

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	Maria Belen Natalini
Project title	"Wild canids as sentinels of ecosystem health: dynamics of infectious diseases in Northern, Argentina"
RSG reference	22555-1
Reporting period	July 2017- July 2018
Amount of grant	£4843
Your email address	belennatalini@gmail.com
Date of this report	06/08/2018

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
Field work: faecal sample collection.				During 2017, we carried out four fieldtrips and in 2018 we held three trips in February, April and June and three are pending (August, October, and December). We obtained a total of 532 wild canid fecal samples and register a total of 114 dogs around the protected areas. Field work will be finished in December 2018.
Field work: surveys of local people.				We conducted 38 interviews during 2017. If the family adopt a new dog, we will add all the relevant information to the interview already done.
Analysis of samples				A pool of samples of domestic (N= 73) and wild canids (N= 66) was analysed to assess the presence of parasitic forms through qualitative methods of concentration (flotation and sedimentation). Both groups were positive for gastrointestinal parasites, dogs had prevalence of 66% and foxes had a prevalence of 71%.
Detection and molecular characterization of <i>Sarcocystis</i> spp.				In May 2018 I performed an internship at the Laboratory of Immune Parasitology, Faculty of Veterinary Sciences, National University of La Plata, in which I learned molecular techniques and analysed a pool of samples to characterize <i>Sarcocystis</i> spp. Infections.
Molecular analysis for <i>Toxocara</i> spp. and <i>Ancylostoma</i> spp.				Next year I will perform these analyses in the Laboratory of Ecology of Diseases, Institute of Veterinary Science of Litoral, CIVET - CONICET, Santa Fe.

Evaluation of bile acids by thin layer chromatography to identify fox species			This task is undergoing.
Educational programme			We did two activities with the public elementary school of Mburucuya and in September 2018 we will complete the activities in two schools of San Miguel and Ituzaingo cities.
Communication activities			In 2017 I presented my project goals in a high school (Instituto Salesiano Pio XI) and in a conference held at the National University of the Northeast. At the end of August 2018, I will perform a dissemination activity of my project to the community of Mburucuya and for the rangers of the park.

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

Unfortunately, in April and June of 2017 our field trips were cancelled due to the strong floods that affected Corrientes province. As a result of heavy rains Corrientes and other three provinces in Argentina have been impacted by the floods, and it is estimated that 10,000 people have been evacuated. Most of the access roads to the study sites included trails and transects were closed. Also, the place where we lived and worked was evacuated. In August of 2017 we returned to the field work and added a sampling site in the northwest of the province.

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

The most important results we have had were:

- We found *Ancylostoma* spp., *Toxocara* spp., *Trichuris* spp. and protozoans such as *Sarcocystis* spp. and *Giardia* spp. in samples of dogs and foxes. Many of them are zoonotic parasites. The next step will be to run a molecular characterisation of these parasites to accurately determine the species and know if dogs and foxes share the same species of parasites. These analyses will be run during 2019.
- We have carried out a reliable record of people living around protected areas, with the registration of the domestic animals they own. In this regard, we have identified every dog in the area, and when dogs are known to enter into the park, immediate actions are taken together with the rangers including informative talks to the dog owners to prevent these events.

- We have recorded relevant data on the wild canids present in the study sites (displacements, reproductive seasons, feeding), which will be used to strengthen the long-term study on wild canids initiated in 2011.

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

We have conducted interviews in the surroundings of the protected areas. People received us kindly and participated actively answering our survey. We were able to establish a link over the months with many families, and many local people are committed to the project. They keep us informed about the condition of the dogs, if they saw foxes or maned wolves in the area, or if their dogs escaped or attack wild animals. When visiting a household, we provide information about parasitic diseases and parasite cycles their dogs are exposed to and how to prevent them. We also intervened when necessary and provided sanitary treatment to sick and injured dogs.

5. Are there any plans to continue this work?

I have 2 years of laboratory work and writing of my final thesis work. I plan to defend my dissertation in April 2021. I would like to establish a line of work in wild canids in Corrientes province, incorporating other sampling sites to generate regional data and add the study of ectoparasites.

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

I am currently writing an article with preliminary data on parasitosis in domestic canids present in the wild-domestic interface of protected areas and their implications for the health of wild animals (to be submitted to the International Journal for Parasitology).

In July 2018 I presented a technical report to the National Parks Administration (APN) of Argentina, with the work done in 2017. At the end of my fieldwork I will submit two technical reports, one for the Natural Resources Direction of the Province of Corrientes and the other to APN. In these reports I will provide information about my study give recommendations about the management that is being carried out in each area with respect to the contact between domestic-wild canids and their implications.

With the completion of my doctoral thesis I will use the data from this study to write articles on diseases infections in wild canids. Next year I will present our work in the VIII Argentine Congress of Parasitology and in other congresses.

Also, Rodrigo Bay, an advanced student of the Bachelor in Biology, National University of Northeast, is developing an undergraduate thesis using data from this study. He is evaluating the food habits of *Cerdocyon thous*, *Lycalopex gymnocercus* and *Chrysoyon brachyurus* in relation to the characteristics of the vegetation cover in the three sampling sites. The animal's diet may mediate the host-parasite relationship, so these data is relevant to our work.

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

I used the grant to buy equipment (GPS and flashlight) and for field work, since August 2017 until this year. The use of the grant corresponds to the proposed period.

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. Exchange in April 2017: \$1= £19,74

Item	Budgeted Amount	Actual Amount	Difference	Comments
FOOD - £6,5 x 4 people x 22 days x 12 trips	3432	1848	+1584	We had to move some funds from "feeding" to cover fuel (see below).
EQUIPMENT – 1 Garmin eTrex 20 1 Flashlight Led Fénix Uc35 960 Lumens 6 Modos Micro USB Rechargeable	289	287	+3	Fully spent.
FUEL - 850km/studies trips (£93,5 x 12 trips)	1122	1779	-557	In Argentina, fuel has increased by 50% from 2017 to 2018. And it was necessary to add the fuel costs of the three remaining fieldtrips. In addition to using part of the feeding funds provided by The Rufford Foundation, I will cover the rest with my budget provided by the government.

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

It is important to continue with the education processes that we are carrying out within the study sites and surroundings. I have to process all the samples collected during these 2 years and analyse the data to understand the ecology of the diseases caused by the parasites that wild carnivores may share with dogs and, in some cases, with humans. I have to finish my PhD thesis.

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?

I used the logo in all our presentations and in the technical reports sent to the government. I will use it in a material that we will leave to the students of the educational program and in other talks. I have recommended The Rufford Foundation to my colleagues.



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

Ph.D. Martín Kowalewski, director of the Biological Field Station Corrientes (EBCo – MACN CONICET), researcher in The National Scientific and Technical Research Council in Argentina. He is the scientific advisor. He guides me and helps me through the process regarding field work, methodology and laboratory analysis.

-Ph.D. Pablo Beldomenico, Researcher, Director of Laboratory of Ecology of Diseases (Institute of Veterinary Science – CONICET), Santa Fe, Argentina. Supervision of *Toxocara spp.*, *Ancylostoma spp.* and *Giardia spp.* lab genetic analysis.

Ph.D. Gastón Moré, Researcher of CONICET, Laboratory of Immunoparasitology, LAINPA - Faculty of Veterinary Sciences, National University of La Plata, Buenos Aires, Argentina. Supervision of *Sarcocystis spp.* lab genetic analysis.

Field assistants: **Rosa Arguello, Soledad Schmith, Paula Carou, Jorge Garnica, Francisco Molina, Mariana Mazzanti, Alicia Enciso, Gabriela Espinola, Silvina Bocca,**

Martin Galarza, María de las Mercedes Lezcano, José Cabrera, Angelina Godoy, Dalma Armua, Cecilia Ruiz, Noelia Zimmerman, Belen Gandulfo Del Cueto, Daniel Gomez Rojas, Rodrigo Bay, Berta Martinez, Paula Blanco, Marianela Bonetto, Yanina Berra, Patricia Casco, Martin Sanchez, Francisco Sanchez Gavier, Conrado Holzer.

Every fieldtrip last 22 days and three assistants work with me. Most of them are vets, rangers or biologists' students. We collect fecal samples from foxes and domestic dogs and conduct interviews with local villagers.

Educational team: **PhD Veronica Romero, Patricia Fernández** and **Barbara Romero** environmental interpretation guides. Members of the Environmental Education team of the EBCo (Biological Field Station Corrientes - CONICET). We perform the educational workshops in schools near the protected areas.

12. Any other comments?

We would like to thank to The Rufford Foundation for the support. This project is important for my professional growth and allows me to contribute with unique and relevant data for the conservation of the species in my country.



Left: Interactions, one pampas fox with two crab eating foxes in PNM. Right: Taking samples.