

## Final Evaluation Report

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Your Details	
<b>Full Name</b>	Simo Talla Franklin
<b>Project Title</b>	Pangolin population assessment in forest vs savannah habitats: Improving the effectiveness of camera-traps used to monitor these species
<b>Application ID</b>	30475-2
<b>Date of this Report</b>	09/10/2022

**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
Environmental education about the ecological and cultural importance of pangolin				This objective was totally achieved, and we are grateful to some collaborative institutions in Cameroon (Cameroon Pangolin Working Group, WildAid, TRAFFIC, ABOYERD and Mentor Bushmeat) with whom we joined effort to celebrate pangolins in rural and urban areas and increased public attention in Cameroon on the plight of pangolins.
Improving the effectiveness of camera traps used in the monitoring of the white-bellied pangolin				This objective was totally achieved. We assessed the optimal placement strategy of camera trap (log vs non-log) that allow adequate detection of the white-bellied pangolin with moderate survey effort. We also compared the effect of seasonality (rainy vs dry season) on the detection of the white-bellied pangolin. We wrote a paper with the results, currently under review in Ecology and Evolution
Niche overlap between the giant pangolin and the aardvark				We recorded and confirmed the presence of giant pangolin and aardvark in Mpem et Djim national both species showing a level of temporal and spatial overlap. However, we believe that more data is required to elaborate on the level of spatial overlap between the giant pangolin and the aardvark. We did not record enough data to make inference on the effect of seasonality on the giant pangolin detection. There was however a decrease between the number of detections recorded in 2018 and those recorded in 2022, likely a result of pervasive harvest.

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

**a).** Deploying camera traps to target logs is an effective strategy for recording several forest species, including the white-bellied pangolin.

**b).** Camera traps targeting logs are more efficient at detecting white-bellied pangolins than camera traps viewing the ground.

**c).** Giant pangolin and armadillo can enter the same burrow although both species were not recorded entering the same burrow in the same night, suggesting a relatively good level of tolerance between the two species.

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

Right at the beginning of this project was the Covid-19 outbreak which caused a huge delay in all planned activities. Obtaining the necessary permits to conduct the study was really delayed due to many administrative officers, only working from home. Obtaining a permit to do the awareness raising campaign in a period where isolation and social distancing was recommended everywhere was also a big challenge. But after waiting for several months, we finally received all necessary permits although very late. Another difficulty was the bushfire in the savannah area of Mpem et Djim national park that damaged three of our cameras. One SD card was recovered but the two others were completely burned with the cameras, and we couldn't save any.

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

The local community was very active in the activities marking the celebration of World Pangolin Day 2021. In the rural area, people from several villages converged on Linté village, to experience this event they already know well. The main target was the youth. Using entertainment and environmental education, we tried to encourage them to change their habits. All those who took part in these activities were strongly motivated to individually contribute to saving pangolins by reducing their harvesting and consumption rates. Locals who usually participated in our ecological surveys since 2018 as field assistants, guides and porters have built over the time very strong skills for camera trapping and are also now involved in assisting the park management team in ecological monitoring activities. They also benefited from temporary payment during fieldworks. People in the urban area were sensitised to pangolin conservation. Many had never heard about "The World Pangolin Day" and were not aware that pangolin is a protected species.

**5. Are there any plans to continue this work?**

The future development for this work includes to apply the improved detection method to estimate the white-bellied pangolin abundance in protected areas in Cameroon. This can either be achieved through an occupancy-based approach or a density-based approach (without the need for individual identification). We are also planning to develop a community-based conservation programme to reduce the reliance on poaching and bushmeat consumption and end the killing of pangolins in our study area.

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

Two publications have been written from this work, both are currently under review in *Oryx* and *Ecology and Evolution*.

1. Pangolin exploitation around Mpem et Djim and Deng Dneg national parks in Cameroon, submitted to *Oryx*. This research is questionnaire-based study from my first Rufford Small Grant project
2. Adapting camera-trap placement based on animal movement patterns for rapid detection: a focus on the endangered, white-bellied pangolin (*Phataginus tricuspis*), submitted to *Ecology and Evolution*. This research is an ecological based study that combined data from my first and second RSG project
3. Insight into the ecology and habitat association of the elusive giant pangolin in the forest-savannah mosaic area of Cameroon - in preparation.

We gave a PowerPoint presentation of our results at the European Conference of Tropical Ecology in Montpellier (7-9 June 2022). We are also planning to apply to other conferences. We will share our results with the IUCN Pangolin Specialist Group where there is currently a pangolin detection and monitoring methods initiative.

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

The next important steps to this project include developing a community-based initiative to reduce the reliance of local people on bushmeat which is the root cause of pangolin/wild animal depletion. There is also a crucial need for evaluation of pangolin abundance. Population status information is often derived from hunting, market and trafficking data which suffer from underestimation and there is a need to apply lesson learned from detection methods to provide insitu information on population abundance.

## **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?**

We used the Rufford Foundation logo in a PowerPoint presentation we gave during the European Conference of Tropical Ecology in Montpellier (7-9 June 2022). The logo has also been used on the banner, factsheet, t-shirt and billboard that we made for the 2021 World Pangolin Day. Also, we properly acknowledged The Rufford Foundation financial support in the papers above mentioned that we recently submitted. This acknowledgement is also included in our publications in preparation.

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

**Difouo Fopa Ghislain (Project assistant):** He helped and assisted with the setup and deployment of camera traps in the forested and savannah area of the Mpem et Djim NP, this included programming cameras, helping identify suitable locations for

placement from wildlife spoor, ensuring consistent placement of cameras whilst adhering to deployment protocols. He helped with the preparation and organization of the activities during the awareness raising campaign in urban and rural areas. He co-authored our publications resulting from this project.

**Daniel J. Ingram (Project advisor):** He contributed to the development and implementation of our field protocol by giving us advice. He co-authored our publications resulting from this project.

**David Olson (NEOM Nature Reserve, Kingdom of Saudi Arabia) and Sévilor Kekeunou (Ass. Professor of Zoology, University of Yaoundé 1, Cameroon)** who are respectively my PhD Director and Supervisor assisted with guidance and edits of the different materials related to this project.

We also acknowledge **Galandi Bertin, Ndjibe Issa, Ngomane Lazard, Ngoura Jean Bosco, Djete Serge, and Ngomane Pierre** for their help during the fieldwork in Mpem et Djim National Park. They were involved as porters and guides during fieldwork.

#### **10. Any other comments?**

We'd like to thank The Rufford Foundation for funding this study, which has helped us to contribute to improving the white-bellied pangolin monitoring using camera traps in the field and learn more about the giant pangolin ecology in Mpem et Djim National Park. We also presented the results of this project during the European conference of Tropical Ecology in Montpellier and had the opportunity to meet many other researchers from around the world.

