

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	Carolina Beatriz Trigo
Project title	Estimating cattle carrying capacity for a sustainable cattle-breeding system compatible with the conservation of the semiarid Chaco forest, Argentine
RSG reference	13782-1
Reporting period	January 2014 — March 2015
Amount of grant	£5960
Your email address	carolinatrigo88@gmail.com
Date of this report	4/05/2015

1. Please indicate the level of achievement of the project's original objectives and include any relevant comments on factors affecting this. This project had a general objective and several particular objectives.

Objective	Not achieved	Partially achieved	Fully achieved	Comments
The general objective was to know the ANPP to estimate the carrying capacity of the ecosystem with livestock and then generate the information base to design sustainable management guidelines in the National Park Copo (located in Santiago del Estero province, Argentina).			x	This general objective has been reached but we had the disadvantage that the project took more time than we had planned. That is to say, the project was planned to be executed and completed in 12 months, but we could not follow the plan because we had obstacles with the use and application of the methodology.
The first particular objective was to do the counting of forage ANPP in shrubs and herbaceous plants, to estimate the carrying capacity of the system.			x	This objective has been reached, despite time retardation and changes in the methodology for measuring shrub ANPP.
The second particular objective was to generate the scientific information base in order that authorities and cattle owners can make sustainable management decisions related to cattle activity.			x	We generate this scientific information base in order to the authorities take management decisions based on them. We hope it be in that way, because these management decisions not only depend on us.
The third particular objective was to execute workshops with the local community, park rangers, other researchers and workers in the area, in order to agree on possible management practices related with the preservation of native forest.		X		The final project data were obtained recently, so we had not time for do workshops to communicate the final results yet. However, through the project development, we did individual talks with cattle owners and park rangers, communicating the project progress and preliminary results.

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

During the development of project, appeared some problems that made slower its progress in the time. The first obstacle was that we figured out later (with the help, corrections and suggestions from colleagues) that to estimate shrubs and herbaceous ANPP in areas adjacent to the old enclosures, the correct way was to close at the beginning of the wet stage these areas, to prevent that livestock consume the growing production of shrubs period 2013-2014, but we did not. Therefore, we lost to harvest in that period of growth of shrubs and herbaceous outside the old enclosures in the forest, and we had to wait until the beginning of the next wet season to close.

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

1. We could estimate the ANPP, in forests and grasslands, from which the carrying capacity of the system was estimated. From this, we generated information base from which the authorities in charge of the park and with cattle owners could take management decisions compatible with native forest conservation.
2. We were able to adjust and test some methodologies to estimate ANPP, which previously had not been used in the chaco forest. These adjusted methodologies are now available for other researchers who wish to replicate or do a similar study.
3. With this project, it was given work to the field assistants who were in every campaign, and at some cattle owners who help us with the installation of adjacent enclosures. In addition, a new member joined the group in order to make his thesis to finish his career of agronomist, based on data from ANPP grassland. Finally, through this project it was possible to me, perform and move on with the data for my doctoral thesis, which without this subsidy would have been very difficult to execute.

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

We consider that there should be established a fluid and active communication with the cattle owners, because they are who lived there all his life and they have more knowledge about the natural history of the park. This information is so valuable and should be taken into account when developing management plans related with biological conservation of native forests.

Therefore, cattle owners who live inside the park participated in the project in several times and in various ways:

- In the confection of the new fixed enclosures adjacent to old enclosures.
- In surveys about the use of forage plants and information on movement of livestock.
- In the suggestion of where is the better place for put the mobile cages of grasslands.
- Other suggestions through the project development, because we had a continuous communication with them on the progress of the project mentioned.

5. Are there any plans to continue this work?

I have plans to continue this work because, according to my doctoral thesis, although I lack repeat the same samples in another wet season more (which would imply another year of study in the field) in order to cover the widest temporal variability possible. This is because the climatic variability in

the landscape is an important factor to estimate ANPP, because ANPP varies according to how dry or how wet are the years, and therefore the carrying capacity can also vary between years.

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

I exposed some of the results in a local forest conference which was held in north of Argentina in 2014. The rest of the results will be shared this year in two conferences (in September and October 2015), for which I am already analysing and processing the data. Also, I will post them in a scientific journal and give general talks to cattle owners, park rangers and authorities of the place, in order to share my results and suggest management guidelines.

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

RSG was used over a period of time bigger than planned, covering from January 2014 to April 2015. I plan to continue using this same RSG because I have one more campaign in which money of this RSG is destined. This campaign involves taking data in May or June in this year to measure grasses ANPP for to complete the exclosures that are on grasslands. Therefore, compared with the planned time, campaigns were delayed due to the inconveniences mentioned before.

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.

In Argentina due to the current political and economic context in which we live, there is a distrust in the price level that consistently leads to rise. In this country we do not have stable prices right now, but all products are constantly rising. Therefore, there is no consensus on a single rate of inflation, and for that reason the prices can vary greatly.

Item	Budgeted Amount	Actual Amount	Difference	Comments
Fuel for field Trips: £245 a trip.	£979	£1400	-£421	The fuel price has increased and also we decided to make a couple of campaigns more than we had planned do.
Vehicle maintenance: change of oil, filter, shock absorbers, front axle, etc. and mechanic payment.	£1223	£1000	£223	Although the mechanical service and the prices of spare parts for vehicle also have increased, the maintaining of the vehicle also was paid by other grant of a related project.
60 iron posts for the five 30 x 30 m fixed fence enclosures.	£734	£600	£134	Due to rising prices in the posts, we had to reformulate the design and use less posts for adjust the budget and to execute the project without problems.
5 rolls x 1000mts each San Martin 17/15 wire for each of the 5 fixed enclosure	£612	£550	£62	By changing the design of adjacent enclosure's to fixed enclosures', we used less wire

fences.				than we had budgeted.
Galvanized tourniquets to stretch fence wire (70 items per fixed enclosure).	£61	£50	£11	We used less galvanised tourniquets than what we had budgeted.
Safety clasps for suspended wire in fixed enclosure fences.	£245	£200	£45	Because the price of safety iron clasps increased and it was difficult to get them, we decided to use reforested wood clasps to save money.
Blacksmith charge for 8 mobile enclosures.	£1230	£1100	£230	Because the price of materials increased for make mobile exclosures by the blacksmith, we did just 4 of them (but we increase temporary replicas in order to remedy this lack).
13 pluviometers, 1 per enclosure.	£60	£30	£30	We did not use the total of pluviometers that we had budgeted.
Truck trailer to carry enclosure material to the study sites.	£100	0	£100	There was no need to rent a truck trailer to bring exclosures to the place of studio, as we could carry on the same truck.
Transport expenses for assistant residing in another state.	£100	£250	-£150	Because we decided to increase the number of trips or campaigns, this item increased twice, as the assistant who is paid for cost of transportation is who is working in grasslands and he goes in all travels or campaigns for taking data.
Field assistant wages: £34 a day each for 3 assistants per campaign.	£616	£616	£0	Depending on the purpose and need for each campaign, there were times we needed 2 assistants and other 3 or 4 assistants. Therefore, the number of attendees and the number of days per campaign were variable.
TOTAL	£5960	£5796	£264	

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

I think the next steps with this project are:

- Do a replica more of all sampling we already done, with a similar data collection, which imply another year of sampling. This would be in order to cover the climate variability possible.
- Share the results in conferences and scientific meetings, as well as giving talks or informative reunions with cattle owners and park rangers.

- Continue with the investigation of other questions and knowledge gaps that appear during the development of this project, and can contribute to the conservation of native forests. For example, a study of the movement of livestock inside the park; a study on the availability of forage fruits, etc.

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, of course. RSGF logo was used in the presentation to a conference of science, as well as the presentation of the project to the people who participated in it.

11. Any other comments?

Thanks to RSG grants by Rufford Foundation we could carry out this project, because without this huge help, it could not have been executed. This project could contribute to the search and processing of valuable knowledge that will propose a livestock management plan for this park. We could collect useful information and methodologies never practised before in this environment, what remains as a precedent for future research not only in this national park, but throughout the vast territory covering the chaco forests in Latin America.