Final Evaluation Report

Your Details	
Full Name	Nicola Louise Ransome
Project Title	Investigating Cetacean Diversity in El Salvador: A "Training-While-Doing" Approach to Aid Conservation and Management of Threatened Coastal Populations
Application ID	29701-1
Date of this Report	5.09.2022

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
1. Cetacean diversity and distribution maps and abundance estimates (where possible), to be presented to the Salvadorian Environment Agency and published in a peer reviewed journal.				We have still not been able to survey the whole coast due to the pandemic. However, we have surveyed ¾ of the coastline and will be able to complete this within the next year. I have also shared data with a student studying small cetaceans in the region to be used for her undergraduate thesis.
2. Maps of spatial habitat use by the most commonly encountered cetacean species to develop spatially explicit management plans around whale-watch activities, provided within a report to the Salvadorian Environment Agency, and published in a peer reviewed journal				Same problem as before that travelling the whole coast during the pandemic has been impossible. However, we have presented maps of whale and dolphin distribution to the Environment Agency twice in two annual reports. Additionally, Marlene one of the students I have been training has created maps of different social groups of humpback whales for a conference.
3. Photo-identification catalogues of various cetacean species to be made available to researchers throughout the North Pacific.				We have created the first photo-identification catalogue of humpback whales used by the Salvadorean and US Governments for management purposes. The catalogue is now being processed to be printed and sold in El Salvador.
4. Suggestions of changes to whale-watch regulations to be presented to the Salvadorian Environment Agency based on information on species presence and distribution.				I have been working closely with Luis Pinada who oversees whale watching regulations. I have reviewed all his documents for new whale watching regulations, I met with staff of the Environment Agency and I have advised on the new regulations. I also was a reviewer on the peer review article on sustainable whale watching in a Salvadorean scientific journal.
5. A reduction in the harassment of cetaceans				Due to work mentioned above, and through working in four different

in shallow coastal waters throughout El Salvador by tourist vessels.				workshops in El Salvador training the local fisherman in safe whale watching practices, we have undoubtedly reduced harassment of humpback whales regionally.
6. A network of trained and certified whale-watch captains, throughout El Salvador, with knowledge of proper navigation practices around cetaceans, dangers and cumulative negative effects of improper whale watching.				We have most definitely achieved this (although only in the area where a whale watching industry currently exists). We have worked in the field and taught workshops not only on safe navigation practices but also on collecting basic scientific data and photo-identification images.
7. A brochure printed, in English and Spanish to inform tourists of local whale-watch regulations.				Better than this, we have produced a catalogue of photo-identification images of humpback whales. Within it we have included a guide for whale watching in English and Spanish. The environment agency will be funding the printing of this for all whale watching boats in Los Cóbanos for the next whale season.
8. Trained and inspired young Salvadorian early career biologists, with knowledge in distance sampling methodology, photo-identification, data collection and analysis, and acoustic surveying.				Yes 100%. Very happy that we have trained in total six young Salvadorian biologists. I also undertook a training workshop which was attended by 25 more student biologists from San Salvador.
9. Two undergraduate thesis on cetaceans of El Salvador, which will hopefully by the start of their successful careers in cetacean conservation.				Yes. These are presently being worked on. In addition, I am the "godmother/madrina" to two projects being run by early career researchers from El Salvador. One on humpback whale song and one on seasonal presence (Figure 18).
10. A well designed format to be presented to the Salvadorian Environment Agency to introduce a system of whale watching flags in El Salvador, to show captains have attended "best navigation" workshops.				Yes. While the flag system is not preferred by the environment ministry, we have worked hard in helping train the local fisherman. There is now a network of guides approved by the government who have permits to be whale watching captains.

11. Presentation of survey findings at the SOLOMAC Conference (Brazil 2020), Society of Marine Mammalogy conference (2021) and future Rufford conferences.				Yes. Society of Marine Mammalogy and Rufford (see images below) both Melvin and I presented. The SOLOMAC has not yet taken place due to COVID.

2. Describe the three most important outcomes of your project.

a). The start of a project, "Proyecto Megaptera El Salvador" run by me and four Salvadorian biologists which, is now become a wing of Fundacion Naturaleza which is a registered NGO in El Salvador. We have been asked to share our data with NOAA and Cascadia Research and we are officially the first to do cetacean research and be published at the international level in the country. Please note on NOAA reports below, both Melvin and I are named as the contributors for the work. Something that is very important to me is that I am there helping but this is a Salvadorean project run by Salvadorean biologists. Our first English publication has been submitted and will be out before the year's end which has Melvin and I as first and second author, and several well-known US biologists. I was invited by the IUCN to a workshop in Costa Rica on Important Marine Mammal Areas (IMMAs) in the Eastern Tropical Pacific (ETP). It was in English so only I attended, and I helped write two proposals for just El Salvador and one for the whole Central America region. I was also invited to the WWF workshop to assess the risk of vessel strike in the ETP. Held in Bogota, Colombia, I advising on the risk in El Salvador. Lastly, Melvin and I have been asked to attend a workshop in Baja California by the International Whaling Commission (IWC) for the scientific working group of Central America. These workshops, hotel room and travel costs are paid by the organisations, and our inclusion shows the worth of our work and how it is being recognised at the international level.

b). Training the local fisherman of El Salvador and being directly involved with the government training in workshops and in the field. I have really enjoyed this work immensely and I was thanked by US Aid who said our work in helping to develop the whale watching industry of Los Cóbanos has directly aided in preventing some of the local community migrating illegally to the US. This was very impactful to me and made me realise what a difference we are making with our work to some of the local communities' lives. This is 100% group effort but it was very humbling to think that I could of anyone helped on this level.

c). Training young Salvadorian biologists and helping initiate cetacean research in the country. Prior to us being granted the money from Rufford there had just been one project on dolphins in El Salvador. The ministry of environment has been developing a cetacean research project which I have helped as an advisor. I have also helped train directly the six young biologists in the field, and via workshops over 20 more. Melvin Castaneda, who is my main collaborator, presented internationally on our work in El Salvador and has a great future ahead of him in cetacean research.

3. Explain any unforeseen difficulties that arose during the project and how these were tackled.

The Covid pandemic which began 2.5 months after we received funding. It has prevented us from doing work along the whole coastline, but we have managed to carry on, albeit delayed. We were just based in one town and therefore able to carry on without putting team at risk by constant travel. Thank you so much to The Rufford Foundation for their support through these difficult times.

4. Describe the involvement of local communities and how they have benefitted from the project.

As explained above:

a) We have helped train fisherman in good navigation practices around whales and to be whale watching guides.

b) We have helped develop the whale watching industry in Los Cóbanos which has helped improve the local economy and potentially prevented people from migrating.

c) We have helped spread the love of whales throughout the country.

d) We were not able to teach in schools due to pandemic, but we plan to start this year (Covid regulations allowing)!

5. Are there any plans to continue this work?

Yes, this is just the beginning. We now have NGO status. We are involved in collaborative work throughout Central America and the North Pacific. Many researchers have commented to me how happy they are with the work I am doing "down there" in El Salvador, and especially happy that it is a "training-while-doing" approach. That the whole point of the work is to support local researchers in developing as cetacean researchers and to have their own project. It is impossible to learn field work techniques from the internet and with no experienced cetacean researchers in El Salvador it would have meant these young biologists would have had to leave the country to learn. This had prevented cetacean research from developing nationally. I really hope that cetacean research in El Salvador will continue to grow. These young biologist I have trained are becoming local experts, and no starting to impart their knowledge to others who want to learn. What an incredible domino effect. I never dreamed we could be so successful.

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

a) Publications – We have published one paper now in Spanish and have one in press in English. We now have 2 good years of data and when we have 5 we will start use the data for some more advanced modelling and analysis of cetacean regional presence.

b) Collaborations - Our data has already been used for three reports for NOAA, and one for WWF. It is very important to me that we collaborate and share our data so that the most can me made out it as possible. Right now, there are four other scientists using our data for up-and-coming reports.

c) Presentations – We have been presenting in El Salvador for young biologists, government and fishing communities. We plan to continue doing this via workshops and presentations, to aid with the promotion of the importance of cetacean research in El Salvador.

d) Conferences - We plan to present at all the conferences we can about our work in El Salvador!

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

The first step will be to complete surveys along the whole coast this winter as originally planned. Now that the pandemic is over, we should be able to achieve this.

This whale season we will continue with our work holding workshops for whale watch captains, but we want to expand it now to other fishing communities.

Now the pandemic is becoming less impactful, we hope to be able to start teaching in schools.

I have been asked to be a PhD supervisor for a student who was one of last year volunteers at our project in El Salvador. We will be incorporating genetic work on humpback whales which is being run by Dr Jorge Urban in Baja California, Mexico. This is a very exciting collaboration for us all.

Melvin and I will attend the IWC workshop in Baja California, Mexico at the end of October 2022.

We will apply for the next round of funding from The Rufford Foundation with the hope we will be able to continue with our work with aid from the financing.

8. 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?

Yes, all our presentations, posters and publications either use the Rufford logo or thank The Rufford Foundation. Please see figures below. We constantly are so grateful for The Rufford Foundation making this all possible.

9. Provide a full list of all the members of your team and their role in the project.

Nicola Ransome – Scientific advisor

Melvin Castaneda – Project Leader

Marlene Vazques – Research Assistant

Marvin Morin – Research Assistant

Diana Martinez – Research Assistant

Rebecca Valenica – Research Assistant

10. Any other comments?

I just want to take this opportunity to thank The Rufford Foundation for their support. We have been able to change people's lives by the funding so kindly gifted to me. By helping train young biologists allowing them to develop in their careers as cetacean researchers, and who are now training other biologists in the country. Also, by helping with the development of a whale watching industry in Los Cóbanos, improving the economy and providing work for local fishing communities.

Thank you so much to The Rufford Foundation!!

Figures: Field work, workshops, conferences, presentations, publications and reports

(a) Fieldwork

Figure 1: In the field "training-while-doing"




b) **Workshops (held by us)**

Figure 2: 2020 workshops for fisherman of Los Cóbanos on safety around whales.

Figure 3. Thanking Rufford in above presentation.

Figure 4. 2021 workshops mid-pandemic training fisherman in whale research techniques.

Figure 5. Workshop in training students from San Salvador in 2021.

Figure 6. Thanking Rufford in above presentation.

(b) Workshops (by others)

Figure 7. 2020 IWC meeting for humpback whales of Central America at the first ever Conference for cetaceans of Central America.

Figure 8. 2020 meeting in El Salvador for marine biologists of Los Cobanos.

Figure 9. 2021 meeting for cetacean biologists of Central America for NOAA work.

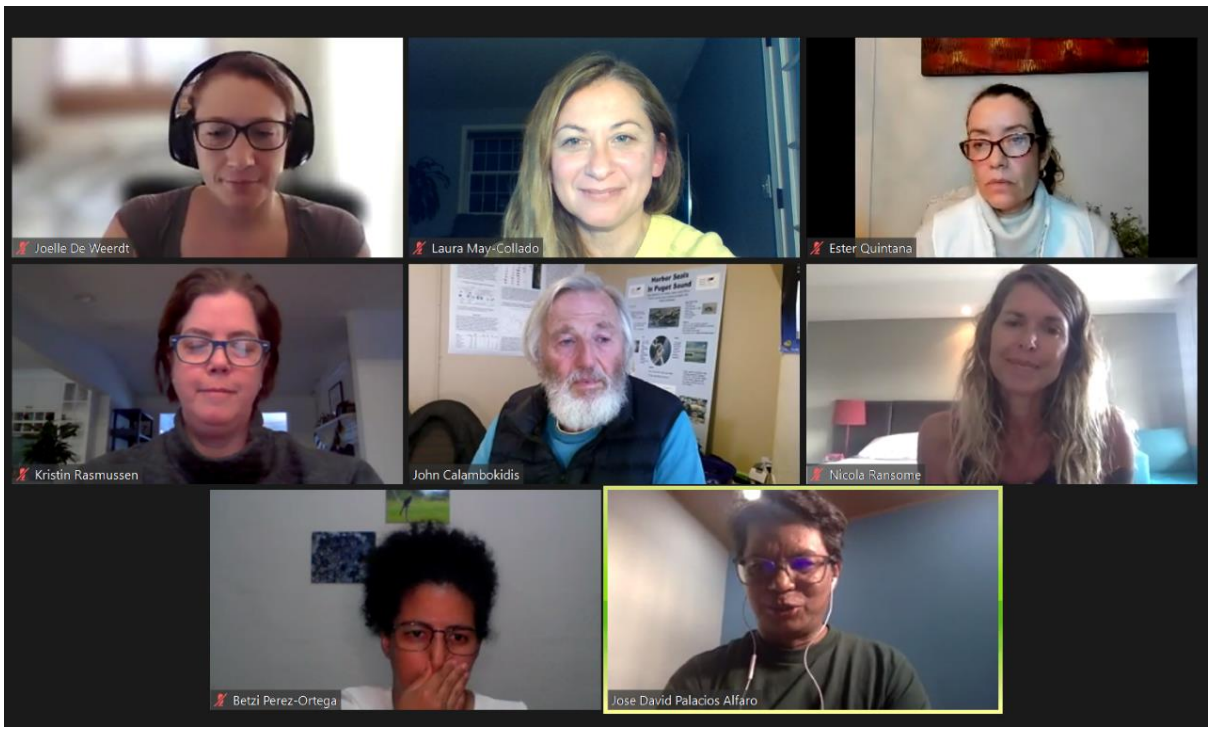
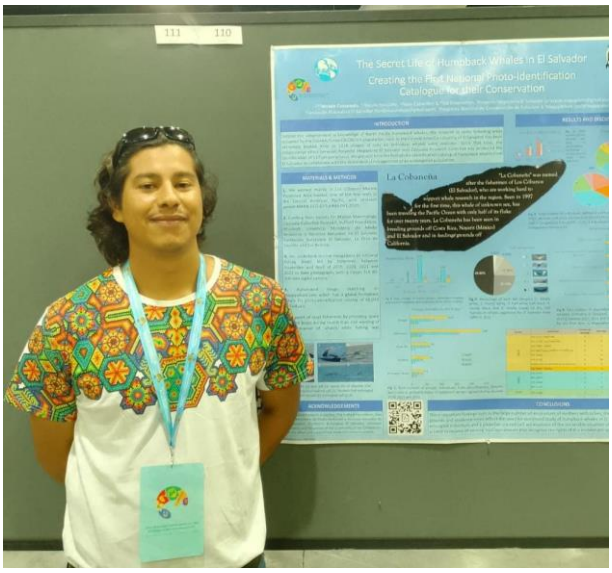


Figure 10. 2022: Workshop in Bogota, Colombia to reduce vessel strike in the Eastern Tropical Pacific (Nico attended virtually).

Figure 11. 2022 IUCN meeting in Costa Rica Attended by Nico where she laid out proposals for one Important Marine Mammal Area and one area of interest in El Salvador.

(c) Conferences

Figure 12. Rufford conference in El Salvador 2021 (LEFT) and Society of Marine Mammalogy 2022 (RIGHT).



(d) Presentations

Figure 13. 2020 Online talks by Nico, Melvin and Marlene presenting about marine mammals of El Salvador for the Ministry of Environment.

Figure 14. 2020 Marvin presenting on his experience in the field studying cetaceans at the University of San Salvador.

(e) Publications and reports

Castaneda GM, Martinez de Navas E, **Ransome NL**, Benito PC, Pineda L, Aguilar LM (2022) Eventos de Cetaceos enmalladas en El Salvador. Rev Min 24: 23 – 30.

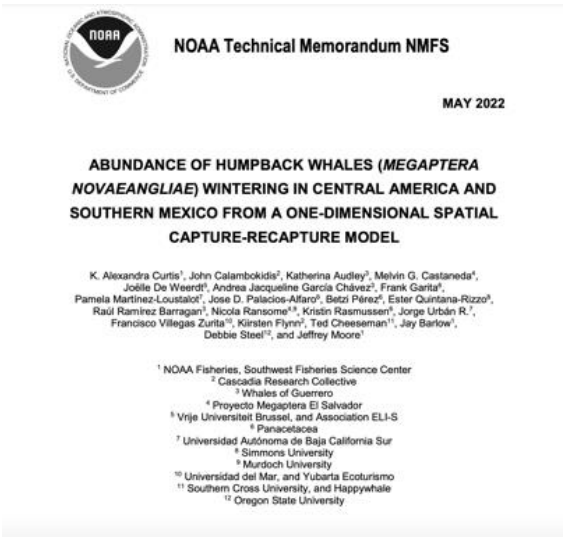
Martínez-Loustalot P, Audley K, Cheeseman T, De Weerdt J, Frisch-Jordán A, Guzón O, Olio M, Ortega-Ortiz C, **Ransome N**, Villegas-Zurita F, Urbán-R. J (2021) Towards the definition of the humpback whale population units along the Mexican and Central American coasts in the Pacific Ocean. Mar Mammal Sci, (*in press*).

Ransome N, Castaneda MG, Cheeseman T, Calambokidis J & Sharp F (2022) Migratory destinations of endangered humpback whales, *Megaptera novaeangliae* (Cetartiodactyla: Balaenopteridae) from El Salvador. Rev Trop (*in press*).
Curtis KA, Calambokidis J, Audley K, Castaneda MG, De Weerdt J, **Ransome N** et al. (2022) Abundance of humpback whales (*Megaptera novaeangliae*) wintering in Central America and southern Mexico from a one-dimensional spatial capture-recapture model. U.S. Department of Commerce, NOAA Technical Memorandum. doi: 10.25923/9cq1-rx80

Taylor BL, Martien KK, Archer FI, Audley K, Calambokidis J, **Ransome N** et al. (2021) Evaluation of humpback whales wintering in Central America and southern Mexico as a Demographically Independent Population. US Department of Commerce, National Oceanic and Atmospheric Administration National Marine Fisheries Service Southwest Fisheries Science Center. doi:10.25923/sgek-1937

Taylor BL, Martien KK, Archer FI, Audley K, Calambokidis J, **Ransome N** et al. (2021) Evaluation of Mexican Distinct Population Segment of Humpback Whales as units under the Marine Mammal Protection Act. US Department of Commerce, National Oceanic and Atmospheric Administration National Marine Fisheries Service Southwest Fisheries Science Center. doi: 10.25923/nvw1-m

Figure 15. Example of two front pages of reports.



NOAA Technical Memorandum NMFS

MAY 2022

ABUNDANCE OF HUMPBACK WHALES (*MEGAPTERA NOVAEANGLIAE*) WINTERING IN CENTRAL AMERICA AND SOUTHERN MEXICO FROM A ONE-DIMENSIONAL SPATIAL CAPTURE-RECAPTURE MODEL

K. Alexandra Curtis[1], John Calambokidis[2], Katherina Audley[3], Melvin G. Castaneda[4], Joëlle De Weerdt[5], Andrea Jacqueline García Chávez[3], Frank Garita[6], Pamela Martínez-Loustalot[7], Jose D. Palacios-Alfaro[8], Betzi Pérez[8], Ester Quintana-Rizzo[9], Raúl Ramírez Barragan[3], Nicola Ransome[4,5], Kristin Rasmussen[9], Jorge Urbán R.[7], Francisco Villegas Zurita[10], Kiirsten Flynn[11], Ted Cheeseman[11], Jay Barlow[1], Debbie Steel[12], and Jeffrey Moore[1]

[1] NOAA Fisheries, Southwest Fisheries Science Center
[2] Cascadia Research Collective
[3] Whales of Guerrero
[4] Proyecto Megaptera El Salvador
[5] Vrije Universiteit Brussel, and Association ELI-S
[6] Panacetacea
[7] Universidad Autónoma de Baja California Sur
[8] Simmons University
[9] Murdoch University
[10] Universidad del Mar, and Yubarta Ecoturismo
[11] Southern Cross University, and Happywhale
[12] Oregon State University

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Eventos de cetáceos enmallados en El Salvador

Entangled cetacean events in El Salvador

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Elba Martínez de Navas[2]
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RESUMEN

El enredo en las artes de pesca es reconocido como la principal amenaza moderna para las poblaciones de cetáceos a nivel mundial. A continuación, se presenta la primera evidencia de interacciones entre las pesquerías artesanales marino-costeras y los cetáceos a lo largo de la costa del Pacífico de El Salvador. Entre los años 2017 y 2022, se registraron cinco eventos de enredo, dos en especies de delfines oceánicos, *Stenella longirostris y S. attenuata*; tres casos de ballenas jorobadas, *Megaptera novaeangliae*, uno de ellos fue una madre y una cría dependiente, enredadas en el mismo arte de pesca. Estos cinco incidentes fueron documentados en el oeste de El Salvador, cerca del Puerto de Acajutla y constituyen el primer informe de enredo de cetáceos en el país, incluyendo un caso que afecta a una población de ballenas migratorias en peligro de extinción y a una especie de delfín amenazada. Cabe destacar que, dos casos de animales vivos enredados involucraron intentos/exitosos de liberación de los animales por parte de pescadores locales voluntarios, guardarrecursos y personal de la fuerza naval no entrenados en el rescate de cetáceos. Este

Figure 16. Thanking Rufford in Curtis et al. 2022 NOAA report. This was the same in all of our reports.

report. Karin Forney provided an internal peer review.

Funding

Funding for data analysis was provided by Protected Species Science Branch, Assessment and Monitoring Division, Office of Science and Technology, NOAA Fisheries, through the Protected Species Toolbox Initiative. Funding for 2021 field collections and SPLASH 2 coordination was partially provided by NOAA Fisheries West Coast Region and NOAA Fisheries Office of Protected Resources. Field work in El Salvador was additionally supported financially by the Rufford Foundation and the Society of Marine Mammalogy, and research equipment was gifted by Idea Wild. Whales of Guerrero also received funding or gifts in kind from the San Francisco Bay American Cetacean Society Chapter, Oceanic Society, SEE Turtles, Cetacean Society International, Smultea Environmental Sciences, Mysticetus, Adobe, National Geographic Society, Norcross Foundation, Idea Wild, SEMARNAT, US Department of Fish and Wildlife Service, Rodrigo y Gabriela, and individual project supporters. The funders had no role in the design or execution of the study, decision to publish, or preparation of the report.

(f) Community work

Figure 17. 2021 Beach cleaning in Los Cóbanos with Melvin, and the local children and wives of the fishing community.

(g) Awards

Figure 18. Melvin and Rebecca awarded grants for their research projects into humpback whales in El Salvador (of which I am the "madrina/godmother").

(h) Other

Figure 19. The three other women of Proyecto Megaptera describing their work on International Women in Science Day 2021.


Hola, mi nombre es Rebeca Valencia, bióloga de profesión y recientemente me encuentro realizando mi trabajo de posgrado en el área de Educación Ambiental. He dedicado los primeros años de mi labor a la formación y fortalecimiento de capacidades para un desarrollo sustentable en comunidades locales, con temas relacionados a cambio climático, agricultura orgánica, gobernabilidad ambiental y género. Actualmente formo parte del proyecto Megaptera de El Salvador, con el fin de generar información científica sobre cetáceos y de manera especial de la ballena jorobada.
Proyecto Megaptera El Salvador


Soy Diana Martínez, bióloga egresada de la Universidad de El Salvador. He sido voluntaria en algunos proyectos de reforestación y mi hobbie es fotografiar flora y fauna lo cual disfruto mucho. Actualmente apoyo con la investigación de las ballenas que visitan la costa de El Salvador con el Proyecto Megaptera
Proyecto Megaptera El Salvador

Figure 20. 2020 the kind of heartfelt message that makes it all worthwhile!!! P.S Translation of her/his is Facebooks fault.