CEBioS

Belgique
partenaire du développement

CENTRE DE SURVEILLANCE UNIKIS DE LA BIODIVERSITÉ

2ND INTERNATIONAL CONFERENCE ON BIODIVERSITY IN THE CONGO BASIN

REPORT

Challenges for the future

Kisangani - Democratic Republic of Congo

March 2023

This report is also available on the conference website https://congobiodiv23.naturalsciences.be/

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TRIBUTE TO PROFESSOR EMERITE DUDU AKAIBE MIGUMIRU

" FROM A VILLAGE BOY IN FARADJE TO BIODIVERSITY EXPERT "

On 17 August 1949, in a village in the Territory of Faradje, District Kibali-Ituri, in the north-east of the Belgian Congo, now the Democratic Republic of Congo, a little boy named Akaibe Migumiru was born into a large family. Little Akaibe grew up in the good atmosphere of a peasant/worker family where, from an early age, he had to learn the little jobs of country life: supplying water and firewood, collecting small building materials for huts, granaries and stables for small livestock, acting as a shepherd for the family goats, supplying the family with food supplements by fishing and hunting small birds and mammals, etc.

Alongside this pressure of rural life, the colonial administrative and ecclesiastical system required children to obtain a school education. The young Akaibe Migumiru did not escape this pressure and was soon extracted from the "good life" of peasant education and sent to a classical school. This led him to become Benjamin Akaibe Migumiru Dudu, with Dudu being the name Dudu by which he was mostly known, and to climb the school education ladder in Faradje and Buni, to continue his academic education in Kisangani, until he obtained his PhD in Science from the University of Antwerp (Belgium) in 1991.

As far back as 1980, the graduate in zoology, Dudu Akaibe, was appointed Teaching Assistant at the Faculty of Science and, as a result of certain circumstances, he found himself being the only Assistant in his Department of Wildlife Protection, having to carry out all the tasks assigned to assistants on his own. This position of sole Assistant, combined with his very accommodating and respectful nature, led to him being adopted by all the professors in the Department and the Faculty, putting him in a good position and at the forefront of almost everything for a long time.

Thanks to the open-mindedness and to the many contacts of Professor Hugo GEVAERTS, then Head of the Belgian University Cooperation at the University of Kisangani, Dudu was soon sent to Antwerp to the laboratory of Professor Walter VERHEYEN, for an internship that opened up the world of rodents to him.

In 1991, having obtained his PhD, Dr Dudu decided to return to his university in Kisangani, despite the political disturbances surrounding the democratisation of Zaire. The effects of this political unrest included the suspension of the cooperation with Belgium, a major supporter of training, at least at the Faculty of Science at the University of Kisangani, and the departure from Kisangani of several professors and other researchers, creating gaps in the training and supervision of the next generation of academics.

Dr Dudu, who was appointed Professor and who rose through all the Congolese academic ranks up to Professor Emeritus, used his conciliatory qualities to attract and gather around him all those who wanted to keep the flame of training and research alive in the Faculty of Science. Dudu refused to restrict himself to his speciality, rodents (taxonomy, ecology, etc.), and surrounded himself with researchers from all zoological specialities, and even beyond, leading them to DES/Master's and Doctorate/PhD degrees. To achieve this, he set up the Laboratory for Ecology and Animal Resource Management (LEGERA) with one of his colleagues. His contacts with Professors Hugo GEVAERTS, Walter VERHEYEN, Jan HULSELMANS, Herwig LEIRS, Erik VERHEYEN, Marc COLYN, etc. have been very useful and beneficial. Dudu has been able to position himself at the centre of a network of knowledge to conduct some twenty Master's theses and fifteen Doctoral theses in animal biology and various other related fields, as well as to produce several scientific publications. A few number of new species of organisms have been described and some have been dedicated to him (*Praomys mutoni*, *Lophuromys dudui*, ...).

In addition to the "LEGERA" laboratory, which served as a launching pad for research activities, Dr Dudu Akaibe was also at the centre of initiatives that raised the profile of Kisangani and the DRC as pools for biodiversity research. These include the multidisciplinary scientific expedition on the Congo River known as "Boyekoli Ebale Congo", the creation of the Centre de Surveillance de la Biodiversité (CSB) in Kisangani, and the organisation of two International Conferences on the Biodiversity of the Congo Basin.

In the academic hierarchy, he has held the positions of General Director of the Bengamisa Higher Institute of Agronomic Sciences, Rector of the Yangambi Faculty of Agronomy, and Director of the Biodiversity Monitoring Centre.

Dudu has also taken part in international research missions related to epidemics such as the Ebola virus.

Professor Emeritus Benjamin Dudu Akaibe Migumiru, being one of the initiators of the second International Conference on Biodiversity in the Congo Basin, was unable to attend the conference for health reasons. However, the participants paid tribute to him with frenzied applause during the closing ceremony of this Conference, hoping and wishing for his speedy recovery.

Unfortunatly, nature has decided otherwise. On Thursday 13 April 2023, Professor Dr Benjamin Dudu Akaibe Migumiru has left us.

May his scientific legacy live forever.

May his soul rest in peace!

Dr Pionus KATUALA Gatate
Faculty of Sciences - University of Kisangani

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MESSAGE FROM THE ORGANISERS

Dieudonné UPOKI AGENONG'A
CSB ad iterim Director

Luc JANSSENS DE BISTHOVEN
CEBioS Coordinator

In view of the major challenges in the Congo Basin, in terms of environment, governance, poverty, galloping demography and recurring conflicts, an international conference on biodiversity, right in the heart of the planet's lung, came at just the right time.

The Belgian government and its development cooperation have shown and renewed their confidence in the actors and stakeholders of the Democratic Republic of Congo (DRC) and other countries of the Congo Basin by financing this 2nd conference in March 2023. It has been organised by the Centre de Surveillance de la Biodiversité (CSB), at the University of Kisangani, and the CEBioS programme, based at the Royal Belgian Institute of Natural Sciences. CEBioS, a capacity-building programme for biodiversity and sustainable development, has compiled, through the perseverance of its team and its know-how to prepare, together with the scientific committee and the hosting institute in the DRC (CSB), an attractive programme, rich in scientific perspectives, governance, management and use of ecosystem services in this huge region.

Supported by numerous stakeholders from the four corners of the earth, and key Belgian institutions for the Congo Basin, such as the AfricaMuseum and the Botanical Garden of Meise, as well as by a large number of universities, this conference enabled us to take stock of the current situation of this biodiversity, which is often scorned, exploited and, unfortunately, still too little known.

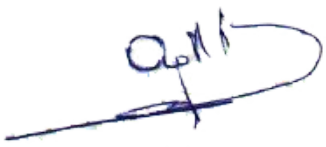
This conference report is intended as an annotated summary with conclusions and recommendations, to complement the collection of abstracts available online, which we highly recommend.

The event rallied people's minds and hearts around a common project to better understand and respect the natural environment of the Congo Basin, while respecting its inhabitants and neigbors and improving their socio-economic situation. The various sessions and activities enabled a multitude of different perspectives to be shared, ranging from cutting-edge scientific analyses, artistic creativity, traditional knowledge, the desire of young people to play their essential role in this momentum, the concept of socio-ecological resilience, climate change, conservation, the 'one health' approach and many other themes.

We were personally struck and moved by so much shared passion, from researchers to diplomats, from NGOs to decision-makers.

Our dearest wish is that this conference will continue to live on through concrete actions in search of solutions, scientific knowledge (research, data compilation, national reports, etc.), advocacy, awareness-raising and recognition of man's existential dependence on nature.

The message seems clear: greater integration of, and respect for, local stakeholders and their traditional knowledge and practices, and greater scientific and conservation focus on "hidden" biodiversity, such as that of aquatic environments and soils, in protected areas and community forests, as well as in urban and rural areas, fairer and more effective governance and management of protected areas, based on science, more resources for scientific research and capacity building, and greater connection with the international community.



Dieudonné UPOKI AGENONG'A
CSB acting Director

Luc JANSSENS DE BISTHOVEN
CEBioS Coordinator

"This event united minds and hearts around the great common project of better understanding and respecting the natural environment of the Congo Basin"

2 INTRODUCTION

The Congo Basin forest, which straddles several Central African countries, is considered to be the second largest equatorial forest in the world. Its role in climate change, as a carbon sink, is undeniable, as it is now considered to absorb more carbon per year than the Amazon rainforest. Its biodiversity is extremely rich, but remains largely unknown and underestimated.

Despite the importance of this forest on a local, national and global scale, its destruction appears to be underway.

The Democratic Republic of the Congo, which lies at the very heart of the system and has a sizeable area of forest on its territory, is a key player in its conservation. For this reason, the country was chosen to host the 2nd International Conference on Biodiversity in the Congo Basin, which was held in Kisangani from 6 to 10 March 2023.

The primary objective of the conference was to provide an opportunity for the many stakeholders involved in studying and preserving biodiversity, to share their knowledge and thus help to better understand the threats to biodiversity as well as the solutions that exist or are needed to protect it. It offered also an opportunity to highlight the links between biodiversity, health, climate and socio-ecological systems, and to discuss the relationship with the post-2020 Global Biodiversity Framework of the Convention on Biological Diversity (CBD) and the Sustainable Development Goals (SDGs).

More specifically, the conference was an opportunity to:

- Enhance awareness and motivation among (inter)national and provincial political authorities to increase their efforts to safeguard the Congo Basin and its unique fauna and flora.
- Contribute to addressing growing demographic pressure and economic development and their effects on the use of renewable natural resources as well as the potential threats to human health.
- Strengthen the existing local and international network of scientists, civil society and policy makers.
- Strengthen links between climate, biodiversity and health research.
- Promote the public availability of data related to the exploitation of renewable natural resources to local authorities.

3 MESSAGES FROM KEYNOTE SPEAKERS

Inza KONE

Swiss Center for Scientific Research

Ivory Coast

Biodiversity conservation and development in African countries

Africa is home to almost a quarter of the world's biodiversity, including the largest intact assemblages of large mammals on Earth and a wide variety of biomes. Africa's natural biological heritage is at the heart of the continent's current and future prosperity. Millions of people depend on this heritage and the services it provides. In particular, Africa's protected areas play a crucial role in addressing water and food insecurity, natural disasters, climate change and pandemics, as well as economic, energy and cultural issues.

Unfortunately, the erosion of biodiversity on the continent is alarming, with one of the highest rates of deforestation in the world. Biodiversity conservation is not often a priority for households, or even for political decision-makers. Indeed, with high demographic growth rates, many African countries are faced with urgent development needs and are following trajectories that are exerting increased pressure on their natural environment.

Development programmes in these countries struggle to reconcile human well-being with economic and environmental prosperity. Increased by climate change, the continent's current losses of species and natural habitats are having a negative impact on its ability to achieve sustainable growth.

It is therefore necessary to rethink the development trajectories of African countries, in particular the way in which biodiversity is considered in development programmes. There are many examples of success and innovation in biodiversity conservation in Africa that offer hope. Most of them are based on the following objectives: (i) disseminating information and raising awareness of the importance of biodiversity and the need to conserve it; (ii) adapting the political and legal framework to better integrate the participatory management of ecosystems; (iii) building the capacities of all stakeholders; (iv) participatory evaluation and monitoring of ecosystems.

Benjamin TOIRAMBE

Secretary General, Ministry of the Environment and Sustainable Development

Democratic Republic of Congo

Bridging the gap: An overview of needs

Tropical forests are home to over 50% of the world's biodiversity. However, the current rate of erosion of this biodiversity is comparable to the one that led to the five mass extinctions we know today. The current rate of species extinction is 100 to 1000 times higher than in the past. If we don't do anything, two-thirds of animal and plant species could disappear in the space of 50 years. One million species are currently endangered! And for more than two decades, humanity has failed to reverse this trend.

Several pressure factors have increased over the last 50 years. These include the use of land and sea (with more than 100 million hectares of tropical forest lost between 1980 and 2000), the direct and unsustainable exploitation of fish stocks (60% of stocks are now over exploited), the increase in the presence of invasive exotic species (70% increase), and many others.

Unfortunately, ambitions and political will remain weak at international level.

Moreover, the international targets that have been ratified seem unrealistic.

So how can we close the gap between what is and what should be? Several solutions seem to be emerging:

1. By taking biodiversity into account in the relevant sectors. This means improving the science-policy interface, by taking the results of research in decision-making into account.
2. By using a number of levers for action: recognition of indigenous knowledge and local communities, the fight against climate change, the development of sustainable financial and economic systems, the development and effective management of the network of protected areas, integrated landscape management, the integration of agro-ecological practices, and many others.
3. By assessing the needs and increasing funding (capacity building, scientific cooperation, technology transfer).
4. By thinking globally and acting locally.

Nicky KINGUNIA INEET

Head of the Carbon Stocks Management Office, Sustainable Development Directorate, Ministry of the Environment and Sustainable Development (MEDD)

Democratic Republic of Congo

Political, ethical and legal aspects (CITES, Nagoya)

The Convention on Biological Diversity (CBD) is a legally binding international treaty with three main objectives: (i) the conservation of biological diversity, (ii) the sustainable use of biological diversity, and (iii) the fair and equitable sharing of the benefits coming from the utilisation of genetic resources (GR). This treaty, adopted in Rio in 1992, came into force in 1993.

The Nagoya Protocol is a complementary agreement to the CBD. It provides a transparent legal framework for the effective implementation of objective 3 of the Convention. It was adopted in 2010 in Nagoya, Japan, and entered into force in 2014. Its objective, the fair and equitable sharing of the benefits arising from the use of GR, makes a major contribution to the conservation and sustainable use of biological diversity.

In this protocol, the political and regulatory aspects are considered in particular by articles 5 and 16, which require each Party to take legislative, administrative or general policy measures to ensure the fair and equitable sharing of benefits arising from the use of genetic resources and associated traditional knowledge.

With regard to the ethical aspects, the protocol creates favorable conditions for the fair and equitable sharing of the benefits coming from the utilisation of GRs and associated Traditional Knowledge (TK), thereby ensuring greater transparency for providers and users. Under the Nagoya Protocol, each Party is encouraged to develop, update and use voluntary codes of conduct, guidelines and good practices, as well as standards relating to Access and Benefit Sharing (ABS). All these provisions ensure that ethical aspects are taken into consideration in the Nagoya Protocol.

Olivier HARDY

Université Libre de Bruxelles
Biological and Ecological Evolution Research Unit

Belgium

How genetic tools improve our knowledge of African flora

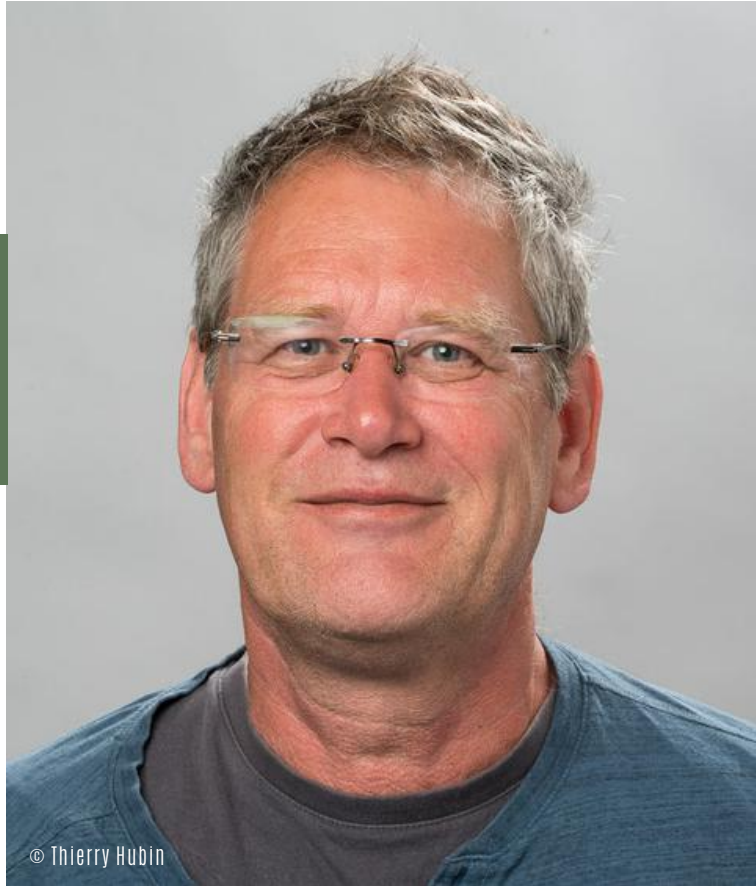
Molecular genetics is a fast-growing scientific discipline with numerous applications in medicine, agronomy, ecology, and taxonomy. We illustrate recent progresses and applications of genetic tools in the field of botany, ecology and forestry and provide some recommendations to develop this research domain in Africa.

- Genetic data show that correct species delimitation remains a concern for many African trees, with many cryptic species (i.e. species reproductively well isolated but not distinguished in previous taxonomic works), so that the tree flora might be much higher than currently estimated (approximately 3,000 species). Correct species delimitation is particularly important for exploited trees to develop sustainable forestry practices as truly threatened cryptic species may be hidden under a widespread and apparently non-threatened taxon.
- DNA barcoding and metabarcoding - the identification of organisms based on their DNA - are promising approaches for monitoring biodiversity, study food webs and to identify traded plants but they still require some improvements and the completion of databases for tropical African species.
- Most tree species show relatively strong phylogeographic structures, reflecting their biogeographic history on a timescale that can reach hundreds of thousands to millions of years. By comparing different species, genetic data provide new insights to reconstruct the origin of African biomes and their evolution in response to past climate changes.
- Genetic tools also allow investigating the reproductive cycle of tree populations, showing that seed and pollen dispersal does not appear as limiting factors under selective logging for most timber species but maintaining good seed trees after exploitation is important to ensure sufficient natural regeneration.
- DNA sequencing technology could become more accessible to African researchers through the use of commercial DNA sequencing platforms but it requires:
  - academic training in genetics and bioinformatics;
  - simple and inexpensive procedures to export genetic material for basic research under the Nagoya legislation.

Han DE KOEIJER

National Focal Point for the CBD Clearing-House-Mechanism

Belgium



Capacity building and development, technical and scientific cooperation, and knowledge management : outcomes of the Conference of the Parties at their 15th meeting

The Convention on Biological Diversity (CBD) works with ten-year strategic plans. In 2010, during the tenth Conference of the Parties (COP10) in Nagoya, Japan, the 2011-2020 strategic plan, including the AICHI objectives, was approved. The reports from the CBD signatory countries and the scientific reports from the Intergovernmental Platform for Biodiversity and Ecosystem Services (IPBES) were used to take stock of the results of the 2011-2020 strategy in the "Global Biodiversity Outlook 5".

Unfortunately, almost none of the targets have been met, due to a lack of funding, capacity, and policy. With this in mind, a great deal of effort has gone into developing the new global framework for biodiversity. Programmes for (1) funding, (2) capacity building, (3) technical and scientific cooperation, (4) reporting, target monitoring and (5) Digital Sequence Information (DSI) have been discussed. These programmes should make it possible to overcome the problems of the 2011-2020 Strategic Plan.

During the COP15 in Montreal, the Kunming-Montreal Global Biodiversity Framework was adopted by the Parties, with five decisions on the above themes closely linked to the framework known as "the package".

Three themes, (1) capacity building, (2) technical and scientific cooperation, and (3) information management, were addressed during the negotiations in the preparatory meetings for COP 15. The results of these negotiations, by theme, as well as the activities arising from these decisions, have been highlighted, so that each signatory country can contribute to the success of the Kunming-Montreal global framework. Participants to this conference are invited to become more involved in updating their national biodiversity strategy (NBSAP), and to take the capacity-building needs to achieve the predefined objectives into account . One of the key messages from COP15 is: "It is now time to act, because the biodiversity crisis is real".

Pascal BOECKX

University of Ghent
Isotope Bioscience laboratory (ISOFYS)
Department of green Chemistry and Technology

Belgique

Relieving pressure on socio-ecological systems to safeguard nature-based CO2 removal in the Congo basin

In central Africa and in particular the Democratic Republic of the Congo (DRC), low productive slash and burn agriculture is the key driver for forest disturbance. The latter, together with a ca. fourfold increase in population by 2100, make that under this scenario the share of degraded and secondary forests is increasing hand in hand with a poor food sovereignty. Hence, efforts for forest conservation and restoration in the Congo basin should be intertwined with sustainable agricultural intensification. To understand this nexus, we set-up an eddy covariance fluxtower, forest succession chronsequences, and integrated soil fertility management in community forest-based interventions in the Tshopo province of DRC.

Using the flux tower and ancillary data we can quantify temporal dynamics of net ecosystem exchange of CO2 and its partitioning into gross primary productivity and ecosystem respiration. Using the forest succession, we observed high atmospheric N and P deposition, fast tree species richness recovery though with a different composition from the original forest, a slow aboveground biomass recovery though with a constant net annual carbon sink, i.e., climate change mitigation, across forest age classes in the succession. Using a set of nitrogen metrics, we show that despite high N deposition, early forest succession shows conservative N cycling, which is likely indicating N limitation early on in secondary forest succession. As secondary succession advances, the N cycle gradually becomes more open. Based on leaf stoichiometry, soil analyses and nutrient balances of over 100 fallows of different age and number of clearings, we showed that cations and most dominantly calcium is the scarcest nutrient for both forest regrowth and agronomic efficiency.

In the same region within community forests, triple helix (policy, research, stakeholders) action research, including zonation, governance, integrated soil fertility management, forest monitoring, etc. is currently implemented to co-create forest conservation and restoration, while sustainably enhancing food security. Doing so we aim to demonstrate that food sovereignty, biodiversity conservation and the climate mitigation emergency can be reconciled in the Congo basin.

Léonard BOMBOLO BOSENGE

National Alliance for the Support of Indigenous and Community Heritage Areas and Territories (ANAPAC)

Democratic Republic of Congo

Areas and territories conserved by indigenous pygmy peoples and local communities (ICCA), an opportunity to achieve the 30×30 target of the new post-2020 Global Framework on Biodiversity

The way of life of indigenous peoples and local communities is in harmony with nature. The results of community and traditional conservation practices contribute to the integrity of forests and other ecosystems. Territories and areas conserved by indigenous peoples and local communities, most often referred to as ICCAs, are living territories marked by three main characteristics, namely (1) a community, (2) a link between this community and the territory, and (3) a system of governance for the preservation of biodiversity. These ICCAs offer useful solutions for combating biodiversity loss and climate change. Unfortunately, however, these ICCAs are often ignored and suffering injustice. In the Democratic Republic of Congo (DRC) a great deal of work has already been done to give these organisations greater legitimacy and make them more autonomous.

This also involves advocacy to obtain legal recognition for these territories preserved by indigenous peoples and local communities. There is still an urgent need to promote the natural and cultural potential of the ICCAs through scientific studies.

The prospects identified are the following:

- Secure les ICCAs through a specific legal framework using different legal options that are available,
- Develop and strengthen the socio-economic, ecological and cultural valuation options of the ICCAs,
- Continue to identify and document les ICCAs,
- Set up a practical funding mechanism and capacity development,
- Popularise the law on the protection and promotion of the rights of Pygmy Indigenous Peoples (PIP).

Hugues AKPONA

African Parks

Benin

The science-policy interface for biodiversity

Development that claims to be sustainable should be constructed to (1) tackle the real development problems on an informed basis, (2) position resources on development aspects that guarantee and amplify impact, (3) promote co-ownership and co-responsibility for development, and (4) maximise the positive impacts (while minimising the negative impacts) of selected strategic development options on biodiversity.

To achieve this, science, which should provide the key elements to support decision-making, is struggling to meet this need due to a lack of integration between scientists and policy-makers. Science should help to make better political decisions, and political concerns should accompany science in a synergetic and complementary approach. Unfortunately, because of differing visions, perceptions, interests and priorities, this integration between science and politics is struggling to take shape, hence the need to gather everyone around the same table, in order to minimise any disagreements and remove barriers to increase the impact.

However, facilitating integration requires a better understanding of the barriers. Both scientists and politicians face many challenges.

For scientists, we can mention (1) the lack of effective long-term biodiversity monitoring systems, (2) the lack of adequate funding and heavy dependence on external donors, (3) divergent interests, (4) the lack of thematic groups to develop specific expertise, (5) the lack of consolidated databases for the long-term, (6) still too much fundamental science oriented research, limiting the appropriation of the results by policy-makers, (7) the lack of genuine passion with some stakeholders, limiting innovation, and (8) the poor communication of research results in an accessible format.

For politicians, it is more a question of (1) not considering research as a decision-making tool, (2) short-term visions aligned with the short duration of political mandates, (3) lack of time to read complex studies, (4) taking other factors into account (economy, political risks and opposition, etc.), limiting the impact of research results, (5) the absence of 'win-win' solutions, giving scientists the impression that they are being exploited.

There are, of course, other challenges may have impact on this integration between science and policy, including a tendency to keep documents , achievements and initiatives to oneself, compromising the set up of exchange platforms. But also the ego that comes with a title, inhibiting strategic thinking and openness to transparent debate, or even the influence of authority reducing the possibilities of exchange on controversial subjects.

How can we bridge the gap between these two worlds? Several solutions can be explored. These include (1) developing the means to understand the political processes and information needs, (2) creating a framework for using research as a source of knowledge to guide decisions, (3) involving decision-makers in the research process from the start out , (4) integrating research results into the programme for monitoring the state of biodiversity, (5) proposing and running an active platform compiling research data, (6) asking the right questions to achieve objectives, etc.

It is clear, then, that integration between science and policy is desirable, but we must be aware that the process will take time. Despite everything, and in order to be more effective, we need to maintain the right mindset, free ourselves from structural and cultural constraints, and have the courage to invest in themes that are sometimes sensitive and controversial. Whatever the case, empathy and openness will be decisive factors in establishing sound and positive communication between the various parties involved.

"Science should help to make better political decisions, and political concerns should accompany science in a synergetic and complementary approach"

Adams CASSINGA

ConservCongo NGO

Democratic Republic of Congo

"Animals are the jungle's best gardeners, a job no human can do better"

Challenges and opportunities

The immediate causes of illegal wildlife trafficking in the Democratic Republic of Congo (DRC) are poverty, ignorance, mismanagement, greed and superstition. This trafficking obviously has an impact on biodiversity, the economy, good governance, territorial security and food security. Numerous hotspots for trafficking have been identified in the DRC, with the most threatened species being elephants, pangolins and small as well as large monkeys. The country has already achieved results in the fight against trafficking. However, there are still preconceptions that make the task difficult, such as that demand creates supply, or that poverty is the main cause. Today, the challenges remain numerous and include (1) poor governance, (2) lack of action despite current knowledge, (3) poor law enforcement, (4) scattered efforts, and (5) poor local involvement.

Protecting wildlife through education, alternative means of survival for indigenous inhabitants and neighbors, and law enforcement are among the best ways of ensuring the survival of the forest, and therefore the survival of the planet and humanity in general. Animals are the jungle's best gardeners, a job no human can do better than they do. Regulating subsistence hunting in rural areas, reviving farming activities and raising domestic animals would be options to explore in the fight against food insecurity, but also a substitute for poaching.

Héritier MILENGE KAMALEBO

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Ecosystem services: a new approach to a better understanding between the relationship between man and nature

Nature plays an important role in providing food for humans and animals, energy, medicinal products, genetic resources, and a whole range of materials essential to the physical well-being and cultural heritage of people. Nature maintains the quality of the air, fresh water and soil on which humanity depends, distributes fresh water, regulates the climate, ensures pollination, controls pests and mitigates the impact of natural hazards. Ecosystem Services (ES) are the services provided by nature and the benefits that humans derive from ecosystems. There are several types of ES (regulation, cultural, supply - production, support - sustainment). ES provide a wide range of quantifiable economic benefits and less tangible services to society.

According to the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES), strategies for the sustainable management of natural resources cannot be devised without the active participation of local and indigenous populations and all local stakeholders.

Population support for sustainable management of natural resources implies setting up a mechanism for sharing information, on the ecosystem goods and services provided, and on experience and knowledge, to help recognise the conservation value. The promotion of ecosystem services makes it possible to strengthen the links between populations and ecosystems with several providing purposes, in particular (i) to facilitate access to natural resources (NR) of interest to local people, (ii) to put in place endogenous conservation strategies of habitats and service-providing ecosystems, (iii) to set up value-chains for the sustainable exploitation of NR in order to improve local people's living conditions, and (iv) to encourage active participation and community involvement in the conservation process. Furthermore, contributing to a better understanding of ES is fully in line with the objectives of the IPBES, which aims, among others, to take stock of biodiversity and monitor its evolution and its contribution to the well-being of populations.

Joachim MARIËN

University of Antwerp
Evolutionary Ecology Group

Belgium

From the ecology of diseases to "One Health" research in the Congo Basin

Over the last five decades, the number of emerging infectious diseases has increased considerably. Most of these are caused by zoonotic pathogens originating in wildlife, and several are known to have originated in the rainforest of the Democratic Republic of Congo, such as the Ebola virus (bat reservoir) or the monkeypox virus (squirrel reservoir). To develop strategies to mitigate and prevent zoonotic diseases in humans, it is necessary to understand how pathogens are transmitted in their wildlife reservoir populations. However, for the vast majority of zoonotic pathogens, this information remains largely unknown due to the lack of field data on which theories can be tested.

A useful way of testing eco-epidemiological hypotheses is the 'OneHealth' approach, which (1) recognises the interconnection between human, animal and ecosystem health, and (2) considers potential or existing risks at the animal-human-ecosystem interface.

Although the majority of epidemics originate in wild animals, there are many barriers between animal reservoirs and humans. Certain groups of mammals appear to be at greater risk of transmitting infectious diseases to humans. These include rodents and bats. Why is this? Because (1) they are the most abundant and specifically rich mammals, (2) they have frequent contact with humans (rodents), (3) they have rapid life-history traits (rodents), and (4) they have an aerial lifestyle and migration patterns (bats).

It is important to remember that increasing diversity leads to (1) the dilution effect (the prevalence of diseases decreases), and (2) the amplification effect (the prevalence of diseases increases). Specific diversity therefore influences the dynamics of infectious diseases.

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Taxonomy and evolution, inventories
Botany

Main identified problems

In their presentations, the various speakers highlighted the prickly problem of a lack of data on the taxonomy of natural resources in Africa in general and particularly in the countries of the Congo Basin. This lack of data is linked to the weak infrastructural capacity of the countries in the region and to an increased lack of human resources in the field of taxonomy of flora, mycoflora and fauna. Insufficient knowledge of the region's biodiversity inevitably leads to its management incapacity and its low valuation. We can only manage well what we know well. Policies based on biased or incomplete data cannot solve the problem.

Conclusions

- The characterisation of the biodiversity of plants and fungi in the Congo Basin (species identification and population dynamics), and the designation of conservation priorities, are made difficult by the inadequacy of taxonomic knowledge, and the too small number of specialists properly trained in the identification of organisms.
- This lack of taxonomic knowledge hampers the development of knowledge about biodiversity in the Congo Basin;
- Some of the methods used in studies of natural resources need to be updated in order to produce recent data;
- Future studies on biodiversity in the Congo Basin will require a multidisciplinary approach based on solid taxonomic knowledge.

Recommendations

- Encouraging studies aimed at improving knowledge of the Congo Basin's biodiversity and its management. These studies should focus on (i) the taxonomy of flora and fauna, using genetics as an essential tool (identification, drawing up inventories and checklists); (ii) biogeography to understand the origins and distribution mechanisms of native and exotic species, for example; (iii) the ecology and management of biodiversity; (iv) the problem of invasive species, which are still very little studied in the Congo Basin (monitoring their expansion);
- Strengthening the training of young researchers and technicians in taxonomy, including substantial time for practical field work;
- Developping new methods and a systemic approach in studies aimed at understanding and valuating the biodiversity of the Congo Basin;

- Encouraging research on sites where biodiversity has already been studied in the past. This will enable the study of their long-term evolution;
- Integrating the knowledge of local communities in biodiversity studies. For example, reforestation programmes in the countries of the Congo Basin should focus on indigenous species, highlighting the cultural, religious or economic value of the selected species;
- Encouraging work aimed at domesticating the species of flora, mycoflora and fauna most in demand by local communities or those of high value for their ecosystem services. Domestication will make it possible to ensure the conservation of genetic resources *ex situ* and through reserves to ensure *in situ* conservation;
- Raising awareness among stakeholders and mobilising funding for basic research into biodiversity in the Congo Basin through multi-institutional and multi-disciplinary collaboration.

Olivier HARDY
Bill KASONGO
Jan Lucas KLEIN
Janvier LISINGO
Grace Jopaul LOUBOTA PANZOU
Pierre MEERTS
Bakari Amuri SALVIUS
Piet STOFFELEN

"We can only manage well what we know well"

4.2

Taxonomy and evolution, inventories
Terrestrial zoology

Main identified problems

Speakers of this thematic session focused on wildlife issues in the Democratic Republic of Congo that could have general implications for the biodiversity of all the ecosystems in the Congo Basin. While insisting on the contribution of their data, they point out that the information that could support this generalisation, still shows gaps for the Congolese and African fauna as a whole. This is, among others, explained by the lack of financial support and of national expertise. Congolese and African researchers have been challenged to remedy this situation.

Conclusions

Following the various presentations and debates, it became obvious that the current data is incomplete, meaning that research activities will have to be continued in the future to gain a better understanding of the fauna's characteristics and the way this fauna functions in the Congo Basin.

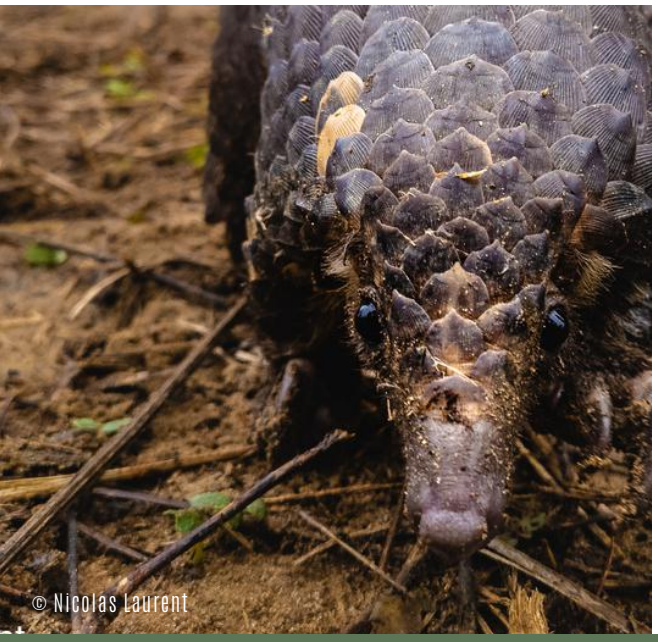
To achieve this, it is important to have access to financial and human resources. National, African and international institutions should attach considerable importance to this.

Recommendations

The recommendations made at this thematic session are addressed to stakeholders at several levels:

- Research institutions and researchers should continue research, using the new technologies available to enrich knowledge and fill the gaps in the wildlife components of national biodiversity in the Congo Basin.
- National and international NGOs should support scientists in areas other than those targeted by the research to improve knowledge of animal biodiversity in the Congo Basin.
- Local communities should support and accompany researchers in the process of understanding the animal biodiversity of their territory.
- The authorities should allocate and increase a substantial budget to the research sector, which is one of the keys to development.

The combination of all these recommendations would ensure control of information relating to the knowledge, preservation and judicious use of Congolese terrestrial animal biodiversity, for a more sustainable management and use of biodiversity in the Congo Basin.



Gabriel BADJEDJEA BABANGENGE
Pascal BAELO
Zacharie CHIFUNDERA KUSAMBA
Prescott MUSABA
Casimir NEBESSE
Julien PUNGA PUMANENGE
Guy David SEBAGENZI
Ange Ghislain ZASSI-BOULOU

4.3

Taxonomy and evolution, inventories
Aquatic zoology

Main identified problems

- Lack of information on the diversity and distribution of fish in and outside several protected areas in the Congo Basin. Information on the ecology, biology, ethology (etc.) of several fish species is even more scarce.
- Lack of conservation policies for fish and other aquatic organisms inside and outside protected areas.
- Over-exploitation of fishery resources through unsustainable fishing practices.
- Pollution (mining, household waste, plastics, etc.) and degradation of aquatic ecosystems.
- High population density in fisheries and almost exclusive dependence on fishing for the supply of animal protein.
- Lack of knowledge about the level of exploitation of fisheries resources in the Congo Basin.

Conclusions

- The results of all the presentations on the ichthyofauna of the protected areas (PAs) studied showed that fish management in PAs does not seem to be a priority. In fact, little or no concrete action is being taken by PA managers to protect the ichthyofauna within the parks. This is reflected in the absence of ichthyofauna management directives and plans in the parks already studied.
- Many species of fish have yet to be discovered, described and studied. In order to better protect this aquatic biodiversity, it is essential to improve our knowledge of the subject and therefore to invest more in research and the integration of this knowledge into policies, directives and management plans.
- In addition to knowledge of aquatic biodiversity, it is important to work on fishing practices (e.g. scooping, use of ichthyotoxic plants, etc.) and their implementation, in order to limit the impact on habitats and fish populations targeted directly or indirectly.
- Conservation practices in certain PAs are still too often strongly oriented towards terrestrial species or large mammals, neglecting certain specific classes present in the park (such as fish). Proposing a law to protect fish is now a necessity for the PAs of the Congo Basin. Such a proposed law on the status of fish would facilitate the work of PA managers and rangers on the ground. In some cases, this will also require modifying the entire biodiversity conservation policy for better integration of fish and associated aquatic ecosystems.

Recommandations

- Make an inventory of aquatic biodiversity and biodiversity hotspots so that they can be incorporated into protection plans.
- Determine the conservation status of fish species in protected areas (PAs) in the Congo Basin.

- Set up public aquariums with local species to be protected in institutions, museums, etc. This would inform people about the importance of fish and draw their attention to the need to protect them.
- Introduce community co-management systems, as centralised management has shown its limitations. Fishermen themselves and local communities need to be involved in fish protection, to better protect the diversity of aquatic habitats.
- Define buffer zones of 100 to 500 m along the edges of aquatic ecosystems where all activity will be prohibited. This should be based on the highest water level reached during periods of flooding. This technique has already proved its effectiveness in conserving aquatic resources.
- Promote alternative income-generating activities for local populations living in and around protected areas to reduce fishing pressure. These include ecological fish farming using indigenous species, microprojects for raising small ruminants and poultry, rice growing, etc.

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Célestin DANADU MIZANI
Papius DIAS M. TIBI
Edit LOKELE NDJOMBO
Taylor MAMBO BABA
Pascal MASILYA MULUGULA
Wilson MAYO ILODIRI
Maarten VAN STEENBERGE

"The proposal for a law on the protection of fish is now a necessity for the Protected Areas of the Congo Basin"

4.4

Conservation and traditional knowledge

Main identified problems

- Religion acts at the level of belief, and certain taboos have been abandoned;
- As a result of the renunciation of cultural beliefs, population growth is affecting living space, including that of certain sacred forests;
- In addition to religion, encounters with other people and cultures have an impact on local beliefs and taboos;
- The political will to integrate traditional knowledge into the governance programme is weak.

Recommendations

- Continue to improve the understanding of traditional knowledge, which has positive effects on biodiversity conservation;
- Provide decision-support summaries on traditional knowledge to local, provincial and national executives, in order to integrate traditional knowledge into governance;
- Integrate traditional knowledge into the implementation of sustainable development projects and programmes;
- Encourage legislators to make laws that take traditional knowledge into account.

Conclusions

The studies presented in the "Conservation and traditional knowledge" thematic session have shown that traditional knowledge, which has enabled the people of the Congo Basin to live in harmony with nature, is under threat because of the arrival of modernity and inadequate policies. Anthropo-sociological, socio-political and societal actions, as well as scientific research on the subject, are needed both to preserve this knowledge and to conserve biodiversity.

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Marcel BANTUBUNGI WA TUMBA
Nono BONDJENGO IKOMBE
Justin KYALE KOY
Tolérant LUBALEGA KIMBAMBA
Alphonse MAINDO
Alain Delon MOUAFA T.
Trésor MUGANGUZI

4.5

The "One health" concept

Main identified problems

- Significant human pressure on animal and forest resources is a risk factor for the emergence of zoonotic diseases with pandemic potential: high pressure on resources and promiscuity between humans, domestic animals and wildlife.
- The absence of an integrated multisectoral monitoring tool tailored to each threshold, per sector, is one of the major reasons for the lack of a multisectoral response plan.
- More support for research into zoonotic diseases and their distribution is needed to improve the understanding of transmission mechanisms and therefore the risks for humans.

Conclusions, perspectives and recommendations

- Pooling the efforts of three health sectors (animal, human, environmental) and ensuring equity in technical and financial support could be the start of a coordinated and appropriate response to the need to control and prevent zoonotic diseases.
- A multi-stakeholder and multi-sectoral response integrated by the establishment of a collaborative framework between the different levels of authority and action. This to facilitate the exchange of information enabling the development of epidemiological bulletins, strategic plans and response plans, depending on the emerging diseases identified.
- Action should be taken on the causes, by integrating sustainable means of subsistence for local populations (e.g. small-scale livestock farming to diversify protein sources), while integrating appropriate conservation objectives. But also on the consequences, by coordinating systems for detecting and responding to health risks (e.g. setting up a community monitoring network, with local One Health committees).
- We need to build the capacity of local communities to understand the risks of zoonoses and poor food hygiene practices (food processing and preservation).
- More funding for research into the spread of zoonotic diseases is needed, both in the field and in the archives available in various research institutes. The aim is to improve the understanding of the mechanisms by which diseases spread, so that we can better anticipate the risk of new epidemics/pandemics. This will probably require the development and use of new analysis techniques (and technologies).

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Nicolas LAURENT
Steve NGOY
Vincent de Paul SANVURU
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Joel VUNZI NSIMBA

4.6

Bridging the gap

Science-policy interface and data mobilisation

Main identified problems

- Biodiversity management is not based on and does not make the most of the results of research.
- This research is often not funded.
- In some areas, there is a lack of collaboration between the various actors to ensure better integration of the interests of different stakeholders and therefore better management of biodiversity.
- Biodiversity management is based on texts that are unrealistic, vague and often ill-suited to the local context.

Conclusions, perspectives and recommendations

- Better integrate stakeholders (politicians, researchers, endogenous knowledge holders, practitioners) in the management and sustainable use of biodiversity and ecosystem services.
- Genuinely and effectively involve local communities in biodiversity management.
- Biodiversity management should be based on research results.
- Implement realistic indicators (e.g. MRV - Measuring Reporting Verification) for monitoring (global and national frameworks) and good governance of biodiversity.
- Pool resources and expertise to ensure that research makes a greater contribution to the governance of biodiversity in the Congo Basin.
- Encourage greater use of platforms for sharing knowledge and information on biodiversity: IPBES (and BioSE-RDC), Clearing-House Mechanism (CHM), CABES project (for Central, West and East Africa).

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Han DE KOEIJER
Alain DIN DIPITA
Paul KAZABA K.
Odette MANIRAKIZA
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Jacques NKENGURUTSE
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4.7

Bridging the gap
Capacity needs

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Han DE KOEIJER
Edouard ILUNGA WA ILUNGA
Luc JANSSENS DE BISTHOVEN
Charlot MIKOBI MIKOBI
Héritier MILENGE KAMALEBO
Longin NDAYIKEZA
Jacques NKENGURUTSE
Anne-Julie ROCHETTE

Main identified problems

- There is a huge need for capacity building in all areas, particularly in taxonomy, conservation, collection management, data quality and sustainable (fishing) methods.
- There is a lack of taxonomists and infrastructure for conserving collections.
- The evaluation of ecosystem services (ES) is an increasingly topical issue, particularly in the management of protected areas, but the existing tools are still too little known and applied.

Conclusions et recommandations

- Difficulties associated with collecting specimens: environmental, storage and laboratory identification constraints. There is a great opportunity in Central Africa to invest more in taxonomy, as many ecosystems are still poorly understood.
- We need to invest in setting up a taxonomic research centre to update existing collections and develop databases.
- We need to invest more in training young people, developing curricula and networking experts at regional and international level, as well as raising awareness among the general public.
- Biodiversity capacity-building programmes and management tools designed to facilitate the work of nature reserve managers do exist. The programmes subsidised by the Directorate General for Development Cooperation and Humanitarian Aid (DGD) to the Royal Belgian Institute of Natural Sciences (CEBioS) and the AfricaMuseum, for example, support the development of scientific careers as well as capacity building for partners responsible for nature protection and management (institutions, research centres, etc.). The handbook developed by EVAMAB provides a guide and tools for evaluating SE, to help integrate the concept into the management of protected areas to achieve a positive combined effect for both man and nature. EMA (Environmental Monitoring and Assessment) is a monitoring tool for environmental data in line with the Sustainable Development Goals (SDGs). It takes into account the pillars of sustainable development (social, economic and environmental). It is therefore a tool for monitoring the SDGs, post-2022, for a more integrated management of natural resources. However, the proper use of these tools requires capacity building.
- It is important to communicate more frequently on existing programmes and tools, as well as to increase synergies.

4.8
Challenges and opportunities

Main identified problems

The challenges mentioned by the various stakeholders are numerous and have major consequences for biodiversity: (1) population growth and pressure on forests, (2) landscape fragmentation and conversion of forests into farmland, (3) unsuitable fishing techniques, (4) migration and conflicts. These are among the direct and indirect driving forces that influence the environment, biodiversity and the resilience of socio-ecological systems.

Conclusions, perspectives et recommandations

The speakers, each in their own field, were able to identify opportunities to help improve and restore biodiversity:

- Integrating more intensively the local knowledge and traditions that contribute to a stable farming population, reducing then pressure on forests and biodiversity;
- Choosing well thought-out, integrated land-use strategies (agricultural areas, roads, forests);
- Researching and popularising farming and fishing techniques that respect biodiversity, while explaining to fishermen and farmers the "win-win" effect that will be the effect if biodiversity is preserved;
- Developping migration strategies meeting the needs of breeders, farmers and protected areas.

The resilience of socio-ecological systems can offer a framework encompassing the challenges and opportunities with simultaneous work on 4 axes: (a) Protection of ecosystems; (b) Access to ecosystem services; (c) Rights, policies and governance; and (d) Knowledge, capacities and awareness.

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Luc JANSSENS DE BISTHOVEN
Inza KONE
Emmanuel LOMBO
Lisette MANGAZA NONDO
David MASAMBA
Pascal MASILYA MULUGULA
Francine NABINTU NTUGULO
Johan SLIMBROUCK

4.9 Ecosystem services and their valuation

Jonathan BACHISEZE MAGALA
Joan Ndeh BIH
Cédric CHIMI DJOMO
Achille DIODIO
Innocent KANDA
Charlot MIKOBI MIKOBI
Héritier MILENGE KAMALEBO
André SAFARI

Main identified problems

As part of this session, the following common issues were identified:

- The degradation of forests due to factors such as industrial or non-industrial agriculture and the extraction of fuel wood and timber, which by contributing to the loss of biodiversity, contribute to the reduction of ecosystem services (supply, support, regulation);
- Speaking about REDD+ (Reducing Emissions from Deforestation and Forest Degradation in Developing countries), the poor consideration of information to succeed in restoring forest ecosystems and the failure to take into account certain carbon sinks (fine roots);
- The poor reconciliation of research work with conservation work.

Conclusions, perspectives et recommandations

- Considering ethnomycology in domestication programmes;
- Greater visibility of the impact of REDD+ projects and of the lessons learned to make relevant recommendations for safeguarding biodiversity;
- Support for communities in the development of income-generating activities and the conservation of biodiversity;
- A better strategy for the conservation of some species, in particular the ones which have become extremely rare due to anthropogenic pressure, such as *Prunus africana*;
- The urgency of full protection of peatlands in the Congo Basin, which have a high carbon storage capacity. The involvement of communities is important to guide policies in the conservation of these habitats;
- The consideration of fine roots, and their biomass, in understanding the resilience and restoration of forests and efforts for the sustainable management of forest ecosystems;
- An increase and promotion of projects aimed at increasing the density of endangered wild animals.

In general, these perspectives are about the domestication of species of interest, the involvement of communities in the implementation of projects and the creation of links between research and policies.

4.10
Ecology and global change

Main identified problems

- Although intact tropical forests remain important carbon reserves and key centres of biodiversity, their capacity to sequester additional carbon in trees is declining.
- Although the Congo Basin's net carbon uptake is increasing over time, carbon emissions linked to changes in land use are also increasing.
- Urban areas (due to population density and lifestyle) and transport routes have an influence on the spatial distribution of forest cover losses. Infrastructure development increases forest loss and reduces forest recovery. The proximity of forest areas to high-density zones and national borders leads to mass deforestation (over-exploitation and export).
- Although further studies are still needed on this subject, it is highly likely that climate change is already having an effect on the foliar traits of certain understorey species in the Yangambi Biosphere Reserve. Analysis of the data recorded at INERA/Yangambi suggests that this is linked, among other things, to the increase in atmospheric CO2 concentration and temperature.
- There is a risk of rapid degradation of the peatlands as a result of the transformation of the environment by man; many concessions have already been granted, whether for agriculture, mining or forestry, and most importantly oil exploitation. There also seems to be over-exploitation of certain tree species present in these environments (in reference to the numerous rafts observed on the river in the region).

Conclusions

- Conserving the forests of the Congo Basin is of paramount importance in mitigating the effects of climate change and protecting biodiversity on a global scale. The countries of the Congo Basin are true carbon sinks, with net carbon absorption increasing over time.
- There are already signs that certain plant species in tropical forests are reacting to the increase in CO2 and temperature. Further studies are needed to determine the indirect impact of nutrient limitation on other factors.
- The peatlands of the Congo Basin are vast, complex and rich in carbon. But these rainforests have long remained virtually unexplored because of their impracticality and the exorbitant cost of field research; very little is known about their functioning and biodiversity. Hence the importance of increasing the number of scientific studies on the subject.

Recommendations

- Working with local communities on land-use plans to enable development that limits the impact on forest cover (rational management of the land and its resources).
- Increase funding for research into ecosystems/habitats in relation to climate change. This includes stepping up research into peat bogs, in order to increase scientific knowledge and raise awareness among political decision-makers of the need to protect this globally important forest heritage.

"Conserving the forests of the Congo Basin is of paramount importance in mitigating the effects of climate change and protecting biodiversity on a global scale"

Marijn BAUTERS
Adeline FAYOLLE
Yves HATANGI
Joseph KANYAMA TABU
Evariste LOKE LOBANGA
Lisette MANGAZA
William VERBIEST
Eric KATEMBO WASINGYA

4.11

Conservation of our closest relatives

Main identified problems

- Habitat degradation and fragmentation are a threat to the survival of some primates, which provide ecosystem services (e.g. the dispersal of seeds of plant species used by humans).
- The lack of a harmonised university curriculum and the lack of funding for research.
- Lack of knowledge, coordination and communication between networks and the various actors in the field.
- The problem of limited and often ill-suited accommodation for monkeys in sanctuaries.

Conclusions, perspectives and recommendations

- The chimpanzees of the Democratic Republic of Congo (DRC) are among the least studied groups of primates. The other two chimpanzee 'empires' are Gabon and West Africa.
- The presence of ruderal species in chimpanzee faeces would be a complementary indicator for an analysis of the anthropisation of the landscape.
- Fragmentation of chimpanzee habitats can have immune, epidemiological and behavioural effects on the groups of primates studied. It would therefore be important to support research into the fauna found in forest fragments in isolated areas.
- Promote community conservation initiatives to reduce the pressure on great apes: one example is the establishment of Community Forests (CF), which offer many advantages (low cost protection, less insecurity, fewer resources required). As a result, they could be an alternative way of safeguarding this species of primate. To achieve this, protection and restoration measures must involve local communities taking ownership of conservation.
- Intensify the collection of genetic data for the taxonomic identification of some isolated primate populations.
- Increase the intake capacity for orphaned great apes and improve the living conditions of at the seizure sites for those animals awaiting a place.
- The lack of knowledge, coordination and communication between the networks and the various actors involved in research, sanctuary management and *in situ* primate conservation in and outside protected areas is an obstacle to the development of collaboration and knowledge sharing. It would be useful to carry out a local, regional and national mapping of the human resources and organisations involved in research on great apes and other primates in the DRC. This would make it possible to identify consortia and apply for joint grants, optimising the resources available.

Generally speaking, these perspectives are about:

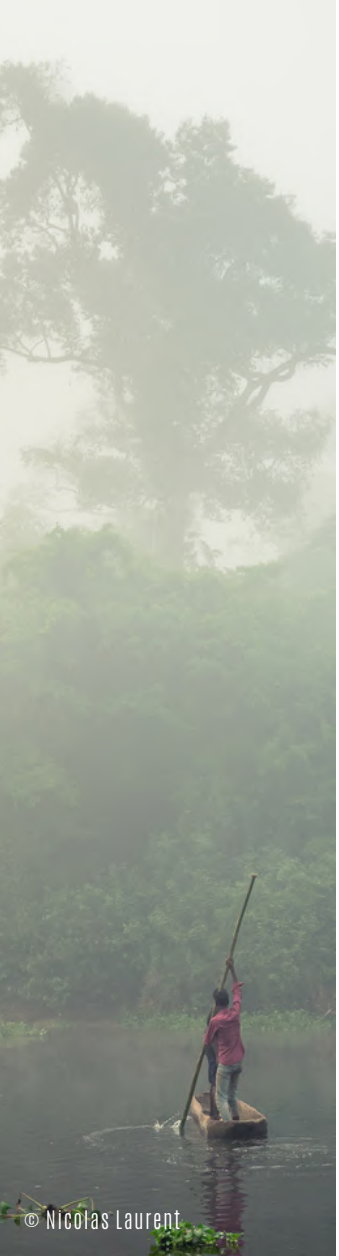
1. Involving local communities in safeguarding the species and their habitat.
2. The importance of stepping up conservation activities and biological research on great apes in order to better identify their needs and protect them more effectively, giving priority to isolated areas to gain a real understanding of their needs.
3. The importance of developing synergies between the various actors involved in preserving the targeted species.

Vivien BBIDJO
Marcel BIBENTYO
John HART
Cleve HICKS THURSTON
Anne LAUDISOIT
Daniel MFOSSA MBOUOMBOUO
Charles MUMBERE MUSAVANDALO
Urbain NGOBOBO AS IBUNGU

"Community Forests can be an alternative way for safeguarding these species"

5 CONSERVATION IN PRACTICE

For a whole day, conference participants were able to take part in various training sessions, workshops and seminars on subjects specific to the Congo Basin and the host country of the conference, the Democratic Republic of Congo.



5.1

CLIMATE-BIODIVERSITY ACTIVITIES IN YANGAMBI

Organiser: Wannes HUBAU

Introduction

The Democratic Republic of Congo (DRC) gained international attention as a "country for climate change solutions" in the wake of CoP26 in Glasgow (2021). This new status stems from the publication and the dissemination of top-notch scientific research on Congo basin forest ecosystem services such as carbon storage, CO2 uptake and biodiversity. The Congo basin is now widely regarded as one of the largest regions of top-priority conservation importance.

As a result, the DRC was invited to organise the pre-CoP27. To prepare this important meeting, the Ministère de l'Environnement et Développement Durable (MEDD) organised a scientific pre-CoP27 (september 2022) and chose the Yangambi Man-And-the-Biosphere (MAB) reserve as its venue because it is an emerging hotspot for top-notch scientific research on natural resources. For the same reason, the organisers of the 2nd International Conference on Biodiversity in the Congo Basin (March 2023) decided to dedicate a full session to scientific research and related activities in Yangambi.

The impressive recent emergence of Yangambi as an international centre of knowledge, dissemination and policy, is a result of its UNESCO MAB status. Biosphere reserves are learning places for sustainable development, providing local solutions to global challenges. They are sites for testing interdisciplinary approaches to understand and manage changes and interactions between social and ecological systems.

They consist of three interrelated zones that reconciliate three complementary and mutually reinforcing functions:

- The core area comprises a strict conservation zone;
- The buffer zone is used for scientific research, monitoring, training and education;
- The transition area is used for sustainable economic and human activities.

In the Yangambi MAB reserve, multidisciplinary scientific research goes hand-in-hand with capacity building, education, management, development of sustainable economic activities, and governance. To do so, multiple institutions are active in the Yangambi reserve and the surrounding landscape.

Summary of the main conclusions

The overview below presents some ideas that emerged from the discussions.

Research can benefit the governance and conservation of the reserve:

- research makes it possible to identify the various ecosystem services, and especially those that are vulnerable and/or threatened;
- research on ecosystem services should be accompanied by research oriented towards social sciences, and research on governance (multi-disciplinarity).

Scientific results must be "translated" and communicated in a language that is easy to understand by a "general public" (i.e. the entire Congolese population):

- every citizen has a right to information;
- a specific focus on local communities (around the reserve) is very important;
- specific examples are videos and comics;
- communication efforts should be adapted to social networks (eg videos that can be distributed easily).

Scientific results need to be "translated" and communicated in a language that is easy to understand and applicable in politics and diplomacy:

- through policy briefs (e.g. https://congobasincarbon.africamuseum.be/documentation);
- this can increase visibility (pre-CoP27 in Yangambi is a good example);
- this can directly result in policy decisions (Science for policy making).

Local communities benefit from being involved in research activities:

- through the valuation of local products;
- through job opportunities (which pays better than anything else);
- by learning new things (e.g. the importance of ecosystem services);
- finally, local communities themselves become potential conservation actors.

Local communities can inspire research:

- research projects must integrate a priori the ideas and needs of local communities;
- the MAB Committee can function as a bridge between stakeholders.

(Science) tourism can help preserve the reserve:

- through the entry of foreign currencies, job creation, opening up and improving education;
- on the other hand, tourism could also have negative impacts such as the introduction of new contagious diseases, thus contributing to the destruction of biodiversity.

These conclusions may be incorporated into the conceptualisation and development of research project proposals. Clearly, researchers are invited to think out-of-the-box. Besides scientific research, there is a growing demand for education, interaction with politics and diplomacy and local capacity building.

The stakeholders involved in this exercise during the conference were:

THE CONGO BASIN HERPETOLOGISTS' ASSOCIATION

5.2

Organiser:
Zacharie CHIFUNDERA KUSAMBA

Introduction

As part of the international conference on biodiversity in the Congo Basin, a thematic session on herpetology was organised on 8 March 2023 by the ASHERCO association, moderated by Professor Chifundera Kusamba, President of the association.

This herpetological session was attended by members from the Democratic Republic of the Congo (DRC) and the Republic of the Congo (RC). The main objective was to examine the current state of herpetology in the Congo Basin, in order to better define the activities to be implemented in terms of research, training and conservation, for greater efficiency of action.

At the end of the meeting, ASHERCO made significant progress in setting up and attracting members. The association is currently established in the countries of the Congo Basin, with the exception of Equatorial Guinea and Sao Tome and Principe. It currently has 28 members from the Congo Basin countries, the United States and Europe.

In the near future, the association plans to develop the following scientific activities: (1) organising the first Congress of Fundamental and Applied Herpetology in the DRC (at the Station de Recherche en Ecologie Forestière de Mabali in Equateur Province), and (2) proposing more "research and development", in connection with the Nagoya Protocol (APA), the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and the International Union for Conservation of Nature (IUCN).

However, the Association is currently facing financial problems to carry out herpetological inventories, and is struggling to train experts in taxonomy and genetic analysis. Lack of knowledge of medical herpetology, in relation to snakebites and the treatment of those affected in rural areas, also remains a challenge for the future.

However, and at the end of this herpetology session, ASHERCO members recommended proceeding with the signing of the Statutes, drafting an academic curriculum on medical herpetology, introducing the subject in various faculties of African universities, to fight against envenomations, in accordance with the WHO guidelines of 17 June 2017, placing this scourge at the top rank of Neglected Tropical Diseases south of the Sahara.

Some recommendations

The members recommend that efforts be made to:

- Update and connect herpetological databases in the various countries;
- Seek funding for research projects and training;
- Train young students (LMD) and technical staff;
- Set up a Regional Herpetology Laboratory and create an Institute for African Herpetology;
- Set up communication bulletins (Newsletters), and
- Develop scientific entrepreneurship by considering herpetology as a development factor.

"Envenomations are the leading neglected tropical disease in south Sahara"

LOCAL COMMUNITY FOREST CONCESSIONS

5.3

Organiser: Tropenbos DRC

Introduction

The forests of the Democratic Republic of Congo (67% of the national territory) represent around 50% of Africa's tropical rainforests and are home to an impressive biodiversity of flora (at least 10531 species, 1337 of which are endemic) and fauna (at least 4758 animal species). Considering the importance of these forests for biodiversity and humanity as a whole, the Democratic Republic of Congo (DRC) has introduced Community Forestry (CF) to give indigenous peoples and local communities (IPLC) greater responsibility for managing their forests to enhance local development and environmental conservation. This process is in its 5-year experimental phase (2018-2023). At present, many actors are supporting the IPLCs, with more than 150 local community forest concessions (CFCLs) allocated to the IPLCs on a perpetual basis. As part of the 2nd International Conference on Biodiversity in the Congo Basin, a seminar was organised, chaired by Tropenbos DRC, to discuss the challenges and lessons learned in implementing this process.

The main challenges

- Cumbersome administration procedures: in principle, the period between the application and the awarding of a CFCL title is 150 days, or 5 months, but in practice this period is generally well over 24 months. As an example : 10 initiated CFCLs, for which the public notice was closed in April 2022 without contestation, have still not been signed;
- False gratuity : the process was intended to be free of charge (as required by law), but it is extremely expensive;
- Lack of technical and operational capacity among stakeholders: there is only one Community Forestry (CF) focal point for an entire province, and there are no direct relays in the sectors;
- Weak political will to support the process: the process is virtually left to NGOs and non-state actors, whereas the state should be taking the lead in implementing its own policy. Curiously, many government officials are demanding to be paid to carry out their sovereign responsibilities in relation to the process they are supposed to be steering;
- A shift in the balance of power between the IPLCs and the traditional chiefs: traditional chiefs, who once acted as masters of the forests and land, are now being asked to share their powers with bodies made up of some of their "community members";
- Abuse of power preventing effective management of CFCLs and a wait-and-see attitude of some CFCL members.

Some recommendations

- Review the existing legal framework to make the process more flexible by incorporating binding provisions such as automatic validation in the event of failure to meet deadlines;
- Collect information on the various violations of community forestry legislation so that the perpetrators can be punished in an exemplary manner;
- Set up a community forestry office in each province with well-trained and paid staff and focal points in each decentralised territorial entity;
- Advocate for state involvement in the implementation of community forestry to reduce the role of NGOs and development partners;
- Diversify awareness-raising activities for traditional chiefs and customary leaders on the role they can play in community assemblies and councils to facilitate maintaining the balance of power and to ensure that benefits from the community forestry are channelled to the IPLC.

5.4 CITES IN PRACTICE

Organisers:
MEDD Sustainable Development Directorate, DRC
CITES body, DRC

CITES, the Convention on International Trade in Endangered Species of Wild Fauna and Flora, establishes a legal framework for wild plants and animals trade, in order to limit the impact on the species concerned.

As part of this conference, and given the importance of this Convention for biodiversity, training on the subject was offered to participants. The aim was twofold: (1) to deepen participants' theoretical knowledge and (2) to give them the keys to preparing and submitting export permit applications to the relevant authorities.

From a theoretical point of view, the participants reviewed the political, ethical and legal aspects of the Convention. The political aspects concerned bilateral and multilateral cooperation with other CITES member Parties in taking joint positions to defend common interests related to biodiversity, but also the diplomatic aspects that play a predominant role. A section on the DRC's general policy documents, particularly in relation to biodiversity and endangered species of wild fauna and flora, was also discussed. The ethical aspects included the emphasis on the morality that should guide the management of trade in endangered species of fauna and flora. Finally, the legal aspects covered the judicial problems associated with violations, arrests, trials and convictions related to the application of the CITES convention. Laws, regulations and enforcement measures were also discussed.

A more practical part, on how to submit permit applications, was explained to the participants. This included the following elements: a review of the different categories of CITES permit application files, an analysis of the conditions for applying for a CITES permit, a presentation of the CITES computerised management platform (CMIS), and finally a presentation on the justification for permits whose goods have been exported to remain in the CITES Management Authority's computer system.

5.5 FROM THE BUSH TO SEQUENCING

Organisers:
Sophie GRYSEELS
Casimir NEBESSE
Nicolas LAURENT

This "From the bush to sequencing" workshop was aimed specifically at researchers, laboratory technicians and students wishing to improve their knowledge and skills in collecting and analysing DNA samples.

The main objective was to introduce participants to a series of techniques ranging from the collection of animal samples in the field to the production of DNA sequences and their preliminary analysis.

More specifically, during this workshop, participants were able to familiarise themselves with the theoretical principles behind DNA barcoding and metabarcoding, their advantages and their contexts of application. The workshop also addressed different sample collection techniques, such as environmental DNA sampling and direct specimen sampling.

5.6 THE POLICY BRIEF: WHAT AND HOW?

Organiser: Pierre HUYBRECHTS

The aim of the training course on writing policy briefs was to review theoretical and practical advice to enable conference participants to start writing or continue their policy briefs in a more complete and effective way. More specifically, the trainer dealt with content-related aspects, gave graphic advice, addressed the notions of preferred language and timing, and proposed examples of best practices. Participants were also given a number of recommendations on how to disseminate policy briefs in the best possible way to reach political decision-makers.

5.7 SOCIO-ECOLOGICAL RESILIENCE

Organisers:
Luc JANSSENS DE BISTHOVEN
Johan SLIMBROUCK

SOCIAL ECOLOGICAL RESILIENCE NETWORK

How can biodiversity be incorporated into a holistic approach to socio-ecological resilience?

The integrity of the biosphere is one of the planetary boundaries that have already been crossed. Biodiversity is an essential component, ensuring the resilience of ecosystems through its role as a reservoir of genetic diversity and its capacity to adapt. The disappearance of the integrity of the biosphere and the climate alone would be capable of pushing the Earth system out of its stable state. However, we need to take into account all the planetary boundaries, consider all the ecosystems that provide ecosystem services that are essential for a good quality of life, and see the loss of biodiversity in terms of a holistic approach to resilience (ecosystems and socio-ecological systems).

SECORES - the socio-ecological resilience network - has entered into discussions with researchers and field actors to frame the challenges of biodiversity in the socio-ecological resilience approach; to analyse how to reconcile measures in each domain; and to define the needs for capitalising experiences and research.

Three working groups imagined a resilient socio-ecological system that contributes to the well-being of the population within the boundaries of the planet. More specifically, the participants decided to work on (1) an urban system, based on the city of Kisangani, (2) a rural agro-ecological system, based on a Burundian landscape, and (3) a silvo-pastoral system, with internal and cross-border transhumance, in the north of the DRC. The focus was on biodiversity, governance and access to ecosystem services.

The working groups highlighted the fact that thinking about the resilience of a system opens up a debate that will make it possible to integrate the social, ecological and economic aspects on the basis of the various ecosystem services at a more integrative level.

It is therefore a very useful conceptual framework for loosening tongues and looking beyond one's own little speciality or specific ecosystem service, for reflecting in a more holistic and integrated way.

STATE OF THE ART OF THE BIODIVERSITY IN THE DRC

5.8

Organisers:
Nicky INEET
Daniel MUKUBI

Introduction

At the preparatory meeting for the 2nd International Conference on Biodiversity in the Congo Basin, held in Kisangani in August 2022, the first discussions between the different stakeholders concerned the need to make the data and information required to update the inventory of biodiversity in the Democratic Republic of the Congo (DRC) available.

During the second edition of the International Conference on Biodiversity in the Congo Basin, a special session was devoted to updating the State of the art of the biodiversity in the DRC, in order to deepen discussions and establish a framework for collaboration and consultation to mobilise the relevant data and information within an acceptable timeframe.

Opening remark

At the opening of the session, Mr Benjamin Toirambe, Secretary General of the Ministry of the Environment and Sustainable Development, pointed out that the DRC's biodiversity was not well known. For example, it is still difficult to give an exact answer to the question of how many species of fish there are in the country, or what the fishing potential of the Congo River is. The same applies to the status of the elephant population inside and outside our protected areas, which is still not under control. The level of knowledge of the biophysical environment remains low as well. All this poses a problem in terms of reporting, even though the country is required to draw up and submit a national biodiversity report every four years, as an obligation under the Convention on Biological Diversity (CBD).

Hence, there is a real need for scientists to help mobilising data and sharing information to facilitate the development of national strategies. It is now urgent to establish a framework for collaboration between the scientists themselves, but also between the scientists and the Congolese government, with the aim of identifying the challenges and proposing the necessary measures. The drafting of the seventh national report on biodiversity will largely depend on the effectiveness of this collaboration.

Governance and the state of the art of the biodiversity in the DRC

The Head of Division in charge of Biodiversity and National Focal Point for the CBD, Mr Nicky KINGUNIA INEET, reminded participants of the reasons behind the Convention on Biological Diversity and the DRC's adherence to this international treaty. He pointed out that the DRC had already drawn up and submitted six (06) national reports on biodiversity, and was in the process of preparing its seventh report, due before the end of February 2026.

He recalled that the aim of the August 2022 workshop was to agree on the best approaches for facilitating access to relevant data. At the first International Conference on Biodiversity in the Congo Basin, held in 2014, a framework for exchange was set up by the Centre de Surveillance de la Biodiversité (CSB), whose Focal Points were designated in 11 provinces. The aim was to strengthen and update this structure. The 2022 workshop, attended by 45 people from 16 organisations, analysed the 10 strategic axes of the former National Biodiversity Strategy and Action Plan (NBSAP) document. At the end of the workshop, a general report was made up and circulated, and resource structures, data sources and people were identified.

He ended by saying that this session dedicated to updating the DRC's state of the art of the biodiversity was intended to continue the work begun in August 2022, and to popularise the Kunming-Montreal Global Biodiversity Framework adopted at the end of the fifteenth Conference of the Parties to the Convention on Biological Diversity (CoP15 CBD) in December 2022, with which the new NBSAPs should be aligned.

Following this presentation, a question-and-answer session was opened, focusing mainly on biodiversity financing, technology transfer, capacity building, access to global databases on genetic resources, the scale of application of the Kunming-Montreal global biodiversity framework, taking into account the concerns and rights of indigenous peoples and local communities, and consideration of the results of scientific research in political decision-making.

At the end of the question-and-answer session, a number of suggestions for mobilising data were put forward :

- Ask the academic authorities to require researchers to provide an annual report on the research activities carried out and the results obtained;
- Set up an Environment and Sustainable Development Focal Point in each higher education institution, university and research centre;
- Set up a committee to collect, sort and process reliable and relevant data for the preparation of national reports on biodiversity;
- Facilitate thematic groups and provide small grants for researchers to make data available;
- Centralise all existing data and information, and identify what is missing;
- Set up a Public-Private Partnership (PPP) so that NGOs that generate biodiversity data and information make them available to the government, while guaranteeing their intellectual property;
- Put in place a legal framework enabling the State to own the data produced on Congolese soil as part of foreign and international projects, to prevent foreign organisations and researchers from keeping this data at the end of projects;

- Create a permanent collaborative dynamic between the Ministry of Higher Education and Universities, the Ministry of Scientific Research and the Ministry of the Environment and Sustainable Development;
- Strengthen technical and scientific cooperation;
- Define priorities for research, funding and community development.

Conclusion

There is a need for sufficient, high-quality information to guide the development of strategies and the conception of effective measures, in order to be able to define what we want to do with our biodiversity. The CSB's Provincial Focal Points will have to propose lists of researchers and their areas of research, in order to produce a mapping of the researchers and information available, to fill the gaps. We need to focus on consolidating our networks and working together on the next steps. A good framework for cooperation, collaboration, trust and transparency between scientists, researchers and government is a major asset if we are to win the challenge of conserving biodiversity and improving living conditions for communities.

"There is a real need for scientists to contribute to data mobilisation and information sharing to facilitate the development of national strategies"

5.9 THE PARTICIPATORY APPROACH TO THE CONSERVATION AND MANAGEMENT OF THE LOMAMI NATIONAL PARK AND ITS BUFFER ZONE

Organiser: John HART

Introduction

At the 2nd Conference on Biodiversity in the Congo Basin, organised in March 2023 in Kisangani, the Lomami National Park (LNP) held a symposium on the "participatory approach to conservation in and around the LNP". The aim was to disseminate the results of this new approach and make some contribution to the overall objective of the conference, which was to improve understanding of environmental protection in relation to biodiversity, climate, health and the socio-ecological systems of the Congolese basin. After raising participants' awareness, 13 talks, interspersed with breaks, were presented in auditorium 05 of building 6 of the Faculty of Science at the University of Kisangani. Moderated by GIZ, the discussions and contributions were conducted after 2 or 3 presentations, in a purely scientific and participatory approach. Divided into 3 panels: Management, Biodiversity and Protection & Conservation of the LNP, the various presentations provided important information on the current status of this protected area. The LNP stands out for the way it was created, with its buffer zone and the traditional involvement of the local community, as well as its geographical location straddling 3 provinces (Maniema, Tshopo and Sankuru). With a surface area of 8,874 km², it is the youngest park in the DRC (July 2016). Its future vision is based on a development and management plan, with programmes focusing on the structuring, management and development of the LNP. The exceptional diversity of primates, the endemism of certain species such as *Pan paniscus* (Bonobo), *Okapia johnstoni* (Okapi), *Afropavo congensis* (Peacock), etc. and the existence of new species of monkeys *Cercopithecus lomamiensis* (Lesula), *Colobus sp. nov.* and a spatially varied flora make the Lomami a precious reservoir of biodiversity of great socio-cultural, scientific and climatic interest.

Today, although this biological diversity is faced with various types of anthropogenic threats, in particular poaching and habitat loss, protection and conservation efforts are still visible through the new conservation strategy, the monitoring of hunting and patrols with a mixed composition. In addition to material, human and financial constraints, inventories of flora and fauna, associated by traditional expertise, are essential to fill the information and scientific data gaps as well as to support the management of the LNP. In the end, the synergy of stakeholder actions for a development and management plan for the Park, specifying the micro-zoning and related activities and/or projects, compatible with conservation objectives, remains an advantageous approach for sustainable management and long-term conservation of the LNP.

Objectives of the symposium

The main aim of the Lomami symposium at this conference was to inform a diverse audience about the importance and achievements of the participatory conservation approach being implemented in and around the Lomami National Park to maintain and sustainably manage its biodiversity.

More specifically, the Lomami symposium aimed at:

- Strengthening the awareness and motivation of (inter)national and provincial political authorities to increase their efforts to preserve the Congo Basin and its unique fauna and flora,
- Helping cope with the growing demographic pressure and economic development and their effects on the use of renewable natural resources, as well as the potential threats to human health that may come with it,
- Strengthening the existing local and international network of scientists, civil society and policy-makers,
- Strengthening links within research on climate, biodiversity and health,
- Promoting to local authorities the public availability of data related to the exploitation of renewable natural resources .

Main conclusions

In terms of management, the Congolese Institute for Nature Conservation (ICCN), the guarantor of nature conservation in the DRC, is making enormous efforts, with the support of GIZ, to protect and conserve protected areas, in line with the global framework of the Convention on Biological Diversity (CBD). This is being achieved through the establishment of various governance structures and the use of innovative monitoring tools such as SMART. For the LNP, future management must involve a development and management plan comprising programmes for the structuring, management and development of the LNP.

As far as biodiversity is concerned, it is worth noting that the DRC is one of only 4 countries in the world with a mega-diversity of primates (15 species recognised today). The same is true of the LNP, which is home to a wide range of animals, including endemic species such as Bonobo, Okapi, Peacock and 2 new species of monkey recently discovered, including *Cercopithecus lomamiensis* and *Colobus sp nov.* There are also a relatively high number of

forest elephants (around 639), grey parrots and 168 species of fish. The LNP is also covered by a forest fragmented into 2 types of vegetation: the basin forest on clay soil, which is sometimes flooded, in the north of the park and a savannah zone on sandy soil in the south. The structure and floristic composition vary according to the type of forest.

However, the park's significant biodiversity is not immune to the threats posed by armed poaching and habitat loss caused by slash-and-burn agriculture. For some time now, a series of activities and/or projects have been developed in the buffer zone to deal with the recurring threats posed by some members of the local communities or migrants from urban centres. These include joint patrols (eco-guards and FARDC) that have led to several arrests of poachers, the monitoring of hunting by imposing tokens on hunters and bushmeat traffickers, a project to create a community reserve to protect African grey parrots, and support for the acquisition of forest concessions by the local community (CFCL). The latter initiative has been severely criticised by some experts, as it could lead to poor management of the buffer zone and even other serious problems. Constraints such as understaffing of the eco-guards, poor funding and inadequate equipment meant that the LNP could not be effectively monitored and protected.

However, particular attention needs to be paid to the management of the LNP buffer zone to avoid encroachment on the fully protected area. The involvement of various stakeholders in drawing up the Park's development and management plan remains a priority.

Sponsor of the Lomami symposium report: GIZ - GBF
Source: KANYAMA TABU, J., 2023. *Symposium du parc national de la Lomami.*

Side Event with the

6 BIODIVERSITY FUTURE GENERATION

As part of the conference, the organisers, in collaboration with the Congolese Youth Biodiversity Network (CYBN), organised a short film competition as well as a drawing and essay competition on biodiversity-related themes. The aim was to raise public awareness of the Congo Basin's biodiversity, its importance and its preservation, especially for the younger generations.

The proposed theme for the competitions was "***Cheers to the health of biodiversity***", addressing the importance of biodiversity as well as current and future challenges.

The members of the jury focused on the following elements:

- Taking a new, original and innovative look at the theme of biodiversity;
- Contribute to the knowledge and understanding of these themes for non-expert audiences;
- Opening up the debate with political decision-makers and local and/or national authorities;
- Deal with representations and collective imaginations that can benefit or harm biodiversity.

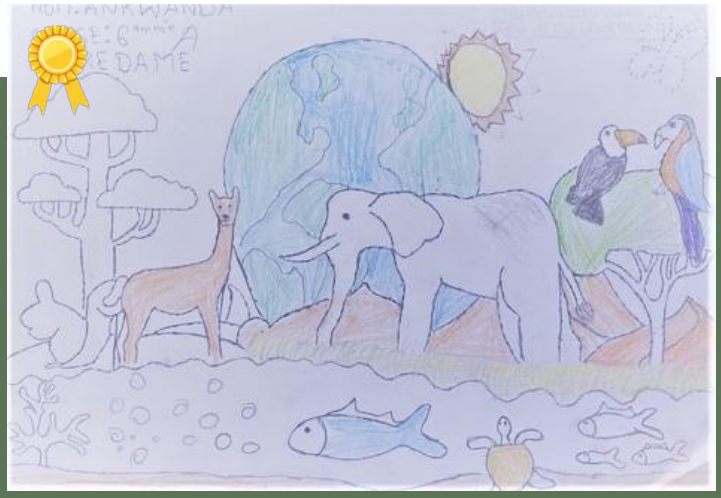
6.1 Short films

The film "La médecine des Grauer", shot by Alain MUKIRANYA in Virunga and Kahuzi Biega national parks, won first prize in the short film competition.

Congratulations to ALAIN MUKIRANYA for his film and his commitment to preserving biodiversity in the Democratic Republic of Congo!

The aim of this film is to document the diet of Grauer's gorillas (*Gorilla beringei graueri*), a species that is still little studied, and its relationship with human medicine. A review of the literature on the diet of two target populations of Grauer's gorillas (Virunga National Park and Kahuzi-Biega National Park, in the Democratic Republic of Congo), and surveys carried out in the villages of Lubero on the plants consumed by Grauer's gorillas and their uses, revealed that these plants are used differently in the pharmacopoeia and sometimes vary for the treatment of the same illness. As traditional pharmacopoeia is the most accessible way for local people to stay in good health, this film encourages both research into new molecules that are effective in the diet of Grauer's gorillas, as well as making them available for the health of the population.

6.2 Drawings



We would particularly like to congratulate ANKWANDA, in Year 6, on his artistic work. The drawing shows just how rich the flora and fauna of the DRC are!

Congratulations also to the other winners for their masterpieces.

6.3 Essays

Well done to Albertine IYOYA KOKO for her essay on the responsibilities of young people in protecting biodiversity. Fully aware of the problems facing biodiversity, Albertine suggests ways of protecting it.

In her essay, Albertine rightly points out that *"humans are at the root of the biodiversity crisis because of their activities. But that doesn't stop young people from taking part in protecting their planet, because young people are the future of this world"*.

Congratulations Albertine!

6.4 Jury members

Short films

- Daniel AUCLAIR - French school teacher, short films director and author for “La Salamandre”, a swiss organisation producing bi-monthly short films about nature (1 minute)
- Raissa MALU - Congolese physicist by training, author, publisher and director of "Investing In People", the organiser of the annual science and education week in the DRC
- Tshoper KABAMBI (Bimpa Production) - Congolese writer and director ("Heart of Africa" filmed in 2020)
- Shivan PARUSNATH - National Geographic, artist, conservationist, filmmaker, photographer, videographer, researcher
- Ecoflix - Online platform with as primary objective to educate, inspire and support meaningful action that will make a tangible and measurable difference to help saving animals and restoring the planet through visual storytelling: https://ecoflix.com/team (represented by CEO David Casselman)
- Anne LAUDISOIT - EcoHealth Alliance - Experienced researcher, National Geographic explorer and specialist in epidemiology, emerging infectious diseases and biodiversity
- Pierre HUYBRECHTS - Scientific Programme Officer at CEBioS (Capacities for Biodiversity and Sustainable Development), Communications Manager, Global Taxonomy Initiative Focal Point

Drawings and Essays

Several members of the Congolese Youth Biodiversity Network organised the activities relating to the drawing and essay competitions. The members of the jury were: **Merveille BONDONGWE WOMBE**, **Grace MULUVYA**, **Jonas BOSUNGA EKAKA**, and **Elie NGUO MUSHONGA**

6.5 Exhibition stands

With an exhibition area with stands, an opportunity was created to promote networking between various civil society organisations, funding bodies and the scientific world, all playing an important role in the Congo Basin region. Each exhibitor was also given the opportunity and the time to present their achievements and activities to the many conference participants, as well as to a number of students from the Faculty of Science campus (UNIKIS).

1. Congolese Youth Biodiversity Network (CYBN)
2. Swedish University of Agricultural Sciences (SLU)
3. Red Colobus Conservation Network (RCCN)
4. Wildlife Conservation Society (WCS) and the Okapi Wildlife Reserve
5. UNESCO
6. National Biomedical Research Institute
7. Green Hart of Africa - Congo-base Initiative
8. Lexica on National parks' habitats (ICCN-CEBioS)
9. CEBioS - Capacities for Biodiversity and Sustainable Development
10. Maiko National park
11. UNEP - GEF Congo Basin Impact programme
12. ONG A.E.EN

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7 PRESS CENTRE

CIFOR-ICRAF, active in the Yangambi-Kisangani area, set up a press centre especially for the event. Numerous local and even national journalists from the print, audiovisual and web media were able to interview conference participants to gather their impressions on the state and future of biodiversity in the Congo Basin. The organisers also aimed at training the journalists on biodiversity and environment issues to ensure improved coverage of these themes in the future.

A selection of these journalists' productions, published on websites, social networks and traditional media is available on the conference website.

The conference was also covered by the Belgian Mo Magazine and by an appearance on the Dutch Belgian News show on 03/11/2023 (VRT)

Organisers:
Paolo CERUTTI
Dorcas KANKU

Press represented at the event: kis24.infos, Radio Bondeko d'Isangi, environews.org, boyomainfo.com, Radio okapi, Infordc, Le Baromètre, La Reference plus, la Radiotélévision Nationale Congolaise, dépechesdelatshopo.net, Canal Orient, rfmtv.net, Hapamedia.net, Agence Congolaise de Presse, Mo magazine, VRT.

8 CONCLUSION

The 2nd International Conference on Biodiversity in the Congo Basin was an opportunity for many people to discuss an issue that is still all too often forgotten: biodiversity. Faced with the urgency of its decline in the Congo Basin, but also elsewhere on our planet, conservationists are trying to get things moving. Events such as this encourage discussion between a range of stakeholders, covering different levels of government and different sectors, often initiating debate and sparking future initiatives and collaboration.

The many speeches, the various thematic sessions and the sessions on "conservation in practice" highlighted various issues and challenges, but also many recommendations. This chapter attempts to outline the ways in which biodiversity in the Congo Basin can be better taken into account and therefore better protected.

It seems clear to all the speakers that the major causes of biodiversity loss in the Congo Basin are linked to high population growth rates in the countries concerned, unsustainable agricultural and fishing practices, extraction of "energy" wood, landscape fragmentation, migration and conflict in certain regions. But there is more. The discussions and debates also highlighted other factors that contribute just as much to the erosion of biodiversity, such as poor governance or governance that is ill-suited to the local context, a lack of data on the biodiversity to be protected, a lack of involvement and recognition of local populations, a lack of proper research infrastructure and infrastructure for the protection of biodiversity, a lack of specialists in many areas of scientific research, and poor coordination and communication between the different actors.

Fortunately, the discussions did not stop at analysing the problems. The participants also tried to identify areas for improvement to halt the current biodiversity decline as quickly as possible. This will be driven by the new Global Biodiversity Framework , adopted by the Parties at COP15 in Montreal in December 2022. The mixed results of the 2011-2020 strategy have encouraged member countries to focus more on capacity building, technical and scientific cooperation, and information management - points that coincide with the recommendations made at the conference.

More specifically, the following is a five-point (05) summary of the main elements raised during the discussions.

01

More data
More infrastructure
More funding

With regard to the lack of data, several recommendations emerged from the discussions on the state of the biodiversity in the DRC, namely

- Ask the academic authorities to require researchers to provide an annual report on their research activities and the results obtained,
- Set up an Environment and Sustainable Development Focal Point in each higher education institution, university and research centre,
- Set up a committee to collect, sort and process reliable and relevant data for the preparation of the national reports on biodiversity,
- Create and lead thematic groups and provide small grants for researchers to make data available,
- Update, connect and centralise all existing data and information, and identify what is missing,
- Set up a Public-Private Partnership (PPP) so that NGOs that generate biodiversity data and information make them available to the government, while guaranteeing their intellectual property,
- Put in place a legal framework enabling the State to own the data produced on Congolese soil as part of foreign and international projects, to prevent foreign organisations and researchers from keeping this data at the end of projects,
- Create a permanent collaborative dynamic between the Ministry of Higher Education and Universities, the Ministry of Scientific Research and the Ministry of the Environment and Sustainable Development,
- Strengthen technical and scientific cooperation,
- Define priorities for research, funding and community development.

Participants also mentioned their limited access to global databases and platforms for sharing knowledge and information on biodiversity (genetic resources, CHM, etc.) as an important area for improvement.

As for the lack of infrastructure, a number of non-exhaustive ideas emerged from the discussions:

- Invest in setting up taxonomy centres to update existing collections and databases,
- Set up a regional herpetology laboratory and create an African herpetology institute,
- Strengthen existing research infrastructures in terms of both buildings and available equipment,
- Increase and adapt the accommodation for primates in sanctuaries.

On the financial side, increasing the research budget remains a key element, as a better understanding of what we want to protect is an essential prerequisite for good management. The discussions also demonstrated a lack of funding at the levels of education, infrastructure, community management, and so on.

02

Strengthened capacities

The many discussions often pointed to a need for capacity-building both for conservation stakeholders (state services and as civil society), researchers and local communities, as well as for young people wishing to focus their curriculum on the study and/or the preservation of biodiversity. More specifically, the following recommendations were made:

- Strengthen training for young people by developing and harmonising university curricula (taxonomy, collection management, conservation, zoonoses, etc.),
- Strengthen the training of young researchers and technicians (new techniques, collection and management of databases, etc.),
- Communicate more about biodiversity capacity-building programmes and management tools designed to facilitate the work of managers,
- Enhance the capacities of local communities to improve their understanding of and involvement in the management and governance of their biodiversity (CFCL).

03

Policies and mechanisms better adapted to the context

The debates on the policy side highlighted a number of recommendations:

- Integrate research results to guide political decision-making. An attempt should be made to better integrate this knowledge into policies, directives and management plans (Protected Areas). As mentioned in another point (No. 04), this will require improved synergies between research and politics.
- Adapting the policy and legal frameworks to better integrate participatory ecosystem management, and providing greater security for Indigenous and Community Heritage Areas and Territories (ICCAs). Local knowledge and traditions also need to be better integrated into legal texts. This will require the production of policy guidance notes.
- Choosing well thought-out, integrated land-use planning strategies, requiring, among others, a more global approach, such as the "landscape" approach, the creation of buffer zones to limit the impact of human activities (for example, the management plan for the Lomami Park and its buffer zone), and even the development of migration strategies that meet the needs of livestock breeders, farmers and protected area managers.
- Determine the conservation status of local species to be protected (at Protected Area level) and develop conservation strategies for species which have become rare.
- Develop realistic indicators for monitoring (global and national frameworks) and for good governance of biodiversity.

04

More collaboration
More synergies between stakeholders

The discussions on improving collaboration and synergies led to recommendations formulated around four main points:

- Actively involve local and indigenous communities (and other local stakeholders) in the sustainable management of biodiversity (ecosystem monitoring, community forestry, more sustainable farming and fishing practices, income-generating activities),
- Significantly increase networks of experts at local, regional and international level,
- Increase synergies between research, field actors (e.g. NGOs), local communities and politicians (Science-Policy Interface),
- Increase multi-institutional and multi-disciplinary synergies.

05

More awareness
More communication

The main recommendations that emerged from the discussions on the "awareness-raising" aspect are the following:

- Publicise legal documents such as the texts of laws so that they are better taken into account by indigenous peoples and local communities (IPLC). But also to help them to become aware of their rights (by referring to the legal texts in force).
- Promote community conservation initiatives (e.g. Community Forests) to ensure greater ownership by local communities.
- Raise awareness among local communities and indigenous peoples about the importance of sustainable management of natural resources, with particular reference to ecosystem services and their benefits, but also to the risks of the emergence of zoonotic diseases, etc.
- Advocate for greater awareness on the part of (inter)national and provincial authorities to step up efforts to preserve the Congo Basin and its unique flora and fauna.

We hope that these recommendations will contribute to discussions on more effective and sustainable management of biodiversity in the Congo Basin at several levels. There is still a long way to go, but positive initiatives are already emerging, suggesting that anything is still possible. Improved communication, and hence improved collaboration, seems to be a sound and positive basis for enhancing synergies.

Let's keep hope alive and continue to work together to protect the beautiful nature of the Congo Basin.

Akisante Sana!

9 ACKNOWLEDGEMENTS

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" Alone we can do so little, together we can do so much "

Helen Keller

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