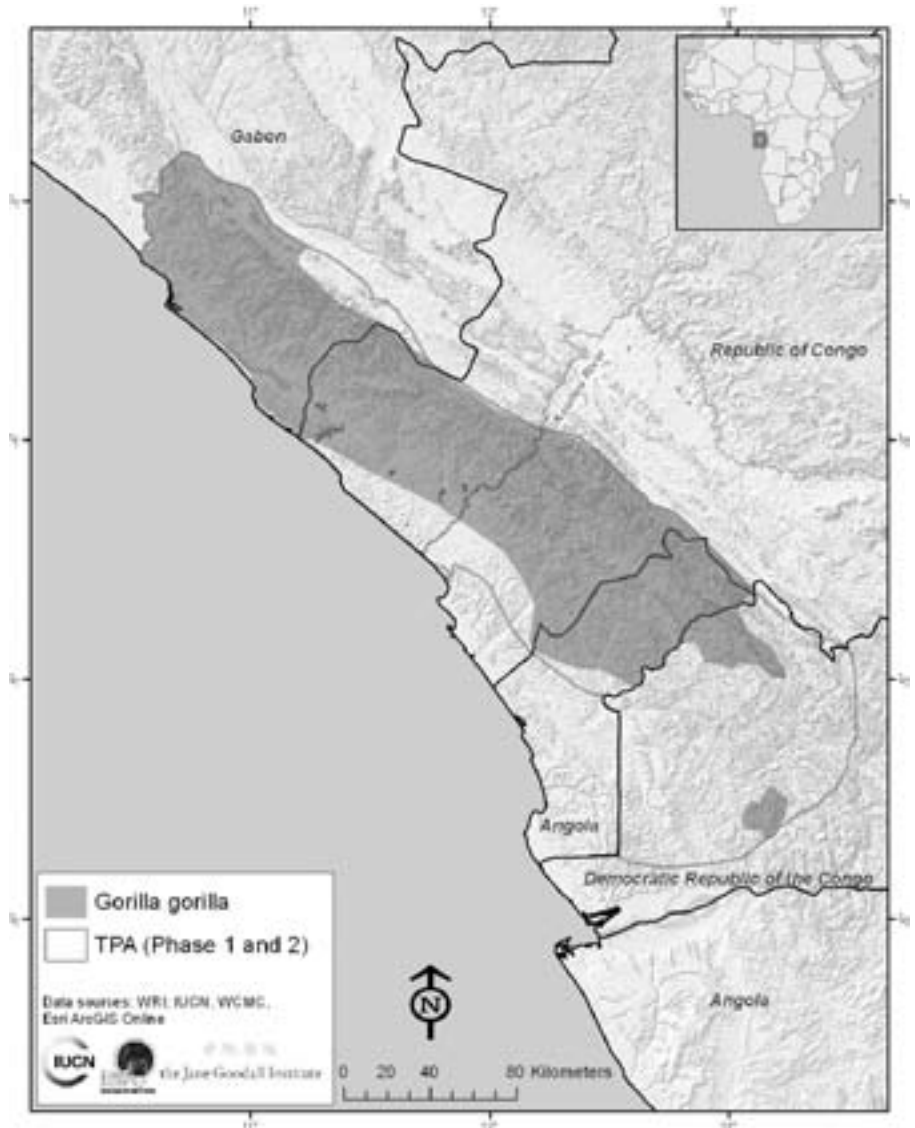
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More recently, in February this year, Gabon joined the initiative, in the Ministers' Committee meeting held in Kinshasa, and the transfrontier initiative was thus extended north, to include the full range of the Mayombe ecosystems. Several additional countries have expressed interest in joining the initiative, and thus strengthen it.

Existing Protected Areas in the Mayombe include Luki Biosphere Reserve in DRC; the rather new Maiombe National Park (gazetted in 2011), covering most of the Maiombe forest in the Cabinda Province of Angola; Dimonika Biosphere Reserve, Conkouati-Douli National Park and Tchimpounga Nature Reserve in Congo; and Mayumba National Park in Gabon.

A study was undertaken to identify areas for the designation of potential new conservation areas and ecological corridors, and to analyze the conditions for creating the Mayombe Forest Ecosystems Transfrontier Conservation Area (Ron 2011). Further studies were undertaken to analyze land uses and impacts in the Mayombe area (Pintea & Macleod 2011), to identify existing policies and legislation frameworks in the individual countries, and propose recommendations for their adaptation, extension and harmonization, for better enabling the cooperative conservation efforts (Ecosphere 2011). A draft strategic plan was presented to the initiative's governments, and adopted in February 2013 (Ron et al. 2011).

Several key result areas were identified for urgent action during the next 5 years, among them: establishing adequate and harmonized legal and policy frameworks; creating the required institutional frameworks for management planning through a participatory approach; integrated spatial planning of the Mayombe Transfrontier Conservation Area and of its sustainable management; enabling sustainable economic development; strengthening law enforcement at the national level and



Possible gorilla range in the proposed Mayombe Transfrontier Protected Area. Surveys are necessary to determine the actual gorilla distribution.

Map: L. Pintea (JGI)

through cooperation between the parties; sensitization and education, as well as technical capacity building at all levels; and creating financial sustainability for the initiative's implementation, based on the party governments' budgetary commitment, as well as on expanding partnerships.

The Mayombe forest, with its associated species, is still subjected to

considerable threats and pressures, throughout its range. The conservation of these globally important and fragile ecosystems is dependent on a substantive effort of each of the countries that was privileged to share it, on extensive cooperation between these countries, and on extended regional and international support.

Tamar Ron



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References

Ecosphere (2011): Legal and policy frameworks. Mayombe Transfrontier Project. Prepared for the Governments of Angola, Congo and DRC, UNEP and IUCN

Pintea, L. & Macleod, K. K. (2011): GIS data availability and analysis of the Mayombe forest ecosystems. Mayombe Transfrontier Project. Prepared for the Governments of Angola, Congo and DRC, UNEP and IUCN

Ron, T. (2001): SAGA Symposium. The Ministry of Fisheries and Environment of Angola and UNDP: http://www.saga-jp.org/sympo/SAGA4/4abst/4_oral.pdf

Ron, T. (2002): Transfrontier initiative for the regional protection of the Maiombe forest – Visit to the Republic of Congo, 27.3.–5.4.2002 – A report. The Ministry of Fisheries and Environment of Angola, UNDP and NORAD

Ron, T. (2003): The conservation of the Maiombe Forest, Cabinda, Angola, within the framework of a transfrontier conservation initiative. The World Parks Congress, September 2003, Durban, South Africa

Ron, T. (2005): The Maiombe Forest in Cabinda: Conservation efforts, 2000–2004. *Gorilla Journal* 30, 18–21

Ron, T. (2011): Potential for designating Protected Areas for conservation and for identifying conservation corridors as part of the planning process of the Mayombe forest TPA. Prepared for the Governments of Angola, Congo and DRC, UNEP and IUCN

Ron, T. et al. (2011): Towards a Transboundary Protected Area Complex in the Mayombe Forest Ecosystems. Five Years Strategic Plan and Roadmap. Prepared with the support of the Royal Government of Norway, UNEP and IUCN. Adopted by the Governments of Angola, the Republic of Congo, the Democratic Republic of Congo, Gabon, February 2013

Oil Palm Plantations in Africa

The oil palm (*Elaeis guineensis*) has its origin in West Africa. Palm oil is a common cooking ingredient in equatorial Africa, Southeast Asia and parts of Brazil (Hoyle & Levang 2012). In the addition to palm oil extracted from the pericarp, kernel oil from the endosperm is used in the cosmetics industry. In some Western countries the greater use of oil palm in food products is driven by the move away from unhealthy trans-fats. Waste from the palm kernel after the extraction of the oil is also used as animal feed and as

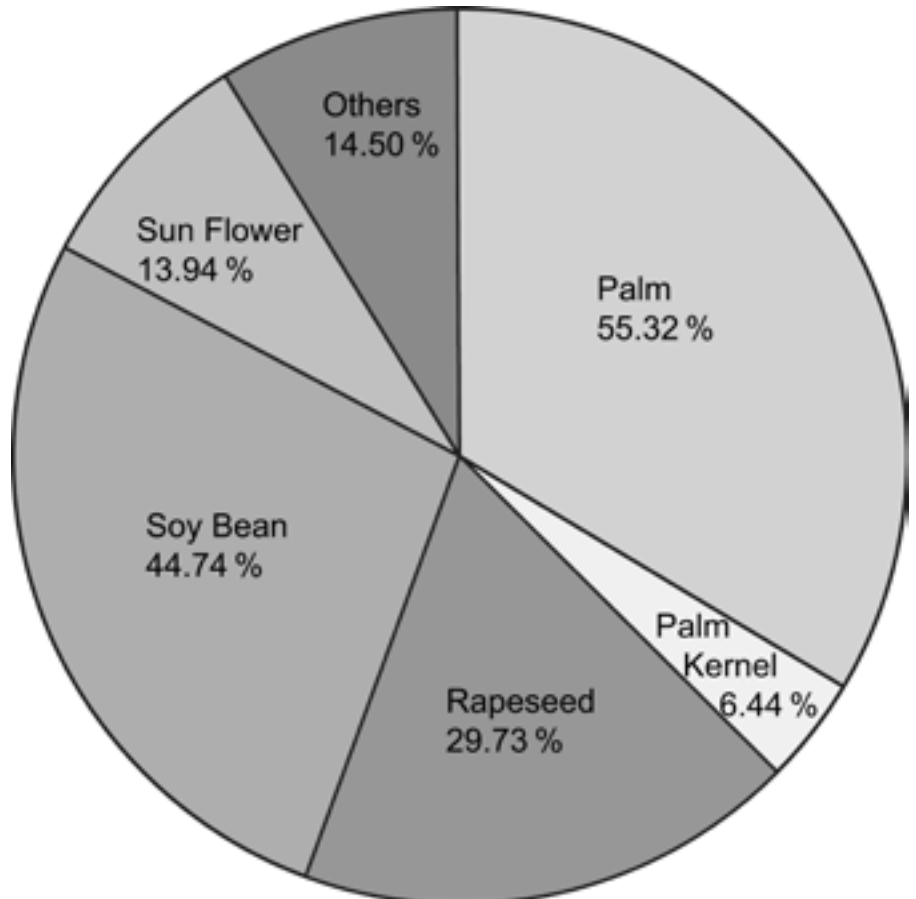
biofuel (Hoyle & Levang 2012). There are also proposals to replace diesel with biofuels in electricity generating stations powering mobile phone base stations in rural Africa (van Grinsven 2006). A palm oil plantation produces more oil per hectare than rapeseed, soybean, sunflower and maize crops, the major biofuel plants.

Malaysia and Indonesia are the world's largest producers, together accounting for 81,7% of the world's palm oil production (USDA 2012). In Africa, the main producers are Nigeria, D. R. Congo, Ghana, Cameroon and Ivory Coast (Carrere 2010; USDA 2012).

Over the past years global demand for palm oil has grown massively due to increased consumption in China,

India and emerging Asian economies where palm oil is used as a cooking oil. Furthermore, as part of the EU's attempt to reduce the emission of greenhouse gases, the EU 20/20/2020 target foresees a 20% penetration of renewable energy by 2020. This decision has fueled the demand for palm oil and increased prices. The decision was well intended, but the target does not list any requirement for the sustainable production of renewable energy, so without further regulation the expansion of biofuel production might undermine the climate change goal and fuel forest destruction.

While the expansion of the palm oil sector in Malaysia is limited (there is no more land available), and the same is



World vegetable oil production

USDA 2012



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true for large parts of Indonesia, many Asia-based companies are now expanding to Africa to satisfy the global demand. A big issue in Asia has been the “grabbing of land”; there are examples where forest land was grabbed, the timber sold, and the revenue from the timber sale used to finance the development of the oil palm plantation. Wich et al (2011) estimate that illegal logging was responsible for the removal of 380,000 ha annually in Sumatra during the last two decades, or comparable to a loss in carbon value of approximately US\$ 1 billion every year – and many of these forests harboured important orangutan populations.

Pros and Cons

Malaysia and Indonesia have demonstrated that palm oil production is an economic opportunity for local

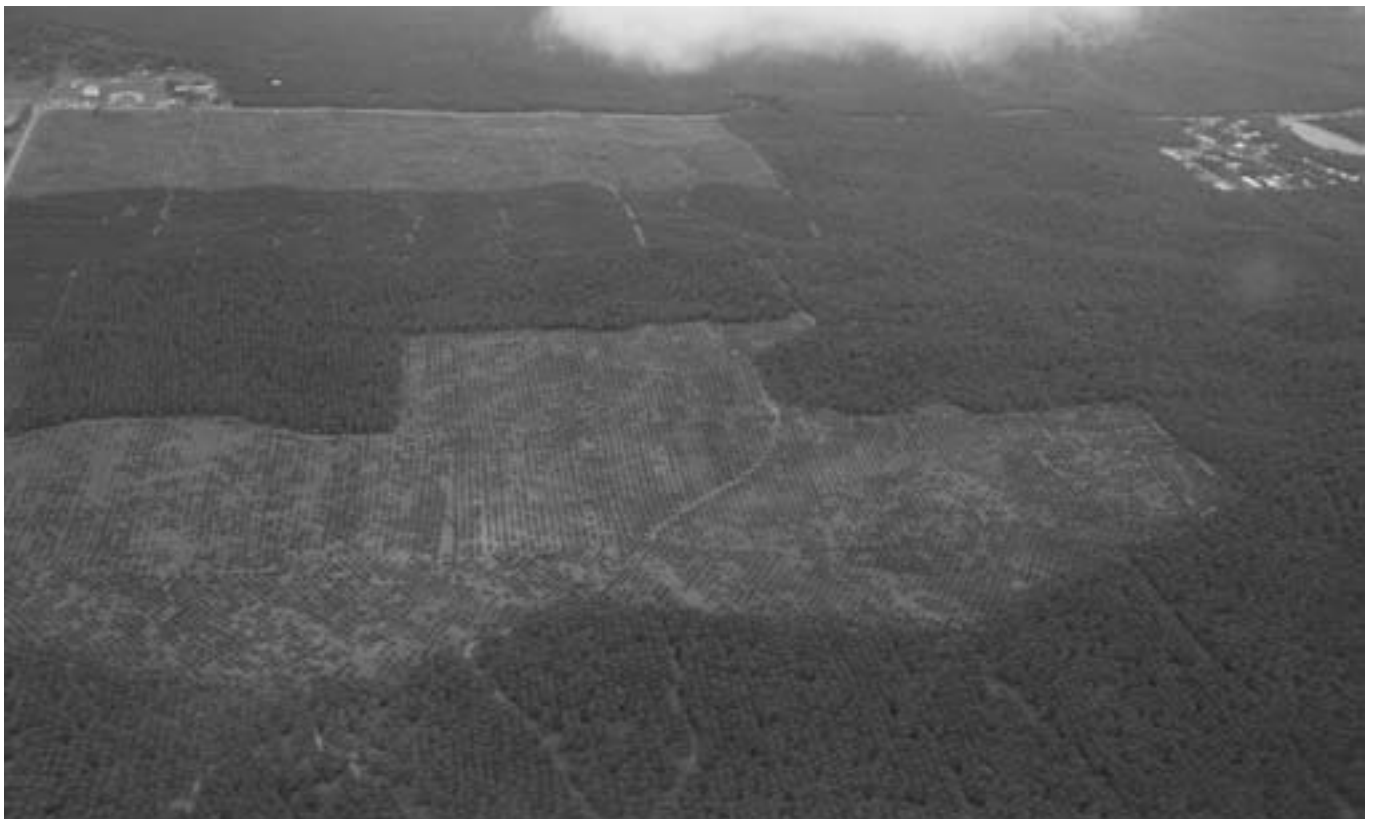
and national economies, and has the potential to reduce poverty and contribute to socio-economic development. Benefits include employment, revenue/taxes, and infrastructure often associated with better education and health provision. Often industrial-scale plantations are complemented by small-scale plantations. Boyle and Levang’s article (2012) indicates that in Southeast Asia 30–40 % of the surface area covered by oil palm is the property of smallholders.

The major challenge is how to reconcile agricultural development with biodiversity. The massive development of the palm oil sector has resulted in the loss of high conservation value forests and their associated biodiversity. Other environmental damage includes the increase in soil erosion, reduced water protection by forests and,

of course, greenhouse gas emissions from land-use conversion.

There are also social costs, e.g. when large agribusinesses do not involve smallholders and/or recruit their workforce from somewhere else. The loss of alternative revenue is another issue: tourism, sustainable forestry, non-timber forest products, and payment for environmental services such as REDD+ (Reduced emissions through deforestation and degradation) can significantly contribute to a local and national economy.

An example of the clash between development and conservation is the Tanoe Forest in Ivory Coast, where massive local and international protest prompted the government to cancel the conversion of a high biodiversity forest into an oil palm plantation. The Herakles project in Cameroon is



Aerial view of an oil palm plantation

Photo: Johannes Refisch



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very contentious as well, as it proposes the acquisition of > 100,000 ha in southwestern Cameroon, situated inside a globally recognized biodiversity hotspot between Korup National Park, Rumpi Hills Forest Reserve, Bakossi National Park and Banyang-Mbo Wildlife Sanctuary (Hoyle & Levang 2012; Linder 2013).

How to Reconcile Palm Oil Expansion and Conservation

The sustainable development of palm oil can lead to economic development and poverty reduction, but its uncontrolled development might lead to the loss of high conservation areas, might negatively impact on local communities and indigenous people, and can prevent the countries from benefiting from payment for ecosystem service schemes.

The author and colleagues (Wich et al. 2011) undertook a comparative economic analysis in Sumatra, Indonesia, and compared the potential economic benefit from palm oil with the potential revenue from other land-use forms including a conservation and climate change scenario under REDD+. Some of the recommendations are relevant for the situation in Africa as well, among others:

- Strengthen integrated spatial land-use planning by maintaining a master spatial planning database or map containing defined boundaries of protected forest or forests included in the protection schemes, whether under REDD+ or for other purposes.
- Immediately designate new areas for REDD+.
- Increase the productivity and yield of existing palm oil plantations.
- Focus further resource development, including the expansion of oil palm plantations, on low current use value lands by taking into account all social and environmental implications, and avoid agricultural

and timber concessions on high conservation value lands.

- All new development should comply with the principles and criteria of the Roundtable of Sustainable Palm Oil (RSPO). The requirement to comply should be anchored in national policy and regulations. This is a very complex and challenging exercise as the whole chain in the palm oil industry is much more complex than in the timber sector (where similar certification efforts in the form of the Forest Stewardship Council, FSC, are in place), so that tracing palm oil from the end client back to the producer is very difficult. The *Guardian* writes in one of its recent articles on the subject that even a number of the RSPO are not complying with their own standards (Guardian 2013).

In Indonesia and Malaysia, where most of the forests have been converted into oil palm plantations, Koh and Wilcove (2007) propose to use revenue from oil palm agriculture to buy land for the establishment of private nature reserves.

Johannes Refisch

References:

- Carrere, R. (2010): Oil Palm in Africa: Past, present and future scenario. World Rainforest movement series on tree plantations No. 15. www.wrm.org.uy
- Guardian (2013): Major palm oil companies accused of breaking ethical premises. <http://www.theguardian.com/environment/2013/nov/06/palm-oil-companies-ethical-report>
- Hoyle, D. & Levang, P. (2012): Oil Palm Development in Cameroon. An adhoc working paper. WWF, Institut de Recherche pour le developpement, CIFOR
- Linder, J. M. (2013): African Primate Diversity Threatened by "New Wave" of Industrial Oil Palm Expansion. *African Primates* 8, 25–38
- Van Grinsven, L. (2006): Pumpkin-seed power dawns for Africa. *Economic News* 13 October 2006 http://www.namibian.com.na/index.php?archive_id=27140&page_type=archive_story_detail&page=4544
- USDA (2012): www.fas.usda.gov
- Wich, S. et al. (2011): Orangutans and the economics of sustainable forest management

in Sumatra. UNEP/GRASP/PanEco/YEL/ICRAF/GRID Arendal. ISBN 978-82-7701-095-3

Geriatric Gorillas

December 22, 1956, was a historic day for the zoological world as we welcomed the first successful zoo gorilla birth – a female, eventually named Colo in honor of her birthplace, Columbus, Ohio. She quickly captured the hearts of thousands of individuals and even graced the cover of *TIME Magazine*. The world watched eagerly for news of Colo's development and growth and she has taught us a lot about gorilla behavior. Today, Colo's descendants can be found throughout the United States as ambassadors for their species. Nearly six decades later, Colo is still surprising the zoo community and teaching us about this remarkable species.

Like humans, gorillas in zoos are living longer and longer. In 2013, Colo celebrated her 57th birthday. Caring for Colo and other elderly gorillas presents a new set of challenges, and zookeepers, veterinarians and maintenance staff have had to become more creative with their care. The Columbus Zoo indoor gorilla habitat is comprised of several gunitite trees that provide climbing opportunities as well as aiding the gorillas in utilizing the entire vertical space of the exhibit. All of our transfer doors are off the ground and the gorillas have to climb these trees to move from room to room. About 10 years ago we noticed that it was more difficult for Colo to navigate this area and that she was much more cautious in her movements. To help Colo move around, the staff added a firehose that runs the length of the tree in order to provide a railing she can hold onto. We also had our exhibitry department create realistic looking knots in the tree that act like steps and provide more traction. Finally we added two mesh ramps that



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Colo

Photo: Graham S. Jones, Columbus Zoo and Aquarium

make it easier for her to get onto and down from these trees. We no longer shift Colo around to all the rooms in this space, but with these modifications she has an area she can get around in safely.

Overall, Colo has been an extremely healthy gorilla. A few of the medical issues she has had include constipation, urinary tract infections, arthritis and loss of muscle tone. We started noticing a loss of body tone/weight when Colo was about 40 years old. At that time we supplemented her diet with protein powder and ensure. In more recent years we have adjusted her diet and started her on an exercise program and no longer feel the need for these supplements. Basic repetitions of lifting her arms and standing have helped her muscle tone. Additionally the staff give her the opportunity to move through the chutes in both of our areas. Having the choice to move between buildings to see all of our other gorillas not only mentally stimulates Colo, but also

encourages her to move around more.

To help control her arthritis and keep her moving comfortably, the vets started her on monthly adequate injections. Keepers have seen a remarkable improvement in her movement since these were started in 2009. Colo's arthritis is most severe in her hands. In order to help her exercise her fingers and keep her joints moving, we had a student do a diet study for us in 2010. The point of the study was to see what presentation of diet was most beneficial to Colo, both in terms of making her use her fingers and getting her to eat all items offered. We found that the larger we left the food items, the more fingers she used to eat them and that she flexed these fingers more. Based on this study we no longer cut her food up small and scatter it around the room, a practice commonly employed to increase foraging time. Finally, the addition of cranberry juice and acidophilus capsules help with urinary tract health, and a daily dose of prunes keeps her

bowel movements regular, something monitored daily by the staff.

The final thing that has changed for Colo over the years is her social grouping. Colo has served many roles in our gorilla community and has been integral in the education of countless younger animals but, in 2006, she let us know that she was ready to leave group dynamics behind and live by herself. Colo is always next to gorillas and she has visits with other animals, but she prefers to watch over the other groups and give sage advice from afar, and she particularly enjoys playing with her great grand-daughter through the mesh. Although living alone is not the right choice for all older animals, it was the choice that Colo made, and the keepers were ready to accommodate her wishes.

In 2012, Colo set a new longevity record for gorillas. Though her situation is not typical (median life expectancy is 37.5 years for a female), we have been blessed to have such a wonderful animal educating us on the species. From the time of her birth, Colo has brought happiness, understanding and hope to many generations of gorillas and the people who love them.

Audra Meinelt

Gorillas and Other Primates Discussed in Nairobi

We attended the 19th International Scientific Conference in Nairobi, Kenya, from 11 to 13 September 2013. It was jointly organised by the Institute of Primate Research (IPR), the Kenya Agricultural Research Institute Trypanosomiasis Research Centre (KARL-TRC), and the Kenya Society for Immunology (KSI).

This year's conference followed a successful meeting held in 2010 and reinforced the long tradition of National Museums of Kenya-IPR in hosting suc-



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cessful scientific meetings. It also provides a forum for researchers both to present data and to interact with clinicians, policy makers and government officials responsible for the management and control of diseases, public health and animal welfare. It brought together over 120 participants from local, national and international organisations.

The theme of this year's conference was "Basic and Clinical Research for Improved Health". As such, it embraced both human and animal health and welfare, in line with the current emphasis on "One Health". The participants included both young and experienced scientists from the fields of biomedical research, veterinary medicine and conservation. The sessions covered immunology and pathology of diseases; basic pathogens and disease studies; fertility and contraceptive research; diagnostic research; drug discovery and testing; non-communicable diseases; socio-economic aspects of biomedical research; animal science and species conservation. There were also two excellent Poster Sessions. Over 100 abstracts were published in the Conference Proceedings.

Amongst papers of general interest concerning primates was our joint presentation, "Primates in Captivity: Legal and Practical Implications". In this we referred to the current debate in Britain about the pros and cons of permitting the keeping of non-human primates in private hands. We outlined both the health and the legislative implications, with particular reference to our work in Trinidad, including dealing with an outbreak of yellow fever in red howler monkeys.

One of the Keynote Addresses presented at the conference that was particularly relevant to readers of *Gorilla Journal* was the paper "Diseases and pathology of the genus *Gorilla*: the need for a database of material and resources" by John E. Cooper, Gor-

don Hull and Gladys Kalema-Zikusoka. This emphasised the need for a central database of material and resources relating not only to the diseases and pathology of the genus *Gorilla* but also listing institutions where research material (bones, wet tissues, paraffin blocks, samples suitable for DNA studies) is situated. Although both species of gorilla occur only in Africa, historical material from them, some dating back many years, is to be found in many countries of the world. This largely comprises skeletons, bones and skins. It is important that the location of as much gorilla material as possible, old and new, is recorded. A database of such information would help all those studying gorillas, especially African colleagues who live and work in the range states, to gain access to specimens that might assist them in their studies or aid their attempts to manage and conserve these threatened species.

At the conference it was announced that John Cooper and Gordon Hull, with the assistance of others, intend to collate these data as a publication, and

thereby produce a monograph on the pathology of gorillas, aimed at primatologists, veterinarians, biologists, osteologists and conservationists. They are contacting knowledgeable colleagues, especially primatologists and wildlife veterinarians, and informing them of the project. Comments, advice and offers of help from readers of *Gorilla Journal* would, therefore, be much appreciated.

It should be made clear that the collation of data as described presents no threat to the different organisations which strive to protect and save gorillas. On the contrary, the publication of a catalogue outlining where material is to be found – and, with it, a review of current knowledge and thinking about the pathology of the genus – will serve to help such people now and in generations to come.

The whole conference was most enjoyable and scientifically stimulating, with many presentations on different subjects by young East Africans.

John E. Cooper and Margaret E. Cooper



Margaret Cooper discusses the Conference with fellow presenters.

Photo: Margaret E. Cooper



READING

Juichi Yamagiwa and Leszek Karczmarski (eds.)

Primates and Cetaceans: Field Research and Conservation of Complex Mammalian Societies (Primate Monographs). Springer 2014. XV, 439 pages, 78 illustrations, 47 in color. Hardcover, € 160,49, US\$ 209.00, ISBN 978-4-431-54522-4. eBook € 124,94, ISBN 978-4-431-54523-1

Nanda B. Grow, Sharon Gursky-Doyen and Ali Krzton (eds.)

High Altitude Primates. (Developments in Primatology: Progress and Prospects, Vol. 44). Springer 2014. XXI, 360 pages, 61 illustrations. Hardcover, € 139,09, US\$ 179.00, ISBN 978-1-4614-8174-4. eBook € 107,09, ISBN 978-1-4614-8175-1

James L. Newman

Encountering Gorillas: A Chronicle of Discovery, Exploitation, Understanding, and Survival. Lanham (Rowman & Littlefield Publishers) 2013. 220 pages. Hardcover, US\$ 39.00, £ 24.95, ISBN 978-1-4422-1955-7. eBook US\$ 38.99, £ 24.95, ISBN 978-1-4422-1957-1

Monte Reel

Between Man and Beast: An Unlikely Explorer and the African Adventure that Took the Victorian World by Storm. Hardcover Doubleday 2013. 352 pages, US\$ 19.91, ISBN 978-0-38553422-2. Paperback Anchor 2013, 432 pages, US\$ 12.57, ISBN 978-0-30774243-8

Michael Deibert

The Democratic Republic of Congo: Between Hope and Despair. London (Zed Books) 2013. 280 pages. Paperback, £ 12.99, US\$ 19.95. ISBN 978-1-78032345-9

Lorenzo Cotula

The Great African Land Grab? Agricultural Investments and the Global Food System. London (Zed Books)

2013. 248 pages. Paperback, £ 12.99, US\$ 22.95. ISBN: 978-1-78032420-3

Pádraig Carmody

The Rise of the BRICS in Africa. The Geopolitics of South-South Relations. London (Zed Books) 2013. 184 pages. Paperback, £ 16.99, US\$ 29.95 ISBN 978-1-78032604-7

Industries minières – Extraire à tout prix? Alternatives Sud. Points de vue du Sud. Louvain-la-Neuve (Centre tricontinental) 2013. Éditions Syllepse, vol. XX, no. 2. 215 pages. € 13.00. <http://www.cetri.be/spip.php?rubrique142>

Jessica F. Brinkworth and Kate Pechenkina (eds.)

Primates, Pathogens, and Evolution. Developments in Primatology: Progress and Prospects, Vol. 38. Springer 2013. 421 pages, 45 illustrations. Hardcover, € 139,09, ISBN 978-1-4614-7180-6. Online ISBN 978-1-4614-7181-3

New on the Internet

Interactive map showing the change in forest cover worldwide 2000–2012: <http://earthenginepartners.appspot.com/science-2013-global-forest>

New interactive map (2013) by IPIS showing mining sites and involved armed groups in eastern DRC: <http://ipisresearch.be/mapping/webmapping>

Ken Matthysen and Andrés

Zaragoza Montejano

‘Conflict Minerals’ initiatives in DR Congo: Perceptions of local mining communities. IPIS/Humanity Unitec/EurAc, November 2013. 50 pages, 712 kB. http://www.ipisresearch.be/publications_detail.php?id=426

Gabriela Wass

Why businesses should assess

human rights impacts from the outset of projects. SOCO International Oil Company in Virunga National Park, DRC. IPIS Insights, August 2013. 6 pages. http://www.ipisresearch.be/publications_detail.php?id=414

Southern African Resource Watch

The High Cost of Congolese Gold: poverty, abuse and the collapse of family and community structures. July 2013. 16 pages. PDF: http://www.gold.sarwatch.org/sites/gold.sarwatch.org/files/reports/docs/CongoGold_02%20cover.pdf (2.54 MB)

Ruben de Koning and the Enough Team

Striking Gold: How M23 and its Allies are Infiltrating Congo’s Gold Trade. Enough Project, October 2013. 21 pages. <http://www.enoughproject.org/reports/striking-gold-how-m23-and-its-allies-are-infiltrating-congos-gold-trade> PDF: <http://www.enoughproject.org/files/StrikingGold-M23-and-Allies-Infiltrating-Congo-Gold-Trade.pdf> (2.14 MB)

Amnesty International

“Better to die while speaking the truth ...” Attacks against human rights defenders in North Kivu, DRC. Amnesty International 2013. 54 pages.

<http://www.amnesty.org/en/for-media/press-releases/drc-death-threats-and-intimidation-silencing-human-rights-defenders-2013-12>

PDF: <http://www.amnesty.org/en/library/asset/AFR62/008/2013/en/c174bf31-86b0-4563-927d-d148a3f7b0a8/afr620082013en.pdf> (848 kB)

MONUSCO

Child recruitment by Armed Groups in DRC from January 2012 to August 2013. 26 pages.

PDF: <http://monusco.unmissions.org/LinkClick.aspx?fileticket=DazRcHfpAJ0%3d&tabid=10701&mid=13689&language=en-US> (1 MB)



BERGGORILLA & REGENWALD DIREKTHILFE



Gorillas by Chisato Abe

Chisato Abe's exhibition of paintings of gorillas called "The Dream of Forest" was presented from 18 to 24 July 2013 in the Art Gallery in Abeno Harukas, a mega-department store which has just opened in Osaka, Japan. Chisato Abe is an artist who has specialized in gorillas for about 30 years. On 19 July, Prof. Juichi Yamagiwa, Dr. Augustin K. Basabose and members of the Pole Pole Foundation (POPOF) visited the exhibition and expressed their admiration and appreciation of it.

The largest and most eye-catching of the paintings was a portrait in oils of a silverback gorilla, Gino, which was 162 x 162 cm with gold background. Visitors were impressed by the size of this painting and Chisato Abe's detailed brushwork. The visitors, who did not know much about gorillas, commented that they felt the beauty of the figures and the tenderness of the gorillas expressed in the drawings. Some visitors cried in front of the drawing of a gorilla family, which they felt showed the won-

Chisato Abe in front of the Gino portrait with Juchi Yamagiwa (above) and Augustin Basabose (below); with Miki Matsubara (bottom right)



derfulness of gorillas. Chisato Abe said that she wanted to keep on drawing gorillas and to continue her interaction with gorillas into the future.

Miki Matsubara

Our Donors

From May to October 2013 we received major donations by Christoph Baumann, Angelika Dickmann, Elisabeth Engel, Irmgard and Jürgen Friedrich, Colin Groves, Jutta Haubner, Erika and Volker Jährling, Klaus Kerth, Hannelore Merker, Hanna Otte, Jochen Rasche, Birgit Reime, Wolfram Rietschel, Alfred Roszyk, Heidi Thies, Jill and Steve Tyler, Gabriele Uhl and Michael Schmitt, Christof Wiedemair.

Wolfram Rietschel collected donations for us again, especially during a tour that he led to the gorillas. Volker Jährling promoted our activities very successfully in Bünde; he convinced several people and companies to donate to us. Birgit Domanig donated the proceeds from the sale of paintings, and the amusement park Schwabepark donated the money they received from the sale of chimpanzee paintings. Finally, the printing and media company druckpartner in Essen sponsored the printing of new flyers for our organization.

Many thanks to everybody! We are grateful for any support, and we hope that you will continue to support us in 2014. A happy and successful year to each of you!



Do you know our website?

On our website www.berggorilla.org we do not only post the Gorilla Journal articles and various interesting information on gorillas, their conservation and their habitat, but also some extras.

Art

<http://www.berggorilla.de/index.php?id=1356&L=1>
We present artists with a special interest in gorillas; one of them is Chisato Abe (p. 23).

Literature

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

Links

<http://www.berggorilla.de/index.php?id=1241&L=1>
This section provides links to the websites of various organisations, archives, maps and other sources of information.

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