Australian Government
Australian Fisheries Management Authority

Torres Strait Prawn Fishery

BYCATCH AND DISCARDING WORKPLAN

2015 – 2017

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Box 7051, Canberra Business Centre, ACT 2610 Tel (02) 6225 5555 Fax (02) 6225 5500 AFMA Direct 1300 723 621

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1. Introduction

1.1 Background

The *Torres Strait Prawn Fishery Bycatch and Discarding Workplan* will detail a program of actions to address priority bycatch issues in accordance with legislative and policy responsibilities.

The aim of this workplan is to develop strategies that will:

- Respond to ecological risks assessed through the Ecological Risk Assessment for the Effect of Fishing and other assessment processes.
- Avoid interactions with species listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and species listed under the Torres Strait Species of Interest list.
- Reduce discarding of target species to as close to zero as practically possible.
- Minimise overall bycatch in the fishery.

The Bycatch Workplan outlines the management actions that the Australian Fisheries Management Authority (AFMA) aims to achieve by 2017 in response to bycatch and discarding of species of high ecological risk in the Torres Strait Prawn Fishery (TSPF).

1.2 Supporting documents

This workplan only forms part of AFMA's management response under the broader Ecological Risk Assessment (ERA) framework, and should be read in conjunction with the:

- Environmental sustainability assessment update for habitats, assemblages and bycatch species in the Torres Strait Prawn Fishery;
- Commonwealth Policy on Fisheries Bycatch;
- AFMA's program for addressing bycatch and discarding in Commonwealth fisheries – an implementation strategy.

1.3 Fishery snapshot

The TSPF is located between the tip of Cape York and Papua New Guinea. It consists of over 100 islands and many more reefs. Eighteen of the islands are inhabited. The fishery is managed by the Torres Strait Protected Zone Joint Authority (PZJA), established under the *Torres Strait Fisheries Act 1984*. Currently, all licenses in this fishery are held by the non-Indigenous Transferable Vessel Holder (TVH) sector.

The TSPF is managed through the *Torres Strait Prawn Fishery Management Plan 2009* using a series of input controls, including a limit on the number of boat licenses and tradable fishing nights combined with other restrictions on gear and vessel characteristics (DAFF, 2009). Blue Endeavour and Brown Tiger Prawns are the main species targeted in the fishery with Red Spot King Prawns essentially a by-product species. The commercial catch is also made up of a number of other by-product species which include finfish, cephalopods, crabs, scallops.

The fishery adopted the Torres Strait Prawn Fishery Harvest Strategy in 2011 (AFMA, 2011) which defines a set of trigger, target and limit reference points and decision rules for the fishery as a whole and

for tiger prawns. A catch trigger also exists for endeavour prawns. Triggers have been set at levels that acknowledge the reduced effort in the fishery in recent years, and align with the concept of Maximum Economic Yield (MEY), consistent with the fishery's goal to move to MEY-based targets when fishing activity increases. The harvest strategy provides for revision and update when necessary to reflect these changes in activity and has a long-term economic target that will be pursued once catch-and-effort triggers in the fishery are reached.

The first Bycatch Action Plan was developed in 1999 to address growing public concern regarding prawn trawl operations and in recognition of initiatives being undertaken in adjacent trawl fisheries. The second Bycatch Action Plan followed in 2005, incorporating any changes regarding management of bycatch species. Over this time, the Fishery has achieved significant milestones in the management of bycatch, including the implementation of trawl exclusion zones in various areas of the TSPF since 2008, as well as, the introduction of mandatory turtle exclusion devices (TED) and bycatch reduction devices (BRD) in 2002 and 2004 respectively. More information on the fishery can be found in the *Torres Strait Prawn Fishery Handbook 2015* (Cocking and Turnbull 2015).

1.4 Workplan objectives

The key objectives of this Workplan for 2015-17 are to:

- Reduce the risk to key high priority species, TEPs and species of interest in the TSPF.
- Provide protection for areas that are important habitat for vulnerable species of marine life.
- Get a better understanding of the current BRDs used in the TSPF, and improve the uptake of the most effective BRDs. Continue to improve the quality of scientific data collected by scientific observers;
- Improve reporting of bycatch and TEP interactions.
- Clarify gear specifications in the relevant legislative instruments.

The following projects and management actions have been or will continue to be undertaken in pursuit of the above objectives over the period of this Workplan. The proposed management actions will focus on developing and implementing cost-effective strategies to pursue continual improvement in bycatch reduction, fill critical information gaps about 'at risk' bycatch species, or about bycatch and discarding more generally. These strategies will be incorporated into a more strategic approach to the management of bycatch and discarding within the fishery. During the annual review of the Workplan, further research priorities and projects can be added if consistent with the overall aim of the Workplan and there is a capacity to fund any further projects.

2. Ecological Risk Assessment

2.1 Process

In moving towards Ecosystem Based Fisheries Management, the Commonwealth Scientific and Industrial Research Organisation (CSIRO) undertake ERAs for all AFMA-managed fisheries. ERA proceeds through four stages of analysis: scoping; an expert judgement based Level 1 analysis (SICA – Scale Intensity Consequence Analysis); an empirically based Level 2 analysis (PSA – Productivity Susceptibility Analysis); and a model based Level 3 analysis. This hierarchical approach provides a cost-efficient way of screening hazards, with increasing time and attention paid only to those hazards that are not eliminated at lower levels in the analysis. Risk management responses may be identified at any level in the analysis

and result in a list of species that are at high risk to the effects of fishing of which AFMA should focus management attention

The level 1 analysis has been undertaken in the TSPF. No further analysis was undertaken at this stage due to the low effort in this fishery resulting in a very low perceived risk to bycatch. AFMA will consider the need to undertake level 2 analyses once effort in the fishery reaches the triggers identified in the Torres Strait Prawn Fishery Harvest Strategy.

2.2 Sustainability assessment

In 2005, the CSIRO undertook a project looking at the effects of trawling on seabed habitats, species and assemblages in the TSPF (Pitcher, 2011). This project was reviewed in 2011 by overlaying maps of seabed habitats, species and assemblages from the previous project with a summary of the 2011 effort data for the fishery. This has provided updated information on the potential impact that the TSPF may have on non-target species giving consideration to current levels and pattern of effort.

The 2005 study found that a few species were at risk from trawling in the TSPF. The 2011 review found that the risks identified in 2005 were now minimal given the current low level of effort in the fishery.

Effort levels peaked through the 1990s and have been declining since. The 2005 assessment was conducted when effort was about half of peak levels, but more than four-times greater than in 2011 (1,663 days). Effort in 2005 (6,957 days) was close to the Australian effort cap (6,867 nights) and above the estimated effort at Maximum Economic Yield cap (5,284 days) if that target was adopted in future. The current effort levels (2014) are estimated at around 2,200 fishing days. The 2005 sustainability assessment is a reasonable indication of the potential environmental risks if the fishery recovers to these effort levels. Consequently, should effort in the fishery increase, it is likely that some management action may be required to ensure sustainability of all bycatch and benthos.

2.3 Threatened, endangered and protected species

It is a legislative requirement that interactions with species listed under the EPBC Act be avoided. Consequently, AFMA develops measures to mitigate interactions for all threatened, endangered and protected (TEP) species regardless of their risk level under the ERA framework.

The TSPF interacts with several groups of TEP species including sea snakes, turtles, syngnathids, dugongs and sawfish. Seasnake bycatch represents the largest amount of individuals captured in the TSPF. A summary of TEP species interactions is detailed in Table 1.

Table 1. Summary of TEP species interactions for 2012-2014.

Year	**2012**			**2013**			**2014**		
Life Status	Dead	Alive	Unknown	Dead	Alive	Unknown	Dead	Alive	Unknown
Turtle		5			4			5	
Sawfish					1				
Sygnathids	69								
Seasnakes	9	1173	368	6	753	433	17	819	494

Six of the seven existing species of marine turtle are found in Australian waters, including the Loggerhead turtle, Green turtle, Hawksbill turtle, Olive Ridley turtle, Flatback turtle and Leatherback turtle. These species are vulnerable to local depletion and therefore bycatch reduction is vital for the long-term viability

of these species. Turtle mitigation has been largely addressed through mandatory use of Turtle Excluder Devices (TEDs) in the TSPF (see section 4).

3. Species of Interest

Management of all fisheries in the Torres Strait is pursued under the objectives and framework of the Torres Strait Treaty. The treaty is concerned with the sovereignty and maritime boundaries in the area between Australia and Papua New Guinea and the protection of the way of life and livelihood of traditional inhabitants and the marine environment. In this context, the traditional inhabitant members of the Torres Strait Prawn Management Advisory Committee (TSPMAC) and the Torres Strait Regional Authority (TSRA) have compiled a list of species which are significant to the traditional inhabitants of the Torres Strait and at risk of interaction with fishing efforts within the TSPF (Table 2). Observers collect information on the take of these species, and this information is provided to the TSPMAC. The TSPMAC discuss whether any management action is recommended depending on the catches.

Table 2. Species of interest compiled by the traditional inhabitants of the Torres Strait Prawn Management Advisory Committee and the Torres Strait Regional Authority

Caab Code	Scientific names	Common Names	Traditional names
37 381002	*Mugil cephalus*	Sea Mullet	THURUD WAP
37 438010	*Siganus lineatus*	Goldlined Rabbitfish	PARASA
37 384010	*Choerodon Schoenleinii*	Black spot Tusk Fish / Parrot fish	BILLA
37 311040	*Epinephelus quoyanus*	Gold Spot Rockcod / Long fin rockcod	THUKUM
37 350017	*Plectorhinchus chrysotaenia*	Painted Sweetlip / Goldlined Sweetlips	KWIKUMUK
37 350003	*Diagramma labiosum*	Painted Sweetlip / Slatey Bream	PECOO
37 311045	*Cephalopholis sonnerati*	Tomato Cod	PELIT
37 437008	*Acanthurus dussumieri*	Pencil Surgeonfish	SABAI
37 437031	*Naso unicornis*	Bluespine Unicornfish	EEBAI
28 820006	*Panulirus ornatus*	Ornate rocklobster	

4. Current Measures Addressing Bycatch

4.1 Bycatch reduction devices and turtle excluder devices

The use of TEDs and BRDs is known to reduce the volume of bycatch taken in fisheries. Since they were introduced in 2002, TEDs have proven most successful in the reduction of large bycatch species including turtles, sharks and rays. The prevention of large animals from entering the codend greatly enhances their chance of survival, reduces damage to the prawns and sorting time, and minimises the risk to deck crew from being bitten, stung or injured. Within the TSPF, the introduction of TEDs has reduced interactions with turtles from 500-600 (Robins, 1993) each fishing season to around 6 turtles each season. Of these recorded interactions, there have been no recorded turtle deaths. BRDs have also been mandated for the fishery to reduce the volume of fish bycatch. Further information regarding the efficiency of BRDs and TEDs has not yet been collected and a full gear survey will be undertaken as part of this Workplan.

4.2 Temporal and spatial closures

The TSPF is subject to temporal and spatial closures. These have been initiated for various reasons, including protection of juvenile prawns, protection of pearl shell beds and protection of breeding population of marine turtles. The spatial and temporal management regime reduces the area and time available for fishing generally, thereby protecting critical habitats and providing sanctuary for a number of species. Protecting the diversity of complex seagrass beds, reef communities and the epibenthos that they support, has significantly reduced the footprint of the fishery and its impact on the ecology of the area.

With the implementation of the management plan in 2009, some of the closures were changed to actually being excluded from the defined fishery area. Given the importance of these closures and no plans to change them, excluding them from the fishery was a more committed option for closing these areas to fishing permanently. Seasonal (temporal) closures (0600 hours local time on 1 December and 1700 hours local time on 1 March the following year) to trawling also limit the impact of the fishery on bycatch.

4.3 Fishing effort

Fishing effort has been at historically low levels since 2009, operating at around 30% of the Australian effort limit for the fishery (6,867 days) for the 2009 – 2014 seasons. The decrease in fishing effort combined with spatial and temporal management and reductions in the TSPF fleet has resulted in a reduced impact on the ecosystem and thus, bycatch.

5. Bycatch Reduction Workplan

Table 2. Workplan for 2015-2017

Management Actions	Risks being addressed	Timeframe	Responsible Party	Projected Cost	Milestones	Performance Indicators
1. Conduct a gear survey to identify the BRDs and TEDs used in the fishery.	Potential use of less effective BRDs and TEDs than are best practice.	June 2015	AFMA bycatch program.	$1,000-2,000. AFMA bycatch program.	Survey conducted. Draft survey report produced. Final report with actions and recommendations to the Torres Strait Prawn Management Advisory Committee.	Removal of any outdated BRDs from the fishery (September 2015). Increased use of the most effective BRDs in the fishery.
2. Review and streamline the TSPF gear regulations.	Use of the most effective bycatch reduction devices. Compliance with minimum gear standards (align with US standards). Industry understanding and compliance with gear regulations. Inconsistency in regulations between similar fisheries	End of 2015	AFMA Management TSPMAC	To be included in AFMA bycatch program budget. (TED review has already been conducted for NPF and the results can be extended to the TSPF. BRD review was conducted for QLD east coast fishery leading to changes in QLD regulations)	Permitted gear types complied with. Improved compliance rates with gear regulations.	Develop list of most effective devices permitted to be used. Review minimum gear standards (i.e. align TEDs with US standards). Simplify regulations. Update the TSPF gear direction.
3. If catch / effort increases to within trigger limits as described in the Harvest Strategy then a review of moderate/high risk ERA species will be undertaken.	Risk to bycatch species found as moderate/ high risk through the ERA process.	Initiated once harvest strategy triggers are reached.	AFMA fisheries management team.	Budgeted in fishery overheads.	Monitor catch and effort triggers. Review of high risk ERA species undertaken within AFMA and management options discussed by TSPMAC if triggers are reached.	If triggers are reached, TSPMAC recommendation is made regarding necessary management actions for moderate/ high risk species.

6. Data and Research

6.1 Monitoring programs

The monitoring program in the TSPF is implemented through logbooks and observer coverage to record bycatch and interactions with threatened, endangered and protected species.

In 2014, 2,203 days of fishing effort were recorded with 47 days observer coverage (2.53% of active effort). This level of coverage increased from 2013, where 37 of the 1990 days fished were observed (1.86% of fishing effort).

Monitored Bycatch Groups	**Logbook**	**Scientific Observers**
Turtles	Yes	Yes
Sea Snakes	Count only	Yes
Syngnathids	Count only	Yes
Sawfish	Yes	Yes
Other elasmobranches	No	Yes
ERA identified 'At risk' species	N/A	N/A
Bycatch estimates	No	Yes
Bycatch composition	No	Yes

7. Review Process

The Workplan will be reviewed biannually to ensure the progress in meeting the objectives of the Workplan are on track. This will allow risks to the fishery to be mitigated as they arise.

The Workplan will be reviewed at the end of two years and a new workplan developed and implemented. The review will assess achievement of milestones and the overall effectiveness of fishery projects in terms of addressing bycatch risks and discard reduction.

8. References

Australian Fisheries Management Authority (AFMA). (2011). Harvest Strategy for the Torres Strait Prawn Fishery, AFMA, Canberra, Australia.

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Pitcher, C.R. (2013) Environmental sustainability assessment update for habitats, assemblages and bycatch species in the Torres Strait Prawn Fishery. Scientific Technical Report. CSIRO, Brisbane, Australia.