



Australian Government

Department of the Environment and Heritage

Assessment of the
Small Pelagic Fishery

February 2006

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This document is an assessment carried out by the Department of Environment and Heritage of a commercial fishery against the Australian Government Guidelines for the Ecologically Sustainable Management of Fisheries. It forms part of the advice provided to the Minister for the Environment and Heritage on the fishery in relation to decisions under Parts 10, 13 and 13A of the Environment Protection and Biodiversity Conservation Act 1999. The views expressed do not necessarily reflect those of the Minister for the Environment and Heritage or the Australian Government.

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Assessment of the ecological sustainability of management arrangements for the Small Pelagic Fishery

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EXECUTIVE SUMMARY

Background

The Australian Fisheries Management Authority (AFMA) has submitted documents for strategic assessment of the Small Pelagic Fishery (SPF) under Parts 10, 13 and 13A of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

On 12 November 2002 the Minister for the Environment and Heritage (the Minister) signed an Agreement with AFMA to initiate the strategic assessment of the fishery. Following public consultation, the *Terms of Reference for the Environmental Assessment of the Small Pelagic Fishery* were adopted. The draft document: *Draft Assessment Report Small Pelagic Fishery* (the submission); was received by the Department of Environment and Heritage (DEH) on 29 October 2003. The document was released for a thirty-day public comment period that expired on 28 November 2003. Three public comments were received. AFMA provided a response to the issues raised and amended the submission where necessary. A final submission for assessment was received on 30 June 2004.

During the course of the 2004 assessment, a number of interactions occurred with cetaceans and seals, resulting in their deaths. Due to serious concerns about the potential impacts of mid water trawling on protected species, it was not considered prudent to finalise the full assessment of the SPF by the 1 December 2004 deadline until additional information could be collected on the nature and frequency of potential interactions and the effectiveness of interim mitigation measures gauged to serve as the basis for longer term measures. To enable AFMA to collect the requisite information, two consecutive declarations have been made, declaring the SPF as an approved Wildlife Trade Operation (WTO). This effectively allowed the export of product from the fishery while further work was undertaken on the protected species issues. The most recent WTO declaration expired on 28 February 2006. This report assesses the SPF against its current management arrangements, the submission made in 2003 and the extensive work undertaken by AFMA in consultation with DEH, in mitigating the risk of interactions with protected species. The assessment also takes into account the three public comments received in 2003.

The management arrangements for the SPF are currently being formalised and AFMA maintain they will be in place by mid 2006. Due to delays in the formal implementation of these management arrangements, no formal Statement of Management Arrangements has been submitted by AFMA for the SPF. Accreditation under Part 10 of the EPBC Act is therefore not possible at this time and will not be considered in this assessment. When the management arrangements are formalised by AFMA, assessment of the SPF will be finalised.

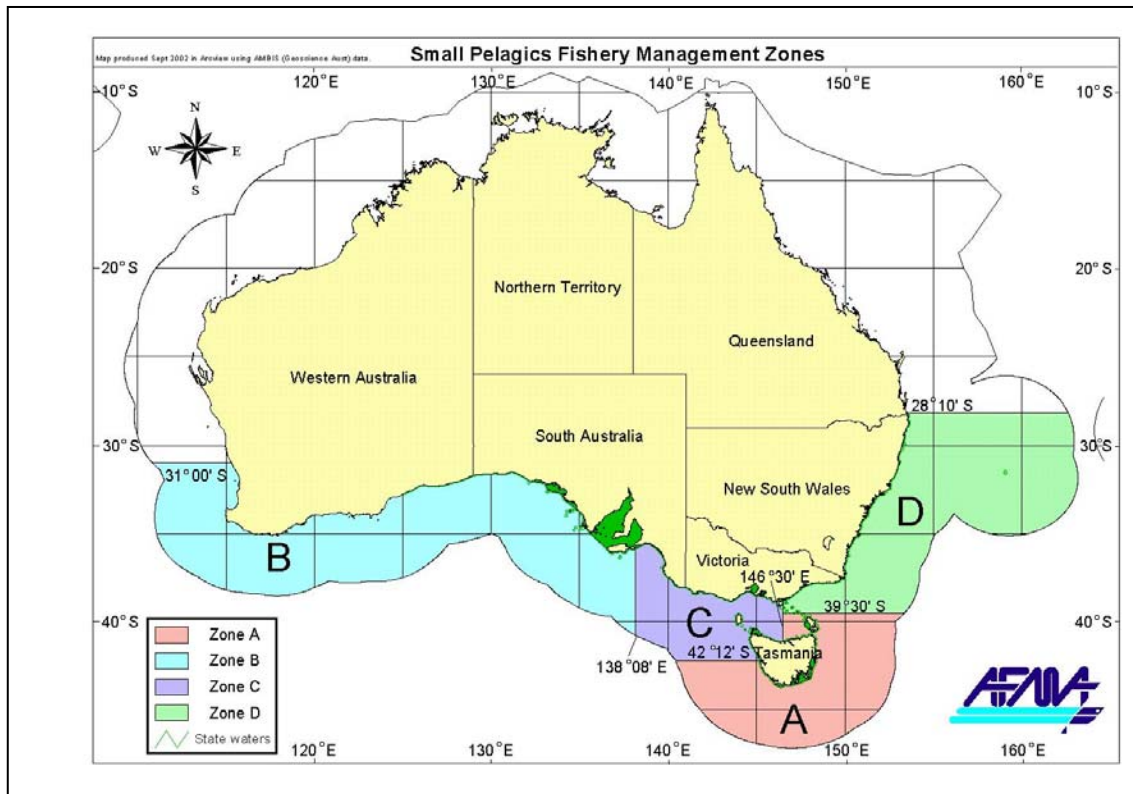
Table 1: Summary of the Small Pelagic Fishery

Area	From Queensland/New South Wales (NSW) border, around southern Australia to a line at latitude 31° south (near Lancelin north of Perth). The fishery is divided into 4 Zones (A, B, C and D)
Fishery status	Uncertain, probably under-fished, ¹ in the Great Australian Bight and the western region of the Australian Fishing Zone (AFZ)
Target Species	Blue mackerel (<i>Scomber australasicus</i>)

¹Caton A. and McLoughlin K (Eds.) 2004. Fishery Status Reports 2004. Status of Fish Stocks Managed by the Australian Government. Bureau of Rural Sciences. Australian Government Department of Agriculture, Fisheries and Forestry. 243 pp.

	Yellowtail scad (<i>Trachurus novaezelandiae</i>) Jack mackerels (<i>T. declivis</i> & <i>T. symmetricus</i>) Redbait (<i>Emmelichthys nitidus</i>)								
Byproduct Species	Target species comprise 90% (by weight) of the catch with the remaining 10% composed of other small pelagic species.								
Gear	Purse seine and mid-water trawl (single and pair). Trawl mesh size restrictions apply.								
Season	1 September to 31 August of the following year in Zone A. Zones B, C & D not currently active.								
Commercial harvest 2002/03 (Approximate value for all Zones)	<table> <tr> <td>Blue mackerel</td> <td>457 t</td> </tr> <tr> <td>Yellowtail scad</td> <td>4.1 t</td> </tr> <tr> <td>Jack mackerels</td> <td>2,322 t</td> </tr> <tr> <td>Redbait</td> <td>2,920 t</td> </tr> </table>	Blue mackerel	457 t	Yellowtail scad	4.1 t	Jack mackerels	2,322 t	Redbait	2,920 t
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Jack mackerels	2,322 t								
Redbait	2,920 t								
Value of commercial harvest 2002/03	\$1,703,600 (5,703 tonnes sold)								
Recreational harvest (Combined all Zones)	Blue mackerel 168 t; yellowtail scad & jack mackerel combined 37.5 t								
Commercial licences issued as at 1 December 2004	75 licences issued, fewer than 5 active fishers.								
Management arrangements	<p>Output controlled through Trigger Catch Levels (TCLs) specific to the Zones B, C and D and a Total Allowable Commercial Catch (TACC) for Zone A.</p> <p>Input controlled through:</p> <ul style="list-style-type: none"> • limited entry; <p>Zone A has additional input controls:</p> <ul style="list-style-type: none"> • Vessel size restrictions (Tasmanian Diversified Inshore Sector); restrictions on gear (purse seine only sector); restrictions on gear (Commonwealth trawl only sector); and closures (state waters for trawl method inside 3 nm and closures for the purse seine method in some enclosed waters). 								
Export	Trial shipments to South East Asia								
Bycatch	Bycatch is low (<1%) consisting of other pelagic species.								
Interaction with Threatened Species	Interactions with dolphins and seals have occurred, however since observer programs were implemented no interactions have been reported. Possible interactions with seabirds. Dolphins were caught in purse seine trials off southern Queensland.								

The area of the fishery includes Commonwealth waters from the Queensland/NSW border, around southern Australia to a line at latitude 31° south (near Lancelin north of Perth) out to the outer edge of the Australian Exclusive Economic Zone (EEZ) or Australian Fishing Zone (AFZ). The area of the fishery is divided into four Zones A, B, C and D. Currently most of the fishing activity is conducted in Zone A.



Under the Offshore Constitutional Settlement (OCS) the Australian Government manages the fishery including State waters in Tasmania, Victoria and South Australia and partially in Western Australia. The OCS with NSW is still to be finalised. Tasmania and the Australian Government are negotiating a Joint Authority agreement by which Tasmania will have the day to day responsibility for managing the fishery in Zone A.

The fishery targets jack and blue mackerel, yellowtail scad and redbait. There is no limit to the quantity or species that may be taken as byproduct by the fishery although these represent on average less than 10% (by weight) of the targeted catch. Common byproduct species include small pelagic species taken when targeting other SPF species (eg capture of barracouta when targeting jack mackerel). Observer data from mid-water trawl operations in Zone A indicates that small catches of South East Trawl Fishery (SETF) species like spotted warehou are occasionally caught. Mid-water trawl operators in Zone A are required to hold quota and to acquit any catches of SETF species. The catch of quota species from other fisheries is assessed under other relevant fishery submissions and therefore is not discussed significantly in this report.

Small pelagic species tend to aggregate in species and size specific schools. Purse seine and mid-water trawl methods rely on targeting these aggregations and as a consequence bycatch is relatively low. Observer data and onshore catch monitoring suggest that bycatch comprises less than 1% of purse seine and mid-water trawl catches. The issue of un-confirmed reports of dumping of large quantities of barracouta (*Thyrsites atun*) by mid-water trawlers in Zone A while targeting small pelagic species is discussed and the subject of a recommendation under Principle 2 of this report.

Small pelagic species are characteristically described as being associated with landmasses and rarely occurring in deep oceanic waters. There is some evidence that the stocks of blue and jack mackerel, yellowtail scad and redbait may have distinct subpopulations across their distribution range in Australian waters.

The main species of interest, jack mackerel and redbait, achieve first maturity at 3 or 4 years of age and a size of approximately 27 cm and 22 cm fork length respectively. Eggs have been collected

throughout Tasmanian coastal waters indicating that spawning occurs over a wide area. Individuals may spawn several times during the season making the estimation of eggs numbers difficult.

The catch of small pelagics took place in Tasmanian waters well before the 1970s, primarily as bait for the local rock lobster fishery. During the mid seventies there was interest in exploiting mackerel in larger quantities for fish meal but the venture was not successful and never proceeded past the trial phase. In 1979 the South Eastern Fisheries Committee (SEFC) set a TACC of 30,000 tonnes of mackerel for Australian waters, of which 10,000 t was reserved for waters off Tasmania. Interest in the fishery was renewed during the early eighties when a floating processing plant was purchased and based at Triabunna. The first catches were made in 1985 and in the 1986-87 season topped 40,000 t, making it the largest single species fishery (by weight) in Australia. That level of catch has never been repeated and since that time catches have fluctuated on a downward trend. Although some consideration has been given to the possibility that these downward trends have been caused by over-fishing, the general consensus is that the low catch and low level of effort in the fishery are more likely due to environmental fluctuations and low market demand.

The current level of activity in the fishery is very low. In 2002-2003 the GVP was \$1,703,600 for a total of 5,703 tonnes. Currently there are 75 licences (as at 1 December 2004) throughout the fishery with fewer than 5% currently active. However, there is renewed interest in the fishery since redbait has been found to be an acceptable feed for Southern Bluefin Tuna (SBT) tuna pens operating in South Australia and therefore a viable substitute for imported pilchards.

The principal method used to fish for small pelagics is purse seining. Recent limited experimental trials in Zone A have shown that mid-water trawling and mid-water pair trawling are also effective methods. While purse seining relies on the surface or shallow sub-surface schooling behaviour of mackerels, mid-water trawls can target fish across the entire water column. Recent catches have mostly been by trawling in Zone A.

Gear restrictions apply to mid water and pair trawling in the form of mesh size and mesh liner size and configuration.

Protected species interactions in this fishery arising from mid water trawl include the capture of cetaceans and seals. Possible interactions in the purse seine sector include capture of cetaceans, seals and seabirds. A limited developmental purse seine fishery for pilchards in southern Queensland was stopped in 1999 due to the capture of dolphins. DEH shares AFMA's concerns that in the event that fishing effort increases in Zone D (off NSW) interactions with dolphins may occur requiring further implementation of mitigation measures.

Interactions with seals and seabirds occur with both gear types but do not appear to result in mortalities of these species. Until October 2004, limited evidence suggested that interaction with any protected species group is very low. In October 2004, following an incident involving the accidental death of 14 common dolphins, mitigation measures were immediately implemented in the fishery, and investigation of options for longer term measures commenced. DEH has worked closely with AFMA in investigating and reducing these risks and DEH will continue to closely monitor this situation. Protected species interactions are assessed under Principle Two of this report.

The large area covered by the SPF results in it overlapping with a number of other Commonwealth and State-managed fisheries that take small pelagic species as target, byproduct or bycatch. These include the NSW Ocean Haul Fishery and the NSW Ocean Trap and Line Fishery, the Tasmanian Diversified Inshore Sector, the Commonwealth Tuna Fisheries (Eastern Tuna and Billfish [ETBF], Western Tuna and Billfish [WTBF] and the SBT fisheries), the Southern and Eastern Scalefish and Shark Fishery (SESS), the Western Australian South Coast Purse Seine and West Coast Purse Seine fisheries and the South Australian pilchard fishery. The low level of fishing by the SPF in Zones B,

C and D implies that the impact on fisheries operating in those Zones, either directly or through ecosystem effects, is likely to be minimal. This is likely to be the case as well in Zone A where although the level of catch by the SPF is higher, it is still well below the TACC. Conversely the volume of take of small pelagic species, and therefore the impact on those stocks, by fisheries other than the SPF ranges in magnitude depending if they are a target species or incidental catch. AFMA is active in coordinating the sharing of catch information across jurisdictions in the SPF range for use by the Small Pelagic Research and Assessment Team (SPRAT) and the Zone A Small Pelagic Research and Assessment Group (ZASPRAG) in setting TCLs and a TACC for Zone A.

Two ex-South East Non Trawl Fishery purse seine permits also have unrestricted access to small pelagic species which could confound the current SPF management regime. AFMA is seeking to address this by incorporating these operators into a proposed new management regime in 2006.

In addition to the commercial harvest, there is recreational take along the whole extent of the species' distribution. This issue is further discussed under Principle One of this report.

The fishery is managed by AFMA from waters between 3 and 200 nautical miles. Key elements of the management regime for the SPF are:

- *Fisheries Management Act 1991* (FMA);
- *Fisheries Administration Act 1991*;
- *Fisheries Management Regulations*;
- *The Management Policy for the Small Pelagic Fishery 2002* (Management Policy 2002)
- The interim management arrangements AFMA, in cooperation with the Tasmanian Department of Primary Industries Water and Environment (DPIWE), has in place under permits granted for the Commonwealth waters in Zone A;
- AFMA Corporate Plan;
- AFMA 5 year Strategic Research Plan;
- Bycatch Action Plan (BAP) (finalised in late 2005); and
- Relevant Gazetted notices, Directions and licence conditions.

The fishery is managed through limited entry, TCLs specific to Zones B, C, and D and a TACC for Zone A. Gear restrictions, in the form of mesh size, only apply to the trawl sector.

Overall assessment

The material submitted by AFMA, including the original 2004 submission and quarterly reports submitted under the two previous short term WTO declarations, demonstrates that the management arrangements for the SPF meet most of the requirements of the Australian Government *Guidelines for the Ecologically Sustainable Management of Fisheries* (the Guidelines).

While the fishery is relatively well managed, and significant progress has been made in mitigating the risk of protected species interactions, DEH has identified a number of risks that must be managed to ensure that their impacts are minimised:

- Potential for further protected species interactions as fishing activity increases;
- Lack of finalised and formalised measures and performance criteria for target species, byproduct and bycatch and measures and performance criteria for protected species interactions and ecological impacts of the fishery;
- Minimal information available in relation to bycatch and interactions with protected species; and
- Lack of finalised mitigation measures for impacts on protected species.

Conditions and recommendations to address these issues have been developed to ensure that the risk of impact is minimised in the longer term. Through the implementation of the recommendations and

conditions and the continuation of a responsible attitude to the management of the fishery, management arrangements are likely to be sufficiently precautionary and capable of controlling, monitoring and enforcing the level of take from the fishery while ensuring the stocks are fished sustainably.

The SPF is in a developmental stage and has made considerable progress in developing sound management arrangements. The management regime aims to ensure that fishing is conducted in a manner that does not lead to overfishing and for fishing operations to be managed to minimise their impact on the structure, productivity, function and biological diversity of the ecosystem. On balance, the fishery is being managed in an ecologically sustainable manner and is working to address existing problems and minimise environmental risks.

The operation of the fishery is consistent with the objects of Part 13A of the EPBC Act. Given the management arrangements currently in place and the significant work undertaken to improve the sustainability of the SPF, DEH considers that the fishery will not be detrimental to the survival or conservation status of the taxon to which it relates in the short term. Similarly, it is not likely to threaten any relevant ecosystem in the short term. DEH therefore recommends that the fishery be declared an approved WTO for the remainder of the 3 year period already instigated through the two previous short term declarations, with the actions specified in the recommendations to be undertaken by AFMA to contain the environmental risks in the long term. DEH considers that the fishery, as managed in accordance with the management regime is not likely to cause serious or irreversible ecological damage over the period of the export decision. Specifically, the WTO declaration would allow the export of product from the fishery until 6 December 2007. The WTO declaration will require annual reporting on the progress of implementing the conditions and recommendations of this report and other managerial commitments. The implementation of the recommendations will be monitored and reviewed as part of the next DEH review of the fishery in 2007.

As the official fishery area encompasses Commonwealth as well as State waters, consideration under Part 13 of the EPBC Act is required regarding the impact of the fishery on listed threatened species, listed migratory species, cetaceans and listed marine species.

Protected species occurring in the fishery area include cetaceans, seals, seabirds and sharks. As stated above and discussed in further detail through the report, interactions have occurred with cetaceans and seals, however significant work has been undertaken to reduce and mitigate these interactions in the future. The actual and potential impact on Part 13 species under the management arrangements is considered low and sufficient work is being undertaken to guard against future interactions. There are no listed threatened ecological communities in the fishery area.

DEH recommends that the SPF management arrangements be declared an accredited fishery under Sections 208A, 222A, 245 and 265 of the EPBC Act. In making this judgement, DEH considers that the fishery to which the regime relates does not, or is not likely to, adversely affect the survival in nature of listed threatened species or population of that species, or the conservation status of a listed migratory species, cetacean species or listed marine species or a population of any of those species. DEH also considers that the management regime requires that all reasonable steps are taken to avoid the killing or injuring of protected species, and the level of interaction under current fishing operations is low. On this basis, DEH considers that an action taken by an individual fisher, acting in accordance with the management regime, would not be expected to have a significant impact on a listed threatened species or listed migratory species protected by the EPBC Act.

Conditions:

1. Operation of the Small Pelagic Fishery (SPF) will be carried out in accordance with the Management Policy for the Commonwealth Small Pelagic Fishery 2002 (SPFMP).
2. The Australian Fisheries Management Authority (AFMA) will inform the Department of the Environment and Heritage (DEH) of any changes to the SPFMP or other significant policy documents.
3. In relation to the accidental catch of dolphins within the SPF, AFMA will:
 - Continue a observer program with a high level of coverage to determine the frequency of any interactions with cetaceans and the adequacy of mitigation measures.
 - Ensure that all boats operating within the fishery have in place appropriate measures to detect dolphins in the vicinity of operations and implement measures to avoid fishing in areas where dolphins are observed.
 - Ensure that all fishing operators immediately notify AFMA and DEH of any dolphin captures.
 - Ensure that the skippers, crew and observers on all vessels operating in the fishery are thoroughly briefed on the above measures before leaving port.
4. Operation of mid-water trawlers in the SPF will be carried out in accordance with the agreed strategy requiring operational protocols to be strictly observed by fishers. In the event of fishing operations using gear types other than mid water trawl interacting with protected and/or listed species, AFMA will develop and implement mitigation measures within 6 months.
5. Reports to be produced and presented to DEH annually, and to include:
 - a summary of all protected species interactions reported in the SPF; and
 - information sufficient to allow assessment of the progress of AFMA in implementing the conditions and recommendations specified for the SPF.

Recommendations

1. AFMA to continue to actively engage with other relevant jurisdictions in pursuit of collaborative or complementary management and research of shared small pelagic stocks.
2. Within 12 months, AFMA to finalise development of a formal data plan which sets out needs, priorities, mechanisms and timeliness for data collection.
3. Within 12 months, AFMA to account for all small pelagic species extractions in setting the TCLs and TACC for the SPF.
4. Within 12 months, AFMA to finalise the development of measures and performance criteria (including reference points) for target species, byproduct and bycatch and measures and performance criteria for protected species interactions and ecological impacts of the fishery. These measures will also be made publicly available within this time.

5. AFMA to report publicly on the status of the fishery on an annual basis, including a review of each of the performance criteria in the management regime for the SPF.
6. Within 12 months, AFMA to establish a mechanism for collecting reliable information sufficient to identify long term trends in bycatch and interactions with protected species. In the event that bycatch or protected species interaction increase and pose a risk to sustainability, AFMA to investigate suitable bycatch mitigation measures for the fishery.
7. AFMA to implement across the fishery mitigation and/or management measures endorsed as appropriate and acceptable by the Cetacean Mitigation Working Group as a matter of priority.
8. AFMA to identify and implement management strategies to address/mitigate any impacts identified through the Ecological Risk Assessment (ERA) with the timeframe for implementation commensurate with the level of risk identified by the ERA or other relevant research on target, byproduct, bycatch or protected species interactions.
9. In the event of interactions with protected species in the fishery, AFMA, in consultation with DEH, will within 12 months implement long term arrangements to address the interaction of protected species with fishing operations in the whole SPF.

PART I - MANAGEMENT ARRANGEMENTS

The SPF is managed by AFMA.

The management regime is described in the following documents, all of which are, or will be publicly available:

- *Fisheries Management Act 1991* (FMA);
- *Fisheries Administration Act 1991*;
- *Fisheries Management Regulations*;
- *The Management Policy for the Small Pelagic Fishery 2002* (Management Policy 2002);
- The interim management arrangements AFMA, in cooperation with the Tasmanian Department of Primary Industries Water and Environment (DPIWE), has in place under permits granted for the Commonwealth waters in Zone A;
- AFMA Corporate Plan;
- AFMA 5 year Strategic Research Plan;
- Bycatch Action Plan (finalised in late 2005); and
- Relevant Gazetted notices, Directions and licence conditions.

A number of other documents, including research reports, scientific literature and discussion papers are integral to the management of the fishery.

As the assessment of the SPF has been carried out in regard to the current Management Policy, DEH requires that the operation of the SPF be carried out in accordance with the arrangements set out in the Policy.

Condition 1: *Operation of the Small Pelagic Fishery will be carried out in accordance with the Management Policy for the Commonwealth Small Pelagic Fishery 2002 (SPFMP).*

DEH considers it important that management arrangements remain flexible to ensure timely and appropriate managerial decisions. Because of the importance of the management plan and documents referred to above to DEH's assessment of the fishery, an amendment could change the outcomes of the assessment and decisions stemming from it. Decisions resulting from this assessment relate to the arrangements in force at the time of the decision. In order to ensure that these decisions remain valid, DEH needs to be advised of any changes that are made to the management regime and make an assessment that the new arrangements are equivalent or better, in terms of ecological sustainability, than those in place at the time of the original decision.

Condition 2: *The Australian Fisheries Management Authority (AFMA) will inform the Department of the Environment and Heritage (DEH) of any changes to the SPFMP or other significant policy documents.*

Under the Management Policy the fishery is organized into four Zones A, B, C and D. Zone A is considered under transition while jurisdictional negotiations are under way between AFMA and DPIWE that would devolve responsibility for daily management of the Zone to DPIWE. Currently future management options are being developed by DPIWE for Zone A as well as by AFMA for Zones B, C and D. In both cases there is a move towards establishing complementary arrangements between the Zones based on quota regimes. It is anticipated that management arrangements will be formalised in mid 2006. The formalisation of these management arrangements will trigger a review of decisions made under the EPBC Act.

Current management of the fishery incorporates a range of sound consultative mechanisms and a clear commitment to effective consultation with a variety of stakeholders. DEH considers the level of consultation to be adequate and is confident that AFMA will continue to ensure interested parties are consulted appropriately.

The Small Pelagic Fishery Management Advisory Group (SPFMAC) is an advisory group that provides AFMA with advice on management and research needs of the SPF. The membership comprises commercial and recreational fishers, and representatives from environmental groups, scientific advisors and State and Commonwealth fisheries management agencies. DPIWE has established the Zone Small Pelagic Working Group (ZASPWG) with a similar role to that of the SPFMAC.

The SPRAT is an independently chaired advisory group that reviews and provides advice to AFMA on the stocks of small pelagic species in Zones B, C and D. The group currently meets annually to recommend risk weighted TCLs for the upcoming season. Due to the transitional nature of the Zone A sector of the fishery, the DPIWE has established a research advisory group similar to SPRAT called Zone A Small Pelagic Research and Assessment Group (ZASPRAG). SPRAT and ZASPRAG have cross membership.

NSW, Tasmania and South Australia have supported the ZASPRAG and SPRAT through participation of scientists and managers from their respective state fishery agencies. Industry sectors based in those states have participated, as have representatives of the peak recreational fishing association (RecFish Australia) and the Australian Marine Conservation Society.

More recently, the Cetacean Mitigation Working Group (CMWG) was established to provide AFMA with advice on the mitigation of protected species interactions in the SPF. The CMWG comprises representatives from the Tasmanian Aquaculture and Fisheries Institute (TAFI), DPIWE, the Commonwealth Department of Fisheries and Forestry (DAFF), AFMA, DEH, industry representatives and conservation groups.

The management policy contains a number of objectives relating to the development of an ecologically sustainable and economically efficient commercial fishing sector. The policy sets out a management framework that addresses limited entry, latent effort, license splitting, TAC and TCL level setting provisions as well as management response in the event of a TCL being reached. An assessment of the effectiveness of these measures is included in Part Two of this report.

Management of the SPF is based on a mixture of input and output controls. Such controls include:

- TCLs set individually for Zones B, C and D and a TACC limit in Zone A; and
- Limited entry.

Zone A has additional input controls:

- Vessel size restrictions (Tasmanian Diversified Inshore Sector);
- Restrictions on gear depending on the sector (purse seine only sector and Commonwealth trawl only sector); and
- Closures (state waters for trawl method inside 3 nm and closures for the purse seine method in some enclosed waters).

Additional measures have also recently been developed to mitigate the risks of protected species interactions in the SPF. These measures have not yet been fully implemented across the full range of the SPF.

Compliance and enforcement tools utilised in the fishery are based on the TCL and TACC regime. All operators in the SPF are required to complete catch and effort logbooks. The concession holder

is required to complete the logbook and certify that the information is a complete and accurate record. The likelihood of timely and accurate logbook completion is greatly increased by the requirement to make a landing report, and the possibility that the consistency of the report, the logbook records and the landed catch will be examined on the vessel's arrival in port. Industry has agreed to submit log-sheets to AFMA within 7 days of returning to port to assist with monitoring of TCLs and the TACC in Zone A. The statutory period for the return of log-sheets is 14 days from the end of the month during which the recorded fishing activity occurred.

DEH considers that these compliance measures contain the means of enforcing critical aspects of the management arrangements for the fishery at its current level of activity.

The Management Policy will remain in force for five years until 2007, however it may be amended during that period if required and will be formalised in 2006. The SPF is subject to an annual review conducted by SPRAT and Small Pelagic Fishery Working Group (SPFWG) based on catch data against TCLs and TACC. Other analyses (eg bycatch and byproduct trends) are included in the annual stock assessment. DEH considers that a five year review of the entire fishery policy framework is suitable while critical aspects are reviewed annually and while AFMA and DPIWE continue to act when adverse signals appear in the fishery. The annual reviews and the development of performance criteria are discussed more fully in Principle 1 of this report.

Fishery-dependent data relating to the target species is collected on a regular basis in the fishery in the form of logbooks. Fishery independent information has also been collected through an observer program in Zone A. Discussion of the information collection system can be found in Principle 1 of this report.

An analysis of the fishery's capacity for assessing, monitoring and avoiding, remedying or mitigating any adverse impacts on the wider marine ecosystem in which the target species lives and the fishery operates is contained under Principle 2 of this report.

DEH considers that the current management arrangements comply with all relevant threat abatement plans, recovery plans, the National Policy on Fisheries Bycatch, and bycatch action strategies developed under that policy. DEH expects that AFMA will also ensure compliance with any future plans as they are developed. AFMA has developed a Bycatch Action Plan and implemented it in 2005.

Although small pelagic species may undertake limited migrations, they are not usually found in deep waters and Australian stocks are considered to be relatively distinct and separate from those from neighbouring countries. Therefore, no regional or international management regimes, to which Australia is a party, are of direct relevance to the fishery. The prime international regime affecting the fishery is the United Nations Convention on the Law of the Sea (UNCLOS). The management regime essentially complies with this. Other international regimes are applicable to fisheries management but do not explicitly involve this fishery, for example the 1992 Convention on Biological Diversity and in particular the 1995 Jakarta Mandate requiring that, in relation to the sustainable use of marine and coastal biological diversity, the precautionary principle should apply in efforts to address threats to biodiversity. While these agreements are not specifically addressed in the Submission, the fishery's compliance with their requirements can be assessed by examination of Part Two of this report. The application of the International Convention for the Prevention of Pollution from Ships (MARPOL) to vessels operating in the fishery is explicitly discussed under Principle 2, Objective 3.

DEH considers it is incumbent on all authorities to develop a thorough understanding of the framework of national, regional and international agreements and their applicability to export-based fisheries for which they are responsible.

Conclusion

DEH considers that the SPF management regime is documented, publicly available and transparent, and is developed through a consultative process. The management arrangements are adaptable and underpinned by appropriate objectives. The SPF Management Policy requires the development of performance criteria by which the effectiveness of the management arrangements can be measured, enforced and reviewed. This is addressed under Recommendation 2.

The management arrangements are capable of controlling the harvest through a combination of input and output controls appropriate to the size of the fishery and are underpinned with precautionary TCLs and TACC set for each of the fishery Zones. Periodic review of the fishery is provided for, as are the means of enforcing critical aspects of the management arrangements.

The management regime takes into account arrangements in other jurisdictions, and adheres to arrangements established under Australian laws and international agreements.

PART II – GUIDELINES FOR THE ECOLOGICALLY SUSTAINABLE MANAGEMENT OF FISHERIES

Stock Status and Recovery

Principle 1: *‘A fishery must be conducted in a manner that does not lead to over-fishing, or for those stocks that are over-fished, the fishery must be conducted such that there is a high degree of probability the stock(s) will recover’*

Maintain ecologically viable stocks

Objective 1: *‘The fishery shall be conducted at catch levels that maintain ecologically viable stock levels at an agreed point or range, with acceptable levels of probability’*

Information requirements

Small pelagic species have a wide geographic distribution. AFMA and DPIWE believe that the stocks of these species are restricted to Australia’s EEZ. It is possible that for some species limited exchange of larval and/or adult fish occurs with New Zealand stocks.

The geographic distribution and spatial structure of the SPF species is not completely known for all species and AFMA has committed to incorporating any new information into stock assessment processes and management responses. In Australia, small pelagic species are found in waters off NSW, Tasmanian, South Australian and Western Australian and AFMA has sought to establish complementary management arrangements across the range of the fishery. The multi jurisdictional membership in SPRAT, ZASPRAT, the ZASPDWG and SPFDWG assist in the development and monitoring of those complementary arrangements.

Currently catch is only significant in Zone A, with very low catch in Zones B, C and D. Fishery dependent data across the SPF is obtained through compulsory daily logbooks. Operators in State waters of Zone A are required to return the Purse Seine Daily Fishing logbooks to DPIWE while purse seine and mid-water trawl operators in Commonwealth waters of Zone A return logbooks to AFMA within 7 days of completion of a fishing trip. AFMA and DPIWE are jointly monitoring catches in Zone A through logbooks and landing records. Zone A operators are also voluntarily completing Commonwealth Catch Disposal Records and providing copies of logbooks to DPIWE to assist with quota monitoring.

Both AFMA and DPIWE logbooks contain information on daily and shot-by-shot target catch, hours fished and areas of operation. Fishers are obliged to record byproduct data on a separate logbook. Logbooks include a compulsory field on discards. DEH believes that data reliability for target species is reasonable and that compliance and enforcement activities have the capacity to ensure the ongoing reliability of data in the fishery.

The level of verified data for Zones, B, C and D of the fishery is limited. There has been very little fishing effort in these Zones in recent years. AFMA currently relies on logbooks for information on target, byproduct and bycatch data collection in these Zones.

DEH notes that there are a range of monitoring approaches that AFMA should consider to improve data collection and validation. AFMA has stated its confidence in implementing cost effective port sampling programs if required. Other options available could include cooperative approaches with State agencies established through the SPRAT or through contractual arrangements with third party observer program providers similar to those administered in the SESS Fishery, ETBF and SWTBF.

AFMA is liaising with NSW Fisheries to develop complementary logbook recording for bait taken within State waters as well as offshore. The proposal is for NSW to adopt the bait catching logbook used by Commonwealth tuna permit holders. AFMA considers that it would be problematic to have two bait logbooks in use by the fleet which is based in NSW. Many tuna operators have a state entitlement to catch bait for their own use inside 3 nautical miles.

AFMA's SPF permits include a condition whereby observers can be placed on vessels. This allows AFMA to respond to any significant increase in effort. AFMA will base its decision to deploy observers on the level of fishing activity and the advice of the SPRAT in regard to fishery data requirements and any potential for interactions with protected species.

The observer requirements for pair trawling in Zone A are more specific and set at 25% coverage (pair trawling is only being tested in Zone A). An ongoing catch monitoring and observer program is currently being administered by TAFI for Zone A. TAFI is confident that the 'at sea' and port sampling coverage levels are robust. The scientific sampling program is quite intensive at present due to the protected species interactions in the SPF. AFMA has agreed that future observer deployments in Zone A will be managed by DPIWE and TAFI.

Fishery-independent data collection, apart from the extensive research program undertaken in relation to protected species interactions, is limited. AFMA submits that this is because research fishing is prohibitively expensive and typically generates low catch rates. While a small catch may be economic for fishers, the limited amount of data that can be obtained from small sample sizes will mean the data are of limited use.

AFMA and DPIWE collect data from a range of sources (logbooks, landing reports, voluntary catch sampling and observer data) in an effort to counteract the lack of fishery-independent data. DEH considers this a useful approach given the economic and resource constraints under which the fishery operates. However, DEH is concerned that a more comprehensive data validation plan is not in place in the event of the fishery expanding from its current low level of activity. AFMA management currently monitor catches as reported in logbooks and will consider implementing prior reporting and catch disposal records if catches approach the trigger TCLs. Operators in Zone A are assisting by voluntarily completing Commonwealth Catch Disposal Records.

Small pelagic species worldwide are, in places, the basis for large scale fisheries and have generated considerable research interest. Some research findings from northern hemisphere mackerel (*Scomber* species) fisheries may be relevant to Australian fisheries for blue mackerel. However, there has been limited research on small pelagic species in Australian waters. Some useful earlier research looked into the oceanographic and environmental influences on jack mackerel abundance and their trophic role.

SPRAT, SPFWG, Fishery Research and Development Corporation (FRDC,) DAFF and State fishery agencies have sought to categorise research into small pelagic species on a priority basis taking into account species most of risk or their relevance to the management of commercial and recreational fisheries as well as recognising their trophic importance to other fisheries and temperate ecosystems. An important outcome of this coordinated approach was the broad support for the FRDC project: *Development and evaluation of egg-based stock assessment methods for blue mackerel*. The project will determine if an egg production model can be used as a basis for stock assessment for blue mackerel. This methodology has been successfully applied to the South Australian pilchard fishery. The South Australian Research and Development Institute (SARDI) and AFMA contributed funds towards this three-year project and the Australian Maritime College (AMC), TAFI and NSW Fisheries have committed in kind support. A steering committee with Commonwealth and State fisheries agencies, universities and industry and recreational sector representatives is managing the project.

The distribution range of the small pelagic species extends over several jurisdictions and fisheries. A number of Commonwealth and State managed fisheries take small pelagic species as target, byproduct or bycatch. DEH strongly encourages AFMA to continue to pursue complementary cross-jurisdictional management arrangements.

Recommendation 1: *AFMA to continue to actively engage with other relevant jurisdictions in pursuit of collaborative or complementary management and research of shared small pelagic stocks.*

TAFI is currently developing a research program on redbait in response to recent commercial catches of that species in Zone A. The research program is to be funded by industry contribution through fees for licences and quota fees. However there is no timeframe for its implementation.

Information on stock structure, abundance distribution and productivity of all SPF species is limited. AFMA argues that current research is at an appropriate level commensurate with the level of fishing. However, there is no plan to address a potential increase in fishing effort and associated information requirements. DEH considers that a priority for SPF is the development of a formal data plan which sets out needs, priorities, mechanisms and timelines for data collection. The data plan should strategically direct future data collection to inform management of the fishery and provide input to future reviews of the SPF Environmental Risk Assessment (ERA) on the sustainability of the fishery being conducted by AFMA and the Commonwealth Scientific and Industrial Research Organisation (CSIRO). AFMA has begun work in this area, in accordance with recommendations made in previous short term WTO declarations, however DEH considers that this should be completed within the next 12 months.

Recommendation 2: *Within 12 months, AFMA to finalise development of a formal data plan which sets out needs, priorities, mechanisms and timeliness for data collection.*

Overall, given the range of fishery dependent and independent data gathered by AFMA and DPIWE and the mechanisms for regularly reviewing data requirements, DEH considers that there is a reliable information collection system in place appropriate to the present scale and nature of the fishery. Continuation of existing data collections and research programs, combined with some extension and refinement of such activities to address a potential increase in fishing effort or change in fishing gear or methodology, as set out in a data plan, will be important for the future management of the fishery.

Assessment

The primary management tool for the fishery are annual TCLs for Zones B, C and D and a TACC for Zone A. An annual performance assessment of the fishery is conducted and used to determine the most appropriate TCLs and TACC for the fishery.

The assessment uses fishery dependent and independent information (e.g. independent surveys conducted by the SARDI). Catch and effort are used to determine the nature of any changes in the fishery and if triggers are reached. This process is undertaken by the SPRAT and SPFWG for Zones B, C and D and ZASPRAG and ZASPWG for Zone A.

AFMA recognises that there is insufficient information to develop quantitative stock assessments for small pelagic species and in view of the low level of fishing activity suggests that it is not a high priority at this time. In its place, AFMA implements a precautionary approach through the use of conservative output controls even though the SPRAT suggests that these stocks are likely to be able to sustain higher harvest levels. DEH assumes that it will be some years before the assessment

model is developed. AFMA, DPIWE and TAFI are currently supporting the FRDC project: *Development and evaluation of egg-based stock assessment methods for blue mackerel*, which is expected to provide the basis for a quantitative stock assessment for blue mackerel.

In the absence of robust indices of abundance both the SPRAT and ZASPFRAF review historical catch and effort data, available information on the biology and life history of domestic small pelagic species and draw on information from other small pelagic fisheries to set TCLs and TACC.

Because the fishery has progressively diminished its level of catch since the peak 1986-87 season and is considered to be of low value, research into the distribution and spatial structure of the stock has not been a high priority. Species in the SPF vary in their range and stock structure, and there is little species specific information. Due to the lack of information, SPRAT and ZASPFRAF take into account data on prevailing oceanographic conditions in the various Zones, available species information and fishery dependent and anecdotal information when reviewing TCLs and the TACC.

An example of this approach is illustrated in the way jack mackerel TCLs and the TACC have been set for the Zones. In view that some studies indicate that jack mackerel may have distinct subpopulations across southern Australia, SPRAT set differing TCLs across the Zones of the fishery based on the relative size of the Zone, its oceanographic regime, estimated productivity and catch and effort records.

In general terms knowledge of the distribution and spatial structure of small pelagic species can be summarised as follows:

Blue mackerel

Found in Australian waters from off north-western Australia through to the Great Australian Bight to south-eastern Australia and Queensland. Distribution through Bass Strait is uncertain. There is assumed to be limited mixing between Australian and New Zealand stocks. Stock structure studies and tagging programs are required to verify stock structure for this species.

Redbait

Limited information is available for this geographically widespread species on aspects of its biology or stock structure. It is reported from the Australian continental shelf break, offshore seamounts, islands and mid oceanic ridges in the south west Atlantic, Indian and south Pacific oceans.

Peruvian jack mackerel

Currently a minor component of Zone A catch, Peruvian jack mackerel form the basis of a large fishery of Peru and Chile. The abundance and range of this species appears to have increased since the 1970s. Peruvian jack mackerel were first reported in New Zealand waters in 1987 and Australian waters in 1989 they have become established throughout much of the New Zealand's EEZ.

Yellowtail scad

Distribution is from southern Queensland around the southern half of the continent to Exmouth Gulf in Western Australia. They appear to be most abundant in NSW. Yellowtail scad are neritic and are uncommon in waters cooler than 13°C. Anecdotal information suggests that the abundance of yellowtail along the east coast is patchy and there is currently little understanding about the rate and extent of mixing between the areas of higher apparent abundance.

Removals of small pelagic species include direct harvest by the fishery, direct harvest and mortality from other Commonwealth and State managed fisheries and recreational harvest.

The fishery operates under a TCL system in Zones B, C and D and under an annual TACC in Zone A. AFMA management currently monitors catches as reported in logbooks and will consider implementing prior reporting and catch disposal records if catches approach the trigger TCLs. Operators in Zone A are assisting by voluntarily completing Commonwealth Catch Disposal Records.

Observer programs have not reported any high grading of target species in the fishery leading to discards. The fishery effectively targets small pelagic species due to their schooling behaviour with an average bycatch of only 1% of the total catch. The end product for the fishery is mainly fishmeal and bait with minimum catch for value added processing for human consumption. Operators off NSW targeting fish for human consumption often sample schools using jigs to see if the fish are of suitable size for marketing prior to deploying their purse seine nets.

The Management Policy 2002 states that the collection of accurate catch/effort data in relation to the harvest of SPF species across all catching sectors is fundamental to the maintenance of effective management strategies for the SPF. The SPRAT is committed to annually review data collection to identify any further improvements required for the collection of commercial landing data in the SPF. DEH considers that the process of identifying and reviewing data collection needs should be undertaken on a strategic basis and has addressed this issue through Recommendation 3.

A number of sectors outside the SPF management arrangements, including Commonwealth and State managed fisheries, target or take small pelagic species as bycatch or byproduct. For example, Commonwealth Tuna fishers are permitted to take SP as bait and depending on where they take it can use a number of methods to do so. Small pelagic species are caught as bycatch and frequently discarded in the SESS Fishery. Operators in the trawl sector are only required to record estimates of quantities of these species if retained. The gillnet, demersal longline and trap sectors are required to record discards. The level and type of byproduct and bycatch taken by others sectors is confirmed by observer data gathered through the Integrated Scientific Monitoring Program (ISMP). To assist in the identification of take of small pelagic species by other sectors DEH welcomes AFMA's initiative in seeking that State and AFMA logbooks complement each other.

A limited number of ex-South East Non-Trawl Fishery (SENTF) permits for purse seine (previously referred to as the Informally Managed Fishery) also allow access to small pelagic species (in Zones C and D). These permits are unrestricted by the TCLs set for those Zones. DEH notes that AFMA is in dialogue with permit holders as to how to bring these permits into compliance with SPF management arrangements through the development of a management regime for an Informally Managed Purse Seine Fishery (IMPSF). DEH sees this as an important initiative and until the IMPSF is brought into line with SPF management arrangements, AFMA will need to monitor and quantify the take of small pelagic species by these unrestricted operators.

DEH considers that the proper management of stocks requires that AFMA use best available estimates on the take of small pelagic species as target species, byproduct and bycatch across all sectors, including that from the IMPSF, during the TCLs and TACC setting process for the SPF to ensure that the overall harvest of small pelagic species is sustainable. AFMA has begun work in this area under Recommendations made in previous short term WTO declarations, however DEH considers that this work should be completed within the next 12 months.

Recommendation 3: *Within 12 months, AFMA to account for all small pelagic species extractions in setting the TCLs and TACC for the SPF.*

Management response

The current SPF management regime aims to maintain ecologically viable stock levels through a range of input and output controls. These measures are outlined in Table 1 and Part I of this report.

DEH considers that the combination of input and output controls should ensure adequate protection of the target stocks, but notes that this is contingent upon the TCLs and TACC being set at an appropriate level supported by effective management response processes.

The Management Policy 2002 contains a series of trigger catch levels (TCLs) relating to the harvest of small pelagic species. They are triggered when the total commercial catch, including landed and/or discarded catch, from the purse seine and mid water trawl sectors, reaches the relevant trigger level for each Zone. Additional performance indicators and trigger points are included in the draft Zone A Small Pelagic Fishery (ZASPF) Policy document which has been released by DPIWE for comment by stakeholders. These relate to failure to reach the set TACC for the year, significant change in size structure of catches, catch composition ratios and changes in the bycatch or byproduct percentage of catch.

DEH notes that in the event that a trigger point is breached, the Management Policy requires a review of the circumstance under which the TCL was reached to be conducted by SPRAT within 30 days. The results of the review, including proposed management options, if required, will be submitted to the SPFWG and then to the AFMA Board. The AFMA Board is to decide on the appropriate management response within 15 days of receiving the advice of the SPFWG. The submission outlines a number of potential generic management responses. These include the introduction of effort or catch limits, alternative approaches or any additional research or data collection that should be implemented.

DEH notes that the current level of catch is currently at very low levels and none of the TCLs have been reached in any of the Zones.

The low level of fishing activity in the SPF is one of the key reasons for the paucity of information about the fishery in general. This together with the variations in abundance and distribution stemming from oceanographic events has hampered the ability to establish measures and performance criteria beyond the TCLs and TACC. However, an increase in fishing activity may lead to unsustainable impact to the fishery and the wider environment. DEH welcomes the release of an investment warning by the AFMA Board as a positive step in addressing the potential increase in effort. DEH believes that, in view of the potential for the fishery to significantly increase its level of effort through the use of current entitlements, future management should include the development of measures, performance criteria and reference points for target, byproduct and bycatch and measures and performance criteria for protected species interactions and for wider environmental impacts. These measures can be progressively refined as information becomes available. AFMA has begun work in this area under a previous recommendation of a short term WTO, however DEH considers that this work should be completed within 12 months.

Recommendation 4: *Within 12 months, AFMA to finalise the development of measures and performance criteria (including reference points) for target species, byproduct and bycatch and measures and performance criteria for protected species interactions and ecological impacts of the fishery. These measures will also be made publicly available within this time.*

The performance of the SPF is reviewed once a year by SPRAT and SPFMAC for (Zones B, C and D) and ZASPRAG and ZASPFAC for Zone A. There are no formal requirements obliging AFMA to report on the performance of the fishery. DEH believes that management should be transparent with public reporting against each fishery performance criteria on an annual basis.

Recommendation 5: *AFMA to report publicly on the status of the fishery on an annual basis, including a review of each of the performance criteria in the management regime for the SPF.*

Low levels of byproduct are recorded by SPF operators. Catch of species targeted by other fisheries is very low in purse seine operations but slightly higher in mid-water trawling. AFMA requires that SPF fishers hold quota to cover the take of species managed by quota under the SESS Fishery Management Plan. All retained species in the SPF must be recorded in logbooks. DEH considers that byproduct levels in this fishery at the current levels of effort are low. However, the potential for the fishery to increase effort and/or a shift in gear type may result in changes to the type and quantity of byproduct take. DEH notes that better data collection and validation will help to ensure byproduct take is sustainable.

Conclusion

DEH considers that the management regime in the SPF is appropriately precautionary and provides for the fishery to be conducted in a manner that does not lead to over-fishing. While DEH considers that the information collection system and stock assessment and management arrangements generally are adequate at the existing scale of operations, to ensure that the fishery is conducted at catch levels that maintain ecologically viable stock levels with acceptable levels of probability, a number of recommendations have been made for improvements in the longer term.

The FRDC Blue Mackerel Project will provide the basis for the first quantitative stock assessment for a small pelagic species in the fishery. AFMA anticipates that this project will assist in the identification of appropriate reference points for this species. It is anticipated that this project will be completed in 2005. SPRAT is considering the implications of using the outcomes of the blue mackerel project as a proxy on the stock status for other small pelagic species.

Promote recovery to ecologically viable stock levels

Objective 2: *‘Where the fished stock(s) are below a defined reference point, the fishery will be managed to promote recovery to ecologically viable stock levels within nominated timeframes’*

This objective is not applicable to the fishery at present. SPF trigger points and management processes are in place to avoid the risk of overfishing. As a result of the low market demand catch levels are low and well below the TCLs for Zones B, C and D or the TACC for Zone A. However, in the event that market demand should increase catches, AFMA in coordination with DPIWE have established a precautionary management strategy, aimed at maintaining stock abundance.

Conclusion

DEH considers that small pelagic fish stocks are not below a defined reference point but should that occur in the future, the fishery is conducted such that there is a high degree of probability the stock would recover to ecologically viable stock levels within nominated timeframes.

Ecosystem impacts

Principle 2: *‘Fishing operations should be managed to minimise their impact on the structure, productivity, function and biological diversity of the ecosystem’*

Bycatch protection

Objective 1: *‘The fishery is conducted in a manner that does not threaten bycatch species’*

Information requirements

AFMA and TAFI have collected verified information on the composition and abundance of bycatch species taken in Zone A. An ongoing catch monitoring and observer program is currently being

administered by TAFI. There is only one company fishing intensively in Zone A, and TAFI is confident that the 'at sea' and port sampling coverage levels are robust for both target and bycatch species. The scientific sampling program is quite intensive at present in response to the development of the redbait resources.

The level of verified data for Zones, B, C and D of the fishery is limited. There has been very little fishing effort in these Zones in recent years. AFMA currently relies on logbook for information to monitor bycatch in these Zones.

SPF permits include a condition whereby observers can be placed on vessels. This allows AFMA to respond to any significant increase in effort in Zones B, C and D. AFMA currently requires 25% observer coverage on pair trawling operations in the fishery (pair trawling has only been tested in Zone A).

The ERA for Commonwealth fisheries project has recently been completed for the SPF component. This process will identify areas of data deficiency in the fishery and will help the SPRAT determine data collection priorities for the fishery. The results will also feed into the BAP and SPF Data Plan (to be completed by early 2007).

AFMA recognises that increased effort in Zones B, C and D may require information above that provided in logbooks but believes that the ERA project will assist with the identification of bycatch issues that may require more intensive monitoring.

In the event of a significant increase in effort or a change from purse seining to trawling as the main gear type the development and implementation of an ongoing monitoring program for bycatch should be a high priority for the future management of the fishery.

The fishery dependent data collection program is considered adequate for the level of existing effort in the fishery. Validation by observers of fishery dependent data is limited to Zone A, however AFMA has the ability to introduce observer programs across the fishery if effort increases or other management issues are identified. Management and industry have recognised the need for and value in collecting information on bycatch in the fishery. The BAP and strategic plan can be expected to progress bycatch data collection and refine reporting systems as work continues on methods to minimise bycatch in the fishery.

Assessment

The level of bycatch in the SPF is considered minimal as reported by observers at less than 1% at the current level of fishing with purse seine gear. In Zone A bycatch mostly consists of barracouta and spotted warehou. Barracouta are a state managed species and are not considered to be a management or research priority in Tasmania. Spotted warehou are managed under ITQs in the SESS Fishery. TAFI reports that spotted warehou comprise up to 5% of the catch on a small proportion of mid-water trawl shots. Operators must cover catches of these species with quota. BRS classified the spotted warehou's stock status as uncertain in 2001/02.

There has been no formal risk analysis of bycatch and its vulnerability to fishing in the SPF. AFMA is awaiting the completion of the SPF ERA to identify those species most at risk of interaction with the fishing gear, capture and discarding. The SPRAT and SPFWG will undertake further risk assessment as required in developing the BAP for the SPF based on the outcomes of the ERA.

Management response

Fishing effort has declined in the SPF and, while these reductions were likely in response to declines in market demand for the target species, they have also resulted in a reduced amount of bycatch taken in the fishery and a reduced impact of fishing overall. Since the 1986/87 season overall catch in Zone A has declined by approximately 88%.

DPIWE has introduced area closures inside Tasmanian state waters according to gear type. Enclosed waters are closed to both purse seine and mid-water trawl, waters out to 3 nm are limited to purse seine only and outside 3 nm both methods can be used. This approach has served to minimise bycatch. Additional closures, such as those applying under the Tasmanian Scalefish Management Plan apply to the Zone A Fishery.

AFMA and DPIWE's assessment of logbook and observer data collected to date is that there is no immediate need to implement measures to manage impacts on general bycatch in the Zone A Fishery.

AFMA acknowledges that there is insufficient information on bycatch in Zones B, C and D to make an assessment, however, the low level of fishing activity in these Zones suggests any impacts are currently very low.

AFMA has developed a BAP for the SPF. The BAP aims to identify the nature of bycatch issues in the SPF by including strategies for data collection, data analysis, assessment of issues identified and implementation of appropriate management responses. The ERA project for the SPF will provide additional direction on bycatch issues to be addressed by the BAP.

An indicator group of bycatch species has not been identified for the fishery, nor have ecosystem indicators. AFMA is committed to including ERA findings in the BAP and to establish an ongoing process to review risk assessments in line with methodology developed by CSIRO, the Victorian Marine and Freshwater Resources Institute (MaFRI) and Commonwealth Bureau of Rural Sciences (BRS).

While bycatch and interaction with protected species is considered to be low in the SPF, the potential for a significant increase in effort in the fishery may result in an increase in bycatch and interactions. The potential increase in the use of mid-water trawl in preference to purse seining may lead to a different overall impact on the environment in the form of bycatch type and quantity as well as in interactions with protected species. DEH understands that mid-water trawl operations may not be able to distinguish (through depth/temperature or acoustic profiles) between SPF target species and other types of schooling fish. There have been recent un-confirmed reports of dumping of large quantities of barracouta (*Thyrsites atun*) by mid-water trawlers in Zone A while targeting small pelagic species. This issue has not been reported or considered by AFMA in their strategic submission and has not been reported by the TAFI managed observer program.

DEH believes that future management arrangements for the fishery should include provisions to ensure that data collection and verification on bycatch and interactions with protected species is adequate, comprehensive and reliable in the event of a significant increase of take or a change in fishing gear. AFMA has begun work in this area in accordance with a recommendation made under a previous short term WTO declaration, however DEH believes that this should be finalised in 12 months.

Recommendation 6: *Within 12 months, AFMA to establish a mechanism for collecting reliable information sufficient to identify long term trends in bycatch and interactions with protected*

species. In the event that bycatch or protected species interaction increase and pose a risk to sustainability, AFMA to investigate suitable bycatch mitigation measures for the fishery.

Conclusion

DEH considers that there is a high likelihood the fishery is conducted in a manner that does not threaten bycatch species. Should this situation change, or a risk assessment process indicate otherwise, DEH expects that AFMA would undertake appropriate actions to ensure that bycatch species are not threatened by this fishery.

Protected species and threatened ecological community protection

Objective 2: *‘The fishery is conducted in a manner that avoids mortality of, or injuries to, endangered, threatened or protected species and avoids or minimises impacts on threatened ecological communities’*

Information requirements

Collection of information on interactions with protected species is by recording in logbooks, a permit condition requiring fishers to notify AFMA within 24 hours of an interaction and observer programs. AFMA and DEH have established a working group to improve the process for the collection and reporting of data of interactions in Commonwealth fisheries. The working group has identified the most appropriate methodology for, and level of detail of, data collection of interactions. The working group has also identified the need for a stakeholder education program.

As outlined briefly above, significant interactions with cetaceans have occurred in 2004 and 2005. In October 2004, while participating in a Tasmanian Government small pelagic species research fishing trip, a mid-water trawler caught 14 common dolphins² in waters east of Flinders Island. The dolphins were trapped against the seal exclusion device and drowned. The skipper immediately filed a report with AFMA. DEH and AFMA investigated the incident, which is the first of its kind reported in the SPF. The accidental nature of the incident was corroborated in the observer report. AFMA and industry have jointly developed and implemented new mitigation measures and the vessel continued to participate in the research trawl program. The Cetacean Mitigation Working Group (CMWG) was established and worked closely with AFMA, industry members and DEH in developing mitigation techniques. While AFMA has begun to implement mitigation measures in the SPF, DEH considers that the work with the CMWG should be ongoing and that AFMA should make a commitment to implement across the entire fishery, mitigation and/or management measures endorsed as acceptable by the CMWG as a matter of priority.

Recommendation 7: *AFMA to implement across the fishery mitigation and/or management measures endorsed as appropriate and acceptable by the Cetacean Mitigation Working Group as a matter of priority.*

Part Two of the current research program is currently underway, with no interactions reported since it began. DEH is satisfied with industry and AFMA’s prompt response to the incident and commends AFMA for its ongoing commitment to researching the prevalence of interactions and in developing mitigation techniques for implementation in the fishery. DEH will continue to work closely with AFMA in monitoring the situation.

² Identification of the species caught is inconclusive but was expected to be either the common dolphin (*Delphinus delphis*) or bottlenose dolphin (*Turisops truncatus*)

The level of interactions with other protected species in the SPF is considered minimal at the current level of effort. Verified observer data for mid-water pair trawling operations in 2001/02 in Zone A recorded only one interaction with a fur seal which entered the net through a seal exclusion device and was released alive. Between June 2003 and October 2004, Industry and TAFI observers reported no further interactions with seals.

Observer reports from Zone A note short tailed shearwaters, shy albatross and Buller's albatross as the most abundant species. No seabird contacts with the vessel or fishing gear occurred during observed fishing operations.

Limited verified data is available on the fishery's interactions with protected species in Zones B, C, and D due to the very low level of fishing activity in these areas.

The SPF ERA project has identified knowledge gaps and defined risks in the SPF. However, there is no formal commitment to develop and implement mitigation measures for high risk issues as identified by the project. DEH considers that the SPF ERA project, highlighted as an indicator of the whole of ecosystem approach to fisheries management, must be underpinned by a commitment to address the issues that it raises on a risk priority basis.

Recommendation 8: *AFMA to identify and implement management strategies to address/mitigate any impacts identified through the Ecological Risk Assessment (ERA) with the timeframe for implementation commensurate with the level of risk identified by the ERA or other relevant research on target, byproduct, bycatch or protected species interactions.*

Assessment

A number of protected species inhabit or transit the area of the fishery, including cetaceans, turtles, seabirds, sygnathids, seals and sharks.

Over the past couple of years, in response to the requirements of the short term WTO declarations and to improve the ecological sustainability of the SPF in terms of protected species interactions, AFMA has:

- established an observer and research program to measure the level of interactions and develop mitigation techniques;
- fully briefed all fishing operators on reporting requirements and measures which must be taken to minimise the risk of interactions;
- developed and implemented operational protocols for mid water trawlers to minimise protected and/or listed species interactions; and
- committed to developing mitigation techniques if interactions occur with fishing gear other than mid water trawlers.

Due to the possibility of interactions with protected species in the fishery, AFMA has agreed to continue their commitment to implementing the following conditions to ensure that all reasonable steps are taken to minimise the impact of fishing operations across the SPF on protected species.

Condition 3: *In relation to the accidental catch of dolphins within the SPF, AFMA will:*

- *Continue a observer program with a high level of coverage to determine the frequency of any interactions with cetaceans and the adequacy of mitigation measures.*
- *Ensure that all boats operating within the fishery have in place appropriate measures to detect dolphins in the vicinity of operations and implement measures to avoid fishing in areas where dolphins are observed.*

- *Ensure that all fishing operators immediately notify AFMA and DEH of any dolphin captures.*
- *Ensure that the skippers, crew and observers on all vessels operating in the fishery are thoroughly briefed on the above measures before leaving port.*

Condition 4: *Operation of mid-water trawlers in the SPF will be carried out in accordance with the agreed strategy requiring operational protocols to be strictly observed by fishers. In the event of fishing operations using gear types other than mid water trawl interacting with protected and/or listed species, AFMA will develop and implement mitigation measures within 6 months.*

Condition 5: *Reports to be produced and presented to DEH annually, and to include:*

- *a summary of all protected species interactions reported in the SPF; and*
- *information sufficient to allow assessment of the progress of AFMA in implementing the conditions and recommendations specified for the SPF.*

Grey nurse and great white sharks are found in the area of operation of the SPF, however observer programs indicate no interaction with these species.

Management and industry have focused more attention on the potential for seal bycatch in the fishery. The reported interaction with a fur seal during a fish pumping operation (released alive) and the bycatch of fur seals in the trawling operations targeting blue grenadier off western Tasmania suggest that the bycatch of seals could increase if seals become habituated to mid-water trawling operations.

Data arising from the protected species logbook records will continue to be monitored. DEH recognises that the minimal data collection and analysis of protected species interactions to date is due to the relative low level of activity of the fishery and the relatively benign fishing method. DEH considers however, that interactions with protected species other than cetaceans must continue to be monitored with a commitment for the development of mitigation measures should interactions with any protected species occur in the future.

Recommendation 9: *In the event of interactions with protected species in the fishery, AFMA, in consultation with DEH, will within 12 months implement long term arrangements to address the interaction of protected species with fishing operations in the whole SPF.*

There are no listed ecological communities in the fishery area.

Management response

The SPF ERA has provided initial information and assessment of the fishery's interactions with endangered, threatened or protected species. Management measures will be reviewed as necessary to ensure that the capture and mortality of these species are minimised.

The SPF BAP was released as a final after a period of public comment. The BAP requires that the SPRAT, SPFWG and AFMA analyse data on protected species interactions and report their findings to the AFMA Board Environment Committee. The stated objective of the BAP is to minimise injury and death to endangered, threatened or protected species and commits AFMA to ensuring the management policy is consistent with recovery plans for species which may interact with the fishery. The BAP also commits AFMA to consult with the SPRAT and SPFWG within 3 months of

any change in the listing or new listing under Part 13 of the EPBC Act to determine if the SPF is likely to impact on the newly listed species.

AFMA has been active in working cooperatively with DEH to improve the collection of interaction data across all Commonwealth fisheries.

Conclusion

DEH notes that there are minimal interactions with protected species in this fishery and considers that the fishery is conducted in a manner that avoids mortality of, or injuries to, endangered, threatened or protected species and avoids or minimises impacts on threatened ecological communities. Should this situation change, or a risk assessment process indicate otherwise, DEH expects that appropriate actions will be undertaken to ensure the fishery avoids mortality and injury to these species and avoids or minimises impacts on threatened ecological communities.

Recommendations and conditions have been developed to ensure that the risk of unacceptable impact on protected species is minimised in the longer term.

Minimising ecological impacts of fishing operations

Objective 3: *'The fishery is conducted, in a manner that minimises the impact of fishing operations on the ecosystem generally'*

Information requirements

Limited information available is collected in relation to the ecosystem impacts of the SPF. Most of the significant information on the fishery is confined to Area A and to a lesser extent Area D. The level of fishing in Zones C and B has been insignificant to date, therefore yielding little information.

There is an expectation that in the event the fishery increases its level of activity so will its ability to gather information. The SPF ERA is reviewing the SPF in the context of the large international fisheries for small pelagic species which are known for experiencing large changes in abundance and in, some cases, the species composition of catches e.g. Peruvian anchovetta and South African pilchard. These events are strongly linked to oceanographic changes, and reductions in abundance of some species are often accompanied by increases in other small pelagic species.

Information regarding trophic interactions and linkages in the SPF will be partially addressed by the FRDC project - *Trophic interactions in eastern Australian pelagic food webs* - the ecological effects of longline fishing in the ETBF. One aspect of this study directly relevant to the SPF (Zones A and D) is the investigation of the components and linkages within the pelagic ecosystem from apex predator through to food sources in the eastern Australian longline fishery.

AFMA anticipates that the blue mackerel egg survey and the ETBF ecological effects study will yield significant information relevant to assessing the impacts of fishing on pelagic and benthic communities. The SPF ERA will review available information in regard to potential impacts of the fishery on food chains and productivity flows and identify areas where more information and research is desirable.

Assessment

There is a recognition by AFMA that small pelagic species are an important part of the food chain in the south-east marine region. Small pelagic species are a significant component of the diet of a number of predators that inhabit or transit through the area of the fishery. These include fur seals, shy albatross, Australasian gannet, southern bluefin tuna and some SESS Fishery quota species

(mirror dorys and john dorys). However, there has been no specific investigation of food chain and or wider ecosystem impacts associated with the SPF.

AFMA is not currently in a position to assess the importance of small pelagic species to higher order predators and/or the possible implications to small pelagic stocks as a result of longstanding fishing for some of the species that prey on small pelagic species and will rely on the ERA to report on the relative risks for various ecologically related, associated and dependent species arising from the small pelagic fishery.

The fishing gear generally is not regarded as posing a significant risk to the physical environment.

Purse seine gear targets surface schools of fish with only the footrope occasionally resting on the seafloor during inshore fishing and with only limited dragging exerted on the bottom and benthic structures. Mid-water trawl targets schools of fish in the water column. Mid-water trawl gear takes very small quantities of demersal fish and at times has limited contact with the bottom. AFMA observers did not report any benthic material in observed trawl shots off Tasmania.

The SPF ERA will report on the relative risks of the fishery in regard to the ecosystem components.

Management response

There is little information of impacts on the wider ecosystem from the SPF. This may be attributed to the lack of information generally on the fishery, its current low level of activity and the effective targeting of the fishing gear. AFMA has implemented a range of management measures that would serve to minimise the risk of significant impact of fishing on ecosystems and their components. Most management measures were established to protect target species although some actions are specifically designed to protect the broader environment. Further work that may highlight ecosystem impacts is underway such as the SPF ERA and the ETBF ecological effects study.

Current management arrangements stated as helping to protect the functioning of the ecosystem from SPF fishing at current and potentially higher levels of effort include; precautionary species specific TCLs for Zones B, C and D and a TACC for Zone A; spatial management regime for Zone B (to address concerns of local depletion); a prohibition of trawl fishing from inshore waters such as designated Shark Nursery Areas; provisions for area closures to be implemented and several marine protected areas within the area of the fishery.

The SPF ERA will serve to identify potential risk areas such as impacts on non-target species (including threatened and protected species), benthic habitats and marine food chains as well as information gaps in relation to ecosystem impacts to be considered by SPRAT.

AFMA has stated that it will consider implementing the outcomes and any recommendations stemming from the CSIRO project - *Ecological indicators for fishery management: non-target species, habitats and food chains*. The objectives of the project are to:

- review the current use of ecological indicators in fisheries management; and
- identify robust ecological indicators and reference points for fisheries management.

Impacts on water quality through the discharge of plastic wastes and pollution from vessels are controlled under MARPOL legislation. Operators are required to comply with the legislation and must retain any plastic waste and dispose of it only when the vessel returns to port.

DEH is confident that the fishery will continue to be managed in a manner that aims to minimise ecosystem and broader environmental impacts.

Conclusion

DEH considers that the fishery is conducted in a sufficiently precautionary manner to minimise the impact of fishing operations on the ecosystem generally. Recommendations have been developed to ensure that the risk of significant impact by the fishery on the marine environment generally is minimised in the longer term.

LIST OF ACRONYMS

AFMA	Australian Fisheries Management Authority
AFZ	Australian Fishing Zone
AMC	Australian Maritime College
ASIC	Australian Seafood Industry Council
BAP	Bycatch Action Plan
BRS	Bureau of Rural Sciences
CMWG	Cetacean Mitigation Working Group
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DAFF	Australian Government Department of Agriculture, Fisheries and Forestry
DEH	Australian Government Department of the Environment and Heritage
DPIWE	Tasmanian Government Department of Primary Industries, Water and the Environment
EEZ	Exclusive Economic Zone
EPBC	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
ERA	Ecological Risk Assessment
ETBF	Eastern Tuna and Billfish Fishery
FAO	Food and Agriculture Organisation of the United Nations
FRDC	Fisheries Research Development Corporation
FMA	<i>Fisheries Management Act 1991</i>
IMPSF	Informally Managed Purse Seine Fishery
ISMP	Integrated Scientific Monitoring Program
ITQ	Individual Transferable Quota
MAFRI	Marine and Freshwater Research Institute (Victoria)
MARPOL	International Convention for the Prevention of Pollution from Ships
NSW	New South Wales
nm	Nautical mile
OCS	Offshore Constitutional Settlement
SARDI	South Australian Research and Development Institute
SBT	Southern bluefin tuna
SESS	Southern and Eastern Scalefish and Shark Fishery
SEFC	South East Fisheries Committee
SENTF	South East Non-trawl Fishery
SETF	South East Trawl Fishery
SPF	Small Pelagic Fishery
SPFMAC	Small Pelagic Fishery Management Advisory Committee

SPFMAC	Small Pelagic Fishery Management Plan
SPFWG	Small Pelagic Fishery Working Group
SPRAT	Small Pelagic Research and Assessment Team
TAFI	Tasmanian Aquaculture and Fisheries Institute
TAC	Total allowable catch
TACC	Total allowable commercial catch
TCL	Trigger catch level
UNCLOS	United Nations Convention on the Law of the Sea
UNFSA	United Nations Fish Stock Agreement
WTBF	Western Tuna and Billfish Fishery
WTO	Wildlife Trade Operation
ZASPF	Zone A Small Pelagic Fishery
ZASPRAC	Zone A Small Pelagic Research Advisory Committee
ZASPRAG	Zone A Small Pelagic Research Assessment Group
ZASPWG	Zone A Small Pelagic Working Group