

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. 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. 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	Verónica Andrea Quiroga
Project title	Ecology and conservation of the Jaguar (<i>Panthera onca</i>) and the Puma (<i>Puma concolor</i>) in the Argentine semi-arid Chaco: influence of prey availability and human presence in the region.
RSG reference	2-20.03.09
Reporting period	Year 2008
Amount of grant	£5934
Your email address	veroquiroga@gmail.com or veroquiroga@hotmail.com
Date of this report	February 17, 2009.

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
<p>To determine the presence and density of jaguars and pumas in two sites of the Argentine semi-arid Chaco (Copo National Park and Aboriginal Reserve) with different levels of disturbance and compare them.</p>			X	<p>We determined the presence and density of jaguars and pumas at both sites. However, given that in the last year we had the possibility to conduct another sample at a third site, with a lot of field workdays, we still have not had time to analyse all the data. As a preliminary result we can say that we only obtained tracks of jaguars at the Aboriginal Reserve, with no sign of their presence in Copo despite it is the better protected site. As for pumas, in Copo we obtained 79 photos, corresponding to 61 different capture events, and in the Aboriginal Reserve we obtained 46 photos corresponding to 28 different capture events (0,8 pumas/100 km²). In the next months we will analyse all the field data and estimate the density of pumas for all three sites using the program density.</p>
<p>To determine variations in availability of potential prey species for jaguar and puma in two sites of the Argentine semi-arid Chaco (Copo National Park and Aboriginal Reserve) with different levels of disturbance.</p>			X	<p>We obtained a lot of information about the presence of different species of potential prey, both from photographs and from indirect observations. At this moment we are analysing data collected in the field to determine the relative abundance of these species in relation to the presence of both cats. As preliminary results, in Copo we obtained many photos of pecaries (<i>Tayassu tajacu</i> and <i>Tayassu pecari</i>) in contrast with the Aboriginal Reserve where we had virtually no photos of</p>

				<p>pecaries. The same pattern occurs with <i>Myrmecophaga tridactyla</i>, <i>Pseudalopex gymnocercus</i> and <i>Tolypeutes matacus</i>. In the case of <i>Mazama gouazoubira</i> and <i>Leopardus geoffroyi</i>, the pattern was the contrary.</p>
<p>To determine whether differences exist between jaguar and puma with respect to habitat use and spatial or temporal activity patterns, relative to the availability of prey and to the level and type of human interference in each site.</p>		X		<p>The absence of jaguars at one site and the very limited data at the other site do not allow us to determine differences in habitat use between the two cats, because jaguar data are insufficient. However, the data obtained for pumas will enable us to relate the differences in density with the prey availability at each site, as well as with hunting pressure and cattle densities, for we which we have obtained data. These data will be analysed shortly.</p>
<p>To obtain current data on the distribution of the jaguar in the Argentine semi-arid Chaco region.</p>			X	<p>We have determined the presence/absence and abundance of jaguars at three key sites of the chaco green corridor at the semiarid chaco of Argentina. These new data are very important because they contradict what was believed for the region—jaguars are at much greater risk of local extinction than previously thought, and urgent conservation actions are required to protect them.</p>

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

One of the difficulties we experienced during sampling in Copo National Park was the high inflation rate that the country has suffered during the project period, so the money requested was not enough.

Another problem was the long delay in the arrival of the camera traps to the country. Our project works with cameras provided on loan by a US-based NGO. The cameras travel from one research group to another in different countries of Latin America, and because of a customs problem in the country of origin, the cameras arrived nearly three months late to Argentina. The senders had told us that the cameras would take two months to arrive, so we traveled to the field site anticipating those dates, installing the other borrowed equipment that we had received. When we learned that the arrival of the cameras continued to be delayed, we decided to stay at the camp and wait for them. But when the

cameras finally arrived (one month later...), not only had we had spent much of the money to stay at the field site and to conduct the other project activities, but also the half of the cameras that arrived were not working! Thus, the sampling in Copo was not only for a shorter time period and with less camera traps, but it also was conducted in spring rather than winter. The start of the rainy season brought some additional logistical difficulties.

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

- We found the jaguar situation is very serious in the Chaco region of Argentina and that their populations are nearly extinct, putting the species in an alarming conservation status at a regional level. Before this study it was believed that the jaguar was still plentiful in the Argentine Chaco and now, we know this is not true. The important results of this study indicate that priorities should be changed regarding the actions proposed by government agencies for the conservation and management of the species and the region.
- We also determined the density of pumas at the three sites sampled, the first calculation made for the species in this region. The preliminary results indicate that puma population status, contrary to what is believed, is also compromised, especially if we compare the figures obtained so far with those estimated for other similar regions. The differences in puma abundance between sites also indicate that the different protection status of the areas, and the different levels of human presence are affecting the population of pumas in this region.
- Finally, our study achieved a survey of all the species of medium and large mammals detectable by the cameras trap and by line transect surveys, at the three sites. There are very few data for these species in the Argentine Chaco and several of them are species of high conservation value, in serious danger of extinction or endemic to the Chaco. For all these species we will determine presence, abundance and activity patterns. In this way, we have obtained information not only about the mammals that are important as prey to jaguar and pumas, but also as species of conservation importance in themselves.

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

The relationship of the project with local communities focuses mainly on the conflict between the two big cats and domestic livestock. During the field campaigns we began conducting interviews with local residents, park rangers, and rural teachers, among others. We distributed educational materials and talked with people about the importance of both species for the Chaco ecosystem and their protection status, among other topics. We investigated which were the major conflicts between settlers and big cats and also suggest solutions. In the survey in Copo National Park, we received excellent responses from people, who were interested in the conservation of the species in general, albeit with some concern about livestock predation or possible attacks on humans. Several of the local people participated in the campaign indicating likely trails for recording the animals, informing us of sightings and predation data, and accompanying us to the field to review the camera traps on several occasions.

5. Are there any plans to continue this work?

At this point we are analysing and transcribing field data, and we will undertake a short trip (30 days) to the three study sites during 2011, to complete interviews and missing information. As the data are processed we will have accurate estimates of density of pumas at the three sites, estimates of the intensity of use of the environment by the principal prey species, spatial and temporal activity patterns for predator and prey, and the relationship between prey species and the two large predators. Similarly, information obtained in interviews will help to further clarify the status of the jaguar and puma in the

region and the specific causes of population declines. We hope that, wherever possible, this information will help push urgent measures for the conservation of both species, their prey and the Chaco environment in general.

The semi-arid Chaco region in Argentina is vast (more than 270,000 km²) and determining the status of the species across this extensive area is a long-term effort. Having determined the situation at three different sites in the Chaco corridor (north, south and center), we have covered a fairly broad and representative sample of the situation in the region. However, it is necessary to continue the surveys at other sites to determine which the key sites are and to priorities new research and conservation efforts. There are places we have not yet evaluated and could be harbouring remaining jaguars in the Chaco. We need to complete information on conflicts between large predators and people, not only in the three areas already surveyed, but also at sites that connect them and other sites of interest. The sampled areas are probably being used by jaguars only as places of passage or perhaps only by a few animals, so it is very important to promote the establishment of new protected areas at these key sites.

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

As the complete results become available, we will communicate them through scientific and technical reports, as well as through general dissemination to the scientific community, local community and government environmental institutions and NGOs in the country.

During year 2009 and 2010 I was interviewed by one newspaper from the region and two journals of general interest, about the project and the importance to the species for conservation. We and other colleagues are writing two book chapters about jaguar conservation. I presented a poster in the International Mammalogical Congress in 2009 and I am writing two preliminary reports for general dissemination.

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 from July 2009 to July 2010. In that period, we completed the sample in Copo National Park with two trips to the field. Then we began to plan the next campaign in Formosa, and we traveled to the field, for that reason we have not had time to write this report before. Except for the delay in sending the final report, the rest of the schedule was completed as planned.

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
Rent of vehicle	2400	3500	- 1100	The differences are due to economic inflation that occurred in the country since the budget was drawn up. In addition, to this item we added the costs of repairing the vehicle, which was very old and often broke down on the difficult Chaco roads.
Gasoline	745	745	0	In this item we saved some money by being so far from town and in a place so isolated, so we directly avoid as possible to going out during the 85 days of field work and thus reduce the amount

				of miles driven and the cost in gasoline. For this reason, the inflation was not evident in this item.
Communication	87,5	60	17,50	For the same reason as in the previous item, in this case, we had limited communication opportunities because of the isolation of the site, so we saved money and avoided the problem of inflation.
Camera trap supplies (films and batteries)	664	773	- 109	The differences are due to economic inflation that occurred in the country since the budget was drawn up.
Pharmacy suppliers	112	133	- 21	The differences are due to economic inflation that occurred in the country since the budget was drawn up.
Office suppliers	70	80	- 10	The differences are due to economic inflation that occurred in the country since the budget was drawn up.
Small field equipment	90	393	- 303	This was a problematic category because in recent months previous to the sample, some changes in the study area made it unsafe to install cameras without being exposed to theft. For this reason, we had to spend more on locks, chains, and metal boxes for the cameras, all items that were not included in the initial budget, but that were essential to prevent theft of the cameras in Copo.
Food	980	980	0	For this item we tried to keep costs to a minimum and we used complementary money from another grant. For this reason, the inflation was not evident in this item.
Movility	700	700	0	For this item we tried to keep costs to a minimum and we used complementary money from another grant. For this reason, the inflation was not evident in this item.
Accident insurance policy	147	147	0	These costs were fixed with the insurance company before starting the campaign and remained fixed despite inflation.

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

We consider it very important to continue monitoring the sites already studied, for at least a second year to determine what is happening with the population of pumas, to confirm the presence of jaguars (as found through tracks at two sites), and also to monitor populations of prey species. An interesting result of this work, as we stated above, was the information obtained for certain species of high conservation value such as *Myrmecophaga tridactyla*, *Priodontes maximus*, *Leopardus pardalis*, *Catagonus wagneri*, *Tayassu tajacu* and 26 other medium and large mammals. We are very interested to monitor these populations over time. We want to determine how every year they are responding to environmental changes in the region--mainly under hunting, livestock and habitat loss pressures--and how this influence the big predators.

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?

Yes, in the poster presented at the International Mammalogical Congress in 2009 and in the preliminary reports sent to the collaborators of the project and to the people involved in jaguar and Chaco conservation in Argentina.

11. Any other comments?

We are very grateful for the grants given by Rufford; without your help our project would not be possible. We are very happy with the development of the research and with the results obtained, we think this information is very important and trascendental for the study and conservation of jaguars, pumas and their prey in Argentine Chaco.

Thank you very much for your help and we look forward to working together in the future.