

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. 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	Clay Plager-Unger
Project title	Dry Tropical Forest Revegetation Project
RSG reference	12492-2
Reporting period	November 24th 2012 through November 23th 2013
Amount of grant	£4,944 received November 24, 2012. Total: £1,056 received December 13, 2012. £6,000
Your email address	planetdrumecuador@yahoo.com
Date of this report	November 16, 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
Revegetation of 20 sites			X	<p>20 revegetation sites with 5,870 native trees were planted and maintained at the following sites/communities:</p> <ul style="list-style-type: none"> • Bahía City Center • Vigua Community • Punta Gorda Nature Reserve • Barrio Bellavista (2) • Barrio Astillero • Canoa • Barrio Maria Auxiliadora (2) • San Isidro Community • Universidad Católica Bahía extension • Rio Muchacho Community • San Clemente Community • KM 19 Community • KM 20 Community • Corporación Nacional de Electricidad: <ul style="list-style-type: none"> ○ Rural Bahía ○ San Vicente ○ Crucita ○ Charapoto ○ Rocafuerte
Wildlife corridors linked with extant forest			X	<p>Wildlife corridors were specifically created at the following revegetation sites:</p> <ul style="list-style-type: none"> • Punta Gorda Nature Reserve • Barrio Bellavista • Barrio Astillero • Universidad Católica Bahía extension • San Clemente Community <p>All of the sites are located in or border on the Cordillera el Bálsamo, a nationally recognised protected biological corridor of dry tropical forest. 1,800 trees, representing 15 different species and impacting an area of approximately 72 ha were dedicated to wildlife corridors.</p>
Tree production in our greenhouse: 8,000 trees		X		<p>7,000 trees, representing 36 different native species, were produced during 2013 as of November 13. Production included: 4,430 fruit producing trees (17 different species), 350 <i>Libidibia glabrata</i>, an IUCN</p>

				recognised threatened species, and 850 trees from nine other species that are considered threatened although scientific research is lacking to properly assess their status. These trees will grow at the greenhouse until they are the proper size to be distributed to local residents in late 2013 / early 2014. An additional 1-2,000 fruit trees have already germinated and will be transplanted by the end of the year and distributed in early 2014.
Donation of fruit trees to residents: 6,000 to 7,000 trees		X		As of mid-November 2013, 2,500 fruit producing trees have been distributed to residents during 18 individual events. Presently there are 3,000 fruit trees at the greenhouse that are scheduled to be distributed in late 2013 and early 2014, with an additional 1-2,000 awaiting transplantation.
"Dry Tropical Forest Revegetation Manual": publish and distribute			X	Final drafts in English and Spanish were completed and, in addition to being available in digital format on the Planet Drum (PD) website, 250 print copies of each (500 total) were distributed to locals at a variety of workshops at the greenhouse and in the field, ecological city open-houses and celebrations, and to partner organisations such as the Children of Ecuador Foundation (Canada) and Global Study Embassy (US).
Conduct 20 Revegetation Workshops			X	Twelve revegetation workshops attended by more than two-hundred local students and nearly 100 international students were held at the greenhouse with the following institutions: <ul style="list-style-type: none"> • Montúfar School (4) • Sathya Sai School (4) • Universidad Católica Bahía extension • Children of Ecuador Foundation • Global Student Embassy (2) Eight field revegetation workshops were conducted in the following locations: <ul style="list-style-type: none"> • Rio Muchacho • Punta Gorda Nature Reserve (2) • Universidad Católica Bahía extension • Bellavista Community (2) • Maria Auxiliadora Community • Crucita County

Residents educated to create bioregional communities that coexist with their surrounding ecosystems			X	PD's presence directly impacts the Bahía community (30,000 people) and an additional 30,000 residents of the greater region who are exposed to our projects on a less frequent basis. In addition to the Revegetation Workshops, which provide 3-4 hours of structured environmental education and field practice, more people than ever have contacted us during the past year about participating in the Revegetation Project, which provides the opportunity to engage them in a deeper shift of ecological consciousness. The Dry Tropical Forest Revegetation Manual is a vital part of this process since it is a readily available source of information about the importance of and methods for ecosystem restoration. Topics of discussion with locals outside of native plant revegetation ranged from sustainable agriculture practices, wild food harvesting, sustainable forest products, and urban ecological planning.
Expansion of our project to neighbouring cities			X	<p>The project was expanded to the following new areas which neighbour the Bahía region:</p> <ul style="list-style-type: none"> • Rio Muchacho • Canoa • San Isidro • Vigua • Charapoto • Crucita • Rocafuerte • San Clemente • San Vicente <p>Tree and Revegetation Manual distribution as well as workshops were all part of this expansion. Although the impact generated to these new regions may be relatively small, locals' reception of the project was overwhelmingly positive, and all of the new locations want to increase their participation in the future.</p>
Ongoing partnership with the people and Municipality of Bahía de Caráquez			X	PD participated in the celebration of the 14th anniversary of Bahía Eco-City on February 22nd by distributing trees, Revegetation Manuals, and engaging visitors in conversation at a Municipal Open

				House. A similar event was conducted in celebration of Earth Day on April 20th. Additional collaboration includes providing technical assistance for the city-wide garbage separation program and general urban planning regarding transportation and water.
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2. Please explain any unforeseen difficulties that arose during the project and how these were tackled (if relevant).

An unforeseen difficulty that arose related to transporting trees more extensively than expected. Fortunately, the Corporación Nacional de Electricidad (CNEL - the National Electric Company) began partnering with PD in April, 2013 to distribute trees through their pilot *Árbol Eléctrico* (Electric Tree) programme: one native tree is donated to residents of rural areas per \$500 of new electricity infrastructure. Since the government is investing a lot of money in electric infrastructure recently, a lot of trees are required for their programme. PD donated 1,370 trees to CNEL between April and November. CNEL assisted in delivering these trees to residents of Charapoto, Crucita, Rocafuerte, Rural Bahía, San Clemente, and San Vicente. CNEL also transported PD personnel to the Crucita region to meet personally with recipients of the trees to provide them with tree maintenance instruction and Revegetation Manuals. The collaboration with CNEL delivered trees to community leaders who distributed them to local residents thereby giving every household access to a tree or two. Working with CNEL both solved PD's tree delivery difficulties and aligned well with PD's grass-roots mission. The partnership has yielded excellent results.

CNEL's demand for trees is very high and PD has been unable to provide all of the trees that they require. CNEL acquires the rest of the trees from a commercial government reforestation programme. Interestingly enough, residents told CNEL that the trees from PD had a much higher survival rate than trees from the government. We are still unsure exactly why this happens, but it may be related to the fact that we specifically choose native species that are well adapted to the micro-climates of each region, and/or because we transport the trees in reutilised plastic bottles instead of plastic bags, which aren't as sturdy.

Since tree production at the greenhouse in 2013 was nearly double that of previous years, we needed almost twice as many plastic bottles. In the past, we collected the bottles from the streets, garbage dumps, and schools. Recently the price of PET plastic has jumped in Ecuador and a nation-wide recycling industry has emerged. As a result, finding free plastic bottles has become nearly impossible and for the first time PD had to purchase them, an unexpected expense. But the positive outcome of this is that local waste collectors and separators have massive quantities of plastic bottles that they are willing to sell to PD. Using these bottles for the trees is a fundamental aspect of the project. It represents the concept of reutilisation, which is an important message and part of the education that we provide. Anyone with a tree in a plastic bottle recognises that PD propagated that tree and the container is recyclable again after the tree is planted.

Low international volunteer participation in late 2013 made it difficult to maintain high levels of tree production at the greenhouse. However, the frequent revegetation workshops held in conjunction with local school children have allowed us to overcome that deficit and actually increase production.

Fewer volunteers has also made revegetation site preparation for 2014, which occurs in late 2013, difficult and we are exploring opportunities to work with local communities and residents in order meet the revegetation site goals for 2014.

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

a. Education is the most important outcome of the project. By teaching locals and international visitors bioregional practices (such as ecological restoration and sustainable living) PD creates a shift in consciousness and behaviour that promotes the reversal of human-caused environmental damage. The field work of the project puts these principles into practice and raises awareness of the issues at hand even further so that locals and visitors understand the importance of the work and know what they can do to become a part of the positive change. Students, teachers, land owners, community leaders and members, international visitors and volunteers are all key targets for the education aspect of the project.

b. Integration of locals into the project is another paramount outcome of the project. By encouraging participation in the various stages of revegetation (such as greenhouse work and tree propagation, tree distribution and workshops, planting, and maintenance), the model that the project presents is sustained by local interest and can be readily expanded and replicated as that interest grows. The revegetation workshops combine education and hands-on experience for all interested parties, especially students and community members, so everyone learns how to put the techniques involved into practice. Increasingly, PD acts as the facilitator of the revegetation process, providing the expertise and materials, while local collaborators undertake necessary labour out of their own motivation to improve the conditions of their environment.

c. Native plant revegetation is the most fundamental outcome of the project. Dry tropical forest is one of the most threatened and fragmented ecosystems in Ecuador that nevertheless contributes significantly to the biological megadiversity of the country. It is estimated that less than 1% of the original forest remains intact; approximately one out of every five species, plant or animal, is endemic, and many are considered to be at risk of extinction. Revegetation with native plants creates natural habitat that enables flora and fauna to survive and thrive, and it also serves as erosion control. In addition to devastating the ecosystem, severe erosion has historically caused massive economic damage and social hardships to the region's populace. Revegetation is the most effective, long-term solution for mitigating erosion.

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

Seventeen distinct communities received 5,000 trees that they would otherwise be unable to access. Demand for trees, particularly of fruit producing varieties, is very strong. At each tree distribution event held by PD, locals eagerly received their trees, and in every instance requested more trees than we were able to deliver at that moment. This creates the ideal situation to attract locals' attention which is crucial for sharing knowledge related to PD's bioregional mission and explaining the revegetation manuals. Besides Dry Tropical Forest restoration, we discuss composting techniques, sustainable agriculture practices, and recycling. Approximately 500 hundred different individuals were direct recipients of trees and manuals.

PD propagates tree varieties based specifically on years of feedback from locals about which native species they most desire. By serving their interests the probability that they will properly care for the trees increases significantly. Native trees provide habitat for native fauna, even if it is only a single tree planted in a person's backyard. Fruit producing trees provide food and future sources of sustainable income. *Chirimoya*, *Grosella*, *Pechiche* and *Tamarindo*, among others, are all native fruit trees with highly marketable fruits and fruit-derived products. They produce significant harvests within 4-5 years. All of these factors produce an integrated solution to some of the most pressing environmental, economic, and social issues threatening the region: deforestation, habitat loss, and underemployment.

5. Are there any plans to continue this work?

The Revegetation Project has been ongoing since 1999 and we expect it to continue well into the future. There is no set end date. Most of the human-caused devastation of the Ecuadorian dry tropical forest has happened in a relatively short period of time, approximately 40 years, its restoration will be an extremely long process since many of the plant species in this ecosystem are slow growing. PD is establishing itself as the revegetation headquarters of the greater Bahía region and the Project is now impacting the entire Manabí province. The goal is to continue increasing production at the greenhouse to keep up with the growing demand for trees, while developing and nurturing interest in ecological restoration through educational outreach.

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

The entire process of PD dry tropical forest restoration is shared with local and international students, residents and communities, the Ecuadorian Government, and NGOs (national and international) through presentations, field visits, education workshops, open-houses, and intensive academic endeavours (such as study abroad programs and internships) in addition to website field reports and newspaper coverage. Recognition of the project as a successful model of ecosystem restoration increases the number of similar projects undertaken in other places.

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

As anticipated, the Rufford Small Grant was used between November 24, 2012 and November 23, 2013.

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. Our budget figures are based upon the exchange rate on November 16, 2013: £ 1.00 GBP = \$1.612 US

Item	Budgeted Amount	Actual Amount	Difference	Comments
Planters/Construction Workers	£ 2,552	£ 2779	£ 227	More labourers were needed than expected in order to plant trees.

Greenhouse construction materials	£ 957	£ 504	<£ 453>	Fewer greenhouse construction materials were needed because a grant from Heytesbury & District Landcare Network (Australia) covered some of the expenses that were used to rebuild the greenhouse.
Survey potential revegetation sites	£ 574	£ 574	£ 0	
Water and transport of same	£ 319	£ 294	<£ 25>	
Labourers-Transportation to/from sites	£ 319	£ 319	£ 0	
Tools and Equipment	£ 223	£ 200	<£ 23>	
Publish <i>Revegetation Manual</i>	£ 311	£ 311	£ 0	
Revegetation Workshops Personnel	£ 251	£ 564	£ 313	Additional assistance was required to manage large groups of participants during revegetation workshops.
Revegetation Workshops Transportation	£ 248	£ 248	£ 0	
Revegetation Workshops Publicity	£ 123	£ 102	<£ 21>	
Revegetation Workshops Refreshments	£ 123	£ 119	<£ 4>	
Total	£ 6,000	£ 6014	£ 14	

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

- Strengthen PD's role as an environmental educator among local schools by continuing to develop revegetation workshops and educational materials.
- Collaborate with international educational institutions to increase the academic community's exposure to the project.
- Dramatically increase tree production at the greenhouse (the goal for 2014 is 15,000 trees) in order to keep up with growing demand.
- Expand the participation of surrounding communities in the project to increase the impact of the revegetation work.

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, RSGF's logo is displayed on the Eco-Ecuador section of PD's website (http://www.planetdrum.org/eco_ecuador.htm). The logo is also displayed prominently on the inside cover of the *Dry Tropical Forest Revegetation Manual*, which is available in English and Spanish, 250 copies of each version were distributed in print. The manual is also freely available in digital format on the PD website:

English: http://www.planetdrum.org/Ecuador/PD_Revegetation_Manual_2013-03_Eng.pdf

Spanish: http://www.planetdrum.org/Ecuador/PD_Revegetation_Manual_2013-01_Spa.pdf

11. Any other comments?

CNEL is in the process of increasing collaboration with PD and the *Árbol Eléctrico* programme by purchasing plastic bottles for PD and assisting in seed collection from the regions where trees are distributed. PD has promised to increase tree production for CNEL to distribute to rural areas in the region.

Community leaders from Crucita and Rocafuerte, who made contact with PD through CNEL have specifically requested to increase participation with PD in 2014.

By reaching out to more local schools, the goal is to eventually provide each student in the Bahía area the opportunity to visit the PD greenhouse, learn about the revegetation process and participate in the propagation of trees.