



Australian Government Australian Fisheries Management Authority

Small Pelagic Fishery Bycatch Action Plan

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OBJECTIVE

The objective of bycatch action plans (BAP) for Commonwealth fisheries including the Small Pelagic Fishery (SPF) is:

'To ensure that the impacts of the fishery's bycatch on the ecosystem are sustainable and consistent with legislative requirements'

In pursuit of this objective this BAP aims to:

- ¬ provide an understanding of the significant bycatch issues in the fishery;
- ightarrow develop mitigation strategies for the incidental capture of protected species; and
- \sim commence development of mitigation strategies for other high risk bycatch species.

RATIONALE

The development of Bycatch Action Plans (BAP) reflects obligations under the Commonwealth Policy on Fisheries Bycatch 2000, Australia's Ocean Policy (launched 1998) and AFMAs commitment to an ecosystem based approach to fisheries management.

AFMA also has a legislative responsibility to take all reasonable steps to ensure that species listed under Part 13 of the Environmental Protection and Biodiversity Conservation Act 1999 (EPBC Act) are not killed or injured as a result of fishing.

The Commonwealth Policy on Fisheries Bycatch defines bycatch as:

"that part of a fisher's catch which is returned to the sea either because it has no commercial value, or because regulations preclude it being retained. Bycatch also includes that part of the 'catch' that does not reach the deck of the fishing vessel but is affected by its interaction with fishing gear."

BACKGROUND

Area of the fishery

The Small Pelagic Fishery (SPF) extends within Commonwealth waters (3nm-200nm) from latitude 28°10' S (near the Queensland/New South Wales border) around southern Australia to latitude 31° S (near Lancelin, north of Perth). Within these boundaries the fishery is divided into four zones, A to D (Figure 1).

Since the development of the fishery most fishing has occurred off eastern Tasmania (Zone A). There is however, a long history of small scale commercial operations, recreational and charter fishers targeting small pelagic species in Zones A and D.

Target species

SPF Fishing Permits authorise the take of the following species;

- Jack mackerel Trachurus declivis & T. symmetricus
- Blue mackerel Scomber australasicus
- Red bait Emmelichthys nitidus
- Yellow tail scad Trachurus novaezelandiae



Figure 1 Area of waters of the Small Pelagic Fishery

Gear used in the fishery

Fishing methods permitted in the fishery are:

- Tidwater trawl; and
- Tidwater pair trawl.

Purse seine and midwater trawl are the principal methods used in the fishery. In 2001 a single concession was granted to trial the use of midwater pair trawl in Zone A. Midwater pair trawling will only be introduced broadly into the SPF if it is shown to be an ecologically sustainable method.

Details of each fishing method are available in the draft Assessment Report for the Small Pelagic Fishery, September 2003 (www.afma.gov.au).

Management regime

Zones B, C and D management arrangements

Zones B, C and D are managed by Permits in accordance with the Management Policy for the Commonwealth Small Pelagic Fishery, 1 March 2002. This policy will be replaced by a Statutory Management Plan (the Plan). The Plan will provide for the grant of Statutory Fishing Rights based on individual transferable quotas. Determination of the Plan is expected in 2006.

Under the existing management policy AFMA has applied a range of input controls including, limited entry, gear restrictions and spatial controls. Catch levels are regulated through precautionary catch trigger limits (TCL) and protocols to be followed upon reaching a TCL are prescribed. To support the management integrity of the Southern and Eastern Scalefish and Shark Fishery (SESSF), SPF midwater trawl Permit holders must also hold entitlements for the relevant SESSF trawl sectors operating in the same area of waters.

Zone A management arrangements

Zone A is managed through a joint arrangement between the Commonwealth and Tasmanian Governments. In 1996 Tasmania and the Commonwealth agreed in principle to place Zone A under a Joint Authority. This agreement was not subsequently enacted. Negotiations to reconsider the agreement and determine long-term management arrangements for Zone A along with other zones are ongoing.

In accordance with the current management arrangements the Tasmanian Department of Primary Industries, Water and Environment set an annual Total Allowable Commercial Catch for Zone A, entry is limited and gear restrictions apply. Zone A operators hold either or both a Commonwealth Fishing Permit or a Tasmanian Fishing License.

Consultative mechanism

In 2005 the AFMA Board appointed members to the first Management Advisory Committee (SPFMAC) and a Resource Assessment Group (SPFRAG) for the fishery. SPFMAC and SPFRAG advise the AFMA Board on management issues and fishery assessments.

A Cetacean Mitigation Working Group (CMWG) has also been formed to provide specialist advice on dolphin mitigation strategies.

Summary of bycatch issues

Both purse seine and midwater trawl methods rely on targeting species that tend to aggregate in size and species specific schools. As a result reported bycatch levels are low with most non-target species accounting for less than 1 % of total catch (Appendix 1). However major bycatch issues in the fishery are:

- lack of verified data to quantify the nature and extent of bycatch across all zones and methods (all observer coverage has occurred in Zone A);
- To capture of dolphins and seals by midwater trawl in Zone A; and
- uncertainty in the range and magnitude of bycatch issues that could occur in the fishery due to high levels of latent effort (and low levels of fishery effort generally).

Ecological Risk Assessment (ERA) project

AFMA is committed to the Ecological Risk Assessment (ERA) process which will help prioritise species, habitats and communities that are most at risk from fishing activities in the SPF.

Given the need to consider broad ecosystem impacts of fisheries and the requirements of Commonwealth environmental legislation, the ERA will improve targeting of management actions, research and monitoring needs within a fishery. Actions to be taken under this BAP will be guided by the ERA outcomes, with measures implemented in response to the ERA to be incorporated into this plan.

The ERA project consists of two phases. Phase I (October 2001 to July 2004) developed a risk assessment methodology and began assessing the risk that fisheries pose to the sustainability of species it interacts with. Phase II will finalise the risk assessments using a refined methodology. Phase II is due for completion by August 2006.

Other research and monitoring projects that are contributing to our understanding and management capacity of bycatch issues in the fishery are listed in Appendix 2.

FISHERY SPECIFIC ISSUES/RISKS

In accordance with the Commonwealth approach bycatch issues in the fishery are considered against the following categories:

- ightarrow protected species and threatened ecological communities;
- ➣ high risk and other bycatch species;
- ➣ removal of habitat; and
- ➣ impact of total bycatch on the broader marine ecosystem.

Protected species and threatened ecological communities

A number of species and taxa listed under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) may and do interact with the Small Pelagic Fishery. Under the EPBC Act fishers are required to report all incidents which result in an interaction with, injury to, or the death of any protected species. For most species and taxa the absence of verified data constrains a robust understanding of the nature and extent of the interactions occurring in the fishery.

Sea birds

Seabirds are known to occur around vessels fishing in the SPF and have been sighted feeding on fish caught and lost from nets (AFMA and TAFI observer reports). Despite the presence of seabirds there has only been one incidental capture recorded in the fishery (see list below).

Seabird entanglement with trawl gear has been observed in the Commonwealth Trawl Sector (CTS) of the SESSF (SESSF BAP 2006-2008). The CTS overlaps with waters of Zone A, C and D and may provide some indication of potential interaction risks at higher levels of fishing effort.

Seabirds sighted by AFMA observers from a midwater pair trawler operating in Zone A between 4 December 2001 and 22 February 2002 include:

- Short-tailed shearwater (Puffinus tenuirostris)
- Shy albatross (Thalassachre cauta)
- ➢ Buller's albatross (Diomedea bulleri)
- 🤝 Wandering albatross (Diomedea cauta cauta)
- The Black browed albatross (Diomedea melanophrys)
- ➣ Wilson's storm petrel (Oceanites oceanicus)
- ➣ Fairy prion (Pachyptila turtur subantarctica)*
- Tittle penguin (Eudyptula minor)
- ➢ Petrels (Procellaria spp)**

* One individual was found in a de-watering unit and released unharmed (8 February 2002)

** Collective reference due to the difficulty distinguishing species from a distance

Seals

Three seals captures have been reported in the fishery. Each seal was caught in Zone A by midwater trawl and identified by crew as an Australia fur seal. The first capture was recorded in May 2005. There are no reports of seal bycatch in other zones of the SPF however vessels fishing in the CTS are known to interact with seals.

Observer reports from Zone A have confirmed that seals may aggregate and forage around midwater trawlers (AFMA and TAFI observer reports). The prevalence of seals has been found to increase during hauling and pumping operations, indicating either an increase in visibility or actual abundance around the vessel.

Dolphins

Since October 2004, 25 dolphins have been caught by midwater trawl in zone A. There have been no recorded interactions in zones B, C and D or during purse seine fishing.

AFMA is working to develop long-term management arrangements to reduce and mitigate dolphin interactions across the fishery. To assist AFMA in developing these arrangements a Cetacean Mitigation Working Group (CMWG) has been formed. The working group is comprised of representatives from AFMA, the Department of the Environment and Heritage, the Department of Agriculture, Fisheries and Forestry, conservation groups, research agencies and industry. Specifically the CMWG is tasked to:

- 1. To provide advice to AFMA on how to improve the Small Pelagic Fishery Bycatch Action Plan to ensure cetacean bycatch mitigation strategies are adequate;
- 2. To respond to incidents that occur in the fishery as they relate to cetacean interactions; and
- 3. Provide advice to AFMA on research needs for developing and revising cetacean mitigation measures.

Other marine mammals

While there are no recorded interactions with other marine mammals in the fishery there are concerns that toothed marine mammals may be vulnerable to capture by SPF vessels as small pelagics form a large part of their diet. Southern right whales and finned pilot whales have been observed during midwater trawl operations in Zone A (AFMA and TAFI observer reports respectively).

Threatened ecological communities

There are no marine ecological communities listed under the EPBC Act. Impacts of fishing on ecological communities are being considered as part of the ERA project.

High risk and other bycatch species

There are no species (excluding protected species) impacted by the fishery that have been identified as high-risk bycatch species. Results of the ERA project will help identify high-risk species and allow management measures to be applied commensurate to those risks.

Removal of habitat

The SPF targets pelagic species within depth range of 0-300 metres minimising contact with the sea floor. Consequently, the risk of habitat removal is low and the fishery's impact on the substrate is considered minimal.

Impact of total bycatch on the broader marine ecosystem

Reportedly low levels of bycatch in the fishery tend to indicate that the fishery exerts little impact on the broader marine ecosystem. It is acknowledged however, that relative impacts may vary according to species (e.g. dolphin species) and/or location and that a significant level of latent effort exists in the fishery. Small pelagic species are also accepted as playing an important role in the productivity of marine ecosystems (Young et al., 1997).

Additional monitoring and data collection on species and environmental factors is needed to contribute to our understanding of this complex issue. Initiatives such as the ERA project will assist AFMA in directing research and monitoring efforts accordingly.

STRATEGIES / ACTIONS

The strategies below describe the steps AFMA will take in relation to data collection, data analysis and management responses to bycatch issues in the SPF. These strategies have regard for the Commonwealth Policy on Fisheries Bycatch 2000 which requires Commonwealth managed fisheries to: reduce bycatch; improve protection for vulnerable species; and arrive at decisions on the acceptable extent of ecological impacts. An implementation timeline for all actions identified is provided in Appendix 3.

Protected species

Strategy 1 - Take all reasonable steps to ensure that species listed under Part 13 of the EPBC Act 1999 are not killed or injured as a result of fishing

Actions

Data collection

- 1. AFMA will monitor interactions with protected species through AFMA logbook, independent observations and research;
- AFMA will continue to implement an observer strategy for the fishery to determine the frequency of interactions with cetaceans and other protected species during midwater trawl fishing;
- 3. AFMA will implement an appropriate observer strategy to validate historically reported low interaction rates with cetaceans and other mammals during purse seine fishing.

Data analysis

- 1. AFMA will compile and report at least biannually on logbook and observer data to the SPFMAC and SPFRAG;
- AFMA will review all available results from the ERA project on any high-risk protected species;
- AFMA will use observer data to assess the accuracy of protected species reporting in AFMA logbooks;
- 4. AFMA will review results of research into potential dolphin and seal bycatch mitigation measures for midwater trawl.

Management response

- 1. AFMA will develop a BAP communication strategy that informs Permit holders of the need for accurate and complete logbook reports;
- 2. AFMA will inform all members of the CMWG of any dolphin or seal interactions that occur in the fishery within 72 hours of having been notified;

- AFMA will convene a meeting of the CMWG so as soon as practicable, in response to dolphin or seal interactions in the fishery when there is agreement among members to do so;
- 4. AFMA will develop research proposals in consultation with the CMWG and SPFMAC, into potential measures to reduce and mitigate midwater trawl dolphin and seal bycatch;
- 5. AFMA will, in consultation with the CMWG and SPFMAC, implement dolphin and seal midwater trawl bycatch mitigation measures determined to be effective through research;
- 6. AFMA will provide all Permit Holders with 'onboard' information sheets on how to identify dolphin and seal species, how to take basic diagnostic samples and on fishing practices to avoid fishing in areas where dolphins and seals are observed;
- Within 12 months of the availability of the ERA results AFMA, in consultation with the SPFMAC and SPFRAG will develop management strategies for all protected species identified as high risk;
- 8. Within 3 months of any change or addition to a species listing, AFMA, in consultation with SPFMAC and SPFRAG will determine if the fishery is likely to impact on the species and apply management measures where appropriate;
- 9. AFMA will support industry in the development of a midwater trawl code of practise and the finalisation of the draft purse seine code of practice.

Performance indicators

Outputs

- 1. BAP communication strategy developed that informs Permit holders on the need for accurate and complete logbook reports within 9 months of the BAP commencement;
- Appropriate management measures implemented to reduce and mitigate midwater trawl dolphin and seal bycatch as determined through research within 12 months of the availability of results;
- 3. CMWG members informed of any dolphin or seal interactions that occurred in the fishery within 72 hours of AFMA being notified;
- 4. Meeting/s of CMWG convened as soon as practicable following agreement among members to do so;
- 5. Research proposals into potential measures to reduce and mitigate midwater trawl dolphin and seal bycatch developed within 12 months of the BAP commencement;
- 6. Management strategies developed and implemented to mitigate fishing impacts on high risk protected species within 12 months of their identification through the ERA project;
- 7. 'Onboard' information sheets provided to all Permit Holders within 6 months of the BAP commencement;
- 8. Logbook and observer data reports reviewed biannually by the SPFMAC and SPFRAG and any high risk protected species identified;
- 9. Logbook reporting reviewed biannually by the SPFMAC and SPFRAG to ensure their effectiveness;
- 10. Management measures applied within 3 months of any change or addition to a species listing, by AFMA, in consultation with SPFMAC and SPFRAG where appropriate;

11. Industry midwater trawl and purse seine codes of practise finalised.

Outcome

All reasonable steps taken to ensure that species listed in Part 13 of the EPBC Act are not killed or injured as a result of fishing.

High risk and other bycatch species

Strategy 2 - Take all reasonable steps to reduce the bycatch of high risk and other species

Actions

Data collection

- 1. AFMA will monitor interactions with high risk and other bycatch species through AFMA logbook and independent observations;
- 2. AFMA will implement a cost-effective observer strategy for the fishery;

Data analysis

- 1. AFMA will report at least biannually on logbook and observer data to the SPFMAC and SPFRAG;
- 2. AFMA will review all available results from the ERA project on any high-risk bycatch and other species;
- 3. AFMA will use observer data to determine the accuracy of bycatch reporting in AFMA logbooks.

Management response

- 1. AFMA will develop a BAP communication strategy that informs Permit holders on the need for accurate and complete logbook reports;
- 2. AFMA will, in consultation with SPFMAC and SPFRAG develop a Strategic Ecosystem Based Data Plan for the fishery;
- Within 12 months of the availability of the ERA results AFMA, in consultation with the SPFMAC and SPFRAG will commence the development of management strategies for all species identified as high risk;
- 4. AFMA, in consultation with SPFMAC and SPFRAG will develop a strategic research plan that addresses information needs in the fishery on high risk bycatch and other species.

Performance indicators

Outputs

- 1. BAP communication strategy developed that informs Permit holders on the need for accurate and complete logbook reports within 9 months of the BAP commencement;
- 2. Management strategies developed and implemented to mitigate fishing impacts on high risk and other bycatch species within 12 months of their identification either through the ERA project or other research;

- 3. Strategic Ecosystem Based Data Plan developed for the fishery within 6 months of the BAP commencement;
- 4. Logbook and observer data reports reviewed biannually by the SPFMAC and SPFRAG and any high risk and other bycatch species identified;
- 5. Logbook reporting reviewed biannually by the SPFMAC and SPFRAG to ensure their effectiveness;
- 6. A strategic research plan developed within 6 months of the BAP commencement.

Outcome

All reasonable steps taken to reduce the bycatch of high risk and other species.

Impact of total bycatch on the broader marine ecosystem

Strategy 3 - Take all reasonable steps to minimise the impact of fishing on the broader marine ecosystem

Actions

Data collection and analysis

- 1. AFMA will gather information on target and bycatch species through AFMA logbook and independent observations;
- 2. Data gathered by AFMA will be analysed as part of the ERA or any other approved research projects.

Management response

- Within 12 months of the availability of the ERA results AFMA, in consultation with the SPFMAC and SPFRAG will commence development of management strategies to ensure broad ecosystem impacts are sustainable;
- 2. AFMA will ensure research priorities for the fishery include research into ecosystem impacts of the fishery.

Performance indicators

Outputs

- 1. Within 12 months of their identification either through the ERA project or other research, development of management strategies to ensure fishing impacts on the broader ecosystem are sustainable commenced;
- 2. Research into marine ecosystem level impacts identified as a priority in the SPF Strategic Research Plan to be developed within 6 months of the BAP commencement.

Outcome

All reasonable steps taken to minimise the impact of fishing on the broader marine ecosystem.

Communication strategy

The effective communication of BAP strategies and outcomes to key stakeholders, particularly commercial fishers, is critical to the overall success of the BAP. Through increased awareness it is hoped that there will be greater industry support for the approaches taken that will lead to a reduction in fishery impacts on bycatch species and the broader marine ecosystem.

Strategy 4 - Effectively communicate the Bycatch Action Plan to industry and the wider community

Actions

Management response

- 1. AFMA Communications section, in consultation with AFMA's Environment Policy and SPF management section will prepare and implement a range of communication programmes designed to educate industry and the wider community on bycatch issues and mitigation measures (eg website updates and information sheets).
- 2. Collected and verified data will be used to inform and discuss bycatch issues with fishers.

Performance indicators

Output

Effective education and awareness programme on bycatch established and information distributed to stakeholders commenced within 9 months of the BAP commencement;

Outcome

Stakeholders are aware of and understand the BAP.

PRIORITIES

Bycatch issues of high priority in the SPF are:

1. Implementation of long-term mitigation strategies to reduce and mitigate midwater trawl dolphin and seal bycatch;

- 2. Collection and analysis of verified data to further understand and identify bycatch issues;
- 3. Development of management measures to mitigate known bycatch issues;
- 4. Implementation of an effective communication and education strategy.

PROGRESS REPORTS AND REVIEW

SPFMAC will provide the Environment Committee with six monthly progress reports in the format developed by the AFMA Environment Committee. The format will include the requirement for the SPFMAC to advise on alternative approaches when strategies have not been implemented. Progress reports will be publicly available once considered by the Committee.

A full review of the BAP will be undertaken 2 years after its commencement.

RESOURCE REQUIREMENTS FOR ACTIONS

Most of the actions identified in the BAP will be funded as part of routine business of SPFMAC and SPFRAG. Budgets for SPFMAC and SPFRAG in 2005/06 are \$ 252 687 and \$ 10 000 respectively.

Implementation of the observer strategy developed for the fishery will be cost-recovered from industry in accordance with the Australian Governments cost-recovery policy. Funding of up to \$185 569 will be sought through AFMA for research into mid-water trawl dolphin and seal bycatch mitigation measures.

ADDITIONAL READING MATERIAL

Publications found on the AFMA website at www.afma.gov.au

- The AFMA (2002) Management Policy for the Commonwealth Small Pelagic Fishery
- The AFMA (2003) Draft Assessment Report Small Pelagic Fishery
- Monitoring marine mammal interactions in the Small Pelagic Fishery: Stage one pilot study, October 2005

Other publications

- Chapman, L. B. and Wakeford, J. (1996). Fishing Technology 1 Part A Fishing Gears and Methods Australian Maritime College.
- Department of Primary Industries, Water and Environment. Fisheries (Scalefish) Rules 2001 and Scalefish Policy Document.
- Welsford, D. C. and Lyle, J.M. (2003). Redbait (Emmelichthys nitidus): a synopsis of biological and fishery data. Tasmanian Aquaculture and Fisheries Institute Technical Report Number 20. pp. 32.
- Young, J. W., Lamb, T. D., Le, D. Bradford, R.W. and Whitelaw, A. W. (1997). Feeding ecology and interannual variations in the diet of southern bluefin tuna, Thunnus maccoyi, in relation to the coastal and oceanic waters off eastern Tasmania, Australia. Environmental Biology of Fishes 50:275-291.

APPENDIX 1: CATCH COMPOSITION

Table 1 Total percentage caught for all species by midwater trawl and purse seine recorded in AFMA logbooks for the Small Pelagic Fishery between 2001 and 2004.

Common name	Midwater trawl	Purse seine ¹
Redbait	71	3
Jack mackerel	26	32
Blue mackerel	2	27
Pilchard	0	35
Red tailed round		
scad	0	2
Yellowtail scad	0	< 1
Barracouta	< 1	0
Spotted warehou	< 1	0
Silver trevally	< 1	< 1
Southern frostfish	< 1	0
Blue warehou	< 1	0
Blue grenadier	< 1	0
Squids	< 1	0
Blue eye trevalla	< 1	0
Swallow tail	< 1	0
Leatherjacket	< 1	0

1 Data includes fishing authorised under SPF Fishing Permits and Informally Managed Fishing (IMF) Permits. Under both Permits operators are required to use the same AFMA Logbook. Daily catch records however, do not provide explicitly for the separation of catch taken under SPF and IMF permits. Data in the table above must therefore be interpreted cautiously. For example it has been reported that pilchards are taken during targeted fishing operations under IMF Permits and constitute a very low proportion of catch during target SPF operations. AFMA will assess the accuracy of logbook reporting in the context of this BAP. Table 2 Relative catch composition for midwater trawl in Zone A based on TAFI catch sampling as at June 2005.

Common Name	Species Name	Ranking	Quantification
Redbait	Emmelichthys nitidus	Very common	68% of all catch, target species
Jack mackerel	Trachurus declivis	Very common	29% of all catch, target species
Blue mackerel	Scomber australasicus	Very common	2% of all catch, target species
Barracouta	Thyrsites atun	Common	<1% of catch, 1-5 % of some shots
Spotted warehou	Seriolella punctata	Common	<1% of catch, 1-5 % of some shots
Arrow squid	Nototodarus gouldii	Uncommon	<<1% of catch, observed in ~40% of shots
Mirror dory	Zenopsis nebulosus	Rare	<<1% of catch, observed in <40% of shots
New Zealand Dory	Cyttus novaezealandiae	Rare	<<1% of catch, observed in <40% of shots
Trawl puffer	Allomycterus pilatus	Rare	<<1% of catch, observed in <40% of shots
Tiger flathead	Neoplatycephalus richardsoni	Rare	<<1% of catch, observed in <40% of shots
Blue grenadier	Macruronus novaezelandiae	Rare	<<1% of catch, observed in <40% of shots
Sandpaperfish	Paratrachichthys spp.	Rare	<<1% of catch, observed in <40% of shots
Gurnard	Lepidotrigla spp.	Rare	<<1% of catch, observed in <40% of shots
Three spine cardinal	Apogonops anomalus	Rare	<<1% of catch, observed in <40% of shots
Sandpaperfish	Paratrachichthys spp.	Rare	<<1% of catch, observed in <40% of shots
Blue warehou	Seriolella brama	Rare	<<1% of catch, observed in <40% of shots
Gurnard	Lepidotrigla spp.	Rare	<<1% of catch, observed in <40% of shots
Three spine cardinal	Apogonops anomalus	Rare	<<1% of catch, observed in <40% of shots
Lanternfish	Lampanyctodes spp.	Rare	<<1% of catch, observed in <40% of shots
Crested Bellowsfish	Notopogon lilliei	Very rare	<<1% of catch, observed in <5% of shots
John Dory	Zeus faber	Very rare	<<1% of catch, observed in <5% of shots
Velvet		Very rare	<<1% of catch, observed in <5% of
Leatherjacket	Parika scaber		shots
Rock Ling	Genypterus tigerinus	Very rare	<1% of catch, observed in <5% of shots
Frostfish	Trichuridae	Very rare	<1% of catch, observed in <5% of shots
Gurnard perch	Neosebastes scorpaenoides	Very rare	<1% of catch, observed in <5% of shots

Table 2 continued

Common Name	Species Name	Ranking	Quantification
		Very rare	<<1% of catch, observed in <5% of
Pink Ling	Genypterus blacodes		shots
		Very rare	<<1% of catch, observed in <5% of
New Zealand Dory	Cyttus novaezealandiae		shots
		Very rare	<<1% of catch, observed in <5% of
Peruvian mackerel	Trachurus murphyi		shots
		Very rare	<<1% of catch, observed in <5% of
Spiny Pipehorse	Solegnathus spp.		shots
		Very rare	<<1% of catch, observed in <5% of
Ray's Bream	Brama spp.		shots
		Very rare	<<1% of catch, observed in <5% of
Elephant Shark	Callorhynchus milii		shots
		Very rare	<<1% of catch, observed in <5% of
Calamary	Sepioteuthis australis		shots
		Very rare	<<1% of catch, observed in <5% of
Stingaree	Urolophus spp.		shots
Anchovy	Engraulis australis	Trace	<< 1% of catch, observed in a single
			shot
		Trace	<< 1% of catch, observed in a single
Barracudina	Paralepididae		shot
Longsnouth		Trace	<< 1% of catch, observed in a single
Boarfish	Pentaceropsis recurvirostris		shot
		Trace	<< 1% of catch, observed in a single
Unid. Phycid Cod	Pseudophycis spp.		shot
		Trace	<< 1% of catch, observed in a single
Gemfish	Rexea solandri		shot
		Trace	< 1% of catch, observed in a single
Jackass Morwong	Nemadactylus macropterus		shot
		Trace	<< 1% of catch, observed in a single
Butterfly Perch	Caesioperca lepidoptera		shot
		Trace	<< 1% of catch, observed in a single
Red Rock Cod	Scorpaena papillosa		shot
		Trace	<< 1% of catch, observed in a single
Pilchard	Sardinops sagax		shot
<i></i>		Trace	< 1% of catch, observed in a single
Starry puffer	Arothron firmamentum		shot
		Trace	< 1% of catch, observed in a single
Eagle Ray	Myliobatis spp.	-	shot
		Irace	<< 1% of catch, observed in a single
Cuttlefish	Sepia plangon	-	SNOT
		Trace	< 1% of catch, observed in a single
Ocean Sunfish	Mola spp.	-	snot
		Irace	< 1% of catch, observed in a single
Banded whiptail	Caelorinchus fasciatus		shot

APPENDIX 2: RESEARCH

Current research and monitoring projects that will assist in the identification and management of bycatch issues in the SPF:

Research Project	Status	Principal Investigator
An investigation of underwater camera technology to assess dolphin and seal bycatch mitigation strategies for mid-water trawlers operating in the Small Pelagic Fishery	Due for completion 30 September 2005	Seafish Tasmania Pty Ltd
Ecological Risk Assessment for Australian Commonwealth Fisheries Project	Due for completion August 2006	CSIRO
Enhanced data collection through focused programs (electronic monitoring)	Due for completion November 2005	AFMA
AFMA Zone A midwater trawl observer coverage	Ongoing	AFMA
TAFI commercial catch sampling Zone A	Ongoing	TAFI

APPENDIX 3: BAP IMPLEMENTATION TIME LINE

Date	Action
Protected species	
Ongoing	 AFMA will monitor interactions with protected species through AFMA logbook and independent observations and research; AFMA will continue to implement an observer strategy for the fishery to determine the frequency of interactions with cetaceans and other protected species during midwater trawl fishing; AFMA will compile and report at least biannually on logbook and observer data to the SPFMAC and SPFRAG; AFMA will inform all members of the CMWG of any dolphin or seal interactions that occur in the fishery within 72 hours of having been notified; AFMA will convene a meeting of the CMWG as soon as practicable, in response to dolphin or seal interactions in the fishery when there is agreement among members to do so; AFMA will support industry in the development of a midwater trawl code of practise and the finalisation of the draft purse seine code of practice.
Within 3 months of a new changed protected species listing	 AFMA, in consultation with SPFMAC and SPFRAG will determine if the fishery is likely to impact on the species and apply management measures where appropriate.
Within 6 months of BAP commencement	 AFMA will implement an appropriate observer strategy to validate historically reported low interaction rates with cetaceans and other mammals during purse seine fishing. AFMA will provide all Permit Holders with 'onboard' information sheets on how to identify dolphin and seal species, how to take basic diagnostic samples and on fishing practices to avoid fishing in areas where dolphins and seals are observed.
Within 9 months of BAP commencement	 AFMA will develop a BAP communication strategy that informs Permit holders on the need for accurate and complete logbook reports.

Within 12 months of BAP commencement	 AFMA will use observer data to assess the accuracy of protected species reporting in AFMA logbooks (and ongoing); AFMA will develop research proposals in consultation with the CMWG and SPFMAC, into potential measures to reduce and mitigate midwater trawl dolphin and seal bycatch;
Within 12 months of research results being available	 AFMA will review results of research into potential dolphin and seal bycatch mitigation measures for midwater trawl. AFMA will, in consultation with the CMWG and SPFMAC, implement dolphin and seal midwater trawl bycatch mitigation measures determined to be effective through research;
Within 12 months of the of the ERA results being available	 AFMA will review all available results from the ERA project on any high-risk protected species; Within 12 months of the availability of the ERA results AFMA, in consultation with the SPFMAC and SPFRAG will develop management strategies for all protected species identified as high risk.
High Risk and other byca	tch species
Ongoing	 AFMA will monitor interactions with high risk and other bycatch species through AFMA logbook and independent observations; AFMA will report at least biannually on logbook and observer data to the SPFMAC and SPFRAG; AFMA will continue to communicate to Permit holders the need for accurate and complete logbook reports.
Within 6 months of BAP commencement	 AFMA will implement a cost-effective observer strategy for the fishery; AFMA will, in consultation with SPFMAC and SPFRAG develop a Strategic Ecosystem Based Data Plan for the fishery; AFMA, in consultation with SPFMAC and SPFRAG, will develop a strategic research plan that addresses information needs in the fishery on high risk bycatch and other species.
Within 9 months of BAP commencement	 AFMA will develop a BAP communication strategy that informs Permit holders on the need for accurate and complete logbook reports.

Within 12 months of BAP commencement	 AFMA will use observer data to determine the accuracy of bycatch reporting in AFMA logbooks (and ongoing).
Within 12 months of the of the ERA results being available	 AFMA will review all available results from the ERA project on any high-risk bycatch and other species; AFMA, in consultation with the SPFMAC and SPFRAG will commence the development of management strategies for all species identified as high risk.
Broader marine ecosyste	m impacts
Ongoing	 AFMA will gather information on target and bycatch species through AFMA logbook and independent observations;
	 Data gathered by AFMA will be analysed as part of the ERA or any other approved research projects.
Within 6 months of BAP commencement	 AFMA will ensure research priorities for the fishery include research into ecosystem impacts of the fishery.
Within 12 months of the of the ERA results being available	 AFMA, in consultation with the SPFMAC and SPFRAG will commence development management strategies to ensure broad ecosystem impacts are sustainable.
Communication strategy	
Ongoing	Collected and verified data will be used to inform and discuss bycatch issues with fishers.
Within 9 months of BAP commencement and ongoing	 AFMA Communications section, in consultation with AFMA's Environment and SPF management section will prepare and implement a range of communication programmes designed to educate industry and the wider community on bycatch issues and mitigation measures (eg website updates and information sheets).