

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	Matthew Bare
Project title	Pilot project of the Amazonian Academy for Ecological Restoration
RSG reference	8991-1
Reporting period	August 2010 – October 2011
Amount of grant	£5132
Your email address	Mattbare03@gmail.com
Date of this report	December 20th 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
Build local capacity to perform biological research, ecological restoration, and support tropical forest conservation		X		See below
Recruit 10-20 university students (doing internship and thesis work required by their universities) to conduct field research in two areas		X		Ten biology students completed research internships during the course of the project. Due to difficulty coordinating student internships with local universities, greater emphasis was placed on: 1) research internships with international students; and 2) educational activities at local schools and universities.
Use diversity indicators to compare the biodiversity of our restoration with that of surrounding naturally reforested areas			X	Biodiversity research focused on a comparison of the avian richness and composition between the botanic garden (a manually restored forest) and two nearby naturally reforesting areas. The purpose of the study was to evaluate the impact of the two decades of intensive manual restoration in the botanic garden on the diversity and nature of faunal colonisation. Approximately 30 days of point counts and mist net monitoring were performed. The research provides a thorough inventory of the bird species of the region, and a detailed list and report was made available to local universities and the Ministry of the Environment, as well as published on the botanic garden website. The research was presented at the Society for Ecological Restoration World Conference in Merida, Mexico, August 2011, and has been submitted for publication to the <i>Journal of Neotropical Ornithology</i> .
Study the reproductive success of orchid species transplanted to the restoration site			X	Orchid reproduction research focused on evaluating the reproductive success of the 200+ orchid taxa transplanted to the botanic garden over the course of the restoration. Orchids were monitored for

				one year for seeds. This information was compiled, and selected orchids of this group were then chosen to monitor for seedling recruitment. A final list was compiled which indicates orchids that have responded well to the restoration treatment and are reproducing independently in the botanic garden, while other taxa which have failed to reproduce. This information will be useful in a range of tropical restoration experiments by highlighting the response of various orchid taxa to restoration treatments. This research was also presented at the SER conference and has been submitted to a peer-reviewed <i>Journal of Orchid Biology</i> .
Train 30-60 landowners and community members in sessions of 2-4 days			X	Training sessions were conducted covering topics of restoration, cultivation of native traditional crops, gardening, handicraft production, and ecotourism. Workshops were planned in conjunction with local institutions and community members, and 55 individuals completed the course of 100 hours.
50% of the landowners who complete the training will undertake one or more of the restoration practices outlined in the training within 12 months of the training		X		More than 500 tree seedlings have been distributed to landowners participating in workshops. However, due to: 1) recent completion of training workshops; and 2) dispersed locations of landowners, follow-up evaluation has been difficult. Further planning is necessary to effectively monitor the impact of restoration activities in private lands.

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

Coordination with local schools and universities proved to be the most difficult component of the project. Despite continued attempts with meetings, advertisements, and guest lectures, collaboration with local biology interns was infrequent. This situation was partially remedied by utilising international students and volunteers for the described biological research projects. Also because of this difficulty, greater emphasis was placed on the development of educational curriculum, including acquisition of biology texts, equipment, and botanical labels, and creation of posters and teaching tools.

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

A. Strengthening bonds with the local community through: 1) landowner training in traditional crops; and 2) visits to the local grade school. A popular element of the landowner training session included

cultivation of local, traditional handicraft plants (*Astrocayum chambira*) and food crops (*Maranta ruiziana*). This training will result in alternative income sources and an improvement of local livelihoods in the elaboration of handicrafts and the cultivation of food crops. The botanic garden has recently constructed a restaurant to feature some of the traditional crops, seasonings, and teas derived from plants of the garden. While this restaurant features products from the garden, the majority of food will be purchased from farmers in the neighbouring community. This community component was complemented by outreach at the local grade school, involving many children of the families in the food and handicraft courses. School activities included reinforcement of science curriculum in grades 4-6, in addition to field trips to the botanic garden.

B. Completion of high quality biological research in avian diversity and orchid reproduction in restored tropical forests. The research, described previously in this report, are some of the first studies conducted in the Neotropics focusing on orchid reproduction and avian diversity in restored tropical forests. The research was presented at the Society for Ecological Restoration World Conference in Merida, Mexico in August 2011, has been submitted for publication, and will soon be available in Spanish on the botanic garden website.

C. Library, botanical labels, and educational posters. Funding and staff time made possible by the Rufford grant has facilitated the creation of vital educational resources that will significantly benefit local biological research. Spanish language texts in the biological sciences, although available in the capital Quito, are rarely used in local university biology classes, and students mainly rely on amateur Internet sites. The cost of these resources is prohibitive for individual students, and university libraries are practically non-existent. The botanic garden now provides Spanish texts in biology, botany, and ecology; flora and fauna guides of Ecuador almost all taxa; and dichotomous keys of several of the major tropical plant families. Complementing this library are high quality botanical labels that identify approximately 200 plants found in the garden with common name, scientific name, and family. As a local scientific establishment, we are in the unique position to bridge communication gaps between local individuals using common names and the scientific community using scientific names. In a region with few official scientific publications and trained scientists, we are confident that these resources will prove indispensable for years to come. Although common information in developed countries, the Jardín Botánico las Orquídeas is now one of the few botanic gardens in Ecuador that offer the basic knowledge of plant identification. Finally, poster displays in the interpretative museum, highlighting themes such as pollination, dispersal, orchids, taxonomy, and deforestation provide an additional element for visiting students. Complementing the museum displays are 500 posters of common trees of the region, with common and scientific names, distributed for free to schools and institutions in the region.

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

Community involvement was one of the principle components of this project, and direct community benefits resulting from training activities and local school outreach are addressed in most important outcome A. Secondary community benefits result from the contribution of the botanic garden education centre to the standard of biology education in local schools and universities. While the university system in Ecuador is currently undergoing reform, we hope that the resources created in this project will provide a vital component of future biological research in the region.

5. Are there any plans to continue this work?

The strength of this project lies in the strong track record of accomplishment of the botanic garden in the local community, therefore, the education work of the project will continue. As local

universities grow, it is hoped that more students will show interest in utilising the education centre for their studies. The botanic garden now boasts a more complete experience for visiting student groups, including greater educational resources as described earlier, in addition to a museum, classroom, and restaurant. Increased income from these visitors will offer more opportunities to expand the educational reach of the botanic garden. Nevertheless, program coordinator Matthew Bare will no longer work on this project, so the botanic garden will have fewer staff resources to expend on education and research work. However, the project has allowed the garden to significantly expand its base of local collaborators, and the garden now counts with a greater number of local allies in the support of biological science education.

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

The educational resources and work of the botanic garden are constantly displayed on the organisation's web page. Many student groups and the majority of interns discover the botanic garden through this web page, and hundreds of students utilize the web page for basic research of plants of the Amazon region. Research projects and species inventories made possible by the Rufford grant, in addition to many others, are also located on the web page. Finally, manuscripts of the two research projects made possible by the Rufford grant have been submitted for publication, as described earlier.

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

The Rufford grant was awarded in November 2010 for a timescale of August 2010-October 2011. Due to the scheduling of the Society for Ecological Restoration Conference in late August, plans were made to complete field work of the project in Ecuador in August, and the last two months were dedicated to the elaboration of manuscripts and translation into Spanish.

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
Salary for Matthew Bare	3664	4580	916	Extra funds were derived from garden resources
Rent	550	1191	641	Extra funds were derived from garden resources
Travel	458	458		
Supplies	458	916	458	Extra funds were derived from a grant from USAID
Extra	2			
TOTAL	5132			

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

Next steps in building local capacity for biological research and ecological restoration need to come from local institutions. In order to ensure effective use of the limited human and financial resources of the botanic garden, further outreach efforts will be reduced until greater participation is seen from local stakeholders. Thanks to the Rufford project and previous work, the botanic garden offers an exceptional local educational resource for biological study. If local schools and universities wish to

utilise the botanic garden to complement the studies and research of their students, they will need to make a greater effort in the future. Similarly, if local governments and institutions increase efforts to foment forest restoration activities, they will find the botanic garden as valuable local resource offering infrastructure and human resources. In the meantime, the botanic garden will continue to offer the education centre as a biological research and education resource for any groups that are interested in visiting.

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 RSGF logo is shown on the website of the botanic garden, which generates approximately 800 unique visitors per month. RSGF was also recognized in the presentation of the research projects at the Society for Ecological Restoration Conference in Mexico and in the forthcoming publications.

11. Any other comments?

Working with the Rufford fund has been remarkably easy. Our team appreciates the confidence of the Rufford Fund to grant support for worthwhile projects and trust the recipients to manage the funds effectively. Our team will consider applying for a 2nd Rufford Small Grant in the near future.