

QSCP Hook and Bait Experiments

Background

The QSCP currently has 383 drumlines to capture sharks along the Queensland coast. These typically use a standard Mustad 14/0 shark hook. These hooks are normally baited with sea mullet and sometimes shark flesh but the QSCP periodically tests alternative hook designs and baits to be more selective in the capture of potentially dangerous shark species, whilst trying to minimise the bycatch of non-target species. During the proposed research experiments different hooks and baits will be assessed. Each experiment will initially involve between 35 and 54 drumlines. Given low catch rates of sharks and bycatch that typify the program, this level of effort will require at least 3 years of data collection before we will be able to determine whether a particular bait/hook has a statistically significant effect on target and bycatch species. In the past we have sometimes found that other logistic problems (such as failure of the baits to remain on hooks or workplace health and safety concerns) have resulted in the early termination of some experiments.

The research does not seek to add fishing gear or increase in any way the numbers of animals that are taken by the QSCP. It merely recognises that some of the existing equipment will be modified slightly, and also be under greater scientific scrutiny to ensure that maximum benefit is gained from the capture of target and bycatch species. There will be dedicated observation of animal behaviour by contractors and scientists, although this will not involve any intervention other than the recording of animal behaviours around QSCP equipment.

Objectives

1. To determine the effectiveness of stingray baits compared to mullet baits (current standard bait) to catch large, potentially dangerous shark species and reduce the by-catch of non-shark species.
2. To determine the effectiveness of Mustad circle hooks compared to Mustad "J" type hooks (current standard hook type) to catch large, potentially dangerous shark species and reduce the by-catch of non-shark species.

Methods

The hook comparison experiment will be conducted at the Townsville Shark Control area (total 54 drumlines) and the bait comparison experiment will be conducted at the Stradbroke Island area (total 35 drumlines) and Capricorn Coast area (total 54 drumlines).

Bait size will be standardised as much as possible and contractors will record catches as they normally do as part of their servicing protocols. It will be important to ensure that a catch is recorded accurately against the particular drumline number. Contractors will also record whether there is any bait left on the hooks when they are rebaited while observations will also be recorded about the condition of the experimental and standard hooks (wear and tear). This will require the collection of additional data by the contractor.

Initially the standard bait or hook type will be placed on even numbered hooks while the treatment hook or bait will be used on odd numbered drumlines. Effectively this means that experimental hooks and baits will be used alternatively in sequence. When drumlines are changed the order of the control and treatment hook or bait will be replaced. Effectively this means that the same bait is used on the same hook between each drumline change. QSCP observers (who accompany contractors on approximately 10% of trips) will check that experimental protocols are being adhered to by contractors.

In addition to modification of existing gear and the monitoring of catch rates, behavioural observations will also be made in the wild on animals that are attracted to the drumlines. This will involve videotaping and direct observation of animal behaviour around gear whenever interesting behaviours are seen by contractors during their normal servicing operations. These observations will take place from the shark contractor's vessel and will not involve divers in the water.

This research was endorsed by the Scientific Working Group on 5 April 2018. The meeting minutes are available on the Department's website.

<https://www.daf.qld.gov.au/business-priorities/fisheries/shark-control-program/shark-control-program-scientific-working-group/shark-control-program-meeting-minutes>

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QSCP Retention of Deceased Specimens for Research and Teaching Purposes

Background

The Queensland Shark Control Program (SCP) aims to reduce the possibility of shark attacks on humans in Queensland. The main method of achieving this is by the removal of large and potentially dangerous sharks in the immediate vicinity of 85 popular beaches along the Queensland coastline.

Target shark species are humanely euthanised (if required) prior to disposal at sea as standard practice in the program. Non-target species (sharks and other species) are released alive if possible. If a non-target species dies in program apparatus it is also disposed of at sea.

Data is collected on target and non-target animals captured in the Program.

This project aims to maximise the use of deceased specimens for research and teaching purposes. Deceased specimens may be provided to researchers who are appropriately permitted to possess them for a range of scientific purposes.

The proposed research does not seek to increase the quantity of apparatus deployed and is not expected to increase the impact of the Program on marine species. Non-target species will continue to be released alive if possible. The utilisation of deceased animals for research purposes will add to our scientific knowledge base.

Objectives

1. To verify the accuracy of species identification by SCP contractors. Species identification can be difficult at sea. In some cases it may be beneficial to retain a whole specimen and obtain expert assistance with identification.
2. To retain deceased specimens for training purposes e.g. species identification training for SCP contractors and Fisheries Queensland staff.
3. To provide deceased specimens to researchers for a range of research purposes. Researchers will need to demonstrate that they are from a recognised research or tertiary institution and that they are appropriately permitted to possess the specimen/s. This would decrease the number of deceased carcasses being disposed of within the Great Barrier Reef Marine Parks whilst not increasing the impact of the program.

Methods

SCP contractors will retain deceased specimens if requested to do so by the Manager, Shark Control Program.

Contractors will be required to record additional information (i.e. specimen/sample number) in their daily log. In addition, a research sample register is required to be maintained by contractors. A register of approved research projects will be maintained by Fisheries Queensland staff. All additional required information is already collected as standard practice.