



POLICY BRIEF

How to make research useful for the management of protected areas in central Africa?

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under the supervision of the Regional Technical Assistance ECOFAC 6



Preparation of a drone flight for the mapping of village territories in the periphery of Garamba National Park, Democratic Republic of Congo (photo: Simon LHOEST).

Executive summary

Research is too often disconnected from protected area management issues in central Africa and the format of research results is inadequate for practical use. In order to conduct finalized research activities for protected area management, we present **20 recommendations** to: **(1)** define priority research topics for protected areas, **(2)** fund research, **(3)** produce research under good conditions, **(4)** disseminate research, and **(5)** use research rapidly.

Research does not sufficiently support protected area management

In the protected areas of central Africa, research, in its various forms, is intended to support management and conservation decisions. However, research results are often presented in a form unsuitable for practical use in

protected area management. Sharing of research results is also insufficient, as is the dialogue between researchers, field managers and policy makers. As a result, research in protected areas is rarely finalized, and rarely in line with managers' priorities.

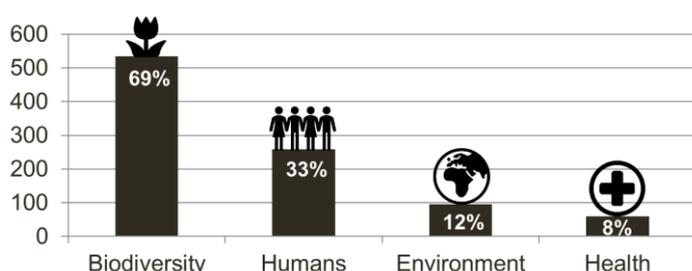
How is research produced in central African protected areas?

Scientific literature is published in English, in most cases with restricted access

More than 95% of scientific articles are published in English, with less than a third of authors having an affiliation in central Africa. Only 37% of articles are freely available on the internet. Guaranteeing open access to these publications and their synthesis in French is essential to allow the use of the results produced in French speaking countries, as well as giving priority to the funding of researchers from national universities.

The scientific literature mainly studies biodiversity

The majority of publications study biodiversity (69% of publications, including 72% on animals), while research applied to direct management issues, concerning human, environmental and health aspects, are under-represented (respectively 33%, 12% and 8% of studies). It is crucial to review the role of local and national actors in steering research towards priority topics for each protected area.



Number of scientific articles identified for each topic in central African protected areas between 2011 and 2020.

The "grey" literature complements the scientific literature

The grey literature (books, reports, dissertations, etc.) complements the international scientific literature with field information and data that can be directly used by managers. The topics studied in the grey literature show a greater emphasis on subjects applied to management, such as human and environmental aspects. Synthesizing the recommendations given in the scientific and grey literature is particularly useful for protected area management, as it helps managers strengthen their field actions and strategic vision.

Is research useful for protected area management?

Protected area managers frequently host researchers

In general, managers perceive research as useful in an applied approach to support management and conservation strategies. For this purpose, managers very frequently welcome outside researchers. The partnership agreements guarantee the restitution and valorization of research results to the managers. Managers provide significant logistical and technical support to the researchers they host, and researchers contribute to local capacity building. Nevertheless, in many protected areas, the training of field staff must be reinforced and researchers must contribute to this.

Only a quarter of managers have identified priority research questions

Only a quarter of managers have defined their priority research questions in a strategic document. There remains a significant gap between research topics and management priorities, which calls for the development of finalized research for which researchers should better coordinate with managers.

The production time of scientific publications is too slow to meet management needs

Scientific publications are not produced quickly enough for the practical needs of managers. Researchers have a responsibility to provide their recommendations to protected area managers in a time frame compatible with decision-making, even before their results are published in scientific journals.

Research results are often inaccessible to protected area managers

Protected area managers rarely have access to research results, whether they are scientific publications, reports, books or dissertations. It is essential to make access to research results free and unrestricted for conservation practitioners.

The format of scientific articles is not adapted to an operational use by field actors

The format of research results must be adapted to the users. Scientific publications often present complicated technical and statistical analyses that are difficult to apply in the field. Short, operational summaries of research recommendations for management are essential, as well as open access popularized materials.

Examples of the practical use of research for protected area management

There are some inspiring examples that demonstrate that it is possible to coordinate research efforts with protected area management priorities and to mobilize research for conservation. The **reintroduction of the scimitar-horned oryx (*Oryx dammah*) in the Ouadi Rimé-Ouadi Achim Game Reserve in Chad** is a remarkable example of using research for conservation purposes. This species has been classified by the IUCN as "extinct in the wild" since 2000. Five years after the reintroduction of 144 animals in 2016, the population now stands at 382 individuals, and this is thanks to the program that combines logistics, breeding, monitoring and scientific research to assess progress, detect threats and inform management. Monitoring is a major challenge: it aims to regularly estimate the size of the reintroduced population, assess the survival of different age classes and reproductive success, measure the use of space by the reintroduced animals, and determine the habitat preferences of the species in interaction with other wildlife, livestock and humans. Monitoring of released animals has allowed for rapid response to threats, including detecting a Rift Valley Fever outbreak in 2018, identifying animals threatened by bush fires, and combating poaching. Analysis of GPS collar data has informed management practices, including modifying release protocols and veterinary prophylaxis. Direct monitoring through field observations also provides more detailed observations of animal health, such as parasite load and body condition, and allows for occasional medical intervention. The ultimate goal of the project is the removal of the scimitar-horned oryx from the "extinct in the wild" category according to IUCN criteria.



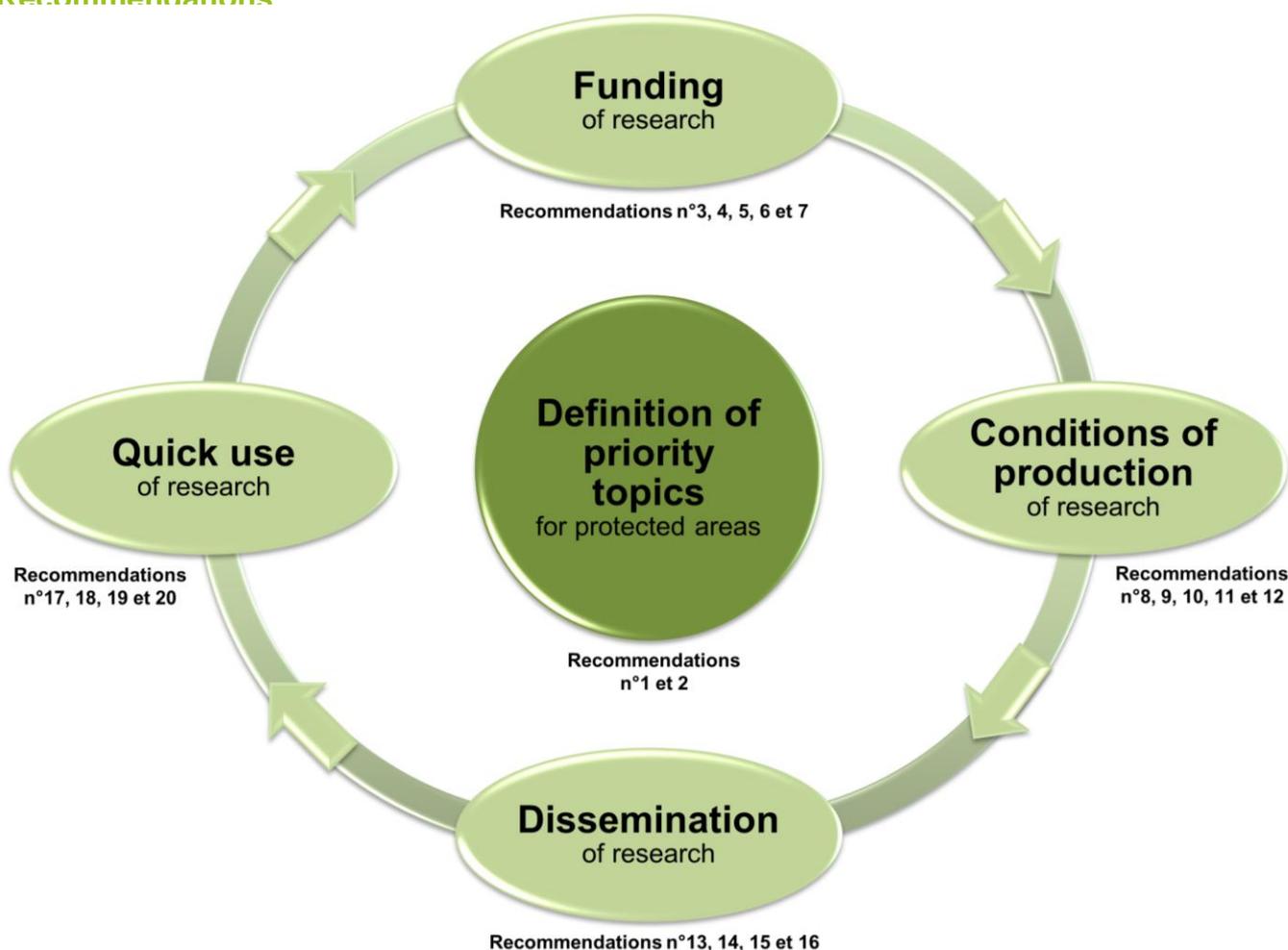
Release of scimitar-horned oryx in 2016 in the Ouadi Rimé-Ouadi Achim Game Reserve (photo: Marc DETHIER).

Another example of the application of research is its use for **disease prevention in protected areas**. Early detection of zoonotic diseases is now a global priority and this monitoring is being carried out in several protected areas across central Africa. At Odzala Kokoua National Park in the Republic of Congo, urine, feces, carcasses, and parasites are sampled to monitor the risks of infection and transmission between species, including great apes and bats. In Lopé National Park and other parks in Gabon, extensive efforts are being made to identify zoonotic diseases and associated pathogens. For example, serological samples are collected to identify bacteria and viruses that can potentially be transmitted to humans through bushmeat consumption.



Research missions on health issues at Odzala Kokoua National Park on the left (photo: African Parks Network) and at Lopé National Park on the right (photo: David LEHMANN / ANPN).

Recommendations



Structuring of the 20 recommendations addressed to protected area managers, central African States and ECCAS/COMIFAC, research and training institutions, donors, and civil society.

i. Definition of priority research topics for protected areas

- To the managers, with the support of OFAC:** At the level of each protected area, define a strategic plan for the finalized research to be carried out with priority axes and themes to be linked to management issues. This strategic plan should be designed through participatory workshops involving all local stakeholders. The design of the research strategy of a protected area could be supported and supervised by OFAC by organizing thematic workshops. All research conducted in a protected area should be subject to terms of reference involving the best response to the management interests of the protected area through prior consultation on the subjects of study between managers and researchers upstream of the fieldwork.
- To research institutions and States:** It is important that research institutions anticipate more than six months in advance the selection of research topics to apply to the relevant national ministries for research permits. National protocols for applying to

ministries for research permits need to be clearly defined, simplified, and widely communicated to protected area managers and research institutions to enable protected area managers to facilitate the process with researchers. Each State should define its thematic priorities in terms of research in protected areas through a research master plan integrating all operators through participatory workshops. Proving the usefulness of the research carried out for the management of the protected areas studied could constitute one of the criteria for obtaining research permits issued by the national ministries.

ii. Funding of research

- To donors and managers:** Include in the budgets of protected areas specific headings for finalized research, in order to define and monitor strategic and priority studies to be conducted. It is necessary for managers to allocate human resources to find funding to develop useful research for management. Financing the establishment and strengthening of a local scientific team allows for the sustainability and safeguarding of research data, avoiding wasting

resources on research that has already been conducted. The installation of a managed research station with a clear strategy and priorities is a success factor in facilitating research in protected areas.

4. **To donors:** Generalize projects and funding over implementation periods of at least 10 years to allow for finalized research strategies. The duration of projects over periods of 3 to 5 years leads to empty cycles during which part of the data is lost and some research is not completed. Specific funding for "Research in and around protected areas" is necessary, over a long period of time (10-15 years), for both the structures to host researchers and the funding of research. In particular, the European Union could set up a regional fund to finance finalized research activities, pooled on a regional scale, allowing the creation of multiple synergies between actors and operating on the basis of specific calls for proposals.
5. **To donors, managers and research institutions:** All research funding related to a protected area should be subject to a standard contract initiated by the donor, between the protected area and the researcher(s) including: (i) the obligation to choose a topic from a priority list established by the protected area, (ii) the obligation to publish in open access, (iii) the obligation to produce an abstract in French in French-speaking countries, (iv) the obligation to encode the publications produced according to a precise procedure for their dissemination (see recommendation n°13), and (v) the obligation to produce a "rapid executive interim report" prior to publication and specifically intended for managers (see recommendation n°14).
6. **To donors:** Develop funding for dissertations, doctoral theses and national post-doctorates directly related to priority protected area management issues, through calls for applications in national universities. The funding of doctorates is the most likely to bring out new researchers and decision-makers imbued with the realities of the field. Post-doctoral fellowships are the most likely to produce effective and rapid finalized research in a short period of time.
7. **To donors:** Fund the strengthening and development of OFAC for the capitalization of research results and their concrete use by all conservation actors in central Africa. In particular:
 - Expand the content of the literature database compiled during the present expertise, including grey literature, make this database permanent and make it an operational tool for capitalization

in the long term, to be communicated widely to actors in the conservation sector (see recommendations n°13 and 14).

- Contribute to the training and general capacity building of managers (see recommendations n°8 to 10).

iii. Conditions of production of research

8. **To donors and research institutions:** Based on a prior assessment of specific needs, generalize capacity building for managers through a training program (qualifying approach), especially for the development of rigorous protocols (e.g., for biomonitoring planning and follow-up over time), database management (collection, archiving and analysis), use of online tools and applications, implementation of research recommendations, and writing of reports and articles for appropriate decision-making.
9. **To research institutions and States:** Build mutually beneficial collaborations between international and national researchers through the signing of partnership agreements between institutions, facilitated by States. This would make it possible to deepen the training of young nationals by experienced researchers, in order to make them actors in national research within the framework of degree programs: for example, by associating one or two national researchers with each international researcher who leaves on a mission to carry out research in a protected area, as it is already the case in protected areas in the Central African Republic. The work of master's and doctoral students should be encouraged because they can produce research results that can be used directly and quickly for management. The RIFFEAC regional network, a collaboration platform initiated between 29 environmental training institutions in central Africa (spread over 9 countries), would be a relevant interlocutor to initiate these collaborations between research institutions within each State.
10. **To research institutions and States:** In order to make the efforts of OFAC for the capitalization of research more effective, bring together researchers and national conservation organizations around national platforms, to plan local and national research strategies, and to provide regular updates on ongoing and future projects (e.g. once a year for each individual State, bringing together representatives of research institutions and representatives of the administration). Again, the RIFFEAC regional network would be a relevant interlocutor to capitalize on research results,

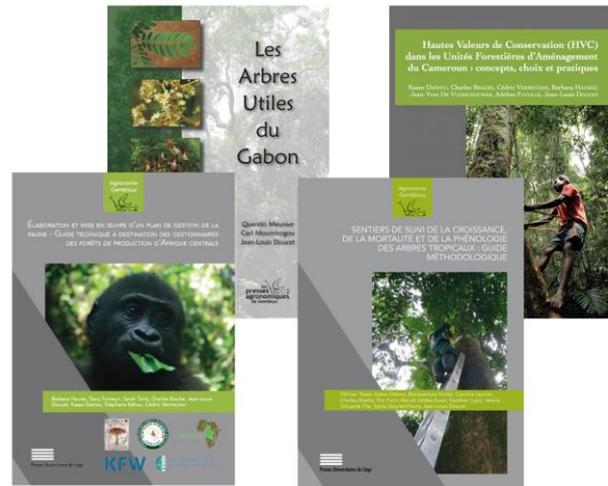
creating this connection between research institutions and states.

11. **To research institutions:** In general, better involve the diversity of stakeholders in the design of research protocols in order to produce more inclusive science, by integrating civil society (NGOs and other organizations), managers, decision-makers and local populations in the formulation of research questions through participatory processes, face-to-face and/or online. Citizen science should also be promoted to integrate local stakeholders in the understanding of societal issues and the research process
12. **To managers:** Take advantage of all opportunities to share and exchange with other (networks of) protected area managers to strengthen each other and create synergies in terms of feedback, capacity building, funding, or collaboration with research institutions.

iv. Research dissemination

13. **To States (via OFAC) and managers:** Define a protocol for dissemination of any newly published scientific article, common to all protected areas, including making it available in hard copy in the protected area library, in national universities and to relevant ministries, and in digital form on the centralized regional website (managed by OFAC). This protocol would be part of the contract between the protected area and the researcher and would be conditional on any funding or support from the protected area.
14. **To States:** At the regional level, through OFAC, share and synthesize research results by making them accessible to managers in the form of easy-to-use, practical tools that respond quickly to their needs. This involves setting up, updating and enriching an online library of all the research conducted in the protected areas of Central Africa, by gathering all the scientific articles and grey literature in an exhaustive manner. The integration of research results would be improved through formulation efforts on the part of researchers, by popularizing scientific studies and by addressing precise scientific recommendations to managers in the form of short syntheses (see recommendation n°5). The sharing and concrete integration of research results can be organized at the landscape scale, by connecting actors by groups, sharing the same management issues, to organize the gathering of literature. The development of a landscape scale vision is essential for conservation and local development. In concrete terms, this could be translated into a dedicated website "Conservation

and Science in central Africa" which would propose landscape by landscape, and by cross-cutting themes, short and popularized analyses of capitalization based on published scientific articles (for example in the format of "Policy Briefs").



Examples of books co-produced by the Belgian association NATURE+ and the University of Liège - Gembloux Agro-Bio Tech, at the interface between science and popularization, making it possible to capitalize on technical knowledge from the field (sustainable planning, wildlife management, identification of areas of high conservation value, botany, etc.) in an open access format, accessible at the following link:

<http://www.natureplus.be/publications/livres/>.

15. **To managers:** Physical archiving of data must be guaranteed and complemented by well-structured digital archiving that is easily accessible to the internal management team. There is a need to define and strengthen appropriate protocols for the digital and physical archiving of data and research results at the local protected area level. In addition to the raw data, it is also essential that the data be complemented with a precise description of the corresponding sampling and collection protocols.
16. **To donors and civil society:** Design a capacity building program for civil society organizations and national journalists on the subject of research popularization (qualifying approach). National NGOs have an important role to play in the dissemination and popularization of science in a language that is accessible and usable by managers and decision-makers. Improving the training of national journalists will also increase the presence of research results in all types of local, national and regional media. This capacity-building process should allow for the dissemination of simple messages from research to decision-makers, including elected officials (deputies, senators, mayors, etc.) and their associations.

v. Quick use of research

17. **To managers and research institutions:** To overcome the different time steps between scientific

research production and management actions, it is essential to define a clear framework for the conditions of use and sharing of intermediate research data and results on a case-by-case basis between research institutions and managers. Researchers should send their raw data and operational recommendations to managers before any scientific papers are published, for rapid practical application. Standard confidentiality agreements can be agreed upon between researchers and managers to keep data confidential until a scientific paper is published, but sharing data and early results with field practitioners should not be a barrier.

18. To States, managers and research institutions:

At the regional and landscape scales, organize forums and brainstorming sessions gathering national and international researchers, managers and policy-makers with a scientific monitoring committee that would meet at a given frequency (e.g., every 6 months) to synthesize published results (see recommendations #13 and 14, database to be compiled by OFAC) and scientific recommendations formulated in a short format of one to two pages, to be shared with government ministries and all conservation stakeholders (e.g., via CBFP or the Mongabay scientific website).

19. To research institutions and donors: Researchers active in central African protected areas must be made responsible for capitalizing on their results, encouraging them to integrate political forums and debates (see recommendation n°3). This can be done through the RIFFEAC regional network and by direct incentive from the donors.

20. To donors: Within the framework of conservation programs financed by the European Union and other donors, the budget dedicated to capitalization should be a priority in order to perpetuate the lessons learned from conservation actions.

Conclusion

The 20 recommendations formulated here aim to optimize the research strategies of protected area managers according to the management effort, to develop synergies between protected area managers, and to promote adequate valorization of research results by including all stakeholders. It is crucial to consider these 20 recommendations in order to make research useful, in a finalized form, in coherence with the management issues of central African protected areas.

Additional information

This short term expertise carried out within the framework of the capitalization project of the ECOFAC 6 Program was carried out jointly by Dr. Simon LHOEST and Prof. Cédric VERMEULEN from February to June 2021. They were supported by Morgane GAUDIN, intern at the non-profit organization NATURE+, in Belgium.

Two literature databases were compiled as part of this study, allowing any user to perform searches by author, country, protected area and topic of study:

- The database of 779 scientific articles published between 2011 and 2020 on all central African protected areas, available at the following link:
<https://www.gembloux.ulg.ac.be/gestion-des-ressources-forestieres/outilslogiciels/apac/>.
- The database of 445 scientific and grey literature documents about Lopé National Park (Gabon), Odzaka Kokoua National Park (Republic of Congo) and Ouadi Rimé-Ouadi Achim Game Reserve (Chad), available at the following link:
<https://www.gembloux.ulg.ac.be/gestion-des-ressources-forestieres/outilslogiciels/apac3p/>.

The usefulness of research in protected areas was explored by interviewing 73 field managers via three types of interviews: an online questionnaire, a group discussion workshop and individual interviews.

The complete expertise report, produced under the supervision of the ECOFAC 6 Regional Technical Assistance, including more details about the methods used and all the recommendations given, is available at the following link:

<https://orbi.uliege.be/handle/2268/261099>.



Common hippopotamus at Garamba National Park, Democratic Republic of Congo (photo: Simon LHOEST).

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