

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	Maria de Lourdes Martinez Estevez
Project title	Hawksbill Sea Turtle Conservation in the Gulf of California: Synergizing small-scale fisheries management and Eastern Pacific Hawksbill turtle conservation
RSG reference	21878-1
Reporting period	June 2017- April 2018
Amount of grant	£5000
Your email address	mmarti72@ucsc.edu
Date of this report	05/15/2018

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>Importance of mangrove estuaries for hawksbill foraging in the Gulf of California</p>				<p>Eight hawksbill sea turtles were tagged with GPS and satellite devices in the western Gulf of California, Mexico. To date, gathered information has demonstrated not only that this species uses mangrove estuaries as foraging grounds, but that the association with the habitat is stronger than previously thought. For instance, Clara, a female hawksbill of more than 90 cm CCL (curved carapace length), has been in the same estuary for more than 6 months.</p> <p>It is interesting to say that not all mangrove estuaries have the environmental conditions to be a suitable habitat for this critically endangered species. The high-resolution study at San Jose island is providing us data on habitat use and preferences and now we identified the physical features on mangroves that hawksbill turtles prefer. The use of critter cameras, a novel technique with this species, has provided information on food preferences and daily activity patterns. For instance, hawksbills forage mainly on sponges, algae beds and surprisingly on mangrove roots. This knowledge is extremely important because it will help identify priority sites for the species and focus conservation efforts within the Gulf of California. Due to the abundance of individuals (>60 individuals) and variety in sizes (ranging from 35 to 91.3 cm CCL),</p>

			<p>mangrove estuary at San Jose island has been identified as a hotspot for the species in the region.</p> <p>Having deployed these tags on hawksbill sea turtles at five different locations, gave us information on the limited distribution range of individuals, compared to other sea turtle species. This behaviour has been demonstrated in other regions and it is associated to the quality of food within the foraging grounds. Interestingly, hawksbill sea turtles have been found in areas that have some type of protection; either as a natural protected area or as a fish refugee. This can be a clear evidence of the relevance of these strategies to protect these marine vertebrates and therefore the habitats they depend on.</p>
<p>Identification of additional Gulf of California mangrove regions where hawksbills can be protected.</p>			<p>We searched all the available information on mangroves distribution in Mexico. We did a detailed analysis on the features of these habitats and selected those that are potentially suitable for hawksbill sea turtles. We currently have a selection of additional 15 mangrove habitats to survey in 2018.</p>

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

We had some difficulties due to weather conditions that made us readjust the work schedule. However, local fishers were supportive and let us camp in their communities. Fortunately, this reduction in accommodation costs allowed us to visit more sites than expected which increased the gathered data on hawksbill sea turtles.

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

The three most important outcomes of the project are:

1. Hawksbill sea turtles remain for long periods (months and years) within highly restricted areas (<10 km²) in the Gulf of California.

2. Hawksbill sea turtles have a strong association to mangrove estuaries with physical features. Those estuaries are also important for local fishing landings in the Gulf of California.
3. Hawksbill sea turtles' records indicate that sizes of most individuals belong to juvenile and subadults which brings hope for the recovery of the population in the long-term.

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

Local communities are fundamental on this project. Juan and Felipe Cuevas, members of El Pardito fishing community, have been key during the monitoring and handling of hawksbill individuals. Together we have combined the science perspective with the local knowledge to identify those places that hawksbill sea turtles prefer, and, we have designed better monitoring equipment to handle and work with this species.

Their participation also helped in the conversations with other fishing communities which felt more confident because Juan and Felipe were part of the project.

5. Are there any plans to continue this work?

Yes, we want to develop the stage 3 of the project. Using our field data, we identified suitable hawksbill sea turtle habitats in the Gulf of California. I want to survey those sites to determine the priority sites for the conservation of the species in this region. Then, I would start the conversation with fishing communities, non-profits, and government agencies to design a network of locally managed protected areas that benefit fishing communities without compromising hawksbill sea turtle presence in the Gulf of California.

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

My results will be available for the scientific community on peer-reviewed journals. For the general public, I want to work on an outreach publication and a series of videos explaining the project, the outcomes, and the potential ways to help protect this species.

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 the field season in July 2017. The length of the project kept the same.

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
Roundtrip airfare from San Jose CA to San Jose del Cabo, Mexico for one researcher	450	450		
Boat rental and fuel	1000	1350	350	We surveyed additional sites within the Gulf of California
Lodging and meals for one researcher	650	300	350	We camped in fishing communities which reduced accommodation costs
Field logistical support (Fishers)	2400	2400		
Miscellaneous field supplies (e.g. epoxy, batteries, anti-fouling paint, harness materials)	500	500		

*Fastloc GPS tags were provided by the Marine species program of WWF Mexico

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

The important next steps would be to confirm the presence of hawksbill sea turtles in the mangrove estuaries already identified, and to start the conversation with decision makers and local communities in the region to develop conservation strategies.

10. Did you use The Rufford Foundation logo in any materials produced in relation to this project? Did The Rufford Foundation receive any publicity during the course of your work?

No yet. I'm planning to use the logo for the outreach materials I want to develop this summer. Rufford Foundation received publicity in two talks I presented about my project in the University of California, Santa Cruz.

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

Don Croll – Academic advisor and researcher with more than 20 years of experience tagging marine vertebrates in the Gulf of California, Mexico.

Juan Cuevas – Fisherman and now conservationist. He has helped in the monitoring and handling of hawksbill sea turtles.

Felipe Cuevas - Fisherman and now conservationist. He has helped in the monitoring and handling of hawksbill sea turtles.

12. Any other comments?

I want to thank The Rufford Small Grants Foundation for the support to develop this project. The gathered information is highly valuable for the future of hawksbills sea turtles in the Gulf of California. We now have a better understanding of hawksbills foraging ecology and habitat associations; this knowledge is crucial to identify those habitats suitable for hawksbill sea turtles and to design conservation strategies to protect them.

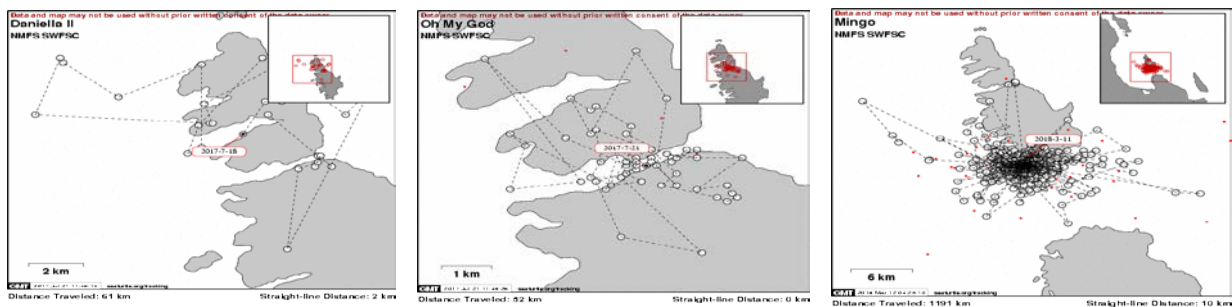


Figure 1. Movement patterns of hawksbill sea turtle individuals in the Zona marina Archipiélago de Espiritu Santo National Park, Mexico.

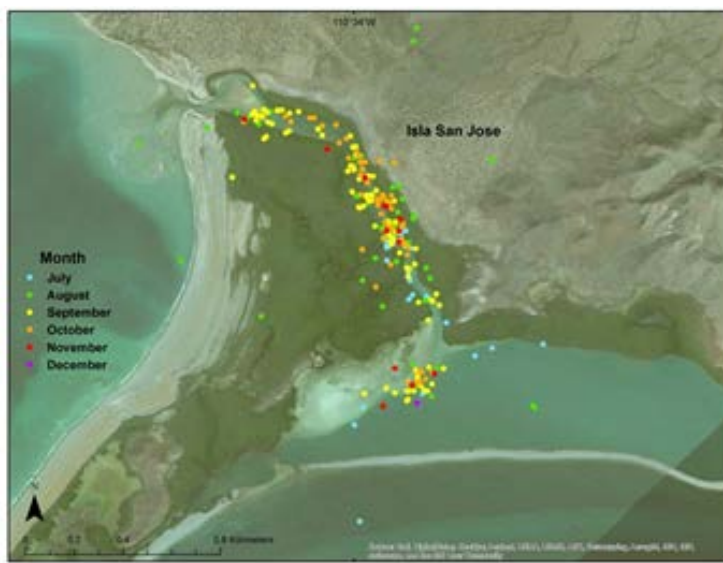


Figure 2. GPS locations of a hawksbill sea turtle adult within the mangrove estuary at San Jose island, Mexico.



Figure 3. Hawksbill sea turtles tagged with GPS and satellite tags in different locations within the Gulf of California. Top left: Zona marina del Archipiélago de Espiritu Santo National Park, top right: Bahía de Loreto National Park, down left: Agua Verde, BCS, down right: Cabo Pulmo National Park.