

Shark Bite-off Program Proposal

Submitted to the Minister for Fisheries by Recfishwest June 2023

Overview

A collaborative approach to addressing shark bite-off in WA through development, adoption and promotion of deterrent technology, education and investment in science.

Program goal

Significantly decrease the incidence of shark bite-off in WA recreational fisheries.

Program objective

Increased adoption of proven shark depredation mitigation techniques by WA fishers.

The Shark Bite-off Problem

Shark bite-off, also called shark depredation, is when a shark partially or completely consumes a fish before it can be brought onboard the boat or once the fish is released. In Western Australia shark bite-off has been a major problem for recreational and charter fishers north of Geraldton for more than a decade and it's increasingly becoming an issue along the lower west coast including in Perth waters. Because of its widespread occurrence and likely impacts on fish stocks, there is increasing concern about shark bite-off from fishers across all sectors, fishery managers, researchers and environmental stakeholders.

The polarising nature of sharks often places the government in a 'no-win' situation with some stakeholders expecting action to reduce shark numbers while others will want sharks to be further protected. A stock assessment of key sharks species is due in late 2023 and this assessment is expected to confirm the increase in shark populations that fishers have been observing for years. A well-designed plan to address shark bite-off in place ahead of the stock assessment release will help guide the direction of public debate on the topic.

Resolving shark depredation will require multiple approaches including improving our understanding of shark populations and behaviour, adoption of emerging deterrent technology and fisher education and behaviour change. This proposal provides a pathway forward that is likely to be supported by all stakeholders. It has a strong emphasis on directly engaging recfishers so that solutions are well understood, and uptake is maximised.

Program scope

Shark bite-off is an issue of national significance and concern. In 2022, the Fisheries Research and Development Corporation (FRDC) held [two National Workshops](#) attended by Recfishwest and DPIRD to better understand the impact and occurrence of bite-offs around Australia. The specific purpose was to identify mitigation options and facilitate a national approach to identify potential next steps in addressing the issue. Each of the high priority recommendations of these workshops are addressed by this proposal.

[Research](#) funded through the Recreational Fishing Initiatives Fund (RFIF) has conclusively demonstrated the use of deterrents can reduce the incidence of depredation by as much as 65%. The results of this research should provide government with confidence that increased investment in both the research and development as well as the uptake of deterrents is a key step towards solving the shark problem.

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This program aims to:

1. Understand and assess the effectiveness of all current and emerging mitigation approaches,
2. Promote positive behaviour change amongst fishers,
3. Normalise the use of deterrents, and
4. Improve deterrent effectiveness.

Methodology

1) Understand and assess the effectiveness of all current and emerging mitigation approaches

Shark bite-off is a complex issue. Approaches to mitigating shark interactions are numerous, wide, and varied. Resolving shark bite-off will also require an understanding and consideration of shark populations and behaviour, social and economic impacts of bite-off, deterrent technology, as well as fisher attitudes and behavioural change.

There is a need to consider current and emerging evidence and draw on a range of expertise to guide program investments to meet the program objective of increased adoption of proven shark depredation mitigation techniques for WA fishers.

A thinktank/expert consultation/multi-stakeholder approach is required to develop a comprehensive and ongoing list of practical mitigation options for WA fishers. This approach will also identify current knowledge gaps or barriers to uptake and adoption of mitigation techniques in a WA context.

2) Promote positive behaviour change amongst fishers

A campaign to promote behaviour change amongst fishers will require education on action that can be taken to reduce bite-off and peer-endorsed behaviours.

- a) Provision of advice on methods to reduce bite off including moving spots regularly, avoiding hot spots, using deterrents, getting the most from your sounder, fishing tips to land more fish, reducing burleying, drifting, trolling distance, cleaning fish and fishing depths.
- b) Promotion of positive behaviours and techniques by well-respected fishing influencers, and in popular fishing forums.

3) Normalise the use of deterrent devices

While deterrents have been proven to work, their uptake has been limited due to a lack of understanding about their use as well as their cost. Addressing these barriers will support the adoption of deterrent technology to become a normalised practice. This proposal aims to achieve this through:

- a) Increasing awareness of deterrent effectiveness, and use
- b) Adoption by fishers / influencers / testing in real life situations
- c) Adding deterrents devices designed for fishing to the government's shark deterrent rebate scheme

3a) Increasing awareness of deterrent effectiveness and use

- Development of comprehensive shark deterrent website with links to tutorials, testimonials, demonstration videos.
- Compilation and publication of a comprehensive list of available deterrents as well as the effectiveness of each deterrent.

- Videos explaining the difference between electronic, magnetic, chemical and sensory deterrents.
- Video tutorials explaining deterrent use in a range of real-life fishing situations.
- Development of a series of extension materials, including for use on water.

3b) Adoption by fishers / influencers / testing in real life situations

- Mass testing of deterrents in real life situations by both recreational and charter fishers with deterrents made freely available to selected fishers, fishing clubs, recreational fishing personalities and charter operators.
- DPIRD experts to assist in designing a robust experimental approach to support a community-based mass testing program as well as adequate administration, data collation and reporting.

3c) Adding recreational fishing shark deterrents to the government's shark deterrent rebate scheme

- A flat rebate rate of fixed proportion of deterrent cost added to and operated under existing shark deterrent rebate scheme.
- Proven devices to be immediately added to the scheme (Sharkbanz and Ocean Guardian) with other devices added once verified by DPIRD to be effective.

4) Improve deterrent effectiveness

The development of shark deterrents has progressed significantly over the last 10 years and there are several deterrents currently in various stages of design and testing. It is imperative that further development of deterrents is encouraged to improve effectiveness, reduce production costs and enhance usability. All deterrent ideas and concepts should be identified, developed, and tested.

4a) Identify deterrent technologies and approaches – under method 1 above.

- Establish a thinktank of scientists, innovators, international experts, inventors and shark experts to identify new and emerging deterrent technologies and possible approaches to addressing bite-off worth investigating.
- Identify science needs required for deterrent testing and standardise testing methodologies.

4b) Development of deterrents

- Seed funding to support bringing new deterrents to market.
- Link deterrent developers and manufactures to end-users to ensure deterrents developed meet end-user needs.
- Support options for mass production of deterrents lowering price barriers.

4c) Testing of Deterrents

- Support to test new deterrents as they become publicly available.
- DPIRD to provide scientific rigor to ensure deterrent testing is comparable.
- Facilitate end-users to collect information on shark bite-off (species, times, severity etc).
- Retest existing deterrents as designs and methods of operation change.

Estimated level of investment

This proposal will require a multi-year funding commitment from the WA Government with an estimated total of \$3 million dollars over three years and will also look to leverage additional funding from the Recreational Fishing Initiatives Fund, the FRDC and partner organisations.

Recfishwest supports an additional contribution from the RFIF of \$300,000 towards initial program costs.

When considering the significance of the impact shark bite-off is having on recreational, charter and commercial fishing experiences and the multibillion dollars fishers injected into our economy each year, the size of the proposed investment is small. That said, this amount reflects the level of investment required to make a real start towards solving the problem. It should be noted final program costs will be determined when refining the program should the government have an appetite in supporting the program.

Program oversight

A program steering committee would be established consisting RFW, DPIRD managers/researchers, local fishers, shark experts, WAFIC, the conservation sector, and communications experts to guide investment in program activities and to maintain a focus on the program objective.

Program timeframe

This program could commence immediately upon a commitment of Government support. Once initiated, and with proper governance and oversight, the program should run for three years then be reviewed.