

## 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	Mayara Dantas Guimarães Beltrão
Project title	Space use and occupancy patterns of Carnivora and small mammal communities in mosaic areas of Atlantic Forest and sugarcane plantations in North-eastern Brazil
RSG reference	20950-1
Reporting period	2016 December – 2018 April
Amount of grant	£4977
Your email address	mayarabeltrao@gmail.com
Date of this report	30 <sup>th</sup> April of 2018

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
To verify the degree of permeability of the sugarcane matrix for rodents and marsupials; the heterogeneity and connectivity between the fragments; its effects on small mammal communities.				Permeability to the sugarcane matrix was low for small mammals. Although important records of specialist species were made they were often found only in a single fragment. This indicates a high heterogeneity among the fragments which may be related to their low connectivity with significant losses at the landscape scale.
To define the consequences of habitat loss and fragmentation for rodents and marsupials from population parameters and community structure.				The vast majority of species reported are generalists and are commonly found in areas with a significant level of degradation compared to specialists who require conserved habitats. Most population densities were low suggesting that the areas may be in an advanced degradation process and may have low resilience, corroborating with some recent studies published for the biome.
To explain how does habitat occupation by medium-sized mammals occur.				We recorded 14 species of medium sized mammals. We highlight, important records, such as the ocelot ( <i>Leopardus pardalis</i> ) and the oncilla ( <i>Leopardus tigrinus</i> ). The first had not been recorded in a very long time in the region and the second is an endangered species. We are still processing the analyses of this dataset.
To produce a connectivity map for the Paraíba State Atlantic Forest that shall be used to guide action plans of the Rural Environmental Registry.				A map was produced, although a refinement is necessary to include roads, the rural private properties ownership and hydric resources.

To provide the basis for the management plan of the two Private Conservation Units involved.			Workshop on "Management Plans of the Pacatuba and Gargaú Private Conservation Units" was held, which was attended by 21 researchers. By the end of this process A well-defined work agenda was established.
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**2. Please explain any unforeseen difficulties that arose during the project and how these were tackled (if relevant).**

Sampling with box traps for carnivores was withdrawn from the project after realising that although much effort happened, the results were extremely incipient. After about 3 months of intense sampling, we came to the conclusion that the investment of time, financial and human resources was not compensating because of the rather low capture rate (only three individuals of one species - *Cerdocyon thous* - were caught).

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

1. As most of the remaining fragments are properties of sugarcane/ethanol industries an event named "Sustainability Dialogues in the Sugar and Ethanol Sector: Fauna and Forest" was held on April 19th and 20th 2018, with the main goal of bringing together researchers, government agencies and the sugar and ethanol industry from the state of Paraíba to discuss an agenda of convergent interests. In this event the most updated results on fauna research, environmental/sustainability projects from the industry sector and new approaches to sustainability were presented. The state's three main sugarcane mills were present as well as 94 participants, 18 speakers from internationally and nationally recognised institutions such as SOS Atlantic Forest and EMBRAPA Environment, and local governmental environmental agencies. The main achievements of the meeting were starting a discussion for the implementation of the largest corporate owned reserve of the Atlantic Forest to build a synthesis of the fauna for the region as well as work for a research agenda using FAO water-energy-food nexus and the role of biodiversity ecosystem services.

On the second day the first Workshop on "Management Plans of the Pacatuba and Gargaú private conservation units" was held, which was attended by 21 researchers. By the end of this process. A well-defined work agenda was established.

2. The results obtained about the permeability of the sugarcane plantation, heterogeneity and connectivity in the fragments of the fauna. The permeability to the sugarcane matrix was low for small mammals and although important records of specialist species were made they were often found only in a single fragment. This indicates a high heterogeneity among the fragments which may be related to their low connectivity with significant losses at the landscape scale.

3. The results obtained about the medium sized mammals. We recorded 14 species with important records, such as the ocelot (*Leopardus pardalis*) and the oncilla (*Leopardus tigrinus*). The first had not been recorded in a very long time in the region

and the second is an endangered species. It is worth mentioning that most of the population densities were low suggesting that the areas may be in an advanced degradation process and may have low resilience, corroborating with some recent studies published for the biome. Furthermore, this study specifically with medium sized mammals was the first in this region.

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

We are designing the management plans evidencing the need to improve the living conditions of the people involved near to fragments with relation to the involvement of these people with the biodiversity resources of the forest and its surroundings. Besides that, they worked like guides during the fieldwork.

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

We intend to increase the quantity of the fragments to be sampled. We sampled three protected areas. We would like to sample other large fragments, especially the one candidate to be the largest corporate owned reserve of the Atlantic Forest and other smaller fragments that are important for connectivity. We would also like to test a reduced scheme of sampling to monitor four times a year the fragments already sampled. With a smaller and sufficient sampling effort to estimate population and community parameters (calculation based on data collected in the present study). This is an important step to monitor the consequences of conversion of areas to reserves and increased connectivity.

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

- 1- In February 2019, the results of this project will be presented at my PhD final presentation in Federal University of Paraíba (UFPB), Brazil.
- 2- We are submitting papers for specific recognized internationally journals of Mammals and Conservation to share our results with academic and scientific environment. One of them is under review in the journal Mammalia.
- 3- I am submitting the reports to the governmental environmental agencies, sugarcane mills, sugarcane industry trade union and association of independent sugarcane growers.
- 4- To publicise in all possible communication vehicles a promotional video that was produced about our project, emphasizing the problematic with main objectives and results, including the event and workshop. In this video I explain what the next steps are and thank to the Rufford Foundation by support granted.
- 5- We intend to continue working with the sugarcane industry for the conservation of fragments now that we have increased their awareness and defined work goals.

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

Financing was timely and fully utilised during the second full year of the fieldwork, as per the original work plan. In addition, it was also possible to use the resource in expenses of half the first year of the fieldwork. All the proposed activities were carried out without problems. The complete project during 4 years (average of the doctoral course in Brazil). The fieldwork lasted 2 years, of which 18 months, as explained above, was funded by Rufford Foundation, which corresponds to 75% fieldwork support and 37.5% of the full PhD project.

**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
Meals for the fieldwork team	1400	1400		
Field Assistant	1200	1200		
Transport with driver Fuel	2399	2399		
Traps (Sherman)	143	143		
Traps (Tomahawk)	456	456		
Traps (Camera trap)	160	0	+160	It was not necessary to purchase equipment.
Bulks	150	150		
Baits	588	588		
Laboratory and capture materials	310	370	-60	
Drugs, repellent, sodium hypochlorite, sunscreen	0	100	-100	We verified the need to insert this item.

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

To publish the papers of this research and finalise and implement management plans for private forest fragments. From the point of view of progress in research, the next steps are related to expanding the sampling of biodiversity to other fragments as well as the refinement of the current and historical land use mapping of the region. This will serve as a basis for the refinement of structural and functional connectivity analysis and thus advance the establishment of priority areas for the recovery of degraded areas. It is noteworthy that the environmental agencies do not have a map to prioritise reforestation or preservation areas.

**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?**

I have used the Rufford Foundation logo in materials (objects and also materials of the event and promotional video). I am sending it in the same e-mail of this report. In addition, I have used the RF logo in presentations, posters and reports.

**11. Any other comments?**

I would like to thank immensely the Rufford Foundation for supporting this research. The work of the foundation is much organised and stimulates research from countries with great biodiversity but with very limited financial resources. I would also like to thank Jane, who was always very helpful in the all the contacts. I will always be grateful to this foundation for this support and wish it great success.

I would like to mention how much this project has provided me with personal growth, particularly in relation to people management and leadership development. In addition to the importance related to the pioneering of this theme in the region and the formation of knowledge multipliers. 70 people were trained during the fieldwork. These people now have a better perspective on the context that we are inserted in, as well as the problems we face, and several of the questions that we need to answer. We have opened a path where there is much to explore.

Obs.: I have made an upload of a promotional video that was produced about our project, emphasizing the problematic with main objectives and results, including the event and workshop. In this video I explain what the next steps are and thank to the Rufford Foundation by support granted. This video is being published in all possible communication vehicles.