

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	Ulisses Moliterno de Camargo
Project title	Old growth and secondary forest site occupancy by understory birds in the Central Amazon, Brazil
RSG reference	50.02.10
Reporting period	July 2010-July 2011
Amount of grant	£5,714.99
Your email address	moliterno.camargo@gmail.com
Date of this report	03.12.2012

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
Identify conservation targets and safeguard the value of primary forests			Done	Despite a majority of species seems to occupy both forest types indifferently, species with differences in occupancy rate are more likely to favor old growth, reflecting the irreplaceability of undisturbed forests. We also documented higher species richness at old growth than secondary forest sites supporting the importance of primary forest for species persistence.
Clarification of controversies over the conservation value of secondary forests			Done	Results also suggest that the full recovery of secondary forest bird fauna is a matter of time. After 25 years of unmanaged regrowth, a quarter of the regional avifauna is occupying secondary forest sites at the same or higher rate that they occupy old-growth, underscoring the secondary forest potential to sustain bird species and setting the difference between a secondary forest, which deserves protection, and a fallow, which can be reclaimed for agriculture at any time. This is a very important outcome, as a controversial revision of the Brazilian forest code, pending approval from legislators, does not contemplate this distinction and allows the treatment of secondary forests as fallows.

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

We had an unexpected delay during the audio processing phase of our project due two main reasons: first, to make the 5-minute recordings (files that were listened) from our 3-hour raw samples took more time than expected; second, to identify all species singing in each 5-minute recordings took too much time because there were several tracks with many species singing at the same time. These two issues caused a substantial delay in audio processing. We tackled that with a huge listening effort from team members and also with an extra help from the ornithologist Claudeir Vargas that worked as a freelancer listener. With the extra help to process the recordings we were capable to achieve our goal of all 5-minute tracks, totalizing more than 256 hours listened.

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

- i) Project documents a slow secondary-forest recovery through re-colonisation from old growth, stressing the potential value of secondary forest, surrounded by primary forest, as habitats for tropical forest bird species.
- ii) Results can contribute to make managers and legislators more aware of the importance of limiting the definition of fallows in time since land abandonment, thus allowing more protection to secondary forest areas and full realization of their potential as habitat for old-growth species.
- iii) Data collection from 2010 sampling season provided more than 2000 hours of audio recordings from primary and secondary forest sites. In addition to enable confirmation and revision of species identifications, store recordings in a permanent database allows development of further studies concerning birds and also other groups like mammals and frogs.

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

5. Are there any plans to continue this work?

Yes. Our work is part of a broader research project aiming to understand the dynamic effects of environmental variation on bird species occupancy in altered landscape. To do so, we intend to collect data for at least 4 years. We already have been collecting data from the same sites for 2 years and we plan keep sampling for more 2 years. This will allow us to explore further questions concerning dynamics of bird populations in our study area. Furthermore, all team members intend to continue this work at some level and personal goals includes both technical and biological approaches. At least two students intend to develop PhD using this project results and three master's degree students are already using our database to develop their research.

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

The research supported by Rufford resulted in a manuscript discussing conservation value of secondary forests and other about tree fall gap effects on spatial ecology of primary-forest birds. We also spread our results through national and international speeches and meetings. Furthermore, we are starting collaborations with researchers intending to explore the potential for further work using our audio recordings database.

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

As soon as we received the grant, we spent all money to purchase the autonomous recording devices. Since then we used this equipment to collect data in two sampling seasons (2010 and 2011). We intend to use these recorders to continue our research on a dynamic context across several years.

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
14 Recorders (SM2 model from Wildlife Acoustics) (recorder costs £408.21 each)	5,714.99	5,714.99	0	
Total	5,714.99	5,714.99		

We also received financial support of the Smithsonian Tropical Research Institute on the value of £sterling 2,117.46 (January-2010), and from Biological Dynamics of Forest Fragments Project on the value of £sterling 1,303.20 (March-2010). Both grants were used to cost field work expenses related to this project.

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

After 2 years of field sampling (2010-2011) we accumulated more than 6,000 hours of audio recordings. Our main challenge now is not data collecting, but data processing. It would take too long to process this huge amount of data only by human effort. We see the development of automated identification systems as the natural next step that could take research like ours to an entire new level.

Besides the technical issues, a fundamental next step is to invest on sampling schemes for several years. Spacial and temporal repeated sampling obtained through robust design will generate high quality data, allowing strong inferences about studied populations and ultimately helping to take informed management and conservation decisions.

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 used the RSG logo in all our speeches and result reports. Besides that, the proper acknowledgments to Rufford support are present in all project-related manuscripts.

11. Any other comments?

Besides reaching the goals of our research project, the grant provided another important outcome: Until now we have trained and developed five ecology students in identifying more than 200 bird voices of local fauna. We think human training as a very relevant need in a country with the world's largest biodiversity, which is investing large sums in resisting environmental degradation. These students now intend to continue developing research in Amazon Region and will use the acquired experience to develop their own personal research.



As a personal comment, Rufford Small Grants support allowed my Master's thesis completion, which enabled fruitful research contacts for developing my PhD in the next years. This is very important for me now and represents a huge injection of motivation in my scientific carrier.