The Rufford Small Grants Foundation

Final Report

Congratulations on the completion of your project that was supported by The Rufford Small Grants 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	Mariel Ruiz Blanco
Project title	Puma-guanaco interactions: evaluating the impact of predation on newborn guanacos
RSG reference	12462-1
Reporting period	November 2012 - January 2014
Amount of grant	£5404
Your email address	marielruizblanco@gmail.com
Date of this report	May 2014

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
Investigate guanaco mortality patterns during their first year of life			x	We captured and radio-collared 29 newborns, which were monitored during the year. We estimated mortality rate, causes and patterns of mortality during the year.
Evaluate potential effects of puma predation of juveniles on population dynamics.		x		We have already collected the data required to run the population dynamics model. We are currently analysing data to conduct simulation analyses. It will allow us to improve our understanding of guanaco population dynamics in different scenarios of level of puma predation, guanaco survival and guanaco density.

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

Our project focuses on juvenile guanaco survival, therefore we captured, radio ear-tagged and monitored 29 newborn during the first year of life. We faced unforeseen difficulties in the determination of mortality causes due to failures and low power in some of the ear-tag transmitters, which resulted in a higher proportion of unknown mortality causes than expected. We also had problems with the purchase of a new and more powerful receiver due to restrictions on imports in Argentina. The new receiver finally arrived few days after the birth season of guanacos had begun, so we had to begin telemetry activities using an old receiver that had lower signal reception. Two of the earliest newborn deaths occurred in this period and we were not able to detect the death signal on time to be able to assess causes of mortality before the carcass was degraded. Additionally, 15 transmitters (which were expected to have a battery life of at least 1 year) began to fail sooner than 1 year after being attached to guanaco newborns. The failure was in the mortality switch, thus transmitters emitted death signals in spite of tagged guanacos being alive. Even though I increased monitoring efforts to closely follow them, due to these failures it was impossible to detect other two real guanaco deaths on time and assess mortality causes appropriately. Despite we could not determine the cause of death; we know that they were not related with the capture due to elapsed time and post-capture observations of newborns with their mothers.

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

We obtained a telemetry-based estimate of guanaco survival rate during the first year of life for the first time in Argentina and the second time in the entire species range. We captured and radio ear-tagged 29 newborn guanacos during the birthing season. After monitoring them, 61% survived to the end of the first year. We also estimated mortality causes and patterns and identified a critical period for newborn guanaco survival, when most deaths occurred. Due to there is a lack of some

basic information affecting native wildlife in Argentina, this demographic data is crucial for wildlife agencies to improve management decisions about guanaco conservation.

We are currently entering and processing these data to develop the population model. Based on this model we will conduct simulation analyses that will allow us to improve our understanding of puma-guanaco interactions in two main scenarios. First, in the "Payunia scenario", we will evaluate how actual and simulated levels of puma predation on juvenile guanacos influence guanaco population dynamics. With this information we will be able to predict guanaco population responses to changing levels of puma predation or guanaco survival. Therefore, we will make more robust management recommendations considering possible future changes in puma and guanaco populations. Second, in the "low density scenario", which represents most populations across the guanaco's range, we will evaluate the effect of different levels of puma predation on low-density guanaco populations. Currently, intense predation in areas where pumas are supplemented by exotic prey could be preventing recovery of these populations.

Our study of guanaco survival in this population is significant because this is the largest protected guanaco population in its range (in the 600,000 ha Payunia reserve) and it is probably the only one that maintains a massive seasonal migration involving tens of thousands of individuals that move up to 150 km between their summer and winter range (according to preliminary results of a telemetry study with adult guanacos conducted recently by my team). Therefore, this population is unique in terms of the spatial scale of the ecological processes it retains, such as seasonal migration and interactions with predators and forage over a large and diverse mosaic of habitats, perhaps most similar to the processes through which guanacos interacted with their environment before massive transformation occurred in the Patagonian steppe due to sheep ranching and human settlement in the last 100 years.

Our juvenile telemetry study also allows us to follow seasonal migratory movements of guanaco family groups in a portion of the reserve not previously studied. We recorded tagged guanaco locations from January 2013 to January 2014 to follow their seasonal migration. Now we are able to describe their movements in this portion of the reserve, complementing data on guanaco migration in Payunia. Family groups spent the summer near parturition sites and surrounding area, at the northeast of the reserve. During autumn the groups joined each other (and also with groups of bachelors) to start to move south. By mid-winter, tagged guanacos with their families were 40-50 km south from their birth sites. And after spending the unfavorable season in southern lowlands, they returned to the northeast of the reserve. The area where guanacos spend the winter is a poorly-studied portion of the reserve called Lonco Vaca. Our data confirm the use of Lonco Vaca by guanacos during winter, reinforcing the importance of this area to conserve guanaco migration. We included the assessment of forage quality in this area to cover the entire yearly range of the guanaco population studied.

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

Fourteen park rangers of Mendoza Province have participated in the project during the year acquiring training in data collection and field techniques. They collaborate with captures and tagging, monitoring juvenile guanacos with telemetry techniques, guanaco necropsies to estimate mortality causes and transects to estimate guanaco density.

Fourteen biology students and young biologists (10 from various Argentine universities and four from US, French and Italian universities) and also our students from the provincial park ranger school, participated in the project as field technicians. They receive intensive training in field techniques like capture and marking, transect sampling, field necropsies and telemetry monitoring. Moreover, given that local universities do not provide this kind of learning, the experience acquired increases their chances of getting involved in conservation biology and wildlife research in the future.

5. Are there any plans to continue this work?

Yes, next birthing season (November-December 2014) we are going to capture and radio ear-tagged a second cohort of newborn guanacos. We have already purchased 35 new transmitters and we have also obtained some funds for field work.

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

We have already presented one communication in an International Scientific Meeting* and will present preliminary results of juvenile guanaco survival in November 2014 in the next Argentinean Meeting of Mammalogy. We are beginning to prepare the manuscripts to submit to international peer-reviewed journals, once we complete another year of field data.

We have also presented two reports to the Renewable Natural Resources Department of Mendoza Province showing preliminary results. Now we are working on a talk to be presented to park rangers, professionals, and authorities of the Mendoza Provincial Department of Renewable Resources to present them the results and discuss conservation recommendations with them.

*Ruiz Blanco M., M.L. Guichón y A.J. Novaro. 2012. Evaluation of the influence of juvenile guanaco survival on population growth in the Payunia Provincial Reserve. II Latin American Mammalogical Congress and XXV Argentinean Meeting of Mammalogy, Buenos Aires City, Argentina.

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

The RSG was used during the first year of field work of our project, started in November 2012. As we reached November 2013 with some remaining funds, and we needed to work in the field also during December and January to collect data on guanaco survival, location and density, we used these funds to cover field costs until January 2014 (previously agree with RSGF). Therefore, RSG was used to cover field expenses from November 2012 to January 2014. Currently we are analysing the results, writing reports and looking for more funds for another year of field work. This will allow us to draw more robust conclusions and to start to explore inter-year variation.

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
Food in the field (£3.5/person/day)	1890	2015	-125	
Gasoline	1228	1229	-1	
Field technician travel cost	1573	1438	+135	Some technicians travelled from closer locations than expected, thus we could reduce costs
Vehicle maintenance	713	735	-22	
Total	5404	**5417**		

Local exchange rate (30-NOV-2012; date when I received the deposit): 7.74 ARG pesos = 1£.
http://es.investing.com/currencies/gbp-ars-historical-data

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

As November 2012-January 2014 included the first year of monitoring survival of juvenile guanacos, the next important step is to complete a second year of monitoring, which will allow us to explore inter-year variation by obtaining another set of estimates of yearly survival patterns, which is essential in highly variable environments like the Patagonian steppe, and draw more robust conclusions about guanaco survival and population dynamics.

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

We used the RSGF logo in the communication presented in the II Latin American Mammalogical Congress in 2012. We will also use it in the next communication we are planning to present the current year, and in the talk we are going to give soon to park rangers and other province personnel. We also acknowledge RSGF in all the reports and written material produced, and we will continue mentioning RSGF in future presentations (reports, manuscripts and any other material related with the project).

11. Any other comments?

It would not have been possible to carry out this study without your support. I am really grateful to RSGF.