

## Final Evaluation Report

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Your Details	
Full Name	Lana Resende de Almeida
Project Title	Unveiling the ecological role of Neotropical mustelids in ecosystem conservation
Application ID	25871-1
Grant Amount	£5,000
Email Address	lanaresende.bio@gmail.com
Date of this Report	July 30, 2020

**1. 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
1. Evaluating the spatio-temporal patterns of habitat use by <i>Eira barbara</i> , <i>Galictis cuja</i> and <i>Lontra longicaudis</i> through a gradient of anthropogenic change in land-use				With the RSG we were able to include two other sampling areas representative of other anthropogenic environmental contexts that were not defined previously on the project.
2. Testing a newly developed non-invasive method for species identification by chemical profiles				With the resources of RSG we were able to adjust the method and use a new experimental approach in this objective, with the help of a partner laboratory.
3. Using individual identification technique to estimate different population demographic parameters.				<i>Eira barbara</i> was the species that we obtained the greatest potential for photo-identification. Right now, we are finishing our analysis.
4. Determining the effectiveness of Conservation Units in the conservation and permanence of the three focal species				Through our analysis of objective one, we are evaluating the efficiency of protected areas for <i>Eira barbara</i> and <i>Galictis cuja</i> mustelid species.
5. Testing for the existence of dietary differences between populations within and outside Conservation Units.				The sampling has already been carried out but due to the COVID-19 pandemic our screening work in the laboratory is suspended.
6. Evaluating the role of the three species in the structuring and maintenance of the stability of the ecological networks				This objective is in process of data compilation and initial analysis.

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

During our sampling we had eight cameras traps stolen from us and from our partners in the field, in addition to other 10 that were damaged during this 2-year period. Through RSG we were able to buy 13 new cameras traps. These cameras were used in the last two sampling areas and are currently being used by other young researchers from my laboratory that are monitoring other mammal species in four new projects.

Concerning objective 2 (identification by chemical profiles), our previous partnership with a laboratory at our university could not be carried out due to their equipment malfunctioning. In this way, we had to carry out this objective experimental procedure with another partner. This partner was at the Federal University of Rio de Janeiro (UFRJ), in Rio de Janeiro, Brazil. The RSG was used to send the processed samples via express mail in addition to paying for my airfare, meals and gas fuel for local transport. The stay was free and other additional costs were paid in private.

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

This project was a pioneer in the monitoring of mustelid species in Brazil from the perspective of different contexts, providing relevant information about mustelid species and their environmental limits of the Atlantic Forest. We were able to develop a new non-invasive method of identifying neotropical mustelid species. This method is a protocol that uses non-volatile compounds and can be also used for other mammal species. Moreover, our results seem relevant to the knowledge of chemical communication in neotropical mustelids, which can be interesting for their management and conservation. The investigation of the role of mustelids and other mesopredators in ecological networks enables a new perspective for decision-making in conservation in degraded areas, where apex predators not occur.

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

Throughout the development of the project, my team and I participated in presentations, meetings and workshops for the general public and environmental managers. I highlight my participation as a speaker for students at the Federal Technological University of Paraná (Brazil) and for the University of Évora (Portugal). I was interviewed for the Província FM radio from Tenente Portela town, a local radio close to one of our sampling areas. Lastly, scientific dissemination materials were developed and shared with our local partners in the study areas. Partial results of this project also were presented at two international congresses: 3rd International Symposium of Ecology (2018) – Foz do Iguaçu, Brazil - and 33rd European Mustelid Colloquium (2019) – Lisbon, Portugal.

Today, we are working on environmental education and scientific dissemination activities in the areas in which we worked. The Clube da Lontra is an itinerant scientific dissemination project that, through presentations, workshops and recreational games, aims to involve the local community in the knowledge of

mustelids and their conservation. However, with the COVID-19 pandemic, our plans have been postponed. Clube da Lontra is now active mainly through social media (Facebook, Instagram and Twitter), bringing knowledge about mustelids and the news about our research to everyone. We believe that the correct information about mustelids and the demystification of some themes can be effective ways of reaching the community and mitigating the anthropogenic conflicts that we have met throughout this project.

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

Of course, by compiling all the different knowledge acquired in this project it will be possible to expand its application in one of the research topics that I consider fundamental, understanding and provide alternatives to mitigating conflicts between mustelids and local communities.

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

All the results of this research will be submitted as scientific articles in journals of international impact, as well as summarised in infographics for banners and virtual posts from Clube da Lontra and our partners.

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

The grant was used for 2 years from July 2018 to July 2020, supporting all field activities related to this project. Due to some situations, like the new areas added and today, the pandemic, this project will last another year only with remote activities. Some analysis as well as, the manuscripts preparation and materials for scientific dissemination, have still to be done.

**8. Budget: 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. It is important that you retain the management accounts and all paid invoices relating to the project for at least 2 years as these may be required for inspection at our discretion.**

Item	Budgeted Amount	Actual Amount	Difference	Comments
Acetonitrile	40		-40	We obtained reagents through financial support from the university. This quota could be relocated to meals and fuel in field work.
3-[4-(Bromomethyl)phenyl]-	120		-120	We obtained reagents through financial support from the

7-(diethylamino)coumarin-(Br-MPAC)				university. This quota could be relocated to meals and fuel in field work.
18-Crown-6	40		-40	We obtained reagents through financial support from the university. This quota could be relocated to meals and fuel in field work, as well as to send our samples via express mail to UFRJ.
Lodging	1100	280	-820	The accommodation in all field campaigns were free. This quota was reallocated for expenses for the trip to Rio de Janeiro to carry out the experimental part of objective 2 (total of £ 280 at the time), for expenses with meals and gas fuel in the new sampling areas for objective 1, 3 and 5. This quota also was used to buy new cameras.
Meals	200	450	+250	
Gas Fuel	1900	2000	+100	
Car Rental	100	100		
Falcon	100	100		We included in this quota a purchase of two new kits of milling materials that were broken during the objective 5 of processing the fecal samples.
Batteries		250	+250	All batteries used in this project were re-approved until the end of their charge and correctly disposed of at the university.
Memory cards	200		-200	We reused memory cards from other projects. This quota could be relocated to buy batteries.
Camera Trap (Maintenance/Eventual repairs)	1200	1800	+600	
Sending samples via express mail		20	+20	We had extra costs to send the fecal samples to the laboratory at UFRJ.
<b>Total</b>	<b>5000</b>	<b>5000</b>		

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

Make all our knowledge accessible not only for other scientists, but also for conservation unit managers, other authorities, and the common folk. We are aiming

to be a base knowledge for new decision-making and planning that are relevant to the conservation of mustelids and the areas in which this project covered.

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

Yes. We used the RSG logo in all material we produced as updates and as posts in Clube da Lontra. Clube da Lontra can be found in all social medias through this link: <https://linktr.ee/clubedalontra>

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

**MSc Lana Resende de Almeida** – Project's leader, my contribution was extended to all the theoretical, practical and analytical stages of the project.

**Professor Dr. Maria João Ramos Pereira, Head of our Lab.** - Theoretical contribution and preparation of the entire project, contribution to statistical analysis and review of the manuscripts.

**Dr. Flávia Tirelli, Post-Doc of our Lab.** - Help in prepare the sample design together, field team and data screening (objective 1)

**MSc Paula Horn, Colleague** - Field team and data screening (objective 1)

**MSc Gisele Bolze, Colleague** - Field team and data screening (objective 1)

**Paloma Linck, Colleague** - Field team and data screening (objective 1)

**MSc Victoria Gravez, Colleague** - Field team and data screening (objective 1)

**Jordani Dutra, Colleague** - Field team and data screening (objective 1)

**MSc Guilherme Oyarzabal, Colleague** - Field team (objective 4), contribution to statistical analysis (objective1), review of all scientific dissemination material produced in this project.

**MSc Danielle Franco, Colleague** - Field team (objective 4).

**MSc Ana Mastella, Colleague** - Laboratory team and review of manuscripts (objective 2).

**Professor Dr. Rafael Garret, Head of Metabolomics Lab at UFRJ.** - Laboratory team, contribution to statistical analysis and review of manuscripts (objective 2).

**Dr. Marina Amaral, Post-Doc of Metabolomics Lab at UFRJ.** - Laboratory team, contribution to statistical analysis and review of manuscripts (objective 2).

**Patricia Guardiola, Colleague** - Laboratory team in the screening of fecal samples (objective 4).

**12. Any other comments?**

I would like to emphasise that this project was carried out mostly by teams of female researchers, from their first stages of preparation, through field work as well as in the laboratory analysis and manuscript writing. Despite the gender differences found in all professions, including science, we are a good example to encourage and strengthen female participation in successful research. Lastly, this project has been developed in its entirety in Brazilian public universities, highlighting the need to strengthen these institutions for the successful continuation of science in Brazil.

We thank The Rufford Foundation for providing research funding. We would like to extend our gratitude to Jane Raymond.