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Status report update on the Cetacean Bycatch Mitigation Project in Peninsular Malaysia

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Status report update on the Cetacean Bycatch Mitigation Project in Peninsular Malaysia

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Interviews and boat-based surveys conducted between 2013 and 2017 and Bycatch Risk Assessment (ByRA) in Matang have identified that gillnets and driftnets were the main fishing gears inshore that entangled Indo-Pacific humpback dolphins (*Sousa chinensis*) and Irrawaddy dolphins (*Orcaella brevirostris*) the most, whereas trawls were the more fatal gear offshore that entangled mostly Indo-Pacific finless porpoises (*Neophocaena phocaenoides*) in Matang, Peninsular Malaysia (Kuit & Ponnampalam, 2021). With the award of the Rufford Small Grant in mid-2022, MareCet commenced a marine mammal bycatch mitigation project to identify bycatch mitigation methods and specifications that are proven to be effective at reducing bycatch of the three focal cetacean species; all while not greatly affecting the fishers' target catch. The project is trialing the use of acoustic pingers on driftnets targeting threadfins to mitigate bycatch of Indo-Pacific humpback dolphins (primarily) and Irrawaddy dolphins. There are also plans to collaborate with the Department of Fisheries Malaysia to develop and test prototypes of a Bycatch Reduction Device (BRD), which is similar to Turtle Excluder Devices (TEDs), mainly for finless porpoises that are caught in trawl nets. Fish catch yield surveys for fisher participants will also be conducted, and time-lapse cameras will also be installed on trawlers to monitor cetacean bycatch from mid-2023 onwards.

The pilot sites for the acoustic pinger trials on Indo-Pacific humpback dolphins (hereafter referred to as humpback dolphins) and Irrawaddy dolphins are in Kuala Sepetang and Kuala Sangga in Perak, and Kuala Perlis, in Perlis, on the northwestern coast of Peninsular Malaysia. Reconnaissance trips were conducted in July 2022 to introduce the bycatch mitigation project to local fishers in Kuala Sepetang, so as to recruit fishers who are willing to test out the use of acoustic pingers on their fishing nets (Figure 1).



Figure 1. A local fisher in Matang who is willing to test the use of acoustic pingers. He is seen here trying to attach the pingers on his fishing net during the reconnaissance trip in July 2022

The pingers that are being trialled on humpback dolphins and Irrawaddy dolphins for gillnets and driftnets in this project are the 125 dB and 145 dB pingers at 1 m distance that were developed by Fishtek Marine Limited. The randomized pings have randomized intervals between 4 to 12 seconds, with frequencies in random order between 50 to 125 kHz for the 125 dB pingers, and between 50 to 120 kHz for the 145dB pingers. The plan was to record the visual and acoustic behaviour of the dolphins during boat-based observations for at least 10 minutes when dolphins would appear to approach the fishing nets and remove fishes from the nets before a pinger is deployed at a depth of approximately 2 m. Two units of Hydromoth (acoustic recorders) were also mounted to a metal plate and tied to a fishing buoy to be deployed at a depth of approximately 2 m to record the acoustic behaviour of the dolphins towards the pinger. However, during pinger trial surveys with fishers using 4-inch mesh driftnets targeting threadfins in July and September 2022, dolphins were not found to approach the driftnets, and the catch mostly consisted of mackerels instead of threadfins.



Figure 2. MareCet team members preparing the acoustic pingers and Hydromoth (acoustic recorders) to be deployed near dolphin sightings

In February 2023, the two co-authors here visited the Marine Research Foundation (MRF) in Sabah for a learning exchange to learn about their projects on bycatch mitigation of sharks, rays, and sea turtles. It was a good learning experience, especially on how the Turtle Excluder Devices (TEDs) were built, and how solar-powered time-lapse cameras were installed and serviced on trawlers to monitor bycatch of sharks and rays on trawlers (Figure 3). In February 2023, SH Kuit also participated in MRF's TED workshop with fishers in Pontian, Johor to observe how the workshop was conducted. The site visits were useful to serve as a guideline to help us further improve our future work when conducting BRD workshops with fishers and installing and servicing time-lapse cameras on trawlers to monitor for bycatch of marine mammals.



Figure 3. Both co-authors trying their hand at climbing the trawler's boom to install the solar-powered cameras on a trawler in Kudat, Sabah

During boat-based surveys in March 2023, the fishers in Kuala Sepetang that we are working with to trial pingers were not fishing for threadfins as they said that it was not the ideal season to target for threadfins. Nevertheless, a few pinger trials were conducted during boat-based surveys when Indo-Pacific humpback dolphins and Irrawaddy dolphins were sighted and were observed to be feeding, and generally remained in the same area, to observe their reaction towards the acoustic pingers (Figure 4). Indo-Pacific humpback dolphins appeared to be initially curious about the pinger for the first 5-10 s by swimming towards it, and thereafter the dolphins would swim away to at least 200 m away from the pinger before resuming their activity. This suggests that the pings from the pinger are within the hearing range of the Indo-Pacific humpback dolphins and the animals would swim farther away from the pinger so that the pings are less loud to their hearing. However, more trials and observations are needed especially during the season for threadfins when depredation is most likely to occur, to determine if the pingers are enough to deter humpback dolphins that are depredating fishers' driftnets, so that they stay slightly away from the fishing nets to reduce their bycatch risk. More pinger trials are also needed to determine if habituation by dolphins to the pingers will eventually occur.



Figure 4. Pinger trial testing in Matang, Perak, during dolphin sightings when boat-based surveys were conducted in March 2023

Moving forward with the award of the Yayasan Hasanah grant, 12 monthly boat-based surveys will be conducted from June 2023 onwards to continue pinger trials with more fishers. After the initial stage of dolphins' behavioural and acoustic observations towards the acoustic pingers, selected fishers will be issued the pingers to trial them out while fishing, and fish catch yield surveys will be conducted more frequently. Additionally, fishers' feedback on the impacts of the pingers installed on their nets on the dolphins' depredation and bycatch will be collated. Workshops with local fishers will be conducted in several other parts of Perak to recruit gillnet/driftnet and trawl net fisher participants to the bycatch mitigation trials. The production of the time-lapse cameras has also been initiated, to be installed on the back of trawlers to monitor marine mammal bycatch in trawl nets. A meeting with the Department of Fisheries Malaysia is scheduled in mid-April 2023, to discuss a strategic partnership to co-develop and trial prototypes of a BRD.

Reference

Kuit, S. H. & Ponnampalam, L. S. (2021). Cetacean Bycatch Risk in Gillnets and Trawls in Matang, Peninsular Malaysia. Paper SC/68c/HIM/08 presented to the Scientific Committee of the International Whaling Commission, Cambridge, UK.