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	Marinés de la Peña Domene
Project title	Building bridges between tropical rain forest and cattle ranchers: creating incentives for overcoming forest regeneration barriers
RSG reference	9904-1
Reporting period	June 2011- June 2012
Amount of grant	£5378
Your email address	mdelap3@uic.edu, manepd@gmail.com
Date of this report	June 12th 2012

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
Plantation establishment: granting land access, fencing sites, growing papayas in the greenhouse and planting, cutting stakes of *Ficus* and *Spondias* and planting			X	We managed to get three landowners to lend land for our project. All sites were established and fenced. Fenced had to be repaired constantly and plantings had to be replanted every time they died.
Measure the survival and growth of planted species.			X	Plantings were monitored every 2 months recording survival and basal diameter growth and height. Some cuttings and papayas had to be replaced due to unsuccessful establishment or herbivory attacks.
Evaluate flowering and fruiting rates of the planted species.		X		At this point some papayas and *Spondias* already have fruits. Flower and fruit production has been monitored every 4 months.
Measure the abundance and richness of animal dispersers (bats and birds) before and after fruit crop maturation of the plantings.		X	X	Birds were evaluated monthly by direct observation and bats where only assessed once using mist nets. Fruit crop maturation has started but is not yet a general pattern.
Test seed rain before and after crop maturation of the plantings.			X	Seed rain were set up and samples were collected every month starting in September 2011
Assess the effectiveness of the planted species to function as regeneration catalysts, as measured by enhanced recruitment in planted plots.		X		Recruitment was evaluated before fruit crop maturation and densities were extremely low. Post fruiting conditions are still not generalized in the plantings and for this reason their function as regeneration catalysts is not yet feasible.
Evaluate the composition of the recruited community among the different planting types to determine whether planted species produce distinctive recruitment patterns.	X			Plantings are not all in fruit and recruitment is still too low to be able to evaluate differences in the recruited community in time and among the planting types.

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

We had two main difficulties within our project: 1) Cuttings and papayas did not always survive. Cuttings did not establish for several reasons, mainly fungus and herbivory attacks. Papayas faced

herbivory attacks and they were not always resistant to the climatic conditions; and 2) Since we are working in active pastures, the pressure of cattle trying to come in to our plots sometimes forced the fence open and eventually killed some cuttings and papayas. The first problem was solved by replanting one and again until plots had at least five *Spondias*, *Ficus* or papayas. The second problem was a constant pressure that we have partially overcome by constant monitoring, but we are conscious that this is a difficulty that is likely to remain when working in agricultural pastures. This can only be controlled until a certain point, being planting establishment the most critical phase. Planting success in one of our sites was not as successful because of conflicts with the farm neighbour how cut our fence wires and letting cows enter which increased planting mortality. Nevertheless, we were successful in keeping most plantings alive and replanting when ever needed.

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

Establishing plantings in heavily grazed pastures is far more challenging than we thought. The environmental conditions are challenging for planting establishment as well the high herbivory rates. Nevertheless our planting success is now up to 90 ± 10% establishment for *Spondias mombin* cuttings, 70 ± 20% for *Ficus aurea* cuttings, and 50 ± 40% for *Carica papaya* seedlings. We are constantly replanting cuttings and seedlings that die out in order to get a 100% establishment in out planted plots.

At this point some of our papaya survivors started to fruit this past January, which is a major success in our project. However until more fruits are available, we do not expect to get visits from the commuter birds that move seeds of forest species. Reporting the per-fruiting conditions is extremely important to be able to evaluate the success in our project as the changes achieved from the initial conditions to the post-fruiting conditions and thorough time.

Some birds like *Sphorophila torqueola, Dives dives, Vireo griseus, Buteo magnirostris, Buteogallus asturian, Cyanocorax morio* and *Sturnella magna* are coming into the plots and using our cuttings as perches. The movement of animals into our plots and trough the landscape is the first step in the path to restore seed dispersal and connectivity.

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

Granting land access in three sites at no cost was one of our major outcomes for this phase of the project. Land is valuable in this region because most of the land is subdivided in small ranches, so landowners will rarely lend land unless they are interested in the project. Now we have three sites in which we have established our project and two in Sontecomapan Lagoon and one in the Ruiz Cortines agricultural colony.

This project financially benefited several people from the localities of Laguna Escondida, Lázaro Cárdenas and Sontecomapan who are helping us with maintaining and monitoring the plots. Mr. Angel Reyes and Mr. Eladio Velasco are now helping to monitor bird and bat communities, María Velasco is processing seeds samples and Isidro Gómez helps us to maintain the plots in shape. We consider that their participation and involvement in the project will help us have a peter reach within the region once we have our complete results.

At the moment we consider to be one of the most important benefits for both parts (people and conservation) that with this project we have listen to ideas and necessities of the locals as people how depend on small cattle production for subsistence. This is in part why we consider that they were willing to participate and to offer their small land portions to develop this project. In the near future we are more likely to be able to work together and we can benefit from each other.

5. Are there any plans to continue this work?

This project is continuing for at least 3 more years. At the moment we have received new funding by the Conservation Leadership Programme (CLP) for 1 year as well as smaller grants by the University of Illinois (Chancellor's Graduate Research Fellowship Program and Elmer Hadley Graduate Research Award). We expect to have important results in the next two years and after this we would like to replicate this project with known and tested results into more parts of the region.

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

Once we have results based on the post-fruiting conditions we are planning to implement workshops within the local communities with the participation of the locals with whom we are already working with. We are also planning to have posters explaining the project in each site and to distribute brochures in the region directed to the cattle ranchers. Once we have tested results we will be able to contact the local authorities and communicate our finding to promote this king of management strategies throughout the region.

In this phase of the project our results are for the pre-fruiting conditions and we can say that regeneration barriers are strong in cattle pastures in the first year of cattle exclosure. In a second phase, which is stating with the first fruit crop from our plantings, we will be able to test how our plantings can help to overcome these barriers. We have collected all the data for the first phase and will be ready to compare results from our first year with those found in our second, third and future years.

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

RSG together with funding from the Scott Neotropical Fund, from the Cleveland Metropark Zoo (CMZ) were spent over a period of 12 months. We had originally considered receiving more funding to complement the RSG, but we were able to complete most of our programmed activities with the funds that we received.

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
Scientific/field equipment and supplies: Material for fences, plant germination, seed traps, bat and pollination censuses and planting tools	1215.88	1076.5	139.38	Mist nets for bat censuses were borrowed and this cost was reduced.
Travel and local transportation- Cuernavaca to Los Tuxtlas and Field station to experimental plots (Expenses for 6 field trips in 1 year)	2828.2	2760	68.2	Some field trips were made by bus, which was less expensive, but more complicated once in the field.
Food for 3 people during transportation to the field/ 6 field trips)	64	111	-47	Our alternative funding did not pay for this item.
Field station fees (7.8 GBP per day, food is included) for 5-6 people/ 6 field trips	1501.12	622	879.12	We made shorter stays in the field and with less people. CMZ also played for this item which doubled our budget.
Two field assistants for setting up the fences and plantations (phase 1; 45 day salary)	1737.7	1737	0.7	
Fuel for boat, and local transportation	229.3	390	-160.7	Local transportation was more expensive than we anticipated and in field trips where we traveled by bus we had to pay more for local transportation.
Anti-venom for snakes	157.25	0	157.25	The field station lent us anti-venom and we did not buy this item.
Digital camera for documentation	125.8	283	-157.2	Good cameras were more expensive and we did not have matching funds for this item.
Field guide books, maps, journal articles and other printed materials	0	0	0	We borrowed field guides.
Legal consulting for properties	125.8	0	125.8	The land was lent to us by the owners and no legal consulting was necessary.
One field assistant for maintaining fences, collecting seed rain, and helping with recruitment censuses (phase 3; salary for 2 day per week for 1	943.5	2546	-1602.5	We had to replant several times and reinforce fences to maintain the experiment. This required more labour and more salaries.

year)				
Report production and expenses for workshops with the local community	377.4		377.4	Workshops and other communication activities will be programmed once we have comparative results for the pre- and post-fruiting conditions.
TOTAL	9305.95	9525.50	+219.55	We received additional funds from CMZ, but not all that we had budgeted for. This reduced out budget and forced us to restructure our budget.

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

Now that we have a good percentage of planting success, and that papayas and *Spondias* cuttings are starting to produce fruits, the next step is a series of continuous censuses to determine changes in the bird and bat community along with the seed rain and recruits. In January 2012 we started documenting reproductive traits of the plantings and as more plantings produce fruits we will be able to relate this with the amount of bird and bat visits. At the same time animal visits can be associated with our seed rain data and finally with the established recruits.

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 will be used in the upcoming presentation in the CLP meeting. Result presentation will also have the RSGF logo, but these will be presented once we have enough data to compare pre- and post-fruiting conditions. Publicity for RSGF was made at an informal level between Mexican students from UNAM and UAEM.

11. Any other comments?

Reporting the per-fruiting conditions is extremely important to be able to evaluate the success in our project as the changes achieved from the initial conditions to the post-fruiting conditions and thorough time. In this phase of the study we were able to assess the grate limitations that succession faces in the first years after cattle is excluded, one of the main factors being the low seed arrival of forest trees and the second being the aggressive competition with invasive grasses. Frit availability in our project is a key part that is now taking place.

We are very thankful to the RSGF for supporting us and we hope to be able to continue our project and to communicate our findings.