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	Anay Serrano Rodríguez
Project title	Evaluating the fragmentation of potential habitat of Campylorhynchus yucatanicus, an endemic bird of Yucatan Peninsula for conservation aims
RSG reference	17373-1
Reporting period	2015-2016
Amount of grant	£4998
Your email address	anserrano@ecosur.edu.mx; anayserrano1984@gmail.com
Date of this report	May 16, 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
To generate necessary information to develop communication actions for the conservation of the: • Create a distribution and potential ecological niche map of *C. yucatanicus* • Evaluate the effect of habitat fragmentation on the density of *C. yucatanicus*				Two scientific publication (currently being revised by other colleagues)
Train the technical assistants and workers from the Protected Area in the monitoring of *C. yucatanicus* and educate the communities on the importance of protecting the species and its habitat				
Alert the protected area managers and decision makers on the threats to this species and its habitat.				

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

It was not possible to obtain free of charge high resolution satellite images (spatial resolution of less than 1 km) in order to create an adequate vegetation map; therefore, INEGI (National Institute of Geography) Series V (SEMARNAT, 2013) maps were used. These are accurate quality maps and were created using images with a resolution of 30 m. We did not complete maps for 18 planned sites as the area between Dzilam de Bravo and San Felipe was inaccessible. However, bird specialists, local informants and birdwatcher guides informed us that there are no records of this species at these sites. In this zone, suitable habitat for *C. yucatanicus* is scarce or absent as mangrove forest extends right up to the coastline; thus, it is highly unlikely that this area forms part of its distribution. Furthermore, in the literature there are no records of this species in this zone.

The counting method used to estimate the number of individuals varied according to experience of each technique and ecology of the species. The study was carried out at 14 sites by means of an intensive search for individuals and capture and

marking whereby population density was measured (individuals per unit area). The planned objectives of the study were achieved, whilst avoiding possible detectability errors.

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

A. Data on the distribution of this species was compiled from which a potential distribution model was obtained. This model can be used to implement conservation strategies and monitoring programmes. The results demonstrate that *C. yucatanicus* has a restricted potential distribution of approximately 2711 Km^2 (2% of the total area of the Yucatan Peninsula). Thirty percent of this area forms part of a state protected area and only 27% is protected as a Biosphere Reserve. However, only 10% of the potential distribution area is within the core area of the Biosphere Reserve, where land use is restricted and protection is relatively effective. For the first time, the degree of fragmentation of the species habitat, as well as the relationship between this and the population density of *C. yucatanicus*, was assessed. In addition, landscape connectivity was estimated important for the dispersion of individuals and maintaining adequate genetic variation. The localities where the highest density values were recorded were San Benito, Celestún, Santa Clara and Ría Lagartos, all of which are outside the Core Area of the Biosphere Reserve. In the most favourable model, (of the 13 generalised linear models used), density depended on the additive effect of three variables: the area of dune vegetation, area of secondary mangrove scrub vegetation, and area of secondary deciduous low thorn forest ($\Delta AIC=0.87$). The populations of Ría Lagartos and to the west of the community of Celestún, appear to be the most isolated when taking into consideration landscape permeability. Landscape permeability between fragments of dune vegetation situated close to the shore is low, predominantly due to the presence of urban areas.

This information will alert protected area managers, politicians, decision makers and financers, of the real threats faced by populations of this species and its habitat. The results are being prepared for the publication of two scientific articles (draft copies attached) and will be sent to RSGF as soon as they are published.

- Potential distribution of *Campylorhynchus yucatanicus* (Aves, Troglodítydae) and landscape connectivity between protected areas.
- Habitat fragmentation and density of *Campylorhynchus yucatanicus* (Aves, Troglodítydae), an endangered endemic species.

B. Information on the conservation state of this species was disseminated by way of an environmental education programme implemented in the local communities and the training of protected area specialists and birdwatchers. The project participated in the festivals of endemic birds that were orientated to mainly children and parents and which were held in the state of Campeche. Talks were held in seven communities located close to the distribution area of *C. yucatanicus*. These talks, directed at teachers, discussed the natural heritage value of the species, threats to its survival, the importance of conservation, in addition to the actions that can be implemented by community inhabitants in order to maintain intact landscape elements in home gardens and livestock farming areas. Two technicians, four specialists in protected areas and four local birdwatching guides were trained

in species identification, counting methods, and bird ring reading.

c. Several meetings were carried out in the offices of the Ria Lagartos and Ria Celestun Protected Areas, writing reports on our results for the protected area management and the Yucatan State Government. This project was presented at the *Primer Simposio de Especies en Riesgo* (First Symposium on At Risk Species), organized by SEMARNAT and CONABIO (Secretary of the Environment and Natural Resources and National Commission for Biodiversity , respectively)

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

The local communities were a key component during the development of this project as they were a source of important information on local land use and possible threats to the species and its habitat. The farm owners and other inhabitants of the communities gave us permission to enter their property and moreover, participated in the capture and marking of individuals as part of a strategy to integrate them into the conservation of this bird species. The importance of conservation for the development of birdwatching ecotourism was emphasized, fomenting the training of local guides.

The main benefit for the local communities was the acquiring of knowledge and training with regard to the conservation of the dune ecosystems and the species that inhabit it, particularly endemic species such as *C. yucatanicus*, only found in this type of habitat.

5. Are there any plans to continue this work?

We plan to continue with this research to gather information that contributes to the understanding of the ecology of this species and therefore, acquire improved tools in order to develop more appropriate and successful conservation actions. The exchange of individuals from one site to another can be evaluated by means of population genetics, a method whereby results can be obtained over the short-term. In the near future, we plan to apply landscape genetic techniques focused on the conservation of *C. yucatanicus* and its habitat.

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

We will share our results through the publication of two scientific articles that have already been completed and are currently being revised by specialists on the subject. The environmental education training and actions we carried out allowed us, to a large extent, disseminate the results of this project. Furthermore, our results and conclusions were communicated during the meetings that took place in the protected areas and government offices. We plan to provide a copy of the scientific articles, the report of the results and management proposals to the SEMARNAT and Yucatan State Government offices.

Independent artists were involved in the project; for example, the Cuban painter Paul Sosa Moya illustrated the species and the threats that it faces with the aim of attaining a more widespread outreach.

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

The Rufford Foundation grant was used over a period of 13 months from May 2015 to June 2016.

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
Office supplies, Printer & toners	145	210	-65	The materials planned were not sufficient to cover the needs of the project and we had to print more material
Digital camera, Lens and accessories	470	470		
Sound reproducer and amplifier	100	100		
Laser Rangefinder	160	160		
Paper publishing	150			The publications have not been sent yet (are being reviewed by other colleagues)
Travel	300	325	-25	Prices have risen
Gas	1300	1350	-50	Prices have risen
Food	1500	1500		
Raincoats and rain boots	100	100		
2 Sleeping bags	38	38		
2 Backpacks	130	130		
1 Camping tents	100	100		
1 Binoculars and 1 GPS	150	200	-50	Prices have risen
4 flashlights and batteries	105	100	+5	We reorganized the budget for price increases in some materials
Contingences	200	200		Were used to fund working materials for volunteers who participated in catches (shirts and caps)
TOTAL	**4998**	**4983**		

Local exchange rate: 1MXN = 21 £ (Aztec Bank in Mexico)

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

I intend to study the exchange of individuals between localities using landscape genetic tools. This future project pretend to evaluate functional connectivity and their relation to the structure of the landscape and fragmentation habitat by anthropogenic causes.

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 logo of RSGF was used in environmental education materials, such as leaflets, posters, t-shirts, stickers, and children's books. This materials contains basic information about the species and habitat and as a way of disseminating the results of this project. The RSGF will be referred and grateful in the corresponding section of the articles that I will be published.

11. Any other comments?

I would like to express my gratitude to the RSGF for its kind support to the conservation of Mexico endemic species and particularly to the *C. yucatanicus* endangered species.