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. 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	Nivia Luzuriaga
Project title	GIBBS: Galápagos Islands Breeding Bird Survey From monitoring to conservation of terrestrial birds in the Galápagos Islands: test and optimization of a point-transect Breeding Bird Survey – Ecuador.
RSG reference	52.02.10
Reporting period	June2010-July2011
Amount of grant	£4600
Your email address	nivialuzuriaga@gmail.con; luzuriaga@mnhn.fr
Date of this report	30th August 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
Objective 1: The definition of a standardised method for the terrestrial birds monitoring			✓	We now have the appropriate dataset to optimise the monitoring protocol (collected on Santa Cruz and Floreana Islands). We concluded that terrestrial birds are better censed with transects. This is under analysis, to be finalised and submitted for publication by end of 2011. The experimental census was made in principal habitats (>10% coverage) including 256 count points and 274 transect subunits 256 detailed point counts and transects for 2010 and transects for 2011.
Objective 2: The implementation of a long term census method for terrestrial birds		✓		We started the planning of a workshop to be run end of 2012 in Santa Cruz (Galapagos Islands) to transfer the methodology and results to local partners and local institutions.
Objective 3: The analysis of historical data of Galapagos penguin and green turtle	✓			We are in the process of setting up a convention to secure the exchange of historical data between the Charles Darwin Foundation and the Muséum National d'Histoire Naturelle.

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

We did not face any major difficulty for Objectives 1 and 2. The two minor difficulties were (i) that student observers that helped with data collection had difficulties to differentiate medium and small ground finches. But that is a foreseen, inherent difficulty to the study system. We partly overcame it by using sound records in the areas where both species occur. We realised that a specific training of observers is needed to differentiate these species; and (ii) for Objective 3, the data transfer is complex, since the ownership of datasets pertains to several observers, and individual negotiations are needed. We are in the process of establishing a global convention to plan this data transfer.

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

Major outcomes are: (1) a Breeding Bird Survey monitoring protocol adapted to the Galapagos Islands terrestrial avifauna and (2) an objective, standard characterisation of the variations in relative abundance between species and between major habitat types:

1. With a simple method and limited funding, it is possible to achieve a long-term monitoring of terrestrial birds with local people observers. By the end of 2012, we will be able to publish all the

results of the optimised monitoring design and field protocol. That should stimulate launching Breeding Bird Surveys in the Neotropics. The choice of the best effective method was based accounting for different factors: observer, habitat, season, time recording, unit (sub-transects left 300, or point with 5 min registration) on individual number species. Sites were visited at the beginning and end of the breeding season in 2010 (transects line and points count) and in 2011 (only transects points). These analyses are based on 256-point counts in 2010, and 46 transect subunits in 2010 and 276 sub transects and 2011. Data were collected by 2-3 observers.

Twenty-two species were documented across the 251 point counts in the four major habitats. The most frequently (fig 1, appendix 1) observed species across all point counts were: (i) among endemics, the ground small finch (*Geospiza fuliginosa*), medium ground finch (*Geospiza fortis*), large ground finch (*Geospiza magnirostris*), the cactus finch *(Geospiza scandens*), the vegetarian finch (*Platispiza Crasisrostris*), the Galapagos mockingbird (*Nesomimus parvulus*); (ii) among habitat generalists, the Galapagos flycatcher (*Myiriachus magnirostris*) and yellow warbler (*Dendroica petechia*), and among introduced invasive smooth billed ani (*Crotophaga ani*).

2. My project will provide data for a regularly updated global assessment of human activities' impact on endemic, non endemic and invasive bird's population. For example, we found that the average number of individuals per habitat type was lower in agricultural landscape and invasive plants habitat than in forest and scrub habitat (test of the habitat type effect, $F_{2, 160}=3.621$, $P = 0.029$). Over all habitats, the yellow warbler, medium ground finches and smooth billed ani were the most abundant species on average. (Appendix 1)

3. The GIBBS initiative project will contribute to providing standard monitoring data of terrestrial birds for planning and assessing management actions by local institutions: the Charles Darwin Foundation, which is the research institution, and the Galapagos National Park, which is in charge of implementing and managing. Both institutions cooperate to establish a management planning based on data analyses of animal population trends.

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

The GIBBS has been developed in collaboration with the scientific local institution; the Charles Darwin Foundation, with the agreement of the Galapagos National Park (GNP). Results of this study will provide standard data for a fast and regular assessment of the state and trends of bird's population for adaptive decisions concerning management and conservation islands.

Furthermore, I involved local students and field assistants each year, training them at the standard monitoring of terrestrial birds. The training of some local observers is mandatory for the continuation of the programme.

5. Are there any plans to continue this work?

My objective, planned for January 2012, is to transfer the first results to local institution Charles Darwin Foundation and Galapagos National Park. Furthermore, the third consecutive annual bird census is foreseen in February-May 2012. At the end of 2012, I plan to organise a workshop in Santa Cruz (Galapagos Islands) to communicate on the results of the project and provide training at the monitoring methods and data analysis methods that I developed.

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

I will publish my results in two papers (one will be submitted in October 2011 to Bird Census News). I will also communicate on the results at the IX Neotropical Ornithology Congress to be held in Cusco, Peru November 8-14 2011.

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 between July 2010 and mars 2011 while my project will last until October 2012.

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.

1 EURO=0.85297£
1DOLLAR= 0.606 £

Item	Budgeted Amount	Actual Amount	Difference	Comments
International travel Paris-Guayaquil-Paris Domestic-Travel Guayaquil-Galapagos	1500	-1384.87	+115.12	
Field Assistant	727.2	-600.00	+127.2	
Field subsistence Investigator	581.76	-850.00	+268.24	
Field subsistence of student observer	364.20	0	-364.20	This cost was diverted from "field subsistence investigator" more "field assistant"
Fields instruments GPS, Telemeters binoculars, Camera	858.04	-750.0	-108.04	The cost additional is diverted from "Laptop and software fields"
Miscellaneous fields equipment	180	-100	-80.00	I received the additional equipment of Charles Darwin Foundation
Laptop and software	647.05	-800.00	+152.94	
Housing	750	0	0	That fields was financed for Charles Darwin Foundation
Total	**5244.05**	**-4849.07**	**+111.26**	

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

Publishing, my protocol and results to convince that it is useful and easy to implement standard, simple Breeding Bird Surveys in the Neotropics.

The transfer project to local institutions in 2012

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?

I used the RGSF logo in my presentation for the annual congress of students of my Doctoral School (Life diversity, of University Pierre et Marie Curie, Paris VI, France). I also used it for my work summary sent to the IX Neotropical Ornithology Congress. Your logo will be on the 1st slide of the oral talk that will give at that congress (accepted).

I will also mention your funding support in all reports and publications to come out in the coming years.

11. Any other comments?

I am very grateful for the funds provided by the Rufford Small Grant Foundation for my project. It made it a realistic project, allowing the collection of the necessary data. I thank the local scientific supervisor Marc Gardener and Sophie Véran. I thank the scientific supervisor of laboratory UMR7179 CNRS- MNHN Frédéric Jiguet and Pierre-Yves Henry. I thank the local student observers Francisco Moreno and Luis Santana. I also thank the "Département d'Ecologie et Gestion de la Biodiversité" for their support and the Charles Darwin Foundation for their helpful logistic provided during my field work.

The appendix

1: The figures of abundance common birds.

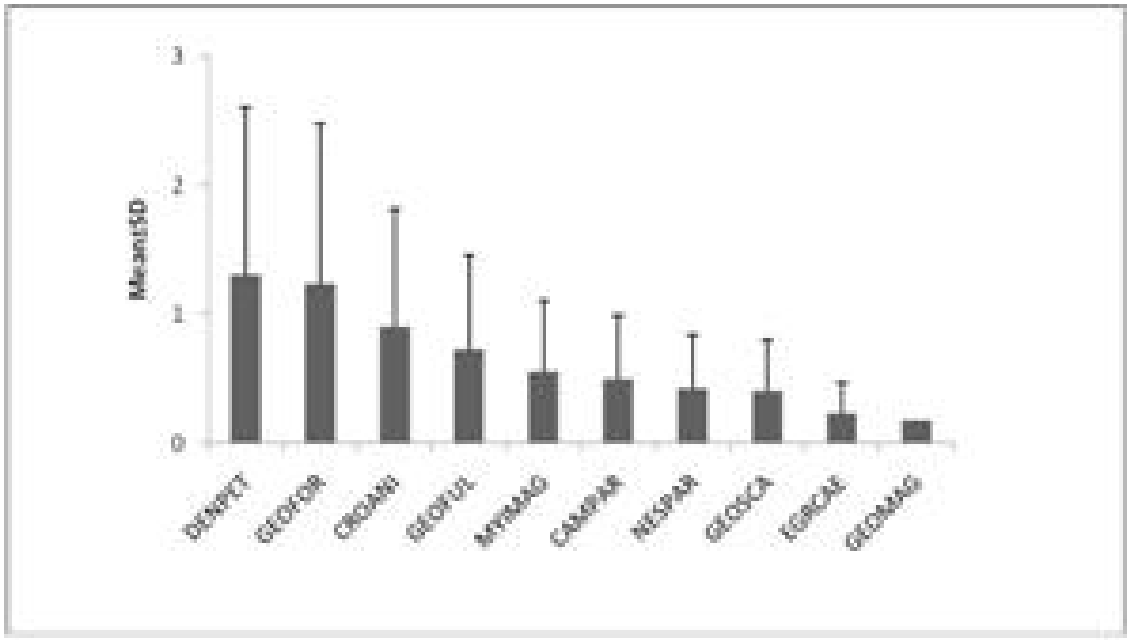

Fig 1: Relative abundance of Galapagos common terrestrial birds: average number of individual species in 251 count points.

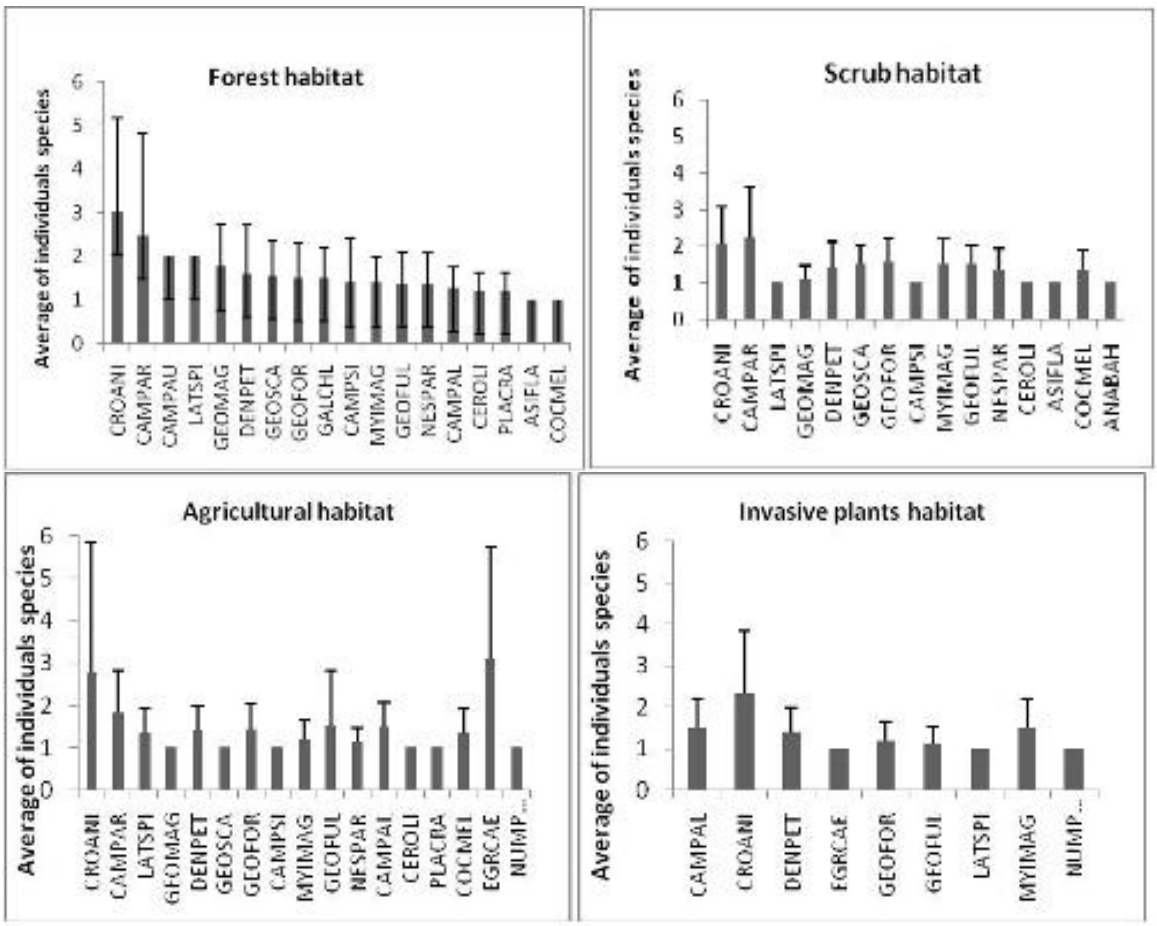

Fig. 2: Average abundance, per point counts (mean±SD) of individual's species per habitat type, in Santa Cruz and Floreana Islands, Galapagos Archipelago 2010.

2: List of Galapagos lands bird's

ID_CODE	Latine_name	Genus name	Specific name	Spanish name
Asifla	Asio flammeus galapagoensis	Asio	flammeus	Lechuza de campo
Bomced	Bombycilla cedrorum	Bombycilla	cedrorum	Myracielito
Butgal	Buteo galapagoensis	Buteo	galapagoensis	Gavilán de Galápagos
Camhel	Camarhynchus heliobates	Camarhynchus	heliobates	Pinzón de manglar
Campal	Camarhynchus pallidus	Camarhynchus	pallidus	Pinzón carpintero
Campar	Camarhynchus parvulus	Camarhynchus	parvulus	Pinzón arbóreo pequeno
Campau	Camarhynchus pauper	Camarhynchus	pauper	Pinzón arbóreo mediano
Campsi	Camarhynchus psittacula	Camarhynchus	psittacula	Pinzón arbóreo grande
Ceroli	Certhidea olivacea	Certhidea	olivacea	Pinson cantor
Chapel	Chaetura pelagica	Chaetura	pelagica	Vencejo de chimenea
Chomin	Chordeiles minor	Chordeiles	minor	Aguaitacamino minor
Cocery	Coccyzus erythropthalmus	Coccyzus	erythropthalmus	Cuclillo pico negro
Cocmel	Coccyzus melacoryphus.	Coccyzus	melacoryphus.	Cuclillo
Colliv	Columba livia	Columba	livia	Paloma bravia
Croani	Crotophaga ani	Crotophaga	ani	Garrapatero
Denpet	Dendroica petechia aureola	Dendroica	petechia	Canario Maria
Denstr	Dendroica striata	Dendroica	striata	Reinita Rayada
Dolory	Dolichonyx oryzivorus	Dolichonyx	oryzivorus	Tordo arrocero
Falper	Falco peregrinus	Falco	peregrinus	Halcon Peregrino
Egrcae	Egretta caeruleus	Egretta	caeruleus	Garza azul
Galchl	Gallinula chloropus	Gallinula	chloropus	Gallareta frentiroja
Galgal	Gallus gallus	Gallus	gallus	Gallina
Geocon	Geospiza conirostris	Geospiza	conirostris	Pinzón grande de cactus
Geodif	Geospiza difficilis	Geospiza	difficilis	Pinzón vampiro
Geofor	Geospiza fortis	Geospiza	fortis	Pinzón terrestre mediano
Geoful	Geospiza fuliginosa	Geospiza	fuliginosa	Pinzón terrestre pequeno
Geomag	Geospiza magnirostris	Geospiza	magnirostris	Pinzón terrestre grande
Geosca	Geospiza scandens	Geospiza	scandens	Pinzón de cactus
Hirrus	Hirundo rustica	Hirundo	rustica	Golondrina de horquilla
Latspi	Laterallus spilonotus	Laterallus	spilonotus	Pachay
Megalc	Megaceryle alcyon	Megaceryle	alcyon	Martin pescador migratori
Myimag	Myiarchus magnirostris	Myiarchus	magnirostris	Pampamosaca de Galapagos
Neoery	Neocrex erythrops	Neocrex	erythrops	Gallareta
Nesmac	Nesomimus macdonaldi	Nesomimus	macdonaldi	Cucuve de Espanola
Nesmel	Nesomimus melanotis	Nesomimus	melanotis	Cucuve de San Cristobal
Nespar	Nesomimus parvulus	Nesomimus	parvulus	Cucuve de Galapagos
Nestri	Nesomimus trifasciatus	Nesomimus	trifasciatus	Cucuve de Floreana
Pascya	Passerina cyanea	Passerina	cyanea	Azulillo
Petpyr	Petrochelidon pyrrhonota	Petrochelidon	pyrrhonota	Golondrina risquera
Phelud	Pheucticus ludovicianus	Pheucticus	ludovicianus	Picogordio Degollado
Pirrub	Piranga rubra	Piranga	rubra	Cardenal Migratorio
Placra	Platyspiza crassirostris	Platyspiza	crassirostris	Pinson vegetariano
Promod	Progne modesta	Progne	modesta	Golondrina de galapagos
Prosub	Progne subis	Progne	subis	Golondrina de iglesias
Pyrrub	Pyrocephalus rubinus	Pyrocephalus	rubinus	Pajaro brujo
Riprip	Riparia riparia	Riparia	riparia	Golondrina Parda
Tyrtyr	Tyrannus tyrannus	Tyrannus	tyrannus	Tijereta sabanera
Tytalb	Tyto alba punctatissima	Tyto	alba	Lechuza blanca
Viroli	Vireo olivaceus	Vireo	olivaceus	Julia Chiui
Zenaur	Zenaida auriculata	Zenaida	auriculata	Tortola orejuda, p-sabanera
Zengal	Zenaida galapagoensis.	Zenaida	galapagoensis.	Paloma de Galapagos
Anabah	Anas bahamensis	Anas	bahamensis	patillo
Numpha	Numenius phaeophus	Numenius	phaeophus	Zarapito
Fremin	Fregataminor	Fregata	minor	Fregata

Ref: Wiedenfeld.(2006)

3: The pictures of most common species

Camarrynchus pallidus

Camarrynchus parvulus

Camarrynchus pauper

Certhidea olivacea

Certhidea olivacea

Coccyzus melacoryphus

Dendroica Petechia

Geospiza fortis

Geospiza fuliginosa

Geospiza magnirostris

Geospiza scanden

Myiarchus magnirostris

Nesomimus parvulus

Platyspiza crassirostris

The local observers in Floreana islands