Final Evaluation Report

Your Details	
Full Name	MIARISOA Jeanne Emma
Project Title	Habitat suitability, population size and distribution of the north-western Madagascar's lemurs: implications for their conservation
Application ID	38438-1
Date of this Report	07/09/2023

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
Assessing the population density of Brown lemur *(Eulemur fulvus)* and Coqurel's sifaka and Mouse lemur in Ambalakida forest.		■		Lemur density data are being collected and analysed, and a paper is being written for a chapter in my PhD thesis, for submission in an international journal, and for IPS 2025 presentation.
Assessing lemur distribution limit in the forest.		■		Lemur distribution limit data have been analysed and the results are introduced in the part of my PhD thesis.
Assessing anthropogenic pressure on lemurs and their habitat		■		Evaluation of the anthropogenic pressure and the data are combined and analysed with the population density.
Ecological monitoring of Brown lemur and Coqurel's sifaka daily activities.			■	Brown lemur and Coqurel's sifaka behaviour data are collected (alimentation, activity, moving, resting) and analysed. The two Master's students used the results to obtain their Master's degree.
Local people sensibilization for biodiversity conservation.			■	The local community and the primary students have been assisted and participated in the sensibilisation activity. The local community has requested our help to ensure the protection of the forest in the future.

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

The first most important outcomes with this project are the education and formation of the local guides for:

a). The first and most important aspect of this project is education and training. We trained local guides for field work and Master's students for data collection in the use of GPS, the monitoring method, the line transect method, taking notes of all observations, and data transcriptions in Excel. The students received training in data processing using R and in processing GPS points using Arc GIS.

b). The lemurs of the Ambalakida forest are still wild and afraid and immediately escape once they notice the human's presence, but after several days of

monitoring, they're starting to get used to it. This new attitude has made the work less complicated. In the forest, we discovered that food resources are typical during the wet season from December to March and insufficient during the dry season from April to November. We were able to assess the food resources of all species in the forest, which enabled us to evaluate long-term conservation strategies.

c). According to the Ambalakida lemur population inventory, we found two diurnal species, including the brown lemur (*Eulemur fulvus*) and Coquerel's sifaka (*Propithecus coquereli*), and one nocturnal species, the mouse lemur (*Microcebus* sp.). Out of the lemurs, the forest inhabited many faunas like reptiles (snakes, geckos, tortoises, etc.), nocturnal and diurnal birds, fishes and amphibians, and flora like orchids, precious wood, medicinal plants, and fruit trees. The forest is assessed as degraded due to human activities such as forest burning, agricultural deforestation, and poaching.

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

The first difficulty we encountered during the project was the difficulty of accessing the forest, especially during the rainy season. It was impossible for the car to get there because of the mud and slippery ground. To get there, we rented a zebu-drawn cart to transport our materials. The whole team walked for about 3 hours.

Secondly, in January and February 2023, two cyclones caused flooding in the forest and the lake around the forest, making the forest inaccessible. We have been waiting for the water to reduce before continuing.

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

The local guides were trained in the use of field equipment such as GPS, how to set up tents, and how to carry out the fieldwork.

We reported to the local community on the number of species in the forest, their scientific and vernacular names, and their distribution. We also reported the situation in the forest, like human activity.

We made a public sensitisation campaign of the importance of lemur's presence in the forest and the whole team helped the villagers during the reforestation 2023. Primary school children received a short training course on the environment and lemurs.

The Ambalakida forest is known as a sacred forest for the local people because of their traditional culture. They produce honey in the forest using traditional techniques, which is one of their economic resources. We have trained members of the association to protect the forest and the processes involved in developing the forest to conservation status.

5. Are there any plans to continue this work?

This project is a good first step, as the presence of researchers in the forest has motivated the local community to protect the forest. So, after a lengthy discussion with members of the local association, we are planning to search for funding for a project to transfer management of the forest to local people. We plan to work with the Ministry of the Environment and Sustainable Development to demarcate the forest, carry out an inventory of the flora and fauna, and conduct a local economic survey. A forest management transfer book will be delivered to the local community with the contract. This is a priority project if we are to protect the forest and advance research into the forest's endangered animal and plant species.

In parallel with this project, a long-term support project for the villagers is needed to reduce deforestation, as the forest is their main resource due to poverty and lack of education.

I need to work on species identification, distribution, and density for nocturnal lemurs. This study is part of the next project because it's important to know all the lemur species that exist in this forest.

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

Ecological monitoring of *Eulemur fulvus* and *Propithecus coquereli* will be presented by the two Master's students to the jury members and the public at their Master's thesis presentation. Their works will be deposited in the university library.

The habitat suitability and population densities will be included in a chapter of my PhD thesis.

All the databases will be processed for a paper to be submitted to an international journal for publication. And we'll use the results of this project to present at the IPS 2025 international symposium in Madagascar.

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

The next important step will be collaboration with the local community and the Ministry of the Environment and Sustainable Development.

The installation of a camera trap in the forest is very important to understand the animal's behaviour, to detect other animals in the forest, and to detect threats.

It's also very important to carry out research on mouse lemurs (*Microcebus* sp.) because we're not yet sure which species it represents, as it's a fragmented forest.

Massive reforestation with native plants is needed in the future to restore the forest.

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?

The Rufford Foundation was acknowledged during the educational campaign. We'll probably put the logo on the cover of the two students' books and on their slideshow presentation and a Rufford Foundation acknowledgment.

I'll put the logo on the cover of my PhD thesis and on the slideshow presentation and Rufford Foundation acknowledgment.

The same goes for the presentation at IPS 2025 in Madagascar.

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

Sébastien Couette is a Professor-Researcher at the École Pratique des Hautes Etudes and an Assistant Director of the Biogéosciences laboratory. He is a supervisor of my PhD thesis.

Herimalala Raveloson is a Professor-Researcher at the Mahajanga University and Director of Mozea Akiba. He is also a supervisor of my PhD thesis and the master's students.

Evasoa Rina is a Professor-Researcher at Mahajanga University and the head of field operations.

Tyss Solofoson is a master's student, and she has worked on the monitoring of *Propithecus coquereli* and the sensibilization campaign.

Mananozatra Jean Claude is a master's student, and he has worked on the monitoring of *Eulemur fulvus* and sensibilization campaign.

Jean Marcellin is an assistant of the field; he has worked on habitat suitability and population density.

Rakotondravony Romule: is an Ecological primate responsible

Ndimby is a local guide.

Lucien is a local guide.

Lava is a local guide.

10. Any other comments?

This project has permitted us to evaluate the lemur habitat in the Ambalakida forest and also to inventory the existing population. Several studies should be carried out in this forest, as we were the first to begin research there. There is a lot of information missing about the fauna and flora of this forest, especially the lemurs.

We would like to thank the Rufford Foundation for funding this project, and we look forward to your support for future projects to obtain protected area status for this forest.

Figure 1: *Eulemur fulvus* in Ambalakida forest.

Figure 2: *Propithecus coquereli* in Ambalakida Forest.

Figure 3: Poaching in the Ambalakida forest.

Figure 4: Raising awareness of the local community for forest protection.

Figure 5: Environmental education for children school.

Figure 6: Environmental education for children school.