

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 | Leo R. Douglas |
| Project title | Developing knowledge and tools to mitigate human-wildlife conflict: quantifying conflict between citrus and parrots on Dominica. |
| RSG reference | 10.08.08 |
| Reporting period | October 20, 2008 – April 9, 2009 |
| Amount of grant | £5,988.08 (or US\$11,794.53). |
| Your email address | lrd2107@columbia.edu |
| Date of this report | May 14, 2009 |

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 |
|--|--------------|--------------------|----------------|---|
| 1. <i>To determine the causes of citrus fruit crop loss.</i> | | | YES | Over the length of the research period, I systematically investigated the causes of crop loss on 13 farms. This was 3 more than the initially proposed 10 farms to be investigated. The most important causes of loss were fruit rot, insect damage, and bird damage, including that caused by parrot frugivory. |
| 2. <i>To determine the quantity and pattern of crop loss across the island and what environmental variables predicts this pattern.</i> | | | YES | The quantity of citrus fruits lost was categorized by cause of loss. Additionally, data for a set of environmental variables that are expected to influence crop loss was collected from all 13 farms studied. These variables will now be tested for their significance statistically. |
| 3. <i>To build the local capacity to study and manage parrot-agriculture conflict.</i> | | | YES | One graduate of the Dominica State College (Limbert Smith) was employed full time for 4.5 months and a second (Machel Sulton) was employed on a part time basis. Both were trained in all the methods used during this project. Additionally they were also exposed to the techniques of another project on the island that studied passerine using mist-netting. |

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

One significant unforeseen difficulty was the time and effort needed to prepare each farm site included in the study to permit data collection. This preparation involved clearing the ground area under each of the 195 trees monitored. This clearing of the orchard undergrowth was necessary to permit the assessments of the number and causes of fruit loss in the citrus orchards. For this reason I hired a second field assistant who focused on clearing low brush to ensure that citrus fruits and fruit fragments on the ground were visible. The assistance of this second assistant was essential for the timely implementation of the project's objectives.

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

1. I conducted research on 13 citrus farms distributed relatively evenly across the citrus-growing areas on the island of Dominica. Some level of crop damage due to parrots was experienced on all these farms. However the most northerly and southerly sites all sustained minimal damage relative to citrus farms surrounding the Morne Diablotin National Park and Northern Forest Reserve. The geographic pattern of parrot-damage therefore reflected a general pattern of a gradient in which farms in the north-central areas of the island sustained high parrot damage and these levels decreased sharply both north and south of the contiguous forest of the Morne Diablotin National Park and Northern Forest Reserve. The economics of this crop losses was complex because while farmers in surrounding the Morne Diablotin National Park/Northern Forest Reserve experienced the highest damage levels, the quantities of citrus they produced was greater than elsewhere, and furthermore the farmers in these areas appeared to have larger and more reliable markets for their citrus over the period of the study.
2. The project determined that there were several important causes of citrus crop loss on Dominica. While parrots are an important cause of citrus fruit loss on the island, on some farms parrots were not the most important cause of fruit loss overall. In total parrots accounted for just over 25% of the total citrus loss when the data from all the farms is combined. Other important causes of loss were due to fungal pathogen that produced Citrus Brown Rot, a species of fruit-piercing moth, rats, theft, natural fruit split, and inclement weather.
3. Citrus fruit damage due to parrots varied on a temporal scale. Parrots primarily ate citrus fruits during the months of November, December and January. This coincided with the ripening of two species of oranges, namely the Common (Valencia) orange, and the Ortanique Orange that were preferred by the parrots.

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

One emphasis of this project was knowledge-exchange and capacity building. I therefore worked closely with: (1) Dominica State College, and (2) the Division of Forestry, Wildlife and Parks of the Ministry of Agriculture. This is discussed in more detail in number 6 below.

5. Are there any plans to continue this work?

Yes, this project is expected to continue in the Fall of 2009.

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

In keeping with the overall objective of building the local capacity to study and manage parrot-agriculture conflict, I prioritized activities that promoted knowledge exchange. To facilitate this process, members of the Division of Forestry, Wildlife, and Parks visited my field site where we discussed fruit damage and interacted with affected farmers. Additionally, the following events were arranged to share the preliminary results of the project to a wider audience:

a. Workshop with the Agriculture class of the Dominica State College.

On March 10th, 2009 I organized and lead a workshop for the final-year class of the Department of Agriculture, Dominica State College. This workshop was divided into two sessions. Session one was

an interactive presentation lead by Limber Smith, project assistant, who delivered a 30 minute presentation on “how to work effectively with farmers who are facing conflict with wildlife”. This presentation examined the following topics drawing on the examples and experiences of the research study; (1) How to conducting scientific research on private lands, and (2) Factors influencing the receptiveness of farmers to participate in studies about people-agriculture conflict. Mr. Smith was commended by his former State College professor for the depth of experience he had acquired during the course of the project.

In session 2, I focused on methods for studying wildlife-agriculture conflict. This section of the workshop I examined the following topics: (1) What is human- wildlife conflict; (2) What human-wildlife conflicts exist on Dominica; (3) What methods is the current project using to understand and document avian-agriculture conflict on the island.

b. Presentation for the Forestry, Wildlife, and National Parks Division.

On March 17th 2009 I presented the preliminary results of the research to the staff of the Division of Forestry, Wildlife, and Parks, in the Ministry of Agriculture, Fisheries, and the Environment. The meeting was also attended by the executive director of the Archbold Tropical Research and Education Centre (ATREC). The ATREC, managed by Clemson University of the USA, is a local non-profit company that facilitates research by students, researchers, and educators.

c. Multi-sectoral Task Force on Crop Depredation.

I participated in two meetings of the Government of Dominica Cabinet appointed multi-sectoral task force on crop depredation and discussed the projects methods and objectives. This participation included presentations at both meetings of the task force on the nature of my work after which the participating stakeholders discussed the issue. I also participated in a field visit by the members of the task force to areas affected by parrot induced crop loss.

d. The Caribbean Amazona Parrots Working Group Meeting

Between July 13th-18th 2009, the Society for the Conservation and Study of Caribbean Birds (SCSCB) [1], the largest single organization devoted to wildlife conservation within the Caribbean, held its 17th biennial meeting in Antigua in the eastern Caribbean. As part of this conference, I participated in the Caribbean Amazona Parrots Working Group meeting and lead a discussion parrot-agriculture conflict in the Caribbean. This Working Group meeting was attended by forestry and wildlife professionals from across the region, including Dominica. As an outcome of this meeting, more than half of the island states represented identified conflict with native psittacines as an important conservation concern in their countries and it was recommended that psittacine-agriculture conflict be a focus of the 2011 meeting of the Society. Additional detail about this conference can be found at: <http://www.scscb.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 was used to cover expenses incurred between October 20th 2008 and April 9th 2009, the length of time that was originally planned for the project.

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 Spent | Difference + = surplus - = deficit | Comments |
|--------------------------------------|---------------------------|---------------------------|--|--|
| Field Assistant Salary | US\$4,050.00 £2,056.19 | US\$2,970.01 £1,507.87 | +US\$1,080.00 +£548.32 | Worked 5 as opposed to the anticipated 6 days per week. |
| Travel Allowance for Field Assistant | US\$ 405.00 £205.62 | US\$0.00 £ 0.00 | +US\$405.00 +£205.62 | I transported my field assistant consistently and therefore this budget item was unspent. |
| Air Travel | US\$1,180.00 £599.09 | US\$ 1,134.08 £575.77 | +US\$46.00 +£23.35 | |
| Rental Car | US\$3,612.00 £1,833.81 | US\$4,315.27 £2,190.86 | - US\$ 703.27 - £357.05 | The period of car rental using the RSG was longer than anticipated and therefore the total cost was greater than originally budgeted. |
| Gas | US\$1,204.00 £611.27 | US\$1814.63 £921.29 | -US\$ 610.63 - £310.02 | As the rental period was increased the quantity of gas used to complete the project was greater than originally budgeted. |
| Farmer Incentive | US\$1,000.00 £507.70 | US\$1,300.00 £660.01 | - US\$300.00 - £152.31 | I identified and used 13 farms as opposed to the previously planned 10 farms to increase the strength of the results. As a result 3 additional incentive payments were made. |
| Miscellaneous | US\$343.53 £174.41 | US\$149.81 £76.06 | +US\$193.72 +£98.35 | Purchase of microwave oven for cooking and heating of meals. |
| TOTAL | £ 5,988.09 | £ 5931.86 | £ 56.23 | |

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

- a. The next step will be to complete a second season of data collection to determine whether there are variations between years in the distribution and quantity of fruit loss due to parrots, other birds, and the other causes of citrus crop loss identified.
- b. I also investigate the impact of parrot frugivory on ecological community structure and function within the citrus-agriculture landscape. Based on this season's research, in areas where parrot frugivory is high the citrus fruit opened by parrots provide readily available

food resources for passerine birds. I will investigate whether and how parrot frugivory of citrus fruits influences habitat quality and reproductive condition of passerines within citrus agriculture landscapes.

- c. Because stakeholder attitudes are vital to understand and predict the development, and conservation implications of people-wildlife conflict, I will examine the knowledge, perceptions, and attitudes of the stakeholders of parrot-agriculture conflict on Dominica. For this aspect of the study I will use quantitative and qualitative social science research methods.

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?

All the oral presentations mentioned in number 6 above graciously acknowledged the funding support of the RSG program for this research project. No printed materials were produced.

11. Any other comments?

Based on my research on Dominica and my subsequent involvement with the Caribbean Amazona Parrots Working Group, conflict between psittacines and agriculture is both significant and widespread throughout the insular Caribbean. I anticipate that the results of this project will be influential in parrot conservation throughout the region and the beyond.

I would like to thank the Division of Forestry, Wildlife, and Parks for their unfailing support and encouragement during the project. It was obvious that they were well aware that the findings will be vital for their work on parrot conservation and for their continued interactions with the local stakeholders that are affected by parrot-agriculture conflict on Dominica. Thanks again to The Rufford Small Grants for Nature program! This research would not be possible without your generous support!