



Australian Government
Australian Fisheries Management Authority

Draft strategic assessment report

 SMALL PELAGIC FISHERY

 MARCH 2009

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Introduction

This draft assessment report for the Small Pelagic Fishery (SPF) has been prepared in accordance with the *Terms of Reference – Environmental Assessment of the Small Pelagic Fishery* (Attachment 1). The report provides the basis for the strategic assessment of the Small Pelagic Fishery and Informally Managed Fishing Permits (IMFPs) consistent with the requirements of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The proposed management arrangements under the Small Pelagic Fishery Management Plan, will replace those already assessed by the Department of the Environment, Water, Heritage, and the Arts (DEWHA).

The report comprises two parts. Part one provides an overview of the proposed management arrangements. Part two details the assessment of the proposed management arrangements against the *Guidelines for Assessing the Ecological Sustainability of Commercial Fisheries – 2nd Edition* (the Guidelines).

For an overview of AFMA and a description of the SPF and IMFPs please refer to the following reports submitted to DEWHA:

- Draft assessment report: Small Pelagic Fishery, July 2003 (Attachment 2).
- Assessment report: Informally Managed Fishing Permits, October 2005 (Attachment 3)

Consultation

Prior to being finalised AFMA consulted on drafts of *Terms of Reference for the Strategic Assessment of the Small Pelagic Fishery* and the strategic assessment report.

- Draft *Terms of Reference for the Strategic Assessment of the Small Pelagic Fishery*; released for public comment from 22 November 2002 to 23 December 2002. No comments were received.
- Draft strategic assessment report; released for public comment from 18 March 2009 to 17 April 2009.

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Executive Summary

The assessment report for the Small Pelagic Fishery (SPF) has been developed in accordance with AFMA's obligations under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The report comprises two parts. Firstly, it provides an overview of the new management arrangements and secondly, it details how the proposed arrangements address the *Guidelines for Assessing the Ecological Sustainability of Commercial Fisheries – 2nd Edition* (the Guidelines). The Guidelines form part of the generic *Terms of Reference – Environmental Assessment of Commonwealth Fisheries* and are a central component of the *Terms of Reference for the Small Pelagic Fishery* (Attachment 1).

Consistent with AFMA's legislative objectives, the AFMA Commission has decided to manage the SPF and IMFPs under a single statutory plan of management (the Plan)¹. The Plan will provide for the grant of Statutory Fishing Rights (SFRs) in the form of Individual Transferable Quotas (ITQs), replacing existing management arrangements based on a system of Fishing Permits².

The fishery will be divided into two management zones, east and west, to pursue stock based management. Listed quota species under the Plan include: jack mackerels - *Trachurus declivis*, *T. murphyi*, *T. symmetricus*; blue mackerel - *Scomber australasicus*; redbait - *Emmelichthys nitidus*; and Australian sardine - *Sardinops sagax*.

AFMA will continue to develop its research and data collection programs which will assist the fishery to be managed in an ecologically sustainable way. In accordance with the Harvest Strategy, AFMA must set reference points which enhance the ability to maintain an ecologically viable fishery. AFMA must also develop, implement and review stock recovery strategies for stocks identified as being at or below relevant reference points.

Finally, AFMA has an ecological risk assessment process in place to monitor the impact, both direct and indirect, that a fishery's or sub-fishery's activities have on five ecological components of the marine ecosystem – target species; byproduct and bycatch species; threatened, endangered and protected (TEP) species; habitats; and ecological communities.

All of these procedures help to ensure that AFMA maintains an ecologically sustainable fishery that maximises the net economic returns to the Australian community.

¹ For an overview of AFMA and a description of the SPF and IMFPs please see Attachments 2 and 3.

² Fishing permits are granted under section 32 of *Fisheries Management Act 1991*



PART I Overview of proposed management arrangements for the Small Pelagic Fishery and Informally Managed Fishing Permits

Management regime

Consistent with AFMA's legislative objectives, the AFMA Commission has decided to manage the SPF and IMFPs under a single statutory plan of management (the Plan). The Plan will replace the existing "*Management Policy for the Small Pelagic Fishery*" and will provide for the grant of Statutory Fishing Rights (SFRs) in the form of Individual Transferable Quotas (ITQs). Introducing a management plan for the SPF and IMFPs is preferred as:

1. Statutory management plans provide a clear administrative framework, allow for a wide range of measures needed to pursue ecosystem based fisheries management and sustainable development of the fishery; and provide for the grant of SFRs.
2. SFRs are an ongoing secure access right that provide greater investment certainty for industry and therefore incentive to utilise fisheries resources in a sustainable manner. (SFRs remain valid for the life of the management plan which exists until such time that it is revoked); and
3. ITQ SFRs reward productivity improvements and enable adjustment to market pressures by operators (therefore maximising the profitability of the fishery).

Specific management arrangements proposed under the Plan are detailed against relevant sections in Part II of this report and a copy of the Plan is provided at Attachment 4. In summary, the Plan supports management initiatives already established in the fishery and continues to provide a right to fish for jack mackerels (*Trachurus declivis*, *T. murphyi*, *T. symmetricus*), blue mackerel (*Scomber australasicus*) and red bait (*Emmelichthys nitidus*). In contrast to current management arrangements the Plan will:

- manage the fishery in two zones east and west of longitude 146°30' as a means to pursue stock based management (Figure 1);
- provide access to take Australian sardines (*Sardinops sagax*) in Commonwealth waters adjacent to New South Wales to accommodate activities currently authorised by Informally Managed Fishing Permits; and
- extend the fishery north along the east coast to 24° 29' 54" S to accommodate activities currently authorised by Informally Managed Fishing Permits (Figure 1).



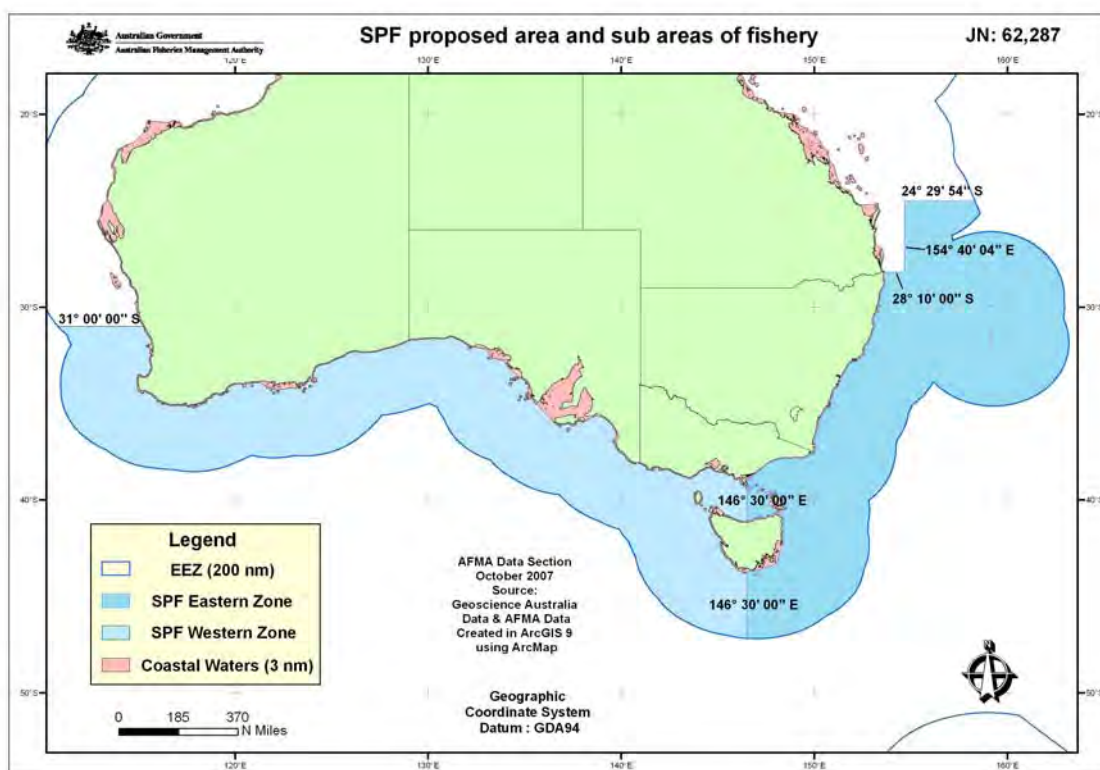


Figure 1 Area of waters for the Small Pelagic Fishery proposed under the fishery's plan of management.

Consultative mechanism

In 2005 the AFMA Commission appointed members to the first SPF Management Advisory Committee (SPFMAC) and a Resource Assessment Group (SPFRAG) for the fishery. SPFMAC and SPFRAG are expertise-based advisory bodies established to advise the AFMA Commission on management issues and fishery assessments. In addition to these advisory bodies, AFMA may also convene specialist working groups to address particular management issues as they arise. For the SPF, AFMA convened a Cetacean Mitigation Working Group comprised of government, scientific and conservation NGO officers in 2005 to provide advice on mid-water trawl dolphin and seal bycatch mitigation strategies.



PART II Environmental assessment against the ‘Guidelines for the ecologically sustainable management of fisheries’

The Guidelines consist of two overarching principles and a series of objectives (Attachment 5). The objectives specifically relate to target, by-product and bycatch species; threatened, endangered and protected (TEP) species; and the broader marine environment. They require that the data collection, assessment and management responses in place are adequate to demonstrate that the fishery is managed in an ecologically sustainable manner. The Guidelines are addressed for the SPF according to these three categories: Information requirements, assessment of the fishery and management responses.

1 Information requirements for the fishery

Guidelines 1.1.1, 2.1.1, 2.2.1, 2.3.1

1.2 *There is a reliable information collection system in place appropriate to the scale of the fishery, based upon an appropriate mix of fishery independent and dependent research and monitoring:*

- ***on the composition and abundance of target, by-product and bycatch stocks;***
- ***on interactions with endangered, threatened or protected species and threatened ecological communities; and***
- ***covering the fisheries impact on the ecosystem and environment generally.***

The SPF Harvest Strategy (Attachment 6) is based on the collection of independent data. The SPF has supported research to evaluate the use of the Daily Egg Production Method (DEPM) as an independent stock assessment technique. As a result of the research, the first quantitative assessment of spawning biomass for blue mackerel and redbait has been conducted (FRDC 2002/061 and FRDC 2004/039). In the absence of quantitative biomass estimates for other SPF species, the Harvest Strategy establishes deliberately precautionary exploitation rates based on an analysis of catch and effort data, and if available, information on the age structure of catch.

Fishery dependent research and monitoring activities are already established for the fishery and will continue to operate following the commencement of the Plan. AFMA will continue to monitor catches and the impact of the fishery on the marine environment through: daily catch and effort logbooks; independent observer coverage (current coverage target is 10%); and catch disposal records (see Attachment 7 for an example of a CDR and logbook record sheet).

The collection and use of fishery independent and dependent data will continue to be guided by existing management projects and research activities. These include:

- Ecological Risk Assessments (ERA): under the Plan, AFMA is committed to strategically address any high risks identified in the ERA process.



- A Bycatch Action Plan (Attachment 8), which takes into account the requirements of the EPBC Act for the protection of endangered, threatened or protected species and threatened ecological communities.
- The SPF Harvest Strategy, that sets out a range of decision rules and management actions necessary to achieve the sustainable and profitable utilisation of SPF resources.
- The outcomes of key research activities: For example, the FRDC has funded a research proposal by Bulman et al, titled *“The trophodynamics of small pelagic fishes in the southern Australian ecosystem and the implications for ecosystem modelling of southern temperate fisheries”* (FRDC 2008/023). Once completed, this project will provide AFMA with a better understanding of the role of SPF species in southern Australian ecosystems, guiding management actions.

2 Assessment of the fishery

Guidelines 1.1.2, 1.1.3, 1.1.4, 1.1.5, 2.1.2, 2.2.2, 2.2.3, 2.3.2

2.1 *There is a robust assessment of the dynamics and status of the species/fishery and periodic review of the process and the data collected. Assessment should include a process to identify any reduction in biological diversity and /or reproductive capacity. Review should take place at regular intervals but at least every three years.*

As described in Section 1.2, the SPF has invested in research programs to evaluate the use of DEPM as a reliable stock assessment technique for SPF species. As a result of the research, the first quantitative assessment of spawning biomass for blue mackerel and redbait has been conducted (FRDC 2002/061 and FRDC 2004/039). In the absence of quantitative biomass estimates for other SPF species, the Harvest Strategy establishes deliberately precautionary exploitation rates based on an analysis of catch and effort data, and if available, information on the age structure of catch.

The SPFRAG will continue to be consulted for expert advice on the assessment of the fishery. The SPFRAG will be guided by the outcomes of data and research programs, established under the Harvest Strategy. As part of reviewing the Harvest Strategy, these programs will be reviewed as required but at least once every three years.

Independent assessments of the fishery are also conducted annually by the Bureau of Rural Sciences (BRS). These assessments are made public in the BRS ‘Fishery Status Reports’ publication.



2.2 The distribution and spatial structure of the stock(s) has been established and factored into management responses.

Significant progress has been made to resolve uncertainties in the geographic distribution and spatial structure of SPF species. In line with research priorities for the fishery, the FRDC funded a project titled: '*Management zones from small pelagic fish species stock structure in southern Australian Waters*' to examine potential stock structures of SPF species; the project was completed in August 2007 (FRDC 2006/076).

The FRDC report reviewed all available literature and data on the biology, habitat and catches of target species in the Small Pelagic Fishery. The report concluded that, for at least four of the five SPF species, there are likely to be two major sub-populations - on the east and west of Tasmania, divided at approximately 146°30'.

In light of these findings and advice from the SPFMAC, the AFMA Commission decided the fishery will be delineated along the meridian of longitude 146°30' E (centre of Tasmania) into two separate zones (Eastern and Western) under the Plan.

While there is some evidence that separate stocks may occur in the far west of the fishery, there is no strong basis upon which to recommend a meaningful boundary to further split the western zone. As the fishery expands and more information comes to hand these uncertainties may be reduced.

In the case of new information being provided on the distribution and spatial structure of target stocks, the Plan provides for AFMA to implement stock specific management arrangements as required. This may include, setting TACs for quota species as separate stocks within current fishery boundaries. This provides AFMA with ongoing flexibility in its management responses.

2.3 There are reliable estimates of all removals, including commercial (landings and discards), recreational and Indigenous, from the fished stock. These estimates have been factored into stock assessments and target species catch levels.

Consistent with obligations under the Plan and the Australian Government's Harvest Strategy policy, total fishing mortality on SPF stocks must be taken into account when determining sustainable catch limits for the fishery. For estimates of total removals AFMA relies on:

- AFMA's logbook program, catch disposal records and independent observer coverage for catches taken by Commonwealth managed fisheries (Attachment 7);
- data provided by each relevant State Government for catches taken by state authorised operators; and
- advice from SPFMAC and SPFRAG for approximate catches taken by recreational fishers along with any other available information. These estimates are considered less precise than commercial estimates and are based on the National Recreational and Indigenous Fishing Survey (FRDC 99/158). Catches by non-commercial sectors are low relative to the commercial harvest limits (Table 2).



The most recent example of how total fishing mortality is taken into account when determining harvest limits for SPF is outlined in the record of the seventh meeting of SPFMAC, April 2008 (Attachment 9)

Table 2: Summary of recreational fishing effort and catch by state (excluding NT) (Source: FRDC 99/158: National Recreational and Indigenous Fishing Survey 2003).

State of Residence	Number of fishers catching SPF species	Number of diarists who fished	Percentage of fishers catching SPF species
NSW	126	2058	6.1
VIC	24	1453	1.7
QLD	19	2222	0.9
SA	64	1740	3.7
WA	176	2182	8.1
TAS	86	1282	6.7
ACT	6	216	2.8
Total	501	11153	4.5

2.4 There is a sound estimate of the potential productivity of the fished stock/s and the proportion that could be harvested.

The SPF Harvest Strategy is based on the Daily Egg Production Method (DEPM), a quantitative stock assessment technique that provides an estimate of the spawning biomass of fish stocks. This effective and cost efficient technique was developed specifically for small pelagic fishes, recognising the life history of these species (Lasker, 1985).

DEPM has been used for the stock assessments of blue mackerel and redbait (FRDC 2002/061 and FRDC 2004/039). AFMA considers that the technique has provided a sound estimate of blue mackerel and redbait productivity and the proportion of the stock that could be harvested.

To date, DEPM assessments have not been conducted on other SPF species. In the absence of quantitative biomass estimates for these species, the Harvest Strategy establishes deliberately precautionary exploitation rates based on an analysis of catch and effort data, and if available, information on the age structure of catch. The SPFRAG will continue to provide expert advice in the setting of TACs in the absence of quantitative biomass estimates.

The Harvest Strategy will be subject to ongoing review. To assist and improve AFMA's capacity to review and evaluate the appropriateness of harvest rates, a quantitative Management Strategy Evaluation (MSE) model is being developed for the fishery (Attachment 10, FRDC Research Proposal). The MSE model will be available to SPFMAC and SPFRAG on an ongoing basis.



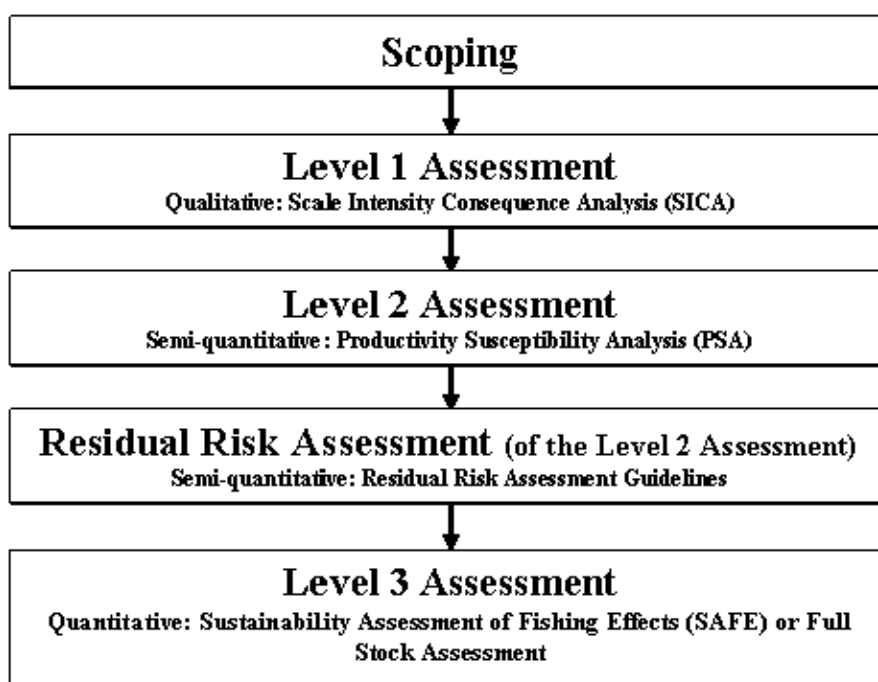
2.5 There is a risk analysis and assessment, conducted at an appropriate scale, of the fishery’s potential impacts on:

- **bycatch;**
- **endangered, threatened or protected species; and**
- **ecological communities, food chains, and the physical environment.**

AFMA initiated the development of Ecological Risk Assessments (ERAs) for Commonwealth managed fisheries in 2001 to assist in prioritising and guiding research, data collection, monitoring and management. ERAs assess the impact, both direct and indirect, a fishery’s or sub-fishery’s activities have on five ecological components of the marine ecosystem – target species; byproduct and bycatch species; threatened, endangered and protected (TEP) species; habitats; and ecological communities.

ERAs progress through a scoping stage and three progressive levels of analysis from a semi-qualitative analysis under Level 2 Productivity Susceptibility Analysis (PSA) to a fully qualitative assessment at Level 3 under either a stock assessment or by applying the Sustainability Assessment of Fishing Effects (SAFE) methodology. This hierarchical approach, described in the table below, is seen as an efficient way of screening activities and identifying key ecological priorities for fisheries management.

Risk Assessment Hierarchy



A Level 2 PSA analysis for the midwater trawl and purse seine methods in the SPF has been completed. The Level 2 PSA assessment categorises species, habitats and communities into high, medium or low risk on the basis of their susceptibility to fishing activities and their ability to recover from fishing impacts. It is an inherently precautionary methodology with risks scored high in the absence of information or evidence to the contrary. A residual risk process



has been applied to the Level 2 PSA results which considers additional information, particularly the mitigating effects of management arrangements that were not explicitly included in the assessment and can result in reduced risk categorisation where warranted and within the agreed Residual Risk Guidelines.

As a final stage to the ERA process a Level 3 SAFE Assessment, is currently underway for the SPF and this is expected to be completed in April 2009. The SAFE methodology includes two components: indicators and reference points. The assessment focuses on one single indicator – fishing mortality rate. An estimate is made of the spatial overlap between species distribution and the footprint of fishery activity, over the fishery jurisdiction, for specific fishing methods and assesses the catchability of species given their likelihood of encountering the fishing gear and the resultant post capture survivability (Zhou 2007).

The results of the various levels of risk assessment for the fishery will be consolidated to form a priority list which will be the focus for the Ecological Risk Management (ERM) strategy which will clearly identify how each species or group of species will be managed under other AFMA policies and management initiatives such as the Harvest Strategy and the Bycatch and Discard Program.

The Plan commits AFMA, in response to new information about the fishery, to review ecological risk assessments of marine communities, quota and non-quota species, and protected species to determine the risk to the maintenance of an ecologically sustainable fishery.

In addition to the ERA, the SPF Harvest Strategy requires an annual report on interactions with TEP species.

3 Management Responses

Guidelines: 1.1.6, 1.1.7, 1.1.8, 1.1.9, 1.2.1, 1.2.2, 2.1.3, 2.1.4, 2.1.5, 2.1.6, 2.2.4, 2.2.5, 2.2.6, 2.3.3, 2.3.4, 2.3.5

3.1 There are management strategies in place capable of controlling the level of take.

Under the Plan the level of take will be principally controlled through Total Allowable Catch (TAC) limits. The Plan provides that AFMA must determine TACs for each quota species and may determine TACs for non-quota (eg byproduct, bycatch) species. In emergency situations, direction powers allow AFMA to close parts of the fishery and/or implement restrictions within a short time frame. Both direction powers and SFR conditions may be used to control the level of target, byproduct and bycatch take in fishery. These measures along with all other regulations for the fishery will be monitored and enforced through a risk-based compliance program.

The AFMA Commission has put in place strategies to control the level of take. For the 2008-09 fishing season, the Commission set trigger catch limits for TACs, which upon being reached trigger management responses detailed in the SPF Management Policy (Commission meeting, June 2008).



3.2 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.

Currently, no SPF stocks have been identified as overfished (Larcombe & Begg, 2008). However, the status of eastern and western jack mackerel stocks, and western redbait stocks, is uncertain. The Commonwealth Harvest Strategy Policy specifies that if stocks fall below the biomass limit reference point, the point at which a stock is defined as overfished, harvesting of that species must cease and a rebuilding strategy determined in agreement with the Minister for the Environment, Water, Heritage and the Arts.

To prevent fished stocks falling below defined reference points, the SPF Harvest Strategy sets conservative exploitation rates. If considered necessary, the Plan provides for AFMA to issue directions to cease fishing to recover stocks to ecologically viable levels.

3.3 There are measures in place to avoid:

- **capture and/or mortality of bycatch and byproduct species, and endangered, threatened or protected species. Steps must be taken to develop suitable technology if none is available.**
- **impacts on threatened ecological communities.**
- **ensure significant damage to ecosystems does not arise,**

and steps must be taken to develop suitable technology if none is available.

Management measures have and will continue to be developed to avoid and/or reduce the capture and mortality of bycatch and byproduct species, and endangered, threatened or protected species in the SPF.

The level of bycatch in the fishery is very low. Results of the level 2 ERA showed bycatch using the mid water trawl method were less than 1% of the total catch per shot. Due to the generally low levels of effort in the fishery, the potential range and magnitude of other impacts on the marine environment is largely unknown. Therefore, maintaining an effective monitoring program, in conjunction with developing mitigation measures for known impacts, forms a key component of the fishery's management strategy.

The SPF has a demonstrated capacity to respond to broad environmental impacts and develop suitable mitigation technologies. In response to observed incidental capture of dolphins and seals by mid-water trawl in 2004/05, AFMA convened a Cetacean Mitigation Working Group, to advise AFMA on possible long term management strategies.

The response included a research project funded by several government agencies, a non-government organisation and industry. The research by Lyle & Willcox (2008), aimed to determine the nature and scale of the interactions and to develop appropriate mitigation devices.

Underwater camera footage taken as part of this research revealed a high level of seal interaction - seals entered the net in 60% of observed shots. In attempt to improve the seal exclusion device (SED) capability, three configurations were progressively used in the study: small, bottom opening; large, bottom opening; and top opening. The small bottom-opening



SED resulted in a 20% mortality rate, the large bottom-opening SED reduced this rate to 7%; there was insufficient evidence to evaluate the top opening SED in terms of reducing mortality.

Since 2004/05, no dolphin and ten seal interactions in the SPF have been recorded by operators in AFMA logbooks. With the development of a Bycatch and Discard Workplan for the SPF in 2009, AFMA will be reviewing management responses to this research.

In addition to the capacity to respond to environmental impacts as they arise, AFMA has a management framework in place to mitigate broad ecosystem impacts:

1. The SPF Plan

- AFMA must implement a Bycatch Action Plan (BAP) (Attachment 8) to ensure that bycatch in the fishery is reduced to, or kept at a minimum. The BAP must be reviewed biennially.
- AFMA is currently reviewing its approach to BAPs. AFMA is developing Bycatch and Discard Workplans for each fishery. Bycatch and Discard Workplans identify the specific bycatch issues in a fishery based on the outcomes of Ecological Risk Assessments (ERAs) and detail actions required to address those issues. The three main areas covered by bycatch action plans are protected species and ecological communities, high risk and other bycatch species and the broader marine ecosystem. The Bycatch and Discard Workplan is then integrated into the management arrangements for the fishery to enable the actions to be implemented. These Workplans will be reviewed every 12 months, and formally renewed every 2 years, in line with the *Commonwealth Policy on Fisheries Bycatch- June 2000*. Until the new Workplans are in place, each fishery will report on its existing Bycatch Action Plan. It is planned to present a draft Bycatch and Discard Workplan for the SPF to the SPF Resource Assessment Group in May 2009.
- SFR holders must take all reasonable steps to avoid incidental interactions with cetaceans, listed species and ecological communities.

2. Harvest Strategy

A key element of the Harvest Strategy (Attachment 6) is the management of potential ecosystem impacts. Small pelagic fish species are important prey items for higher level predators. Because of this key ecosystem role, exploitation rates of small pelagic species are conservative.

3. Ecological Risk Assessments (ERA)

AFMA's ERA process (described under 2.5), will assist in prioritising management responses to ecological components at highest risk from the fishery.

4. Industry Code of Practice (CoP)

In accordance with the BAP, AFMA is committed to supporting industry to develop Codes of Practices (CoPs) that promote measures to minimise the fishery's impact on the environment. The purse seine CoP has been finalised.



3.4 There are reference points (target and/or limit), and decision rules that trigger management responses:

- **including a biological bottom line and/or a catch or effort upper limit**
- **when there are significant perturbations in the indicator species numbers**
- **when monitoring detects impacts on selected ecosystem indicators beyond a predetermined level, or where action is indicated by application of the precautionary approach**

The SPF Harvest Strategy sets out decision rules for quota species. At each tier of the Harvest Strategy, Recommended Biological Catch (RBC) decision rules are in place, which specify a maximum TAC. If the maximum TAC is reached, there are management responses in place. These include for AFMA to direct that fishing is to cease. The maximum TAC limits are deliberately precautionary, accounting for the ecological importance of SPF species as key prey species.

The Harvest Strategy also has decision rules to account for ecological impacts. If evidence arises regarding: significant interactions with TEP species; localised depletion and changes in size/age structure; or changes in ecosystem function, there are prescribed management responses in place. These actions range from reducing TACs, developing mitigation programs, and implementing spatial or other management measures.

The Harvest Strategy will be subject to ongoing review. To assist and improve AFMA's capacity to review decision rules and maximum TACs, a quantitative Management Strategy Evaluation (MSE) model is being developed for the fishery (Attachment 10, FRDC Research Proposal). This will guide management in setting the most appropriate decision rules and TAC limits.

3.5 The management response, considering uncertainties in the assessment and precautionary management actions, has a high chance of achieving the objective.

The management arrangements for the SPF have been developed in pursuit of AFMA's legislative objectives to ensure that the exploitation of fisheries resources and the carrying on of any related activities are conducted in a manner consistent with the principles of ecologically sustainable development. Management arrangements in place to meet this objective include:

1. The SPF Management Plan

- The Plan will provide for the grant of SFRs in the form of ITQs. In contrast to current arrangements, the fishery will be managed in two zones east and west of longitude 146°30' as a means to pursue stock based management. The Plan will also accommodate the activities currently authorised by Informally Managed Fishing Permits.



- AFMA must implement a Bycatch Action Plan (BAP) (Attachment 8) under the Plan. The BAP aims to ensure that bycatch in the fishery is reduced to, or kept at a minimum. It does this by prescribing strategies and actions related to data collection, data analysis and management responses. The BAP must be reviewed biennially. A draft Bycatch and Discard Workplan is expected to be considered by the SPF Resource Assessment Group in May 2009.
- The Holder of SFR must take all reasonable steps to avoid incidental interactions with cetaceans, listed species and ecological communities under the Plan.

2. The SPF Harvest Strategy and Management Strategy Evaluation (MSE)

- The SPF Harvest Strategy is based on the Daily Egg Production Method (DEPM), a quantitative stock assessment technique that provides an estimate of the spawning biomass of fish stocks. It is an effective and cost efficient technique developed specifically for small pelagic fishes (Lasker, 1985).
- DEPM has been used for the stock assessments of blue mackerel and redbait (FRDC 2002/061 and FRDC 2004/039).
- In the absence of quantitative biomass estimates for other SPF species, the Harvest Strategy establishes deliberately precautionary exploitation rates based on an analysis of catch and effort data, and if available, information on the age structure of catch. This precautionary approach has been adopted given the ecosystem role of small pelagic fish species have as key prey items for higher level predators.
- The Harvest Strategy will be subject to ongoing review. To assist and improve AFMA's capacity to review and evaluate the appropriateness of harvest rates, a quantitative Management Strategy Evaluation (MSE) model is being developed for the fishery (Attachment 10, FRDC Research Proposal). The MSE model will be available to SPFMAC and RAG on an ongoing basis.

3. Data collection systems

- Fishery dependent research and monitoring activities are already established for the fishery and will continue to operate following the commencement of the Plan.
- AFMA will continue to monitor catches and the impact of the fishery on the marine environment through: daily catch and effort logbooks; independent observer coverage (current coverage target is 10%); and catch disposal records (see Attachment 7 for an example of a CDR and logbook record sheet).

4. Ecological Risk Assessment (ERA)

- AFMA's ERA process (described under 2.5), will assist in prioritising management responses to ecological components at highest risk from the fishery.
- Under the Plan, AFMA must develop in consultation with stakeholders, a plan to strategically address any high risks identified in an ERA.



5. *Industry Code of Practice (CoP)*

In accordance with the BAP, AFMA is committed to supporting industry to develop Codes of Practices (CoPs) that promote measures to minimise the fishery's impact on the environment. The purse seine CoP has been finalised.



References

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List of Attachments

1. Terms of Reference for the – Environmental Assessment of the Small Pelagic Fishery
2. Draft assessment report: Small Pelagic Fishery, July 2003
3. Assessment report: Informally Managed Fishing Permits, October 2005
4. Draft Small Pelagic Fishery Management Plan 2009
5. Guidelines for Assessing the Ecological Sustainability of Commercial Fisheries 2nd Edition
6. Small Pelagic Fishery Harvest Strategy (June 2008)
7. Catch Disposal Record, Logbook record sheet (Purse seine and Midwater Trawl).
8. Small Pelagic Fishery Bycatch Action Plan (December 2005)
9. Chairs Summary - Small Pelagic Fishery MAC meeting, April 2008
10. BRS Management Strategy Evaluation research proposal to FRDC (August, 2008).

Copies of these attachments are available from AFMA's website (www.afma.gov.au) or by contacting Kate Dunkerley on 02 6225 5424.

