

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	Dan Hending
Project title	Behavioural Ecology of the Sambirano mouse lemur, <i>Microcebus sambiranensis</i> , and its implications for conservation action.
RSG reference	16758-1
Reporting period	<12 Months
Amount of grant	£4,995.00
Your email address	dan_411@hotmail.co.uk / dh14275@bristol.ac.uk
Date of this report	06/06/2015

1. Please 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
Assess home range sizes being used by individuals within this population with an emphasis on inter- and intra-sex differences and overlap.				Eight mouse lemur individuals, five male and three female, were radio-tracked for 3-6 nights each. GPS waypoints were successfully logged to reveal their home ranges and routes that the individuals travel within. GPS waypoints of sleeping sites (See below objective) were also logged to increase the gathered home range data. Enough data was collected to form a reliable conclusion of the home range sizes and differences between members of the population, which can be done once analysis has occurred over the coming months.
Investigate specific micro-habitats and tree species used for sleeping site construction and sleeping site preference.				All species of tree used for sleeping site construction were successfully identified. Suitable tree species for sleeping sites were observed to be used significantly more frequently than other, more unsuitable species. Micro-habitat density, tree characteristics and the group composition of individuals within the site were also successfully recorded for a high number of sleeping site micro-habitats.
Compile an inventory of vocal communications and responses to call playbacks which will be developed into an efficient, low-cost acoustic survey method for remote population density assessment.				Vocalisations were observed infrequently and only four or five vocal call types were recorded, therefore this objective is listed as partially completed. Call playbacks of the gray mouse lemur, <i>Microcebus murinus</i> , were carried out but were not acknowledged by the Sambirano mouse lemur. This suggests that the vocal repertoires across the mouse lemur genus vary significantly.
Provide new information to the AEECL and the IUCN RedList to facilitate conservation and raise awareness of <i>M. sambiranensis</i> .				Information has been revealed for this species' behavioural ecology that was previously not known to the IUCN Red List or the lemur conservation community. This information will be made available through the construction of an MSc thesis and publications in

				relevant primatology journals.
Determine habitat preference of the Sambirano mouse lemur within the Anabohazo with the use of an acoustic survey.				This was an objective added after the initial application for the Rufford Small Grant (See section 11 for details*). An acoustic survey was successfully carried out for four major habitat types within the Anabohazo forest and this data will reveal the habitat preference of <i>M. sambiranensis</i> once analysed.

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

In general there were only a few minor problems during the project. The hired team of veterinarian's arrival to the field site was delayed by 2 weeks due to a cyclone flooding the roads. Once they had arrived the veterinarians worked very quickly and captured, anaesthetised and collared all the required individuals for the study in a much quicker time period than had originally been planned, therefore the data collection occurred on schedule. The cost of porters was much higher than anticipated and many more porters were required than had been originally assumed. Some money was left over to cover these expenses from other sections of the budget which had been much cheaper than budgeted for, so this was not a problem. Halfway through the study, I had to return to the capital and leave Madagascar for 24 hours and then return to the field site after due to a complication with my visa that could not be resolved. This marginally increased the cost of flights during the project. However, some time had been allocated at the end of the fieldwork period for further data collection in case of a delay/interruption such as this so the total data collected was unaffected.

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

- Research on behavioural ecology – Nothing was known of the ecology of this species prior to this study. This project has revealed information on vocalisations, habitat preference, home ranging behaviour and sleeping site ecology. Information such as this will increase the knowledge base of the NGOs who operate within the National Park and will be used to inform the IUCN Red List.
- Conservation Resource – The findings of this project can be used to implement conservation methods for the Sambirano mouse lemur. The long-term reforestation program within the national park can be influenced by the findings on sleeping site trees that this project has revealed to further protect this species. Additionally, the vocal repertoire can be developed into a low-cost, remote population monitoring tool which will allow local NGOs to monitor the species population within the Anabohazo forest.
- Local community Involvement – The local guides and cook hired from a nearby village, Ambinda, developed a keen enthusiasm and interest in the research and its conservation objectives. Additionally, they developed their own knowledge of the forest and their practical skills through their involvement. It was evident that they took pride in the presence of the mouse lemurs within their local forest and the guides professed that this is precious to them. The local people who were a part of the research team were instructed in the use

of the field equipment and were informed of the mouse lemurs known biology, something that has increased local capacity, albeit on a small scale.

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

Three guides and one cook were employed throughout the duration of the project, all of them receiving a per diem wage, food and camping equipment during their stay. The guides were instructed in the operation of the field equipment and were informed of the projects objectives and background, improving their practical skills and knowledge of the species. Many people from other local villages were employed as porters to transport field equipment and food to the site. The wage they received will have helped them greatly: paid roles such as portering are rare in the Sahamalaza-Iles Radama National Park due to its remoteness.

5. Are there any plans to continue this work?

As this was a short-term research project, there are no current plans for the project to continue. The research on this species formed a part of my MSc course and I fully intend to complete a PhD in the future, potentially on this species.

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

The MSc thesis containing the results will be made accessible to the primate conservation research community. Sections of the thesis will be submitted for publication so that the findings are made available to the public via online scientific journals. A presentation and poster of the project will be created and this will be used at primate-based conferences to communicate the results directly to other researchers.

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

The grant was used to purchase the equipment during January of 2015 and was used during the project itself: February – June 2015. This was the originally planned schedule.

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
Flights	1000.00	1270.00	+270.00	An additional internal flight was required to access the field site due to flooded roads caused by a cyclone.
Songscope Computer Software	313.00	200.00	-113.00	Suitable software was already obtained but a laptop was needed to identify call characteristics with the software in the field. This portion of the budget was used

					for this.
4x Petzl Tikka R+	240.00	240.00	0.00		The lamps were less expensive than budgeted before. The remaining budget for this section was used to cover the cost of high-lumen flashlights that were required for nocturnal observation.
Biodegradable Tape	20.00	25.00	+5.00		
Dictaphone	16.00	0.00	-16.00		This was not required.
Tents	120.00	120.00	0.00		
Sleeping Bags	60.00	60.00	0.00		
Binoculars	55.00	0.00	-55.00		
Anker Solar Chargers	200.00	550.00	+350.00		It was found that a much more sophisticated solar power pack would be needed in addition to a high number of batteries to operate equipment. This greatly increased the cost for this section of the budget.
SIM card and credit	100.00	100.00	0.00		
Visa	134.00	110.00	-24.00		
Veterinarian Fees	600.00	500.00	-100.00		
Malagasy Student Stipend	415.00	500.00	+85.00		
Guide Wages	290.00	180.00	-110.00	The wage paid to each member was 5,000 Malagasy Ariary per day, less than the 7,000 Ar per day budgeted.	
Cook Wages	145.00	90.00	-55.00		
Team Food	1017.00	650.00	-367.00		This was significantly less than originally budgeted.
Water Purification and Electrolytes	70.00	70.00	0.00		
Total	4,995.00	4,665.00	-330.00		The grant money left over was used to cover internal bush taxi travel to access the site and porter costs to transport equipment to the site. This was considerably more than originally anticipated.

Note: Money spent within Madagascar during the project has been converted to British Pound Sterling from Malagasy Ariary via the approximate exchange rate: £1.00 = 4000Ar.

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

Microcebus sambiranensis is listed as Endangered by the IUCN Red List. Further research should be conducted on this species to reveal additional information of its behaviour and ecology that this project did not focus on. Another next step is for conservation methods that are specific for this species to be put into action using the results of this project. There are many other *Microcebus* listed as Endangered or Critically Endangered that have likewise not yet been studied. Similar research should be conducted on these species in the not too distant future to improve their conservation potential, in the way that this project has done so for the Sambirano mouse lemur.

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?

The Rufford Foundation logo is not currently on any materials related to the project. However, the RSGF will be acknowledged in all future materials including the MSc thesis, any publications relating to the project and the presentation and poster that will be created. Publications, the PowerPoint presentation and the poster will display all funder's logos, including that of the RSGF. Fellow colleagues and peers have enquired to me about the RSGF and I have informed them of the requirements and criteria of the grant. The Rufford Foundation's logo will be included in any additional materials that will be created relating to the project in the future.

11. Any other comments?

*Additional Objective added: Determine habitat preference of the Sambirano mouse lemur within the Anabohazo with the use of an acoustic survey – Four major habitat types of the Anabohazo forest were acoustically surveyed with the use of a terrestrial recorder equipped with sensitive microphones to test for the presence of *M. sambiranensis* by their vocalisations. The four habitat types were primary forest, secondary forest, riparian forest and the forest edge. Five sites of each habitat type were surveyed and each site was surveyed for a total of three nights, a total of 60 surveying nights. The purpose of this was to determine the habitat preference of the species in order to gain a greater understanding of its likely distribution within the forest.