

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	Carlos A. Mancina
Project title	National survey and Action Plan for the Bats of Cuba: Generating a long-term strategy for conservation
RSG reference	17517-B
Reporting period	Whole project (July 2015 – July 2016)
Amount of grant	£ 10,000
Your email address	mancina@ecologia.cu
Date of this report	July 20, 2016

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
<p>To execute inventory surveys in protected areas and localities little surveyed or un-surveyed for bats; caves will be particularly targeted due to the fact that they constitute vulnerable and critical roosts.</p>			x	<p>Here we report the most intensive and extensive survey of Cuban bats made in the last 40 years. During 11 months a total of 102 localities were visited and sampled (see Appendix 1), including 69 caves. We combined sampling methods and surveyed in different habitats types as mangrove, xerophytic vegetation, secondary, pine, semi-deciduous and evergreen forests; in altitudes between 0 - 750 m asl (see Appendix 1 and 4).</p> <p>We carried out surveys in 33 protected areas of 13 provinces across the island (see Appendix 2), in 11 of these protected areas our results represent the only bat fauna information available at present time.</p> <p>We sampled 69 caves including 30 hot caves. We obtained data about bat species composition and estimations of relative size of their colonies, cave characteristic and conservation status and surrounding habitats; additionally we registered the exact geographic location of each cave.</p> <p>We captured 24 species of 21 genera and six families; this represents 92% of the species reported for Cuba (only <i>Antrozous kopmani</i> and <i>Dasypterus insularis</i> were not captured). A list of the species recorded and number of localities and protected areas are provided in Appendix 3. We obtained 335 new distribution records of Cuban</p>

			<p>bats.</p> <p>We processed a total of 720 individuals of 16 species obtaining morphometric and ecological data, as well as samples of ectoparasites and tissues samples for future genetic analysis.</p>
<p>To produce a National Conservation Action Plan for Cuban Bats including Species Action Plans for threatened, endemic and selected cave-dwelling bat species.</p>		x	<p>At first of the project in a national meeting the schedule the fieldwork was discussed and three regional work groups were created. It allowed increase markedly the number of surveys across the island.</p> <p>We obtained updated information about the threats and protected status of major part of the Cuban bat species and the most important roosts; it will allow re-evaluate the conservation status of Cuban bat species in next national workshop (November 2016).</p> <p>We have images and geo-referenced information to make maps and spatial analyses. It will be included in the species accounts of the Conservation Action Plan. At present we are working in other sections of this document, among them an updated and commented synopsis of the bat caves, a field key to identification of species, a compendium about the diseases transmitted by Cuban bats and a protocol for bat exclusions from buildings.</p> <p>A full achievement of this objective is expected in first trimester 2017 when an electronic edition of the Action Plan will be freely available and uploaded to the website.</p>

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

We did not encounter major difficulties. In some areas the field work was shorted because bad weather conditions; three protected areas were not be visited by logistic setback.

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

- The more extensive and intensive survey of Cuban bats carried out in the last 40 years. Updated information about the distribution of bat species and their roosts across the island are now available; 335 new distribution records of Cuban bats were obtained and many past records were corroborated. Important bat caves (including 30 hot caves) across the island were visited and the information about the bat composition, threats and main disturbances were assessed.
- The representativeness of Cuban bat fauna inside of the National System of Protected Areas was evaluated. Much critical information to management and conservation of bat populations and their roosts was obtained in several protected areas. The information gathered during this project, that shortly will be available for Cuban conservation authorities, will be very valuable to identify bats as conservation objects and its integration in the management plans. In addition, areas with high species richness were identified across the island, and the proposal of two new AICOMs (Important Areas for Bat Conservation) will be submitted to the RELCOM (Latin American and Caribbean Bat Conservation Network) to evaluation.
- The first Conservation Action Plan of Cuban bats will be presented; this document will allow leading a long term national strategy for the conservation of Cuban bats. Also, this project made possible the interchange and association of national experts and actors related with the conservation and study of Cuban bats. The conservation status of bats will be updated and the main conservation strategies are going to be delineated.

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

In many localities we worked and were assisted in the field by many local peoples, parallel, they gained significant experience in bat studies (e.g. capture, handling and identification). We contributed with didactic materials and training to the technical staff of protected areas that will be very useful in future projects and conservation actions. During this period and partially supported by RSG we made several educational activities including a "Bat Festival" at the National Museum of

Natural History. This activity included a photographic exposition, talks about bats, student presentations, didactic games and thematic panels; nearly 250 schoolchildren participated (see Appendix 5).

5. Are there any plans to continue this work?

Yes, we plan to continue this work in the near future. This project was focused mainly on updated the distribution information of bat species across the island with emphasis in the protected areas, as well as to evaluate the conservation status and threats to some critical roosts. However, we need more information on the biology of threatened or endemic species (e.g. *Natalus primus* and *Mormopterus minutus*), in particular with regard to habitat and roost use. We would like sample protected areas where there is no information available yet and to start more exhaustive research in some of the localities visited during this project. In addition, some important regions of the country remain without or with deficient information about its bat fauna.

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

The major part of the information obtained with this project will be included in the "Conservation Action Plan"; it will be available in the first trimester of 2017. Two scientific papers will be written and submitted to impact journals in the next months. In addition, data obtained during the project will be used in two master's degree thesis and one of bachelor. Recently, we presented preliminary results of this work at an International Congress in Havana and a National Meeting in Villa Clara province.

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

Funds were used from August 2015 to July 2016, although the original proposal comprised 18 months. We could not to start in July 2015 because the funds were not available by bureaucratic problems in the reception of the grant. We gave priority to the fieldwork and only a conclusive meeting with all participants would be pending.

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	2500	3200	+700	Fuel, food and local transportation was more expensive than planned, costs of fieldwork and additional field assistants were charged to this item.
Field equipment	2180	2180		
Meetings and office materials	2300	2300		We charged to this item 24 picture frames and one camera stand.
Computational materials	600	850	+250	The laptop and data show were more expensive than originally budgeted.
Preparation and diffusion of the Conservation Action Plan	2000	1400	-600	Budget includes cost of digital supporters (flash drives), design and illustrator; the cost of a printed version will be covered by other funding sources.
Total	10000	9930		

Exchange rate according to the National Bank of Cuba at the moment of grant reception = 1.58 Convertible Cuban Pesos (C.U.C.); amount received = £ 9932.17

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

The most important steps are to processing data and to disseminate our results. Because the intense field work carry out in these months the major part of data and information has not been processed or analysed yet. Many files of echolocation

calls obtained from the acoustical sampling, pellets of barn owl collected of several localities and the polls about the perception of people in Cuba about bats, are going to be processed in the next two months. A technical report relative to our results in protected areas will be given in the next weeks to national direction of the National System of Protected Areas

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?

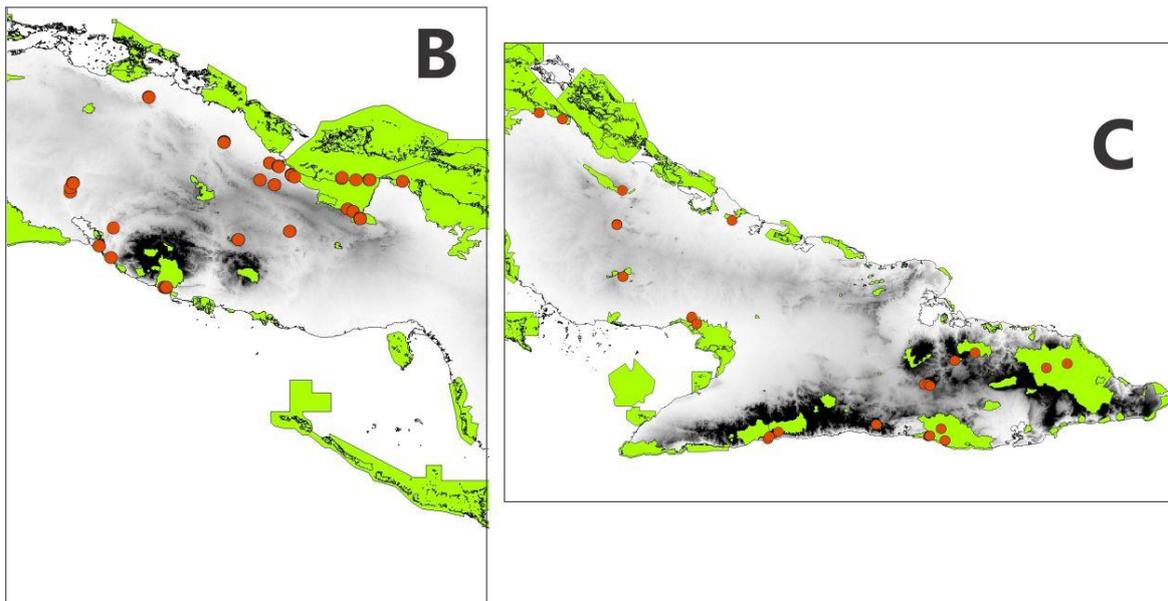
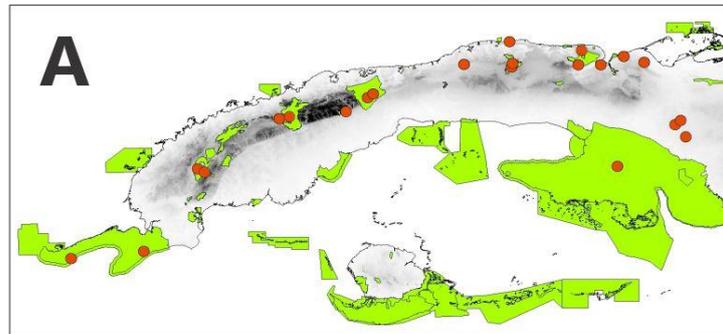
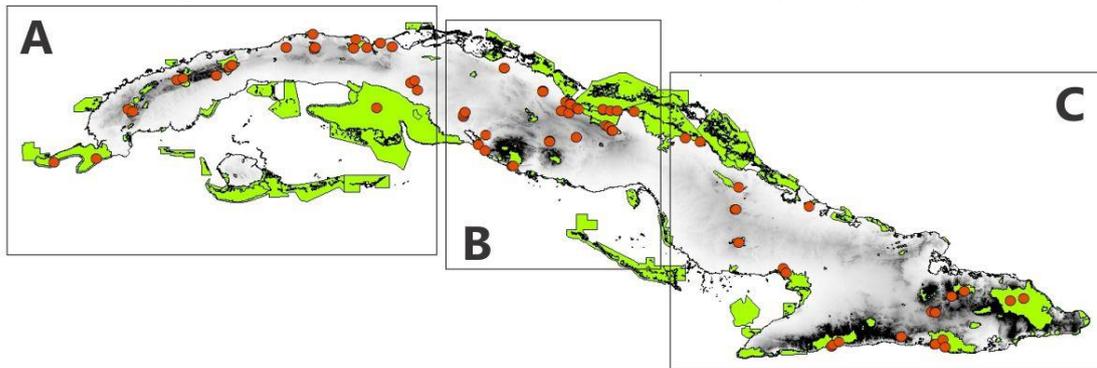
The RSGF logo was used in our presentations and activities; and we will continue using it in all the educational products developed by the Program for Conservation of Cuban Bats. The Rufford Foundation logo will be in the cover of the Conservation Action Plan and the RSG support will be referred in all the papers submitted to scientific journals.

11. Any other comments?

The RSG funding was an essential contribution for the development of this project. Furthermore, the results were possible thank to essential support and collaboration of members of the Program for Conservation of Cuban Bats, they are: Humberto Vela, Margarita Sánchez, Armando Longueira, Hector M. Díaz, Raimundo López-Silvero, Francisca Amador, Tatiana Homar, Adrián Marquez, Joel Monzón, Michel Rodríguez, Carlos Hernández and Rubén Marrero, thus as workers of several protected areas. This RSGF Booster Grant, as previous grants also supported to us by RSGF, have resulted in a remarkable increase of the knowledge about the ecology of the Cuban bats with clear benefit to their conservation.

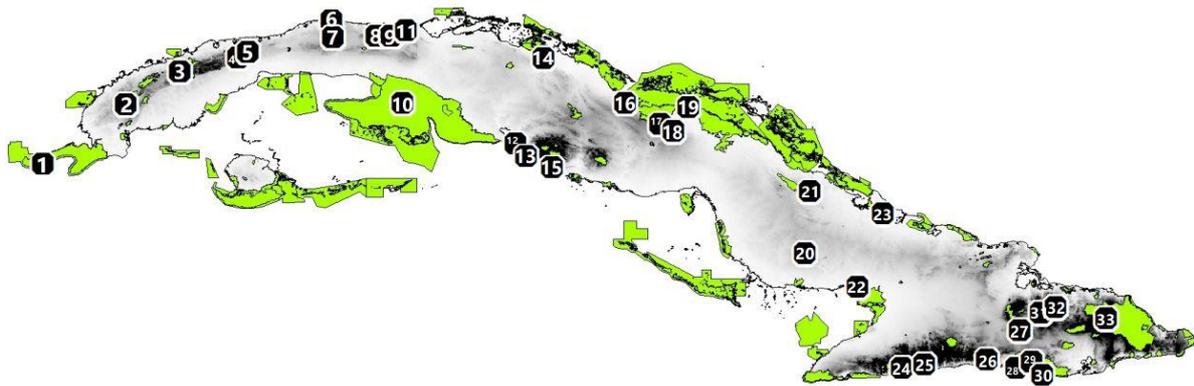
APPENDIXES

Appendix 1. Map of the Cuban archipelago showing those sites (orange circles) visited during the project; Western (A), Central (B) and Eastern Cuba (C), green areas representing the National System of Protected Areas (SNAP).



Appendix 2. List of Protected Areas surveyed in the project.

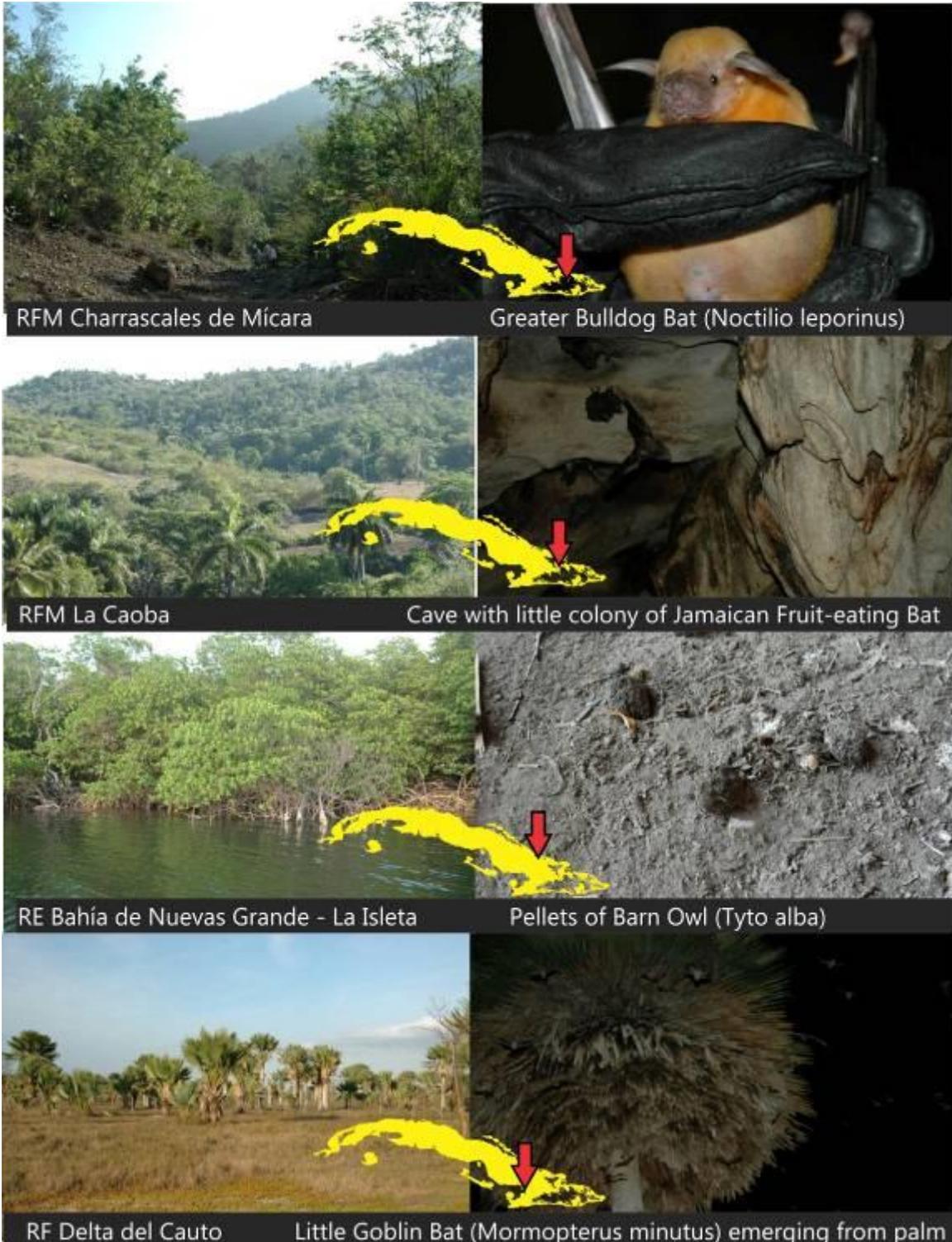
1. APRM Península de Guanahacabibes, 2. RE Sierra San Marcos, 3. APRM Mil Cumbres, 4. RE El Salón, 5. APRM Sierra del Rosario, 6. PNP Ricón de Guanabo, 7. PNP Escaleras de Jaruco, 8. APRM Valle del Yumurí, 9. END Paleocaverna Bellamar, 10. PN Ciénaga de Zapata, 11. END Caverna Santa Catalina, 12. RF Guanaroca-Punta Gavilán, 13. PNP Guajimico, 14. RE Mogotes de Jumagua, 15. PNP Topes de Collantes, 16. APRM Bahía de Buena Vista, 17. END La Chucha, 18. END Boquerones, 19. APRM Humedales de Ciego de Ávila, 20. APRM Sierra del Chorrillo, 21. APRM Sierra de Cubitas, 22. RF Delta del Cauto, 23. RE Bahía de Nuevas Grande - La Isleta, 24. PN Turquino, 25. PN Bayamesa, 26. RE Loma del Gato-Monte Líbano, 27. RFM La Caoba, 28. RE Siboney-Juticí, 29. PNP Gran Piedra, 30. RN El Retiro, 31. RFM Charrascales de Mícara, 32. PN Pico Cristal and 33. PN Alejandro de Humboldt.



Appendix 3. List of bat species observed during the project, number of sites (*n*) and protected areas (*n* PA) are also included.

Family/Species	<i>n</i>	<i>n</i> PA
Noctilionidae		
1. Greater Bulldog Bat (<i>Noctilio leporinus</i>)	7	5
Phyllostomidae		
2. Waterhouse's Leaf-nosed Bat (<i>Macrotus waterhousii</i>)	21	11
3. Jamaican Fruit-eating Bat (<i>Artibeus jamaicensis</i>)	59	28
4. Cuban Fig-eating Bat (<i>Phyllops falcatus</i>)	13	12
5. Leach's Single-leaf Bat (<i>Monophyllus redmani</i>)	25	19
6. Cuban Flower Bat (<i>Phyllonycteris poeyi</i>)	41	22
7. Buffy Flower Bat (<i>Erophylla sezekorni</i>)	21	11
8. Cuban Fruit-eating Bat (<i>Brachyphylla nana</i>)	33	17
Mormoopidae		
9. Antillean Ghost-faced Bat (<i>Mormoops blainvillei</i>)	26	10
10. MacLeay's Mustached Bat (<i>Pteronotus macleayii</i>)	13	8
11. Common Mustached Bat (<i>Pteronotus parnelli</i>)	17	10
12. Sooty Mustached Bat (<i>Pteronotus quadridens</i>)	30	16
Natalidae		
13. Cuban Greater Funnel-eared Bat (<i>Natalus primus</i>)	1	1
14. Cuban Lesser Funnel-eared Bat (<i>Chilonatalus macer</i>)	16	9
15. Gervais's Funnel-eared Bat (<i>Nyctiellus Lepidus</i>)	13	7
Molossidae		
16. Bonneted Bat (<i>Eumops ferox</i>)	1	1
17. Pallas's Mastiff Bat (<i>Molossus molossus</i>)	6	4
18. Little Goblin Bat (<i>Mormopterus minutus</i>)	5	2
19. Broad-eared Free-tailed Bat (<i>Nyctinomops laticaudatus</i>)	1	1
20. Big Free-tailed Bat (<i>Nyctinomops macrotis</i>)	2	1
21. Brazilian Free-tailed Bat (<i>Tadarida brasiliensis</i>)	17	6
Vespertilionidae		
22. Big Brown Bat (<i>Eptesicus fuscus</i>)	22	12
23. Pfeiffer's Red Bat (<i>Lasiurus pfeifferi</i>)	5	4
24. Cuban Evening Bat (<i>Nycticeius cubanus</i>)	1	-

Appendix 4. Photos of some areas surveyed taken during the project implementation.



Appendix 4. Cont.



PN Pico Cristal

Cuban Fig-eating Bat (*Phyllops falcatus*)



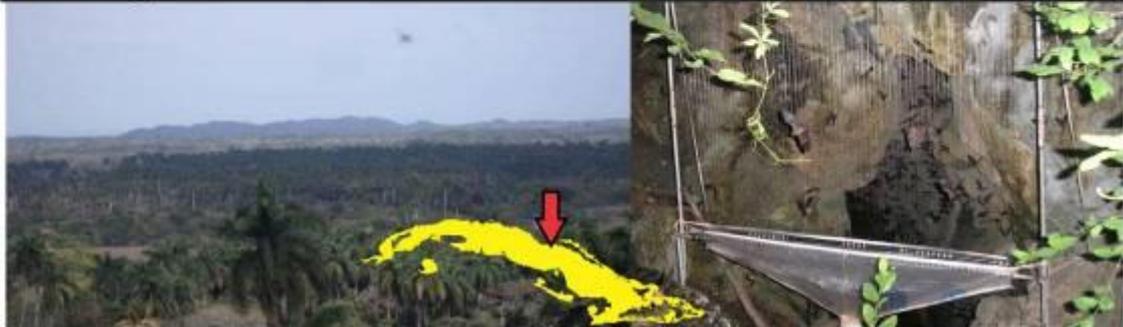
RN El Retiro

Waterhouse's Leaf-nosed Bat (*Macrotus waterhousii*)



Cerro Guajabana

Gervais's Funnel-eared Bat (*Nyctiellus lepidus*)



APRM Bahia de Buena Vista

Capturing *Pteronotus* spp. using harp trap

Appendix 4. Cont.



Appendix 4. Cont.



Appendix 5. Educational activities and the "Bat Festival".



Appendix 5. Cont.

