

## 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](mailto:jane@rufford.org).

Thank you for your help.

**Josh Cole, Grants Director**

Grant Recipient Details	
Your name	Emiliano Donadio
Project title	Conserving the last of the wild: pumas and wild camelids in the semiarid landscapes of the Argentinean Andes
RSG reference	50.12.07
Reporting period	January 2008 – April 2011
Amount of grant	£8,500
Your email address	<a href="mailto:emiliano@uwyo.edu">emiliano@uwyo.edu</a>
Date of this report	May 5 <sup>th</sup> 2011

**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
Goal 1.1: To analyse the spatial distribution of puma predation on vicuñas in the semiarid landscapes of the Argentinean Andes.			✓	The spatial distribution of puma predation on vicuñas was successfully analysed based on 79 vicuña carcasses showing signs of puma predation.
Goal 2.1: To assess vicuña foraging behaviour in risky and safe habitats using feeding trials	✓			Despite several attempts utilising different food substrates, vicuñas systematically ignored the food we offered them. Equipment (i.e., buckets) purchased for this experiment would be re-utilised in future research planned for 2012-2013.
Goal 2.2: To assess vicuña vigilant and foraging behaviour in risky and safe habitats using direct observations			✓	Vicuña foraging and vigilant behaviour was successfully assessed. One hundred fifty observations of vicuña group behaviour were recorded in safe and risky habitats. Also, 75 vicuña individuals were recorded with camcorders all habitats to evaluate vicuña individual behaviour.
Goal 2.3: To analyse the impact of vicuñas on vegetation and fauna using exclosures			✓	Thirty six 400 m <sup>2</sup> exclosures and 18 controls were built. Surveys to evaluate the effects of exclosures were successfully conducted in January and February 2010 and 2011.
Activity 3.1: To analyse camelid use of risky and safe habitats			✓	We conducted 25 500 m-long transects that extended perpendicularly from rocky cliffs into flat-open plains.

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

Most of the unforeseen problems we experienced were related to the implementation of our experimental design. For instance, I had planned to build exclosures but bringing the materials to the park was challenging as we had to transport 3,000 kg (or 500 m) of rebar, 5700 m of wire and 864 fence posts. Our close relationship with provincial and federal agencies allowed us to successfully transport the materials to the park. These agencies provided trucks and personal that helped with the task. So, thanks to collaborative efforts this difficulty was completely solved.

Once the exclosures were in place we discovered that vicuñas were using the fence posts to rub themselves; consequently, they were, in some cases, destroying the exclosures. We solved this by reinforcing the exclosures.

The only unforeseen problem that we could not solve was the lack of response of vicuñas to our feeding trials. We tried with different food substrates but vicuñas still ignored the buckets with food. Therefore I was unable to successfully complete this part of the project. Fortunately, our data collected through direct observations yielded enough information to overcome this problem.

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

First, our data showed that puma predation on vicuñas appeared to have indirect effects on vegetation. Such effect was mediated by habitat type. Habitats that favoured the hunting (ambushing) strategy of pumas were riskier for vicuñas but safer for plants; here vicuñas decreased their grazing pressure. Conversely, those habitats that were adverse in terms of puma hunting strategy were safer for vicuñas but riskier for plants. Our work shows that to conserve habitat heterogeneity is necessary to conserve ecological interactions rather than isolated species. Also, our work highlights the importance of large predators to ecological communities. In the arid landscapes of South America, the removal of pumas would allow vicuña grazing in safe and risky habitats resulting in an undesirable homogenization of the landscape.

Second, during 3 years we ran an unusual research programme that was able to incorporate other aspects not included into our original proposal. For instance we were able to evaluate the survival rates and mortality causes of yearling vicuñas. This is the first time such information becomes available for this species. Our data will be surely used in vicuña demography studies and sustainable use plans.

Third, this research had a high impact in enhancing local research capabilities. Thirty five undergraduate and graduate students from seven different universities participated in this project. All students received intensive training in field and lab techniques related to the field of ecology and conservation. Several of the students presented results in professional meetings; these activities allowed them to enhance their professional skills as well as build up their résumés. One student conducted research for her honours thesis within the framework of this study. Some students are planning future research in the area. Overall, this project opened the possibility for students that would probably become the conservation biologists of the future. They will carry out our conservation efforts into the future. This is likely one of the most important outcomes of this project.

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

From a geographic standpoint, the national park where I worked is fairly isolated; therefore, involvement of local community was not possible. However, three provincial conservation agents and five park rangers received training in a diversity of field techniques that would be useful for future monitoring plans of wildlife and vegetation.

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

There are, definitely. After studying the importance of the interaction puma-vicuñas over vegetation and small fauna we suspect puma predation on vicuñas also affects Andean condor and other bird scavenger populations. Starting in middle 2012 we expect to continue our work evaluating the use by condors of vicuña carcasses with signs of puma predation. Our preliminary observations are encouraging: most vicuñas in our study site are killed by pumas and condors used these carcasses almost always. If quantitative data confirms this speculation then we will be able to link pumas, vicuñas and condors, three highly charismatic species, to build our case for the conservation of the frequently ignored arid and semi-arid landscapes of South America.

Also, we are planning to continue gathering data on vicuña demographic parameters to inform projects dealing with the sustainable use of this species. In our study site, gathering such information would be relatively easy due to the abundance and docility of vicuñas. We expect to radio collar 50 adult females to estimate survival female survival rates and productivity. To date no study has attempted to do this.

We are also planning to develop a monitoring plan for the biota inhabiting the streams of the area. This is fundamental for the conservation of this dry area because these streams are being used by large scale mining operations. Not such a plan is in place so far and streams are very important for the maintenance on meadows which in turn support vicuña populations.

Steps towards these goals have been already taken. Several funding sources have been identified. I have also created ties with several colleagues who accepted to collaborate with the research ideas mentioned above. We will meet in June to develop a sort of blueprint that would be use to achieve our conservation goals. Also, one scholarship is already available for one Argentinean student to conduct research at San Guillermo National Park. We are now interviewing potential candidates for this position.

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

We have already started to share our results and expect to keep doing it within the next 2 years. To do so we used and plan to use three main avenues: the academic avenue, the technical avenue and the public avenue. The academic avenue involves presenting results in professional meetings and publishing results in scientific journals. From January 2008 to date my volunteers and I have presented 10 posters at five professional meetings both local and international. Manuscripts for publication will be written within the next 18 months. The technical avenue involves submitting technical reports to those provincial and federal agencies in charge of managing the areas where we worked. From January 2008 to date I have submitted four technical reports with recommendations and data for monitoring and managing programmes. In fact, one report was a document including the design and implementation of a monitoring plan for communities and populations of flora and fauna not only for the park where I worked but also for the surrounding provincial reserve (1,000,000 million ha in total). Data from this project were included in this monitoring plan. A final report, summarising all our findings, will be submitted before the year ends to the National Park Administration, the authorities of San Guillermo National Park, the Department of Protected Areas of San Juan province and the Federal Wildlife Service. The public avenue involves public talks for public other than scientists. From January 2008 to date, I have given six talks to different audiences emphasising the importance of conserving the semiarid landscapes of South America. The last

presentation was after provincial representatives of Mendoza province in charge of passing a law that would allow the beginning of large scale mining operations in the Andes range. Future public presentations are being planned.

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

The Booster Grant presented by RSG was used over a period of 3 years and 3 months. The project was first planned to run for 1 year. However, grants from RSG and other organisations allowed me to conduct research for an exceptionally large amount of time. Long term projects are scarce and difficult to support and carry out. However, these types of projects are fundamental when dealing with complex ecological and conservation questions. More time in the field usually implies more and better data and therefore more accurate monitoring, managing and conservation measures.

**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
Bus fare	£ 600	£ 600	0	Funds were spent as planned
Field vehicle gas	£ 1,216	£ 3,000	- £ 1,784	Because I was able to extend this project for 3 years (I had planned 1 year when I started), we spent more in gas than planned. The difference was covered with funds from other grants.
Vehicle maintenance	£ 705	£ 1,032	- £ 327	Road conditions had a strong negative impact on trucks; therefore I spent more than planned on vehicle maintenance. The difference was covered with funds from other grants.
Housing	£ 1,460	£ 3,500	- £ 2,040	Because I was able to extend this project for 3 years (I had planned 1 year when I started), we spent more in housing than planned. The difference was covered with funds from other grants.
Food in the field	£ 2,620	£ 6,550	- £ 3,930	Because I was able to extend this project for 3 years (I had planned 1 year when I started), we spent more in food than planned. The difference was covered with funds from other grants.
Material to build 20 grazing enclosures	£ 1,070	£ 1,070	0	Funds were spent as planned

Material to build and run feeding trials	£ 830	£ 830	0	Funds were spent as planned
<b>Total</b>	£ 8,501	£ 16,582	£ 8,081	

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

To consolidate our presence in the area through a 10-year long research programme.

To identify funding sources that would support such long-term programme.

Besides applied research, to develop a strong outreach program so we explain the nearby local communities about the importance of conserving wildlife and their landscapes. This outreach programme should be developed with the close collaboration of the National Park staff and provincial agents.

To increase our public presence (radio, newspapers, public talks) in order to be taken into account by public officers in charge of managing natural resources (particularly protected area and wildlife).

To increase our capacity of influencing political decisions related to the management of natural resources (particularly wildlife and protected areas).

**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?**

RSGF was mentioned in every public talk, academic seminar and posters I presented since I received the grant.

**11. Any other comments?**

This project had very specific goals all of them related to applied ecological research aimed to understand a particular ecological system to suggest conservation actions. Scientific outcomes of this project were mentioned above. However, there are outcomes, not specific to this project, worthwhile mentioning. By supporting a 3 year-long project RSGF basically supported the presence of conservationist in the field; once in the field, besides working on our specific project, we were involved in a diversity of activities: a) park managers often asked for advice in topics related to park management and monitoring; (b) provincial agents asked us for advice when evaluating environmental impact assessments presented by mining companies that are operating in the provincial portion of the reserve; (c) we were frequently invited to give talks at schools and other parks and reserves; (d) because we spent so much the in the park we became the “eyes” of the park rangers (i.e., if something unusual was going on we let the rangers know); and (e) we were able to develop a documentary of the park that is currently being use by park staff to give talks at schools.

These activities, although not specific goals of our project, are critical for conservation action.