

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	Joëlle De Weerd
Project title	Cetacean conservation of Nicaragua
RSG reference	19345-1
Reporting period	May 2016 – April 2017
Amount of grant	£5000
Your email address	Joelle.de.weerd@gmail.com
Date of this report	1 st of June 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
Gather baseline information on species presence, distribution and conservation status				Boat surveys were carried out in San Juan del Sur and Padre Ramos in July 2016 and January – April 2017, during 255 hours of effort covering 3,694 km. We registered 125 sightings in total for the two study sites including: 40 sightings of humpback whales (<i>Megaptera novaeangliae</i>), 20 sightings of bottlenose dolphins (<i>Tursiops truncatus</i>), 64 sightings of pantropical spotted dolphins (<i>Stenella attenuata</i>) and one sighting of false killer whales (<i>Pseudorca crassidens</i>).
Develop capacity building for sustainable eco touristic activities				We have organised two successful workshops with local fishermen and organisations. In total 30 persons were informed on the project activities. ELI-S team always had their t-shirt on every activity to increase visibility of the project. Field identification guides were distributed during the workshops and to boat captains that displayed interest in the project.
Produce the first documentation on marine mammals as field guide and book chapter of Nicaragua;				We printed out 500 copies of the first field guide of cetacean identification in Nicaragua and started distributing it during our workshops. The book is still in progress.
Create awareness amongst local communities, boat operators, fisherman and all other actors related to eco-tourism;				We have organised two successful workshops with fishermen and local boat operators, even the mayor was present on our workshops. We have given more than 30 hours of workshops and environmental classes to at least 50 children of the local communities in 2017.
Make an environmental impact assessment of the construction of the Nicaraguan canal;				This objective can be only achieved after the completion of the project and once the canal has been constructed. Since we have gathered

				data in 2016-2017 we consider this objective is partially achieved since we gathered part of the data needed.
Train national and international students on cetacean research				We have trained one student in marine mammal research that will complete a master thesis on spatio-temporal variations of cetacean distribution in Nicaragua.

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

March 2017 was a very windy month; for this reason we couldn't make as many boat surveys as planned. Instead we organised some land watch activities to compensate field work and worked on data treatment in the office. The permanent high wind conditions impede us to go far offshore (<30 nautical miles), so our data is limited to close coastal areas (up to 6 nm). Due to the high wind conditions, we couldn't gather skin samples for the genetical analysis.

The price of boat renting in San Juan del Sur was higher as expected because tourism is making the prices increase a little bit more every year. Boat surveys are therefore more expensive in the south of Nicaragua than in the northern part. We expect the prices to increase a little bit more by next year again.

The University of Managua changed their policy and don't want to work with small non-profits anymore and therefore I couldn't train a Nicaraguan student this year. It was difficult for me to find one student to train due to this last minute change. In 2018, I will train during one complete year a recent graduated biologist to become marine mammal biologist in order to ensure the follow up of the project in the future.

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

1. First systematic study generating Baseline data on cetaceans

We are establishing baseline data on cetaceans in two different areas in Nicaragua. No dedicated research has been done previously on both dolphin and whale species in the area. With this project, cetacean biodiversity, encounter rate, distribution and residency patterns can be defined. A total of 125 sightings were made over 255 hours of dedicated boat survey. We registered four species this year: humpback whales (*Megaptera novaeangliae*), bottlenose dolphins (*Tursiops truncatus*), pantropical spotted dolphins (*Stenella attenuata*) and false killer whales (*Pseudorca crassidens*). Opportunistic data have been shared with us and one killer whale sighting as well as two strandings has been reported: one spinner dolphin (*Stenella longirostris*) and one dwarf sperm whale (*Kogia sima*). Encounter rates for all the species in San Juan del Sur were higher in 2017 than in 2016. Humpback whales were observed in higher amount than last year and displayed feeding behaviours. Since other cetaceans were seen mostly feeding in San Juan del Sur it

suggests that the area might be critical for feeding and breeding activities for several cetacean species.

2. Photo-identification data

Photo-identification data is a very important component in cetacean research. Thanks to this data, individual habitat usage, residency patterns, and population size can be inferred. Photo-identification catalogues have been created for each encountered species. This year we have added at least 40 new humpback whales to our catalogue. Knowing that according to Bettridge *et al* 2015 the Central American subpopulation is composed of only 500 individuals, we captured almost 10% of the population in one season which is amazing! Both the catalogue of bottlenose dolphins and spotted dolphins has been increased this year too. Exact amounts are not available yet as photo-identification data is still under analysis.

3. Educational workshops

About 50 children were present on our workshops and were very enthusiastic about our venue and weekly interventions. The fact that children recall us in Padre Ramos a few months later and jump all around asking when we will organise workshops is an amazing outcome for us. Firstly they remember the team and what we were doing with them and secondly they are urging for more knowledge, which is the best outcome we can expect! In San Juan del Sur, children showed their interest by their excitement on one side and by their commitment in coming to every single environmental science classes on the other side. Through evaluation forms given at the beginning and the end of the classes we noticed that the children increased their knowledge on the marine environment with 50%. The environmental science classes included not only information on cetaceans but also on all living marine creatures. We collaborated with local actors in turtle conservation and artificial reef construction (fish conservation) to increase knowledge for kids on local actions for marine conservation.

About 30 fishermen and local actors in conservation attended our workshops. Our field identification guide has been distributed to every participant. This was an amazing opportunity to discuss with locals and exchange ideas on the topic. Interest was present and participants kept on notifying on cetacean sightings after the workshop. One of our goals was to collaborate with local organisations and institutes. One of the workshops for the fishermen was organized with Paso Pacifico. The presence of the Mayor of San Juan del Sur was also an amazing positive outcome.

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

Children

The children were very excited to see us come back this year to have the workshops with us. They still remembered quite a lot of information they learned the year before and brought new friends with them. Our collaboration with the Barrio Planta Project

(BPP) was very successful and we are glad to see how the kids loved the environmental science classes. They all learned a lot about whales and dolphins and thanks to organised excursions, the children were even more excited about sighting whales and dolphins in the field. Some children even told us they wanted to continue in the conservation of nature in the future. We believe that children have an important role for nature conservation in the future as they can share their enthusiasm about whale and dolphin conservation with elder people of the community.

Fishermen & Local employment

We employed local fishermen to be our boat captain on scientific and education surveys. We also gave employment to two women that cooked and cleaned for us during the field season. In total, at least four jobs were given to locals and benefited families that are really in need. Finding work in the reserve of Padre Ramos is difficult and local families are really hoping on this work to sustain their families. We have spent a lot of time in the harbour of San Juan del Sur, talking and exchanging with fishermen. They told us that dolphins were hunted in the past so they could be used for shark hunting. Nowadays, shark hunting is still going on but dolphins are not hunted anymore since a cheaper fish has been found with similar traits (smell) then dolphin meat. Fishermen called us on a regular basis or stopped us in the street to notify us of an observation of whales or dolphins. We even had a fisherman that took GPS coordinates and a video of killer whales in the area and shared it with us. It is clear to me that the fishermen are very enthusiast about the project and share their knowledge as much as possible through different medium. Fishermen started understanding, by being in contact with us, that cetaceans might be an important resource for them in the future, which is a great outcome of the project.

Expat community

In San Juan del Sur, there is an obvious community of expats. They are also very happy to hear about the project and most of the people wants to help. In that way, we had volunteers that wanted to help gather data or help us raise funds through small events in local businesses.

5. Are there any plans to continue this work?

Yes, the project has raised great interest around the local and scientific community and we believe it should continue. We believe that our project is contributing to the knowledge on cetaceans where information on the status, especially for the humpback whales, of this species is needed for their management and conservation. I will intend to apply for the 2nd Rufford Small Grant this year.

Science. We want to keep the monitoring of the cetaceans in the area because we are the only group conducting research there. We are gathering little by little crucial information on the different cetacean species inhabiting Nicaraguan waters. We made very interesting discoveries on humpback whales and spotted dolphins and new research hypothesis are arising from the data we gathered until now. There is a probable impact of the upwelling system that Nicaragua is living in. We still need to go further offshore to try to discover new (offshore) species. We have been notified

in May 2017 that blue whales have been seen off the shores of San Juan del Sur. In 2016, we observed 6 species and in 2017 two new species were observed. We are far to know everything and survey efforts should be kept for the future.

Education. The educational part of the project is a core element for the success of this project and we want to continue develop it. This year we had one person dedicated to education in San Juan del Sur and the whole team of scientists offering weekly workshops in Padre Ramos. For next year, I would like to have also one dedication person for education in Padre Ramos in order to expand our impact on the local communities. In addition, I would like to give year-round education classes in San Juan del Sur to ensure a long-term impact on the local communities. Nicaragua, as many developing countries, is based on networking and I believe that being there all the time will help increase our interaction with the community.

Conservation. Recent strandings (April 2017) of a spinner dolphin and a dwarf sperm whale in the Northern part of the country raise concerns about the use of bombs during fishing activities. We need to continue understand which species occur in the areas in Nicaragua and try to understand how they interact with fishermen, who have an obvious role in the conservation of marine species. In total, we observed through our boat surveys six different species, one species through strandings and one species thanks to opportunistic data. Continue networking and communicate with locals and build up a relationship with them will help us exchange and hopefully make locals understand how important species conservation is, also for the development of sustainable eco-touristic activities in the future.

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

We have been sharing our results, videos and photos through our webpage www.nicacetacea.org, our Facebook page www.facebook.com/ELIScientific and our monthly newsletter. The results of the research have been presented from 1st-3rd May 2017 in Denmark on the 31st conference of the Cetacean Society international. We have submitted an abstract to the Society of Marine Mammalogy to present the results at the conference organised in Halifax (Canada). The abstract has been wait listed. A paper on whale feeding on breeding grounds is in preparation and will be submitted in 2017 to scientific journals. We contribute on www.HappyWhale.com an online platform for citizen science where whale pictures can be downloaded and matched by the team of Happy Whale. We have already two whales matched from 2016 with California, main breeding ground of the Central American population. We further organize public events where we share our findings with the public. We will continue organising workshops for fishermen and kids in Nicaragua in order to share data with them.

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 Rufford grant has been used to pay the boat rental, fuel costs and the captain's salary in July 2016 and in January-April 2017. The grant was perfect for the amount of

surveys we could do with the wind conditions and fitted well for the actual length of field work planned.

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. Exchange rate £1 = 38.4244

Item	Budgeted Amount	Actual Amount	Difference	Comments
Fuel boat survey San Juan del Sur + Padre Ramos	5600	2540	-3060	July 2016= £211 January-March 2017= £2329. We overestimated the fuel used because we planned to do more surveys. Because of the bad wind conditions we did almost twice less surveys as planned.
Boat hiring San Juan del Sur + Padre Ramos	1670	1489	-181	Boat hiring for July 2016 and January-March 2017. The boat hiring includes also a part of captain's salary because in San Juan del Sur, captains offer a package per hour of boat rental and salary. We did twice less surveys as planned but the boat was almost as expensive as planned, thus more expensive as expected at the end.
Skipper salary San Juan del Sur + Padre Ramos	1390	934	-456	Salaries for July 2016 and January-March 2017. Salaries of Padre Ramos were exactly as budgeted but the salary in San Juan del Sur was a little bit more expensive since it is a more touristic place, prices increase much faster (see boat renting).
External hard drive (back up)	87	87	+50	£50 difference has been covered by our crowdfunding campaign 2016
Pelican case (x2)	100	100	0	£100 covered by our crowdfunding campaign 2016
Total	8847	5150	3647	The £5000 pounds of the grant has been fully used for execution of the project as mentioned in the grant application. The difference (£150) has been covered by our

				crowdfunding campaign organised by ELI-S in 2016.
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9. Looking ahead, what do you feel are the important next steps?

1. **Continue Survey Efforts.** We need to continue the survey efforts in 2018, from January to April 2018. The more data we can have the better we can understand spatio-temporal distribution patterns of cetaceans in Nicaragua. We are also interested to investigate more about the impact of upwelling on feeding behaviour of cetaceans in Nicaragua.
2. **Compare data.** Compare catalogues of humpback whale fins with other research groups. We started already comparing with our Mexican Colleagues from Oaxaca (MMobidic <https://www.facebook.com/mmobidic>). We have found one match between our catalogues in 2016! We will continue our comparison with other colleagues from Mexico (Jorge Urban), Costa Rica (Lenin Oviedo), Panama (Kristin Rasmussen/Laura M. Collado) and USA (John Calambokidis). Happy Whale website will also help us make this comparison.
3. **Publish our scientific work.** Our data needs to be shared with the scientific community. We will participate to conferences to share our data but will also work on writing peer-reviewed papers (one in preparation on feeding behaviour of humpback whales).
4. **Increase local involvement.** We want to include more locals in the project (students, fishermen) by organising, amongst others, year-round monthly workshops. We are invited to participate in 2018 to the formation of eco-guides by giving a module on cetaceans. This training is supported by the National Institute of Tourism.
5. **Appear in the media.** Continue our effort to appear in the media which increase visibility of the project (Local newspaper, National television, international websites, etc). This has the potential to increase the involvement of local communities by hearing about the project through the media.
6. **Employment.** I want to offer an internship to a marine biologist to work on the project year-round in order to train the biologist in the field of cetacean research. The Brugger Foundation might support this effort by offering a grant to for the intern.
7. **Find funds.** Get funding for field season 2018. We will apply to The Rufford Foundation second grant to ensure a third field season in Nicaragua from January to April 2017.

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, the Rufford Foundation logo has been used in our presentations toward the local communities in Nicaragua. We have put the logo on our poster presented on the scientific community during the conference organized by the European Cetacean Society in Denmark (May 2017). We have used it on our webpage www.nicacetacea.org and on our Facebook page www.facebook.com/ELI-Scientific where we acknowledge the grant awarded by The Rufford Foundation.

11. Any other comments?

Thanks to the grant offered by The Rufford Foundation we could achieve most of our objectives and even more. For this reason, I would like to thank the foundation for its financial contribution, because without this grant we wouldn't have been able to set up our pilot project in this developing country. We are looking forward to collaborating with the Rufford Foundation again in the future.

