Final Project Evaluation Report

We ask all grant recipients to complete a project evaluation that helps us to gauge the success of your project. This must be sent in **MS Word and not PDF 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 – remember that negative experiences are just as valuable as positive ones if they help others to learn from them.

Complete the form in English and be as concise as you can. Note that the information may be edited before posting on our website.

Please email this report to jane@rufford.org.

Your Details	
Full Name	Christian Moreno Leon
Project Title	Monitoring of bat maternity colonies during birthing season in two hot-caves. Local education for bat conservation.
Application ID	17349-1
Grant Amount	£4930
Email Address	Christian.morenoleon@yahoo.com
Date of this Report	10/29/2017

1. 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
The aim on this project is to improve our knowledge of the use of hot caves by bat populations through the birthing period and the risk factors that affect the populations.				
Document the bats 'activity inside the maternity colony combining acoustic and visual monitoring methods.				
Study the bat populations using Automatic Recording Units (ARU) and an array of infrared video-camera placed in different areas of the caves.				
Develop a training program involving the isolated communities living near to "El Mudo" and "Numancia" caves.				

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

There were no difficulties during the period in which the project was developed.

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

a). Bat populations in both caves were studied using Automatic Recording Units (ARU) and two sets of infrared video cameras placed in different areas of the caves. Each ARU-unit was programmed to record sounds for 1 minute every 30 minutes during the day and 1 minute every 10 minutes during night when the activity of bat females increases. Acoustic recordings helped us to identify the species inhabiting the cave by mean of the features of adult echolocation signals, and to get an idea about the vocal activity of newborns inside the roost.We measure newborns in their first weeks of life. These data allow us to correlate the acoustic parameters of their vocalisations with age.

b). We described the vocalisations inside the heat trap from the newborns - most of them were audible with some ultrasonic components but most of the energy was focused in the audible range. Most of these vocalisations were obtained in the period were mothers went out to forage.

c) We worked toward in the capacitation activities with personal and educational talks for both communities, El mudo and Numancia. We delivered a couple of educational materials regarding Cuban bats to the principals in both schools to be

hung in classrooms and halls. Capacitating of children would help to involve them on monitoring bat populations during their holidays, which match with the bat birthing period; therefore offering children an opportunity to spend their free time in engaging games and conservation activities.

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

We developed a training programme involving children's from the primary and secondary school that living near to "El Mudo" and "Numancia" caves; we trained them about the reproductive behaviour of cave-dwelling bats and the importance of protecting them and their roosts. We prepared them to conduct bat conservation works during the school holidays. They learned about general characteristics of bats inhabiting in the hot caves and their importance, and other regarding newborn bats and how to avoid cave disruption during bat reproductive period. Children were able to see bats alive, in which they could recognize differences among species in colour, size and wing membrane features. Children and teachers from this community were very pleased with our activity due that few activities like this are not developed very often in this place.

5. Are there any plans to continue this work?

There are no plans to continue this work.

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

Part of the data obtained from the project was already published in the Caribbean Journal of Science Vol. 49, No. 1, 27-37, 2016. The rest of the results obtained in this project will be published in other international scientific journals.

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

The grant was used over 2 years. One weekly trip, two days each for sampling and data collection (April-September/2015). Ten trips for capacitating personal and educational activities with young people from these communities (April/2015-March/2016).

8. Budget: 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. It is important that you retain the management accounts and all paid invoices relating to the project for at least 2 years as these may be required for inspection at our discretion.

Item	Budgeted Amount	Actual Amount	Difference	Comments
Head Lamps (3 items)	180	180		
Flashlight (10 items)	30	30		
Digital camera with night vision	450	450		
Infrared lights	300	300		
Night vision goggles	100	100		
Camera tripod (4 items)	80	80		
Tramp camera (4 items)	1000	1000		
Men's Hiking Boots (1 pair)	100	68	+32	
Insect Repellent (10 bottles)	50	50		
Sleeping bag (1 items)	90	60	-30	
Mobile phones (2 items)	100	150		
Alkaline Batteries AA	200	200		
Alkaline Batteries D	300	300		
Alkaline Batteries 9V	250	200	+50	
Transportation (Havana-caves)	500	580	-80	Additional field trips.
Food supplies	500	500		
1 Laptop	400	350	+50	Price varied in the market
Educative materials publishing	300	370	70	
Total	4930	4968	-38	

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

Next steps should be extend this project and replicate it in other areas in Cuba. We have to work in create a conservation management plan for this areas and include new caves.

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

The logo from the Rufford Foundation was used in the educational materials published for the children, from the primary schools El Mudo and Numancia, Mayabeque province, Cuba.

11. Please provide a full list of all the members of your team and briefly what was their role in the project.

I worked together with Dr. Silvio Macías, MSc. Yohami Fernández Delgado and the undergraduate student Annette Hernández Abad, from the Faculty of Biology, University of Havana, all of them young nature conservationists with ample experience working with bats. In addition, thanks to our teaching position in the Faculty of Biology, University of Havana, we involved undergraduate students to assist us in the field work and the educational activities

12. Any other comments?

Recording of vocalization from newborns using Automatic Recording Units (ARU). Numancia cave Madruga municipality, Mayabeque province, Cuba.

Workshop developed in the primary school from El Mudo community, Mayabeque province, Cuba.