

Continuation of Galapagos shark research

Shark researchers Dr. Jonathan Mitchell and Dr. Victoria Camilieri-Asch from the University of Western Australia will be return to the Lord Howe Island Marine Park (LHIMP) in November to continue the research on Galapagos sharks started in 2018.

During their last trip, the researchers tested three commercial shark deterrent devices to assess if they are effective at preventing Galapagos sharks from taking bait. The goal of this research is to identify techniques that will help local fishers reduce shark bycatch and depredation (where sharks eat hooked fish).

The three deterrent devices tested (Rpelx, Fishtek SharkGuard and Sharkbanz Zeppelin) work by creating a strong electromagnetic field, which sharks are highly sensitive to. These devices are mounted close to the bait so that when a shark approaches, it is overwhelmed by the strong stimulus and turns away. Only cartilaginous fish like sharks and rays possess this electro sensory system, so bony fish including kingfish and other target species are not affected.



Scientific testing of shark deterrent devices in the Lord Howe Island Marine Park, showing active and inactive control devices mounted close to a bait bag. Photo credit DPIRD.

To ensure accurate results the devices were tested in a scientific way, using an underwater camera rig to record shark behaviours around the bait and deterrent devices. The footage was analysed to see how quickly and frequently sharks took the bait with an active deterrent device, compared with an inactive control device. Other behaviours were also recorded, such as when sharks approached the bait but then rapidly turned away before touching it, had eye twitches or muscle spasms in response to the electrical field stimulus, or nudged the bait with their body.

Preliminary results showed that the Rpelx and Fishtek devices substantially reduced the number of times sharks took the bait compared with control devices. Following from the controlled experiments, the next step is to deploy these two promising devices with charter fishing operators to test them in a real fishing scenario.

The team will also undertake annual servicing of the acoustic array (listening stations deployed in the marine park) to download detection data from tagged Galapagos sharks and yellowtail kingfish. This provides new information on how the sharks and kingfish use different areas of the marine park and whether their movement patterns overlap with fishing activity.

Based on previous research findings published in 2021 that was informed by expert advice from local anglers, fishers can also minimise their interactions with Galapagos sharks by:

- avoiding identified hotspot areas of overlap between shark presence and fishing activity
- regularly moving fishing locations (e.g. every 30 mins)
- using lures or jigs instead of bait
- using handlines or electric reels to retrieve fish faster and,
- fishing deeper than 100m or shallower than 30m to avoid the main depth range where Galapagos sharks spend more time.

It is also recommended that fishers bring their fish waste back to land with them, to dispose of at the tip as compost. Dumping fish waste in fishing and anchorage areas attracts sharks and encourages boat following behaviour.

View the full report with recommendations at the following link:

<https://parksaustralia.gov.au/marine/management/resources/scientific-publications/galapagos-shark-movement-patterns-and-interactions-with-fishing-vessels-in-the-marine-parks-surrounding-howe-island/>

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Dr. Jonathan Mitchell and Dr. Victoria Camilieri-Asch with the camera rig used to record shark behaviour around deterrent devices. Photo credit DPIRD.