The Rufford Foundation

Final Report

Congratulations on the completion of your project that was supported by The Rufford Foundation.

We ask all grant recipients to complete a Final Report Form that helps us to gauge the success of our grant giving. The Final Report must be sent in **word format** and not PDF format or any other format. We understand that projects often do not follow the predicted course but knowledge of your experiences is valuable to us and others who may be undertaking similar work. Please be as honest as you can in answering the questions – remember that negative experiences are just as valuable as positive ones if they help others to learn from them.

Please complete the form in English and be as clear and concise as you can. Please note that the information may be edited for clarity. We will ask for further information if required. If you have any other materials produced by the project, particularly a few relevant photographs, please send these to us separately.

Please submit your final report to jane@rufford.org.

Thank you for your help.

Josh Cole, Grants Director

Grant Recipient Details	
Your name	Fefy Niaina Ravahatramananjarasoa
Project title	Conservation status of the grey headed brown lemur, *Eulemur cinereiceps* in Vohipaho littoral forest: a new potential *Eulemur cinereiceps's* range to conserve.
RSG reference	13868-1
Reporting period	November 2013 - November 2014
Amount of grant	£3,695
Your email address	rav_fefymail@yahoo.fr
Date of this report	November 2014

1. **Please indicate the level of achievement of the project's original objectives and include any relevant comments on factors affecting this.**
2.

Objective	Not achieved	Partially achieved	Fully achieved	Comments
Creating forest map including forest fragments, trails and bushfire			X	We started working on map making in late January 2014. Mapping was done by combining satellite imagery and field data for the consistency and accuracy. We recorded some strategic waypoints and trails data within the whole forest. Then we combined such field data with the satellite imagery by using ArcGIS 10.0 and got final projected map (With the standard and worldwide used projection WGS84). As the forest is divided in two main fragments (north called tsianofana and south called Vohipaho) separated by a huge river called Masianaka, we have made two different maps in two different times. We started with the north fragment in January 2014 and mapped the southern fragment in March 2014 once changing field camp and starting southern fragment's investigation. Combining the two maps was not possible unless attributing a very low map scale in which map cannot be detailed enough to indicate lemurs' distributions. The map was really helpful because even the local guides sometimes losesorientation sense as they are not used to work in the forest and out of trails. The forest is divided in many regions as there are a group of villages. As we have just taken two locale guides from one region, they are easily lost outside their region. Therefore, some guides from MBG helped us recording trails data.
Lemurs habituation for further behavioural and ecology studies	X			The census session mobilised more investigators than we expected. However, in November 2014, with another researcher, we will start habituating two troops for ecological and behavioural survey issues. Such investigation is already funded by another institution (Conservation International Primate Action Fund) and I will lead the team.
Lemur census			X	As the forest is divided in two fragments, we scheduled two census sessions which

				last 2 months each. Surprisingly, the two fragments shelter two different *Eulemur* species, *E. cinereiceps* in the north (Tsianofana) and *E. collaris* in the south (Vohipaho). Such phenomena should be explained by the vicariance where the river avoids species exchange. In consequence, as we ignore such distribution when planning this expedition, we decided to census both species. The census revealed a total population of 65 individuals of *E. cinereiceps* in Tsianofana with 2.7 individuals/km^2. The 65 individuals form 12 troops. Troops are composed averagely by 5±3SE individuals. A sex ratio of 0.7 tilts into males. Lemurs retract in the north part of the forest were anthropogenic activities seems to be lower. Local people exploit forest mainly for case making (local house). Exploitations are periodic every year and fall exactly in the same time as our investigation. Therefore, we noticed that such exploitations affect mainly lemurs feeding trees. The southern fragment, Vohipaho forest shelters 76 individuals of *E. collaris* with 9.5 individuals/km^2. Individuals are distributed into 10 groups. Troops are composed averagely by 8±4SE individuals. A sex ratio of 0.9 tilts into females.
Lemur distribution map			X	Both lemurs' distributions are well represented within the forest's maps, but cannot be uploaded in this tab. It will be attached separately.
Habitat characterization		X		We established six transects of 10 x 100 m instead of 10 expected in the proposal because of the weather, the lack of local guides who know plants and the difficulties when accessing transects within the forest. We have some difficulties to identify plant species. Currently most of these plants are still unknown but are underway to be identified. Some will be recollected again for identification during our next investigation in the site. Bulbs, flowers or fruits are needed to do such identification. However, botanical data with the local name of plants are successfully checked,

				unfortunately, we cannot process botanical analysis without species scientific names with the classifications. As already mentioned above, funded by another institution we will start ecological surveys (2 months habituations and 3 months monitoring from November 2014 to March 2015) including plant species identification mostly those eaten by lemurs. Such investigation will then update botany data and will facilitate habitat characterisation data analysis of this project.
Habitat Pressure (transect line)		X		In the six established transects, we sampled pressures by counting cut trees. However, as mentioned above some plant species are still unknown for the data analysis.

2. Please explain any unforeseen difficulties that arose during the project and how these were tackled (if relevant).

The delay of the fieldwork was due to the administrative papers preparation which took several times at this time of Madagascar's crisis. I submitted my research permit application in late October 2013, just after the Rufford grant agreement was signed, and got the approbation of the Ministry of the Forest and Water in the middle of December 2013. There was nothing I could do.

As we initially planned to start our investigation on July 2013, during the dry season, the change in the investigation period disturbed significantly our work. The heavy rain and the inundation did not allow us to monthly work continuously. Sometimes we have got more than one week off. Moreover, lemurs are extremely wild that locating and counting them involved more participants than I expected in the proposal. Therefore, with my advisor we involved one more student and reduce the investigation period into 4 months (instead of five as mentioned in the proposal) and the transect for botany study into six transects (instead of 10).

The three local guides were all from the forest surrounding. This was there first time working on primatology in the forest. They are not used to.

3. Briefly describe the three most important outcomes of your project.

a. Forest map with lemur's distribution
The map we created detailed forest fragmentations, location and trail, tavy, delimitation of different zones within the forests and lemurs' distribution. Currently, such map is used by the conservation NGOs to plan their daily work, including lemurs monitoring and selective logging assessment.

b. Lemurs population and distribution
Our work rejected current known range of *E. cinereiceps* and extend it south. The limit south of the range is said to be in the Mananara River (Petter and Petter-Rousseaux, 1979, Tattersal, 1982, Irwin

et al., 2005) but our investigation confirm that it is extended to the Masianaka river, about 60 km south of the known limit south. Unfortunately, we still need genetics confirmation.

c. Forest dynamic
We highlighted the real need of forest enrichment and reforestation by comparing the forest regeneration speed (natural regeneration and trees' resilience against selective logging) with the rhythm of forest exploitation (mainly selective logging).

4. Briefly describe the involvement of local communities and how they have benefitted from the project (if relevant).

This project was participatory research; nine local residents and two students from the University of Antananarivo took active part in the field surveys. Two different groups of guides have been hired in the two study locations (Tsianofana forest and Vohipaho forest). For each study location, guides were composed by three local guides from MBG who are familiar of the forest and three local populations from the forest surrounding. Both of them have been trained on the uses of the field materials (GPS, binoculars, basic laptop) and on primatology (how to distinguish sex and age and how to locate lemurs in the forest,). Their help was essential for the accomplishment of this work, mainly on botany studies.

In order to increase local biodiversity awareness and to strengthen the interest and empathy for nature, we organised five presentations and two expeditions for the two schools (all grades) surrounding Tsianofana forest. Our first step was a simple assessment of children's knowledge of the forest and its richness that their parents have transmitted to them. Surprisingly, they all said that "lemurs, warthogs, zebu… are good because such animals can be eaten by human, and frogs, snakes… are not because inconsumable". Because of that, during five Saturdays, all day long we explained the importance role of the forest for their daily life, the crucial ecological role of lemurs for the forest conservation… by using selected photos and videos from all our former and current work, in and out of their region. In addition, we concretised by taking children out from their village to the forest where they noticed the differences and the evolution of the landscape and environment. Unfortunately, we were not able to do such activity in the other field site because of the heavy rain and the flooding.

In a long-term perspective, we can confirm that our work has brought new interest of lemurs for both local population and the implicated NGO. During our last investigation in October 2014, we noticed that lemurs monitoring has been included on the daily work of the forest manager team. Our distribution map is currently considered as a baseline of their actions. We proposed to exclude lemur's feeding trees in the exploitation permits and the forest manager asked us to identify such plants.

5. Are there any plans to continue this work?

In a short time, plan, we intend (or already start) to implement two permanent activities: research/action and education.

As the first lemurs' study in this site, there is still a lot of work to do before reaching the conservation of this species. Currently we just awarded fund (for one session of 3 months surveys) to study seasonality feeding ecology of *E. cinereiceps* in order to identify and exclusion of feeding trees

in the exploitation permits as a first step of lemurs' habitat conservation. We also intend to implement tree nursery which concerns mainly lemur feeding trees (mainly those which are the most threatened by human exploitation) for forest enrichment, to ensure the sustainable food availability of this lemur. Such plan constitutes a mitigation measurement of the ongoing overexploitation of the forest that affects significantly *E. cinereicepses'* feeding tree.

However, our extra activities conclude that education is the most important activity to ensure Tsianofana and Vohipaho forest conservation. The teaching of Malagasy biodiversity is presented marginally in primary school educational system, with only one module for 4th grade, under the rubric "Why do tourists visit national parks? Madagascar flora and fauna are further and further distanced from Malagasy basic skills. Two major challenges have to be overcome for successful environmental education: the elevation of local biodiversity awareness in both formal and informal education and the strengthening of interest and empathy for nature. These long-term goals have to start in primary school, the highest level reached by most of Malagasy rural pupils. Without a strong education the parents' habits which are mainly destructive without any mitigation or conservation plans will be always transmitted from generation to generation. Therefore, we plan to extend the education we already initiated into the whole villages surrounding which depend entirely on the forest.

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

The results will be available at the Missouri Botanical Garden Madagascar library after completion and will lead to publications in indexed journals such as the International Journal of Primatology and Lemur News. As a part of Master degree, it will be presented at the University of Antananarivo and will be available at the University's library. Finally, we expect to present our results at the next IPS congress (2016).

7. Timescale: Over what period was The Rufford Foundation grant used? How does this compare to the anticipated or actual length of the project?

This grant has been used from January to April 2014 instead of July to November 2013 as scheduled on the proposal. Because of the heavy rain and difficulties to locate lemurs, we involved more investigators (two students assistant instead of one and nine local guides instead of two) that we expected. To cover the expenditure, we reduce the investigation to 4 months (instead of five) and get additional help from MBG and additional fund from other colleagues from my University.

8. Budget: Please provide a breakdown of budgeted versus actual expenditure and the reasons for any differences. All figures should be in £ sterling, indicating the local exchange rate used.

Item	Budgeted Amount	Actual Amount	Difference	Comments
Salaries of assistants	650	908	-258	Such differences were due to the number of students involved (two instead of one), which is anyway recompensed by the reduction of the number of investigation period (four instead of five). The reason is explained above.

				However, we have got external fund from colleague to cover the budget lack.
Salaries of local guides	516	426	90	Local guides' salaries are less expensive that we expected. Such salaries were counted monthly not daily as mentioned in the proposal. Moreover, just two guides were monthly paid with £43 a month. The others were sent by MBG to help us (paid by their institution). Therefore, we just allocated gratitude per diem of £29 each. However, in a counterpart we have paid for their daily food.
Cooker	0	114	-114	
Camping equipment	182	57	125	We did not buy any sleeping bags. Each assistant brought their own sleeping bags. The tent was less expensive that we expected, and I have awarded one more from IDEA WILD.
Field equipment	1822	1180	642	We expressly reduced field equipment to allow us to cover food which is not included in this fund as we did not receive any other fund.
Accommodations and food in Farafangana (one-week expenses for arrival and three days for departure, back to Tana)	231	227	4	
Food	0	710	-710	We initially asked food expenses from another foundation. Unfortunately, we haven't received any approval. As foods are essential to the accomplishment of the project, we were obliged to do some rearrangement of the budget and reduce field equipment (also food) as a minimum as we could.
Kitchens Utensil	130	85	45	We brought some kitchens utensil from home and buy just what we do not have.
Research fees	70	70	0	
Two round trip Tana-Farafangana (for PI and Assistant)	94	68	26	Even for three persons, the freight was less expensive that we expected.

Two round trip Car rent (Farafangana-Vohipaho)	0	227	-227	Like foods, this expense was initially supposed to be supported by another foundation and was also paid from the other reduced cost items.
Total	3 695	4 071	-377	In a total, we receive £397 external fund and have £21 left.

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

As a continuation of this project, we conclude that three major activities must be undertaken immediately to ensure the conservation of *E. cinereicepses's* habitat.

- Genetics analysis: to confirm to the scientific community that *E. cinereicepses*'s range is extended in more southern that we know until now. Such confirmation will facilitate fundraising for conservation as Vohipaho forest relates the same potential as any other ranges of *E. cinereiceps* (Manombo forest or Agnalazaha forest)
- Local population depends entirely on the forest for their daily life. Unfortunately, most of *E. cinereicepses*'s feeding tree seems to be the overexploited one (mainly *Uapacca louvelii*). Therefore, it is essential to determine all lemurs feeding tree by studying feeding ecology and initiate the forest enrichment by implementing permanent tree nursery which concern mainly lemurs feeding trees.

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

We used the RSGF logo for all our application to get research permits. We also used the RSGF logo in our preliminary presentations of our work to the local school. During the presentation, we explained the goal of our work and its importance for the conservation. The RSGF was presented as a foreigner backer who funded our work, in order to convince them to protect the forest as you, the RSGF, in a thousand miles far from us are interested to protect our biodiversity because of its uniqueness, why not us a native population.

The RSGF logo will be used in all our future presentations such as the MSc thesis of one of the investigators at the agronomy school, Department of Forestry, University of Antananarivo and the final report we will be sending soon to the Missouri Botanical Garden Madagascar (Manager institution of the forest). The Rufford foundation will be also acknowledged in all the resulting publications.

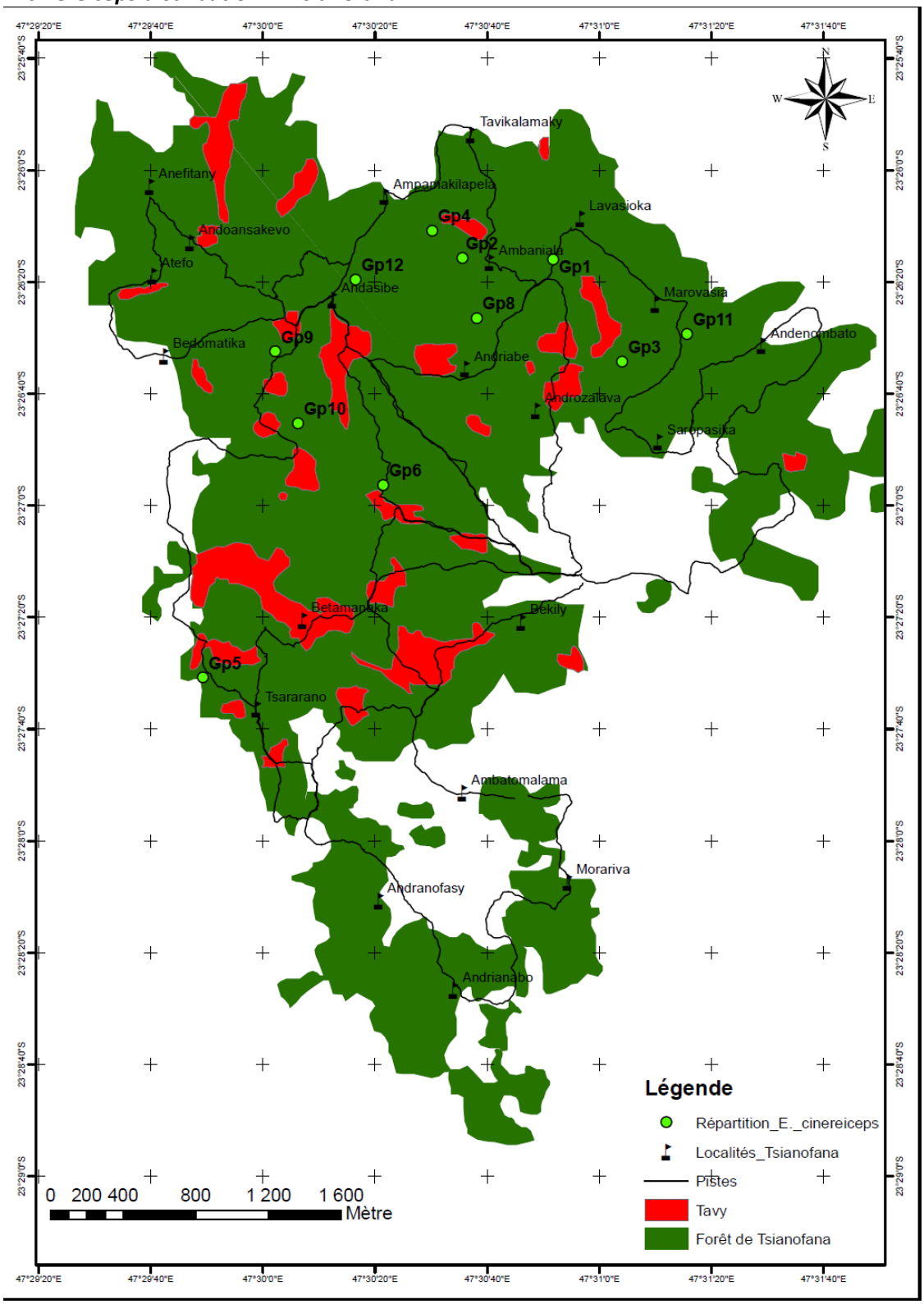
11. Any other comments?

We would like to stress here that there is still a lot to do about Madagascar biodiversity conservation. Native population initiative is we think the best way to reach such goal. Unfortunately, the career of conservation is a little bit neglected. Currently, most of research about primatology in Madagascar, more precisely lemurs, is by foreigners. In our university, each year, at least three master's student choose primatology, but few of them succeed to pursue PhD in such discipline because the difficulties to get fund to cover their research. For all of that, we would like to express our deepest grateful to the Rufford Foundation for trusting us in this preliminary investigation. The grant we awarded was crucial for the accomplishment of this project and the futures of the forest as

we recently noticed a higher consideration of the conservation of this forest from the implicated NGO.

Finally, we are still working in the forest. Currently, one of the students who assist me just award fund from Conservation International to cover 3 month MSc fieldwork about seasonality feeding ecology of *E. cinereiceps* in Vohipaho. The goal of conservation goes on, and Rufford Foundation just succeeds to rise up the empathy and interest of two more Malagasy students in lemur's conservation. CONGRATULATION TO RSG FOR GIVING US TWO MORE NATIVE PRIMATOLOGISTS!

***E. cinereiceps* distribution in Tsianofana**



***E. collaris* distribution in Vohipaho**