

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	Laura Cavallero
Project title	<i>The role of mutualistic interactions on postfire recolonization: BIRDS AS MEDIATORS OF ECOLOGICAL RESTORATION IN FORESTLANDS OF NORTHWESTERN PATAGONIA, ARGENTINA.</i>
RSG reference	28.11.07
Reporting period	2 summer seasons of field sampling (2007-2008 and 2008-2009)
Amount of grant	£ 5000

Your email address	lucavallero@yahoo.com.ar / lcavallero@crub.uncoma.edu.ar
Date of this report	May 30 th

1. Please indicate the level of achievement of the project's original objectives and include any relevant comments on factors affecting this.

Objective	Achievement Degree	Comments
The study will be carried out in Nahuel Huapi National Park, in 15 matorrals of different postfire age.	✓ Fully achieved. The study area was larger than proposed.	The study was carried out in Nahuel Huapi and Lanin National Parks and in the area of El Bolsón (780000 ha approximately). Besides 20 communities of different postfire age (ranging from less than 1 year to 180 years) were sampled.
Spatial patterns of light heterogeneity will be determined with hemispherical photographs along 2 crossed 500m transects, at 5m intervals.	✓ Fully achieved. Spatial patterns of light heterogeneity were sampled.	Hemispherical photographs analysis is in process because it is time consuming task. The length of the transects was shortened to 300m because this was the maximum distance achieved in a full day of field work. Full sampling of a community takes two days of field work, one by transect.
Temperature, relative humidity and wind speed will be measured with a pocket weather station following the same transects.	✓ Fully achieved.	Temperature and relative humidity were measured, but wind speed was eliminated in the field sampling because it doesn't show any tendency during the first sampling season.
Spatial patterns of vegetation cover will be determined along the same transects with line intercept method, to estimate mean size patch of vegetation.	✓ Fully achieved.	Spatial patterns of vegetation cover were determined at 1m intervals in all 20 sampled communities.
Number of seedlings and young shoots originated by vegetative multiplication of each woody species will be	✓ Fully achieved.	This objective was determined considering seedlings and young shoots originated by vegetative multiplication, of no more than 100 cm height.

recorded along those transects, in 1 m ² plots, at 5 metre intervals.		
Bird faeces (bird generated seed rain) will be collected with 150 seed traps distributed in three types of microsites (beneath focal species, beneath dead standing trees and bare soil).	✓ Fully achieved.	The sampling design was almost changed. I installed 450 seed traps in three communities burned in 1999 (150 per community). Seed traps were installed beneath perches of dead standing trees and in bare soil to test the perch effect of dead standing trees in the post-fire recolonization. Seed traps were revisited once a month.
Germination percentage of defaecated seeds will be evaluated in growth chambers, contrasting with corresponding controls.	✓ In process (partially achieved)	Sampling season ended on April 2009 and the analysis of seed traps samples took one and a half months. During the first week of June, viability of seeds recovered from seed traps is going to be tested. After this procedure, germination percentage will be tested.
Bird censuses will be performed to determine diversity and abundance of frugivores.	✓ Partially achieved	Frugivore richness was determined. During this field sampling season abundance was measured as a training task.

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

I have had troubles with the money transfer. My bank did not help me with the filling of the Banking Details Form and confusion between the intermediate Bank and my bank occurred because your correspondent bank had not provided the SWIFT CODE to be able to track the money transfer. When this Code was provided through the SWIFT MESSAGE, the transfer was held correctly. Because of that, the arrival of the payment was delayed for two months. This misunderstanding caused administrative expenses and the amount of money received was £ 4930, due to banking commissions and expenses charged to the transfer.

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

The three most important outcomes of my project are:

- Birds develop a key role as mediators of ecological restoration post-fire communities, promoting seed flow between neighboring communities.

- Seedling recruitment process of bird dispersed species occurs mainly during the early post-fire recolonization (specifically in this work occurs in communities between 5 and 20 post-fire age).

- Large tree species play an important role as perching structures for frugivore birds during the early recolonization after fire, thereby increasing seedling recruitment beneath them.

Attached here is a detailed report that describe how could I arrive to these conclusions.

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

Local communities were involved in divulgation activities as my participation in the Bird's World Week in which I have presented my RSG project to bird watchers and people interested in the subject (power point slides attached).

Besides I have presented my RSG project on a national TV show called "Recurso Natural" (Natural Resources). This program is transmitted by a public and free TV channel that could be seen by all citizens of Argentina (available for download in the following link:

<http://www.4shared.com/file/107952980/84d72d69/ProgTV.html> file is called "ProgTV.rar" and my participation starts from the minute 3.25 of the tape).

Local communities will benefit from this work because it brings light about the moment of the fire cycle in which is convenient for National Parks Administration, to allow fire wood extraction without affecting the early post-fire regeneration or, in this case, the ecological restoration through birds. This is the most important part of the project because in this latitude winters are crude and rough and poor people need wood to keep their houses warm. This represents the major concern of National Parks Administration in terms of management policies related with the recently burned places and could be seen as a trade-off between conservation /recovery of burned places and collaboration with the subsistence of local communities.

5. Are there any plans to continue this work?

Yes, this work is part of my Ph D thesis and to be able to finish it I will need field data from another sampling season (2009-2010).

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

These results will be published in international scientific journals, exposed in ecology and conservation meetings (congresses), and other technical magazines

for general use (enrichment magazines) as Comahue National University (UNCOMA) and Andean Patagonic Naturalist Society (SNAP).

Papers in preparation:

- 1- Ecosystem heterogeneity and recruitment process: relationship with different seed dispersal vectors in forestlands of northwestern Patagonia.
- 2- BIRDS AS MEDIATORS OF ECOLOGICAL RESTORATION: Perching effect of dead standing trees on post-fire recovery in forestlands of northwestern Patagonia.

Finally, I will perform a technical report for the Patagonia's Technical Delegation of the National Parks Administration. This information will help the creation and or modification of existing management and restoration policies of burned areas.

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 February 2008 until middle April 2009.

The project had to be extended because during the first sampling season the seed trap design did not work so well. Because of that, the project should be carried out one year later. However, the project was really useful to test which seed trap design is the most efficient to capture seeds and bird faeces.

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
Used Digital camera Nikon coolpix 8800	£ 500	£ 460	+ 40	
Rechargeable batteries	0	£ 20	- 20	Previously not budgeted
Memory Card	0	£ 25	- 25	Previously not budgeted
Fisheye lens Nikon FC-E9	£ 300	£ 300	0	
Camera Tripod	0	£ 50	- 50	Previously not budgeted
Binoculars Swift 8 x 45	£ 400	£ 290	+ 110	

Seed traps	£ 1500	£ 1000	+ 500	Season 2008 = £ 250 Season 2009 = £ 400 (materials) Seed traps manufacture £ 150 Paper bags to collect samples £ 20 Lab assistant salary for sample revision £ 180 (60 hrs = 3 £ per hour)
Assistant subsistence payment	£ 1125	£ 1330	- 205	£ 19/field day work 70 field sampling days in total * 40 = community sampling (20 communities, 1 transect/day, 2 transects/community). * Seed traps season 2008 = 12 days for installation, revision and pick up. * Seed traps season 2009 = 15 days for installation, revision and pick up. * Seedling transplants = 3 days for installation, revision and pick up.
Fuel	£ 1000	£ 910	+ 90	
Food	£ 175	£ 100	+ 75	
Camping expenses	0	£ 75	- 75	Previously not budgeted
Growth chamber maintenance	0	£ 70	- 70	Previously not budgeted
Sowing trays	0	£ 15	- 15	Previously not budgeted
Sowing substrate	0	£ 15	- 15	Previously not budgeted
Exclusion wire mesh	0	£ 235	- 235	Previously not budgeted
Iron bars	0	£ 35	- 35	Previously not budgeted
Money transfer trouble	0	£ 70	- 70	Unexpected administrative expense
TOTAL	£ 5000	£ 5000	0	

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

It will be very important to appreciate how the role of dead trees change with the post fire age, since providing perching structures to enable post-fire recolonization, bird shelters, natural exclosures that protect natural regeneration from grazing, decomposers substrate, organic matter input and decreasing of soil erosion. Yet, it is important to evaluate the genetic flow among communities, which could be very important to maintain the adaptive capacity of communities to face future disturbances and climate change.

Finally, it will be very important to evaluate the role of birds in the early post-fire recolonization in the Valdivian Rain Forest, the forest community with the highest species diversity of Patagonia and with a big amount of endemic species.

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?

The RSG logo was used in the poster showed in the Annual Argentine Ecology Meeting and during the Bird's World Week (both attached).

RSG was acknowledged in a paper sent to publication in Biological Invasions for which the hemispherical photographs equipment bought with RSG was used. The paper is entitled "An invader shrub (*Rosa rubiginosa*) has a 'competition-free' space from the reproductive phenology perspective. A case study in northwestern Patagonia."

11. Any other comments?

12. I agree to this report being published on the Rufford Small Grants website

Yes



Signed (or print name) _____