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	Jorge Luis Rentería
Project title	Impacts of the invasive blackberry (*Rubus niveus*) on the native vegetation of the Scalesia forest in Santa Cruz, Galapagos.
RSG reference	8961-2
Reporting period	November 2010-October 2011
Amount of grant	£3,550
Your email address	j.renteria07@imperial.ac.uk
Date of this report	8th October 2011

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
To elucidate and document the ecological of the impacts of invasive blackberry on the native plants communities of the Scalesia forest.			**X**	High levels of *R. niveus* invasion were associated with lower plant species diversity and different species composition compared with areas of lesser levels of invasion. Cover (abundance) of herbs, shrubs and trees in infested areas was dramatically reduced when *R. niveus* cover was high; this was particularly obvious for the endemic dominant tree *Scalesia pedunculata*, and native shrub *Chiococca alba*. There was a substantial difference in vegetation structure between slightly and highly invaded areas; a predominantly tall closed forest dominated by *S. pedunculata* compared to a low, dense *R. niveus*-dominated shrubland. Major changes in soil proprieties including soil nutrients were not yet evident in invaded versus non-invaded areas. Effects on the different biological parameters were evident when the cover of *R. niveus* was over 60%. This could be considered to be a biological threshold.
Academic training.			**X**	The information derived from this project is part of a PhD thesis at Imperial College of London. The project has assisted in the training and skilling of an Ecuadorian volunteer/student from an Ecuadorian in the field of conservation, invasive species management and habitat restoration.
Assisting the Managers and local community.			**X**	Through our interaction with the Charles Darwin Foundation, formal and informal technical advice has been provided to The Galapagos National Park Service on the control of the invasive plant species.

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

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

a. **Understanding the impacts.** The invasive plant *R. niveus* has an impact on the native community of the Scalesia forest; sites highly invaded by *R. niveus* had a lower richness and biodiversity of native plant species and a different forest structure.

b. **Management of the invasive**. Impacts on the native plant communities of the Scalesia forest were evident when *R. niveus* cover was over 60%. Future management of *R. niveus* for biodiversity conservation should have the aim of reducing the density to below this level.

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

We have worked closely with local farmers, providing them with technical assistance on the control of invasive plant species and the restoration of farms. We have used local people as field assistants and provided some temporal work opportunities.

5. Are there any plans to continue this work?

Following the main findings of this study, further research will be considered towards the development of an integrated management strategy for the invasive plant R*. niveus*.

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

We have shared our preliminary results, ideas and knowledge through formal and informal communications with National Park Service. This study is one full chapter of a PhD thesis which will be published in the following months. A manuscript is being prepared to be submitted to a peer review journal : Renteria, J. L., Gardener, M. R., Panetta, D. F. and. Crawley, M. J. Impacts of the invasive plant *R. niveus* on the native vegetation of the Scalesia forest in Galapagos, Oecologia, *In prep*. Information about this project will be found on the Charles Darwin Foundation web site: http://www.darwinfoundation.org

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

The RSG grant (received November 2010) was used throughout the end of 2010 and beginning of 32011. Funding was used to cover flights to the UK-Galapagos, stipends and accommodation to support an Ecuadorian volunteer, field assistant, transport, and tools/equipment.

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
International flight UK. Galapagos	1500	1300	200	Under spend funds were reallocated to pay field assistants
Transportation	450	400	50	Cost of hiring a taxi to go to the field. Under spend funds were reallocated to pay equipment
Field assistants	800	950	-150	Cost of labor, it involved hiring a local assistants to help in the field
Student/volunteer	---	1,000	-1,000	Subsistence and accommodation for volunteer during a period of 3 months.
Field subsistence	200	200	0	
Soil analysis	600	550	50	Soil samples were sent to the laboratory.
Tools, equipment and infrastructure		200	-200	Cost of equipments.
TOTAL £	**3,550 (Rufford)**	**4,600**	**-1,050**	Difference was covered with the financial support of the Charles Darwin Foundation. (provided the volunteer).

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

Future research work is necessary for the successful management of the invasive *R. niveus* and the restoration of impacted native communities. Impact studies should be refined to look in more detail at the effects of *R. niveus* on other ecosystem components and functions; this will be critical to prioritizing control efforts (wildlife impacts, nutrients cycling, food webs, ecosystem services). A better understanding of the dynamics of the forest regeneration process and actions to accelerate this process will also be fundamental in order to effectively implement restoration (e.g. seed bank dynamics, ecological succession). Herbicide has been an effective tool for controlling *R. niveus* at local scales. However, the long-term effects of continue herbicide applications on non-target species and ecosystem components are unknown. Search for alternative control methods including ones that focus on the promotion of regeneration of native and/or non-native desirable species should be considered. This information will be very useful to develop methodologies to reduce the cost and duration of control projects and perhaps meet the restoration goals.

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?

It is not possible to use logos in the scientific papers, however the RSGF funding will be acknowledged in any published materials.

11. Any other comments?

Thanks to the financial support from the RSGF, It has been possible to me to carry out my PhD research project in the Galapagos Island. I feel so proud to be able to help with the conservation of this natural paradise.