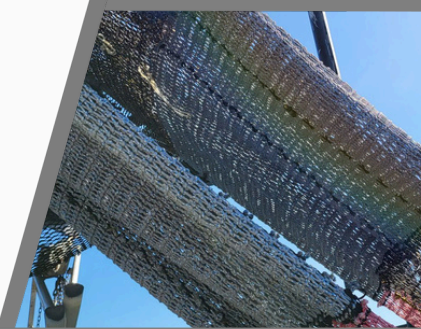
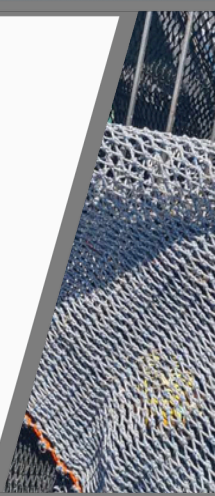
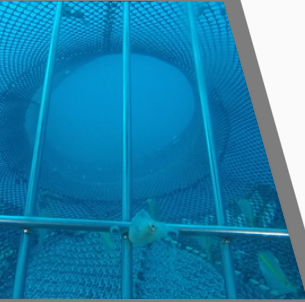
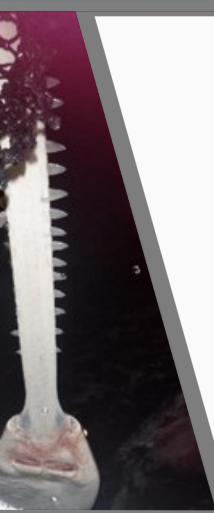




# 'NPF Sawfish Mitigation Workshop Report'

13th November 2025  
Brisbane  
FRDC Project No 2025-034



© 2025 NPF Pty Ltd and Fisheries Research and Development Corporation.

All rights reserved.

NPF Sawfish Mitigation Workshop

FRDC Project 2025-034

Ownership of Intellectual property rights

Unless otherwise noted, copyright (and any other intellectual property rights, if any) in this publication is owned by the Fisheries Research and Development Corporation

This publication (and any information sourced from it) should be attributed to Jarrett, A., Meteyard, B. and I. Knuckey (2026). NPF Sawfish Mitigation Workshop NPF Pty Ltd, Queensland, 2026. [CC BY 4.0]

Creative Commons licence

All material in this publication is licensed under a Creative Commons — Attribution 4.0 International, save for content supplied by third parties, logos and the Commonwealth Coat of Arms.



Creative Commons — Attribution 4.0 International is a standard form licence agreement that allows you to copy, distribute, transmit and adapt this publication provided you attribute the work. A summary of the licence terms is available from <https://creativecommons.org/licenses/by/4.0/> The full licence terms are available from <https://creativecommons.org/terms/> .

Inquiries regarding the licence and any use of this document should be sent to: [frdc@frdc.com.au](mailto:frdc@frdc.com.au)

Disclaimer

The authors do not warrant that the information in this document is free from errors or omissions. The authors do not accept any form of liability, be it contractual, tortious, or otherwise, for the contents of this document or for any consequences arising from its use or any reliance placed upon it. The information, opinions and advice contained in this document may not relate, or be relevant, to a readers particular circumstances. Opinions expressed by the authors are the individual opinions expressed by those persons and are not necessarily those of the publisher, research provider or FRDC.

The Fisheries Research and Development Corporation plans, invests in and manages fisheries research and development throughout Australia. It is a statutory authority within the portfolio of the federal Minister for Agriculture, Fisheries and Forestry, jointly funded by the Australian Government and the fishing industry.

Researcher Contact Details		FRDC Contact Details	
Name:	Annie Jarrett	Address:	25 Geills Court
Address:	PO Box 756 Caloundra Qld 4551	Phone:	Deakin ACT 2600
Phone:	+61 0411426469	Email:	02 6122 2100
Email:	ceo@npfindustry.com.au	Web:	frdc@frdc.com.au <a href="http://www.frdc.com.au">www.frdc.com.au</a>

In submitting this report, the researcher has agreed to FRDC publishing this material in its edited form.

## Acknowledgements

*The Traditional Owners of the land, sea and waters across Australia are respectfully acknowledged, including the Yuggera and the Turrbal People on whose land the workshop was held. We acknowledge the continuing connection that First Nations Peoples have to their culture and pay our respects to Elders past and present and emerging.*

NPF Industry Pty Ltd would like to acknowledge all those who contributed to shaping this report including all workshop participants and Dr. Ian Knuckey, Fishwell for his workshop facilitation and assistance with preparing this report. This workshop wouldn't have been as successful but for all of the work undertaken by AFMA, NPFI, CSIRO and NPF fleet managers to ensure that the information needed was provided in the form of fact sheets and presentations to facilitate tangible workshop outcomes.

In particular, we thank the NPF fleet managers and skippers who attended the workshop and provided their experience and hard-earned knowledge of the practical means of reducing sawfish interactions with trawl fishing gear.

NPFI expresses appreciation to the Fisheries Research and Development Corporation (FRDC) for funding support for this workshop.

# Contents

<b>Acknowledgements</b> .....	<b>ii</b>
<b>Executive Summary</b> .....	<b>v</b>
<b>Introduction</b> .....	<b>1</b>
<b>Objective</b> .....	<b>1</b>
<b>Methods</b> .....	<b>1</b>
<b>Workshop Proceedings</b> .....	<b>2</b>
Workshop Opening .....	2
<b>Background</b> .....	<b>3</b>
NPF Sawfish Management Requirements .....	3
<b>Outcomes of Sawfish Research Projects</b> .....	<b>4</b>
NPF Industry gear mitigation trials .....	4
CKMR Population Estimates.....	8
<b>Sawfish Interactions Data</b> .....	<b>10</b>
<b>Fact Sheets and Workshop Presentations</b> .....	<b>12</b>
Outcomes of Working Group Discussions.....	13
Areas Of Concern / Priorities .....	13
Potential Management / Mitigation Options .....	17
Research Gaps / Further Required Research .....	20
<b>Monitoring and Research Priorities</b> .....	<b>22</b>
<b>Recommendations &amp; Next Steps</b> .....	<b>23</b>
1. Implement the Phased Rollout of Gear Mitigation Options .....	23
2. Strengthen Monitoring to Assess Effectiveness and Maintain Compliance .....	24
3. Support Ongoing Research to Reduce Uncertainty in Population Assessments .....	24
4. Develop and Finalise Operational Guidance .....	24

5. Maintain Strong Industry-Science Collaboration .....	24
<b>Implications .....</b>	<b>24</b>
<b>Extension and Adoption .....</b>	<b>25</b>
<b>References/Projects .....</b>	<b>25</b>
<b>Abbreviations .....</b>	<b>26</b>
<b>Appendix 1 – Agenda .....</b>	<b>26</b>
<b>Appendix 2 - Fact Sheets .....</b>	<b>28</b>
NPF Sawfish Gear Research .....	28
NPF Sawfish Interactions Data .....	32
NPF Sawfish Management Requirements .....	36
<b>Appendix 3 – Group Questions .....</b>	<b>42</b>
S1. Areas of concern / priorities to be addressed.....	42
S2. Potential management /mitigation options .....	43
S3. Research gaps / further required research .....	44

## Executive Summary

The Northern Prawn Fishery (NPF) Sawfish Mitigation Workshop convened 26 skippers, industry leaders, scientists, managers, CSIRO researchers, AFMA, FRDC, DCCEEW and NPF representatives to identify practical, cost-effective measures to reduce sawfish interactions in the NPF.

Sawfish species are listed under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) as follows:

- Green sawfish (*Pristis zijsron*) and Dwarf Sawfish (*Pristis clavata*) are listed as Vulnerable and Migratory.
- Largetooth Sawfish (*Pristis pristis*) is listed as Endangered and Migratory.
- Narrow sawfish (*Anoxypristis cuspidata*) is listed as Migratory.

Commercial fishing has been identified as one of the key threats to sawfish populations in Northern Australia. The workshop addressed the key regulatory and certification obligations under the EPBC Act Wildlife Trade Operation (WTO) conditions and Marine Stewardship Council (MSC) standards, which require the fishery to demonstrate it does not impede recovery of Narrow Sawfish (*Anoxypristis cuspidata*), Green Sawfish (*Pristis zijsron*), Dwarf Sawfish (*Pristis clavata*), and Largetooth Sawfish (*Pristis pristis*).

Participants reviewed comprehensive data on sawfish interactions, including long-term AFMA observer, crew member observers (CMOs), and logbook analyses; multi-season gear-trial results for Small-Bar-Spacing Turtle Excluder Device (SBS TED) development; three years of structured throat-mesh trials; and the first CKMR (close kin mark recapture)-based population estimates for Narrow Sawfish. These were complemented by extensive underwater footage enhancing understanding of sawfish behaviour around trawl gear.

Across data sources, a consistent pattern emerged: the codend is the highest-risk zone for sawfish interactions. Approximately 85% of sawfish within the codend are deceased, making codend exclusion the most effective mitigation strategy. The adjacent 0–2 m zone forward of the TED, where rostra commonly entangle in mesh, is the second critical hotspot. Mortality is approximately 40% when fouling occurs but drops substantially when avoided. Both areas present significant mitigation opportunities.

Evidence demonstrated that two gear modifications, the 70-mm SBS TED (SBS-TED 70) and thicker throat mesh (grey and ruby Magnet mesh), offer the most immediate benefits. The SBS-TED 70 effectively reduces large animal codend entry, enhances escape of small sawfish and proxy species, and preserves prawn catch and quality. Trials with thicker throat mesh recorded zero sawfish interactions, which suggests this material eliminates rostrum fouling without detectable prawn loss. Together, these measures address the primary mortality zones identified. However additional trials and broader data collection across a wider range of vessels/fishing areas are required to quantify the extent to which these gear types reduce sawfish interactions.

Population-level science, particularly preliminary CKMR estimates, suggests Narrow Sawfish populations have a relatively large adult population, but uncertainty remains due to the low number of kin-pairs detected. While this is a positive sign as it indicates that the population is likely not to be very small, it

means that significantly more samples are required to be able to produce useable population estimates. The workshop strongly endorsed continued CKMR sampling, tagging, electronic monitoring (EM) enhancements, and sustained CMO and observer programs to support future assessments and compliance with WTO and MSC requirements.

Breakout groups consistently prioritized preventing codend entry and reducing TED-area entanglement over spatial or temporal management measures, noting sawfish mobility and current spatial data limitations make move-on rules or closures impractical.

**Key findings of the workshop were:**

- Gear-based solutions were identified as the most feasible, evidence-based, and immediately actionable approach.
- Participants unanimously supported combining SBS-70 TEDs, reinforced throat mesh, and phased implementation as a balanced, cost-effective strategy that mitigates sawfish risk while sustaining fishery viability and certification.
- A clear implementation pathway was agreed upon: voluntary trials in 2026; 50% fleet adoption of SBS-70 TEDs during the 2026 tiger and 2027 banana prawn seasons; and full mandatory fleet adoption in the 2027 tiger prawn season. This phased approach mirrors previous successful NPF rollouts, facilitates side-by-side gear comparisons, allows skipper familiarisation, and ensures sufficient data collection for regulatory and certification validation. It was agreed voluntary trials of the thicker throat mesh will continue in 2026. If results continue to show a reduction in fouling, this material will be considered for implementation alongside the SBS-TED 70.
- Ongoing monitoring and research priorities to support implementation were identified, including genetic sampling, periodic CKMR updates, enhanced EM (potentially incorporating AI for large ETP species identification), underwater video analyses, and continued tagging to refine survival and movement estimates.
- Broad support for a collaboratively developed sawfish safe-handling and release protocol received to improve post-capture survival and crew safety.

Overall, the workshop successfully integrated scientific evidence, operational experience, and regulatory context to develop a practical, defensible sawfish mitigation strategy. The strong industry engagement reflects a shared commitment to enhancing environmental performance while maintaining a profitable, sustainable NPF.

*Keywords*

**Sawfish, Northern Prawn Fishery, TEDs, Grids**

## Introduction

Sawfish remain one of the most significant ecological considerations for the Northern Prawn Fishery (NPF), reflecting both their threatened status under the EPBC Act and the fishery's long-running interaction with several species, including Narrow Sawfish (*Anoxypristis cuspidate*), Green Sawfish (*Pristis zijsron*), Dwarf Sawfish (*Pristis clavata*) and Largetooth Sawfish (*Pristis pristi*).

Sawfish species are listed under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) as follows:

- Green sawfish (*Pristis zijsron*) and Dwarf Sawfish (*Pristis clavata*) are listed as Vulnerable and Migratory.
- Largetooth Sawfish (*Pristis pristi*) is listed as Endangered and Migratory.
- Narrow sawfish (*Anoxypristis cuspidata*) is listed as Migratory.

Commercial fishing has been identified as one of the key threats to sawfish populations in Northern Australia. Interaction patterns across northern Australia are better understood today than at any point in the past, largely due to improvements in logbook accuracy and long-term investment by industry in scientific observers, crew member observers (CMOs), CSIRO research projects and targeted gear trials.

The Sawfish Mitigation Workshop for the Northern Prawn Fishery (NPF) was convened on 13 November 2025 at the View Hotel in Brisbane. The workshop brought together industry representatives, skippers, scientists, managers, AFMA staff, CSIRO researchers, FRDC, DCCEEW and NPF Industry members to focus on identifying practical and cost-effective measures to reduce interactions between sawfish and commercial prawn trawl operations. The overarching aim was to evaluate practical, cost-effective management and gear-based solutions for inclusion in the developing NPF Sawfish Mitigation Strategy, with an emphasis on improving escapement, lowering interaction rates, and contributing to the long-term sustainability and recovery of sawfish populations. The workshop brought these threads together to consider how sawfish interactions occur, what the most promising mitigation options are, and where future innovation should be directed.

## Objective

The objective of the workshop was to *'Identify practical, cost-effective mitigation measures to reduce the impacts of commercial prawn trawl fishing on endangered or migratory species of sawfish in the Northern Prawn Fishery for inclusion in the NPF Sawfish Mitigation Strategy'*.

## Methods

The following methods were adopted to facilitate effective implementation and delivery of the NPF Sawfish Strategy Workshop:

- An independent facilitator, Dr. Ian Knuckey was engaged to chair and moderate the workshop
- The workshop agenda and fact sheets on sawfish management requirements, results of NPF Industry gear mitigation trials and NPF sawfish mitigations data were collated and distributed to all attendees by AFMA in advance of the workshop.
- Plenary session presentations on key topics were provided by AFMA, NPFI, CSIRO and NPF fleet masters
- A mix of plenary and working group sessions was used to engage participants in discussions
- Workshop participants were each allocated to one of four (4) working groups comprised of a mix of industry, government and research members.
- Working groups addressed a range of questions classified into three main sections: S1. Areas of concern / priorities; S2. Potential management /mitigation options; and S3. Research gaps / further required research.
- Working group discussions were synthesised and results presented by Dr. Knuckey in the second half of the workshop, followed by a plenary session aimed at identifying key actions and outcomes.

All working group reports were provided to workshop organisers to assist in development of this report. A summary of the working group discussions is provided at [‘Outcomes of Working Group Discussions’](#).

## Workshop Proceedings

### Workshop Opening

Dr. Ian Knuckey, Workshop Facilitator, opened the workshop with an Acknowledgement of Country and welcomed all participants. The workshop opening included remarks outlining the purpose and objectives, intended outcomes, and overall structure of the day and acknowledgement of Fisheries Research and Development Corporation (FRDC) funding. This set the foundation for a collaborative and solutions-focused approach, ensuring that all participants were clear about the workshop’s purpose and the role each session would play in moving toward an agreed mitigation pathway.

### Participants

Name	Organisation
Ian Knuckey	Workshop Facilitator
Bryan Van Wyk	Industry/ NPRAG/MAC member
Ian Boot	Industry/NPRAG/MAC member
Annie Jarrett	NPFI CEO/RAG IP
Brandon Meteyard	NPFI Projects Manager/ Presenter
Dylan Prendergast	Industry (Austral Fisheries)
Dion Buktenica	Industry (Austral Fisheries)
Ben O'Reilly	Industry (Austral Fisheries)
Dwayne Klinkhamer	Industry expert (ex Austral)

Beau Anderson	Industry (Raptis Fishing Co)
Mark Robson	Industry (Raptis Fishing Co)
Geoffrey Muldoon	NORMAC Conservation member
Geoff Richardson	NORMAC Chair
Rik Buckworth	NPRAG member
Gary Fry	CSIRO
Denham Parker	CSIRO
Rich Pillans	CSIRO presenter
Eva Plaganyi	CSIRO - MICE project
Darci Wallis	AFMA RAG member presenter
Brodie Macdonald	AFMA MAC member
Lauren Crowley	AFMA RAG EO
Ben Liddell	AFMA SO
Adrienne Laird	FRDC
Steve Eayrs	FRDC
Jodie Mehrtens	DCCEEW
Toby Patterson	CSIRO Presenter - by TEAMS

**Table 1. Names and affiliations of workshop participants**

## Background

### NPF Sawfish Management Requirements

The first plenary session outlined the regulatory and policy framework for sawfish management in the Northern Prawn Fishery (NPF). AFMA and NPFI summarised the fishery’s obligations under Marine Stewardship Council (MSC) certification and Wildlife Trade Operation (WTO) approval under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act), which require demonstration that trawl operations do not hinder the recovery of threatened and migratory sawfish species. The session reviewed relevant EPBC Act and IUCN listings, AFMA bycatch policies, and the broader legislative context shaping mitigation requirements.

The session summarised Commonwealth bycatch management principles and available mitigation tools, emphasising proportional, risk-based, and adaptive responses, including gear modifications, operational measures, targeted vessel-level actions, enhanced monitoring, and spatial or temporal controls. Participants agreed that an initial, coherent suite of measures should be implemented and refined over time, rather than introducing multiple measures simultaneously.

AFMA outlined the proposed strategy development process and timeline, including consideration by NPRAG in early 2026, stakeholder review of a draft strategy between February and May 2026, endorsement by NORMAC, and publication by 30 June 2026 to meet MSC and WTO requirements.

Discussion highlighted challenges with species-level reporting under current Electronic Monitoring (EM), cumulative pressures on sawfish beyond the NPF, and uncertainty in demonstrating the “not hindering recovery” standard where data are limited. AFMA noted that these issues are under active consideration and emphasised the importance of continued industry and stakeholder engagement throughout 2026.

## Outcomes of Sawfish Research Projects

### NPF Industry gear mitigation trials

Brandon Meteyard presented outcomes from the Northern Prawn Fishery (NPF) gear mitigation research trials. A Google Earth spatial analysis of NPF logbook sawfish interaction data (2018–2023) demonstrated that sawfish interactions occur wherever sustained trawl effort is present. This highlighted the central challenge of balancing effective sawfish protection with the ongoing viability of the fishery for vessels, crews, and dependent families. The results of the trials were presented as follows:

#### Mesh Flap Comparison Trial

- Eight vessels towed:
  - Standard black mesh TED flaps (2.6 mm twine) on one side, and
  - Thicker grey “Magnet” mesh flaps (3.9 mm twine) on the other,
  - Over a full year of fishing.
- Primary interaction locations were the throat, codend, and TED region, with similar proportions of interactions occurring in the flaps.
- Total sawfish interactions were lower on the grey mesh side (45) compared to the black mesh side (61), indicating a potential mitigation effect and supporting further targeted trials.
- Seasonal analysis identified differing interaction patterns:
  - Codend interactions were highest during the banana prawn season.
  - Throat and TED/flap interactions were more prevalent during the tiger prawn season.

#### Sawfish Turtle Excluder Device (STED) Trial

- A modified TED (STED) featuring flap-free triangular top opening, and internal meshed guiding funnel to direct prawns into the codend, compared to standard TEDs.
- Flume tank testing produced positive results however sea trials demonstrated the device was unsuitable for NPF commercial operations due to repeated bogging in soft mud, and unacceptable prawn loss ranging from 9–16%.

#### SBS-TED 70 Trial

The SBS-TED 70, a modified TED with reduced bar spacing of 70 mm was trialled by Austral. Results showed:

- A 56.6% reduction in large bycatch and ETP species,

- A 31.25% reduction in sea snake captures (noting a small sample size),
- A 3% increase in prawn catch, and
- A 3% increase in byproduct catch.
- Significant reductions were also observed in common (non-ETP) bycatch:
  - 76.6% reduction in rays (500–700 mm),
  - 32.35% reduction in sharks (400–800 mm),
  - 100% reduction in fish species larger than 680 mm.
- Wedgefish (*Rhynchobatus* spp.) and shovelnose rays (*Rhinobatidae* spp.) were used as proxies for small sawfish.
  - While sample sizes were insufficient for statistical significance, an observed escapement rate of 52% suggests the SBS-TED 70 may reduce the likelihood of small juvenile sawfish entering the codend by facilitating escapement through the TED flap opening.

## Underwater Video Camera Footage Results (Raptis Vessels)

- Three Raptis vessels conducted trials using underwater cameras mounted approximately 600 mm behind the TED.
- Configurations compared included:
  - Grey Magnet mesh flaps,
  - Thicker ruby mesh flaps, and
  - A grey Magnet mesh throat extension immediately ahead of the TED.
- One narrow sawfish interaction was observed in the control (standard) throat mesh.
- No clear flap-related escapement was detected.
- The throat extension showed promise, recording zero sawfish interactions and warranting further investigation.

## Additional 2024 Voluntary Industry Trials

The workshop noted additional voluntary trials conducted during the 2024 tiger prawn season:

- Nine Austral vessels towed SBS-TED 70,
- Two vessels trialled a new composite “FloMo” fabric in the throat and as reinforcement patches in high-risk net areas,
- Raptis trialled an SBS-TED 50 (50 mm bar spacing) aboard the *Dolphin Pearl*.

## FloMo Net Material Trial

- FloMo fabric, originally developed for the New Zealand snapper fishery, was installed in the throat section on two vessels.
- No sawfish interactions or prawn loss were observed.
- Both trials indicated that further material development is required to improve fishing performance before broader deployment in the NPF.

## SBS-TED 50 Trial

The SBS-TED 50 (50 mm bar spacing, reduced from 110 mm) was trialled by Raptis. The trial was discontinued after six fishing days due to commercially unacceptable prawn loss exceeding 11%.

## 2025 Voluntary Industry Gear Monitoring/ Mitigation Trials

Beau Anderson (Raptis) presented results from multi-year trials assessing alternative throat-mesh materials and TED modifications to reduce sawfish entanglement in the NPF. Voluntary trials in 2023 showed reduced sawfish interactions with grey Magnet mesh compared to standard black mesh, prompting structured experimental trials. As follows:

### Throat-Mesh Trials

A 30-mesh section of the trawl throat was replaced with grey Magnet mesh.

Over three tiger prawn seasons comprising 285 fishing days, the 30-mesh thicker throat material trials have produced:

- Zero sawfish entanglements occurred in experimental throat meshes,
- Twelve entanglements occurred in control meshes.

### Small-Bar-Spacing SBS-TED 50 Trials

- Low-cost SBS TEDs with 50 mm bar spacing were developed by modifying existing devices.
  - A 2024 prototype increased weight and reduced prawn catch.
  - A refined 2025 hollow-pipe design performed comparably to standard TEDs over 17 nights of observer coverage.
  - SBS-TED 50 results:
    - Bycatch of large animals (> 700 mm) declined from 221 individuals (standard TEDs) to 20,
    - Minor reductions in cuttlefish catch,
    - Increased sea snake interactions, attributed to limited sampling.

### Overall Findings of Raptis trials

- Thicker throat mesh appears to prevent sawfish rostrum entanglement.
- SBS TEDs reduce large bycatch and limit sawfish entry into the codend.
- Both measures are cost-effective, operationally practical, and supported by commercial-scale trials.

Bryan Van Wyk (Austral Fisheries) framed mitigation efforts within the broader goal of sustainable seafood production while maintaining a viable NPF. Bryan emphasised the importance of practical, achievable mitigation supported by industry. He noted increased skipper participation in research, improved species-

level reporting, and active involvement in gear trials. Bryan attributed the progress made to a collaborative approach recognising skippers as operational experts. Bryan presented the following information:

## Development & Trial Results: SBS-TED 70 s

- Earlier workshops identified codend entry as the primary driver of sawfish mortality.
- Although regulations permit bar spacing up to 120 mm, wider spacing increases sawfish entry risk.
- Austral trialled SBS TEDs with bar spacing reduced to 70 mm, implementing changes incrementally to minimise operational impacts.
- Design added ~5 kg and required flotation adjustments but performed satisfactorily.
- A two-week scientific trial late in the banana prawn season recorded:
  - No sawfish interactions,
  - Maintained or improved prawn catch.

Underwater footage and skipper feedback indicated:

- Improved sponge clearance,
- Reduced grid blockages and prawn loss,
- Reduced bycatch and improved product quality.

## Fleet-Scale Deployment

- SBS TEDs were deployed across approximately half the fleet for comparative assessment and data from ~2,500–3,500 shots showed:
  - Maintained average prawn catch,
  - Reduced bycatch volumes,
  - Improved prawn quality.

## Sawfish Interaction Outcomes

2024 tiger prawn season:

- 76 interactions across 782 fishing nights
- Three codend entries, all in nets with standard TEDs.

2025 tiger prawn season:

- 53 interactions,
- Two codend entries however, one was in the SBS-70-TED net.
- Continued trials of the SBS-TED 70 are required to determine effectiveness.

*Refer: Appendix 2. Fact Sheets - NPF Sawfish Gear Research. Austral 2024 Tigers SBS-TED 70 trial (pge 29)*

## Costs and Adoption

- Estimated fleet-wide implementation cost: ~\$350,000.
- SBS TEDs considered cost-effective, with lower costs for operators able to fabricate in-house.

## Conclusions

- The SBS-TED 70 is a practical and effective mitigation measure.
- Benefits include reduced sawfish mortality risk, lower large-bycatch rates, maintained catch performance, improved product quality, and strong skipper support.
- The design is suitable for broader adoption within the NPF, inclusion in regulatory frameworks, and potential application in other sawfish-interacting fisheries.

## CKMR Population Estimates

CSIRO (Dr Toby Patterson & Dr Rich Pillans) provided an update on sawfish population research, which focussed on Narrow Sawfish, the species most frequently encountered in the NPF. The research integrates genetic, demographic and ecological data to estimate population size, structure and survival.

## CKMR Program Status

- Close-kin mark–recapture (CKMR) uses parent–offspring and sibling relationships to estimate:
  - Adult abundance.
  - Reproductive output.
  - Natural mortality.
  - CKMR requires:
    - Sufficient numbers of high-quality tissue samples (larger populations require more samples).
    - Reliable ageing data.
    - Ageing data for sawfish remain extremely limited. Obtaining dead specimens for age and growth studies would be a way to address this data gap.

## Sampling And Data Quality

- ~750 tissue samples collected across northern Australia, covering most NPF regions.
- After quality screening, ~94% were suitable for CKMR analysis.
- This indicates that tissue sampling procedures are being well adhered to by CMOs and participants in the sampling scheme. However, more samples are required (see below).

## Initial CKMR Findings

- 13 close-kin matches identified from ~700 samples:

- Full siblings, half siblings and parent - offspring pairs were present in the samples
- Low match rate may indicate a relatively large adult population, but uncertainty remains due to the low number of kin-pairs detected. While this is a positive sign as it indicates that the population is likely not to be very small, it means that significantly more samples are required to be able to produce useable population estimates.
- Spatial patterns observed:
  - Full siblings tend to be locally clustered.
  - Parent–offspring pairs more widely distributed.
  - These patterns may reflect biology or uneven sampling, particularly south of Weipa.

## Survival and Tagging Insights

- Based on observer data and satellite tagging:
  - At-vessel mortality for Narrow Sawfish ~50%, strongly size-dependent.
  - Individuals <1.5 m have high mortality; >2 m have much higher survival.
  - Green and freshwater sawfish show higher at-vessel survival (~80%), but interactions are rare.
  - Post-release survival appears very high for tagged individuals.
  - Satellite tagging data shows extensive vertical movement throughout the water column (3–90 m).

## Key Limitations

- Lack of robust ageing data is a major constraint.
- Uncertainty in growth and longevity directly affects CKMR estimates.
- Around half of submitted samples fail quality checks, slowing reductions in uncertainty.

## Preliminary Population Estimates

- Early results suggest a Narrow Sawfish population in the tens of thousands.
- Confidence intervals remain very wide (from a few thousand to >100,000).

Results are indicative, not definitive.

## Future Requirements

- To achieve  $\pm 15\%$  precision for Commonwealth management:
  - At least an additional 800 high-quality samples are required.
  - Samples need to span multiple years and include strong juvenile representation.
  - Continued industry engagement is critical.
    - ~75 additional samples received since the last reporting period.
    - Improved sample numbers, spatial coverage and handling standards remain priorities.

## Sawfish Interactions Data

Brandon Meteyard (NPF) and Gary Fry (CSIRO) presented an integrated analysis of sawfish interactions with trawl gear in the Northern Prawn Fishery (NPF). The analysis draws on:

- More than a decade of CMO, observer and logbook data.
- Several years of targeted underwater video research.

Collectively, these datasets represent the most comprehensive assessment to date of:

- Interaction hotspots within trawl nets.
- Seasonal and spatial patterns of risk.
- Behavioural mechanisms leading to sawfish entanglement.

The evidence base has directly informed identification of gear modifications with the greatest potential to reduce sawfish mortality.

### Key Interaction Hotspots and Mortality:

- Long-term monitoring data (2010–2024) show interactions are highly concentrated in a small number of consistent net locations.
  - Codend:
    - Accounts for approximately 43% of interactions.
    - Associated with the highest mortality, with ~85% of sawfish retrieved from the codend recorded as dead.
  - Forward of the TED:
    - A second major hotspot occurs less than two metres forward of the TED.
    - Rostra frequently foul in the mesh, accounting for ~29% of interactions.
    - Survival outcomes depend strongly on rostrum entanglement:
      - Survival approaches ~80% when the rostrum is not fouled.
      - Mortality and survival are approximately equal when entanglement occurs.
  - Other interaction zones:
    - Throat: ~9% of interactions.
    - TED flaps: ~4% of interactions.
    - Ground chain or headrope: infrequent.
  - These patterns highlight the importance of:
    - Preventing rostrum fouling near the TED.
    - Limiting sawfish entry into the codend.

*Refer: Appendix 2. Fact Sheets - NPF Sawfish Gear Research. Survivability by Net Area (Pge 34)*

## Seasonal Patterns:

### Banana prawn season:

- Approximately 74% of interactions occur in the codend.
- Reflects the predominance of neonate and small juvenile sawfish.

### Tiger prawn seasons:

- Interactions predominantly involve larger sawfish (~2–4 m or greater).
- Interactions more commonly occur in the throat, around the TED, or immediately forward of the TED.
- Only ~20% of interactions occur in the codend.

## Spatial Variability:

- Marked differences occur among NPF statistical zones:
  - Melville:
    - Up to 83% of interactions occur in the codend.
  - Bonaparte and parts of the western Gulf:
    - Most interactions occur immediately forward of the TED.
  - Other regions (Arnhem, Limmen Bight, Bynoe/Edward Pellew, Groote and Mornington Island):
    - Exhibit distinct interaction profiles.
- Management implications:
  - Codend-dominated regions:
    - Small-bar-spacing TEDs are likely to deliver the greatest reductions in sawfish and broader ETP bycatch.
  - Regions dominated by forward-of-TED rostrum fouling:
    - Modified throat mesh and stiffer panels forward of the TED are likely to be more effective.

## Survivability by Gear Zone:

- Survival is lowest in the codend.
- Survival is higher forward of the TED when rostra are not entangled.
- Generally favourable survival outcomes occur in:
  - The throat.
  - TED flaps.
  - Areas near the headrope.
- The most effective strategy for reducing overall mortality is therefore to:
  - Prevent sawfish from reaching the codend.
  - Minimise rostrum fouling near the TED.

## Underwater Video Research:

Since 2018, CSIRO has deployed custom underwater camera systems on commercial vessels. The program operates under challenging conditions, including turbidity, low light and continuous trawling.

- Outputs include:
  - Thousands of hours of footage.
  - More than 1,800 hours collected during the 2021 tiger prawn season alone.
- Although only 18 sawfish interactions have been captured on video, each has provided critical behavioural insights, including:
  - Approach behaviour at the TED.
  - Rostrum–mesh contact points.
  - Influence of TED orientation.
  - Greater fouling risk for smaller sawfish in softer or more flexible mesh.
- These observations provide strong empirical support for:
  - Small-bar-spacing TEDs.
  - Stiffer throat materials.
  - Modifications to the net immediately forward of the TED.

The workshop noted that integrating behavioural video data with long-term interaction records has substantially refined the focus of mitigation efforts. Together, these datasets provide high confidence in:

- Identification of primary risk zones (codend, forward-of-TED rostrum fouling zone, and throat).
- Selection of mitigation measures most likely to reduce sawfish mortality.

A forthcoming technical report from the underwater video project will provide further detail and support ongoing refinement of gear designs.

## Fact Sheets and Workshop Presentations

Prior to the workshop, participants were provided with the following Fact Sheets:

- NPF Sawfish Management Requirements
- Results From NPF Industry Trials 2023 to 2024
- Sawfish Interactions Data

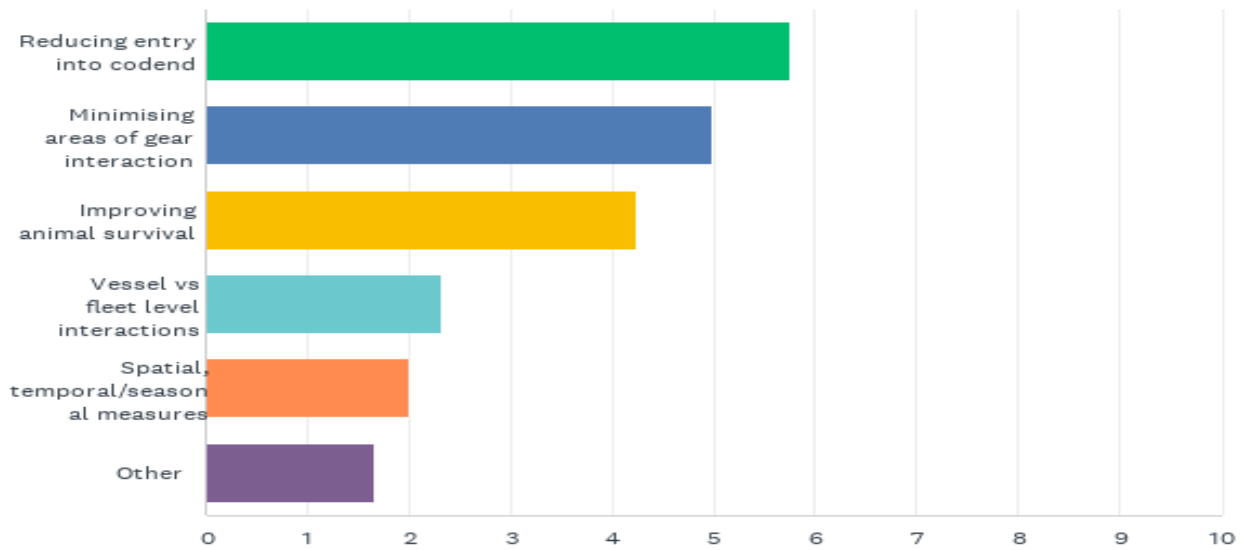
The Fact Sheets are provided at **Appendix 2**.

## Outcomes of Working Group Discussions

### Areas Of Concern / Priorities

#### Priority Areas for Reducing Sawfish Interactions

Across the four groups there was very strong agreement that the highest priority is to reduce the number of sawfish entering the codend. This reflects both the data presented showing high mortality in the codend and the clear logic that avoiding codend capture is the most effective way to reduce deaths.



**Figure 1. Combined group rankings of priority areas for sawfish mitigation.**

The next priority identified by participants was the minimisation of net areas where sawfish are most likely to become entangled, particularly in the vicinity of the turtle excluder device (TED) and the net throat. Participants linked this priority directly to Crew Member Observers (CMO) observations and camera footage, which consistently identify these sections of the gear as key “hotspots” for sawfish interactions and entanglement.

“Improving animal survival” was also ranked as an important objective; however, most groups regarded this as a secondary or downstream outcome. Participants noted that if codend entry and entanglement are effectively reduced, survivability is expected to increase accordingly.

In contrast, spatial and temporal management measures, as well as vessel-level versus fleet-level interaction limits, were consistently ranked as lower priorities at this stage. Groups identified significant knowledge gaps relating to sawfish movement patterns, spatial distribution, and habitat use, and expressed concern that measures such as closures or move-on rules could simply displace fishing effort into other areas where sawfish are also present. Several participants noted that there is currently insufficient data to support the effective design and implementation of spatial or temporal measures, and that further research would be required before such tools could be applied with confidence.

An “other” category captured additional suggestions, including shorter trawl shot durations—particularly during periods or in areas associated with higher sawfish interaction rates—and the exploration of further gear modifications or operational changes. While these options were considered promising, they were generally viewed as secondary to the primary objective of preventing sawfish entry into the codend.

In explaining their rankings, participants consistently returned to the view that gear-based mitigation measures are currently better supported by empirical data and trial outcomes than spatial or behavioural approaches. They noted that trials involving heavier mesh, reduced bar spacing, and other gear modifications have produced measurable and quantifiable results, whereas sawfish movement patterns, habitat preferences, and spatial aggregations remain poorly understood.

Several participants cautioned that move-on provisions or spatial closures could prove ineffective or even counterproductive, as vessels may simply relocate to other areas where sawfish are present, or be displaced from highly productive prawn grounds without clear evidence that overall sawfish risk would be reduced.

Participants also emphasised that CMO observations and research data demonstrate clear patterns of interaction outcomes: codend interactions, particularly involving smaller sawfish, are associated with the highest mortality rates, whereas individuals that exit via the TED or are encountered earlier in the net generally exhibit substantially higher survival. These findings reinforced the strong emphasis on codend avoidance and the reduction of entanglement within specific zones of the trawl net.

One group additionally highlighted the potential value of shorter shot durations, particularly during the tiger prawn season or other periods when sawfish interactions are more likely. This was identified as a relatively manageable operational adjustment that could improve survival outcomes for sawfish that do enter the codend.

## Will Vessel-Level Move-On Provisions (MOPs) Reduce Interactions?

There was broad scepticism among participants that vessel-level move-on provisions (MOPs) would constitute an effective primary mitigation measure for sawfish in the NPF. All groups noted that the available evidence indicates sawfish are highly mobile, undertaking frequent movements over large spatial scales, and that their distribution in offshore areas is not sufficiently well understood to support the confident design and implementation of MOPs.

Participants observed that relocating a single vessel may simply displace fishing effort into adjacent areas where sawfish are also present, particularly where other vessels continue to operate in close proximity. In addition, the real-time recording, verification, and enforcement of MOPs were considered administratively complex and potentially difficult to implement consistently.

The principal caveat identified was that MOPs could have value in highly specific circumstances, such as clearly delineated inshore nursery or pupping areas where small sawfish are known to aggregate. However, participants emphasised that the application of such measures would require robust and spatially explicit ecological information, which is currently lacking for most NPF fishing grounds.

Overall, groups concluded that, under current knowledge and operational conditions, move-on provisions are neither a preferred nor a reliable mitigation measure for a wide-ranging and highly mobile species such as sawfish.

## Acceptable Interaction Rates If MOPs Are Used

Working groups reiterated that gear-based mitigation measures and improvements to post-interaction survivability remain higher priorities than MOPs. Several responses emphasised that there is currently insufficient information on sawfish spatial and temporal distribution patterns to establish robust and defensible thresholds, and that MOPs are therefore not considered a viable core management option at this stage.

One response referred to the existing broodstock move-on condition—four sawfish interactions per calendar day within a three nautical mile radius—and noted that this could, in principle, serve as a reference point should MOPs be considered in the future, particularly within the tiger prawn fishery. However, participants expressed concern that the application of similar provisions in the banana prawn fishery would be impractical, as moving away from key fishing aggregations or “boils” would entail significant operational disruption and financial cost.

Participants also questioned how frequently such thresholds would be triggered in practice, and whether the effective implementation of gear-based mitigation measures would render MOPs largely redundant. The prevailing view was that management effort should remain focused on gear modifications and survivability outcomes, rather than on the development of complex move-on rules with uncertain conservation benefit.

## Effectiveness and Benefits of SBS-TED 70 and SBS-TED 50

All groups agreed that the SBS-TED 70 and SBS-TED 50 trials provide clear evidence of a reduction in sawfish entry to the codend. The trial outcomes were not disputed: both devices were considered effective in reducing codend interactions, particularly for smaller sawfish, which are associated with the highest mortality rates.

Participants also highlighted a range of additional benefits observed during the trials and reported by skippers, including:

- Reduced interactions with larger sharks and rays, including some listed species;
- Evidence of decreased sea snake interactions in certain SBS-TED 70 trials;
- Improved catch-processing efficiency, with reduced time spent handling large bycatch and repairing damaged nets;
- Enhanced crew safety and reduced fatigue by limiting the need to manually remove large animals from the codend; and
- Potential improvements in catch quality resulting from faster processing and reduced debris in the codend.

Some practical considerations were noted, such as the weight of early SBS-TED 50 designs and the need for adequate flotation to ensure optimal fishing performance. These issues were generally viewed as engineering refinements rather than constraints to adoption. Overall, the trials were regarded as highly successful and promising, demonstrating clear conservation benefits alongside operational advantages.

## Confidence in Sturdier (Grey/Ruby) Throat Mesh

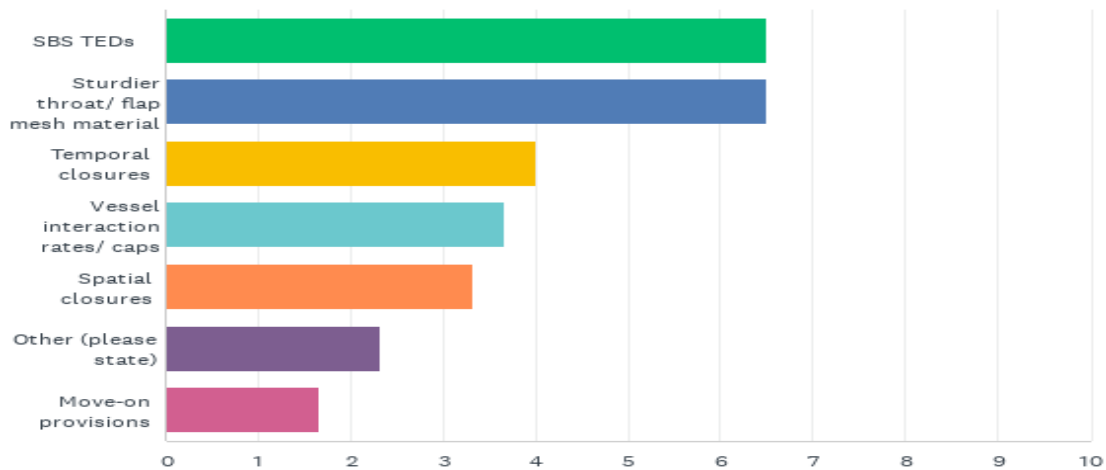
Most groups considered that trials of sturdier throat mesh—particularly grey and, more notably, ruby mesh—provide strong evidence that this approach reduces sawfish entanglement in the throat section of the net without adversely affecting prawn catch. The dataset now encompasses a substantial number of fishing days and trawls in which no sawfish entanglements were recorded when sturdier mesh was used, compared with multiple entanglements observed in standard black mesh over the same period.

Participants also identified several practical advantages associated with the use of sturdier mesh. Ruby mesh deployed in the wings and throat was reported to be more durable, with smaller and more readily repairable holes. In addition, sawfish were considered less likely to become tightly wrapped in the mesh, facilitating faster and safer release. Ruby mesh was generally preferred over grey mesh due to its superior ability to retain shape, reduced stretch, and consistent 70 mm mesh opening.

While three groups indicated that the available evidence is sufficient to support voluntary implementation at this stage, at least one group expressed a preference for further trials across a broader range of vessels and operating conditions before considering any mandatory requirement. Overall, participants characterised sturdier throat mesh as a low-cost, low-risk mitigation measure with clear benefits, suitable for wider voluntary uptake alongside continued evaluation and testing.

## Monitoring and Measuring Effectiveness Of Mitigation

All groups rated SBS-TEDs and sturdier throat/flap mesh as having the highest potential to monitor and measure the effectiveness of different mitigation methods. Changes in interaction rates are relatively straightforward to monitor through logbook data, observer/CMO records and EM, allowing comparison of interaction rates before and after implementation.



**Figure 2. Ranking of potential for monitoring and measuring the effectiveness of mitigation methods.**

Temporal and spatial measures (e.g., closures) and vessel-level interaction caps were considered moderately measurable, particularly given existing tools such as VMS and logbooks. However, participants noted that interpretation is constrained by limited knowledge of sawfish distribution and movements, as well as variability in fishing effort.

Move-on provisions were viewed as the most difficult to monitor and evaluate due to the challenges of real-time decision-making, effort displacement, and inconsistent triggers across vessels.

Participants emphasized the importance of electronic monitoring (potentially supported by AI) to verify reporting and assess gear performance, and suggested that additional tools, such as shot duration metrics and annual gear surveys, could support monitoring of mitigation uptake and effectiveness.

## Potential Management / Mitigation Options

### Best Trade-Off Between Risk Reduction, Cost and Catch

Across all groups, responses were unequivocal that preventing codend entry is the primary priority. Participants consistently described the codend as the “point of failure,” where survival prospects are lowest and handling becomes difficult or unsafe. Many noted that sawfish reaching the codend are effectively lost from a sustainability perspective. While improvements earlier in the gear (e.g., reducing rostrum entanglement) were considered valuable, none were viewed as comparable in impact to fully preventing codend access.

The SBS-TED 70 was consistently rated as offering the most favourable balance between sawfish risk reduction, operational cost, and catch performance. Participants regarded it as highly effective at preventing codend entry while maintaining prawn and byproduct catches once installed. The principal cost is the upfront investment, with minimal ongoing operational costs.

The SBS-TED 50 was also recognised as effective but raised greater concern regarding potential losses of cuttlefish and bugs, as well as increased weight. Some groups viewed it as a practical, low-cost retrofit option (e.g., by welding additional bars into existing TEDs), while others preferred the SBS-TED 70 as a more robust, fish-friendly, and catch-neutral alternative.

Grey/ruby throat mesh was considered a strong complementary measure rather than a standalone solution. Although it does not prevent juvenile sawfish from entering the codend, it substantially reduces entanglement and improves handling in the throat and wings.

FloMo ranked lowest due to concerns about weight, handling difficulty, cost, potential drag and fuel penalties, and limited performance evidence. Participants suggested it may have niche applications but is not currently suitable as a primary mitigation measure.

Overall, participants expressed a clear preference for combining the SBS-TED 70 with reinforced throat mesh, forming a mitigation package that offers substantial risk reduction at acceptable cost with minimal impact on catch performance.

## Different Mitigation by Season (Banana Vs Tiger, JBG)

Groups consistently identified the banana prawn season as the most challenging, due to higher catch volumes, faster tow speeds, and a greater prevalence of small sawfish. These factors increase the risk of clogging, flow disruption, and reduced gear efficiency. Certain areas (e.g. Melville and Arnhem) were noted as having higher interaction rates; however, crews emphasised that spatial patterns vary interannually with environmental conditions. The tiger prawn season was considered comparatively less challenging, as larger sawfish and slower tow speeds result in more predictable gear performance.

Groups generally supported adoption of a single, consistent mitigation package across both banana and tiger seasons, rather than season-specific measures. Participants cited practical and cost advantages in applying a common standard (e.g. a maximum TED bar spacing of 70 mm combined with reinforced throat mesh) across both fisheries and the JBG.

Participants acknowledged that mitigation benefits vary by season. Smaller sawfish are more prevalent during the banana season and are more likely to enter the codend, making the SBS-TED 70 particularly effective. In contrast, interactions with larger sawfish are more common during the tiger season, particularly in the throat and TED region, where reinforced throat mesh and related measures may be more effective.

Despite these differences, there was broad agreement that maintaining separate mitigation regimes would increase complexity and costs and is unnecessary where the same devices are effective across both fisheries.

## Minimising or Incentivising Implementation Costs

Participants identified several approaches to minimising or offsetting implementation costs, including: phased implementation aligned with routine net replacement cycles; seeking external funding or grants (e.g. through FRDC, DCCEEW, NESP, or MSC etc) to support research and early adoption, particularly for fleet-wide

trials; and the use of positive incentives and messaging, such as recognising early adopters and emphasising the role of mitigation in maintaining WTO export approvals and MSC certification.

One group noted that providing confidence through trials demonstrating no unintended prawn loss is itself an effective incentive, as it reduces perceived operational risk. Overall, participants expressed strong support for phased, supported adoption rather than abrupt or unfunded change.

### Stepped Implementation and First-Iteration Options

All groups supported a stepped (iterative) implementation approach, consistent with earlier experience with TEDs and BRDs. Participants considered a phased rollout essential for generating comparative data (new versus standard gear), resolving practical issues, and building operator confidence prior to full implementation.

When asked to prioritise options for the first iteration, SBS-TEDs and reinforced throat/flap mesh were clearly ranked highest. Vessel-level interaction caps, spatial or temporal closures, and move-on provisions were ranked lower and were generally not supported as initial measures.

Narrative responses highlighted a strong preference for trialling the SBS-TED 70 in combination with reinforced throat mesh to assess their combined effects on sawfish interactions, survivability, and catch performance, and to generate robust evidence to inform subsequent implementation stages.

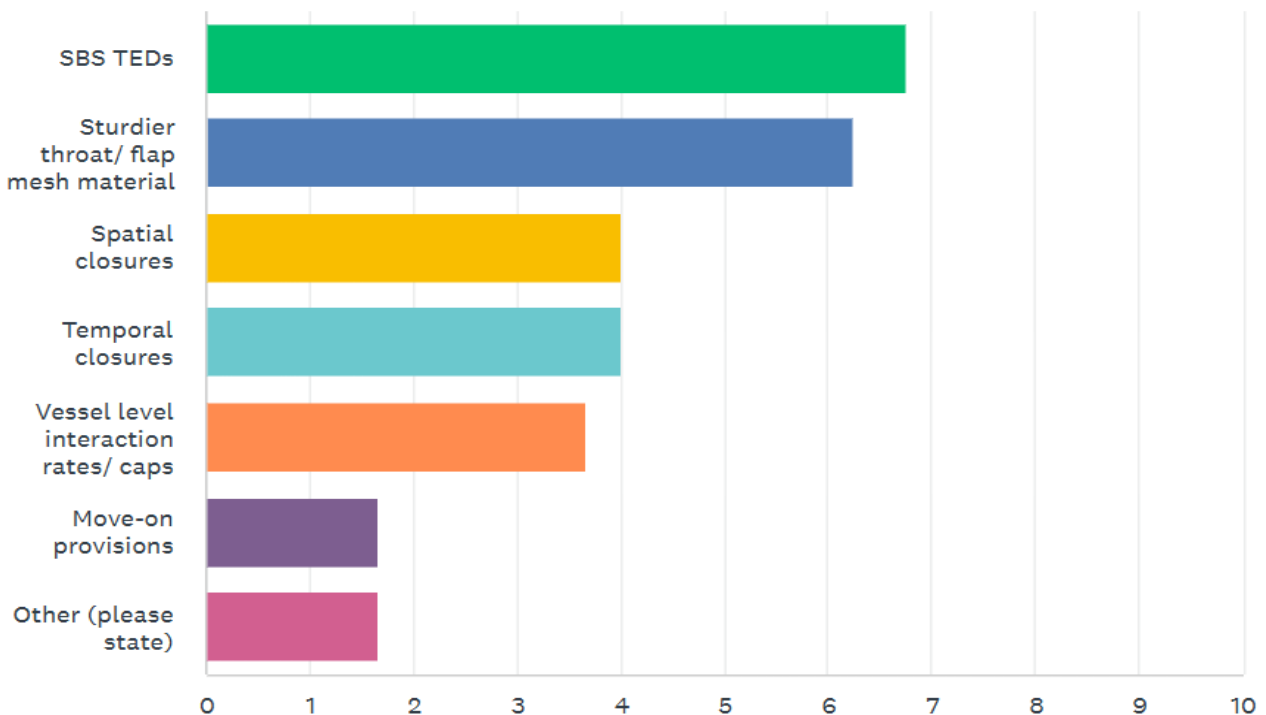


Figure 3. Ranking of preferred ‘practical, cost effective’ mitigation options to be first introduced.

## Phase-In Period and Timing

There was strong support for a phased implementation using a 50%/100% progression, consistent with the original TED/BRD rollouts. Although specific dates varied slightly between groups, a common sequence emerged: voluntary adoption of SBS-TED 70 and reinforced throat/flap mesh during the 2026 banana prawn season; mandatory 50% of nets fitted with SBS-TED 70 during the 2026 tiger prawn and 2027 banana prawn seasons; and 100% of nets fitted with SBS-TED 70 from the 2027 tiger prawn season onward.

Participants considered this timeline sufficient to enable data collection, operational familiarisation, and gear refinement, while allowing skippers adequate time to adjust and optimise performance without compromising catch. One group also noted that the staged rollout aligns well with upcoming certification audit milestones.

## Research Gaps / Further Required Research

### Next Priority Areas If Codend Entry Is Reduced

Assuming codend entry is effectively minimised by the SBS-TED 70, groups agreed that subsequent mitigation priorities should focus on: (i) the throat and the area approximately 2 m forward of the TED, where larger sawfish frequently interact and may become entangled; and (ii) the upper throat and TED flaps, particularly where rostra can snag in mesh or seams.

Participants recommended further investigation of mesh types and configurations in this zone, as well as potential funnel-style or guiding structures to direct sawfish toward escape openings without compromising prawn retention.

Groups also identified front-of-gear deterrents (e.g. lights, vibrations, or other stimuli) as a potential future option to encourage sawfish to move upward and away from the net mouth, consistent with behavioural insights from underwater camera observations.

### Further Trials of Throat and Mesh Types

All groups agreed that additional trials of throat mesh and related configurations are required. While results for reinforced mesh are encouraging, participants noted that testing to date has involved a limited number of vessels and conditions and has not been extensively evaluated during the banana prawn season.

Participants also identified opportunities to trial heavier or alternative mesh types across the broader TED area, not solely the throat, and to explore new or international design concepts that may further reduce entanglement and improve escapement.

Overall, there was strong support for continued, well-designed trials to refine these gear options.

## Alternative Materials (eg FloMo)

All groups supported further investigation of alternative materials that reduce or prevent entanglement, including FloMo and other non-mesh options. Participants recognised FloMo's potential benefits in terms of entanglement reduction and durability, while noting practical challenges related to attachment methods, handling, and weight.

Some groups recommended examining other existing innovations, such as micromesh trials in Shark Bay, as potential models or alternatives. There was consensus that this work warrants additional research and targeted trials, ideally beginning with limited applications in known entanglement hotspots (e.g. specific areas of the throat or flaps) before any broader implementation.

## Other Potential Gear Mitigation Options

Participants identified a range of additional mitigation concepts for future investigation, including: front-of-net deterrent systems (e.g. lights, pingers, or other sensory stimuli) to encourage avoidance or upward movement; scaring lines, tickler chains, or barrier nets to modify interactions at the net mouth; reduced shot durations during periods or in areas of elevated interaction risk; release or zip panels in key net sections (e.g. the throat) to facilitate faster and safer release of large sawfish once aboard; and in-net sensors to detect sawfish entry and enable responsive shot shortening.

These measures were generally viewed as longer-term or research-focused options rather than candidates for immediate implementation but may be considered in the future.

## Ongoing Data Collection For Population Estimates And Survivability

All groups agreed that ongoing data collection for CKMR, tagging, and survivability studies should remain a high priority. Participants emphasised that population estimates and survival data are critical for demonstrating that the fishery does not impede recovery and for maintaining external accreditations.

While acknowledging that tissue sampling and satellite tagging are time-consuming and challenging, participants stressed their value. Several groups supported continuing and expanding incentive schemes (e.g. cash rewards, prizes, branded gear) to encourage crew participation and highlighted the importance of communicating results back to industry to demonstrate how their contributions enhance knowledge and management.

## Sawfish Safe-Handling And Release Protocol

There was unanimous agreement that the Strategy should include a sawfish safe-handling and release protocol, deemed essential for both sawfish survivability and crew safety.

Training remains a critical component of mitigation, particularly due to the risks of handling sawfish on deck. Safe and efficient release is facilitated by crews' understanding of recommended handling techniques and

the use of gear that minimises physical intervention. Participants emphasised that larger sawfish have higher survival prospects when gently removed from the net's wings or body, and that crew familiarity with safe handling equipment is crucial. Some proposed standardised onboard training modules or video resources.

It was recommended that protocols be developed collaboratively by skippers, crew, scientists, and sawfish experts to ensure practicality across diverse vessel layouts and net designs. The goal is to establish a clear, industry-endorsed standard for handling, lifting, tagging (where applicable), and releasing sawfish to minimise injury and stress to both animals and personnel.

## Frequency of Strategy Review

Views on review frequency converged on an initial intensive phase followed by less frequent, structured long-term reviews, suggestions included:

- An initial review 1–2 years post-implementation to assess gear and measure performance;
- Annual reviews of mitigation measures during the first 3 years, particularly while trials and rollout continue; and
- A comprehensive Strategy-level review every 5 years, aligned with major certification and policy cycles (e.g., MSC, WTO, harvest strategies).

Participants emphasized that the review cycle must balance sufficient time for gear trials, electronic monitoring assessment, and data analysis with the need to respond promptly to new scientific findings and operational feedback.

## Other Comments for the Strategy

The final open question highlighted two key points. First, participants stressed the need for additional funding to support research, fleet-wide trials, and incentives for crews and companies facing short-term costs or risks from adopting new gear. Without such support, implementation pace and equity may be limited.

Second, while mitigation measures are expected to benefit all four sawfish species, interactions with green, freshwater, and dwarf sawfish are much rarer in NPF fishing grounds. Therefore, careful monitoring of these species is essential to verify mitigation effectiveness and detect any unforeseen issues promptly.

## Monitoring and Research Priorities

Monitoring:

- Continued delivery of the CMO and observer program.
- Integration of survey data and EM. Note that with the new introduction of EM, specifically to monitor catches of large animals such as sawfish, EM settings need to be reviewed to minimise confounding during the transition.

- Detecting large animals such as sawfish in a catch of prawns is a relatively straight-forward process for AI interpretation of EM footage. Progressive adoption of AI-assisted EM for detection of large ETP species should be explored.
- Consistent collection of ID and length data for sawfish.

#### Genetics and CKMR:

- Sampling funded until mid-2026, with strong support for continued sampling beyond that point.
- Update CKMR assessments approximately every five years.

#### Tagging:

- Tagging program funded until late-2026, with continued tagging identified as essential.
- The conclusion of FRDC/NESP MaC Hub work in 2026 marks an important reporting milestone.

#### Research:

- Further investigation into the behavioural basis of rostrum entanglement.
- Additional underwater video work, including comparisons across throat mesh types.
- Improved quantification of movement patterns via better-retained tags.
- Modelling of combined spatial, seasonal, and operational influences on interaction risk.

## Recommendations & Next Steps

The workshop recommended a clear set of coordinated next steps that combine gear implementation, monitoring, research and industry support. These recommendations will inform consultation with NPFI and NORMAC, and the development and implementation of a formal NPF Sawfish Mitigation Strategy, building on the current NPF Sawfish Plan 2024-2026. The key recommendations from the workshop are:

### 1. Implement the Phased Rollout of Gear Mitigation Options

The SBS-TED 70 and thicker mesh throat materials be trialled and introduced through the agreed staged program:

- Voluntary trials during the 2026 banana season;
- Mandatory implementation of the SBS-TED 70 in 50% of nets in the 2026 tiger prawn season;
- Mandatory implementation of the SBS-TED 70 in 50% of nets in the 2027 banana season;
- Mandatory implementation of the SBS-TED 70 in 100% of the nets in the 2027 tiger prawn season and onward; *and*
- Ongoing trials and regular review of trial results of sturdier throat mesh, including in combination with small bar spaced TEDs.

This implementation pathway allows side-by-side comparisons, operational tuning and the collection of robust before-and-after implementation data.

## 2. Strengthen Monitoring to Assess Effectiveness and Maintain Compliance

Continuation and enhancement of CMO and observer / EM programs (including options for AI-assisted EM review of ETP interactions), underwater camera work, and routine length and ID validation will be critical to tracking changes in interaction rates and survivability.

## 3. Support Ongoing Research to Reduce Uncertainty in Population Assessments

Genetic sampling to continue (funded to mid-2026) to support the CKMR framework, with a longer-term plan for periodic updates every ~5 years. Satellite tagging (funded to late-2026) will remain a priority to improve post-release survival estimates and movement understanding. Additional effort will be directed toward improving age and growth data, which currently limit model precision.

## 4. Develop and Finalise Operational Guidance

Industry, NPFI and AFMA to collaborate to finalise sawfish handling and release protocols - focused on crew safety, minimising rostrum damage and improving survival outcomes. These protocols should be embedded into handling codes, skipper briefings and crew training.

## 5. Maintain Strong Industry-Science Collaboration

The momentum created by the workshop will be sustained through regular feedback loops between industry, CSIRO and managers. Transparent communication of trial results, genetic updates and regulatory expectations will remain essential to successful adoption.

The above recommendations will be considered by NPFI, the NPRAG and NORMAC as potential inputs into the NPF Sawfish Strategy.

## Implications

The outputs from the workshop will be used by AFMA, NPFI and NORMAC to inform the development of the NPF Sawfish Strategy. The strategy will provide assurance to fishery stakeholders, community and consumers that the NPF is committed to reducing impacts of fishing on ETP sawfish and other large bycatch species. There will be cost implications for NPF fishers of new gear mitigation devices and ongoing research investment. However, fishers will benefit from the incorporation of mitigation measures and ongoing

research to reduce sawfish interactions through ongoing MSC and EPBC WTO certification, maintaining access to domestic and export market access, and improved social license.

## Extension and Adoption

The workshop report will be disseminated to AFMA Management, NPRAG and NORMAC members, NPF concession holders, fleet masters and skippers, DCCEEW, and conservation sector representatives. The final report will be hosted on the FRDC and AFMA websites. The workshop report will also form part of considerations in the future MSC surveillance audits/ assessments.

The outputs from the workshop – including recommendations in relation to gear mitigation measures, implementation pathway and timing, and future research priorities - will be considered by NPFI, the NPRAG and NORMAC in February 2026. The NPF is required to develop an NPF Sawfish Strategy by 30 June 2026 as part of the NPF's current EPBC Act WTO conditions. The final agreed mitigation measures, implementation pathway and timing, and future research priorities will be incorporated into that strategy. Those measures will also be included in the next iteration of the NPF Bycatch Strategy. Fishery-wide adoption of the NPF Sawfish Strategy will commence on 1 July 2026.

## References/Projects

The results of the following projects formed the basis of data presented at this workshop:

[Mitigating Sawfish Interactions in the Northern Prawn Fishery: Final Report – March 2025 \(TMSFB000002\)](#)

[Investigating potential for fishing gear, technology and management measures to reduce sawfish and sea snake interactions in Australia's Northern Prawn Fishery \(NPF\) Final Report September 2024 \(MSC OSF\)](#)

Estimating Narrow Sawfish (*Anoxypristis Cuspidata*) Abundance using Close Kin Mark Recapture (FRDC 2021-015) – *in progress*

Multi-fishery collaboration to assess population abundances and post release survival of threatened sawfish captured in commercial fishing operations in Northern Australia (FRDC 2022-068) – *in progress*

Assessing the impacts of trawl gear on sawfishes in the Northern Prawn Fishery with the aim to identify and test mitigation measures ensuring the long-term sustainability of Sawfish populations in northern Australia (FRDC 2019-112) - *in progress*

Laird, A. and Fry G. 2020. How does trawl gear configuration affect sawfish catches – mitigating commercial fishing interactions with sawfish in the North and North-West Marine Park Networks. Final Report to Our marine Parks Round One Grants. Pp. 31. (Marine Parks Grant – Project PY7BSVQ 2020)

## Abbreviations

ABARES	Australian Bureau of Resource Economics and Sciences
AFMA	Australian Fisheries Management Authority
ALARP	As low as reasonably practicable
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DCCEEW	Department of Climate Change, Energy, the Environment and Water
NPFI	NPF Industry Pty Ltd
TED	Turtle Excluder Device
STED	Sawfish and Turtle Excluder Device

## Appendix 1 – Agenda

### NPF Sawfish Workshop Agenda

Thursday 13 November 2025

Venue: View Hotel, Cnr Kingsford Smith Drive & Hunt Street, Hamilton, Brisbane

#### Workshop Objectives

To identify practical, cost-effective mitigation measures to reduce the impacts of commercial prawn trawl fishing on endangered or migratory species of sawfish in the Northern Prawn Fishery for inclusion in the NPF Sawfish Mitigation Strategy.

#### Intended Outcomes

The intended outcomes of the NPF Sawfish Strategy will include improved escapement, reduced interaction rates, and improved sustainability of sawfish populations.

Session 1: Management Requirements / Research Outcomes			Plenary Session
Time	Topic	Purpose	Responsibility
8:45 am	1. Welcome	Welcome attendees and open the workshop with an Acknowledgement of Country; outline the objectives and structure of the workshop	Chair (15 mins)
		Sawfish MSC and WTO Conditions	AFMA/NPFI (10mins)

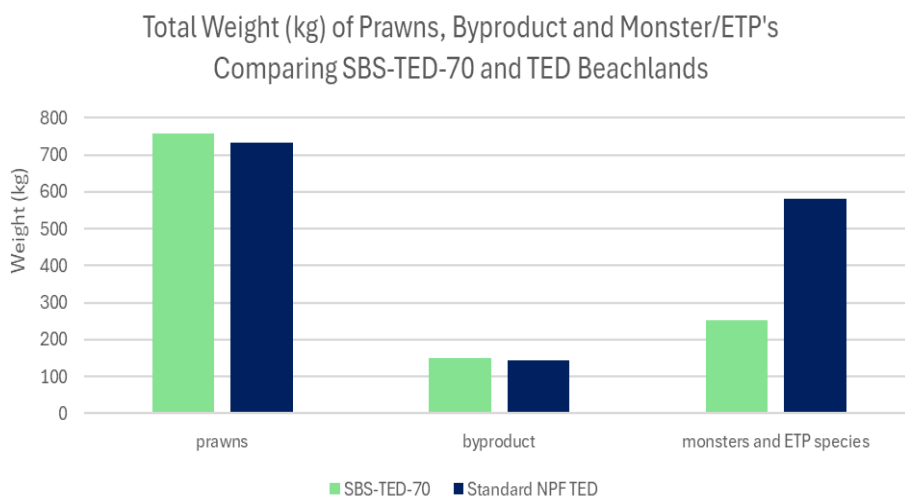
9:00 am	2. NPF Sawfish Management Requirements	IUCN/EPBC Listing Criteria Other relevant AFMA Policy / Legislative bycatch requirements	AFMA (10 mins)
9:20 am	3. Outcomes of Sawfish research projects	Formal NPFI gear mitigation research project trials outcomes	Brandon Meteyard (NPFI) (20 mins)
		2025 voluntary industry gear monitoring/mitigation trials outcomes	Bryan Van Wyk (Austral); Beau Anderson (Raptis) (20 mins)
		Population and tagging projects	Toby Patterson (CSIRO) (20 mins)
10:20am	<i>Morning Tea (15 minutes)</i>		
<b>Session 2: Break-out Group Discussions</b>			<b>Working Groups</b>
10:35am	4. Sawfish Interactions Data	Presentation of sawfish interactions data	Brandon Meteyard(NPFI) / Gary Fry (CSIRO) (20 mins)
10:55am	5. Discuss perspectives	Topics for Discussion: <ul style="list-style-type: none"> <li>• Areas of concern / priorities to be addressed</li> <li>• Potential management / mitigation options</li> <li>• Research gaps / further required research</li> </ul>	All participants (1 hr 20 mins)
12:15pm	<i>Lunch (30 mins)</i>		
12:45pm	6. Summarise discussions	Reports from Working Groups	Chair/Plenary (45 mins)
<b>Session 3: Workshop Outcomes / Next Steps</b>			<b>Plenary Session</b>
1:30pm	7. Proposed approach for Sawfish Management	NPF Sawfish Strategy Development: <ul style="list-style-type: none"> <li>▪ Discuss &amp; agree preferred management / mitigation options</li> <li>▪ Discuss &amp; agree future research priorities</li> </ul> Outline Process / Agreed Approach	AFMA (1 hr 30 mins)
3:00pm	8. Chair summary	Identify next steps Close workshop	Chair (15 mins)
3:15 - 4:30pm	<i>Drinks &amp; Canapes</i>		

## Appendix 2 - Fact Sheets

### NPFI Sawfish Gear Research

#### SBS-TED 70

- Analysis of the data from SBS-TED 70 trials showed a 56.6% decrease in large bycatch/ETP species and a 2% decrease in small bycatch weights, a 3% increase in prawn catch and a 3% increase in byproduct catch. The data analysis showed a reduction in smaller bycatch species (400 - 800 mm) that are typically captured in the codend.



- Wedgefish (*Rhynchobatus* spp) and shovelnose rays (*Rhinobatidae* spp) were used as proxies for analysis of escapement rates transferable to small sawfish. The escapement rate of these species compared to the standard TED's was 52% suggesting the SBS-TED 70 could prevent small juvenile sawfish from entering the codend by allowing them to escape through the TED flap opening.
- The SBS-TED 70 resulted in a 31.25% reduction in sea snake captures in nets fitted with the device.
- The SBS-TED 70 also influenced the capture of common (non ETP) bycatch species resulting in a 76.6% decrease in capture rates of rays within the 500–700 mm size range, a 32.35% reduction in sharks ranging from 400-800 mm and a 100% reduction fish species larger than 680 mm during the trial of this device.
- The SBS-TED 50 showed promising signs of the potential to reduce the capture of larger bycatch species that typically enter the codend. However, further investigation is needed to address the significant loss of commercial catch that was experienced during the trial.

*Austral 2024 Tigers SBS-TED 70 Trial*

- 67 sawfish interactions occurred during the trial across 782 fishing nights totalling 2,793 trawls.
- Most common interaction areas - TED flap, throat, and net wing.
- SBS-TED 70 most common interactions flaps, throat, and net wing
- TED most common interactions flaps, throat and codends.

Table x: Austral sawfish interactions by area of the net - 2024 tiger prawn season comparing SBS-TED 70 with standard TED's.

Area_of_net	Interactions	percentage
Throat	16	24%
Wing	15	22%
Flap	15	22%
TED	7	10%
Try gear	5	7%
Not recorded	5	7%
Codend	3	4%
Top panel	1	1%

Table x: Austral sawfish interactions by area of net and TED type - 2024 tiger prawn season comparing SBS-TED 70

Area_of_net	SBS-TED	TED	TRY	UNK
Codend	0	3		
Flap	7	5		3
Not recorded				5
TED	0	1		6
Throat	7	3		6
Top panel				1
Try gear			5	
Wing	5	1		9

*Magnet Mesh TED Flap 2023 Industry Trial*

- It remains unclear whether Grey and/or ruby Magnet net mesh in the TED flaps (to replace standard black mesh TED flaps) directly reduce sawfish entanglement in this area as the underwater video cameras deployed in the trials did not capture any sawfish interactions in the TED flaps. Further investigation is needed to determine the overall effectiveness of this approach as a potential gear mitigation option to reduce sawfish interactions.

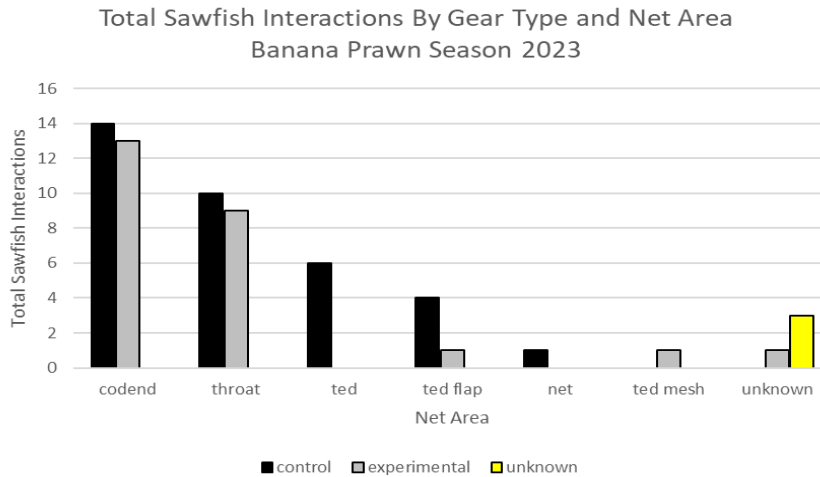


Figure x: Total sawfish interactions by net area comparing grey magnet mesh TED flaps (experimental) with black sapphire mesh TED flaps (control), industry in-season gear trials banana prawn season 2023.

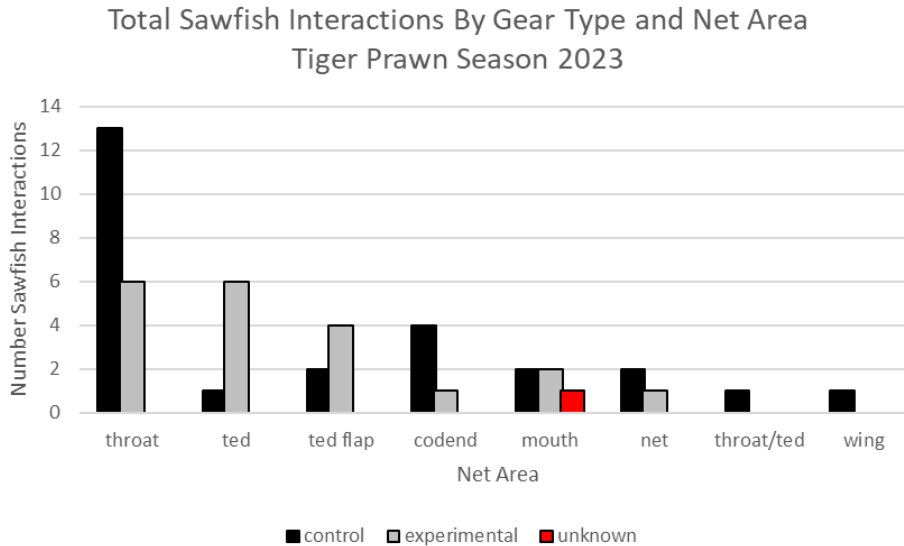


Figure x: Total sawfish interactions by net area comparing grey magnet mesh TED flaps (experimental) with black sapphire mesh TED flaps (control), industry in-season gear trials tiger prawn season 2023.

Over a total of 976 commercial fishing days, 61 sawfish interactions occurred in the control gear and 45 in the experimental gear, with four unknowns. Most common sawfish interactions occurred in the throat of the net, codend and within the TED area

**Table x.** Percentage of Sawfish interactions by area of net during the 2023 industry TED Flap mesh trials.

Area of net interactions occurred (control)	%	Area of net interactions occurred (experimental)	%
throat	39%	codend	33%
codend	27%	throat	31%
ted	11%	ted	16%
flaps	10%	flaps	11%
other	13%	other	9%

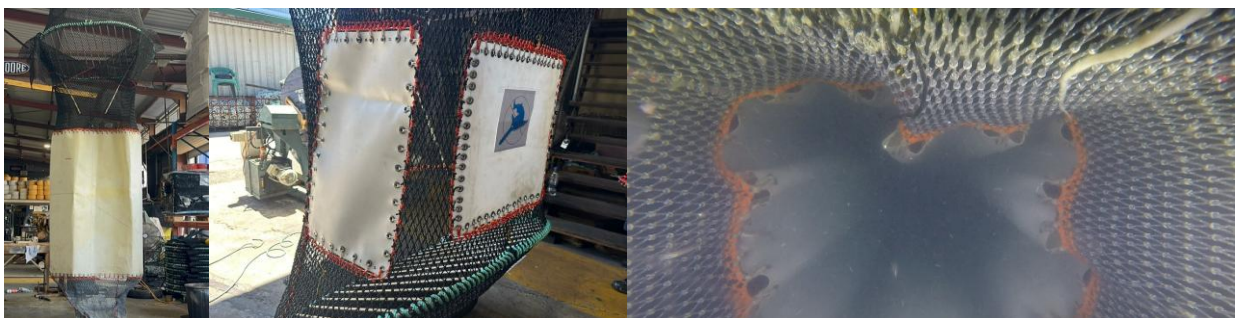
### *Magnet Throat Mesh Trial Tigers 2023 and 2024*

- Grey Magnet mesh material was trialled in the throat section over 190 fishing days and 487 trawls during the 2023–24 tiger prawn seasons, with no sawfish interactions recorded.
- Underwater footage (2024) showed a Narrow Sawfish passing through the grey mesh without entanglement, confirming its potential effectiveness.
- Results indicate the Grey Magnet mesh may offer a practical, low-cost gear modification to reduce sawfish entanglement in prawn trawl nets.



### *FloMo Material Trial*

- The initial trial of the new FloMo material to replace net mesh in various configurations indicated that the material can be towed without affecting performance of the fishing gear.
- The limited underwater video footage captured during the trials, further investigation is required to determine whether this material can effectively reduce sawfish entanglements.



## NPF Sawfish Interactions Data

## NPF analysis of CMO, NPF Survey and AFMA observer Sawfish Interactions Data 2010 to 2024

## Net Entanglement Area

ENTANGLEMENT DETAILS	total	percent
Codend	215	43
<2m anterior to TED, rostrum tangled in net mesh (body inside or outside net through escape)	143	29
Ground chain/heaprope/wings with rostrum tangled in mesh	49	10
Throat	44	9
<2m anterior to TED, rostrum not tangled in net mesh (body inside or outside net through escape)	18	4
TED flaps/ TED flaps and body inside TED escape/ TED flaps and body outside TED escape	19	4
Try Gear	11	2

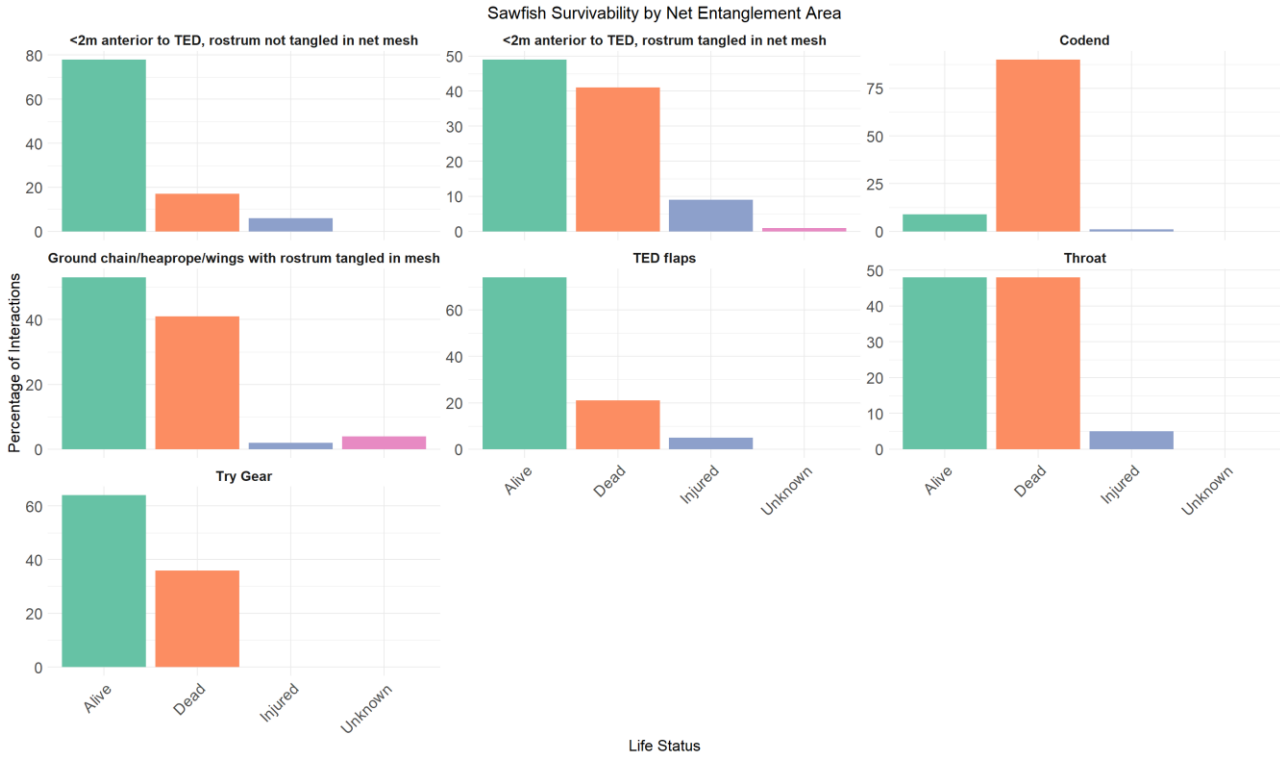
## BY SEASON

SEASON	ENTANGLEMENT DETAILS	total	percent
Banana	<2m anterior to TED, rostrum not tangled in net mesh (body inside or outside net through escape)	7	3
Banana	<2m anterior to TED, rostrum tangled in net mesh (body inside or outside net through escape)	34	16
Banana	Codend	156	74
Banana	Ground chain/headrope/wings with rostrum tangled in mesh	5	2
Banana	TED flaps/ TED flaps and body inside TED escape/ TED flaps and body outside TED escape	1	0
Banana	Throat	6	3
Banana	Try Gear	1	0
Tiger	<2m anterior to TED, rostrum not tangled in net mesh (body inside or outside net through escape)	11	4
Tiger	<2m anterior to TED, rostrum tangled in net mesh (body inside or outside net through escape)	109	38
Tiger	Codend	59	20
Tiger	Ground chain/heaprope/wings with rostrum tangled in mesh	44	15
Tiger	TED flaps/ TED flaps and body inside TED escape/ TED flaps and body outside TED escape	18	6
Tiger	Throat	38	13
Tiger	Try Gear	10	3

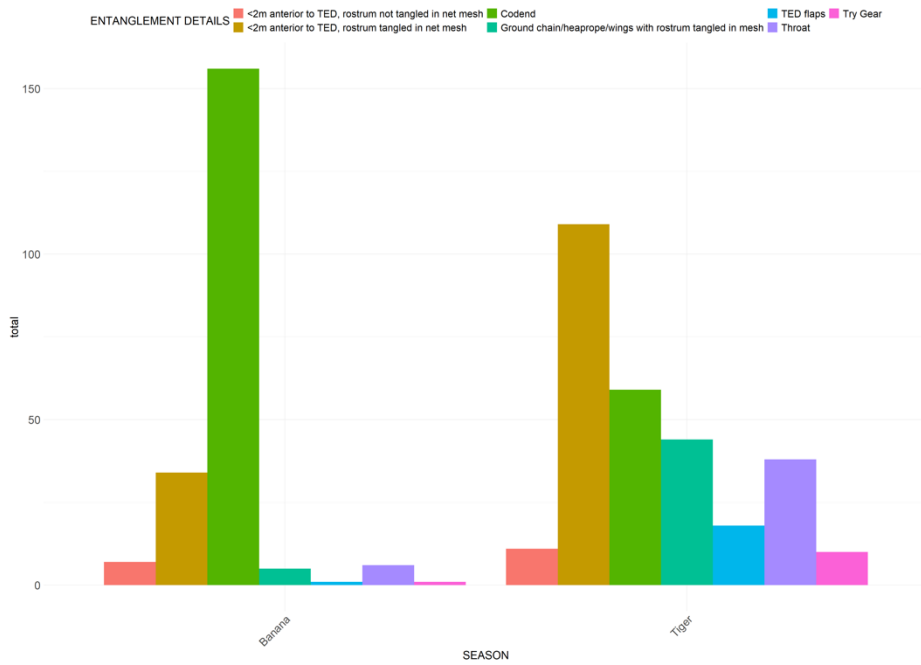
*Top Entanglement Area By Statistical Zone*

<b>zone_name</b>	<b>ENTANGLEMENT DETAILS</b>	<b>total</b>	<b>percent</b>
ARNHEM	Codend	5	38
BOLD	Codend	2	33
BONAPARTE	<2m anterior to TED, rostrum tangled in net mesh (body inside or outside net through escape)	16	76
EDWARD	Codend	12	57
FOG BAY	Codend	8	89
GOVE	<2m anterior to TED, rostrum tangled in net mesh (body inside or outside net through escape)	16	39
GROOTE	<2m anterior to TED, rostrum tangled in net mesh (body inside or outside net through escape)	20	39
KEERWEER	<2m anterior to TED, rostrum tangled in net mesh (body inside or outside net through escape)	7	70
LIMMEN BIGHT	<2m anterior to TED, rostrum tangled in net mesh (body inside or outside net through escape)	23	46
MELVILLE	Codend	86	83
MITCHELL	Codend	4	44
MORNINGTON	<2m anterior to TED, rostrum tangled in net mesh (body inside or outside net through escape)	18	35
PORT ESSINGTON	Codend	30	51
SWEERS	<2m anterior to TED, rostrum tangled in net mesh (body inside or outside net through escape)	1	25
WEIPA	Codend	38	75

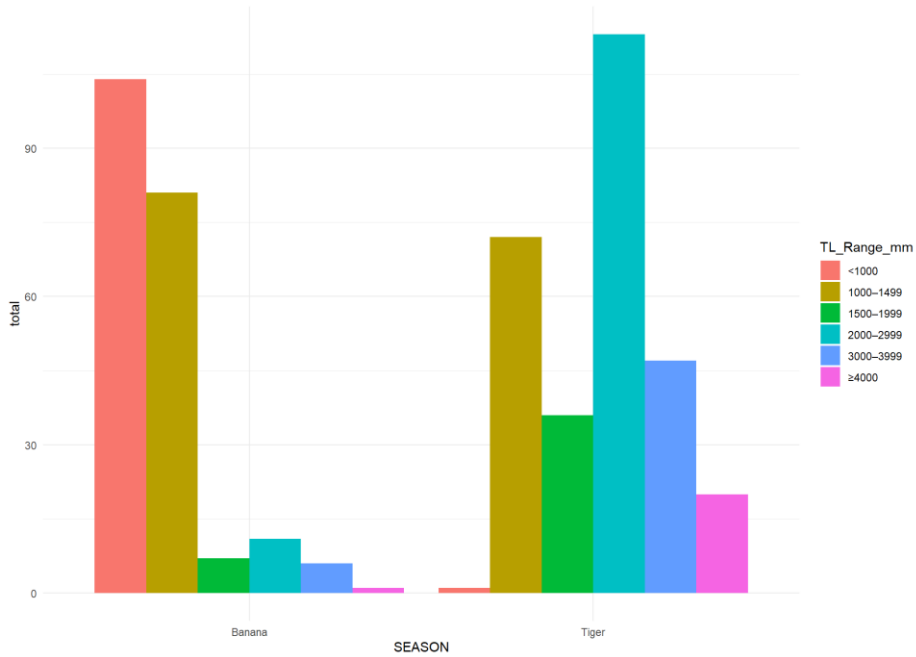
**SURVIVABILITY BY NET AREA**



**SEASONAL TRENDS BY NET AREA**



SEASONAL TRENDS BY TOTAL LENGTH



MOVE-ON PROVISIONS

Table x: Shows how many times move-on provisions would have triggered in 2023 and 2024 by season (1 = Bananas, 2= Tigers). This is highly variable but can start to visualise impact on fishing grounds.

zone_name	season	year	4 or more sawfish	5 or more sawfish	6 or more sawfish	7 or more sawfish
BOLD	1	2023	4	2	1	1
EDWARD	1	2023	1	1	1	1
FOG BAY	1	2023	2			
KEERWEER	1	2023	1			
MELVILLE	1	2023	7	5	2	1
PORT ESSINGTON	1	2023	5	5	4	3
SWEERS	1	2023	1			
BONAPARTE	2	2023	5	2	2	1
LIMMEN BIGHT	2	2023	2			
MELVILLE	2	2023	1			
MORNINGTON	2	2023	1	1	1	
<b>TOTALS</b>			<b>30</b>	<b>16</b>	<b>11</b>	<b>7</b>

zone_name	season	year	4 or more sawfish	5 or more sawfish	6 or more sawfish	7 or more sawfish
FOG BAY	1	2024	1			
KEERWEER	1	2024	1	1		
LIMMEN BIGHT	1	2024	1			

MELVILLE	1	2024	2	1	1	1
MORNINGTON	1	2024	1			
PORT ESSINGTON	1	2024	1	1	1	1
SWEERS	1	2024	1			
WEIPA	1	2024	3	2	2	2
GROOTE	2	2024	1	1		
LIMMEN BIGHT	2	2024	1			
MELVILLE	2	2024	1			
PORT ESSINGTON	2	2024	3	2	1	
<b>TOTALS</b>			<b>17</b>	<b>8</b>	<b>5</b>	<b>4</b>

## NPF Sawfish Management Requirements

The NPF [Marine Stewardship Council](#) (MSC) and [Wildlife Trade Operation](#) (WTO) conditions requirements.

### MSC Conditions

The 2023 NPF MSC reaccreditation included the following condition relating to sawfish.

*“By the fourth annual audit (September 2027) demonstrate that direct effects of the UoAs 1-5 (tiger prawn and white banana prawn sub-fisheries) are highly likely (with 80% probability) to not hinder recovery of sawfish species.”*

This included the three milestones and 6 actions, outlined below.

#### Milestones

- 1) **Year 1 (2025):** By the first surveillance audit, provide a plan detailing how uncertainties about the magnitude of the impact from the NPF tiger prawn and white banana will be reduced in order to demonstrate with a probability > 80% that those sub-fisheries do not hinder recovery of each of the sawfish species.
- 2) **Year 2&3 (2026/2027):** Provide an update on progress in meeting the condition.
- 3) **Year 4 (2028):** Demonstrate that systems are in place that allow >80% certainty that the tiger prawn and the white banana prawn sub-fisheries do not hinder recovery of each of the sawfish species.

#### Actions

- 1) AFMA, NPFI and the NPRAG will review and acknowledge all reports from relevant research projects to inform future management action and/or research needs pertaining to sawfish in the NPF.

*In progress – completion by 2027*

- 2) NPFI & AFMA will review all reports/ findings of data analysis and sea trials with a view to identifying any potential gear mitigation solutions effective at improving escapement and/or reducing interactions which also meet NPF prawn loss criteria for adoption across the fishery.

*In progress – NPF sawfish strategy workshop Nov 2025; development of NPF Sawfish Strategy (by 30 June 2026)*

- 3) AFMA, in consultation with NPFI, the NPRAG and NORMAC will implement successful gear mitigation solutions (that also meet NPF prawn loss criteria) and/or other practical management measures that assist to reduce impacts of fishing on sawfish across the fishery.

*In progress – processes, actions and timing to be included in NPF Sawfish Strategy (by 30 June 2026)*

- 4) CSIRO will undertake and publish the results of scheduled NPF bycatch Sustainability Assessments.

*Ongoing – 2025 Report in progress*

- 5) CSIRO and AFMA, in consultation with NPFI, NPRAG and NORMAC, will undertake & publish the results of scheduled Ecological Risk Assessments (ERAs) for the white banana prawn and tiger prawn sub-fisheries.

*Ongoing*

- 6) AFMA, in consultation with NPFI, NPRAG and NORMAC, will implement actions to address EPBC Act WTO conditions (as required).

*In progress – due 30 June 2026*

## WTO Conditions

The 2023 NPF WTO Approval has two conditions relating to sawfish.

**Condition 7:** *By 30 June 2026, the Australian Fisheries Management Authority must draw on the information developed through the Northern Prawn Fishery Strategic Research Plan 2019-2023 and other supporting research to develop a sawfish bycatch mitigation strategy for the Commonwealth Northern Prawn Fishery. The strategy should consider the application of all relevant management measures and controls, including potential technological, behavioural, temporal, and spatial responses.*

**Condition 8:** *The Australian Fisheries Management Authority must ensure that where possible, all interactions with sawfish and sea snakes in the Northern Prawn Fishery are reported to the species level.*

## Current Listing Status/Policies of Sawfish Species

### EPBC Act Listing

Listing of sawfish species under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), with the relevant listing criteria provided in **Table 1** below.

- Green sawfish (*Pristis zijsron*) and Dwarf Sawfish (*Pristis clavata*) are both listed as **Vulnerable** and **Migratory**.
- Largetooth Sawfish (*Pristis pristis*) is listed as **Endangered** and **Migratory**.
  - Recently reassessed and was listed as endangered under the EPBC Act on 20 August 2025.
- Narrow sawfish (*Anoxypristis cuspidata*) is listed as **Migratory**.
  - Recently reassessed (August 2025) and was not assessed as eligible for listing under any of the listing criteria in the EPBC Act, remaining listed as migratory.

**Table 1: Description of Relevant EPBC Act Listing Criteria**

Listing Category	Description
Migratory	A significant proportion of population cross one or more national jurisdictional boundaries (Bonn Convention, Article I)
Vulnerable	Is facing a high risk of extinction in the wild in the medium-term future
Endangered	Is facing a very high risk of extinction in the wild in the near future

Migratory species have legal protections under national law, including protections from trading, trapping, keeping or causing injury or death to an individual. Sawfish are currently under a combined recovery plan, [Sawfish and River Sharks - Multispecies Recovery Plan](#), released November 2015 in accordance with Part 13 of the EPBC Act. An updated recovery plan is currently being developed by DCCEEW following the listing update. Preliminary consultation from government stakeholders and technical experts is currently being sought to shape the first draft. Input is due 27 January 2026.

Further information on the EPBC Listing for all sawfish species can be found at: <https://www.dcceew.gov.au/environment/marine/marine-species/sharks/sawfish>.

### CITES Listing

Convention on International Trade in Endangered Species (CITES) lists animal and plant species under three appendices in accordance with the level of protection required.

1. Species that are threatened with extinction
2. Species that may become threatened with extinction
3. Species that need to be regulated to prevent unsustainable exploitation

The four sawfish species occurring in the NPF are listed under [Appendix 1](#) and are prohibited from international trade, with exceptions to scientific research. Any species listed under CITES Appendix 1 or 2 are automatically listed as migratory under the *Environment Protection and Biodiversity*

Conservation Act 1999 (EPBC Act) and therefore required to be reported as a Protected species in Commonwealth Fisheries, unless a positive non-detriment finding (NDF) is in place.

Further information on the CITES Listing for sawfish species can be found at: [https://www.speciesplus.net/species#/taxon\\_concepts?taxonomy=cites\\_eu&taxon\\_concept\\_query=Pristidae&geo\\_entities\\_ids=&geo\\_entity\\_scope=cites&page=1](https://www.speciesplus.net/species#/taxon_concepts?taxonomy=cites_eu&taxon_concept_query=Pristidae&geo_entities_ids=&geo_entity_scope=cites&page=1).

### ***IUCN Listing***

The International Union for Conservation of Nature's (IUCN) Red List of Threatened Species provides listings of the global conservation status of animal, plant and fungi species.

All sawfish species, including narrow sawfish, are listed as 'Critically Endangered' and 'Decreasing' on the IUCN list.

Further information on the CITES Listing for sawfish species can be found at: <https://www.iucnredlist.org/search?query=sawfish&searchType=species>.

### **Management of ETP species in other fisheries**

Mitigation strategies for protected species have been implemented across other Commonwealth fisheries, including:

- Dolphin Mitigation Strategies in the Small Pelagic Fishery (SPF) and Gillnet Hook and Trap sector (GHAT).
- Sea Lion Mitigation Strategy in the GHAT.
- Dogfish Management Strategy in the Southern and Eastern Scalefish and Shark Fishery (SESSF).

These management strategies include vessel-level specific management with interaction caps. The strategies are reviewed every 12 months by the Commonwealth Marine Mammal Working Group.

### ***SPF and GHAT Dolphin Mitigation Strategies***

All SPF and GHAT vessels must have an AFMA approved Dolphin Mitigation Plan that outlines vessel-specific actions to minimise dolphin interactions. Rules apply differently depending on the area of fishery (e.g. eastern or western).

The following measures are assessed in the vessel's mitigation plan (VMP):

- Fishing practices (e.g. how you are setting relative to tide).
- Gear setup (e.g. any changes or modifications to gear from previous seasons).
- Mitigation devices (e.g. any mitigation or modifications).

These Mitigation Strategies include interaction rates or caps, which require additional management action if breached, per the following examples:

- Interaction Rate: More than 1 dolphin per 50 shots (1:50) within a review period.
- Interaction Cap: Maximum number of dolphins interactions within a review period.

The first breach of the rate usually involves a review of the VMP, with management responses increasing with subsequent breaches.

### **SESSF Dogfish Mitigation Strategy**

SESSF uses spatial closures to minimise dogfish interactions as part of the Upper-Slope Dogfish Management Strategy. For example:

- 25% of core habitat spatial closures
- 12-month ban on fishing in areas of >3 interactions of dogfish (same or combination of species)

Other mitigation strategies have been implemented to promote population recovery, including:

- 100% monitoring (EM or observers) when fishing in closures
- Fishing and handling practices, for example, dogfish cannot go through de-hooker.
- Zero retention of any gulper sharks to minimise incentive for removal

Further information can be found at: <https://www.afma.gov.au/fisheries-management/management-tools/rebuilding-strategies>.

### **Other relevant AFMA Policy / Legislative Bycatch Management Requirements**

- Specific Mitigation Strategy components required (e.g. Commonwealth Bycatch Policy / AFMA Bycatch Strategy)

#### AFMA Bycatch strategy

The following principles were identified to minimise bycatch of ETP species.

1. Management responses are proportionate to the conservation status of bycatch species and Ecological Risk Assessment results
2. Consistency with Government Policy and legislative objectives (including to avoid and minimise) and existing national protected species management strategies such as the threat abatement plan and national plans of action
3. Incentives should encourage industry-led solutions to minimise bycatch of protected species utilising an individual accountability approach
4. Accounting for cumulative impact of Commonwealth Fisheries on protected species when making management decisions on mitigation
5. Appropriate and consistent monitoring and reporting arrangements across fisheries.

The following key focusses for AFMA are:

- determining data requirements for bycatch including reporting standards (such as species groups or individual species)
- reviewing the existing logbook system (paper and electronic) for capturing information on bycatch
- conducting education programs for the fishing industry (where needed) on how to report bycatch information
- reviewing protocols for data collection (observer and e-monitoring)
- developing internal procedures for handling bycatch information
- compiling species group cumulative bycatch information on an annual basis

[AFMA Bycatch Strategy- Mitigating protected species interactions and general bycatch 2017-2022.pdf](#)

Table 2: Criteria that apply to all gillnet fishers for each dolphin interaction within a review period.

Performance criteria (triggers)	Fisher and management response
<p><b>Any dolphin interaction</b></p> <ul style="list-style-type: none"> <li>• <i>Any dolphin interactions in a single gear set.</i></li> </ul>	<ul style="list-style-type: none"> <li>• The operator must submit a Listed Marine and Threatened Species form in the daily fishing logbook.</li> <li>• The operator must complete a Dolphin Interaction Evaluation Report and submit it to AFMA via email to GHAT @afma.gov.au within 48 hours of landing at the end of the trip.</li> <li>• The operator must post the e-monitoring data drive to AFMA within 48 hours of returning to port.</li> </ul>
<p><b>Additional dolphin interactions</b></p> <ul style="list-style-type: none"> <li>• <i>Three or more dolphin interactions across three or more gillnet sets in a single Review Period.</i></li> </ul>	<ul style="list-style-type: none"> <li>• The operator must immediately cease fishing with gillnets and return to port until authorised by AFMA to recommence fishing with gillnets.</li> <li>• An AFMA or AFMA- approved reviewer must review interaction factors including reviewing electronic monitoring footage from the boat and make recommendations on any potential changes to gear or fishing practices. This review may require the operator to resubmit their Dolphin Mitigation Plan for approval by AFMA.</li> </ul>
<p><b>Maximum dolphin interactions in a review period</b></p> <ul style="list-style-type: none"> <li>• <i>Six or more dolphin interactions where the Maximum Interaction Rate has not been exceeded in either of the previous two review periods.</i></li> </ul>	<ul style="list-style-type: none"> <li>• The operator must immediately cease fishing with gillnets and return to port until authorised by AFMA to recommence fishing with gillnets.</li> <li>• An AFMA or an AFMA- approved reviewer must review interaction factors including reviewing electronic monitoring footage from the boat and make recommendations on any potential changes to gear or fishing practices. This review may require the</li> </ul>

[GHAT gillnet\\_dolphin\\_mitigation\\_strategy\\_updated\\_aug\\_2019\\_accessible.pdf](#)

[spf\\_dolphin\\_strategy\\_2019\\_updated\\_accessible.pdf](#)

## Appendix 3 – Group Questions

The workshop objective is to ‘identify practical, cost-effective mitigation measures to reduce the impacts of commercial prawn trawl fishing on endangered or migratory species of sawfish in the Northern Prawn Fishery for inclusion in the NPF Sawfish Mitigation Strategy’. Taking into account the information presented, Working Groups are requested to discuss and provide advice on the following topics/questions:

### S1. Areas of concern / priorities to be addressed

What are the top priority areas for reducing sawfish interactions *eg* spatial, temporal/seasonal measures; minimising areas of gear interaction; reducing potential for entering the codend; vessel level versus fleet level interactions; animal survivability; other?

What are the trade-offs for balancing sawfish reduction mitigation measures and impacts on fishing operations?

Will move-on provisions reduce sawfish interactions given data suggests that sawfish move frequently and great distances?

If move-on provisions are accepted as a mitigation measure, what is an acceptable interaction rate<sup>1</sup> for the NPF as a whole or should thresholds for move-on provisions vary by season, fishing area, sawfish size class?

Based on the results of 2024 SBS-TED 70 and 2025 SBS-TED 50 trials, is it likely that these devices will reduce the numbers of sawfish entering the codend? What will be the likely benefit?

Have the trials of the grey (sturdier) mesh throat provided enough data to implement in the fishery (190 days and 487 trawls with 0 sawfish entanglements)?

Rank (in order of effectiveness) the potential for monitoring and measuring the effectiveness of the following mitigation measures:

Mitigation Measure	Ranking (1 – 7 in order of effectiveness)
Vessel level interaction rates/ caps	
SBS TEDs	
Sturdier throat/ flap mesh material	
Spatial closures	
Move-on provisions	

<sup>1</sup> Broodstock fishing permit condition: ‘If fishing activity results in interactions with four or more sawfish (any species of the family Pristidae) within a calendar day, the holder shall not deploy fishing gear again for at least 24 hours within three (3) nautical miles of the location where the most recent shot commenced and concluded’.

Temporal closures	
Other (please state)	

## S2. Potential management /mitigation options

Based on trial results, which *gear* mitigation options (SBS-TED 70, SBS-TED 50, grey mesh throat, TED Flap, FloMo) offer the potential for the best trade-off between effective sawfish risk reduction versus operational cost and catch performance (*ie* practical and cost effective management measures)?

Should there be different mitigation measures in place for the banana and tiger prawn fisheries (and/or JBG) *eg* as with BRDs?

Are there ways for costs of implementation to be minimised or incentivised to ensure they are adopted and supported by industry?

Ideally the NPF Sawfish Strategy should be iterative to ensure the Strategy is updated in response to improvements in gear technology and research outcomes. Should a ‘stepped’ approach to implementing mitigation measures be adopted (as occurred with the Toms BRD?)

If yes, from the options below please rank (in order of preference) the preferred ‘practical, cost effective’ mitigation options to be introduced in the first iteration?

Mitigation Measure	Ranking (1 – 7 in order of preference)
Vessel level interaction rates/ caps	
SBS TEDs	
Sturdier throat/ flap mesh material	
Spatial closures	
Move-on provisions	
Temporal closures	
Other (please state)	

Should there be a voluntary phase-in period (as occurred with the Toms BRD)?

If yes, when should this occur *eg* Voluntary - tiger prawn season 2026; Compulsory - banana prawn 2027<sup>2</sup>?

Identify how the proposed mitigation measures will meet help meet WTO and MSC conditions.

---

<sup>2</sup> A timing consideration may be whether there will be different mitigation measures between banana and tiger prawn seasons and/or JBG

### S3. Research gaps / further required research

If sawfish are prevented from entering the codend, what area/s should be the next focus to enable animals to escape out the openings?

Should there be further trials to test throat, mesh types etc?

Do alternative mesh materials like FloMo (which prevents entanglement) warrant further investigation/ trials, including on how best to attach to the net?

Are there other potential gear mitigation options that should be trialled?

Should data collection to support sawfish populations estimates and survivability be ongoing (eg tissue samples and sawfish tagging) be a priority for the fishery and how can this be incentivised?

Should the Strategy include a ‘sawfish safe handling and release’ protocol to improve sawfish sustainability and crew safety?

How often should the sawfish strategy be reviewed (eg every 1, 2, 3 years) noting the time required for gear mitigation sea trials & data analysis/reporting, EM footage review?

Other Comments?

**Table 2: Working Group Tables**

Table 1	Table 2	Table 3	Table 4
Darci Wallis (L)	Rich Pillans (L)	Geoff Richardson (L)	Adrienne Laird (L)
Bryan Van Wyk	Brandon Meteyard	Annie Jarrett	Dwayne Klinkhamer
Ben O’Reilly	Dylan Prendergast	Dion Buktenica	Beau Anderson
Geoffrey Muldoon	Lauren Crowley	Ian Boot	Rik Buckworth
Eva Plaganyi	Steve Eayrs	Gary Fry	Brodie Macdonald
	Mark Robson	Ben Liddell	Jodie Mehrrens