

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 Chillo
Project title	Effects of land-use intensification on biodiversity, ecosystem processes and services: developing tools for sustainable development in forests of Patagonia.
RSG reference	12919-1
Reporting period	March 2013-July 2014
Amount of grant	£ 5754
Your email address	vchillo@gmail.com
Date of this report	July 24, 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
Identification of ranches appropriate for the project, interviews with ranch owners to determine local needs of production and their perception about biodiversity conservation and ecosystem services.			X	We visited 10 private ranches and interviewed the owner or the person in charge. Half of those ranches were not suited for this project because the main forest type in their land was not a mix forest of ciprés and coihue, or because the type of livestock management they had was very different from other ranches. The five ranches we selected for the development of the project are similar in environmental and management conditions, and we perceived a very good reception of the owner in regards of the objectives of the project and the importance of the final outcome (management tool based on ecosystem services).
Quantification of plant species diversity and functional diversity			X	Within each ranch we sampled vegetation (overstorey and understorey structure and composition, abundance per species and number of seedlings and saplings) in areas with high and low silvo-pastoral use intensity. Functional diversity was assessed using published information about each species natural history and performing laboratory analysis of nitrogen content in leaves and leaf specific area of each species.
Quantification of decomposition process			X	Litterbags were installed in different microhabitats within each treatment of each ranch and collected after 6 and 12 months. This experiment provided us with information about changes in decomposition rate under different intensities of silvo-pastoral use.
Quantification of indicators of ecosystem services			X	We were able to properly quantify indicators of three ecosystem services. For cattle production and

(cattle production, erosion prevention and cultural heritage)				erosion prevention we used the information obtained from vegetation measurements. For cultural heritage assessment we identified the presence of plants used by indigenous people for medical and edible purpose, using the information of vegetation measurements and the interviews with landowners and local people.
To develop management recommendations to help ranch owners improve the sustainability of their current silvopastoral practice.		X		Management recommendations based on ecosystem services trade-offs and synergies were written up and presented to each ranch owner. We not only delivered a written report but also discussed it with each ranch owner. We had some very good experiences about their comprehension of the results and the potential that this tool have for sustainable management. But we also had one disappointing experience, where the ranch owner didn't care much about our report. Anyway, we hope that the information provided will be used in a recent future as a management tool. We still have to deliver a written report and coordinate meetings with local government agencies, which is planned to be achieved by the end of the year.

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

There were not important difficulties during the project because previous experience in the area allowed us to make achievable plans, and fortunately no unforeseen difficulties arose.

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

- The results of this project helped to develop ecological knowledge in regards of the effect of land use intensification on biodiversity and ecosystem services, a crucial need in the context of increasing demand of food production. In particular, we found that in temperate mixed forest of northwest Patagonia an increase in silvo-pastoral use intensity generates drastic changes in plant diversity. Under high silvo-pastoral use, understory composition changed towards a more diverse community, but with very different species composition (several of species were lost) and an increase in the richness and abundance of exotic plant species.

- We found that these changes in biodiversity affected decomposition rate and diminished the potential for erosion prevention (regulation ecosystem services) in all ranches but didn't affect cultural heritage (cultural ecosystem service).
- We were able to assess management alternatives that diminish the negative effect of cattle on multiple ecosystem services through biodiversity conservation. In this sense, we worked together with ranch owners identifying their needs of production and knowledge of forest biodiversity and involving them in the findings of this project. The final outcome was a written report with management recommendation according to the objective of increasing or maintaining different ecosystem services. For example, under low silvo-pastoral use intensity, this activity may stand as a productive alternative which helps to reduce deforestation and contributes to maintaining biodiversity and cultural ES by creating heterogeneous landscapes.

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

The local community was involved from the first moment, as we interviewed with several ranch owners and workers to select the sampling sites. Also, owners, workers and other members of the community were interviewed for the definition of plants with medicinal and edible uses, as cultural heritage is important if they recognise it. Finally, the assessment of trade-offs between ecosystem services and its importance as a management strategy was presented and discussed with ranch-owners.

Another important aspect of community participation in the project was the inclusion of undergraduate students during the sampling periods, as five students volunteered to help. Also, two of them are currently doing their undergraduate research final assignment within this project.

5. Are there any plans to continue this work?

I plan to keep on working in the field of community ecology and ecosystem dynamics under human-induced disturbances because I feel that this understanding is fundamental for sustainable development. In particular I will continue with this project, identifying the effect of different land-use practices and intensities on biodiversity and ecosystem services on forests of northwest Patagonia.

This report only contains results of the data collected in the period March 2013-July 2014. But there are other projects with ongoing research in the area, trying to understand forest dynamic under different silvopastoral management and its interaction with other disturbances. Also, I plan to apply for a 2nd RSG for Nature Conservation with the idea of getting deeper into the knowledge of biodiversity and ecosystem services perception by ranch owners and local communities, in order to further develop the management tool that we started to work on with this 1st RSG.

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

Besides the corresponding reports and meetings with ranch owners, we plan to send reports to local and regional authorities, and we are evaluating the possibility of organising a local community workshop. Also, we plan to present all the results of this project at scientific meetings, scientific papers, as well as the RSG web site.

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

17 months. Originally the project was set to last 12 months, but we requested a 5-month extension in order to use our resources better and to take advantage of a full year of data collection.

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
Fuel for field trips	1104	1524	-420	It was more expensive than estimated because of the economic inflation and devaluation process of my country (approximately 40% during the period of this project)
Food and accommodation during field trips	2880	3256	-376	It was more expensive than estimated because of the economic inflation and devaluation process of my country (approximately 40% during the period of this project)
Field supplies (metric tape, GPS, shovel, herbal material, camping gear, netbook)	1178	428	+750	We didn't buy the GPS and the netbook in order to use that money for the increased expenses of fuel, food and accommodation during field trip. Rather, we were able to borrow them from other ongoing projects.
Laboratory supplies (fabric and sealing machine for litterbags, plastic and paper bags)	142	142	0	
Office material (print materials, etc.)	450	630	180	It was more expensive than estimated because of the economic inflation and devaluation process of my country (approximately 40% annually)
Life insurance for 5 students that helped with field work		100	100	Not considered in previous budget
TOTAL	5754	6080	326	

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

The next step is to continue with the project but expanding it to further ranches of the region. The mid-term objective is to include a wider area, more members of the local community and the regional government in order to achieve a regional assessment of biodiversity and ecosystem services. This will highly improve the potential use of the tool that we started developing, knowing,

understanding and using ecosystem services trade-offs and synergies to plan alternative management practices and achieve sustainable development for silvopastoral production in the region.

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 all the reports that we gave to ranch owners. RSG logo will be used also in the reports that we are preparing for local government agencies and in future scientific publications.

11. Any other comments?

We would like to thank RSG for the great opportunity and support which has allowed us to start working towards biodiversity conservation and management alternatives for sustainable development in native forests. Definitely, this project could not be accomplished without the funding of the RSGF.

CONICET CCT Mendoza, Argentina