

The Rufford Foundation

Final Report

Congratulations on the completion of your project that was supported by The Rufford 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	David Villalobos Chaves
Project title	Habitat use and dispersal of large seeded plants by <i>Dermanura phaeotis</i> and <i>Uroderma bilobatum</i> in the dry forest of Costa Rica
RSG reference	14339-1
Reporting period	2014
Amount of grant	£5725
Your email address	avi3187@gmail.com
Date of this report	December 16, 2015

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
Documentation of large seeded plants dispersed by bats			X	
Bat species movements and habitat use and its relation with seed dispersal			x	
Training and teaching students in telemetry techniques and in bat ecology			X	
Publish scientific papers in index journals		x		Few details need correction. Papers already complete. Next step is submitting the papers in indexed journals.
A master degree			x	
Conservation workshops		x		I have been involved in at least five conservation workshops in several places of the country. I pretend to be involved in this kind of activities (directly or indirectly) during the next years

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

The major unforeseen difficulty of this project was during the fieldwork, specifically during the radiotracking sessions. When we originally proposed this research, both bat species (*D. phaeotis* and *U. bilobatum*) were common in the study site, however due to unknown reasons one of them (*U. bilobatum*) started to decrease its population, and currently is extremely hard to catch or find in their roost. This situation has precluded us tracking individuals of *Uroderma*. A situation like this is extremely difficult to tackled because is out of our control.

Another difficulty was the location of the study sites. Both localities are far away from the town and public service is not good for these places. It was solved with the help of institutions like Organization for Tropical Studies (OTS) and University of Costa Rica (UCR).

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

- We generated a complete survey of the large seeded plant species used by *U. bilobatum* and *D. phaeotis* in two areas of Costa Rica. This information was unknown for these ecosystems in the country, and for this reasons is an important baseline research. Additionally, our results (through detailed pictures of fruits, seeds and seedlings) could help others researchers and students to develop their seed dispersal studies, not only with frugivorous bats, but also with birds, primates, rodents and others.

- This is one of the few projects that involve movements of the dispersers (animals, and specifically frugivorous bats) and its relationship with the seed dispersal of different plant species in the dry forest of Neotropics. Although the animal-plant interaction is complex and usually difficult to disentangle, our results give us several clues to better understand this process and consequently improve our interpretation of the role of bats in the conservation and regeneration of the tropical forests.
- Animal-plant interactions are complex, principally because these include many variables that influence the systems. This project allow us to think about these variables, opening endless opportunities to develop many research that could include many taxa and that can be applied in many habitats. As a future professional, the relevance of this idea is invaluable to the development of the biological sciences of Costa Rica. Additionally, the priceless participation of many institutions (Rufford Foundation, BCI, RELCOM, and others), also complement the scope of the project, allowing us to incorporate local communities. This component is extremely necessary and is a fundamental part of a real effort to protect any natural resource.

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

Local community was involved during the fieldwork, especially during the documentation of the bat species diet, principally in the Refugio de Vida Silvestre Ostional. Additionally, in some cases the members of the area joined our field work and continuously ask about bats and their role in the ecosystems. This kind of scenarios were ideal to show the role of bats and clarify the situation with the vampire bats (*Desmodus rotundus*). Since vampire bats attack cattle in many sites of Costa Rica, and the information of ecological services of this group mammals is scarce and sometimes absent, generally, all bats are treated without any distinction, and are killed as equal. For this reasons, involve local communities is extremely necessary.

On the other hand, conservation workshops on child and adult persons are really helpful to change the perception and the concept of the bats to non-specialist people. In the case of child, conservation workshops are designed to teach the boys and girls that bats are NOT bad, scare, ugly and other common adjectives. So, they learn good things about the bats and loose the fear to these animals. In our programme (PCMCR; <http://pcmcostarica.wix.com/pcmcr>) we have specific and friendly materials to teach about the benefits of bats. This knowledge is really important in local people and is the base for conservation decisions at very specific level. For example the decision of kills hundreds of bats that roost in a hollow tree for the simple reason that all are vampire bats.

5. Are there any plans to continue this work?

Work is finished, but as a member of the PCMCR my plan is contribute for the conservation of bats at several levels.

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

My results were presented in the 45 meeting of The North American Society for Bat Research (NASBR) in Monterey, CA, USA, and in several conservation workshops. My master's thesis is ready

and two scientific papers are going to be published in indexed journals. Partial results of this research are published in our website (<http://pcmcostarica.wix.com/pcmcr>). Finally, the results of this work are part of the "Sistema Nacional de Áreas de Conservación (SINAC, <http://www.sinac.go.cr/AC/Paginas/default.aspx>)".

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

The Rufford Foundation grant was totally used during the 2014-2015. Expenses are detailed in the question #8 (Budget).

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	Expenses	Actual Amount of money	Comments
Assistant Salary	1505	0	<i>Change = £ 1 = ₡ 833, 69 (approximately at time of receipt the Rufford grant)</i>
Lodging	1330	0	
Food	1820	0	
Transport	800	0	
GPS	200	0	
Digital Voice Recorder	35	0	
Binoculars	200	0	
Total	5960	0	

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

We must generate more information about seed dispersal of plants by bats. Many frugivorous bat species of Costa Rica feed entirely or partially on fruits, however scarce information for few bat species is currently available. Basic information about this ecological service is essential to conservation strategies of bats, as well is important for conservation workshops.

Seedling establishment is one of the most important steps in this kind of studies; unfortunately the information available is scarce. We collect some related data in this research, however there is still much work to do. A long-term study should be developed, and it should include many important variables that actually affect the success of the seeds, for example soil characteristics, environmental variables (humidity, temperature, pH, etc), predation by rodents and insects, secondary dispersal, as any others.

Finally, I consider that one of the most important steps is do not stop working. I consider that any small effort is valuable, so with the help of thesis, scientific papers, conservation workshops, divulgative books and activities, among others, myself and others colleagues are working hard in doing research and conservations activities to preserve the bats of the Neotropical Region.

**10. Did you use The Rufford Foundation logo in any materials produced in relation to this project?
Did the RSGF receive any publicity during the course of your work?**

Yes. During talks of this project at the University of Costa Rica. Also, the Rufford Foundation logo was used during the 45 meeting of The North American Society for Bat Research (NASBR) in Monterey, CA, USA.

11. Any other comments?

Thank you very much for the help during this project. We are looking forward to work for the research and conservation of bats of the region and your support is really important for the future of our area.

