

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	Javier Paul Oña Lema
Project title	Song occurrence and culture of humpback whales breeding off the coast of Ecuador
RSG reference	19387-B
Reporting period	2016-2017
Amount of grant	£10000
Your email address	ecujavier10@gmail.com
Date of this report	15-06-2017

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>Improve our understanding regarding habitat requirements of humpback whales in their coastal breeding grounds in the north of Ecuador.</p>				<p>Through acoustic and visual monitoring of humpback whales, we obtained valuable information about song occurrence and distribution of social groups. Therefore, our outcomes indicate that the northern coast of Ecuador including Galera-San Francisco Marine Reserve and Bajos de Atacames are an important breeding area for the South-eastern Pacific humpback whale population.</p>
<p>Define priority areas, where humpback whales mate, give birth and communicate through songs.</p>				<p>As part of our research we found that singers and competitive groups prefer deeper water and mixed bottom substrate, whereas females with calves are rather found in shallow waters closer to the coast Our results were published in Marine Mammal Science and presented at an international conference in Chile in November 2016.</p>
<p>Develop academic training and collaboration in bioacoustics research.</p>				<p>With Rufford grant and USFQ CETACEA project we organised a workshop with other researchers from Peru, Colombia and Australia in order to stimulate cooperation in humpback whale research in the region. So far, we signed two collaboration agreements with researchers from Peru, Colombia and Brazil (see annex).</p>
<p>Improve local community awareness to the sustainable use of the oceans and conservation of marine fauna as the humpback whales.</p>				<p>Fishermen, volunteers, bachelor students and researchers and myself as a coordinator met to organise different educational activities with community of Quingue and Caimito. All the planning was written and socialised to the managers and each activity was carried out successfully in the season 2016.</p>

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

New fishermen from Quingue community and bachelor students were included for first time in the acoustic and visual monitoring of humpback whales. With additional training before, during and after our fieldwork, understood the need to standardize methods for cetacean surveys and constant acoustic recordings to cover a major part of study area. Also, standard protocols to use of acoustic device and maintenance, helped considerably to finish the fieldwork successfully.

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

Humpback whale song information

Using spatial analyses about acoustic behaviour (song occurrence) and interaction of social groups. Our preliminary outcomes evidenced both inshore and offshore water should be considering with special requirements to define appropriate priority areas for conservation. Preliminary outcomes, showed high quality of songs combined with visual surveys of whales. According to surveys along the northern coast of our study area we suggest to take into account specific shallow areas for the marine reserve as key areas for humpback whales. In offshore waters we evidenced special characteristics with competitive groups and singers were registered frequently over 100 m depth in the Galera-San Francisco Marine Reserve

Education strategy

Song recordings and photos were converted to education material, which we used to inform adequately about humpback whale life and human interaction off the Ecuadorian coast. Both Caimito and Quingue communities (children, tourists, fishermen and others) participated actively during all education activities (puppet show and beach clean-up), which indicated an important social impact to generate awareness inside communities and improve marine mammals conservation in the area.

Scientific Collaboration

Researchers and students from Ecuador, Peru, and Colombia were trained in acoustic analysis. Two documents "memorandum of understanding for scientific cooperation" were developed to cooperate in the analysis and song comparisons of distinct breeding grounds and seasons in the region. First with the Research Group, Universidad de Antioquia, Colombia and second with the Laboratory of Bioacoustics, Universidad Federal de Rio Grande del Norte, Brazil (see annexed report).

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

The project focused on social initiatives (training/education strategy) with fishermen and local volunteers to carry out an adequate acoustic and visual monitoring of humpback whales. Also, over 50 persons (children, young people and adults) participated in the humpback whale Festival organized by the CETACEA team. A high amount of plastic garbage is dragged to the beaches of the marine Reserve and these communities. Hence, we believe children involved in these social activities (e.g. beach cleaning) since an early age will develop awareness and avoid garbage in their daily lives and take good practices of recycling inside their house and community.

5. Are there any plans to continue this work?

I would like continue with this project in a long-term. This project allowed me to recognise the importance to maintain an acoustic programme in Ecuador and improve scientific collaboration in the south-eastern Pacific region.

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

Two colleagues and myself of CETACEA Project took part at two international events "2nd Workshop Listening for Aquatic Mammals in Latin America" and SOLAMAC (Congreso de la Sociedad Latinoamericana de Especialistas en Mamíferos Acuáticos) Nov 2016. There, we presented a thesis of one bachelor student, who also participated in the project financed by Rufford grant, and I presented our preliminary results of our acoustic research of humpback whales in the Ecuadorian coast (see annexed report).

This 2017, we will participate at a national congress and our team will submit a short communication as note in another scientific journal of marine mammals. Further, two audio-visual "Acoustic and Visual Monitoring of Humpback Whales in the Ecuadorian Coast" and "Humpback whale song workshop: coding and analysis" were prepared to distribute our information in social webs such as Facebook and YouTube.

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

The grant was used during all our fieldwork and education activities carried out during the 2016 season. Four months (June-September) were used to implement acoustic and visual efforts of humpback whales and fieldwork training of cetacean research addressed to national students and fishermen. Further, in August we organised the Humpback Whales Festival with puppetry shows and social activities as cleaning beach and drawing contest for the kids. Also, the funds were used to prepare the bioacoustic workshop, and prepare the final audio-video products about the acoustic workshop and our fieldwork activities.

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 1.64 US dollars for each British Sterling Pound. US dollars is the current currency in Ecuador.

Item	Budgeted Amount	Actual Amount	Difference	Comments
Marine Logistics (June until September, boat rent including fuel, 36 trips per £ 140 boat rent including fuel= £ 540	4200	5040	-840	Difference was provided by self-financing and spare amount of other items.
Hydrophones (a unit £ 400 per two units more taxes= £ 800), two headphones each unit £ 50 per two units = £ 100 , rechargeable batteries with chargers, each pack £20 per 8 units= £ 160)	1350	1060	We	We bought a replacement hydrophone. The amount includes taxes for transfer to Ecuador, and cost of the headphone and rechargeable batteries. The rest of the budgeted amount was included in other items =.
Spatial device GPS	300	350	-50	Difference due for transfer taxes for equipment imported. That was provided for self-financing
Food £ 10 per person per day for 36 days = £ 400 per 2 persons (investigator and an assistant) =£800, including days of fieldwork and education activities.	600	800	-200	Difference was provided by self-financing
Lodging (including days to fieldwork, and education activities) rental of hut per month £ 200 for 4 months	600	800	-200	Difference was provided by self-financing
Acoustic workshop training with support by	1000	1450	-450	Ticket flight changed for taxes and bioacoustics book amount

scientific expert (included ticket flight £ 900, academic material such as bioacoustics book= £ 25 per 10 units = £ 250, and logistic of the event on-site training (professional to record the event, and workshop certificates) £ 100 per 3 workshop days= £ 300.				increase for transfer taxes. Dr Garland got for assistance with travel to the workshop (MASTS Small Grant £500). Difference was provided by this grant.
Transport (regional per 1 round trip to study area =£ 200 and local = £ 40	190	240	- 60	Difference due to local taxes for overweight (transportation equipment). Difference was provided by self-financing
Educational and social activities; banner= £60 each unit per 4= £240, educational poster= £ 25 each unit per 6= £ 150, puppetry material and stand (included material to painting activities) = £ 500.	1300	890	410	The rest of the budgeted amount was included in other items difference.
Office tools (copies, internet use) and field materials (templates for data collection, waterproof case to hydrophone, recorder, GPS, and headphones.	450	300	150	The rest of budgeted amount was included in other items difference.
Total	9990	10930	-950	

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

The CETACEA project has carried out a programme for national and international volunteers to support our scientific activities and since 2016 training activities were addressed to students and the community. All fieldwork and education activities were carried out altogether with members of both Caimito and Quingue communities. Hence, the wide participation of the communities are good indicators that the project impacted the children, teenagers and adults and motivated them to continue with acoustic and visual monitoring of humpback whale off the coast of Esmeraldas.

Training activities such as the "humpback whale song workshop: coding and analysis" allowed to meet other students and future researchers from Colombia, Ecuador and Peru. To support regional collaborations, we will share acoustic

samples and standardised protocols will be used to gather acoustic data and implement acoustic analysis of different years. I will continue working with other colleagues to strengthen high quality acoustic research, and promote strategy conservation of whales in the region.

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?

Yes, we did: During the 2nd Workshop "Listening for Aquatic Mammals in Latin America" and SOLAMAC (Congreso de la Sociedad Latinoamericana de Especialistas en Mamíferos Acuáticos) Nov 2016. We integrated The Rufford Foundation logo and gave publicity in this international events as well as national activities carried out in the Marine Reserve Galera-San Francisco.

Also, the logo was attached in all education material such as posters, and audio-video communication regarding fieldwork activities and workshop carried out during the work in this season (see report annexed and web links).

11. Please provide a full list of all the members of your team and briefly what was their role in the project.

- Dr Judith Denkinger, director of "Research Center Caimito, CETACEA", Quingue, Esmeraldas, northern coast of Ecuador. Supervisor of logistical fieldwork activities and scientific publication.
- Dr Ellen Garland, she supervised the study design and bioacoustics analyses for the project. Co-author on the upcoming publications.
- Ginio, Ernesto, and Leiden (local fishermen) supported our team with maritime logistics and security at sea.
- Ana Paula, bachelor student who assisted in data collection and used data to her thesis.
- BSc. Dario Narvaez (affiliate scientist) and Geovanna Jácome (bachelor student), were assistants to support visual monitoring and photo-identification of humpback whales.
- MSc. Francisco Rubianes, MSc. Laia Muñoz and BSc. Marilda Intriago were collaborators of the fieldwork and educational activities.

12. Any other comments?

Thanks so much to Rufford Foundation for this support and encourage to develop of acoustic project in the Ecuador. Currently, I will apply for a PhD programme to continue my training and learning to implement new acoustic methods and spatial models to study marine mammals in the wild.