

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	Andrea del Pilar Tarquino-Carbonell
Project title	Spatial ecology and conservation of endemic rodents of the Monte desert: the Red Viscacha Rat (<i>Tympanoctomys barrerae</i>) as a model
RSG reference	23662-1
Reporting period	From August 2018 to July 2019
Amount of grant	£5000
Your email address	atarquino@mendoza-conicet.gob.ar
Date of this report	31-July-2019

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
I will characterize the structure of burrow systems of red viscacha rat in sites different environments in terms of soil and vegetation: homogeneous, heterogeneous and intermediate				This field work was fully achieved in may 2019. A total of 105 burrows of red viscacha rat were characterized in all these sites finding variations in structure and vegetation (see point 3 of this report for further details)
I will quantify movement patterns, activity and home range in contrasting habitats				Currently, I am still working on the analysis of home range and activity patterns of the radiotracked individuals through statistical robust software.
I will estimate the probability of the presence of the RVR at broader scales through niche modelling tools				Data analysis and ecological niche modelling is completed and I am working with my advisors on the manuscript of this objective.
To organize extension activities such as diffusion in scientific events, and nonscientific communities			✓	I have participated in two international congresses during 2018 and I will show these results in different events in 2019 and 2020 too.

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

During fieldwork in the months of October and November 2018, telemetry activities were partially affected by weather conditions (unexpected rains, sandstorms). In the desert, the temperature can change dramatically during the night. All these situations extend the duration (in days) of those trips. When winter and summer reached the most extreme values in terms of temperatures (specifically July in winter and February in summer), we paused the fieldwork, also for avoiding stress for animals during the radiotracking.

During May 2019, was not possible to find individual adults in the heterogeneous site (only juvenile). Individuals should be adult in order to have the minimum weight for the transmitters. I expect to have our last field trip in September 2019 in that site.

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

These are the first results evaluating the physical and ecological characteristics of the burrow systems and the movement patterns of the red viscacha rat in the Monte desert. It was observed that ear tags and transmitters do not represent any risk for the animal, since recaptures were recorded in the months of May and November, of a male and a female, respectively

-To characterize the structure of burrow systems of red viscacha rat in sites different environments:

Homogeneous: I characterized 50 red viscacha rat burrows, being the sites with the highest density of red viscacha rat burrows.

Heterogeneous: I found 35 burrows of red viscacha rat; burrows were very tall and also poor in halophytic vegetation, compared to the other sites.

Intermediate: 20 burrows were characterized; in this site, the burrows were relatively small and almost full of vegetation. These data here shown belong to the wet season. Similar results have been found during dry season.



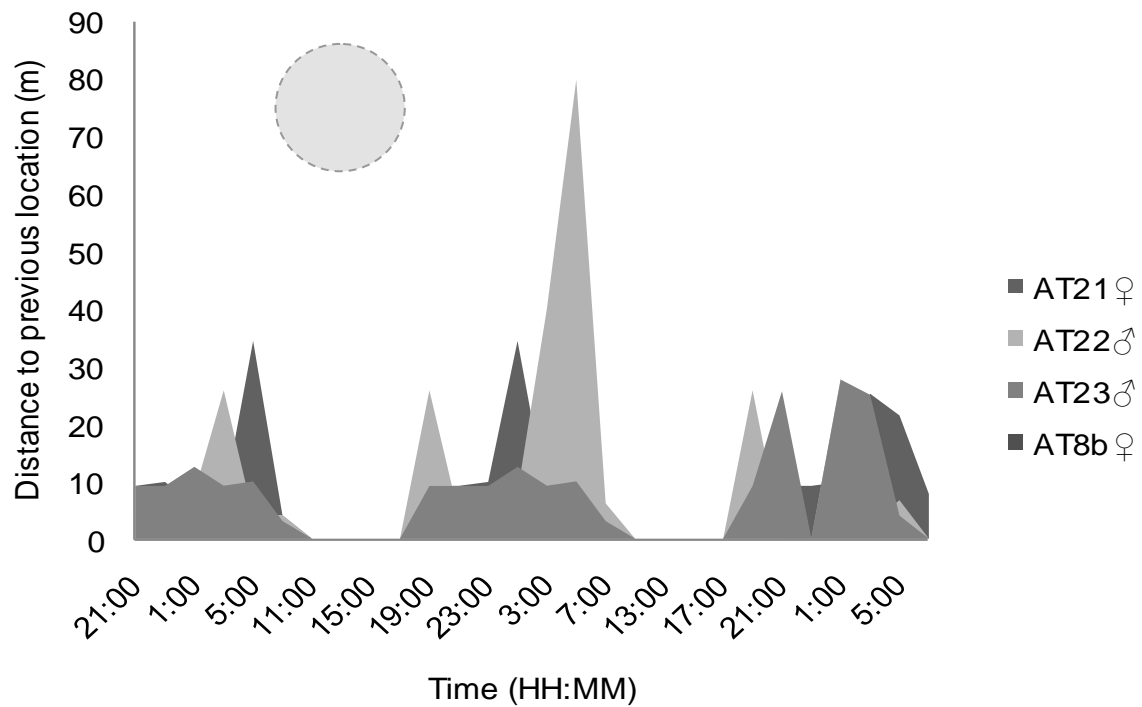
Study sites. Homogeneous (left, Intermediate (center), Heterogeneous (right).

- To quantify movement patterns, activity and home range in contrasting habitats:

During 2018, I captured eight individuals in the homogeneous site and five animals in the heterogeneous site. In the Intermediate site, 14 individuals were captured during that year. As it is observed, the highest densities were found in Intermediate site, followed by the homogeneous site. The heterogeneous site is the locality with the lowest population density of the red viscacha rat. The hours with greatest activity of individuals were recorded during **23:00** and **03:00**, with estimated home ranges of approximately **800 m²** and mean distances between locations of **25 m**.



A red viscacha rat male before to be released with a transmitter.



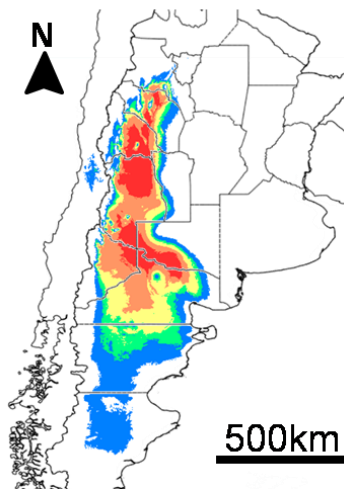
Activity patterns of the red viscacha rat of two males (AT22 and AT23) and two females (AT21 and AT8) during May 2018 in the homogeneous site.

-To estimate the probability of the presence of the RVR at broader scales through niche modeling:

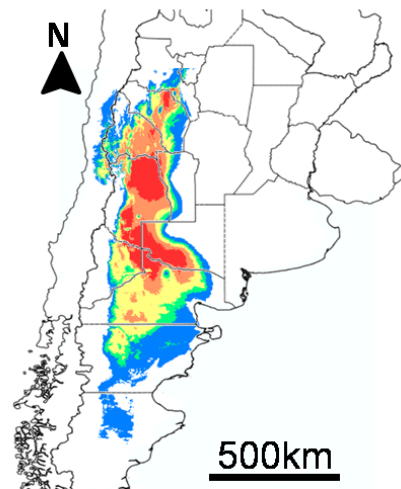
I obtained different predictions of current distribution and projections of their distribution to the year 2070. Certain areas with a higher probability of presence were found, corresponding to favorable conditions for the red viscacha rat. These conditions extend to the southwest of La Pampa and limits with Rio Negro provinces (Center and west of Argentina).

The expected projection for the year 2070 suggests a loss of connectivity in this area with respect to the other predicted areas within the model, being interesting in terms of conservation.

MIROC-ESM Model RCP 2.6



RCP 8.5



Potential distribution models of red viscacha rat for year 2070 with different greenhouse gas emissions pathways (RCP) in Argentina

It is also evident that use of modeling tools, as well as the design of informative material (dissemination poster), are fundamental starting points to work in the conservation of these specialized rodents as well another keystone species and this type of ecosystems.

-To organize extension activities:

I showed part of these results in the annual meeting of the Argentinean Society for Studying Mammals "XXX Jornadas Argentinas de Mastozoología" in 2018 and I will send this year an abstract for the "Jornadas Argentinas de Mastozoología" 2019.

I also prepared an informative material about the red viscacha rat and their life history and biology in the center west of Argentina. I contacted the Natural Resources office of Mendoza and I send them a poster proposal about the relevant information of the species (see next page).



Rata Vizcacha Colorada

Tympanoctomys barrerae

Distribución y hábitat: Se encuentra en la ecorregión del desierto de Monte, centro oeste de Argentina, en algunos sitios de las provincias de Mendoza, San Juan, La Pampa y Neuquén. Es de ambientes salitrosos, como salares y dunas de arena.

Características: De hábitos nocturnos. Pesa aproximadamente 100 gramos, su cuerpo es de color pálido, más blanco en el vientre y posee una cola larga terminada en forma de pincel. Se alimenta de plantas como la zampa y la vidriera que abundan sobre sus madrigueras.



Vive en **madrigueras** de 4m de ancho por 6m de largo con entradas semicirculares



Orina en terrones y heces alargadas similares a “un grano de arroz” de un 1cm de largo

Si usted ve **rastros** de la rata vizcacha (heces, madrigueras), por favor contáctenos:

atarquino@mendoza-conicet.gob.ar o al (261)15-618-2888.

Así podremos trabajar en la conservación de este roedor

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Secretaría de Ambiente y
Ordenamiento Territorial
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4. Briefly describe the involvement of local communities and how they have benefited from the project (if relevant).

Through the assistance of park rangers and assistants during fieldwork, I trained different people for using equipment for wildlife tracking. During field trips, was also possible to interact with local people and converse about the perception of small mammal fauna of the region, especially native rodents, and to share information about their personal observations. The informative poster was very useful for this purpose. On the other hand, was possible to highlight the importance of the red viscacha rat in terms of their ecology, adaptations and genetic distinctiveness. Furthermore, we detect the need of involving local schools in these activities.

During July 2018, I also shared to the community a communication report about animals surviving in the Monte desert and the case of the red viscacha rat (Spanish): <https://www.mendoza.conicet.gov.ar/portal/novedades/index/sobrevivir-en-el-desierto>

A second communication article was also realized during that year: <https://www.mendoza.conicet.gov.ar/portal/novedades/index/roedores-del-desierto-estudian-el-comportamiento-de-la-rata-vizcacha-colorada>

5. Are there any plans to continue this work?

Yes. After dissertation of my doctoral thesis, it's my intention to propose a post doctoral project to identify movement trends (home range, overlapping and nesting) of some generalist and specialist (as example, red viscacha rat) rodents in these arid lands of center west of Argentina, and their responses to variations in soil and vegetation of each habitat.

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

I will use this logo during an oral presentation of the Annual Meeting of the Argentinean Society for Studying Mammal to be held in Puerto Madryn, Argentina in the month of November (2019). I will submit these results through manuscripts to peer-reviewed journals. Moreover, to participate in scientific meetings will allow me to interact with other colleagues working on the same topic and to analyze and discuss these findings.

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

Most of the RSG was used for field equipment and trips. Project is almost finishing and expenses are being covered by other sources such as my scholarship. The duration of this Rufford Small Grant matched with what I planned for the budget during my field and extension activities.

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
Office supplies	150		-150	The Natural Resources office of Mendoza printed all the informative posters, so we decided to use this different to increase the number of transmitters
Food supplies during field trips	1200	1200		
Field supplies	400	400		
10 small mammals transmitters	750	900	150	We increased the number of transmitters with the budget "Office supplies". We finally bought and used 13 transmitters through Telenax (www.telenax.com)
Field Vehicle Gas and maintenance	2500	2500		
Total	5000	5000		

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

The monitory activity of the red viscacha rats during these two years is challenging. Although, more than 30 individuals were captured, radio tracked and released, successfully. I think the next important step is to combine this spatial information with genetic studies on the species in other populations of its distribution, to determine the structure of small and isolated populations in these heterogeneous landscapes, and this will allow a better identification of priority areas for biodiversity conservation in arid lands.

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. The Rufford Foundation logo was used for the oral presentation at the Annual Meeting of the Argentinean Society for Studying Mammals "Jornadas Argentinas de Mastozoología" held in La Rioja, Argentina, during the month of October (2018). It was also included in the poster with information of the red viscacha rat. Finally, it's my intention to acknowledge Rufford Foundation in any written information produced from this project and I will continue mentioning it in future presentations and dissertations.

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

Agustina Ojeda: Discussion of the project, help in fieldwork, writing process.

Ricardo Ojeda: Supervision and discussion of the project.

12. Any other comments?

This Rufford Small Grant was essential for me in order to conduct field work (field trips, equipment) for my doctorate, which is an important step in a scientist career, especially in developing countries.