

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	José Wagner Ribeiro Junior
Project title	Stream-dwelling anuran metacommunity structure and dynamics in the Atlantic Rainforest: an approach that accounts for species imperfect detection
RSG reference	16419-1
Reporting period	January 2015 – December 2016
Amount of grant	£4990
Your email address	jwribeirojunior@gmail.com
Date of this report	15 th January 2017

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
Stream-dwelling anuran data collection				50 streams in the Atlantic Rainforest were sampled, 10 more than original proposed.
Thesis				It has been prepared.
Papers in peer-reviewed journals				The three main papers proposed on original objectives are being written.
Technical guide for sampling with automatic audio recorder				I have instructed graduate and undergraduate students how to use automatic audio recorder through workshop and meetings.
Present key outcomes in conferences				The abstracts have been prepared.
Publication in local and regional media				It is programed to be published in local and regional media after sent to peer-reviewed journals.

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

- Problems with land owner. At the beginning of field survey, I received authorisation to collect in all 50 streams, both in public and private land. But past few months, I had some problems to guarantee my access in six of streams in the private land. Therefore, I had to meet again one of the land owner, and some cases I used a different route to access the stream when it was possible. I was forbidden to return in one of streams because the land was sold, and the new owner disagreed with the project. These difficulties caused delay in my schedule and changes in the field logistic.

- Change of study area. I faced difficulties to find the required number of streams in Cantareira-Mantiqueira Wildlife Corridor for the project, because a lot of streams dried up in 2014 and 2015 in this region caused by a severe drought. Therefore, I changed the study area from Cantareira-Mantiqueira to Alto Paranapanema Basin that is a part of the Atlantic plateau along the south portion of the state of São

Paulo in south-eastern Brazil. The Alto Paranapanema Basin is a region that shelters high amphibian diversity, and high number of endangered species as the Cantareira-Mantiqueira Wildlife Corridor. The change of area caused a year delay of predicted schedule.

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

- **Amphibian list for a Management Plan.** I provided the amphibian survey data to compose the Management Plan to creation of a Private Natural Heritage Reserve (in Portuguese: Reserva Particular do Patrimônio Natural – RPPN) called Trápaga. The main goal of RPPN is the biodiversity conservation on private owned lands.

- **Workshop and training.** I co-organised a Workshop of Bioacoustics and Soundscape from March 21st-24th 2016 at São Paulo State University. The workshop had more than 30 graduate and undergraduate students from different states of Brazil interesting to study audio record data of different biological groups as birds, frogs, and mammals. The workshop goals were introducing concepts and studies of animal sounds, training how to use recorders to generate soundscape interface, and create species specific identifications models.

- **Amphibian data and publication.** I think that the most important outcome of my project will be availability of data stream-dwelling anuran in Atlantic Forest, because quantitative data about this endangered group are scarce. Now, I am conducting the analysis the data and writing the manuscript of landscape influence on stream-dwelling anuran communities. I expect to have the first manuscript submitted in few months.

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

This item does not apply for the current project.

5. Are there any plans to continue this work?

The actual project stream-dwelling anuran in the Atlantic Rainforest is still ongoing. We have finished the data survey, but the analysis and publications of results are being prepared.

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

My plan is share the results of my work through publications of papers in peer-reviewed journals, regional media, conferences, and meetings. Moreover, I will

provide both all the data and the statistical analysis codes that I am developing on GitHub (GitHub id: Xuletajr). In this way, I expect to help and encourage other researches to reproduce similar studies in others places by providing free access to the data (open data) and data analysis code, contributing to generate free useful information for biodiversity conservation.

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

We used the grant of Rufford Foundation grant for the field survey. The budget cover the overall cost of fieldwork, and it was essential to obtain the data.

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.

I used the budget to cover the fieldwork cost, and it was used with the predicted items. From project design until the fieldwork, the price of vehicle rental, fuel, food, and batteries increased in Brazil. In the other hand, I could save money lodging inside the State Park (in Portuguese: Parque Estadual Carlos Botelho). I did not predict the exchange tax of £ 69.

Item	Budgeted Amount	Actual Amount	Difference	Comments
Vehicle rental	£ 1696	£ 1825	£ 129	Price increased
Fuel	£ 568	£ 735	£ 167	Price increased
Food	£ 1179	£ 1260	£ 81	Price increased
Lodging	£ 1179	£ 700	£ 479	Save money staying inside State Park
Batteries alkaline D	£ 263	£ 310	£ 47	Price increased
Batteries alkaline AA	£ 105	£ 105	£ 0	-
Exchange tax	-	£ 69	£ 69	Not predicted
Total	£ 4990	£ 5004	£ 14	

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

In the short term, the important next steps for the project are to publish all the results and become all the data free available. Our models and data will provide quantitative information of influence of landscape use on both species-specific level and community level of stream-dwelling anuran giving support for environmental

decision makers. In the long term, I think that is important to conducted studies of several years to understand the dynamic of stream-dwelling anurans communities.

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?

Until now, I used the The Rufford Foundation logo in two oral presentations: first at São Paulo State University, and second at Michigan State University. But, I am preparing two abstracts to present the results of this project. My expectations are to present the results at the meetings of American Society of Ichthyologists and Herpetologists in July, 2017 and Ecological Society of America in August, 2017.

11. Any other comments?

The Rufford Foundation Small Grant played fundamental role supporting the field work of this project and helped to guarantee the acquirement of quantitate data about stream dwelling-anuran in the Atlantic Forest. Worth to comment that I have established two research partnerships during project development: Dr Guilherme Becker at São Paulo State University, and Dr Elise Zipkin at Michigan State University. The partnership with Dr Becker allowed me to add one more goal to the project to understand the relationship among forest cover, anuran communities and occurrence of Chytrid fungus infection (*Batrachochytrium dendrobatidis* - Bd) on anurans. Chytrid fungus is a severe amphibian disease that is linked to declining populations of amphibians over the world. Now, I am developing hierarchical community models in collaboration with the Zipkin Lab at MSU. The use of hierarchical community models allows the estimation of the state variable that is usually the focal research interest (e.g., occupancy and richness) separately from the survey process, it is possibly to investigates community-level and species-specific responses to covariates, and it estimates occupancy probabilities of rare species (usually with high interest to conservation).