

Final Evaluation Report

Your Details	
Full Name	Milena Marie Beekmann
Project Title	Understanding climate and biodiversity interlinkages in the Lac Télé Community Landscape, Republic of Congo
Application ID	38057-1
Date of this Report	05/02/2024

1. Indicate the level of achievement of the project's original objectives and include any relevant comments on factors affecting this.

Objective	Not achieved	Partially achieved	Fully achieved	Comments
Document local climatic changes				I realised a total of 195 semi-structured interviews, eight focus groups discussions, and many participative observations activities in four Lac Télé Community Reserve villages. Questionnaire parameters focussed on local community observations of climatic and ecological changes, impacts on their livelihoods, and planned or already implemented adaptation measures. As described below, climate changes are already apparent in the reserve.
Identify local community adaptive strategies				Through the interviews, focus group discussions and participative observation activities, I also assessed ongoing climate change adaptive strategies adopted by local communities.
Evaluate the impacts of global changes, human adaptive strategies and/or coping mechanisms on ecosystems, via a set of ecological keystone species and cultural keystone species				This part of the project is still ongoing. After completion of field data entry and analysis, I will be able to assess the impacts of reported changes in the climate and in local livelihoods (as a response to changes in the environment) on Lac Télé Community Reserve key species.

2. Describe the three most important outcomes of your project.

a). Despite its importance from both a biodiversity conservation and climate change perspective, the Lac Télé Community Reserve remains largely understudied. My study filled an important knowledge gap, investigating both the direct impacts of climate change on biophysical systems, and its indirect impacts, via local community responses to their changing environment. Climate change is already apparent in the area, and has been observed particularly via increasing flooding events, increased temperature and disrupted rainfall.

b). Despite a common belief that tropical forests have been relatively spared by climate change, my results suggest that a wide range of climate change impacts

on both floral and faunal biodiversity is apparent in the area. Observed impacts range from increased tree mortality, disrupted fish reproduction, disrupted migratory patterns in mammal species (including the western lowland gorilla) and reduced fruit production. In the region, the lack of accurate meteorological data prevents a comprehensive analysis of climate change impacts on its biophysical systems. The use of local ecological knowledge as a rapid method to monitor ongoing environmental changes has proven very useful.

c). The wide range of environmental changes are pushing local communities to adapt livelihood practices, e.g. by increasing the size of agricultural fields or changing fishing grounds, which can increase existing risks for species conservation. Taking place within complex socio-ecological systems, adaptation actions can however rarely be solely attributed solely to climate change. For example, the use of increasingly aggressive fishing techniques to maximise catches is popular within Lac Télé local communities, but it can only take place if enough income has been earned, as fishing material is expensive. It is thus also important to consider historic and socio-economic factors affecting adaptation decisions, as well as local variabilities linked with livelihoods and historic agency factors within the reserve.

3. Explain any unforeseen difficulties that arose during the project and how these were tackled.

A few difficulties arose during the preparatory phase, as well as during the fieldwork mission.

- Following a change of personnel within the WCS Lac Télé team, fieldwork activities, initially planned from March to September 2023, were put on hold. After a few months of uncertainty, an agreement was found with the WCS direction, and activities took place from June to December 2023.
- Upon arrival on site, reserve-wide flooding occurred. It notably affected the first village in which I had planned to work. Logistics had to be arranged in order to cater to needs arising from living in a flooded area.
- WCS presence in certain areas of the reserve was a ground for tensions between villagers and eco-guards. As a visiting researcher, I carefully followed any developing tensions over the course of the 6-month mission. This situation also informed the selection of villages to partner with.
- In one community (contrary to experience in other villages), interviews in Lingala, the national language, did not yield satisfactory results. It took a few weeks to find appropriate translation.

4. Describe the involvement of local communities and how they have benefited from the project.

Engagement with Lac Télé Community Reserve local communities was at the heart of all my research activities. All activities were informed by Free, Prior and Informed Consent (FPIC) procedures to mitigate potential risks to local communities. Data collection also followed the Code of Ethics of the International Society of

Ethnobiology (ISE) and the recommendations of the Ethics Committee of the Sapienza University.

At the beginning of my fieldwork, activities started with a village tour to gain approval from local and customary authorities. Upon arrival in all villages, chosen methodologies were discussed and agreed upon with village leaders. At the beginning of each activity, a special time was dedicated to ensuring that all participants fully understood their rights under FPIC requirements, with the hope to help strengthen local community negotiating capacities with research or conservation stakeholders. This method was notably praised by one local chief. In general, I benefitted from positive relationships with local and customary chiefs, local community members, the local WCS team and regional administrative authorities.

I also recruited a few villagers as translators and guides in the forest, and was accompanied by a Congolese master's student, who, through this project, will continue her career in conservation.

Throughout the project, knowledge generation was enriched by Lac Télé local communities' rich local ecological knowledge, and their ability to detect changes in weather patterns and climate, including biophysical systems changes.

5. Are there any plans to continue this work?

While the field data collection has come to a term, activities are still under progress. After the return from the field in early January 2024, collected data entry, cleaning and analysis started in late January 2024. Data analysis will include the aggregation of survey data to develop of list a commonly used adaptation strategies, using statistical tests to examine the variability of adaptive efforts across gender and age groups. This will be combined with spatial information from the landscape to draw a map displaying local climatic and biophysical systems impacts. Additionally, I plan to assess the combined impacts of climates changes and human adaptive responses on key Lac Télé Community Reserve species, by conducting a climate change vulnerability assessment. This will feed into recommendations to develop a climate change-informed framework for conservation activities within the reserve.

6. How do you plan to share the results of your work with others?

Several dissemination activities are planned:

- In four villages, village chiefs requested a written activity report, including results that are relevant from a climate change adaptation perspective. Those reports are currently under draft. They will be printed and delivered through the local WCS team. A similar report will be also shared with the Congolese administration through the Sous-préfecture.
- A report will also be shared with the WCS direction in Brazzaville, which will include recommendations towards the development of a climate-smart conservation strategy, including how results can be used to integrate climate

change impacts on species into conservation activities and to strengthen local communities' climate change preparedness.

- I submitted an abstract to present fieldwork results at the European Congress of Conservation Biology (17-21/06/2024).
- A publication focusing on observed climate changes and impacts on biophysical systems in the Lac Télé Community Reserve is currently under preparation for submission to the journal "Ecology and Society".

7. Looking ahead, what do you feel are the important next steps?

In the next months, priority activities will include the finalisation of the data entry and data analysis phases, as well as the sharing of activity report with Lac Télé Community Reserve communities. The sharing of the report is a time sensitive endeavour, as information will help improve community understanding of climate change impacts and how to react to changes (floods and rainfall perturbations were still ongoing when the report was drafted). More long-term perspectives include the development of climate-smart conservation framework for conservation action under climate change.

8. Did you use The Rufford Foundation logo in any materials produced in relation to this project? Did the Foundation receive any publicity during the course of your work?

I have not yet shared any research materials, but this is planned in the next months. Future presentations will feature the Rufford logo.

9. Provide a full list of all the members of your team and their role in the project.

Gérard Bondeko's help, as the WCS Community Conservation Coordinator with 20 years of experience in the Lac Télé Community Reserve, was extremely valuable in terms of planning collaboration with local communities.

Célie Mougouya, a master student from the Marien Ngouabi University in Brazzaville School of Agronomy and Forestry, was hired as a research assistant, and performed well with all data collection tasks.

The WCS Congo staff provided useful logistical support in preparation for fieldwork activities.

10. Any other comments?

I am particularly grateful for the flexibility exhibited by The Rufford Foundation executive team when I exposed difficulties linked with the timing of my field activities. This project would not have been possible without the support of the Rufford Foundation.



Organising many community discussions. From left to right: local communities in the villages of Mohounda, Itanga and Mobangui.



Many journeys by pirogue. The Likouala-aux-herbes river constitutes the main axis of communication between villages and plays an important cultural role.



From the first interview....to the last, six months later! Evaluating floods impacts on tree saplings.



Many community meetings.



Assessing the impact of floods on tree mortality.



Young Western lowland gorilla silverback.