

The Rufford Foundation

Final Report

Congratulations on the completion of your project that was supported by The Rufford 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	Ana Sofia Nanni
Project title	The effects of agricultural modernization for ecosystem services in a subtropical watershed
RSG reference	11308-1
Reporting period	May 2012- September 2013
Amount of grant	£6,000
Your email address	sofiananni@gmail.com
Date of this report	October 15 th 2013

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
Land cover maps for 1980-2010 period			X	We obtained land cover maps for 1986 and 2006 in the study area, which were the basis for identifying land conversions spots. The map of changes showed processes of deforestation in lowlands and forest recovery in highlands, although net forest change represented less than 1%, evidencing processes of forests redistribution more than forest losses or gains.
Identification of biophysical and topographic variables influencing forest cover change			X	We identified demographic and socio-economic trends were drivers of forests relocalisation within the study area, while topography conditioned their 'new' distributions.
Above-ground biomass (AGB) field assessments			X	We completed above-ground biomass sampling in 20 plots distributed in different types of forests within the study
AGB spatial explicit models (2000-2012)			X	By a combination of spectral information derived from MODIS imagery and field sampling we elaborated AGB biomass maps for 2000 and 2012, and performed analyses of carbon storage changes in forests within the analysed period.
Biodiversity sampling		X		We performed dry season and wet season birds and large mammals sampling in 28 sites distributed within the study area, in order to capture the responses of these groups to the two main processes of change: deforestation in lowlands and forests regrowth in highlands. Large mammals sampling using tracking plots were useful for confirming their presence but not to make comparisons between sites, for which we acquired six Moultrie M-880 camera traps in order to obtain higher quality data. For this reason, large-mammals sampling will extend to May, 2014.
Relating biodiversity patterns with	X			Although we have performed biodiversity sampling and we have

landscape characteristics.				obtained GIS spatial explicit layers including land cover maps, ABG maps, topographic, demographic and climatic information, due to a lack of time we have not combined this information yet, in order to capture the main patterns of distribution of the sampled groups in relation to the spatial variables mentioned.
Watershed protection assessments	X			Due to a lack of time, this objective was reformulated to be performed between January and June, 2014.
Food production assessments		X		We compiled the information about food production change in the study area during the last 3 decades, but these data have not been analysed to the date.
Integration of Ecosystem Services and Land cover change	X			The valuation of ES and their trade-offs analyses of different ES within the study area have not been performed yet, due to a lack of time, although the base information in order to do achieve this have been almost completely developed, for which these analyses will be performed before July, 2014.

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

N/A

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

1- Generation of information and knowledge about the main patterns of forests change in subtropical Andean forests of developing South America, identifying processes of forest loss and forest regrowth associated mostly to topography (altitude and slope) and to a less extent to demographic trends (rural population density); and the enhancement of the concept of forests redistribution (rather than net changes, such as net losses or net gains), which may have relevant environmental consequences at regional scale.

2- Development of AGB temporal maps, as a direct measure of forest degradation, something that has not been achieved before at bigger scales. This helps quantify the importance and extent of a very relevant process that is in general difficult to identify since it doesn't imply the total conversion of forests; and in the study area in particular AGB temporal maps showed that forest degradation affects different kind of ecoregions than deforestation does (mostly transitional forests between Dry Chaco and Yungas ecoregions, which therefore have a potentially high value of conservation), and predominates over forest regrowth, which focuses in high altitude montane forests instead.

3- The integration of land use change and *a group* of ecosystem services in a heterogeneous subtropical area, which helps to understand the trade-offs and trends of different ES under land changes contexts, identifying antagonist and complementary ES and how contemporary land uses trends enhance or threaten their preservation. This constitutes a relevant input for conservation decisions, since it helps identify areas of higher value of conservation as a result of a group of beneficial ecological characteristics.

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

Local communities have indirectly contributed a lot in the development of this project, by facilitating places to stay during the sampling campaigns, such as schools, rural houses, etc. We have also shared long conversations, in which they shared their extensive knowledge about many aspects of the study area. We have also performed one day workshops and birds watching with students from the rural schools.

5. Are there any plans to continue this work?

This work will be continued as part of my PhD project until 2015. During the time left we will continue with biodiversity sampling and complete the partially achieved or non-achieved objectives described above.

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

The results will be published in different peer reviewed and local journals and local and international conferences and workshops. At the time, I have sent a manuscript which is under revision in Regional Environmental Change journal and explores the main associations between forest cover patterns of change and topography and demographic trends. I am now working in the manuscript about ABG biomass trends in the study area, which is going to be sent in December to Forests Ecology and Management journal. Also, the abstract "Agriculture adjustment, land cover redistribution and rural population dynamics in a subtropical watershed" have been accepted for oral presentation in 2014 Land Global Project OSM, in Berlin.

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

Rufford Foundation grant was used for 18 months from May 2012 to September 2013. The proposed objectives were too large and varied as to achieving them completely in 18 months but the grant has complied with its purpose of funding the field work and the material for further samples, and it has allowed me to achieve the main goals outlined when elaborating Rufford Small Grants application.

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
Salaries/field staff and assistants	800	0		
Supplies and materials (1 GPS, several books, 2 birds field guides, 1 binocular, 1 tent, 6 camera traps, 8 memory cards, 40 rechargeable batteries)	2000	0		In my application I had informed I'd be buying 2 GPS and 1 notebook. However, it had appeared more adequate for the objectives of the project to buy six Moultrie trap-cameras for mammals sampling instead, which accounted for £1500 of the supplies and materials budget.
Gasoline and vehicle maintenance and rent (~210 days)	1700	0		
Food and accommodation during sampling campaigns (~120 days)	1500	0		
Total	6000	0		

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

I feel the next important steps are to integrate the different aspects of my results in order to generate a detailed and complete assessment about the main trends of land use change in the last decades in heterogeneous landscapes of subtropical developing Latin America, and their consequences over ES provision as a whole. This appears as an important priority in the context of globalization and rapid LUCC changes, for which integrative studies are lacking.

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

I have used the Rufford Foundation logo and have acknowledged Rufford Foundation in all the manuscripts I've sent, although none of it has been published yet. I will be using it in the oral presentation in Berlin next year and in any presentation related to this project I attend to in the future.

11. Any other comments?

I'd like to express my sincere gratitude to RSGF. Had it not been for your generous financial support, I would have not been able to successfully perform field activities as I did. This grant has also encouraged me to continue with my career as a conservation scientist and I am truly grateful for that.