

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

Thank you for your help.

**Josh Cole, Grants Director**

Grant Recipient Details	
<b>Your name</b>	Javier Paul Oña Lema
<b>Project title</b>	Humpback whale habitat preference and occurrence of songs as an initiative to the in situ conservation in the coast of Bajos de Atacames, Esmeraldas, Ecuador
<b>RSG reference</b>	11860-1
<b>Reporting period</b>	2012-2013
<b>Amount of grant</b>	£ 6000
<b>Your email address</b>	<a href="mailto:ecujavier10@gmail.com">ecujavier10@gmail.com</a>
<b>Date of this report</b>	24 <sup>th</sup> June 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 determine the spatial distribution of humpback whale social groups in relation to depth and bottom composition			X	Through Geographical Information Systems (GIS), the temporal distribution patterns of social groups were identified based on depth and bottom composition. All social groups showed a low or moderately clustered distribution. Groups with a calf preferred mixed bottom substrates and shallow water (e.g. <20), whereas competitive groups where males compete for females displayed a low overall preference for bottom type or depth.
Identify the social group stratification of humpback whales in this wintering ground			X	According to their distribution, social groups showed a slight segregation at this wintering ground. However, long-term studies to are necessary to support this hypothesis and define more details in this sense.
To describe the spatial distribution of singers in relation to depth and bottom composition in the study area.			X	Humpback whale songs were frequently heard and recorded across the study area. Our analyses showed that singers were randomly distributed and were not clustered over the study area. This suggests that singers do not appear to be selecting bottom type or depth.
Establish a scientific element that will allow to identify requirements to promote successful marine resource management and an in situ humpback whale conservation plan.			X	Fieldwork activities such as sound recordings of (songs), biopsy sampling and monitoring of whales were used as didactic education material. These resources together with video presentations were provided to local 7 <sup>th</sup> grade elementary school children and family member of fishermen who supported our fieldwork. They increased their knowledge about humpback whales and their marine environment off the coast of Esmeraldas. In the future, these kinds of workshops should be carried out constantly to

				<p>more school in the study area and with the help of other governmental and non-governmental organisations. Didactic material developed within our project and training courses for local teachers could be successful to encourage the community for more conservation actions of marine resources.</p>
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**2. Please explain any unforeseen difficulties that arose during the project and how these were tackled (if relevant).**

We had no significant difficulties, but we were not able to monitor whales constantly in areas deeper than 200 m, which would have meant a high cost for logistics. However, we organised our fieldwork in a way that we achieved to cover an important sampling area.

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

- 1) Social groups of humpback whales such as pairs, singletons, and groups with a calf showed a strong preference for a mixed bottom substrate and clustered distribution, whereas competitive groups displayed a dispersed pattern, indicating a lack of preference for either substrate type or depth. Furthermore, spatial analysis indicated that whales segregated partially in social groups, specifically singletons, pairs and groups with calves. Singletons showed a preference for 10 to 20 m depth, while groups with a calf preferred shallower water with depths of 0 to 10 m, and pairs showed moderate clustering with a preference for 20 to 30 m deep.
- 2) A high occurrence of song was detected, strongly indicating that this area represents a relevant breeding ground for Stock G humpback whales. So far few efforts exist recognise important zones for acoustic behaviours in marine species while sound contamination of human activities increases constantly. Our results demonstrate songs were routinely recorded through sampling in both shallow and offshore waters (up to 200 m) off the coast of Esmeraldas. Autocorrelation analysis showed singers were more likely to be randomly distributed within the study area than clustered together. It is possible that singers may not indicate a preference for particular substrate types or depths in this region. However, singers were frequently recorded in depths less than 20 m and over mixed bottoms.
- 3) Fieldwork activities such as sound recordings, biopsy samples and monitoring of whales (social groups, surface behaviour) were used as didactic material education, which was presented for first time to some children of elementary education, fishermen and family that live near at study area. With this initiative we perceived interest in children, teacher and local community to get collaboration in future projects in this zone.

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

The local community such as school children and fishers participated in workshops and activities of this project. The didactic material such as sound recordings, biopsy samples and sightings of whales and other visual data were recorded on video and presented to children of elementary education, fishers and their family members. Training of teachers and children was an advantage to improve the relationships between the local community and researchers. Now, we hope that other schools of this area can receive the didactic material and could broadcast part of our work in their classrooms.

To take conscience about the marine environment and marine mammals such as humpback whales at early ages will be important to improve conservation plans in the future.

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

This project was part of my master's programme in tropical ecology but it also encouraged me to continue with cetacean monitoring off the coast of Ecuador. Marine mammals such as humpback whales and other cetaceans have a wonderful underwater communication in all of our oceans, which really impressed me. However, this ability is constantly interfered by human activities especially in the coastal zones where they have their breeding grounds.

My future plan is to continue to learn more about the acoustic and social behavior of Cetaceans. Specifically, vocalisations and the effects of noise on some species such as humpback whale songs and social groups in the breeding grounds off Ecuador. Moreover, the team formed by masters and PhD candidates during the last period of sightings whales and other student was very interested in this topic and will continue with new fieldwork during the next seasons when humpback whales arrive at the coast off Ecuador.

Though the economic part is always limited but necessary to continue with more information for both short and long-term conservation in the breeding ground. Therefore, we hope to continue with support from grants such as Rufford and other foundations, which would help us to extend the study area along the coast of Ecuador and possibly the Galapagos Island to know evident connection of cetaceans during their migrations.

In this sense, with the knowledge and skills acquired in the master's programme and this project, I will do more researches in these issues and I will apply for PhD positions at foreign universities, where I can learn more about bioacoustics and marine conservation while I would continue my fieldwork in Ecuador.

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

We began to share our first results with the local community through workshops for elementary school and college students. Besides I gave several talks for University Students on our Campus at Cumbaya, and Galapagos and for University groups at El Acanilado in Esmeraldas. For now, with the final results, we are working on a scientific publication to be published in Marine Mammals science or other Scientific Journals. Further on, I will present my findings at the National Biology Conference in September 2014. Moreover, we developed a web page at Facebook named Cetacea

(<https://www.facebook.com/cetacea.ecuador?ref=ts&fref=ts> or <https://www.facebook.com/groups/445136338839440/>), where we provide information about our project and experiences.

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

We used the Rufford grant funds during the season of 2012 (June to August) until early 2013 when we held workshops for the local community at El Acantilado.

**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.**

Calculated on a rate of Exchange of 1.57 US dollars for each British Sterling Pound. US dollars is the current currency in Ecuador.

Item	Budgeted Amount	Actual Amount	Difference	Comments
Boat rent: daily £ 115 every day per 32 days	3450	3680	-230	The expenses in the 30 survey days were used with the fund RSG (£3450) and 2 days extras trips (£230) were used with additional funds taking tourists from El Acantilado, who provided for these additional trips.
A hydrophone	134	134	0	All items such as electronic devices were imported from Amazon and other companies.
Tape recorder	180	180	0	
Digital Camera with zoom 5x	252	252	0	
GPS	190	190	0	
Food: £ 8 per person per day for 45 days= £ 360 (times two for investigator and assistant)	720	720	0	The food and lodging in the workshops carried out then of fieldwork was including in the 45 days budgeted to a general cost (investigator and assistant). Additional expenses were provided by El Acantilado.
Lodging: £ 10 per person per day for 45 days= £ 450 (times two for investigator and assistant)	900	900	0	Housing for additional volunteers was provided by El Acantilado.
Transport	41	41	0	In this item is included both transport inside and outside of

				study area (investigator and assistant).
Office tools and fields	133	133	0	
<b>Total</b>	£ 6000	<b>£ 6230</b>	£ -230	

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

Learning and teaching every moment to encourage local student and other people with my work and point out the importance of healthy marine environments without noise contamination. Always taking into account the relationships of humans and nature.

**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?**

Yes, I did. The Rufford Logo appeared in all presentations, I held for the local community and University students and Rufford was specially mentioned in acknowledgement and as funding source for the Cetacea project 2013.

**11. Any other comments?**

I am very grateful for the opportunity to work on bioacoustics of humpback whales thanks to Rufford Small Grants. This grant was fundamental to carry out my project and the publicity at the Rufford web page helps us to promote our research here in Ecuador.

