

PROJECT TECHNICAL REPORT

Mainstreaming Outreach and Understanding Habitat Requirements to Conserve the Goliath Frog
in Cameroon



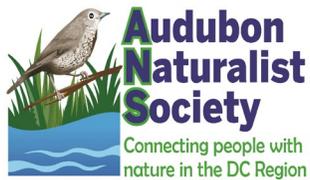
The Goliath frog (Conraua goliath)

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1. Introduction

1.1 Background and context

Cameroon is known as a hotspot of biological diversity with several species found around. There are more than 200 amphibian species believed to dwell around (Fretey et al., 2011). Several sites reflect this remarkable diversity with striking aggregation of species (Portik et al., 2016; Taboue et al., 2017). However, this unique diversity is constantly threatened by various anthropogenic activities. The increasing population around is leading to growth in land demand for agriculture and settlement potentially causing an escalating situation. More population implies new mouths to feed and ineluctably increasing pressure on natural resources. As such, frog collection for food has been identified as one of the main threats to several frogs in Cameroon (Gonwouo & Rödel, 2008). This is the case of the Goliath frog endemic to Cameroon and Equatorial Guinea. Goliath frog depends on fast-flowing rivers by forests. It is among the few frog around exhibiting parental care building and guarding their nests (Schäfer et al., 2019). However, this frog is experiencing several threats. There are beliefs of low genetic diversity in its population (Nguiffo et al., 2019) and their remarkable size is making them prone to increasingly hunting for meat and pet trade. So far, this species continues to face consumption by local communities at an alarming rate and a potential Conservation Action plan for *Conraua goliath* identifies consumption of frogs as of prime importance for immediate action.

Associated with local consumption there is land demand for settlement and agricultural activities forced by an unprecedented flow of population from the neighbouring Southwest region prone to social unrest. This is believed to also act as an important indirect threat to the Goliath frog. Agricultural activities associated with the habitat of this frog are believed to slowly be degrading its remaining terrestrial and aquatic habitat. Although this frog is fully protected by Cameroon law (Class A species), this is not true in the field with several individuals still hunted for meat across its range. This practice is rampant across the Goliath frog range finding its basis from the local knowledge associating Goliath frog meat to potential rejuvenating properties (Taboue et al, in preparation). Recent fieldwork across the range of the Goliath frog showed that this frog is still present in some water bodies across its range (Taboue, Personal observation). It remains necessary to implement a sound conservation action toward this giant with a clay foot.

This project aimed at letting the local community know that some of their activities have potentially deleterious effects on amphibians and the Goliath frog. Additionally, discuss with them

potential alternative economic livelihood activities that might ultimately assist them to reduce the pressure on natural resources and potentially save the Goliath frog. Finally, raise awareness in fringing communities on the need to protect amphibians.

1.2 Project objectives, activities and expected outcome

This new initiative endeavoured to the followings:

- i) Obtain updated data on the occupation and population status of the Goliath frog across its range within Cameroon to assess population trends in localities where historical data is available, including as well data on body weight and length of individuals;
- ii) Quantify habitat requirements, such as riparian vegetation cover and potential threats as deforestation adjacent to rivers and infrastructure construction;
- iii) Understand spatial and socio-economic drivers of frog hunting pressure across the Goliath range;
- iv) Explore solutions to alleviate hunting pressure through workshops with stakeholders across the range of the Goliath Frog;
- v) Provide education sessions for various stakeholders to raise awareness on the need to conserve Goliath frog and amphibians in general.

2. Description of the Study site

The Goliath frog is distributed across Littoral-South regions of Cameroon and part of the North of Equatorial Guinea. The present study will focus on its Cameroonian range. This area ranges roughly between longitude 9-13E and latitude 2-5N. It is made of 8 divisions namely Mvila, Ocean, Valle du Ntem, Wouri, Nkam, Mounjo, Sanaga Maritime, Dja et lobo. Several places are relatively industrialised or densely populated contrasted with surrounded rural areas.

Populations living there belong to various ethnic groups such as the Bassa, Bakoko, Bakweri, Douala and Fang-Beti. The vegetation is a mosaic of humid tropical forest and Atlantic mangrove forests with the landscape dominated by concessions of agricultural lands used for commercial crops like banana, palm and rubber. The topography is low especially in the coastal part and becomes lightly rugged while moving inland with a marked peak in the northern part of this setting due to the prominent Mount Cameroon. This region is part of the humid tropics receiving over 10,000 mm of rainfall annually with yearly temperatures ranging from 15 to 33-degree centigrade (Miaschi, 2017). There is important hydrography with several running water bodies draining into the Sanaga River and the Atlantic Ocean. This region is also home to unique and threatened biodiversity. This has resulted in the erection of several protected areas such as the Campo'o Man National Park, Lake Ossa and Douala-Edéa Wildlife Reserves and the proposed Ebo National Park. There is important hydrography with several running water bodies draining into the Sanaga River (Figure 1).

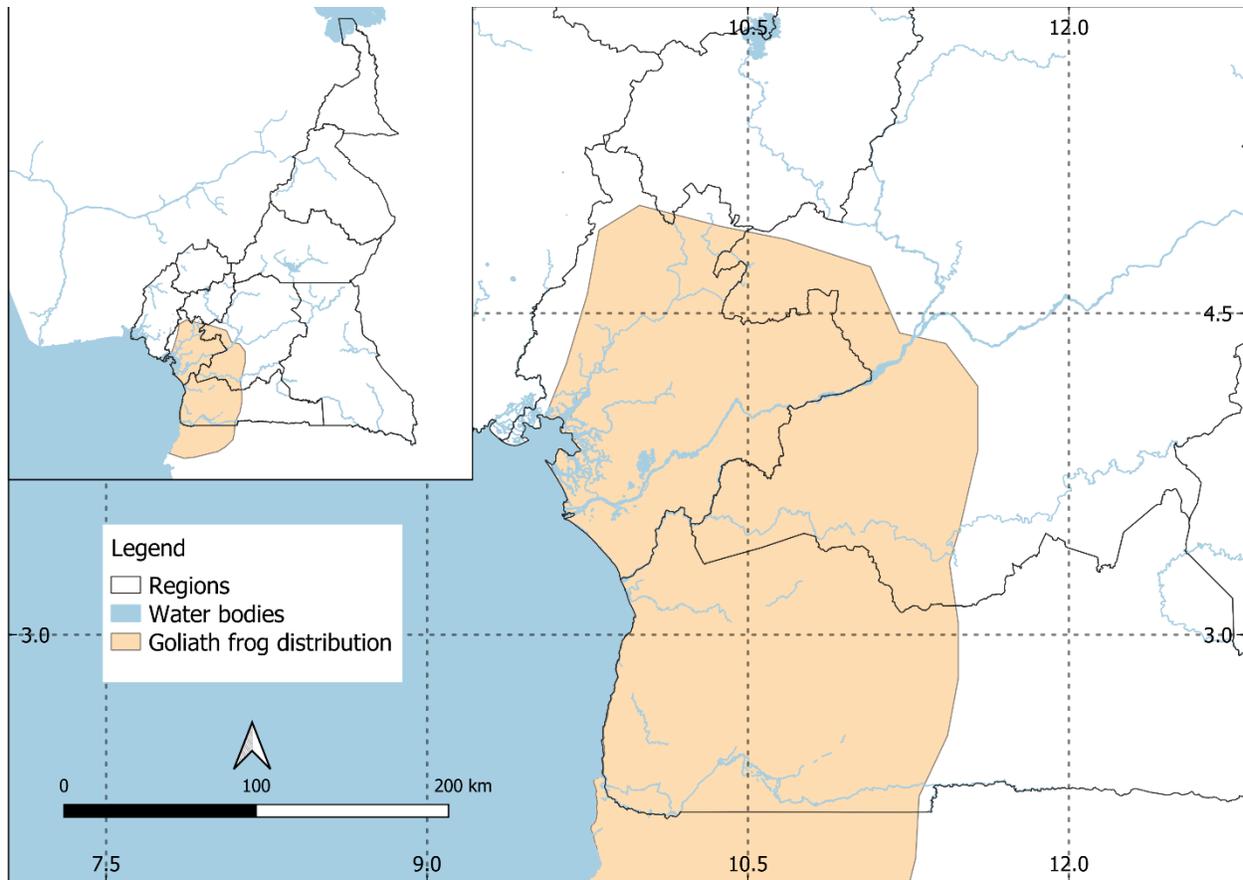


Figure 1: Study region

3. Key Project Activities

The following key project activities were conducted during the project execution period:

1. Revitalization and extension of school environment clubs with the training of youths/ students and selected stakeholders on conservation.
2. Focus group discussion to understand drivers of hunting pressure and amphibian conservation potential among local people.
3. Surveys to characterize better the phenology of the Goliath frog with emphasis on the distribution and habitat requirements. The following data were recorded: frog presence and the number of frogs seen.
4. Special events to raise awareness on threats facing amphibians and improve local knowledge to encourage positive attitudes towards their conservation.
5. Reporting and dissemination: Presentation of our activities at scientific and conservation meetings.

4. Field Methods

4.1 Surveys

The reconnaissance survey method (visual and acoustic encounter survey (VES & AES method) was used. We surveyed several sites across Manjo, Loum and Njombe-penja in Moungo. A total of twelve sites were surveyed.



Figure 2: Goliath frog's habitat surveyed

4.1.1 Visual Encounter Surveys

During visual encounter surveys, we searched a given area systematically. We had day recognition and night surveys. The survey involved following a track in or across the water bodies searching for any sign of Goliath frog. We search for individuals and/or nests. Day recognition was made for 07 am to 12 pm) whereas night sampling was done between 7 pm and 12 am along streams and the surrounding vegetation (Crump & Scott, 1994; Rödel & Ernst 2004).



Figure 3: Investigator during fieldwork

4.1.2 Audio Surveys

Using a microphone, we also undertook audio surveys. Building on our experience, we have been able to fairly recognize the calls of the Goliath frog. Using this, we were able to note the presence of Goliath frogs without direct observation.

4.2 Community meetings

Meetings were held in key settlements involving local populations. Some tools were used to perform community engagement. Such tools involved interviews with key informants (farmers and hunters) and focus group discussions. In each site, before any ecological survey, a meeting involving members of the traditional councils and community representatives was organized to inform and solicit their support.

4.3 School education sessions

Formal lectures on environmental education were held in five new primary schools. In each school, we met with the headmaster to get access to the school. After access was granted, we selected class 5 and 6 students as they already have a background in biology. A small meeting with the teachers of these classes was organized to brief them on the purpose of our visit and show them the amphibian manual. All of them were highly interested and receive a manual for further awareness-

raising. A pool of 50 students was drawn and put together to respect sanitary measures as specified by the government, this was followed by a question-answer session. Using a manual made for the purpose, students were told about their natural milieu, their interaction with it, the place of amphibians into this and how helpful they are. Students were also educated on the problems amphibians do face and why it is important to preserve them. Specific measures on how to protect amphibians were also discussed with the students. In the end, students were able to say what amphibians are, know the Goliath frog and why is it important to not eat it. What are the other threats to amphibians and some possibilities to reduce them. At the end of the training, students and teachers were happy and all of them pledged to keep talking about amphibians to other students and their surroundings even after our departure.

4.4 Training workshops

Training workshops involving youths/students and representatives of community-based forest management groups were held. This activity was part of our institutional and capacity building. Furthermore, this project facilitated the settling of community-based networks of conservation leaders across the Moungo.

5. Project achievement/Conservation output

The conservation output of this project involves locating several breeding populations of Goliath frogs. These were observed with individuals of different ages (Figure 4).



Figure 4: Juvenile Goliath frog

Additionally, this project involved work done alongside communities across the range of the Goliath frog. Indeed, during this project new contact and work were performed with our network of local communities.



Figure 5: Awareness raising



Figure 6: meeting with some primary school officials

We could engage a total of 264 farmers and 10 known hunters of Goliath frogs in 8 different communities. (Mangamba, Ebone, Manengole, Manjo, Loum, Njombe-Penja, Nko'o long, Epimimbang). Farmers were educated on the need to prefer the use of organic fertilizers to chemical ones to improve the yield of the crop. Farmers were told to recycle all their organic waste to produce compost for their crops. They were also told to prevent washing their equipment into running water, especially the one with pesticides and fertilizers. Farmers processing palm nuts directly into the runoff were also advised to use different ways to treat a little bit of their runoff to reduce the pollution of the water bodies by their activities.



Figure 7: Meeting in Nko'o long

A meeting with government wildlife Eco guards as well as the chief of the post of wildlife and working in the forest block around to build their capacity on identifying Goliath frog and resolving incidents of agricultural encroachment as well as identify the various techniques hunters use to collect the frog. The eco guards were given brochures and leaflets to guide them in giving technical support and providing future assistance to local farmers and hunters.



Figure 8: Traps used by hunters

An intense community conservation campaign was organized to educate stakeholders on the need for the sustainable conservation of amphibians and their habitats. The education activities included conservation talks, presentations, broadcasting of local cultural drama on amphibian-related topics in schools and communities. Community meetings (Figure 9) were also conducted in the local language to further educate the communities on amphibian Conservation issues.



Figure 9: Community meeting in Mangamba

6. Conservation achievement

This project through its community outreach component made local communities aware of the plight of amphibians and more particularly the Goliath frog. Awareness among people reached out through this project was raised on threats Goliath frog and other amphibians are facing mainly by a number of their activities. Doing so, people were told about the need to consider an alternative that might favour the amphibians and the environment they do share with us human beings. This project also favoured the change of the mindset of several people, indeed several locals believed that amphibians are venomous and infinite. Such beliefs were demystified through community outreach. People who have never formally interacted with amphibians were given opportunities to do so. Methods and ways to use to reduce threats on amphibians were discussed and a new spirit where amphibians might receive more attention and be preserved in the communities was advocated.

Communities into which this project was executed also benefited from short term financial benefits in terms of punctual employment as volunteers and local guides. Today those people are ready to further assist future conservation endeavours around.



Figure 10: Awareness raising in Manjo

Several communities of Goliath frogs were observed during this project providing new updates on the distribution and threats they face. Various habitats were surveyed covering a slide elevation gradient and various types of habitats ranging from farmland, semi degraded and gallery forest. Water bodies moving through these habitats were sampled. *Conraua goliath* recorded across the Moungo in new sites harbouring a good population concentration in some rivers around villages

like Epiminbang and Nko'olong provide more insight into the population of this giant with a clay fit. This frog is known to be fond of fast-flowing water bodies depending on these for feeding, reproduction and care of the young ones. Breeding sites were recorded during this project with constructed nests harbouring various cohorts of tadpoles at different growth levels (Figure 11). These were mainly observed at the pic of the dry season (February and March). Besides these, unfortunately, degradation of habitat was also observed. Mainly due to farming activities such as processing of palm nuts into oil, bush fire and laundering directly into water bodies (Figure 12, Figure 13).



Figure 11: Observed tadpoles of Goliath frog. Figure 12: Spill off of palm nut processing into the main water body



Figure 13: Bush fire by a water body harbouring Goliath frogs

Students were trained on the need to conserve amphibians and Goliath frogs. This project engaged about 1245 students in schools of the Division harbouring the Goliath frog. Students received prizes and incentives to increase their interest in the conservation of amphibians and the Goliath frog. These were interested and pledged to be ambassadors of Goliath frog in their communities.



Figure 14: Pupils during an education session

7. Conclusion

Ways to reduce the consumption of the Goliath frog are still explored. Such measures as protecting nests during the reproduction period, alternative livelihood for hunters, setting up a community forest management committee. There is still a need for several to be done for sound conservation of this giant. Other work might consider assessing the water parameters associated with this frog as well as specific triggers to reproduction and other biological processes. New insights on the socio-economic profile associated with the consumption of this frog might also reveal points that might be used to address this issue. The specific site might be preserved during a specific period to reduce the burden on the population. This might pass through participatory mapping of the breeding site and specific awareness-raising among hunters. Additionally, this report and the following scientific publication will provide more emphasis to raise awareness on the need to

conserve this frog. Strong involvement of stakeholders remains needed to curb threats toward Goliath frogs indeed, despite official protection, conservation strategies need to involve fully local communities in conserving this species.

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