

The Rufford Small Grants Foundation

Final Report

Congratulations on the completion of your project that was supported by The Rufford Small Grants 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	Ryszard Oleksy
Project title	The contribution of fruit bats to forest regeneration in Madagascar- do bat-processed seeds do better?
RSG reference	9817-1
Reporting period	July-November 2011
Amount of grant	£6000
Your email address	bzrzo@bristol.ac.uk
Date of this report	January 2012

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
Germination of bat-processed seeds in progressively more natural conditions		Partially achieved		The study tested one species of seed found in the faeces of bats. The results indicate that bat-processed seeds germinate better than natural seeds. However, it is essential to test more species and investigate the strength and health of produced seedlings
Seed dispersal			Fully achieved	Seed dispersal was observed in the roost area and under feeding trees.
Artificial feeding sites			Fully achieved	The experiment indicated that bats are not attracted to artificial feeding sites at a rate which would contribute to the maintenance of the soil seed bank
GPS tagging study		Partially achieved		The project involved a successful GPS tagging trial on <i>Pteropus rufus</i> , the first done on any <i>Pteropus</i> species.

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

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

- The bat-processed seeds of a strangler fig species (*Ficus polita*) showed higher germination rates than natural seeds and have the potential to be stronger and healthier seedlings
- The GPS tagging study showed that bats are potentially important seed dispersers and may be the only animals able to maintain small forest fragments scattered in a largely agricultural landscape
- Artificial feeding sites were unsuccessful in attracting *Pteropus rufus*, although they attracted a variety of animals which potentially could contribute to the soil seed bank. However, no seed deposition was observed around the sites

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

The local community was greatly involved in the project. They provided help with sample and data collection. They have benefited from short-term employment which was significant for them. Additionally, they have learned a lot about local ecosystems, needs for the protection of bats as well as their role in forest maintenance. They became aware of the conservation status of the bats and the forest. I explained to people why sustainable use of forest resources is important; the future prognosis for Madagascar ecosystem as well as importance of the island in terms of global biodiversity. Most of the people were not aware that Madagascar is experiencing an ecological crisis due to the speed of deforestation or that most of Malagasy flora and fauna is endemic to the island and makes it a unique place on the Earth.

5. Are there any plans to continue this work?

The next fieldwork is planned for the middle of 2012, subject to finding funding. I then aim to clarify the germination results in terms of the strength of produced seedlings, and to perform experiments with other plant species.

The project will also focus on expanding the GPS study which has so far produced interesting insights into bat foraging behaviour. It was the first GPS tracking study done on *Pteropus rufus* and produced a clear map of bat movements at high spatial and temporal resolution for one bat over 11 days. The next stage will be to tag more bats and get more reliable data which would clarify the foraging behaviour of the bats, show movement patterns of the colonies and identify the most important feeding grounds and places visited by bats. That will show the ranges over which bats disperse seeds as well as locating the exact places that bats visit during the feeding.

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

When the study is completed it will form part of my PhD thesis, and I aim to publish at least two papers in refereed high impact journals on the topics researched once my sample sizes are adequate.

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

The grant was used over a period of four months (July-November 2011) which corresponds with the original plans.

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
Flight ticket for one person	700	900	-200	The price of flights went up at the time of booking
Madagascar Research visa	55	200	-145	Madagascar Embassy was closed in London and I had to travel to Paris to obtain visa
Vaccinations and malaria medication	50	105	-55	
MICET fee	344	344	0	
Malagasy student's thesis fee	160	333	-173	University fee was higher than the amount provided by MICET
Daily pay for Malagasy student	960	960	0	
Malagasy student's supervisor visit	285	285	0	
CAFF/CORE representative visit	782	0	782	The representative did not visit us during the fieldwork
Cook	420	420	0	
Guide	420	420	0	
Sustenance for PhD student	240	240	0	

Research fee for Mandena Conservation Zone	720	720	0	
Tent	50	25	25	
GPS	100	140	-40	
Vehicle	600	800	-200	The maintenance of vehicle was not anticipated in the budget
Fuel	150	150	0	
Total	6036	6042	-6	

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

The most important steps are to investigate the success of seedlings produced from bat-processed seeds and compare them to natural ones. That will give a full account of the importance of bats not only as the dispersers but also as enhancers of seedling growth. It is also important to repeat the experiments with other plant species.

I also aim to conduct more GPS studies on bats as the initial results bring new insights into their foraging behaviour. They seem to be the main visitors of small forest fragments scattered along agricultural fields and are able to disperse large quantities of seeds.

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

I have used the logo in a departmental seminar at the University of Bristol.

11. Any other comments?

I would like to thank the Rufford for providing financial support for this project. Without your help I would not be able to conduct this study which brought really valuable results about the role of bats in forest ecosystems.