



Australian Government

Australian Fisheries Management Authority



Small Pelagic Fishery



Bycatch and Discarding Workplan



2014-2016

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1. Introduction

In carrying out its functions, the Australian Fisheries Management Authority (AFMA) must pursue objectives in the *Fisheries Management Act 1991* including having regard to the impact of fishing activities on non-target species and the long term sustainability of the marine environment.

Under Part 2 of the *Small Pelagic Fishery Management Plan 2009*, AFMA is required to develop and implement a bycatch action plan (now referred to as a Bycatch and Discarding Workplan) to ensure that information is gathered about the impact of the Small Pelagic Fishery (SPF) on bycatch species, that all reasonable steps are taken to minimise incidental interactions with Threatened, Endangered and Protected (TEP) species, and that the ecological impacts of fishing on habitats are minimised.

The Workplan should be read in conjunction with:

- the *Commonwealth Policy on Fisheries Bycatch (2000)*
- *AFMA's program for addressing bycatch and discarding in Commonwealth fisheries: an implementation strategy (2008)*.

2. Fishery description

The SPF includes Commonwealth waters (3-200nm) from south east Queensland, southern Australia, and Western Australia to latitude 31°00'00" S. The fishery is currently divided into two sub areas, east and west of latitude 146°30'00" E.

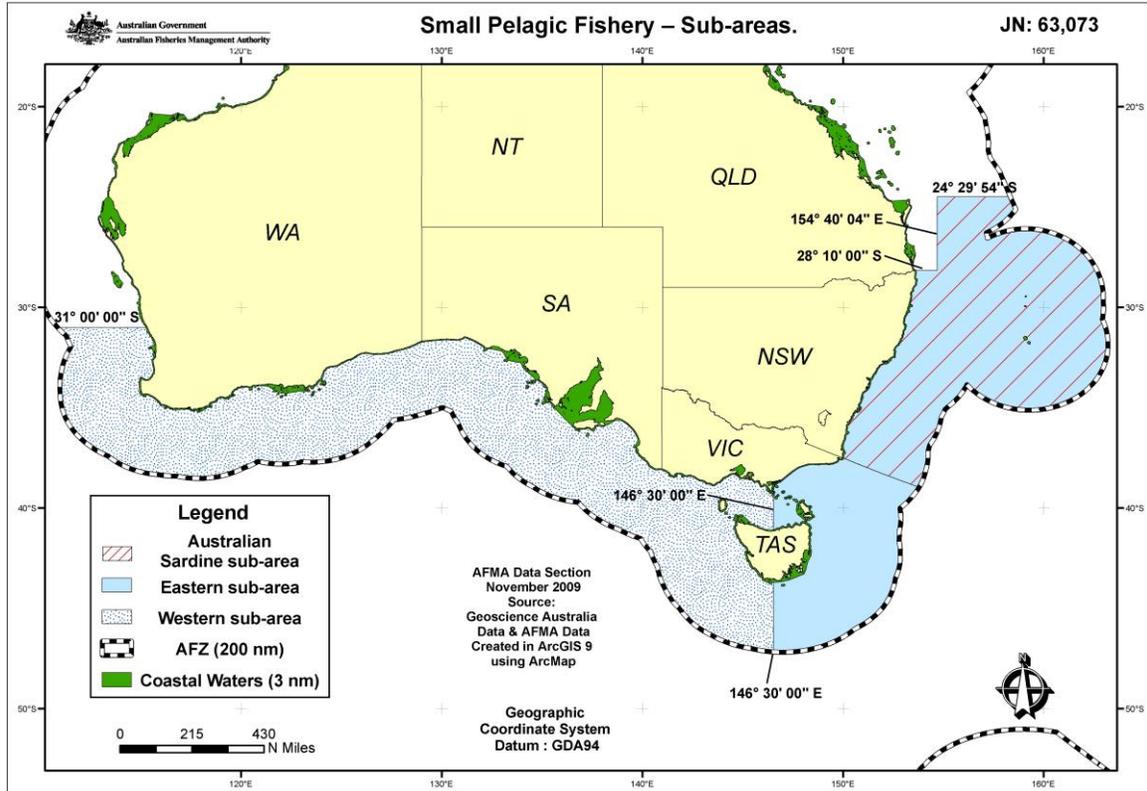


Figure 1 Eastern and western sub areas of the SPF, including the sardine sub-area.

There are four target species in the SPF:

- Blue Mackerel (*Scomber australasicus*)
- Jack Mackerels (*Trachurus declivis*, *Trachurus murphyi*)
- Redbait (*Emmelichthys nitidus*)
- Australian Sardines (*Sardinops sagax*).

On 1 May 2012, AFMA implemented a quota management regime in the SPF. The total allowable catch for these species is allocated amongst operators based on their quota holdings. Any catch of the target species must be covered by quota.

The two fishing methods permitted in the SPF are purse seine and midwater trawl. Jigging was trialled as a new method for the 2013-14 fishing season but has not been implemented as a permanent fishing method in the SPF and therefore is not considered in this Workplan.

Bycatch and discarding risks in the SPF

In the SPF:

- bycatch means catch other than of the four target species in the SPF. Bycatch also means that part of catch that does not reach the deck of the fishing vessel but is affected by interaction with fishing gear
- discarding means catch (of either target species or bycatch) which is discarded because either it has low commercial value or because regulation precludes it from being retained.

The methods used in the SPF are relatively selective thereby ensuring operators catch target species without large volumes of bycatch. Accordingly, this workplan primarily focuses on the reduction of the risk of bycatch of TEP species such as marine mammals and seabirds.

Data contained in the Workplan has been obtained primarily through logbooks, catch disposal records, research projects and on-board observers.

2.1 Purse seine

The risk of bycatch of TEP species when using purse seine gear is low. There have been no reported purse seine gear interactions with TEP species since the first SPF Bycatch and Discarding Workplan commenced in 2009, and very low levels of reported interactions before this.

There were 29 species that were identified as high risk to purse seine fishing in the SPF and can be found in **Table 1** (below). These are all TEP species and the Ecological Risk Assessment report explains that there is a lack of information regarding the nature of the interaction with the purse seine sector of the SPF.

The *Ecological Risk Management Report for the Purse Seine Sector* (2010) identified that purse seine fishing in the SPF represents minimal risk to TEP and other bycatch species because:

- species targeted in the SPF generally school in single species groups
- purse seine operators assess schools prior to deploying nets and if species such as marine mammals or sharks are detected, the net is not deployed
- Purse seine nets rarely entangle fish or other species and TEP species can usually be readily released by lowering of part of the net
- the method allows continuous access to the water/air interface for marine mammals and reptiles to breathe if a TEP species is encircled in the net.

2.2 Midwater trawl

There has been no reported midwater trawl gear interactions with TEP species since the first SPF Bycatch and Discarding Workplan commenced in 2009 which has been a period of low fishing effort. However a number of dolphin and seal interactions were reported during midwater trawl

operations in 2004-05. Following the introduction of management measures further monitoring found:

- interactions with dolphins are rare: there were no observed interactions over two seasons of observations.
- fur seals were frequently observed entering the trawl nets, and there has been some evidence of some mortality.

Seabird interactions in the SPF are low with a few isolated interactions reported in the 2005-06 season. The only other TEP species interactions involved the catch of one syngnathid during 2004-05.

The *Ecological Risk Management: Report for the Midwater Trawl Sector of the Small Pelagic Fishery* in March 2010 identified eight priority species that are at high risk of interacting with midwater trawl fishing gear. These are outlined in **Table 1**. It should be noted that recent midwater trawl effort has been very low.

2.3 Jigging

Jigging was trialled as a new method for the 2013-14 fishing season to target Blue mackerel. AFMA deployed observers on initial trips to monitor the effectiveness of the jigging gear and interactions with TEP species. Over the two trips of the trial a total of three mackerel were caught and there was an interaction with a shearwater. Based on this, AFMA has assessed that the jigging trial for mackerel did not meet AFMA's legislative objectives of cost efficient and environmentally sustainable management and therefore was not implemented as a permanent fishing method in 2014-15 and therefore not considered in this Workplan.

3. Ecological Risk Assessment Results

The Ecological Risk Assessment process is undertaken to determine the impact of fishing on marine species and habitats. Assessment of marine species is based on a series of parameters including life history, biological productivity and susceptibility to fishing gear. It involves a hierarchy of risk assessment methodologies, as highlighted in Figure 2, progressing from a comprehensive, largely qualitative analysis at Level 1, through a semi-quantitative Level 2 Productivity Susceptibility Assessment (PSA), to a Residual Risk Analysis of the Level 2 PSA which refines the risk assessment by encompassing management measures, to a quantitative analysis at Level 3 Sustainability Assessment for the Effects of Fishing (SAFE). This approach is a means of screening out low impact activities and low risk species and focusing a more intensive and quantitative analyses on those species assessed as being of higher potential risk from the impact of fishing. For the detailed methodology please refer to *Ecological Risk Assessment for the Effects of Fishing: Methodology* (Daley et al, 2007) or see <http://www.afma.gov.au/managing-our-fisheries/environment-and-sustainability/ecological-risk-management/#spf>.

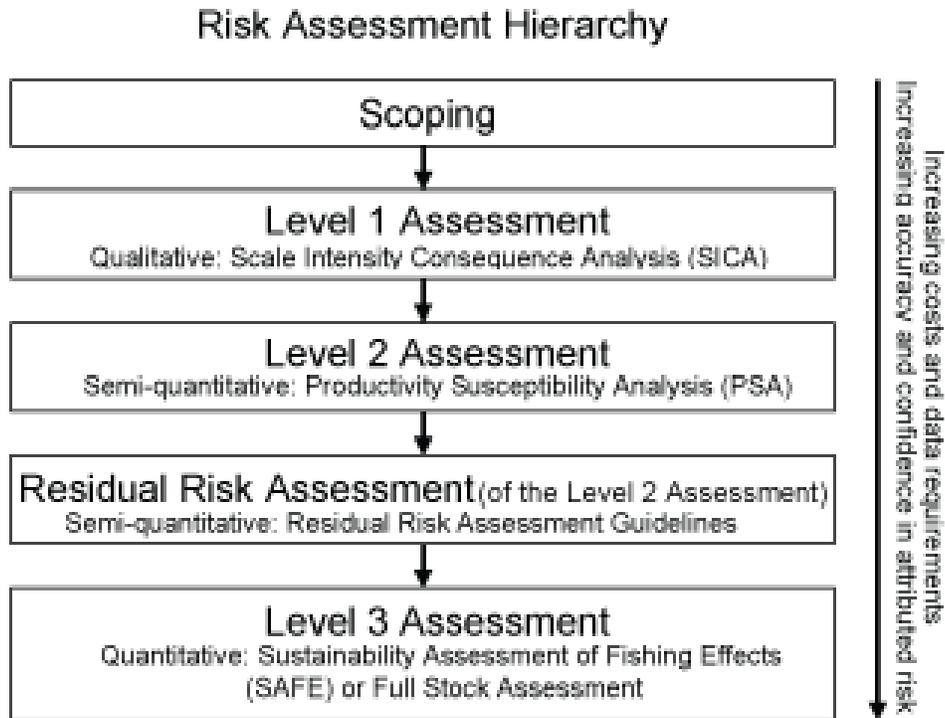


Figure 2: Ecological Risk Assessment Hierarchy

The highest level of assessment undertaken in the SPF was the Level 3 SAFE Assessment for teleosts and chondrichthyans. Level 2 PSA and a Residual Risk Analysis of Level 2 PSA results were also conducted for the SPF. Out of a total of 100 species (3 chondrichthyans and 97 teleosts) that were assessed by the SAFE methodology, across both the purse seine and mid-water trawl sectors of the SPF, no species were assessed as high risk to the effects of fishing.

Noting that there were no high risk species identified under the SAFE methodology, actions under this bycatch and discarding workplan have been prioritised to address risks to the 29 species that were assessed as being at high risk from either midwater trawl or purse seine methods through the Level 2 PSA Residual Risk Analysis. These species are detailed in **Table 1**.

3.1 Purse seine

The level 2 PSA Residual Risk Analysis results identified 29 species at high risk from purse seine fishing in the SPF (**Table 1**). These species were considered at high risk because of a lack of observer information regarding the nature of interactions with the purse seine sector of the SPF. However the ERA assessment acknowledges that impact on TEP species when using purse seine gear is generally considered to be low as in most cases most marine mammals are able to move freely into and out of the purse-seine net as it is top-opening. There have been no reported purse seine gear interactions with TEP species since the first SPF Bycatch and Discarding Workplan commenced in 2009, with very low levels of reported interactions before 2009.

3.2 Midwater trawl

The level 2 PSA Residual Risk Analysis results identified eight species at high risk from midwater trawl fishing in the SPF (**Table 1**). Seven dolphin species were considered high risk due to a number of interactions reported during midwater trawl operations in 2004-05. The Australian fur seal is assessed as high risk as populations of this species are in the proximity of the midwater trawl sector and when the fishery was assessed between 2006 and 2008 the effectiveness of SEDs was still being trialled.

There has been no reported midwater trawl gear interactions with TEP species since the first SPF Bycatch and Discarding Workplan commenced in 2009 however recent effort has been very low.

Table 1: High risk species identified from the SPF Level 2 Productivity Susceptibility Analysis Residual Risk Assessment for mid-water trawl and purse seine. **Note:** Yes = at high risk from the method; No = not at high risk from the method; * = refer to action item in Table 2 which explains how the identified risk is addressed.

Common Name	Scientific Name	Purse Seine	Mid-water trawl	Action Item*
Andrew's Beaked Whale	<i>Mesoplodon bowdoini</i>	Yes	No	2
Australian Fur Seal	<i>Arctocephalus pusillus doriferus</i>	Yes	Yes	1, 2
Blainville's Beaked Whale	<i>Mesoplodon densirostris</i>	Yes	No	2
Bottlenose Dolphin	<i>Tursiops truncatus</i>	Yes	Yes	2
Cuvier's Beaked Whale	<i>Ziphius cavirostris</i>	Yes	No	2
Dwarf Sperm Whale	<i>Kogia simus</i>	Yes	No	2
Elephant Seal	<i>Mirounga leonina</i>	Yes	No	1, 2
False Killer Whale	<i>Pseudorca crassidens</i>	Yes	No	2
Fraser's Dolphin	<i>Lagenodelphis hosei</i>	Yes	Yes	2
Ginkgo Beaked Whale	<i>Mesoplodon ginkgodens</i>	Yes	No	2
Gray's Beaked Whale	<i>Mesoplodon grayi</i>	Yes	No	2
Hector's Beaked Whale	<i>Mesoplodon hectori</i>	Yes	No	2
Hourglass dolphin	<i>Lagenorhynchus cruciger</i>	Yes	Yes	2
Humpback Whale	<i>Megaptera novaeangliae</i>	Yes	No	2
Indian Ocean bottlenose dolphin	<i>Tursiops aduncus</i>	Yes	Yes	2

Common Name	Scientific Name	Purse Seine	Mid-water trawl	Action Item*
Indo-Pacific Humpback Dolphin	<i>Sousa chinensis</i>	Yes	No	2
Killer Whale	<i>Orcinus orca</i>	Yes	No	2
Leopard Seal	<i>Hydrurga leptonyx</i>	Yes	No	1, 2
Long-finned Pilot Whale	<i>Globicephala melas</i>	Yes	No	2
Minke Whale	<i>Balaenoptera acutorostrata</i>	Yes	No	2
Pygmy Killer Whale	<i>Feresa attenuata</i>	Yes	No	2
Risso's Dolphin	<i>Grampus griseus</i>	Yes	Yes	2
Rough-toothed Dolphin	<i>Steno bredanensis</i>	Yes	No	2
Short-finned Pilot Whale	<i>Globicephala macrorhynchus</i>	Yes	No	2
Southern Bottlenose Whale	<i>Hyperoodon planifrons</i>	Yes	No	2
Southern Right Whale Dolphin	<i>Lissodelphis peronii</i>	Yes	Yes	2
Strap-toothed Beaked Whale	<i>Mesoplodon layardii</i>	Yes	No	2
Striped Dolphin	<i>Stenella coeruleoalba</i>	Yes	Yes	2
True's Beaked Whale	<i>Mesoplodon mirus</i>	Yes	No	2

4. Existing measures to reduce bycatch

4.1 Purse seine

Observer Coverage

The observer coverage target for purse seine is:

- 10% of shots or
- the first five trips for new boats entering the fishery or existing boats moving into significantly new areas.

Code of Practice

The SPF purse seine fishery operates under the *Commonwealth Small Pelagic Fishery Purse Seine Code of Practice* (2008), which includes provisions regarding minimising the risk of interactions with TEP species. These provisions include:

- assessing the presence of TEP species prior to deploying the net
- making every reasonable endeavour to return any captured TEP species alive utilising techniques outlined in the Protected Species Handling Manual
- terminating the shot if this does not work and releasing one end of the net until the TEP species is released

Reporting requirements

For both purse seine and midwater trawl methods, operators are required to report any TEP species interactions to AFMA in their logbook.

4.2 Midwater trawl

Observer coverage

Observer coverage targets for midwater trawl are:

- 20% of shots or
- the first 10 trips for new boats entering the fishery, or existing boats moving into significantly new areas.

Seal Excluder Devices

The use of an AFMA-approved Seal Excluder Device (SED) is compulsory for all midwater trawl vessels in the SPF. A 2008 study of SEDs on midwater trawl vessels in the SPF recommended that a top opening SED needed to be further examined. The 2009 Workplan identified a trial of upward excluding SEDs which has not proceeded due to lack of midwater trawl effort in the fishery.

Ongoing camera trials of acoustic release upward-excluding SEDs in the Commonwealth Trawl Sector has delivered positive results. The acoustic release mechanism allows the SED gate to be deployed only when the trawl is operating in the seal diving range. Preliminary results indicate that this technique effectively releases trapped seals and reduces the potential loss of fish.

The effectiveness of SEDs on SPF midwater trawl vessels will be tested should midwater trawling recommence in the fishery.

Individual Vessel Management Plans

From 1 May 2013, all midwater trawl vessels are required to develop and implement AFMA-approved Vessel Management Plans (VMPs) for seabirds and marine mammals before fishing. VMPs must contain measures to minimise and avoid where possible, the discharge of biological material whilst fishing gear is in the water and to use physical mitigation devices in a particular manner to avoid interactions with seabirds, seals and dolphins.

The 2009 Workplan included the development and implementation of individual VMPs for midwater trawlers.

5. Bycatch Workplan and Action Items

The key objectives of the Bycatch Workplan for the period 2014-2016 are to:

- respond to high ecological risks assessed through AFMA's Ecological Risk Assessment process and management response completed in 2010 and other assessment processes
- avoid interactions with species listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)
- reduce discarding of target species to as close to zero as practically possible
- minimise overall bycatch in the fishery over the long-term.

Table 2 outlines actions that will be undertaken during the period of the Workplan to pursue the above objectives.

6. Review and reporting Process

The Workplan will be reviewed at:

- 6 months – to check that the progress of actions is on track.
- 12 months – to ensure actions are progressing well, ensure that the objectives of are being met and determine if any additional actions can be taken.
- 18 months – to check that the progress of actions is on track.
- 24 months – to fully assess the overall effectiveness of the workplan actions in addressing the associated bycatch risks or discard reduction.

Table 2: SPF Bycatch and Discard action items

#	Action Items	Risk / Issue to be addressed	Timeframe	Costs \$	Responsible Parties	Performance Indicators	Milestones
1	Design and test SEDs for SPF midwater trawl vessels, and adapt SED design based on results.	Mitigation of seal and dolphin mortalities.	End of 2015-16 fishing season, pending fishing activity.	Approx. \$15,000 including AFMA staff time, covered under AFMA budget.	Industry, supported by AFMA management.	<p>SED designs are adapted for individual vessels.</p> <p>SEDs installed on all active SPF midwater trawl nets before fishing commences.</p> <p>AFMA approved SED in use on all SPF midwater trawlers.</p>	<p>SED design submitted to AFMA.</p> <p>SEDs implemented for midwater trawl vessels and verified at sea.</p> <p>SED specifications documented.</p>
2	Develop and implement individual vessel management plans for midwater trawl vessels to minimise TEP species interactions including procedures for reporting on catch and wildlife interactions.	Interactions with TEP species such as marine mammals and seabirds.	End of 2015-2016 fishing season, subject to fishing effort	Approx. \$5,000 per vessel for assessment and VMP development. Funded through AFMA's Bycatch and Discard Program.	Industry and AFMA, in consultation with SPFRAG.	Every active SPF vessel has a vessel management plan.	AFMA develop vessel management plans in conjunction with concession holders for each vessel.

NB: As there has been very limited effort in the SPF, this Workplan includes some items that have been rolled over from the 2011 – 2013 Workplan