Final Evaluation Report

Your Details	
Full Name	Ana Belen Avila
Project Title	Development and implementation of a long-term monitoring program to evaluate prey population responses to the reintroduction of an apex predator
Application ID	30487-2
Date of this Report	April 2022

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
Establish a baseline for long-term monitoring of medium and large vertebrates in the area focused on jaguar potential prey, estimating relative abundance, habitat use and activity patterns				We collected data from 30 camera trap stations in San Alonso and 20 in San Nicolas. A total of 95,126 photos were obtained from San Alonso and 69,038 from San Nicolás. Through collaborative work between project members and national park staff, the photos were tagged and sorted by site and species. Our team is currently carrying out statistical analysis to estimate relative abundance, habitat use and activity patterns of each species.
Recording the habitat types surrounding the camera sites and evaluating the density and distribution of the species that use open areas and are possible to recognize from aerial photos				30 flights over the 30 sampling sites were carried out simultaneously with the camera trap survey. Each mission consisted of a 25 ha circular polygon around the camera trap location. From the photographs, orthomosaics will be made using ArcGIS PRO software.
Replicating previous surveys conducted 10 years ago using camera traps				20 camera traps were placed in San Alonso and 10 in San Nicolás, replicating exactly the 2009 surveys carried out by Di Bitetti and Di Blanco (2009). A total of approximately 124,983 photographs were obtained, and for San Nicolás a total of approximately 98,121 photographs were obtained.
Behavioural observations of capybaras, pampas deer and marsh deer, in order to document their current behavioural budgets in relation to predation risk				This objective could not be carried out because the team was unable to travel regularly to the sampling site and the relative abundance assessment objectives were prioritised given that some behavioural data had been obtained in previous work (also funded by The Rufford Foundation) on capybaras, which are expected to be the main prey.

2. Describe the three most important outcomes of your project.

a). Creation of a collaborative team (Proyecto Yaguarete, APN Regional Technical Delegation of North-eastern Argentina, Iberá National Park and Fundación Rewilding Argentina) with common objectives that we hope to maintain and continue to strengthen in the new stages of the project.

b). Collection of baseline data on mid and large mammals: this was fundamental considering that in 2021 the first jaguar individuals were released on San Alonso Island, and the data collected in these collaborative tasks have been key to generate the baseline of some of the ecosystem conditions prior to the release of the first jaguars.

c). Collection of data on mid and large mammals comparable with sampling from 12 years ago. This information will allow us to evaluate changes generated by other management practices prior to the release of the jaguars.

3. Explain any unforeseen difficulties that arose during the project and how these were tackled.

As is well known, the project was developed with some logistical complications due to the COVID-19 pandemic. Because of this, we decided to employ a local field technician, who assisted with data collection when the team was unable to travel to the field. Prior to the pandemic, the project was to have his assistance for 2 months, and he was finally employed for 9 months.

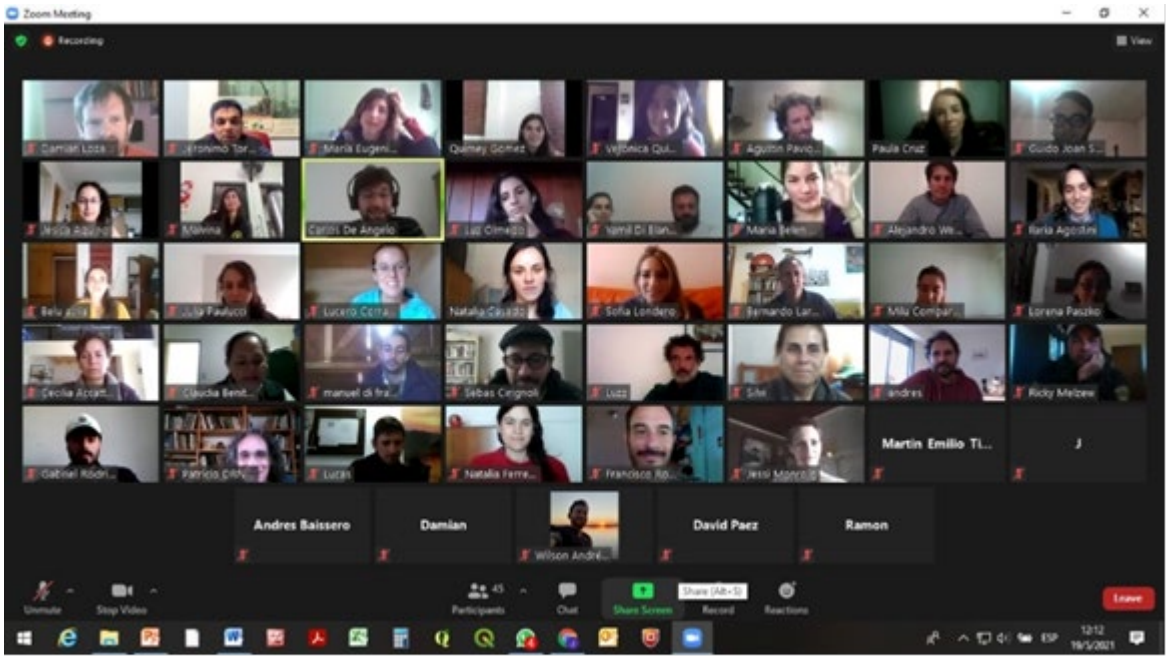
Some objectives had to be shortened or eliminated, among them behavioural data collection.

We redistributed the resources we received in order to be able to pay the technician's salary. We mainly use the money for food supplies in the field, other transportation needs, miscellaneous and field vehicle gas and maintenance.

4. Describe the involvement of local communities and how they have benefitted from the project.

As a team we organised a camera trap image processing training workshop for all Iberá National Park staff and open to other workers in the area. The workshop was held on 19 May 2021. It was developed through the Zoom platform with the collaboration of other members of the Proyecto Yaguareté team and support from Fundación Vida Silvestre Argentina. A total of 57 participants took part, of which 15 belonged to national parks (Iberá NP, Iguazú NP, among other departments) and the rest to members of different research teams, non-governmental organisations, private reserves, etc. During the workshop, an introductory talk on the subject was given, as well as a step-by-step practical demonstration of labelling, with examples of different situations that usually arise during analysis. In addition to this training, we had previously prepared material to share, such as a guide for handling camera traps, a document of species that usually cause confusion in photos for each working area (Misiones, Iberá and Chaco), and protocols and lists of tags for the

systematic processing of data. All the material was made available, and the workshops were recorded, so that the effort made can function as a virtual training that we will leave available for future interested parties. The results of the workshop were very satisfactory, as we were able to establish a common basis for labelling in order to optimise and systematise data processing, so that the data collected can be easily interpreted and uploaded to databases. In addition, it was very positive to generate links between those of us who are working in the same areas with this camera trap methodology.



5. Are there any plans to continue this work?

Yes, the plan is to continue with this monitoring every year in collaboration with the national park, Proyecto Yaguareté and Rewilding Argentina, in order to quantify changes in the mammal populations generated by the return of the jaguar. First of all, densities and abundances will be estimated with the data obtained and processed from these first surveys, which will serve as a baseline for future comparisons.

On the other hand, part of our team started to address the topic of scavengers and availability of carcasses left by the jaguar, in order to estimate not only what the new jaguars are feeding on but also the impact on the scavenger community. To address this issue, one of our team members, Quimey Gomez, started her PhD by addressing these questions in 2021.

The aim is to form a team that can monitor the various changes that may be generated by the return of the Jaguar, generate baseline information and maintain

this long-term monitoring in order to quantify changes and redirect conservation efforts based on reliable information.

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

Once we complete data analyses, we will share the results with: (1) the public via non-technical articles in a magazine and a regional newspaper; (2) the scientific community via presentations in professional mammals' meetings and articles in peer reviewed journals; and (3) NGOs in charge of the jaguar reintroduction project and wildlife state agencies via technical talks and reports.

Up to now, the preliminary data obtained from these surveys have been organised into a final report that has been submitted to the National Parks Administration.

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

Our next steps are to: 1) strengthen institutional links to be able to continue this monitoring in the long term; 2) address new lines associated with other potential impacts of the return of the jaguar, such as effects on trophic control of the ecosystem, and scavenger community; and 3) make pre- and post-jaguar comparisons with the data collected to assess possible changes in the mammal community.

8. 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?

Rufford's support for this project was made visible in the workshops conducted with the collaborating institutions. The logo was used in seminars within my institution and with the NGO in charge of the jaguar reintroduction project. It is planned to disseminate the logo in the works to be presented in congress and in dissemination activities.

9. Provide a full list of all the members of your team and their role in the project.

Members	**Role**
Carlos De Angelo	Collaboration in planning of field activities, logistics, statistical analysis. Advisor of project.
Agustin Paviolo	Collaboration in planning of field activities, logistics, statistical analysis. Advisor of project.
Mario Di Bitetti	Collaboration in planning of field activities, logistics, statistical analysis. Advisor of project.
Quimey Gomez	Master's student. She participated in the field work and will be in charge of the analysis of the data obtained from the camera traps. She was also a speaker at

	the labelling workshop for the other collaborating institutions.
Wilson Pinzon	Master's student. He participated in the field work and will be in charge of the analysis of the data obtained from the drone flights.
Alejandro Welschen	Field technician. Installation of camera traps, drone flights, and collection of memory cards in the field, among other activities.