Final Evaluation Report

Your Details	
Full Name	Eliette Noromalala
Project Title	Interaction Between Humans and Lemurs and Monitoring of the Lemur Population in the Marotandrano Special Reserve, Madagascar
Application ID	37473-1
Date of this Report	Jan 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
Determine the anthropological activities that impact lemur populations and their habitat			✓	We checked all the lemurs and other wildlife traps in four sites we conducted study but did not find any traps. However, we recorded other anthropogenic activities such as lash and burned agriculture
(2) Understand livelihood, food security, and lack of educational opportunities that might cause the local people to depend on forest resources,			✓	We have data.
(3) Assess the cultural beliefs and perceptions associated with human activities that harm or benefit the MRS lemur populations, and			✓	We have data.
(4) Evaluate local people's willingness to participate in conservation in order to design community-based conservation projects. To estimate the lemur population density			✓	People are willing to contribute to conservation.
(5) Assess the lemur population density in the MRS and compare it to previous studies			✓	We have data.

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

a). Livelihood of local people and practice:
A household, on average, consists of five individuals who live on $2.5 a day for food. The rainy season poses the highest food insecurity, as people lack access to varied food and predominantly consume cassava and rare rice. The majority of the local population are farmers (90%), with either a primary (41%) or secondary (30%)

education. Results indicate that 70% of people prefer consuming farmed over wild animals (30%). Among farmed birds like chicken, duck, and goose, 53% of the population favours these meats, and 74% of the interviewed households engage in farming them. Almost everyone interviewed utilises fragmented forests for firewood (91%) and charcoal (8%) for cooking and construction.

Slash-and-burn agriculture emerges as the most common practice, contributing to the destruction of the surrounding protected area. About 89% of individuals burn their land, cultivate crops, and subsequently move to a new area every 2 to 3 years. Only a small fraction (9%) uses rice fields for growing rice.

In conclusion, forest destruction emerges as a more pressing conservation issue than hunting.

b). Ethnoprimatology section:
Most participants (91.7%) reported seeing lemurs in their lifetime and were most familiar with *I. indri* (75.4%), *Varecia variegata* (70.3%), *Propithecus diadema* (50%), and *Eulemur fulvus* (40.7%), but less familiar with *Cheirogaleus major* (5.1%), *Daubentonia madagascariensis* (13.6%), *Allocebus tricotis* (15.6%), and *Hapalemur occidentalis* (19.5%). *E. albifrons* and *V. variegata* were reportedly the most hunted (35.3% and 36.1%, respectively), while *D. madagascariensis* was the least hunted. The results reveal that there are positive correlations between the familiar and the hunted species (r= 0.72). *I. indri* was perceived positively because of its resemblance to humans, while *D. madagascariensis* was believed to bring bad luck, disasters, and to kill humans. Large bodied and diurnal lemurs were well recognised and often hunted. In conclusion, these findings suggest that local beliefs result in prioritising the protection of certain lemur species over others.

c). Lemur population survey :
Lemur visibility
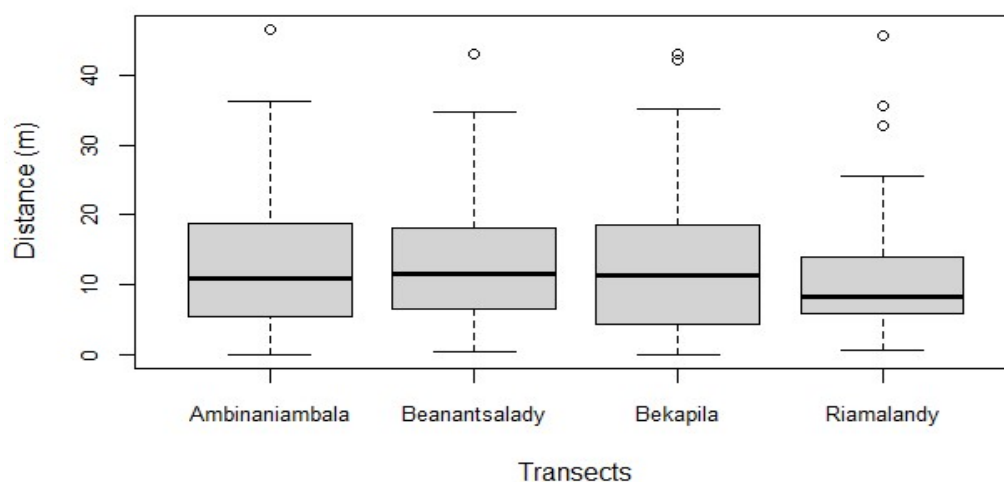
The ANONA showed that there is no significant difference in the mean of the distance of observation of the lemurs for each site (p=0.11>0.05). However, in

Riamalandy the distance of the observer from the lemurs is slightly shorter than the other site, suggesting the fact that Riamalandy is a touristic area, therefore lemurs are somewhat habituated (Fig.1).

Encounter rate
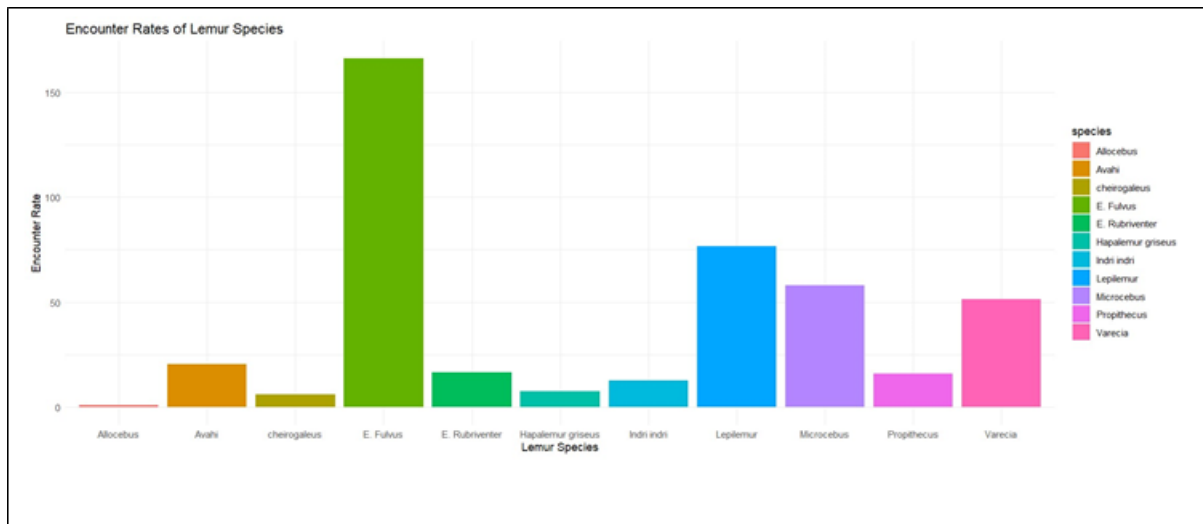
Eulemur fulvus and *Varecia variegata* exhibit high encounter rates, as illustrated in Figure 2. Interestingly, these two species are not only frequently encountered but are also commonly reported as familiar and hunted in the ethnoprimatology study. In contrast, *Indri indri* and *Propithecus* show lower encounter rates, despite being well known to the local community. It remains uncertain whether the reported hunting of these two species contributes to their reduced encounter rates. Additionally, *Lepilemur* and *Microcebus* demonstrate high encounter rates. The elevated encounter rate of *Microcebus* could be attributed to factors such as their high population density and the non-hibernation season. Microcebus species are well adapted to a diverse range of habitats, including disturbed ones.

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

Navigating around the reserve was a challenge because the road was in poor condition. The cost of gas exceeded the original budget, and the expenses for porters increased dramatically. Additionally, taking notes with printed sheets was not a good idea, as we were working in the rainforest. Therefore, we ended up using recorders for the interviews. Thanks to the additional funds from the International Primatological Society, we were able to cover all costs, and the project was successful.

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

Local people were hired to assist us as cooks, porters, guides, and negotiators during the expedition, allowing them to earn a modest salary. Each head of the village

gathered the local people and introduced us to facilitate smooth communication. The local residents expressed eagerness to participate in the interviews and demonstrated a willingness to engage in the continuation of the project. They were also able to effectively communicate their needs and conservation aspirations during our time with them.

Additionally, we mentored a Malagasy student pursuing her Master's degree at the University of Antananarivo. Some of the data we collected will contribute to her Master's thesis.

5. Are there any plans to continue this work?

This year, we plan to initiate environmental education programmes for both children and adults to change perceptions of lemurs, other wildlife and forest use. Our goal is to educate them about the biology, behaviour, and conservation of lemurs and other wildlife, using children's books designed for school kids. Additionally, we will integrate environmental education with various topics, not limited to lemurs, into the school programme through collaboration with school administrators and teachers. We will promote composting as an alternative to slash-and-burn agriculture, addressing the significant concern of slash-and-burn practices in the Marondrano Special Reserve. This environmental education initiative for children and adults will be an ongoing project within the reserve.

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

We have already presented a portion of our results, titled "Lemur-human interactions and beliefs among individuals living around Marotandrano Special Reserve, Northeast Madagascar," through an oral presentation at the International Primatological Society Conference 2023 in Malaysia and a poster presentation at the Texas Association for Biological Anthropology 2023. Currently, we are in the process of writing a paper that incorporates a lemur population survey and ethnoprimatology. Additionally, we plan to write a paper on "Decolonizing conservation: Marotandrano Special Reserve case," utilising the data we have collected.

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

The most important next steps, in addition to environmental education, include:

- Teaching alternative agricultural methods to the local people.
- Introducing agroforestry practices, such as cultivating vanilla and cloves, to increase the income of the local people and protect the forest from fires.
- Providing education to the local people on farming crops as a substitute for obtaining protein through hunting wildlife.

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 consistently use the logo of The Rufford Foundation and acknowledge the foundation every time we share the results of the project. The initial instances were at the IPS and TABA conferences. On the Natior'Ala association website that we founded; The Rufford Foundation is showcased among our funders. We take pride in being funded by The Rufford Foundation.

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

Currently, we are an association called "Natior'Ala." All of us, along with a Malagasy student, collected data in the Marotandrano Special Reserve. Here are our roles within the project:

Eliette Noromalala: Head of the project, responsible for writing publications and funding applications. Supervises all activities.

Faratiana: Manages the administration of our association and serves as the lead trainer for environmental education.

Francis: Leads the creation of children's books and environmental education.

Kathryn (a new member): Leads all conservation projects.

Herrimann: Serves as the fieldwork leader and data analyst.

10. Any other comments?

Thank you for supporting us.