

Final Evaluation Report

Your Details	
Full Name	Sui Hyang Kuit
Project Title	Mitigating Bycatch of Small Coastal Cetaceans in Gillnets and Trawls in Matang Important Marine Mammal Area, Peninsular Malaysia
Application ID	36089-1
Date of this Report	09 May 2024

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
To identify bycatch mitigation methods and specifications that are proven to be effective at reducing bycatch of the three focal cetacean species while not greatly affecting the fishers' target catch		X		We found that the Fishtek pingers of 125dB and 145dB (50-125 kHz) are effective in reducing depredation and bycatch of Indo-Pacific humpback dolphins. However, for Indo-Pacific finless porpoises and Irrawaddy dolphins, the results were not conclusive yet and more observations are needed.
To trial the use of acoustic pinger on Indo-Pacific bottlenose dolphins depredating purse seines		X		This is an additional objective that was added after the end of the 1st year to replace the trials on trawls as there were no uptake by trawl fishers as they said it was a bigger problem in the past. The Future Oceans pingers 175dB (60-120 kHz) pingers appear to be effective for Indo-Pacific bottlenose dolphins in the first 3 months of trials. However, after approximately 3 months of pinger trials, the Indo-Pacific bottlenose dolphins appear to have habituated to the pingers and were reported to continue depredating the purse seines.

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

- a) The Fishtek Marine 145dB and 125dB pingers (50-120 kHz) are effective to reduce bycatch of Indo-Pacific humpback dolphins (*Sousa chinensis*) in driftnets targeting threadfin breams that are usually depredated.

- b) To date, there is no sign of habituation by Indo-Pacific humpback dolphins (*Sousa chinensis*) to acoustic pingers yet and the Indo-Pacific humpback dolphins are still using the area where fishers fished. Fishers did not report that their fish catches are affected by the acoustic pingers installed. Other driftnets without pingers have higher depredation rates by Indo-Pacific humpback dolphins than driftnets with pingers.

- c) The Indo-Pacific bottlenose dolphins were found to habituate to the Future Oceans 175dB Anti-Depredation pingers (60-120 kHz) after about 3-4 months of pinger trials for purse seines.

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

In the beginning, some of the fishers were reluctant to install pingers on their driftnets as they were not familiar with the acoustic pingers. However, as we focused on working with a few key fishers with high bycatch rates in the fishing villages, and eventually as the pingers were found to be effective by the early batch of fishers and they have gained more confidence with the use of pingers, the project spreads through word-of-mouth in the fishing villages and more fishers are interested in trialling the pingers and agreed to participate as well.

For Irrawaddy dolphins, we did not have records of bycatch and depredation of Irrawaddy dolphins reported by fishers throughout the pinger trial period. While bycatch of Irrawaddy dolphins sometimes occur, bycatch rates of Irrawaddy dolphins were known to be much lower than Indo-Pacific humpback dolphins as the Irrawaddy dolphins are not known to depredate the driftnets. More observations are needed for Irrawaddy dolphins' behaviour towards the acoustic pingers.

There were still a few bycatch incidences of Indo-Pacific finless porpoises that happened in the beginning stage of the pinger trials, but as the fishers continue to use the pingers and they were given more to reduce the spacing between them, we received less reports of finless porpoise bycatch in the later stages of the project.

As there were no uptake by trawl fishers, we have shifted our focus to trial pingers on purse seines with frequent depredation and live bycatch of Indo-Pacific bottlenose dolphins. Acoustic pingers were found to be effective in the beginning stage for purse seines with Indo-Pacific bottlenose dolphins, but habituation by bottlenose dolphins occurred after approximately 3 months of trials. A fisher reported that his fish catches of skipjack tunas are negatively affected by the pingers. We have tried to convince other fishers to keep trialling the pingers but unfortunately some of the fishers withdrew from the trials as the pingers were

thought to be no longer effective to reduce bycatch and depredation of Indo-Pacific bottlenose dolphins and some of their fish catches of skipjack tunas were reported to be negatively affected. Currently, we only have three fishers who are still trialling the acoustic pingers on their purse seines. We will need to investigate other alternatives for bycatch mitigation of Indo-Pacific bottlenose dolphins in purse seines.

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

Local fishers who participated in the bycatch mitigation trials installed pingers on their fishing gear and provided data on whether these nets were depredated, any bycatch occurrences, and their fish catch data on a regular basis. These fisher participants have benefitted from the reduction of their bycatch and depredation by Indo-Pacific humpback dolphins in their driftnets. This reduces their opportunity costs as they can reduce the time, effort and money spent to either repair or replace their damaged nets when there is depredation or releasing or removing the bycaught cetaceans in their fishing nets. Some of these fishers have also recommended the use of pingers to their other fisher friends with bycatch and/or depredation issues of Indo-Pacific humpback dolphins.

5. Are there any plans to continue this work?

Yes, we are still continuing this work with more driftnet fishers in Perak and they will be given with more acoustic pingers for fishers' other driftnets so that we can monitor for longer period to see if habituation would occur for Indo-Pacific humpback dolphins. We also hope to expand to other states in Peninsular Malaysia as there may be behavioural differences in different cetacean populations.

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

After conducting more trials with fishers, we plan to submit a technical report to the Department of Fisheries Malaysia to provide science-based evidence for the decision makers, and so that the use of acoustic pingers can be expanded to other states in Peninsular Malaysia, especially areas with high bycatch risks of Indo-Pacific humpback dolphins. We also plan to publish the findings in peer-reviewed journals and share the findings with our marine mammal colleagues in scientific conferences.

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

The most important first steps would be to continue pinger trials especially in areas with high Indo-Pacific finless porpoise bycatch so that we better understand if the pingers are effective to reduce bycatch of finless porpoises or if we need to consider

other alternatives for bycatch mitigation methods. We will be working with more fishers in northern Perak (e.g. Tanjung Piandang) who have more bycatch of finless porpoises.

We also hope to engage more fishers in other parts in Peninsular Malaysia with cetacean bycatch and depredation issues to trial these acoustic pingers.

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?

The write-up about the bycatch mitigation project funded by The Rufford Foundation and Rufford Foundation logo were included in MareCet's SiGHTINGS 2022 newsletter (<https://www.marecet.org/newsletter>).

The Rufford Foundation was also mentioned in MareCet's updates about the bycatch mitigation project on our social media platforms (e.g., Facebook).

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

1. Dr. Kuit Sui Hyang leads the acoustic pinger trials with local fishers and boat-based surveys to record visual and acoustic data during the pinger trials.
2. Dr. Louisa Ponnampalam provides technical advice for the project, and provides support during fieldwork especially on visual observation of cetacean behaviour.
3. Dr. Saliza Bono is responsible for the acoustic components of the project and deploying the acoustic equipment to record the vocalizations and anthropogenic sounds during survey and analyse the acoustic recordings.

10. Any other comments?

Thank you for the initial funding provided by The Rufford Foundation. We hope to be able to continue this project and work with more fishers to reduce their bycatch and depredation in their fishing gears for conservation of marine mammals in Malaysia.