

## The Rufford Foundation

### Final Report

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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](mailto:jane@rufford.org).

Thank you for your help.

**Josh Cole, Grants Director**

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Grant Recipient Details	
Your name	Juan Pablo Torres-Florez
Project title	Atlantic rainforest habitat fragmentation and habitat quality: effects on the functional connectivity of a forest dependent frog species
RSG reference	16883-1
Reporting period	April 2015-April 2017
Amount of grant	£4975
Your email address	jptorresflorez@gmail.com
Date of this report	July 12, 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
Quantify the effect of habitat fragmentation and structural connectivity on the functional connectivity of <i>Haddadus binotatus</i>				
Measure gene flow between subpopulations remained in different fragments as well as into the same fragments				
Quantify the effect of habitat fragmentation and structural connectivity on the morphological differentiation between subpopulations of <i>Haddadus binotatus</i> .				
Test whether there is an isolation by distance, isolation by resistance or if there is no isolation of the subpopulations of <i>Haddadus binotatus</i> .				
Broadcast the importance of the study and the initiative to conservation of the native fauna of the region.				
Understand how microclimatic variables associated with the modification of habitat can interact isolating populations.				This objective was not accomplished because to import the different sensors it will take some time, and the project should began before that.
Gather the results generated with those of other researchers working in the same biome biodiversity biome.				This objective was partially achieved but we aim to achieve it completely in the next year when information from other researchers will be available.

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

Although the project was complete and very interesting data were obtained, some issues related with field season and sampling permits arose. Probably the main problem was that during the development of the project there was an abnormally strong drought and a shortening of the rainy season period in the region where the work was being developed. This issue interfered in the reproductive period of the *Haddadus binotatus*. Because of that, the detection of individuals and subsequent DNA collection were restrict, resulting in a smaller number of individuals sampled than expected.

Obtaining permits for the execution of our scientific project in the São Paulo region turn out to be another problem. The analysis period of the permit request was officially 90 days, but it took 6 months, which hampered the sampling of some important areas.

We could not obtain the extra financial support that was supposed to be used to buy the equipment necessary for the collection of abiotic data from the landscape, and because of that we could not achieved one the objectives in which we aim to understands how microclimatic variables can affect the isolation of populations through ecological niche modelling of *H. binotatus*.

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

The Atlantic Rainforest has been strongly deforested during the last 50 years creating a series of forest fragments and patches, thus using a species with short generation times, we aimed to understand how the fragmentation process could affect the connectivity for this and other species.

Taking into consideration the previous, we found out that the 11 areas we sampled were not genetically isolated. This result suggests that the structural landscape connectivity in the area found by previous analyses is important with the aim to maintain the gene flow between the *H. binotatus* sampled groups in one single undifferentiated population (fig 1.).

The data and results obtained can has being analysed with previous and ongoing studies of other researchers in the region, with the aim to obtain a broader picture of the influence of the landscape in conservation for different species. We hope at a short time we will be able to understand the connectivity in this region for different taxa and propose a management scenario to maintain connectivity in this area.

Finally but not least important, we additionally developed educational initiatives with local land owners and workers on the region and with the Owners Association of Ibirapitanga Reserve, to raise awareness of the importance of conserving the local fauna and flora, as well as conserving the structural landscape of the region with the aim to maintain the connectivity of the different species that inhabits the area.

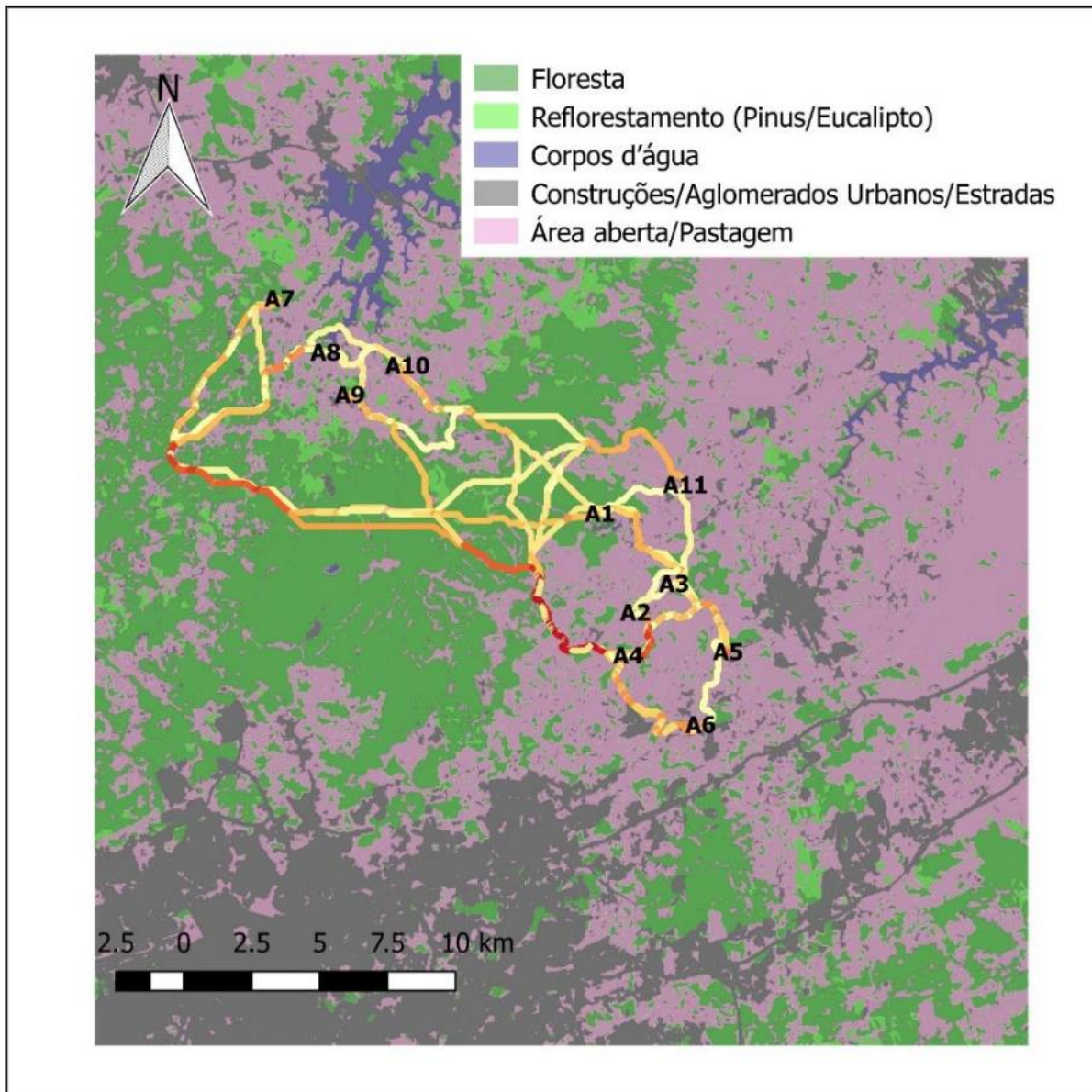


Figure 1. Landscape genetics connectivity analysis between the areas.

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

We got involved in outreach and educational initiatives with the local community, including land owners and workers that were instructed about the importance of their participation and the roles they could play during the development of the study. We also gave an interview about the importance of the study to the local magazine *Sauá* that is distributed to the local community of the *Residencial Terras Altas*.

We took part in some initiatives that the Owners Association of Ibirapitanga Reserve organised aiming to educate the young members of the Residencial Terras Altas about environmental and conservation issues.

We developed a poster that was distributed in the region with the aim to educate schools and local communities about the importance of the forest conservation for different species.

In conjunction with researchers from the State University of Sao Paulo (UNESP), we are organising in the near future, talks at local schools of the area. In these talks will be intended to expose the knowledge obtained from the different projects carried out in the area (different species projects).

#### **5. Are there any plans to continue this work?**

We plan to continue with this work, with the aim to test for population structure at a broader geographic area (probably the complete distribution of the species). With this we would continue generating genomic data and to look for any relationship between genetic data and environmental data. The answer of this relationship could give us a cue of how environmental global change could affect populations of amphibians.

Also as was mentioned before, we aim to continue with this project in terms of dissemination and outcomes of the project in schools and with local authorities.

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

We are working mainly in two peer-reviewed articles to be published in relevant scientific journals. Also, the MSc degree obtained with the support of this project is aiming to attend conferences and talks.

We also plan to do a second interview for the local magazine *Sauá*, to show the local community about the results we obtained during our work on the area.

We are also working together with some other researchers to gather results about several aspects of that area to show local authorities and stake holders about the importance of reforestation and ecosystem services.

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

Unfortunately because we depended to obtain the samples during the rainy season, for the moment that the grant was approved, the field season was almost ended. The grant was used during the field work, the laboratory reagents, development of the genetic library and sequencing.

**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 activities	1600	1900	300	Increase of price of gas as well as exchange-rate differences between the different periods
Field material	375	375	0	
Lab material	500	750	250	It was planning to use just 1 kit of DNA extraction, but at the end 2 kits were used at a less price than 1 previously budgeted
Third-party services	1500	1550	50	Differences in the rate of sequencing between 2 different years.
Bioinformatics server	0	398	398	Because we moved from common markers to genomic markers, we need to rent a server in order to conduct the analyses.
Dissemination material	1000	500	-500	We produced a poster that cost less than budgeted.

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

The most important next step is to publish our results and join them with other researchers in the area to more broadly comprehend the role of the landscape structure in the local fauna and flora and to present to Brazilian Government authorities and politicians so they can plan actions aiming the protection and maintenance of the Atlantic Forest biome based on scientific data.

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

Yes, we used the logo in presentations of MSc Gabriela Raphael Duarte, and the name of Rufford Foundation was in all materials of her research, including her master's dissertation.

Also the logo was used in the poster we published (attached) and will be continue used in any other talk, conferences, seminars and at local community schools.

**11. Please provide a full list of all the members of your team and briefly what was their role in the project.**

- Juan Pablo Torres-Florez (PhD): Main researcher, supervision of analyses and genomic libraries preparation.
- Gabriela Raphael Duarte (MSc): Collection of samples, analyses of data.
- Tiana Kohlsdorf (PhD): Supervision of lab issues and analyses. Supervisor of Gabriela Duarte thesis.
- Milton Cezar Ribeiro (PhD): Landscape support. Landscape ecology analyses supervisor. Field support.

Other people not contemplated in the initial proposal was involved in this research project and we would like to thank them for their valuable contribution:

- Paul Hohenlohe (PhD)
- Sarah Hendrix (PhDc)
- Danilo Boscolo (PhD)
- Fabio de Cury Barros (PhD)

**12. Any other comments?**

We would like to thank the Rufford Foundation for the support gave to this project. Without this funds we could not have completed this project. I hope that this report will be fully satisfactory for you and the RSG team and hopefully I would like to receive further support to continue our research at the Atlantic Rainforest. Finally, I wish to your every success and congratulate on the great job that do to help conserve species and ecosystems around the world.

