

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	Nohelia Esperanza Farías Curtidor
Project title	Studying occurrence, distribution, mercury concentrations, and genetic status of cetaceans in The Guajira (Colombia) as indicators on health of the ecosystem.
RSG reference	18754-1
Reporting period	26/01/2016 – 26/01/2017
Amount of grant	£5000
Your email address	nohefa@gmail.com
Date of this report	26/01/2017

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
Determine the ecological status of cetaceans in la Guajira.				<p>We travelled 450 nautical miles in total. We had 12 sightings of two different dolphin species: Atlantic spotted dolphin (<i>Stenella frontalis</i>) and bottlenose dolphin (<i>Tursiops truncatus</i>).</p> <p>The most common dolphin behaviour was bow riding, but they were also seen jumping, traveling, resting, mating, and socialising.</p> <p>The group size ranged between three and 30 individuals.</p> <p>Number of calves ranged between one and two by group.</p> <p>The dolphin populations seem to be in good ecological condition; however, long-term monitoring is necessary to determine population's abundance and so, the real conservation status of dolphin populations in the Colombian Caribbean.</p>
Determine the genetic status of cetaceans in la Guajira.				<p>This goal was fully successfully achieved. However, we recognised that to determine the genetic status of cetaceans in la Guajira it is necessary to collect more samples. To date, we completed 15 samples and we obtained following results: We collected seven samples of <i>Stenella frontalis</i>, which showed a high genetic flow and low genetic structure among these dolphins distributed in some Caribbean areas (Panama, Puerto Rico, Virgin Islands, and Colombia). In</p>

				contrast, we collected eight samples of <i>Tursiops truncatus</i> . Genetic results show that individuals distributed in La Guajira belong to the "worldwide distributed form", which suggest low philopatry in La Guajira. These genetic results suggest that La Guajira is an important transit area. However, it is necessary to collect more samples to confirm this hypothesis.
Determine the conservation status of cetaceans in la Guajira.				We determined that dolphins are exposed to mercury in La Guajira. Although levels of this metal in skin samples is low compared to other populations worldwide (e.g. Japan or Brazil), we concern about health status of dolphins because we did not expect to found presence of mercury in La Guajira. Theoretically, In this area there is not incidence of this metal, and dolphins, as top predators, are indicating that this metal is present in waters of La Guajira. We confirm that dolphins are top predators because isotopic analyses. So, it is necessary to focus future research not only in dolphins, but also in fish, since local fisheries is the most important food resource for local community in La Guajira. During this fieldtrip we collected some samples of fish, but ecotoxicological analyses are underway. Nonetheless, we need more samples and replicates of fish in future research to obtain robust results for these species.
Educate children and fishermen about cetacean and environment conservation.				Environmental education is a very important part of our project. We successfully conducted outreach activities to two primary schools and with some groups of fishermen in the area.

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

In the environmental education part, we had some troubles with the fishermen. The attendance to the meetings was low, because fishermen were working hard since early morning, and they are not very willing on going to meetings in their break time.

However, we could do very interesting workshops with few assistants and they spread the word. Furthermore, they liked very much the project and some of them are engaging in our project. In fact, some fishermen have been calling us after we finished the field trips to tell us that they are watching dolphins. We plan to come back, in order to show our results, and we hope that attendance increase.

In the field, we got some troubles with the engine, but fortunately our captain has very good skills and he could fix it in one day. We opted to carry a spare motor. In addition, we could not do surveys until the place we had planned, due to bad weather. The waves in the north part were very high. So instead, we did more transects in another area.

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

1. Environmental education with children.

Workshops with children were very special. We explained to them about cetaceans, pollution, and how to do a good waste management. They were listening and participating with great interest. One of the most rewarding outreach product was a story, that I wrote and that we present as a cartoon video. This video explains the importance of marine fauna, including not only cetaceans, but also turtles, birds, manatees, fishes. The kids loved this video and they learned a lot about conservation of marine ecosystems. We really plan to the middle term to publish a book with this story, which is called "Yosira y el abuelo pescador" (Yosira and the old fisherman).

2. Sightings

We obtained 12 sightings of bottlenose and Atlantic spotted dolphins. We could see adults, juveniles, and calves in the groups. We also could take good photos, so we could start working in photo-ID to determine abundance status of these dolphin populations. Although populations look in good ecological conditions, it is necessary to conduct more field trips in order to identify real status of dolphin populations in La Guajira.

3. Genetic and Ecotoxicology

It was possible to determine the genetic flow and structure of dolphin two species (*Tursiops truncatus* and *Stenella frontalis*). In addition, we obtained ecotoxicological results, which show that dolphins are top predators in La Guajira and they accumulate low levels of mercury in skin. However, we need more samples to obtain more robust results.

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

Children and fishermen have been involved in the environmental education part of the project. Unfortunately, waste management of local community is not very good in La Guajira (See photo attached). With our outreach activities, we think people started to create awareness about waste management. We really believe that people who attended workshops will start to manage their waste in a better way, and they will teach other people to take more care about the environment and to reuse, recycle and consume less. However, it is necessary to continue with these outreach activities, in order to maintain this awareness of waste management and reach more people.

5. Are there any plans to continue this work?

Absolutely, we want to continue with this project for a long time. The idea is to continue with the field work and the environmental education, at least once per year during a long term.

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

We want to publish the book about environmental education for children, the Yosira story. In addition, we provide to local fishermen a short identification species guide in order they help us to provide more occurrence data of cetaceans. In the future, we plan to create with them a short guide of cetaceans' species in La Guajira, since they do not know which species are present in this area.

We have already share our results in the 17th Working Meeting of Experts on Marine Mammals from South America - 11th SOLAMAC Congress of the Society Latin American of Specialist of Aquatic Mammals (December 2016, Chile). We presented a poster with our results of the work conducted in la Guajira. We also presented an abstract to the European Cetacean Society with our genetic results. We plan to obtain more skin samples to present in the middle term a report to the Whaling Commission with toxicological results. Also, we plan to go to the 21st Biennial Conference on The Biology of Marine Mammals, which will be held in October 2017

in Halifax (Canada). In addition, with occurrence data that we obtained and other free published data, we plan to publish an article about habitat modelling of *Stenella frontalis* in the Caribbean. This analysis is very suitable for management of this species, since provide information about potential distribution areas, so it is possible to increase survey and conservation efforts in these areas. Also, we plan to participate in future Rufford conferences to show our project and our relevant results.

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

We got the money at the end of January 2016. However, we started to use it on March until December 2016, including the field work and the sample processing in the laboratory. We used the money during the project, between the dates that we anticipated.

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 was consulted at <http://www.xe.com/currencyconverter/convert/?Amount=1&From=GBP&To=COP> and for September 20ht, 2015, one (1) British Pound (GBP) equals 4,638 Colombian Pesos (COP).

Item	Budgeted Amount	Actual Amount	Difference	Comments
Flights Bogotá – Riohacha (2 people – roundtrip)	336	220	116	We bought two tickets for two researchers. The difference in the value is because we found an offer. RSG spent = £220
GPS	270	270	0	We bought a GPS. We did not pay this item with the Rufford Grant. RSG spent = £0
Echo sounder	209	209	0	We bought an Echo sounder. We did not pay this item with the Rufford Grant. RSG spent = £0
Aquatic camera GoPro	202	202	0	IDEA WILD provided funds to

Hero3+				buy an Aquatic camera GoPro. We did not pay this item with the Rufford Grant. RSG spent = £0
Digital camera	172	172	0	We used a digital small camera for the field trip. We did not pay this item with the Rufford Grant. RSG spent = £0
2TB Hard Drive	65	65	0	We used a 2TB Hard drive to save all the photos and documents related to the project. We did not pay this item with the Rufford Grant. RSG spent = £0
Digital camera Canon T2i	234	234	0	We used a digital camera for the field trip. We did not pay this item with the Rufford Grant. RSG spent = £0
Camera zoom lens 75-300mm	135	135	0	We used the lens for the digital camera for the field trip. We did not pay this item with the Rufford Grant. RSG spent = £0
PAXARMS rifle	5082	5082	0	We used the PAXARMS rifle to take the samples from the cetaceans in the field. We did not pay this item with the Rufford Grant. RSG spent = £0
Laptop	670	670	0	We used a laptop during the project. We did not pay this item with the Rufford Grant. RSG spent = £0
Local transportation	101	120	-19	We used it to go to the schools to do the environmental education and to travel from Mingueo to the airport in Riohacha. The difference is because the transport was a little bit more expensive than we thought. We did not pay this item with

				the Rufford Grant. RSG spent = £0
Food for 23 days (4 people)	1200	893	307	We used RSG funds to buy food during 23 days on the field (breakfast, lunch, dinner, snacks and water), to four people (two researchers, the captain of the boat and his helper). However, this item was cheaper than we expected. RSG spent = £893
Lodging for 23 days (4 people)	600	440	160	We used it to pay the lodging for 23 days in the field for four people (two researchers, one captain and his helper). The difference in the value is because some hotels were cheaper than we expected. RSG spent = £440
Boat, captain and gasoline for 23 days	4000	2240	260	We used it to pay the boat, the captain and the gasoline for 23 days in the field. The value is different because we were did not work half of a day due to bad weather and one day due to problems with the motor. RSG spent = £2240
Captain's helper	200	200	0	We used it to pay to the captain's helper during the field trip. We did not pay this item with the Rufford Grant. RSG spent = £0
Environmental educational material for children	300	193	-7	We used it to buy colours, papers with marine animal drawings and booklets with the cetaceans that we have seen in the area. The difference in the value is because we had to pay a little bit more for the colours. RSG spent = £193

DNA Extraction	275	275	0	We used it to do the DNA extraction of the samples that we collected from the animals in the study area. We did not pay this item with the Rufford Grant. RSG spent = £0
PCR	265	471,78	206,78	This item includes the PCR costs for samples that we collected from dolphins in the study area. However, we used RSG funds only to pay sequencing expenses. Differences in the value are because sequencing expenses increased during 2016 due to money exchange. RSG spent = £471,78
Mercury analyses (for 30 samples)	107	483,98	376,98	We used RSG funds to pay mercury analyses. Differences in the value are because we also collected some samples of fish, of which we conducted ecotoxicological analyses of muscle and liver tissue for each individual. In addition, we include isotopic analyses for each sample that increased the cost. RSG spent = £483,98
Incidentals	200	64	0	We used it to pay things that we did not had in any item and we needed to pay, like for example to buy some spares to the motor of the boat. RSG spent = £64
Total	14623	12649.76	1400,76	RSG spent = £5005.76

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

The next important steps that we think we need to work on are:

1. Get stronger in the environmental education with local fishermen, in order they engage in this conservation project.
2. Try to do a longer field work, with more transects, further and longer distances from the coast, in order to see more offshore cetacean's species.
3. Take more liver and muscle samples of fish as potential prey for dolphins. Due we found mercury levels in skin samples of dolphins, it is urgent to conduct toxicological analyses in fish since they are an important food resource for local communities.
4. We want to try to go to the field twice per year, on May and on September. So, we can compare occurrence cetacean's species during two seasons in the year. As a result we could report new species not reported before in La Guajira.

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 used the Rufford Foundation logo in all outreach presentations and materials for children and fishermen (species identification guide). We also made t-shirts for the researchers and the captain of our boat and his helper, with the logo as well. Furthermore, during outreach talks we always talked about how we got the money to conduct research and environmental project. In addition, we posted RSGF logo in poster presentations during 17th Working Meeting of Experts on Marine Mammals from South America - 11th SOLAMAC Congress.

11. Any other comments?

We are indebted with the Rufford Foundation for provide us this grant. Without it, we wouldn't be able to do what we did during the last year. And we really hope to continue with this project for a long term and that Rufford Foundation wants to support it as well.

THANK YOU SO MUCH!!!!