

Final Evaluation Report

Your Details	
Full Name	José Fernando Pontón Cevallos
Project Title	All voices matter: incorporating fishers' and expert knowledge to improve fisheries decision-making in the Galapagos
Application ID	27919-1
Grant Amount	£5000
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Date of this Report	10-06-2021

1. 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
Explore and integrate different sources of knowledge (i.e., fisher's ecological knowledge, experts' knowledge, scientific literature) about species of fisheries importance depending on coastal ecosystems (e.g., mangroves), and analyse their contribution towards sustainable fisheries management				There was a change of topic for my PhD thesis from sustainable fisheries to mangrove ecosystems. Thus, our interviews (with fishers and experts) and two participative workshops (with fishers from Santa Cruz and Isabela, respectively) were aimed at exploring new ecological knowledge about mangrove ecosystems in the Galapagos and their associated fisheries species. We also analysed and contrasted different stakeholders' perceptions and attitudes about mangrove ecosystem services, socio-environmental problems and potential conservation strategies. With this, we will be able to discuss the contribution of fishers' ecological knowledge in the sustainable management of this ecosystem.
Conceptualize and evaluate sustainable fisheries management scenarios among key fisheries stakeholders of the Galapagos, by applying decision-support tools				As I changed the topic of my PhD thesis, I did not conceptualize fisheries management scenarios and, later, evaluate them. Instead, I identified and compiled mangrove threats and potential management strategies in the interviews (with fishers and experts) and discussed them with a group of managers and scientists from different Galapagos institutions in Santa Cruz Island during a roundtable discussion. Then we developed an exercise in which participants applied a multi-criteria decision-making tool (AHP) to prioritise management strategies on different mangrove locations in Santa Cruz Island. During this exercise, participants recognised the need for multi-stakeholder management and governance of this ecosystem.

<p>Provide a debate space to Galapagos' key fisheries stakeholders, that contributes towards the integration of different sources of knowledge in fisheries research and management</p>		<p>During the interviews, fishers revealed that their knowledge about the marine ecosystems was constantly investigated by scientists and managers, but their participation was hardly acknowledged or encouraged. Therefore, during our workshops and roundtable discussion, we provided debate spaces to envision new opportunities for participative research in Galapagos mangroves.</p>
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2. Please explain any unforeseen difficulties that arose during the project and how these were tackled.

First, our main difficulty was obtaining the interest of the fishing communities during interview (late 2019-early 2020) and workshop (April 2021) stages of our research. Fishers constantly mentioned that many researchers and managers had conducted interviews and workshops with them in the past but had failed to provide them the results of these studies and to acknowledge their participation. In such regard, many fishers had become reluctant to give any type of information, especially on Isabela Island. To tackle this issue, we approached representatives from fishing cooperatives, managers and scientists working with fisheries who helped us with the identification of key informants and potential participants. Then, these were contacted by telephone and most of them agreed to being interviewed or attending the workshops. In regard to the invitations for the workshops, the local government of Santa Cruz (municipality), for instance, granted us a space on their radio show to send a message and invitation to the community. We also broadcast invitations by other channels of communication such as announcements in social media, flyers, and noticeboards. Even then, we had difficulties obtaining enough participants in both activities. In such regard, we approached fishers during regular visits to the fishing piers of each island, asked them for an interview or handed out invitations to the workshops. If these were refused, we stayed talking to them, so they would develop a bond of trust with the researchers.

The second largest difficulty was imposed by the Covid-19 pandemic during 2020, which prevented us from physically conducting expert interviews, workshops and roundtable discussion, as entrance to the islands (for non-locals) and research activities were completely banned. In the case of the expert interviews, we decided to conduct them via telephone or e-mail from July-October 2021, obtaining, at the end, 33 participants. In the case of the workshops and roundtable discussion, we had to wait until March-April 2021 to visit the island and organise them. During these events, we made sure to always safeguard biosecurity measures across participants.

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

Throughout this study:

- We revealed that fishers' ecological knowledge is a valid source of information in mangrove research and has a potential contribution in mangrove sustainable management. Fishers have revealed valuable data in regard to the biology and ecology of fisheries species depending on this ecosystem, and the environmental conditions associated to biogeographical patterns of this ecosystem in the Galapagos.
- We found out that fishers are aware of mangroves' importance for humans, not only in terms of food provision but also in relation to supporting, regulatory and cultural ecosystem services. In addition, they are aware of the current threats and socio-ecological conflicts that mangrove ecosystems face and are able to propose viable conservation strategies to change this situation. At the same time, we noticed that their perceptions about mangroves are different from other users (e.g., tour guides, park rangers, scientists), as fishers interact with this environment in unique ways, and develop their own type of knowledge.
- We revealed that fisher's knowledge and perceptions have the potential to be integrated in the decision-making process of mangrove management/conservation, thus contributing to the participative management of objectives of the region.

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

As explained before, fishers from three local communities (Santa Cruz, San Cristobal, Isabela) and other mangrove stakeholders (such as tour guides, park rangers), were interviewed and/or invited to the workshops. Thus, their involvement was more consultative than participative. Yet, at the same time, fishing cooperative representatives, personnel of government institutions and local scientists participated in the design, planning and/or organisation of our activities and had a crucial role in the overall success of our study. Communities benefited from our project since our activities aimed at promoting the integration of fishers' ecological knowledge in mangrove research and management. Specifically, we showcased the application of a decision-support tool (AHP) for the integration of multi-stakeholder perceptions about mangroves (including the fishing sector); but most importantly, we provided a space for debate about this subject at different levels (i.e., first among users and then among managers).

5. Are there any plans to continue this work?

This work itself has no plans of continuation. Yet, we look forward to collaborating in the near future with local institutions of the Galapagos (such as the Charles Darwin Foundation) in other aspect of socio-ecological research, especially in regard to the integration of fishers' and local ecological knowledge in the research and management of the marine ecosystems.

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

The results of our interviews conducted in late 2019-early 2020 as well as other aspects of my PhD research were already shared during the workshops and roundtable discussion to the attendees. The overall results of the study will be published in two scientific peer-reviewed articles that we are currently preparing. In addition, we will prepare one report of the workshops and one of the roundtable discussions (aide-mémoires) that summarise their main objectives and results of the events using a less technical language. These will be shared among all the participants and relevant scientific and management institutions that participated in the study. At the same time, the Charles Darwin Foundation will aid us publishing story maps of our events to the general public. Additionally, we will present the results of this study in an international conference called 'Estuaries and coastal seas in the Anthropocene – Structure, functions, services and management', to be held in September 2021. Finally, we are planning a socialisation of the results of my PhD research for next year. During this socialisation, we will invite the fishers and other people that participated in our interviews and workshops, although it will be directed towards the general public.

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

The grant was used from October 2019 to May 2021, rather than from January to December 2020. We used some funds before the anticipated starting date in order to finance the conducting of interviews with the fishing communities of Santa Cruz, San Cristobal and Isabela islands, as I took advantage of my visit to the islands for conducting some sampling in mangrove ecosystems. In addition, there was a 5-month extension of the project due to the Covid-19 pandemic, which prevented us from conducting the most important activities of our project.

8. Budget: 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. It is important that you retain the management accounts and all paid invoices relating to the project for at least 2 years as these may be required for inspection at our discretion.

Item	Budgeted Amount	Actual Amount	Difference	Comments
Living expenses for staff	2000	1996	-4	Very small difference.
Internal mobility	1000	674	-326	We spent less of the budgeted amount, as instead of bringing fishers from different islands for a Santa Cruz workshop, we decided to conduct two workshops (one in Santa Cruz and one in Isabela). This

				way, the cost of internal mobility (i.e., maritime transport) was greatly reduced.
Airfare (international and from mainland Ecuador to the Galapagos)	500	824	+324	We spent more of the budgeted amount, as an international ticket from Ecuador to Belgium for Jose Ponton was purchased with these funds, rather than using external funds.
Workshop's materials and logistics	1500	1281	-219	We spent less of the budgeted amount, mainly because we did not have to pay for the venues for the workshops. The venues represented no cost, as they belonged to government institutions and just needed to be booked in advance.
TOTAL	5000	4775	-225	*We used an exchange rate of 1 USD = 0.709 GBP taken from XE.com (11-06-2021)

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

Even though fishers' ecological knowledge has been applied to investigate other research questions in the past in the Galapagos (especially in regard to fisheries), this is the first time being explored and applied in relation to mangroves. In such way, our study proved that fishers could reveal valuable management-applicable knowledge about mangroves of the Galapagos, complementing available scientific knowledge of this ecosystem. If this type of research is to be continued in the future, it is important that researchers spend more time identifying key informants about mangrove topics, as some participants (e.g., older fishers with past collaboration in research and management activities) have developed a deep knowledge about this ecosystem through time and experiences. At the same time, as more studies like these are conducted in the future, it is important to validate this information with scientific studies/ground truthing activities. If this is accomplished, more specific research questions about mangrove fisheries could be addressed using these methods, either in mangroves or other ecosystems.

On the other side, projects empowering the participation of fishing communities and other marine users in the decision-making process of the marine reserve should always take into account the diversity of cultural/intangible values that each stakeholder grants to mangroves or other marine ecosystems. Novel approaches for participative management and the application of suitable decision-support tools among managers are necessary in order to obtain and successfully integrate fishers' ecological knowledge in mangrove sustainable management.

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

Before each interview, The Rufford Foundation was acknowledged as one of the funding organisations of this study. Later on, during the presentation of interviews' results at the workshops and roundtable discussion, the logo was used in the introductory slide of the PowerPoint, and also mentioned when acknowledging the funding organisms of the project. The foundation will be also acknowledged in the articles that result from this study, thesis defence, and other presentations that result from the study,

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

Research team in Galapagos:

Jose Ponton Cevallos, PhD student, Ghent University: project leader.

Nathaly Ramirez Valarezo, environmental engineering graduate, Universidad de Guayaquil: bachelor thesis (about interviews to mangrove experts); support in workshops (planning, execution, facilitation in events, reporting).

Mireya Pozo Cajas, professor, Universidad de Guayaquil: support in interviews to experts and workshops (planning, execution, supervision, reporting, moderation in events).

Samuel Cevallos Moncayo (volunteer): support in workshops (facilitation in events).

María José Rendón (volunteer): support during interviews.

Javier Farraye (volunteer): photography and video during workshops and roundtable.

Collaborators:

Jorge Ramirez Gonzalez, senior fisheries researcher, Charles Darwin Foundation): support in interviews and workshops (conceptualization)

Nicolas Moity, ecological researcher, Charles Darwin Foundation: support in workshops (conceptualization).

Gabriela Rodriguez, social researcher, Charles Darwin Foundation: support in interviews and workshops (conceptualization, planning).

Maria Jose Barragan, science coordinator, Charles Darwin Foundation: support in interviews and workshops (conceptualization).

Gabriela Navarrete Forero, independent researcher: support in interviews to experts (conceptualization, supervision, reporting)

Rafael Bermudez Monsalve, professor, ESPOL: PhD supervisor; research logistics; hosted our team in his lab in Galapagos

Peter Goethals, professor, Ghent University: PhD supervisor; project administrative responsible

12. Any other comments?