

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	Rayner Núñez Aguila
Project title	Butterflies of Turquino National Park, Cuba. Research and individual capacity building toward its conservation.
RSG reference	8909-1
Reporting period	November 2010- November 2011
Amount of grant	£5810
Your email address	rayner_na@yahoo.com
Date of this report	December 2011

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
Inventory of Turquino National Park (TNP) butterflies			x	
Butterfly population counts and gathering of data on butterfly's biology			x	
Capacity building of park personnel and community			x	

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

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

Inventory of Turquino National Park butterflies

During four visits to TNP, 70 butterfly's species were recorded, 39 of them for the first time. Today, the total number of butterflies known from TNP is 80, including 28 endemic species and subspecies, the 42% of entire Cuban fauna (see below).

Table 1. Vegetation types, altitudinal range, and number of butterfly species and endemism at TNP.

Vegetation types	Altitude(m)	Number of butterfly species	Number of endemics
Disturbed vegetation	250-1000	57	15
Evergreen forest	300-800	26	16
Rainforest	800-1600	17	12
Cloud forest	1600-1900	9	9
Cloud scrub	1900-1974	4	4

Butterfly population counts and data on species biology

In total, 59 butterfly species were recorded in transects along all vegetation types of TNP. Species richness was greater at lower altitudes and disturbed vegetation, but percentage of endemism was highest at better preserved vegetation types in higher altitudes (see below).

Table 2. Vegetation types and number of butterfly species and number of endemics recorded along transects at TNP.

Vegetation types	Number of butterfly species	Number of endemics
Disturbed vegetation	47	9
Evergreen forest	19	10

Rainforest	10	5
Cloud forest	8	8
Cloud scrub	4	4

Vegetation type, relative abundance and number of individuals per 100 m along vegetation paths were recorded for each butterfly species (see Annex 1). Fifteen nectar sources were also recorded for 18 butterfly species, 13 of them endemics without previous data on this topic. The host plants of two endemics were revealed for the first time during this project. These are *Pithecellobium maestrensis* for *Dismorphia cubana* and *Ichnanthus mayarensis* for *Calisto smintheus*.

Capacity building of park personnel and community

Educative talks involving park authorities and personnel were performed. Those included an initial poll where knowledge on butterflies was evaluated between park authorities, park guides and conservation technicians. In this poll, 60% of asked park personnel ignored which kind of organisms are butterflies and all 30 ignored how many species inhabit the park, although some mentioned to know few TNP endemic butterflies. About 80% identified importance of butterflies for man and in nature, and 40% knew what an endemism is. Park authorities knew better the subject than conservation technicians. After this poll, 200 educational pamphlets (see attachment) explaining what a butterfly is, why they are important, and how many butterfly species inhabits the TNP was released. In a subsequent visit, another similar poll was developed and some of the results were improved compared to initial poll, including recognising which kind of organisms are butterflies (60 % answered correctly). Knowledge about butterflies was increased among conservation technicians because 60 % of them answered correctly what an endemism is and why butterflies are important. During the last visit a photographic guide (see attachment) showing 69 species of butterflies from TNP (from a total of 80) was distributed to the park personnel and to the community library. Information regarding butterfly fauna, including habitat use, nectar source use and host plants known, was provided to park authorities to be used in the next management plan.

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

Capacity building included both park personnel and community members. During educative talks and by reading project printed material (pamphlet, butterfly guide) they learned what kind of organisms are butterflies, its importance to nature and man, and about the TNP butterfly fauna. Most of park workers live inside the park so they constitute an additional way to expand knowledge on butterflies to other community members. Educational pamphlets are also available to all members of community at town library. Update of knowledge on butterflies by park guides may improve the satisfaction of clients visiting the park and would serve to increase the economic incomes.

5. Are there any plans to continue this work?

Yes, additional visits will be conducted to the TNP to continue the study of its butterfly fauna and the cooperation with the TNP authorities, including the delivery of a full report on project findings (species list by vegetation types, endemism, and charismatic species of interest for park visitors).

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

An article on butterflies of the TNP, including a checklist, the habitat uses and all available information on the biology for each species is also in preparation. When published, this article will be sent to Rufford Small Grants. Copies of the TNP butterflies' photographic guides were sent to head institutions on the study of natural sciences in Cuba, including the Faculty of Biology of the University of Havana, the Oriental Centre for Ecosystems and Biodiversity, and the Institute of Ecology and Systematics. Results will be also presented in the next Congress of Mesoamerican Society for Biological Conservation in Havana, Cuba, in 2013. Besides, all data involving two endemics species, *Calisto smintheus* and *Calisto herophile*, will be used in a Ph. D. thesis scheduled to be finished in 2013.

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 over 12 months from November 2010 to November 2011.

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
Transportation	500.00	500.00	-	
Food supplies	1500.00	1521.00	21.00	Prices of some products varied
Salary	300.00	300.00	-	
Lodging	300.00	300.00	-	
Batteries	100.00	85.00	15.00	Market prices varied
Battery charger	50.00	46.00	4.00	
Tent	60.00	60.00	-	
Laptop	700.00	685.00	15.00	Market price varied
Printer	350.00	343.00	7.00	
Printer toners	300.00	310.00	-	
Sheets	150.00	160.00	10.00	Market price varied
Professional Digital Camera	700.00	689.00	11.00	Market price varied
Macro conversion lens	800.00	800.00	-	
TOTAL	5810.00	5789.00	11.00	Exchange rate: 1.44229

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

- To deliver all project information to park authorities to be included in the next park management plan.
- To finish an article on park butterflies, including species list, its relative abundance at each vegetation type at park, the obtained biological information for each species and considerations on their conservation.
- To apply to new funds to develop a similar project at Alejandro de Humboldt National Park, located in north eastern Cuban mountains, which also possesses a very rich and poorly studied butterfly fauna, with many endemic species, most of them restricted to this massif.

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?

The RSG logo was used at all the capacity building activities and in the printed materials (educational pamphlets and park butterfly guide, see Annexes 2 and 3).

Annex 1.

Relative abundance (# of individual per 100 m) of butterflies recorded in paths along transects at vegetation types sampled at Turquino National Park

Species/Relative abundance (individuals per 100 m) in each vegetation type	Disturbed vegetation	Evergreen forest	Rainforest	Cloud forest	Cloud scrub
Family HesperIIDae					
<i>Astraptes h. habana</i> E	0.4	0.6	0.3	0.1	0.1
<i>Hylephila phyleaus</i>	0.1	-	-	-	-
<i>Parachoranthus magdalia</i>	0.1	0.1	-	-	-
<i>Perichares p. philetas</i>	0.2	0.1	-	-	-
<i>Synapte m. malitiosa</i>	0.3	0.1	0.1	-	-
<i>Urbanus dorantes santiago</i>	0.1	-	-	-	-
<i>Urbanus proteus domingo</i>	-	0.3	-	-	-
<i>Pyrgus oileus</i>	0.5	-	-	-	-
<i>Eantis papinianus</i>	0.1	-	-	-	-
<i>Wallengrenia otho misera</i>	0.1	-	-	-	-
<i>Ephyriades b. brunnea</i>	0.1	-	-	-	-
<i>Erynnis z. zarucco</i>	0.2	-	-	-	-
<i>Polites baracoa</i>	0.1	-	-	-	-
<i>Cymaenes tripunctus</i>	0.1	-	-	-	-
<i>Saliana esperi soroa</i> E	0.1	-	-	-	-
<i>Proteides mercurius sanantonio</i> E	-	-	-	0.1	-
Family Nymphalidae					
<i>Agraulis vanillae insularis</i>	0.5	-	-	-	-
<i>Anetia briarea numidia</i> E	-	0.4	0.5	0.8	0.8
<i>Anetia cubana</i> E	-	1.3	0.6	0.4	0.4
<i>Archaeoprepona demophoon crassina</i> E	-	-	-	-	-
<i>Calisto h. herophile</i> E	1.1	-	-	-	-
<i>Calisto s. smintheus</i> E	-	2.3	6.6	7.0	1.8
<i>Colobura dirce wolcottii</i>	0.1	-	-	-	-

<i>Dryas iulia nudeola</i> E	0.4	0.1	0.1	-	-
<i>Greta cubana</i> E	-	0.3	0.4	0.1	-
<i>Heliconius charithonius ramsdeni</i>	0.4	0.1	-	-	-
<i>Hypanartia paullus</i>	-	0.3	-	-	-
<i>Lycorea cleobaea demeter</i> E	-	-	-	0.1	-
<i>Marpesia chiron</i>	0.5	-	0.1	-	-
<i>Marpesia e. eleuchea</i> E	0.1	-	-	-	-
<i>Danaus p. plexippus</i>	0.2	-	-	-	-
<i>Doxocopa laure druryi</i> E	0.2	0.1	-	-	-
<i>Danaus gilippus berenice</i>	0.1	-	-	-	-
<i>Adelpha iphicleola iphimedia</i> E	0.1	-	-	-	-
<i>Junonia evarete</i>	0.1	-	-	-	-
<i>Anartia jatrophae guantanamo</i>	0.6	-	-	-	-
<i>Siproeta stelenes biplagiata</i>	0.1	-	-	-	-
<i>Anthanassa frisia</i>	0.1	-	-	-	-
<i>Anartia chrysopelea</i> E	0.3	-	-	-	-
Family Papilionidae					
<i>Battus polydamas cubensis</i>	0.4	0.5	-	-	-
<i>Heraclides pelaus atkinsi</i> E	-	-	-	-	-
<i>Heraclides thoas oviedo</i> E	0.3	0.5	-	-	-
<i>Parides g. gundlachianus</i> E	0.2	0.3	-	0.1	-
<i>Heraclides androgeus epidaurus</i>	0.1	0.3	-	-	-
<i>Battus devilliers</i>	-	0.3	-	-	-
Family Pieridae					
<i>Dismorphia cubana</i> E	-	0.3	-	-	-
<i>Glutophrissa drusilla poeyi</i>	0.5	-	0.3	-	-
<i>Phoebis s. sennae</i>	1.1	-	0.1	-	-
<i>Pyrisitia lisa euterpe</i>	0.5	-	-	-	-
<i>Pyrisitia messalina</i>	0.2	-	-	-	-
<i>Phoebis p. philea</i>	0.2	-	-	-	-
<i>Anteos clorinde</i>	0.3	-	-	-	-
<i>Pyrisitia d. dina</i> E	0.1	-	-	-	-
<i>Ascia monuste eubotea</i>	0.1	-	-	-	-
<i>Eurema दौरa</i>	0.1	-	-	-	-
<i>Eurema boisduvaliana</i>	0.1	-	-	-	-
<i>Abaeis nicippe</i>	0.1	-	-	-	-
Family Lycaenidae					
<i>Leptotes cassius theonus</i>	0.1	-	-	-	-
<i>Hemiargus hanno philenus</i>	0.1	-	-	-	-