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	Maíra Benchimol de Souza
Project title	Ecological consequences of mega-hydroelectric dams on vertebrate assemblages in Amazonian forests
RSG reference	9856-1
Reporting period	June 2011 to January 2013
Amount of grant	£5785
Your email address	M.Souza@uea.ac.uk
Date of this report	4th February 2013

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
Quantify patterns of vertebrate species persistence and abundance in 30 of the ~3,500 true forest islands of the Balbina Dam.			X	We have conducted quantitative biodiversity surveys at 37 sites (more than our initial plans) using a combination of four techniques - line-transect censuses, phototrapping, track surveys and armadillo burrow counts. Each island were surveyed eight times, providing us with a species presence/absence matrix per island.
Examine the synergistic effects of habitat patch size and quality on vertebrate assemblages.		X		We assessed habitat quality through measures of forest structure and composition using 0.25 ha forest plots within each island as well as using high resolution satellite images. Forest patch and landscape metrics are being measured using GIS approaches ® in order to run the analysis.
Model the patterns of forest vertebrate extinction across all Balbina islands		X		We will use empirical models based on key patch and landscape variables to model patterns of persistence and extinction across all 3,500 islands in the Balbina Dam. Analysis are being conducted at the moment.

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

Our field team dealt with several difficulties during the period of data collection, including outboards problems, physical injuries and changes in the field staff. These difficulties led us to have some delays in the fieldwork, but did not prejudice the overall goals of this project. Actually, it was important to get experience for further (eventually) field work problems that may occur in future research.

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

1. Vertebrate assemblages were drastically affected by the landscape configuration caused by a major hydroelectric dam in the Brazilian Amazon. A large fraction of the vertebrate species in the nearby mainland forests had disappeared from small and medium islands, whereas virtually all species persisted in the larger islands.
2. Landscapes features and habitat quality seem to operate synergistically to affect the vertebrate assemblages on islands. The composition of vertebrate species in one island

seems to be a response of the landscape configuration, both related to patch and landscape metrics and habitat quality predictors.

3. The habitat structure and floristic composition have been constantly changing over the years. After 25 years of the construction of the dam, we found a different vegetation structure in the islands, mainly in the small ones, due to processes of edge effects and absence of lowland forests.

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

We involved local residents during data collection of this project. Four local field assistants were hired for 1 year, strengthening local capacity building and local cooperation. They received intensive training on sampling techniques, as well as learnt to complete worksheets, operate camera traps and conduct floristic surveys, becoming good professionals to assist further projects on biodiversity surveys in the Amazon.

5. Are there any plans to continue this work?

The Uatumã Biological Reserve, where this study was conducted, offered a strong logistic support for this project and became our partner. With their support, we would like to develop a monitoring programme in the area, in order to follow the ecological processes that have been occurring on the biodiversity over the next years. Further, we aim to conduct population projects to understand the mechanisms of use of habitat by different vertebrate species.

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

The information obtained in the study will be disseminated throughout publications in several high-impact outlets, including high-ranking conservation and ecology journals (*PNAS, Conservation Biology, Journal of Applied Ecology, Ecology*), popular science and conservation magazines in Brazil (e.g. *Ciência Hoje, Natureza & Conservação*), as well presented in international conferences (SCB and ATBC annual meetings). At a different scale, lectures will be presented at local schools located near the reservoir area (Balbina village), in partnership with Uatumã Biological Reserve's Environmental Education Program, and results from the study will also be presented to both researchers at INPA and policy makers in Manaus. Furthermore, results of this research will form chapters of Benchimol's PhD thesis at the University of East Anglia.

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

We used RSG funds for two fieldwork periods: June 2011 to December 2011 and also June 2012 to December 2012. We developed the field work project within the expected time. However, the data analyses are demanding more time than expected.

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
Field assistants/boatmen	£2.000,00	£1923.08	£76.92	Local exchange rate used (for all items): £1 = R$2.50
Garmin 60CSx WAAS-enabled GPS unit	£160,00	£160	£0	
Digital camera-traps (Reconyx HC500 HyperFire™ Semi-Covert IR)	£3.000,00	£0	£3000	The subsistence and field assistant costs of this project were much higher than originally anticipated in our proposal, and we obtained another small grant to purchase the camera traps. We therefore decided to readjust expenditure and use the funds requested to buy camera traps to purchase an outboard motor (which was absolutely essential for boat transportation in the vast Balbina lake) and additional field supplies.
Outboard 15HP	£0	£1.820	£1.820	Explained above.
AA Duracell Batteries (for camera-traps) + memory cards	£0	£616.69	£616.69	Required for the camera traps (we needed more batteries than previously planned).
Tree climbing gear	£290,00	£0	£290	This was no longer required since the professional botanist who conducted the floristic surveys had already his own equipment
Tree pruner	£35,00	£0	£35	Same as the item above.
Other field supplies (camping gear etc)	£300,00	£1263.77	£965.22	It was required to purchase several additional field supplies and consumable items.
Total	**£5785.00**	**£5785.00**	**£0**	

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

We believe the next steps should be disseminating the results of our studies throughout publications, lectures and PhD thesis. Further, assist the Uatumã Biological Reserve on the implementation of a long-term biodiversity monitoring programme.

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?

We haven't produced any material related to the project yet, but will certainly use the RSGF logo when it occurs.

11. Any other comments?

My field team and I are really grateful to RSGF for have provided the funding required for this project. We have no doubts that without this resource the project would not have achieved the desired success. We hope to disseminate the results as soon as possible, and will send every produced material to you. Our wish is that RSGF continues to assist conservation projects worldwide.