

## 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](mailto:jane@rufford.org).

Thank you for your help.

**Josh Cole, Grants Director**

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#### Grant Recipient Details

<b>Your name</b>	Carlos A. Mancina
<b>Project title</b>	Integrating research and education for the conservation of Cuban bats and their habitats.
<b>RSG reference</b>	11197-2
<b>Reporting period</b>	Whole project (February 2012 – February 2013)
<b>Amount of grant</b>	£ 6000
<b>Your email address</b>	<a href="mailto:mancina@ecologia.cu">mancina@ecologia.cu</a> or <a href="mailto:mancina2001@yahoo.com.mx">mancina2001@yahoo.com.mx</a>
<b>Date of this report</b>	12 March 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
To continue a long-term ecological research of bats in "Sierra del Rosario" Biosphere Reserve, in order to complete a baseline for understanding long-term effects of habitat modification and climate changes on bat populations of Cuba.			x	We have incremented 1 year field data to our long-term monitoring of bat populations in the "Sierra del Rosario" Biosphere Reserve. We continued using the same acoustic and mist-netting protocol of the previous 10 years. During this year over 300 bats belonging to 10 species were captured and tagged with a numbered band on a plastic necklace. We have completed a sampling effort (m × hr) of more than 1.300 net metres × hrs and over 250 hours of recordings were gathered. Preliminary analyses indicate similar abundance estimates and body mass of most abundant phytophagous bats that before to hurricanes of 2008 (Gustav and Ike), suggesting a recovering of these population and their habitats. We will complete in some weeks the analysis of these data, and at the end of the first semester of 2013 we will hope to finish a manuscript related with the long term dynamics of the bat populations of the "Sierra del Rosario" Reserve for a peer reviewed journal ( <i>Acta Chiropterologica</i> ). One manuscript, related with temporal niche overlap in phytophagous bat assemblage of "Sierra del Rosario", was recently finished and submitted to <i>Journal of Tropical Ecology</i> .
To determine how phytophagous bats contributes to the germination rate of key pioneer plants.			x	During this year we have collected over 65 faecal pellets belonging to five phytophagous species to estimate the fruits most frequently consumed by these species. Among the plants most frequently used by bats we selected three species ( <i>Piper aduncum</i> , <i>Cecropia schreberiana</i> and <i>Muntingia calabura</i> ) for the germination experiments due to their small seed pass through the digestive tract of the bats. To date we used two bat species ( <i>Artibeus jamaicensis</i> and <i>Brachyphylla nana</i> ) in the experiments. Individuals of these species were held in small cages to collect faeces

				with seeds. We compared germination rate and percentage of germinated seeds from the bat faeces with control seeds. Preliminary data suggest in most plant species and both bat species low effect on the percentage and rate germination between consumed and control, although the bat seeds tend to germinate more quickly. Once experiments have been completed the results are going to be submitted to a peer review journal. These results are the most important part of a thesis of bachelor's degree at the Faculty of Biology in the Havana University.
To build capacities through educational campaigns as well as theoretical-practical courses in local communities, conservation workers and decision makers, in three of the most important areas for the conservation of Cuban bats			x	We made talks and training workshops in four areas: "Varahicacos" Natural Reserve, Matanzas province (81°07'W, 23°11'N), "Siboney-Jutici" Natural Reserve, Santiago de Cuba province (75°46'W, 19°57'N), "Sierra del Rosario" Biosphere Reserve, Pinar del Rio province (82°57'W, 22°50'N) and Gibara, Holguin province (76°08'W, 21°07'N). In these activities participated over 125 peoples, including foresters, teachers of local schools, students, speleologists, conservation workers, biologists and stakeholders. At these workshops were delivered scientific publications, posters and other didactic materials. All-comers learned many aspect of the natural history of bats of their localities, to identify bat species, and capture and monitoring techniques. In all localities we realised bat inventories in caves and forest zones with participation of local people.

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

We did not encounter major difficulties. Two areas initially planned could not be visited this year because bad weather conditions and delayed permits. However, these areas were substituted by other of similar importance for bat conservation.

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

- Continue a long term monitoring protocol as essential baseline to understand the dynamics and effects of hurricanes of populations and assemblages of Cuban bats.

- Explore the functional importance of Cuban bat species on the natural regeneration of degraded forests in Cuba.
- Improve the awareness and research capacity of local people in important areas for the conservation of Cuban bats. This project made possible a noteworthy strengthening of the Program for Conservation Cuban Bats.

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

In all localities that we visited during this project we worked together with many local people. We contributed with materials (e.g. mist nets) and technical training that would be very useful in their future projects and conservation actions. We delivered didactic materials (e.g. poster and book that were partially financed by RSG in our previous RSG) in addition to many scientific literatures, which in these localities are not available. The local people actively participated in inventories and learned methods of capture and handling as well as identification of bats. This project allowed interchange of experiences between provincial groups interested in the conservation of bats. During this period we inaugurated a monothematic photographic exposition about bats motivated by the world activities related with the "Year of the Bat". This exposition will be exposing in communities near to important areas for the conservation of Cuban bats.

**5. Are there any plans to continue this work?**

I would like continue monitoring the Sierra del Rosario's bat populations and expand to other localities at the island. This year we will build capacities in other two important areas with high diversity of bats and density of caves, and will continue building the Program for Conservation Cuban Bats.

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

We share the results through scientific papers, popular articles and didactic materials, thus as through presentations at national and international meetings. During this period I gave talks to university students and technical trainings in areas of importance for Cuban bat conservation. Several publications were results direct or indirect of our RSG projects (in all RSGF support was indicated), there are:

- Mancina, C.A., L. García, and B. W. Miller. 2012. Wing morphology, echolocation, and resource partitioning in syntopic Cuban mormoopid bats. *Journal of Mammalogy* 93: 1308-1317.
- Sánchez-Lozada, M., y C.A. Mancina. 2012. Reserva Ecológica Siboney-Juticí: un área de importancia para la conservación de los murciélagos de Cuba. *Boletín de la Red Latinoamericana para la Conservación de los Murciélagos* 3: 15-17.
- Mancina, C.A. and I. Castro-Arellanos. (submitted). Temporal niche overlap in a bat assemblage of western Cuba. *Journal of Tropical Ecology*.
- Rojas, D., and C.A. Mancina. (submitted). SCENT: Site Conservation priority index based on 'species on the EDGE' and Network Theory. *Biological Conservation*.
- Rojas, D. C.A. Mancina and L. Navarro (submitted) Phylogenetic signal, feeding behaviour, and brain volume in Neotropical bats. *Proceedings of the Royal Society B*.

Mancina, C.A. (in preparation). Ecological niche modelling as tool for identifying important areas for the conservation of bats in Cuba.

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

I used the RSG for my research from February 2012 to February 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.**

Item	Budgeted Amount	Actual Amount	Difference	Comments
Field expeditions	1500	1500		
Field equipment	500	600	-100	I bought a 28-200 mm lens for reflex photograph camera.
Laptop computer	700	800	-100	
Office materials	300	300		
Four training workshops	1500	1300	+200	Because the logistic two workshops were shorter than planned.
Impression of Plasticized leaflet, photos and a field guide of the Cuban bats	1500	1500		
<b>TOTAL</b>	6000	<b>6000</b>	0	The exchange was 1 pound = 1.31 Convertible Cuban Pesos (C.U.C.).

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

To process and to analysis the data and to publish the results in recognised journals besides expose our results in national and international meeting.

**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?**

We have included the logo of RSGF in didactic materials as a posters and a photographic guide of the Cuban bats. I have used the logo in my presentation in the Annual Meeting of Latin American Network for Bat Conservation in Colombia in December 2012 and in a photographic exposition, talks and in presentations in several localities. In all my publications between 2010 and 2013 the support of RSGF is acknowledged.

**11. Any other comments?**

This project allowed to many people saw closely a bat for first time and improve the image respect to the bats. I don't have doubt that this project will have positive impact for the conservation of bats across the island. Thank to RSGF for support our researches and the conservation efforts in all Latin America.



## PHOTOGRAPHS



Workshop at "Siboney-Jutici" Natural Reserve, Santiago de Cuba province



Photographic exposition of bats at the National Museum of Natural History.



Workshop and other activities at the “Varahicacos” Natural Reserve, Matanzas province



Workshop at “Sierra del Rosario” Biosphere Reserve, Pinar del Rio province.





Talks to biology students, National Botanical Garden of Cuba.



Workshop at Gibara, Holguin province.





Types of bands used during bat monitoring.



Plasticised photographic field guide (original size 216 x 279 mm)



Poster (original size 650 x 450 mm)