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Global Standard for Responsible Supply of Marine Ingredients

Fishery Assessment Methodology and Template Report V2.0

Fishery Under Assessment	**Jack Mackerel (*T. declivis, T. murphy*)Blue Mackerel (*S. australasicus*); Red Bait/Cape Bonnetmouth (*E.nitidus*); Australian Sardine (*S. sagax*) FAO 81**
Date	**October 2018**
Assessor	**Jim Daly**

Application details and summary of the assessment outcome				
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Key Contact: Joe Rossignuolo		**Title:** Business Development Manager		
Certification Body Details				
Name of Certification Body:		**SAI Global**		
Assessor Name	**Peer Reviewer**	**Assessment Days**	**Initial/Surveillance /Re-approval**	**Whole fish/ By-product**
Jim Daly	Vito Romito	5	Initial	Whole fish
Assessment Period	2017-2018			

Scope Details	
Management Authority (Country/State)	Australian Fisheries Management Authority (AFMA)
Main Species	Jack Mackerel (*T. declivis, T. murphy*); Blue Mackerel (*S.australasicus*); Red Bait/Cape Bonnetmouth (*E.nitidus*); Australian Sardine (*S. sagax*).
Fishery Location	The Commonwealth Small Pelagic Fishery (SPF) extends from the Queensland/New South Wales border, typically outside 3 nm, around southern Australia to a line at latitude 31° South (near Lancelin, north of Perth). Australian State governments generally manage fishing from the Australian coast out to 3 nautical miles (Figure 1). The fishery is divided into two sub areas, east and west of latitude 146° 30' due to evidence of separate stocks in both East and West of Tasmania for Jack Mackerel, Blue
Gear Type(s)	Main gear types: Purse seine & Mid-water trawl. Since May 2017 Mid-water pair trawl; Jigging and Minor line methods have been approved
Outcome of Assessment	
Overall Outcome	PASS
Clauses Failed	NONE
Peer Review Evaluation	PASS
Recommendation	Species listed are approved for use under the current IFFO-RS Standard (July 2017) v 2.0.

Assessment Determination
Almost all Australian stocks in the Small Pelagic Fishery (SPF) are managed by both Australian and State governments under Offshore Constitutional Settlement (OCS) arrangements. The exception is the western stock of Australian sardine (*S.sagax*), managed by South Australia and Victoria. Unlike in the Commonwealth fishery, State catches are not constrained by catch limits. Members of the SPF Scientific Panel consist of fisheries scientists, marine ecologists and natural resource management economists. The Panel provides advice to the South East Management Advisory Committee (SEMAC0) and the Australian Fisheries Management Authority (AFMA) Commission. The Panel also meets with stakeholders (Forums) at least twice a year to report its findings and gather relevant information from them. The SPF Scientific Panel (Jan 2018) noted that Victorian catches may not be available moving forward due to confidentially concerns. The issue of not providing State catches is becoming important with multiple jurisdictions in a number of jointly managed stocks. Future fisheries assessments for these stocks under the IFFO RS Standard will monitor progress on resolution of this issue. A Harvest Strategy (Quota species) adopts exploitation rates tested to provide a high probability that target stocks will be maintained, on average, at the target reference point of 50% of unfished levels (B_{50}), with a less than a 10% probability over 50 years of falling below the limit reference point of 20% ($0.2B_0$) of unfished levels. Given that the Blue Mackerel (East) stock has a potential for high annual abundance/recruitment variability, and the last DEPM survey was 2014 the SAI Global Assessment Team would like to know when the next DEPM survey is planned. The AFMA Bycatch and Discard Program develops policy and management strategies to manage the impact of commercial fishing on non-target and protected species. Approximately 218 Threatened, Endangered or Protected (TEP) species are theoretically found within waters of the SPF. These include 3 species of sharks/rays, 78 species of seabirds, 49 species of marine mammals, 10 marine reptiles and 78 species of bony fish. An Ecological Risk Management (ERM) framework details a process to assess, analyse and respond to the ecological risks posed by Commonwealth managed fisheries. Jack Mackerel, Blue Mackerel, Red Bait/Cape Bonnetmouth and Australian Sardine are not listed in the current CITES appendices of endangered species and are not listed in the current IUCN Redlist of threatened species (websites accessed 04.10.18).

The Species listed in this report are approved for use under the current IFFO-RS Standard (July 2017) v 2.0.

Peer Review Comments

The SAI Global Peer Reviewer agrees with the Assessor that the Australian stocks of the Small Pelagic Fishery (SPF) assessed in this report are compliant with the IFFO RS V2 requirements.

The SPF fishery is managed conservatively by AFMA through a harvest control framework and reference points that limit potential catches based on quality of available information, clearly adopting the Precautionary Approach to setting individual stocks catch limits. Furthermore, catches for these stocks are currently well within TAC limits.

The fishery management system is coupled to an effective fisheries monitoring and enforcement programme that shows the conduct and findings of AFMA Fisheries Officers in terms of boardings, controls and assessment of overall fishery compliance with set measures.

The Jack Mackerel (*T. declivis, T. murphy*); Blue Mackerel (*S.australasicus*); Red Bait/Cape Bonnetmouth (*E.nitidus*) and Australian Sardine (*S. sagax*) stocks assessed in this report all appear to be well managed. The Tier decision approach manages the stock assessment process and also addresses the reliability of DEPM data that in some cases was compiled during surveys undertaken in 2004.

There are accurate records maintained for TEP species interactions with the SPF, especially so for the pelagic trawl component which appears to be the cause of interactions (and in several cases mortalities) for a suite of species including albatrosses and cormorants, fur seals, shortfin mako sharks and a whale shark. A total of 108 interactions with protected species were reported in the SPF fishery during the 2016 calendar year.

All AFMA-managed fisheries have accreditation for interactions with protected species. Without this accreditation, fishing operators may be liable for prosecution for the capture of protected species. Protected species management strategies include area closures, gear restrictions, monitoring requirements or trigger limits.

Habitat interactions caused by the SFP fishery appear to be negligible. The ecosystem effects of the fishery are managed through bycatch management plans and TEP species interactions permits. Furthermore, the conservative TACs and very small harvests in this fishery do not appear to be causing negative effects to the ecosystem in which these species are important components.

Notes for On-site Auditor

Note: This table should be completed for whole fish assessments only.

General Results

General Clause	Outcome (Pass/Fail)
M1 - Management Framework	PASS
M2 - Surveillance, Control and Enforcement	PASS
F1 - Impacts on ETP Species	PASS
F2 - Impacts on Habitats	PASS
F3 - Ecosystem Impacts	PASS

Species-Specific Results

Category	Species	% landings	Outcome (Pass/Fail)	
Category A	Jack Mackerel (*T. declivis, T. murphy*)	60	A1	PASS
			A2	PASS
			A3	PASS
			A4	PASS
Category A	Blue Mackerel (*S.australasicus*)	30	A1	PASS
			A2	PASS
			A3	PASS
			A4	PASS
Category A	Red Bait/Cape Bonnetmouth (*E.nitidus*).	9	A1	PASS
			A2	PASS
			A3	PASS
			A4	PASS
Category C	Australian Sardine (*S. sagax*)	1	PASS	
Category D	N/A			

[List all Category A and B species. List approximate total % age of landings which are Category C and D species; these do not need to be individually named here]

Species Categorisation

Common name	Latin name	Stock	% of landings	Management	Category
Jack Mackerel	*T. declivis, T. murphy*	Jack Mackerel East	50	AFMA	A
Jack Mackerel	*T. declivis, T. murphy*	Jack Mackerel West	10	AFMA	A
Blue Mackerel	*Scomber australasicus*	Blue Mackerel East	20	AFMA	A
Blue Mackerel	*Scomber australasicus*	Blue Mackerel West	10	AFMA	A
Redbait/Cape Bonnetmouth	*E.nitidus*	Red Bait East	1	AFMA	A
Redbait/Cape Bonnetmouth	*E.nitidus*	Red Bait West	8	AFMA	A
Australian Sardine	*S.sagax*	Sardine East	1	AFMA	C

MANAGEMENT

The two clauses in this section relate to the general management regime applied to the fishery under assessment. A fishery must meet all the minimum requirements in every clause before it can be recommended for approval.

M1	Management Framework – Minimum Requirements		
	M1.1	There is an organisation responsible for managing the fishery	YES
	M1.2	There is an organisation responsible for collecting data and assessing the fishery	YES
	M1.3	Fishery management organisations are publically committed to sustainability	YES
	M1.4	Fishery management organisations are legally empowered to take management actions	YES
	M1.5	There is a consultation process through which fishery stakeholders are engaged in decision-making	YES
	M1.6	The decision-making process is transparent, with processes and results publically available	YES

Clause outcome:	PASS

M1.1:

The Australian Fisheries Management Authority (AFMA) is the Government agency responsible for the efficient management and sustainable use of Commonwealth fish resources. AFMA manage and monitor commercial Commonwealth fishing and work with other Government agencies and international counterparts to deter illegal fishing in the Australian Fishing Zone (AFZ).

Almost all Australian stocks in the Small Pelagic Fishery (SPF) are multijurisdictional (managed by both Australian and State governments) under Offshore Constitutional Settlement (OCS) arrangements. The exception is the western stock of Australian sardine (*S. sagax*), managed by South Australia and Victoria.

State Governments manage fishing from the Australian coast out to 3 nautical miles including recreational, commercial coastal, inland fishing and aquaculture. Occasionally there is some overlap in fishing operations between State and Commonwealth jurisdictions; AFMA regularly communicates with the State fisheries agencies to manage problems. Representatives from State fisheries agencies attend meetings of the South East Management Advisory Committee (SEMAC). Fishing is generally not permitted inside three nautical miles from any State coastline but that can vary depending on the State.

Species targeted by commercial fishers in the SPF are: Jack mackerel (*Trachurus declivis, T. murphyi*); Blue mackerel (*Scomber australa*sicus); Redbait/Cape Bonnetmouth (*Emmelichthys nitidus*) and Australian sardine (*Sardinops sagax*). The fishing season is a 12 month season, beginning each May. The fishery is divided into two sub areas, east and west of latitude 146° 30' due to evidence of separate stocks in both East and West of Tasmania for Jack Mackerel, Blue Mackerel and Redbait/Cape Bonnetmouth (**Figure 1**).

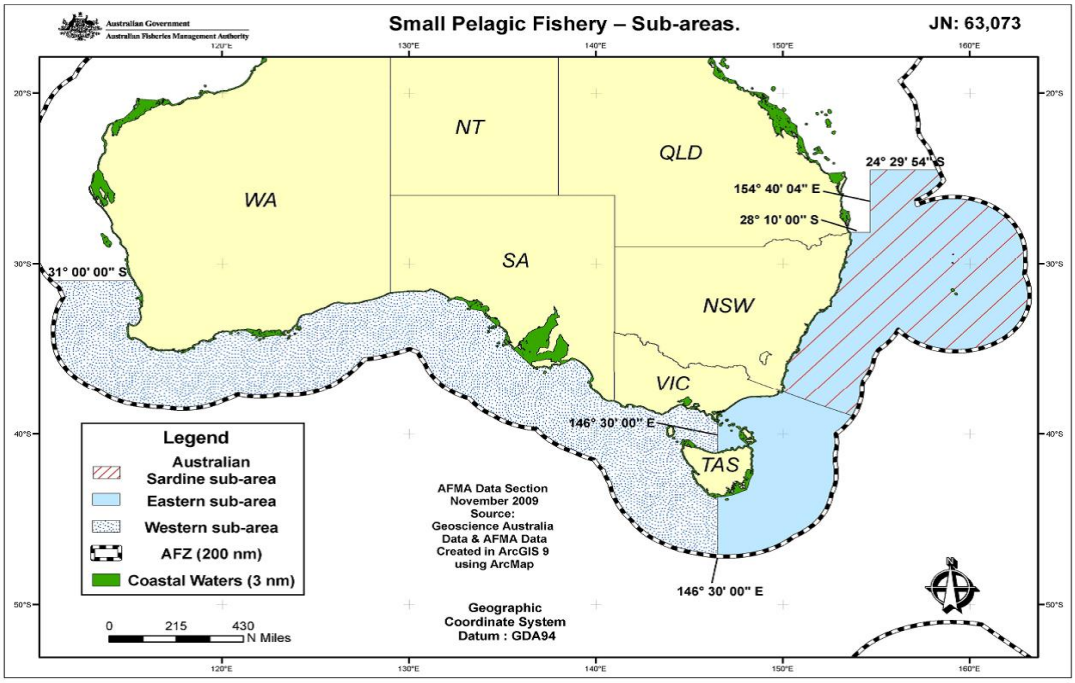

Figure 1 Small Pelagic Fishery (Reproduced from www. AFMA.gov.au)

AFMA's responsibilities are shared between a Commission and a Chief Executive Officer:

- The AFMA Commission is responsible for domestic fisheries management.
- The Chief Executive Officer is responsible for foreign compliance, and for assisting the Commission and giving effect to its decisions.

Commonwealth Fisheries Harvest Strategy Policy and Guidelines allow for a science-based approach to setting catch limits and offers practical advice on how to interpret and apply the policy to fisheries.

There is an organisation responsible for managing the fishery **R1,R2**

M1.2:

The Small Pelagic Fishery Resource Assessment Group (SPFRAG) provided advice and recommendations to the South East Management Advisory Committee (SEMAC), AFMA Management and Commission on the status of target stocks, harvest rates, TACs, and the impact of fishing on the marine environment. The members of the SPFRAG completed their term of appointment on 30 June 2015. AFMA is currently trialling a SPF Scientific Panel and Stakeholder Forum advisory process.

Members of the SPF Scientific Panel consist of fisheries scientists, marine ecologists and natural resource management economists. The Panel provides advice to SEMAC and the AFMA Commission. The Panel also meets with stakeholders (Forums) at least twice a year to report its findings and gather relevant information from them.

There is an organisation responsible for collecting data and assessing the fishery. **R3**

M1.3:
Management functions are designed to allow for sustainable development of the SPF. The Fisheries Management Act 1991 Part 1 (***Preliminary***) Section 3A ***Principles of ecologically sustainable development*** gives legal empowerment to AFMA sustainability objectives:

The following are principles of ecologically sustainable development:
(a) decision-making processes should effectively integrate both long-term and short-term economic, environmental, social and equity considerations;
(b) if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation;
(c) the principle of inter-generational equity–that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations;
(d) the conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making;
(e) improved valuation, pricing and incentive mechanisms should be promoted

Fishery management organisations are publically committed to sustainability. **R2**, **R4**

M1.4:
AFMA Objectives of Fisheries Management Plans are set out in Section 3 of the Fisheries Management (1991) Act:

(a) implementing efficient and cost-effective fisheries management on behalf of the Commonwealth;
(b) ensuring 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 (which include the exercise of the precautionary principle), in particular the need to have regard to the impact of fishing activities on non-target species and the long term sustainability of the marine environment;
(c) maximising the net economic returns to the Australian community from the management of Australian fisheries;
(d) ensuring accountability to the fishing industry and to the Australian community in AFMA' s management of fisheries resources;
(e) achieving government targets in relation to the recovery of the costs of AFMA.

The SPF Fishery Management Plan (Nov 2009, as amended) has been applied in this fishery from 01 May 2014. A Total Allowable Catch (TAC) is set for each quota species within each zone. Each TAC is divided amongst concession holders depending on the number of Statutory Fishing Rights (SFRs) held by each. Five fishing methods are currently permitted in the SPF.

Fishery management organisations are legally empowered to take management actions **R2, R4**.

M1.5:
Members of the SPF Scientific Panel consist of fisheries scientists, marine ecologists and natural resource management economists. The Panel provides advice to SEMAC and the AFMA Commission. The Panel also meets with stakeholders (Forums) at least twice a year to report its findings and gather relevant information.

AFMA Resource Assessment Groups (RAGs) and Management Advisory Committees (MACs) play a role in identifying research needs, assessing research proposals and the outcomes of research, both essential stock assessment type research and other relevant management related projects. The SFP Scientific Panel is considered a RAG.

The AFMA Research Committee (ARC) determines research priorities and projects for funding in accordance with the ARC's annual research cycle. The ARC also recommends research priorities for potential Fisheries Research and Development Corporation (FRDC) funding for consideration by the Commonwealth Research Advisory Committee (ComRAC). The ComRAC process is managed by the FRDC. Members of these Committees and groups include AFMA fishery managers, fishing operators, scientists and researchers, State and territory governments, conservation groups and recreational fishers.

There is a consultation process through which fishery stakeholders are engaged in decision-making. **R3**

M1.6:
Stakeholder Forums are the main avenue to capture stakeholder views regarding science for the SPF. Forums are open to members of peak recreational fishing bodies, environmental non-government organisations (e-NGOs), indigenous groups, individual community stakeholders and commercial fishing industry members.
Amendments to the Freedom of Information Act 1982 introduced an Information Publication Scheme which requires Australian Government agencies to publish certain information on a website (from 1 May 2011).

Information available on the AFMA website includes:

- AFMA's organisational structure and functions and powers
- Details of statutory appointments

- AFMA's annual reports, including TAC's
- Current agency consultations
- Information AFMA routinely provides to Parliament
- AFMA's Disclosure Log

Documents listed as operational information, where they have not been published for downloading on AFMA's website, can be made available to members of the public by contacting AFMA's Freedom of Information Coordinator.

The decision-making process is transparent, with processes and results publically available. **R5**

References

R1: AFMA (Last revised April 2017) Small Pelagic Fishery Harvest Strategy June 2008 11pp https://www.afma.gov.au/sites/g/files/net5531/f/uploads/2017/04/SPF-Harvest-Strategy_April-2017_FINAL.pdf

R2: AFMA (2014) Small Pelagic Fishery Management Plan 2009 as amended. Federal Register of Legislative Instruments 2014C01077 42pp https://www.legislation.gov.au/Details/F2014C01077/Download

R3: AFMA (September 2015): Acquiring scientific advice by the use of a Scientific Panel and Stakeholder Forums in the Small Pelagic Fishery 21pp https://www.afma.gov.au/sites/g/files/net5531/f/uploads/2015/12/FINAL-Scientific-Panel-Policy-Paper.pdf

R4: Office of Parliamentary Counsel, Canberra: Fisheries Management Act 1991 No. 162, 1991 (includes amendments up to Act No 123 (2017) 460pp https://www.legislation.gov.au/Details/C2017C00363

Office of Parliamentary Counsel, Canberra (March 2017): Fisheries Management Regulations 1992 made under the Fisheries Management Act 1991pdf 181pp

R5: AFMA website (accessed 03.10.18): Information Publication Scheme: https://www.afma.gov.au/about/information-publication-scheme/information-publication-scheme-operational-information

Standard clauses 1.3.1.1, 1.3.1.2

M2	**Surveillance, Control and Enforcement - Minimum Requirements**		
	M2.1	There is an organisation responsible for monitoring compliance with fishery laws and regulations	YES
	M2.2	There is a framework of sanctions which are applied when laws and regulations are discovered to have been broken	YES
	M2.3	There is no substantial evidence of widespread non-compliance in the fishery, and no substantial evidence of IUU fishing	YES
	M2.4	Compliance with laws and regulations is actively monitored, through a regime which may include at-sea and portside inspections, observer programmes, and VMS.	YES

Clause outcome:	PASS

Evidence

M2.1:

The main functions of AFMA's National Compliance and Enforcement Program are:

- Ensuring compliance with AFMA's domestic fisheries management measures.
- Ensuring licensed boats comply with fishing conditions within the AFZ.
- Ensuring that there are no unlicensed foreign boats operating in the AFZ
- Managing port access for foreign boats.
- Surveillance and apprehension of foreign boats fishing illegally in the AFZ.

The Program uses a risk based approach which enables AFMA's resources to be targeted to the areas where they are most needed. An Operational Management Committee (OMC) having regard to the results of the risk assessment determine which risks will be addressed.

Fisheries Officers conduct targeted inspections of Commonwealth endorsed operators. All foreign fishing boats can be inspected on arrival. All Commonwealth fishing boats are tracked via vessel monitoring systems (VMS). The AFMA National Compliance Operations and Enforcement Policy establishes the framework on which AFMA's Compliance and Enforcement Program is based.

There is an organisation responsible for monitoring compliance with fishery laws and regulations **R6, R7**.

M2.2:

Quota SFRs allow fishers take a percentage of the TAC that has been set for each quota species. SFR's granted under the SPF Management Plan may be transferred, leased, surrendered or cancelled. A 28 day quota reconciliation process is in place should a quota be exceeded. Compliance actions are undertaken if a SFR quota holder is still over quota after a 28 day period for any landing. AFMA has set an overcatch percentage of 10% for all SPF quota on the last day of the fishing season. AFMA then deduct this amount from the Quota SFR in the next season, provided there is enough uncaught quota SFRs to cover the overcatch.

Part 3 (***Regulation of Fishing***) Division 8 (***Suspension and cancellation of fishing concessions***) of the Fisheries Management Act 1991 outlines the conditions whereby AFMA may suspend or cancel a fishing concession with the SPF.

Part 6 (***Surveillance and Enforcement***) Division 1 (Officers) of the Fisheries Management Act 1991 Section 84 (***Powers of Officers***) gives Officers (***for the purpose of the Act***) powers of search and seizure of evidence when a commission of an offence against the Act is suspected.

These measures (or tools) can be used in combination, separately or for types of incidents to achieve the most appropriate outcome. Sanctions may include:

- ***Warnings, Cautions***
- ***Commonwealth Fisheries Infringement Notices***
- ***Amendments to fishing concession conditions***
- ***Directions by fisheries officers e.g. to cease fishing or return to port***
- ***Prosecution, suspension or cancellation of fishing concessions. The Commonwealth Director of Public Prosecutions (CDPP) prosecutes crimes against Commonwealth law***

There is a framework of sanctions which are applied when laws and regulations are discovered to have been broken. **R2, R4, R6, R7**

M2.3:
During the 2016-17 fishing season AFMA Fisheries Officers undertook 55 port visits, five sea patrols and ten aerial surveillance flights and conducted 233 boat inspections and 95 fish receiver inspections. The program saw a high level of compliance, with no breaches or further action required in 89% of the inspections.

Australia combats IUU fishing through aerial surveillance, sea patrols and real-time monitoring of fishing vessels. If IUU boats are caught in Australian waters they can be seized and the crew detained and prosecuted, and in some cases imprisoned.

AFMA has a key role in implementing a number of regional and international agreements and arrangements which identify the tools used to strengthen policing systems, or monitoring, control and surveillance (MCS) programs to combat IUU fishing.

The Australian National Audit Office (ANAO) conducted audits in 2008/09 and 2012/13 to assess the effectiveness of AFMA's administration of its Domestic Fishing Compliance Program. Overall the 2012/13 audit found that AFMA has developed and implemented effective arrangements for administering its Compliance Program.

There is no substantial evidence of widespread non-compliance in the fishery, and no substantial evidence of IUU fishing. **R4, R6**

M2.4:
All vessels nominated to the SPF quota are fitted with a Vessel Monitoring System (VMS) of a category specified in the register of AFMA approved units. The VMS unit must remain switched on at all times that the boat is nominated to a Commonwealth concession, including when in port or engaged in State fishing.

AFMA, with the assistance of the NSW Water Police and Border Protection Command, also lead fisheries patrols on the East coast of Australia and outside the AFZ on high seas area of the Pacific Ocean. AFMA Fisheries Officers board and inspect fishing vessels through international fisheries management agreements to ensure that these vessels are following agreed rules and to ensure their operations do not undermine the sustainability of shared fish stocks.

Onboard Scientific Observers are employed by AFMA to independently record catch, effort and biological information of each fishing trip. They take samples from fish and record length, weight and sex of each fish caught during a trip and report on the other wildlife that may be seen, the weather conditions, and bycatch composition. Vessels in the SPF must carry an AFMA observer when requested by AFMA.

Compliance with laws and regulations is actively monitored, through a regime which may include at-sea and portside inspections, observer programmes, and VMS monitoring. **R2, R8,R9**

References

R6: AFMA National Compliance and Enforcement Program 2018-19 33pp
https://afma.govcms.gov.au/sites/g/files/net5531/f/10017-afma-national-compliance-and-enforcement-program_fa.pdf

R7: AFMA (2013) National Compliance and Enforcement Policy 43pp
http://www.afma.gov.au/wp-content/uploads/2010/06/National-Compliance-and-Enforcement-Policy-2013.pdf

R8: Small Pelagic Fishery Management Arrangements Booklet 2018-19, Australian Fisheries Management Authority. Canberra, Australia. 39pp
www.afma.gov.au/fisheries/small-pelagic-fishery

R9: AFMA (July 2005) National Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing 99pp
http://www.agriculture.gov.au/SiteCollectionDocuments/fisheries/iuu/npoa_iuu_fishing.pdf

Standard clause 1.3.1.3

CATEGORY A SPECIES

The four clauses in this section apply to Category A species. Clauses A1 - A4 should be completed for **each** Category A species. If there are no Category A species in the fishery under assessment, this section can be deleted. A Category A species must meet the minimum requirements of all four clauses before it can be recommended for approval. If the species fails any of these clauses it should be re-assessed as a Category B species.

Species Name		**Jack Mackerel (*T. declivis, T. murphy*)**	
A1	**Data Collection - Minimum Requirements**		
	A1.1	Landings data are collected such that the fishery-wide removals of this species are known.	YES
	A1.2	Sufficient additional information is collected to enable an indication of stock status to be estimated.	YES
Clause outcome:			**PASS**

A1.1:

All Commonwealth fishers must record all catch and effort details (including gear and spatial position) in their AFMA daily fishing logbooks. Catch weights are used in combination with logbook gear, effort and spatial data to inform fishery stock assessments. A Harvest Strategy Policy (HSP) makes provision for the monitoring of all fishery-dependent data (catch, effort and size/age catch structure).

Landings data are collected such that the fishery-wide removals of this species are known **R1, R2, R8**

A1.2:

Daily Egg Production Method (DEPM) surveys generate estimates of spawning stock size (SSB) based on surveys of eggs during spawning seasons. DEPM estimates are currently used as absolute estimates of stock size for the purpose of calculating Recommended Biological Catches (RBCs). Recommended TACs are then calculated by subtracting any significant known sources of mortality from RBCs. Adjustments for catches taken in other fisheries will be based on the SPF Scientific Panel's best estimate of future catch in other fisheries. Where no DEPM surveys have been conducted, the use of an Atlantis ecosystem model to provide estimates of biomass is available.

Annual Fishery Assessments are assessments covering the previous fishing year for all targeted (quota) species that informs the Scientific Panel's advice regarding the level of fishing that should be permitted, or provide scientific evidence of changes in stock status since the DEPM estimate Progressive information available from the season to date, if available, may also be considered. These assessments include updated catch and effort data.

Sufficient additional information is collected to enable an indication of stock status to be estimated.**R3, R10, R11**

References

R10: Lasker, R. (1985). An egg production method for estimating spawning biomass of pelagic fish: application to northern anchovy, Engraulis mordax. NOAA Tech. Rep. NMFS, 36: 1 - 99.

R11: Smith, A., Ward T, Hurtado F, Klaer N, Fulton E, and Punt A. (2015). Review and update of harvest strategy settings for the Commonwealth Small Pelagic Fishery - Single species and ecosystem considerations. Hobart. Final Report of FRDC Project No. 2013/028

Standard clause 1.3.2.1.1

A2	**Stock Assessment - Minimum Requirements**		
	A2.1	A stock assessment is conducted at least once every 3 years (or every 5 years if there is substantial supporting information that this is sufficient for the long-term sustainable management of the stock), and considers all fishery removals and the biological characteristics of the species.	YES
	A2.2	The assessment provides an estimate of the status of the biological stock relative to a reference point or proxy.	YES
	A2.3	The assessment provides an indication of the volume of fishery removals which is appropriate for the current stock status.	YES
	A2.4	The assessment is subject to internal or external peer review.	YES
	A2.5	The assessment is made publically available.	YES
Clause outcome:			**PASS**

A2.1:

Jack Mackerel within the SPF is assessed and managed as separate stocks in the Eastern and Western subareas (Figure 1). The most recent DEPM survey for Jack Mackerel (East) was conducted in January 2014. Fisheries assessments (both stocks) are undertaken and reported annually. The 2015-16 RBC and TAC were set using 2015 harvest strategy control rules and the 2014 DEPM biomass estimate. State catches were deducted from the RBC to obtain the 2015-16 Commonwealth TAC. AFMA Commission retained the 2015-16 TAC for the 2016-17 fishing season to allow additional testing, including Management Strategy Evaluation (MSE) to be completed on the SPF harvest strategy. This testing was completed in 2016.

MSE involves using simulations to compare the relative effectiveness for achieving management objectives of different combinations of data collection schemes, methods of analysis and subsequent processes leading to management actions. MSE can be used to identify a 'best' management strategy among a set of candidate strategies, or to determine how well an existing strategy performs.

A DEPM survey for Jack Mackerel (West) was conducted in 2017. On the basis of the information provided, the Scientific Panel (Jan 2018) agreed that the DEPM survey results were appropriate for setting Jack Mackerel RBCs under the Harvest Strategy for the 2018-19 season.

A stock assessment is conducted at least once every 3 years (or every 5 years**) R12, R13**

A2.2:
The Harvest Strategy adopts exploitation rates tested to provide a high likelihood that stocks will be maintained, on average, at the target reference point of 50 per cent of unfished levels (B_{50}), with a less than a 10 per cent chance over 50 years of falling below the limit reference point of 20 per cent ($0.2B_0$) of unfished levels.

These target and limit reference levels are consistent with those established in the Commonwealth Harvest Strategy Policy, and have been shown to be ecologically sound for Australian small pelagic stocks as a result of the low dietary dependency of higher trophic level predators in south east Australia on the targeted SPF species. The 2016 SPF Harvest Strategy (all Quota species) will be reviewed at least once every three years.
The B_{50} reference point represents a trade-off of an optimal economic reference point for an ecologically conservative reference point. This is because economic research has found that BMEY is equal to BMSY for SPF stocks and BMSY for these stocks is estimated to be between B_{30} and B_{36}. Given these BMSY levels are uncertain and the ecosystem in southern and eastern Australia is not highly dependent on these species, the higher target of B_{50} is considered safe from an ecological perspective. Exploitation rates applied are maximum limits only; lower harvest rates may be recommended.

The assessment provides an estimate of the status of the biological stock relative to a reference point or proxy **R1, R8,**

A2.3:
Maximum exploitation rates to be used are based on Tier Decision Rules:

- **Tier 1 Maximum Exploitation Rate:** Tier 1, based on a quantitative stock assessment and an Annual Fishery Assessment incorporating a DEPM estimate, provides the greatest certainty in RBC setting and allows the highest potential harvest rate. A DEPM survey can only be used to set the RBC at this rate for five consecutive fishing seasons, after which the stock (s) will move to being assessed under **Tier 2.**
- **Tier 2** provides a medium level of assessment based on an Annual Fishery Assessment and previous DEPM assessment, and allows a lower potential harvest rate than for **Tier 1.** As a result of the different productivity of each target species the maximum exploitation rates and maximum time at **Tier 2** level varies.
- **Tier 3 Maximum Exploitation rates** are the lowest level of assessment and apply when the requirements of other Tier levels are not met. **Tier 3** has a lower potential harvest rate than **Tier 1** or **Tier 2**. A review of available catch and effort data should be undertaken annually. For a stock where a biomass estimate has previously been derived based on a DEPM survey but the maximum time at **Tier 2** has been exceeded the exploitation rate may not exceed half the **Tier 2** maximum exploitation rate. There is no limit to the length of time that a stock can remain at **Tier 3.**

The 2014 DEPM survey Jack Mackerel (East) estimated spawning biomass SSB to be 157,805t (95% CI 59,570-358,731 t). The 2015-16 RBC and TAC were set using 2015 harvest strategy control rules and the 2014 DEPM biomass estimate. State catches were deducted from the RBC to obtain the 2015-16 TAC of 18,670t. The peak harvest during the past 30 years in this fishery was 4% of the SSB, with most catches far below this. This level of fishing mortality is unlikely to have substantially reduced spawning biomass. The Scientific Panel (Nov 2018) confirmed its previous recommendations for RBCs for this stock based on the 2017 SPF Harvest Strategy and the 2014 DEPM Survey results. This is the stock's fourth season at Tier 1 with a maximum exploitation rate of 12% of the SSB, equivalent to a RBC of 18,937t.

State catches (Jack Mackerel (West)) were deducted from the RBC to obtain a 2015-16 TAC of 3,600t. The AFMA Commission retained the 2015-16 TAC for the 2016-17 fishing season to allow for additional testing, including MSE, to be completed on the SPF harvest strategy. This testing was completed in 2016. The peak catch in 2016-17 was less than 1% of the 1970s biomass estimate and 19% of the RBC. There was very little catch of this stock during the previous 16 years and no reported catches for 2014-15.

A DEPM survey for Jack Mackerel (West) was conducted in 2017 which provided a best estimate of biomass of 34,978t. As there is a DEPM survey now available for this stock, this species moves to Tier 1 under the Harvest Strategy. The Tier 1 exploitation for this stock is now 12% of the SSB, equivalent to a RBC of 4,197t. The assessment provides an estimate of the status of the biological stock relative to a reference point or proxy. **R1, R8, R13**

A2.3:
TAC's for all SPF quota species are available online http://www.afma.gov.au/portfolio-item/blue-mackerel
For the 2018-19 fishing season a TAC of 18,890t (Jack Mackerel East) and 4,190t (Jack Mackerel West) was announced by AFMA (March 2018). Previous MSE testing for Jack Mackerel (East) suggests that the harvest strategy is appropriate, and its application would result in a low probability of the stock falling below $0.2B_0$ for more than 90 per cent of the time, in line with the Harvest Strategy Policy (HSP).

There is a paucity of information on life history and productivity for Jack Mackerel (West). Data from Jack Mackerel (East) were used instead, which may compromise the model outputs for the stock. In the case of Jack Mackerel (West) the Atlantis-SPF biomass estimate was 60,000t and the Tier 2 exploitation rate 6 %. The 2016-17 TAC was held at the 2015-16 level pending additional testing of the harvest strategy. The peak harvest from this fishery (2016-17, 686t) was less than 1 per cent of the spawning biomass estimate, and catches have been low as a proportion of estimated biomass. As there is a DEPM survey now available for this stock, this species moves to Tier 1 under the Harvest Strategy. This level of fishing mortality is unlikely to significantly reduce SSB.

The assessment provides an indication of the volume of fishery removals which is appropriate for the current stock status. **R13, R14.**

A2.4, A2.5:
The SPF Scientific Panel met in Melbourne (Jan 2018). The Panel reviews scientific and economic data and provide advice to SEMAC and the AFMA Commission. During the meeting the Panel noted that no issues were raised at the Stakeholder forum regarding the Annual Assessment of SPF Stocks and RBC advice. The Panel confirmed its previous recommendations for RBCs, based on the 2017 SPF Harvest Strategy and the 2014 DEPM Survey results (Jack Mackerel East).

Fishery status reports published by the Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES) provide independent assessments of the biological status of fish stocks and the economic status of fisheries managed, or jointly managed, by the Australian Government (Commonwealth fisheries). Fisheries management within States is generally centralised within the relevant departments with responsibility for fisheries. ABARES uses data and information sourced from AFMA and Regional Fisheries Management Organisations (RFMO's).

The assessment is made publically available. **R13, R14, R15**

References

R12: André E Punt et al (2016) Management strategy evaluation: best practices. Fish and Fisheries Vol 17 Issue 2 June 2016 3-34 https://onlinelibrary.wiley.com/doi/abs/10.1111/faf.12104
R13: A Moore and D Mobsby (2017) Department of Agriculture and Water Resources Fishery Status Reports Chapter 7: Small Pelagic Fishery Status Reports (2017) http://www.agriculture.gov.au/abares/research-topics/fisheries/fishery-status/small-pelagic
R14: AFMA (March 2018) Fisheries Management (Small Pelagic Fishery Total Allowable Catch - Quota Species) Fishing Capacity Determination 2018 4pp https://www.legislation.gov.au/Details/F2018L00337
R15: Small Pelagic Fishery Scientific Panel (the Panel) Meeting Minutes (Jan 2018) https://www.afma.gov.au/sites/g/files/net5531/f/uploads/2018/02/DRAFT-SPF-meeting-minutes_22-January_FINAL.pdf

Standard clause 1.3.2.2, 1.3.2.1.2, 1.3.2.1.4

A3	**Harvest Strategy - Minimum Requirements**		
	A3.1	There is a mechanism in place by which total fishing mortality of this species is restricted.	YES
	A3.2	Total fishery removals of this species do not regularly exceed the level indicated or stated in the stock assessment. Where a specific quantity of	YES

		removals is recommended, the actual removals may exceed this by up to 10% ONLY if the stock status is above the limit reference point or proxy.	
	A3.3	Commercial fishery removals are prohibited when the stock has been estimated to be below the limit reference point or proxy (small quotas for research or non-target catch of the species in other fisheries are permissible).	YES
Clause outcome:			**PASS**

Evidence

A3.1:

A Harvest Strategy (HS) adopts exploitation rates to maintain the spawning stock biomass (SSB), on average, at the target reference point of 50% of unfished levels and achieve a less than 10% chance over a 50 year period of the SSB falling below the limit reference point (LRP) of 20% of unfished levels ($0.2B_0$). Recent catches of a number of the SPF stocks have been limited by economic constraints and are considered by the SPF Scientific Panel to be below the sustainable levels.

Target and limit reference levels are consistent with those established in the Commonwealth Harvest Strategy Policy, and have been shown to be ecologically sound for the Australian small pelagic stocks as a result of the low dietary dependency of higher trophic level predators in south east Australia on targeted SPF species.

There is a mechanism in place by which total fishing mortality of this species is restricted. **R1, R13**

A3.2, A3.3:

Commonwealth catches (Jack Mackerel East) increased to 9,873t in 1997-98, fluctuated markedly to 2003-04 and then declined thereafter as a result of decreasing effort in the fishery. Commonwealth catches decreased from 5,342 t in 2015-16 to 3,966 t in 2016-17**.** Total catch (Commonwealth and State) peaked in 2015-16 and was 4% per cent of the 2014 SSB and 34% of the RBC and TAC.

Total catch (State and Commonwealth) for Jack mackerel (west) did not exceed 250 t before 2005-06. Commonwealth catch was zero or negligible from 2011-12 to 2014-15, and increased to 613t in 2015-16 and 686 t in 2016-17. State catches have been negligible for the past decade. The peak catch in 2016-17 was less than 1% of the 1970's biomass estimate and 19% of the RBC. There was very little catch of this stock during the previous 16 years.

AFMA has set an overcatch percentage for all SPF quota species on the last day of the fishing season. Up to 10% over a quota for each species in one fishing season can be landed without penalty. AFMA will then deduct this amount from quota holdings in the next season, provided enough uncaught quota SFRs in the next season is present to cover the overcatch. Catches have never exceeded the allocated TAC's. Total fishery removals of this species do not regularly exceed the level indicated or stated in the stock assessment.

Total fishery removals of this species do not regularly exceed the level indicated or stated in the stock assessment. Commercial fishery removals are prohibited when the stock has been estimated to be below the limit reference point **R4**, **R13**.
References
Standard clause 1.3.2.1.3

A4	**Stock Status - Minimum Requirements**		
	A4.1	The stock is at or above the target reference point, OR IF NOT: The stock is above the limit reference point or proxy and there is evidence that a fall below the limit reference point would result in fishery closure OR IF NOT: The stock is estimated to be below the limit reference point or proxy, but fishery removals are prohibited.	YES
Clause outcome:			**PASS**

Evidence

A4.1:

RBC's and TAC's are set annually (both stocks) based on harvest strategy control rules, annual assessments and DEPM biomass estimates. Application of Tier decision rules (harvest rates as a % of Biomass) allow for annual calculation of RBC's and from these TAC's. For Jack Mackerel (East) a Tier 1 harvest rate of 12% of Biomass (5 years) and a Tier 2 harvest rate of 6% (10 years) was adopted by the AFMA Commission in April 2015. The peak harvest during the past 30 years in this fishery was 4% of the SSB, with most catches far below this. This level of fishing mortality is unlikely to have substantially reduced SSB. Current fishing mortality remains a small proportion of biomass, and below 2015-16 and 2016-17 RBCs.

As there is a DEPM survey now available for the Jack Mackerel West stock, this species moves to Tier 1 harvest rate (12%) under the Harvest Strategy. The peak harvest from this fishery was less than 1% of SSB, catches have been low as a proportion of estimated biomass. This level of fishing mortality is unlikely to have substantially reduced SSB. Current fishing mortality remains a small proportion of biomass, and below the 2015-16 and 2016-17 RBCs.

Both stocks are at or above target reference points. **R1**, **R13, R15.**

References
Standard clause 1.3.2.1.4

Species Name		Blue Mackerel *Scomber australasicus*	
A1	**Data Collection - Minimum Requirements**		
	A1.1	Landings data are collected such that the fishery-wide removals of this species are known.	YES
	A1.2	Sufficient additional information is collected to enable an indication of stock status to be estimated.	YES
Clause outcome:			**PASS**

Evidence

A1.1:

Blue Mackerel within the SPF is assessed and managed as separate stocks in Eastern and Western subareas (Figure 1). All Commonwealth fishers must record all catch and effort details (including gear and spatial position) in their AFMA daily fishing logbooks. Catch weights are used in combination with logbook gear, effort and spatial data to inform fishery stock assessments. A Harvest Strategy Policy (HSP) makes provision for the monitoring of fishery-dependent data (catch, effort and size/age catch structure) and, where no Daily Egg Production Method (DEPM) surveys have been conducted, the use of the Atlantis ecosystem model to provide estimates of biomass.

Peak harvest from the Blue Mackerel (East) stock (State and Commonwealth catches) was in 2015-16 (2,367t) at 4% of the 2014 SSB. Total landings of the Blue Mackerel (West) stock (State and Commonwealth catches) peaked in 2008-09 at 2,168t (4% of SSB estimated by the 2005 DEPM survey).

Landings data are collected such that the fishery-wide removals of this species are known **R1, R6.**

A1.2:

Daily Egg Production Method (DEPM) surveys generate estimates of spawning stock size (SSB) based on surveys of eggs during spawning seasons. DEPM estimates are currently used as absolute estimates of stock size for the purpose of calculating Recommended Biological Catches (RBCs). Recommended TACs are then calculated by subtracting any significant known sources of mortality from RBCs. Adjustments for catches taken in other fisheries will be based on the SPF Scientific Panel's best estimate of future catch in other fisheries. Where no DEPM surveys have been conducted, the use of an Atlantis ecosystem model to provide estimates of biomass is available.

During the annual fisheries assessment of the Blue Mackerel (West) stock the Scientific Panel (2018) noted the most recent DEPM survey for this stock had been undertaken in 2005 and 2006. The Panel confirmed its previous support of the SPFRAG approach which adopted a biomass estimate for Blue Mackerel (West) of 86, 500t based on the results of the two surveys that covered most of the western spawning area.

The Scientific Panel also noted that the size structures for this species differ between the east and west with much larger fish in the west and agreed that a research project should be recommended to review existing data and new information from the 2018 SA Australian sardine surveys to provide further information for relevant SPF stocks west of Kangaroo Island for which there is currently limited information.

Sufficient additional information is collected to enable an indication of stock status to be estimated.**R1, R13**
References
Standard clause 1.3.2.1.1

A2	**Stock Assessment - Minimum Requirements**		
	A2.1	A stock assessment is conducted at least once every 3 years (or every 5 years if there is substantial supporting information that this is sufficient for the long-term sustainable management of the stock), and considers all fishery removals and the biological characteristics of the species.	YES
	A2.2	The assessment provides an estimate of the status of the biological stock relative to a reference point or proxy.	YES
	A2.3	The assessment provides an indication of the volume of fishery removals which is appropriate for the current stock status.	YES
	A2.4	The assessment is subject to internal or external peer review.	YES
	A2.5	The assessment is made publically available.	YES
Clause outcome:			**PASS**

Evidence

A2.1:

The 2015-16 RBC and TAC were set (Blue Mackerel East) using 2015 harvest strategy control rules and the 2004 DEPM biomass estimate as results of the 2014 DEPM survey were not available at the time. The outcomes of the 2014 DEPM survey were available for setting the TAC for the 2016-17 fishing season; however, the AFMA Commission retained the TAC from the previous year to allow additional testing, including MSE, to be completed on the SPF harvest strategy. This testing was completed in 2016. As a result, the 2015-16 and 2016-17 RBCs and TACs for Blue Mackerel (East) were based on the 2004 DEPM survey (SSB 23,009t, later revised by SPFRAG to 40,000t).

The SPF Scientific Panel met in Melbourne (Jan 2018). The annual fisheries assessment of this stock provided no basis to change the Panel's previous advice for this species. While there is uncertainty associated with the adult parameters used in the DEPM, the 2014 DEPM survey biomass estimate of 83,300t was deemed appropriate by the Panel to be used as the basis for providing RBC advice and 2017-18 TAC's.

The SPF Scientific Panel also noted (Jan 2018) that the most recent DEPM surveys for Blue Mackerel West stock had been undertaken in 2005 and 2006. The Panel confirmed its previous support of the SPFRAG approach which adopted a biomass estimate for Blue Mackerel (West) of 86,500t based on the results of two surveys that covered most of the western spawning area. The 2015-16 RBC and TAC were set using the 2014 harvest strategy control rules and 2005 DEPM biomass estimate. The TAC for the 2016-17 season was held at the 2015-16 level pending further testing of the harvest strategy, completed in 2016.

A stock assessment is conducted at least once every 3 years (or every 5 years if there is substantial supporting information) **R1, R13**

A2.2

The Harvest Strategy adopts exploitation rates tested to provide a high likelihood that stocks will be maintained, on average, at the target reference point of 50 per cent of unfished levels (B50), with a less than a 10 per cent chance over 50 years of falling below the limit reference point of 20 per cent (0.2B0) of unfished levels.

These target and limit reference levels are consistent with those established in the Commonwealth Harvest Strategy Policy, and have been shown to be ecologically sound for Australian small pelagic stocks as a result of the low dietary dependency of higher trophic level predators in south east Australia on the targeted SPF species.

Assessments provide an estimate of the status of the biological stock relative to a reference point or proxy **R1, R13**

A2.3:

Most of the Blue Mackerel (East) catch has historically been taken in State fisheries (inside 3 nm limit); However, with the introduction of a freezer vessel, the Commonwealth catch has recently exceeded State catch. For the 2018-19 fishing season a TAC of 12,090t (Blue Mackerel East) and 3,230t (Blue Mackerel West) was announced by AFMA (March 2018). Previous MSE testing for Blue Mackerel (both stocks) had suggested that the harvest strategy was appropriate, and its application would result in a low probability of each stock falling below 0.2B0 for more than 90% of the time, in line with the HS.

However a 2015 MSE suggested linking harvest strategy settings to the productivity of the species. A Tier 1 harvest rate of 15% (maximum of five years) and a Tier 2 harvest rate of 7.5% (maximum of five years) for both East and West Stocks was adopted by AFMA in April 2015, with the Tier 2 harvest control rule used as the basis for 2015-16 TAC's.

The 2016-17 TAC's were maintained at 2015-16 levels pending additional testing of the harvest strategy. This testing was completed in 2016. The TAC for the 2018-19 fishing season (Blue Mackerel East, 12,090t) was derived from RBC's set at 15% of the estimated SSB of 83,300t (Tier 1 stock). The TAC for the 2018-19 fishing season (Blue Mackerel West 3,230t; second season at Tier 3) was derived from a RBC set at 3.75% of the estimated SSB of 86,500t. Catches of both stocks have been low as a proportion of estimated biomass. This level of fishing mortality is unlikely to have substantially reduced SSB.

Peak harvest from the Blue Mackerel (East) stock (State and Commonwealth catches) was in 2015-16 (2,367t) at 4% of the 2014 SSB. Total landings of the Blue Mackerel (West) stock (State and Commonwealth catches) peaked in 2008-09 at 2,168 t at 4% of SSB estimated by the 2005 DEPM survey.

The assessment provides an indication of the volume of fishery removals appropriate for the current stock status **R12**, **R13, R14**

A2.4, A2.5:
The SPF Scientific Panel met in Melbourne (Jan 2018). The Panel reviews scientific and economic data and provide advice to SEMAC and the AFMA Commission. The 2014 DEPM survey biomass estimate Blue Mackerel (East) was deemed appropriate by the Panel to be used as the basis for providing RBC advice and 2017-18 TAC's. The Panel also confirmed its previous support of the SPFRAG approach which adopted a biomass estimate for Blue Mackerel (West).

Fishery status reports published by the Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES) provide independent assessments of the biological status of fish stocks and the economic status of fisheries managed, or jointly managed, by the Australian Government (Commonwealth fisheries). Fisheries management within States is generally centralised within the relevant departments with responsibility for fisheries. ABARES uses data and information sourced from AFMA and Regional Fisheries Management Organisations (RFMOs).

Assessments are subject to peer review and are made publically available. **R13, R15**

References

Standard clause 1.3.2.2, 1.3.2.1.2, 1.3.2.1.4

A3	**Harvest Strategy - Minimum Requirements**		
	A3.1	There is a mechanism in place by which total fishing mortality of this species is restricted.	YES
	A3.2	Total fishery removals of this species do not regularly exceed the level indicated or stated in the stock assessment. Where a specific quantity of removals is recommended, the actual removals may exceed this by up to 10% ONLY if the stock status is above the limit reference point or proxy.	YES
	A3.3	Commercial fishery removals are prohibited when the stock has been estimated to be below the limit reference point or proxy (small quotas for research or non-target catch of the species in other fisheries are permissible).	YES
Clause outcome:			**PASS**

A3.1:
A Harvest Strategy (HS) adopts exploitation rates to maintain the spawning stock biomass (SSB), on average, at the target reference point of 50% of unfished levels and achieve a less than 10% chance over a 50 year period of the SSB falling below the limit reference point (LRP) of 20% of unfished levels (0.2B0). Recent catches of a number of the SPF stocks have been limited by economic constraints and are considered by the SPF Scientific Panel to be below the sustainable levels.

Target and limit reference levels are consistent with those established in the Commonwealth Harvest Strategy Policy, and have been shown to be ecologically sound for the Australian small pelagic stocks as a result of the low dietary dependency of higher trophic level predators in south east Australia on targeted SPF species.

There is a framework of sanctions which are applied when laws and regulations are discovered to have been broken.

There is a mechanism in place by which total fishing mortality of this species is restricted **R1,R13**

A3.2, A 3.3:
Most of the Blue Mackerel (East) catch has historically been taken in State fisheries. However, with the introduction of a freezer vessel, the Commonwealth catch has recently exceeded State catch. Commonwealth catch increased in 2015-16 to 2,022t (up from 203 t in 2014-15) and decreased to 1,248 t in 2016-17. State catches are not available for 2016-17. Total state and Commonwealth catch was 2,367 t in 2015-16, which is the peak catch for the fishery representing 3% of the 2014 SSB. The Commonwealth catch in 2016-17 was 67% of the RBC, 76% of the TAC and less than 2% of the 2014 SSB.

Very little Blue Mackerel (West) was caught before 2004-05. Total Commonwealth-landed catch increased in 2005-06, peaking in 2008-09 at 2,168 t (4% of SSB) and decreasing steadily thereafter. There was negligible catch between 2011-12 and 2014-15 in both the state and Commonwealth fisheries. Commonwealth catch was 979 t in 2015-16 with negligible state catch, and 766 t in 2016-17.

AFMA has set an overcatch percentage for all SPF quota species on the last day of the fishing season. Up to 10% over a quota for each species in one fishing season can be landed without penalty

Total fishery removals of this species do not regularly exceed the level indicated or stated in the stock assessment. **R4, R13.**

References

Standard clause 1.3.2.1.3

A4	**Stock Status - Minimum Requirements**		
	A4.1	The stock is at or above the target reference point, OR IF NOT: The stock is above the limit reference point or proxy and there is evidence that a fall below the limit reference point would result in fishery closure OR IF NOT: The stock is estimated to be below the limit reference point or proxy, but fishery removals are prohibited.	YES
Clause outcome:			**PASS**

A 4.1:
RBC's and TAC's are set annually (both East and West stocks) based on harvest strategy control rules, annual assessments and DEPM biomass estimates. Application of Tier decision rules (harvest rates as a % of Biomass) allow for annual calculation of RBC's and TAC's. The Harvest Strategy (HS)

adopts exploitation rates to maintain SSB on average, at the target reference point of 50% of unfished levels.

The 2015-16 and 2016-17 RBCs and TACs for Blue Mackerel (East) were based on the 2004 DEPM survey and the revised SPFRAG SSB estimate of 40,000t. Because of the age of the assessment, the RBC for 2015-16 was set using the Tier 2 decision rule (using 7.5% of the 2004 SSB) which resulted in an RBC of 3,000t. Total catches (Commonwealth and State) of this stock in 2015-16 and 2016-17 were 2,367t and 1,248t (Commonwealth only) respectively amounting to 3% and 2% respectively of the 2014 SSB.

The 2015-16 and 2016-17 RBCs and TACs for Blue Mackerel (West) were based on a 2005 DEPM survey and a revised SPFRAG SSB estimate of 86,500t. Application of the Tier 2 decision rule (using 7.5 % of the 2005 SSB) resulted in an RBC of 6,500 t for the 2015-16 and 2016-17 fishing seasons. Commonwealth catch in 2015-16 (979t) represented 15% of the RBC and 16% of the 2015-16 TAC. Commonwealth catch in 2016-17 (766t) represented 12% of the 2016-17 RBC and TAC.

The stock is at or above the target reference point **R1, R13, R15**

References

Standard clause 1.3.2.1.4

Species Name		**Red Bait/Cape Bonnetmouth (*Emmelichthys nitidus*).**	
A1	**Data Collection - Minimum Requirements**		
	A1.1	Landings data are collected such that the fishery-wide removals of this species are known.	YES
	A1.2	Sufficient additional information is collected to enable an indication of stock status to be estimated.	YES
Clause outcome:			**PASS**

Evidence
A1.1:
Redbait is assessed and managed as separate stocks in the Eastern and Western subareas (Figure 1). All Commonwealth fishers must record all catch and effort details (including gear and spatial position) in their AFMA daily fishing logbooks. Catch weights are used in combination with logbook gear, effort and spatial data to inform fishery stock assessments. A Harvest Strategy Policy (HSP) makes provision for the monitoring of fishery-dependent data (catch, effort and size/age catch structure). Catch data includes retained and discarded figures for purse seine and midwater trawl vessels operating in the SPF.

Landings data are collected such that the fishery-wide removals of this species are known. **R1,R6**

A1.2:
Daily Egg Production Method (DEPM) surveys generate estimates of spawning stock size (SSB) based on surveys of eggs during spawning seasons. DEPM estimates are currently used as absolute estimates of stock size for the purpose of calculating Recommended Biological Catches (RBCs). Recommended TACs are then calculated by subtracting any significant known sources of mortality from RBCs. Adjustments for catches taken in other fisheries will be based on the SPF Scientific Panel's best estimate of future catch in other fisheries. Where no DEPM surveys have been conducted, the use of an Atlantis ecosystem model to provide estimates of biomass is available.

Sufficient additional information is collected to enable an indication of stock status to be estimated **R1, R2, R10, R11.**

References

Standard clause 1.3.2.1.1

A2	**Stock Assessment - Minimum Requirements**		
	A2.1	A stock assessment is conducted at least once every 3 years (or every 5 years if there is substantial supporting information that this is sufficient for the long-term sustainable management of the stock), and considers all fishery removals and the biological characteristics of the species.	YES
	A2.2	The assessment provides an estimate of the status of the biological stock relative to a reference point or proxy.	YES
	A2.3	The assessment provides an indication of the volume of fishery removals which is appropriate for the current stock status.	YES
	A2.4	The assessment is subject to internal or external peer review.	YES
	A2.5	The assessment is made publically available.	YES
Clause outcome:			**PASS**

A2.1, A 2.2:
RBC's and TAC's are set using 2015 harvest strategy control rules and the latest DEPM biomass estimates. Annual fisheries assessments are undertaken (both stocks).

The most recent DEPM surveys for Redbait (East), in 2005 and 2006 provided estimates of SSB of 86,990t and 50,782 t. The average of these two spawning biomass estimates (68,886 t) was used to estimate an RBC of 3,400 t for 2015-16 and 2016-17, using the Tier 2 decision rule. State catch of this stock is negligible; the Commonwealth TAC was set at 3,310t for the 2015-16 and 2016-17 fishing seasons. Commonwealth catch in 2015-16 was 189 t, decreasing to 10 t in 2016-17. State catches have been negligible since 2010-11.

The annual fisheries assessment (Jan 2018) provided no basis to change the previous advice for this stock. The Scientific Panel (Jan 2018) confirmed that the approach used by SPFRAG of

adopting the average of these DEPM estimates (68,886t) should be continued, and the Harvest Strategy Tier 2 harvest rate for Redbait (East) of 5% was used as the basis for RBC advice.

No DEPM survey or estimate of biomass has been undertaken for Redbait (West). Because of this lack of data, the SPFRAG estimated SSB by drawing on expert opinion and experience of similar stocks. In the absence of an empirically derived biomass estimate, the RBC was based on a model-derived one (Atlantis-SPF ecosystem model) and a Tier 2 harvest rate. Using the mean SSB estimate of 66, 000t from Atlantis, the proposed Tier 3 exploitation for this stock is 0.25 x 5% (Tier 2 rate) = 1.25%. As there has been no DEPM survey for this stock the species remains a Tier 3 stock. State catches were deducted from the RBC to obtain the 2015–16 Commonwealth TAC of 2,880 t. The AFMA Commission retained the 2015-16 TAC for the 2016-17 fishing season. Commonwealth catch was 1,135t in 2015-16 and 1,140t in 2016-17. State catches have been negligible in the past).

It was noted during the annual fisheries assessment (Jan 2018) that a DEPM survey (Redbait West) was underway which will be available for the 2019-20 TAC setting process.

The assessment provides an estimate of the status of the biological stock relative to a reference point or proxy. **R14; R15**

A2.3:
The Harvest Strategy adopts exploitation rates tested to provide a high likelihood that stocks will be maintained, on average, at the target reference point of 50% of unfished levels. Annual Fishery Assessments covering the previous fishing year inform the Scientific Panel's advice regarding the level of fishing that should be permitted, or provide scientific evidence of changes in stock status since the DEPM estimate.

Peak total (Commonwealth and state) catch (Redbait East) in 2003-04 was 10% of the estimated SSB average. No catch was reported in 2014-15. Commonwealth catch in 2015-16 increased to 180t; less than 1% of the SSB estimate, and 5% of the RBC and TAC.

Catches have historically been low in this fishery (Redbait West), and this level of fishing mortality is unlikely to have substantially reduced SSB. TAC's announced for the 2018-2019 fishery were 3,420t (Redbait East) and 820t (Redbait West) respectively.

The assessment provides an indication of the volume of fishery removals which is appropriate for the current stock status **R14, R15**

A2.4; A2.5:
The SPF Scientific Panel met in Melbourne (Jan 2018). The Panel reviews scientific and economic data and provides advice to SEMAC and the AFMA Commission. DEPM survey biomass estimates (2004, 2005 Redbait East only) and the ecosystem derived model (Redbait West) were deemed appropriate by the Panel to be used as the basis for providing RBC advice and TAC's for the 2018-19 fishing season.

Fishery status reports published by the Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES) provide independent assessments of the biological status of fish stocks and

the economic status of fisheries managed, or jointly managed, by the Australian Government (Commonwealth fisheries). Fisheries management within States is generally centralised within the relevant departments with responsibility for fisheries. ABARES uses data and information sourced from AFMA and Regional Fisheries Management Organisations (RFMO's). The assessments are made publically available. **R13, R15.**
References
Standard clause 1.3.2.2, 1.3.2.1.2, 1.3.2.1.4

A3	**Harvest Strategy - Minimum Requirements**		
	A3.1	There is a mechanism in place by which total fishing mortality of this species is restricted.	YES
	A3.2	Total fishery removals of this species do not regularly exceed the level indicated or stated in the stock assessment. Where a specific quantity of removals is recommended, the actual removals may exceed this by up to 10% ONLY if the stock status is above the limit reference point or proxy.	YES
	A3.3	Commercial fishery removals are prohibited when the stock has been estimated to be below the limit reference point or proxy (small quotas for research or non-target catch of the species in other fisheries are permissible).	YES
Clause outcome:			**PASS**

A 3.1:
A Harvest Strategy (HS) adopts exploitation rates to maintain the spawning stock biomass (SSB), on average, at the target reference point of 50% of unfished levels and achieve a less than 10% chance over a 50 year period of the SSB falling below the limit reference point (LRP) of 20% of unfished levels (0.2B0). Recent catches of a number of the SPF stocks have been limited by economic constraints and are considered by the SPF Scientific Panel to be below the sustainable levels.

Target and limit reference levels are consistent with those established in the Commonwealth Harvest Strategy Policy, and have been shown to be ecologically sound for the Australian small pelagic stocks as a result of the low dietary dependency of higher trophic level predators in south east Australia on targeted SPF species.

There is a framework of sanctions which are applied when laws and regulations are discovered to have been broken.

There is a mechanism in place by which total fishing mortality of this species is restricted **R1,R13**

A 3.2, A 3.3:
The Redbait (East) fishery started in the early 1980s. Total landings (Commonwealth and State) were less than 2,000 t per year between 1984-85 and 2000-01, but increased in 2001-02 and subsequent years, peaking at 7,450 t in 2003-04. Annual catches decreased steadily thereafter. Commonwealth catch in 2015-16 was 189 t, decreasing to 101 t in 2016-17. State catches have been negligible since 2010-11. Peak total (Commonwealth and state) catch (Redbait East) in 2003-04 was 10% of the estimated SSB average. No catch was reported in 2014-15. Commonwealth catch in 2015-16 was less than 1% of the SSB estimate, and 5% of the RBC and TAC.

Catches have historically been low in the Redbait West fishery. This level of fishing mortality is unlikely to have substantially reduced SSB. No catches of redbait (west) were reported before 2001-02. Catches increased from 1,100t in 2001-02 to a peak of 3,228 t in 2006-07 (5% of estimated SSB of 66,000t) and decreased steadily thereafter, with no reported catch between 2009-10 and 2013-14. No catch was reported in 2014-15. Commonwealth catch was 1,135 t in 2015-16 and 1,140 t in 2016-17. TAC's announced for the 2018-2019 fishery were 3,420t (Redbait East) and 820t (Redbait West) respectively.

Total fishery removals of this species do not regularly exceed the level indicated or stated in the stock assessment.

Commercial fishery removals are prohibited when the stock has been estimated to be below the limit reference point or proxy **R4; R13**

References

Standard clause 1.3.2.1.3

A4	**Stock Status - Minimum Requirements**		
	A4.1	The stock is at or above the target reference point, OR IF NOT: The stock is above the limit reference point or proxy and there is evidence that a fall below the limit reference point would result in fishery closure OR IF NOT: The stock is estimated to be below the limit reference point or proxy, but fishery removals are prohibited.	YES
Clause outcome:			**PASS**

A4.1:
Recommended Biological Catch (RBC) and Total Allowable Catch (TAC) are set annually (both East and West stocks) based on harvest strategy control rules, annual fisheries assessments and DEPM

biomass estimates. Application of Tier decision rules (harvest rates as a % of Biomass) allow for annual calculation of RBC's and TACs**.** The peak harvest from this fishery (Redbait East 2003-4) was 10% of the SSB; catches have been low as a proportion of the estimated SSB. Although the biomass estimate is dated, this level of fishing mortality is unlikely to have substantially reduced SSB. No catch was reported in 2014-15. Commonwealth catch in 2015-16 was less than 1% of SSB and 5% of RBC and TAC. Catches (Redbait West) increased to a peak of 3,228 t in 2006-07. The level of Redbait (West) SSB estimated by the Atlantis-SPF model (66,000t) is consistent with SSB estimates for other similar stocks; however, there is little empirical evidence to corroborate the ecosystem modelling. Catches have historically been low in this fishery, this level of fishing mortality is unlikely to have substantially reduced SSB. The Scientific Panel (Jan 2018) noted the most recent biomass estimates from the 2005, 2006 DEPM's (Redbait East only). The 2018 annual assessment provided no basis to change the Panel's previous advice for this stock. The stock is at or above the target reference point **R1, R13, R15**
References
Standard clause 1.3.2.1.4

CATEGORY C SPECIES

In a whole fish assessment, Category C species are those which make up less than 5% of landings, but which are subject to a species-specific management regime. In most cases this will be because they are a commercial target in a fishery other than the one under assessment. In a by-product assessment, Category C species are those which are subject to a species-specific management regime, and are usually targeted species in fisheries for human consumption.

Clause C1 should be completed for **each** Category C species. If there are no Category C species in the fishery under assessment, this section can be deleted. A Category C species does not meet the minimum requirements of clause C1 should be re-assessed as a Category D species.

Species Name	**Australian Sardine (*Sardinops sagax*)**		
C1	**Category C Stock Status - Minimum Requirements**		
	C1.1	Fishery removals of the species in the fishery under assessment are included in the stock assessment process, OR are considered by scientific authorities to be negligible.	YES
	C1.2	The species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy), OR removals by the fishery under assessment are considered by scientific authorities to be negligible.	YES
Clause outcome:			**PASS**

Evidence

C1.1:

Australian sardine within the SPF is assessed and managed as a single east coast stock (Figure 1)**.** State catches comprise most of the total catch. Unlike in the Commonwealth fishery, State catches are not constrained by catch limits. Total Sardine catch from Commonwealth and State fisheries (other than that taken in South Australia) in 2008-09 were 4,787t and decreased to 893t in 2014-15; its lowest level since 2001-02. The total catch in 2015-16 was 1,434t.

Catches of this species peaked at 7,392 tonnes in 2016-17 due to a significant increase in Victorian State catches (Jan 2018 Scientific Panel meeting). The Commonwealth catch (2016-17) was 131t. The Scientific Panel noted that Victorian catches may not be available moving forward due to confidentially concerns. The issue of not providing State catches is becoming an issue with multiple jurisdictions in a number of jointly managed stocks.

The 2016-17 SPF Sardine catches were 0.2% of the DEPM biomass estimate and 7% of the TAC, with the total catches of Australian sardines being 14.9% of the 2004 DEPM estimated biomass.

All Commonwealth fishers must record all catch and effort details (including gear and spatial position) in their AFMA daily fishing logbooks. Catch weights are used in combination with logbook gear, effort and spatial data to inform fishery stock assessments.

Fishery removals of the species in the fishery under assessment are included in the stock assessment process **R13, R15.**

C 1.2:

Egg surveys for the east coast stock of Australian Sardine and Eastern Blue Mackerel were conducted concurrently in August-September 2014. For Australian sardine, a spawning biomass of 49,600t (95% CI 24,200-213,300 t) was estimated with the DEPM.

The 2015-16 RBC and TAC were set using the 2015 harvest strategy control rules and the revised 2004 DEPM biomass estimate (40,000t) because the results of the 2014 DEPM survey were not available. For the 2016-17 fishing season AFMA retained the TAC from the previous year to allow additional testing, including MSE, to be completed on the SPF harvest strategy. This testing was completed in 2016.

The Harvest Strategy adopts exploitation rates tested to provide a high likelihood that stocks will be maintained, on average, at the target reference point of 50% of unfished levels, with a less than a 10% over 50 years of falling below the limit reference point of 20% of unfished levels.

Because of the age of the 2004 DEPM estimate, the Sardine RBC for 2015-16 was set using the Tier 2 decision rule (10% of 2004 biomass estimate), which resulted in an RBC of 4,000 t. After

deductions for expected state catches, AFMA set the 2015-16 Commonwealth TAC at 1,880 t and subsequently maintained the 2016-17 TAC at the same level. 2016-17 SPF total (Commonwealth and State) Sardine catches (2,887t) were 5.8% of the 2014 DEPM estimated biomass; 2017-18 total SPF catches (7,392t) were 14.9% of the 2014 DEPM estimated biomass. State catches are not constrained by catch limits. This level of fishing mortality is unlikely to have substantially reduced SSB.

The annual assessment (Jan 2018) provided no basis to change the Scientific Panels previous advice for this species. The Panel confirmed its previous recommendation to use the biomass estimate from the northern survey (49,575t) to determine a RBC for the northern area and that only the NSW State catches should be taken off the RBC when setting the TAC. The TAC announced (March 2018) was 9,510t.

The species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy) **R13**, **R14,R15**

References

Standard clauses 1.3.2.2

FURTHER IMPACTS

The three clauses in this section relate to impacts the fishery may have in other areas. A fishery must meet the minimum requirements of all three clauses before it can be recommended for approval.

F1	**Impacts on ETP Species - Minimum Requirements**		
	F1.1	Interactions with ETP species are recorded.	YES
	F1.2	There is no substantial evidence that the fishery has a significant negative effect on ETP species.	YES
	F1.3	If the fishery is known to interact with ETP species, measures are in place to minimise mortality.	YES
Clause outcome:			**PASS**

Evidence

F1.1:

Interactions with marine mammals are a key environmental concern for the midwater trawl fishery. A study commissioned by AFMA (2005-6) to quantify the nature and extent of interactions, and to evaluate potential mitigation strategies, found that fur seals entered the net in more than 50% of midwater trawl operations during the study. The observed mortality rate was 0.12 seals per shot, using bottom-opening seal excluder devices. The study concluded that effective, upward-opening seal excluder devices are needed when this type of gear is used. No dolphin interactions were recorded during the study.

In response to these results, AFMA requires all midwater trawlers to have an AFMA-approved, upward-opening seal excluder device before starting to fish. The Commonwealth SPF industry purse-seine code of practice requires fishers to avoid interactions with species, where possible; implement mitigation measures, where necessary; release all captured protected species alive and in good condition; and report all interactions with protected species.

Interactions with ETP species are recorded. **R16, R17**

F1.2: F1.3

AFMA publishes quarterly reports of logbook interactions with protected species on its website. A total of 108 interactions with protected species were reported in the SPF during the 2016 calendar year: 7 were with shy albatross (*Thalassarche cauta*), all of which were dead; 1 was with an unidentified albatross, which was dead; 2 were with unidentified cormorants, which were dead; 51 were with Australian fur seals (*Arctocephalus pusillus*), 6 of which were released alive and 45 were dead; 7 were with New Zealand fur seals (*A.forsteri*), all of which were dead; 1 was with an Antarctic fur seal (*A. gazelle*), which was dead; 1 was with a whale shark (*Rhincodon typus*), which was released alive; and 38 were with shortfin mako sharks (*Isurus oxyrinchus)*, of which 20 were released alive and 18 were dead. There is no substantial evidence that the fishery has a significant negative effect on ETP species.

AFMA has developed protected species management strategies for Australian sea lions, dolphins and upper slope dogfish which outline management arrangements to minimise the impact of fishing on these species. The strategies involve unique management arrangements tailored to reducing interactions with each species. Arrangements can include things such as area closures, gear restrictions, monitoring requirements or trigger limits.

The fishing industry may encounter (interact with) with protected species listed under the Environment Protection and Biodiversity Conservation Act 1999 (the EPBC Act) administered by the Department of the Environment. All Commonwealth commercial fisheries are accredited by the Department of the Environment and AFMA. Without this accreditation, fishing operators may be liable for prosecution for the capture of protected species.

The fishing industry take all reasonable steps to minimise interactions with protected species. Commonwealth commercial fishers must report all interactions with protected species to AFMA. As long as operators are fishing in accordance with the accredited fishery management arrangements it is not an offence to interact with a protected species. However, it is an offence for fishing operators not to report these interactions in their AFMA logbook. Marine species listed under the EPBC Act include seals and sea lions, sharks, turtles, seabirds and cetaceans (whales and dolphins).

AFMA has developed protected species management strategies for Australian sea lions, dolphins and upper slope dogfish which outline management arrangements to minimise the impact of fishing

on these species. The strategies involve unique management arrangements tailored to reducing interactions with each species. Arrangements can include things such as area closures, gear restrictions, monitoring requirements or trigger limits.

Observers are AFMA employees trained in specialised sampling techniques including the collection of otoliths (fish ear bones), biological samples such as the sex and length of a fish and environmental observations such as whether birds and other wildlife could be seen during a fishing trip or if there was bad weather.

Observers have fishing industry experience and/or environmental science or management qualifications. Observers often provide the most reliable data on catch composition, fate of target and non-target species and fishing effort. Observer data is also important in helping gauge the level of interactions with non-target species including with threatened, endangered and protected species. All operators are required to carry observers when requested by AFMA.

If the fishery is known to interact with ETP species, measures are in place to minimise mortality **R8**, **R16, R17, R21**

References

R16: Lyle, JM & Willcox (2008) Dolphin and seal interactions with mid-water trawling in the Small Pelagic Fishery, including an assessment of bycatch mitigation strategies, Tasmanian Aquaculture and Fisheries Institute, University of Tasmania, Hobart. https://www.afma.gov.au/wp-content/uploads/2014/02/

R17: AFMA Website (accessed 10.10.18): Protected Species Interaction Reports: https://www.afma.gov.au/sustainability-environment/protected-species-management/protected-species-interaction-reports

Standard clause 1.3.3.1

F2	**Impacts on Habitats - Minimum Requirements**		
	F2.1	Potential habitat interactions are considered in the management decision-making process.	YES
	F2.2	There is no substantial evidence that the fishery has a significant negative impact on physical habitats.	YES
	F2.3	If the fishery is known to interact with physical habitats, there are measures in place to minimise and mitigate negative impacts.	YES
Clause outcome:			**PASS**

Evidence

F2.1:

AFMA regularly monitor the effects fishing activities have on marine species, habitats and communities through ecological risk assessments. The assessment results help to prioritise the management, research, data collection and monitoring needs for the fishery.

After the risk assessment is complete, an ecological risk management strategy is developed to address how AFMA will manage marine species, habitats and communities identified in the assessment as greatly impacted by commercial fishing operations.

Ecological Risk Management (ERM) framework is used to assist decision makers in developing fisheries management arrangements that are consistent with the Ecologically Sustainable Development ESD objective. The framework uses the Ecological Risk Assessment for the Effects of Fishing (ERAEF) as the primary means of assessing the risks that fisheries may pose to the marine environment.

Following a Productivity, Susceptibility Analysis (PSA) undertaken in 2010 for all ETP species a summary of priority issues for managing the ecological effects of purse seine fishing in the Small Pelagic Fishery was presented and a priority list of species noted. Approximately 218 Threatened, Endangered or Protected (TEP) species are theoretically found within the waters of the fishery. These include 3 species of sharks/rays, 78 species of seabirds, 49 species of marine mammals, 10 marine reptiles and 78 species of bony fish. Purse seine fishing approaches are considered to present minimal risk to TEP species in the SPF. There were no interactions with TEP species reported in either logbooks or by observers over the period 2004-2009. The ERM framework details a transparent process to assess, analyse and respond to the ecological risks posed by Commonwealth managed fisheries.

Potential habitat interactions are considered in the management decision-making process **R18, R19**

F2.2,F2.3:

The fishing methods used do not cause damage to the bottom: the trawl is designed and rigged to fish in midwater, and is therefore not intended to come in contact with the seabed. For purse seining, effective use requires that fish form dense aggregations on or close to the surface of the water**.**

An ERM Guide (June 2017) to assist AFMA fishery managers better implement ERAEF in a consistent and transparent manner has been published. The Guide outlines the process by which fishery managers can develop strategies to plan, implement, monitor and review fisheries, ensuring they are being managed in an ecologically sustainable way. A five year schedule of re-assessment for all Commonwealth fisheries has been developed (unless an earlier re-assessment has been triggered).

Application of the Guide will improve the implementation of the ERAEF framework, by applying certainty to the identification of high risk species and the adoption of risk mitigation management responses. The Guide provides an overview of ERAEF and ERM for habitats and ecological communities to date, including a review of relevant objectives, ERA methods, recent research and future directions.

Once habitat units are identified through Scale Intensity Component Analysis (SICA) their resilience and susceptibility to fishing from specific activities is assessed. Analysis at Level 1 is for whole components (commercial, bycatch and habitats and communities), not individual sub-components. This approach is precautionary, ensuring that elements determined to be 'low risk' can be confidently omitted from further steps.

Two productivity attributes (eg: rate of regeneration) and nine susceptibility attributes (eg: selectivity of gear to habitat) are ranked from 1-3 representing low-high risk. From this, habitat units can be assessed as low, medium or high risk. Sixteen habitats have been assessed as high risk on the mid-slope in waters between 700-1500 m. A 700 m depth closure was initially introduced to protect stocks of orange roughy and other deepwater species.

If the fishery is known to interact with physical habitats, there are measures in place to minimise and mitigate negative impacts **R19**

References

R18: Ecological Risk Management (2010) Report for the purse-seine sector of the Small Pelagic Fishery
March 2010 20pp https://www.afma.gov.au/sites/g/files/net5531/f/uploads/2014/11/Ecological-Risk-Management-SPF-purse-seine-March-2010.pdf
R19: Guide to AFMA's Ecological Risk Management (June 2017) 119pp
https://www.afma.gov.au/sites/g/files/net5531/f/uploads/2017/08/Final-ERM-Guide_June-2017.pdf

Standard clause 1.3.3.2

F3	**Ecosystem Impacts - Minimum Requirements**		
	F3.1	The broader ecosystem within which the fishery occurs is considered during the management decision-making process.	YES
	F3.2	There is no substantial evidence that the fishery has a significant negative impact on the marine ecosystem.	YES
	F3.3	If one or more of the species identified during species categorisation plays a key role in the marine ecosystem, additional precaution is included in recommendations relating to the total permissible fishery removals.	YES
Clause outcome:			**PASS**

Evidence

F3.1:

The Small Pelagic Fishery Management Plan (2009, as amended, Part 2 Specific ecosystem requirements) lists management objectives for by-catch action plans and harvest strategies. A by-catch action plan requires AFMA to ensure that information is gathered about the impact of the fishery on by-catch species and that:

- ***all reasonable steps are taken to minimise incidental interactions with seabirds, marine reptiles, marine mammals and fish***
- ***the ecological impacts of fishing operations on habitats in the area of the fishery are minimised and kept at an acceptable level;***
- ***by-catch is reduced to, or kept at, a minimum, and below a level that might threaten by-catch species***

The harvest strategies reviewed by AFMA must ensure that they remain appropriate for maintaining ecologically viable stocks of the quota species and an ecologically sustainable fishery. Further ecosystem safeguards are contained in requirements under Part 3 of the Plan (Total allowable catch).

The broader ecosystem within which the fishery occurs is considered during the management decision-making process. **R2.**

F3.2:

The fishery is managed with individual transferable quotas (SFR's) derived from TAC's calculated from DEPM SSB estimates, annual fisheries assessments and fisheries dependent data. There are restrictions on gear that may be used, requirements to mitigate effects on sensitive species and temporary spatial closures.

Harvest Strategy Policy and Guidelines allow for a strategic, science-based approach to setting catch limits in Commonwealth fisheries and offers practical advice on how to interpret and apply the policy to fisheries. Resource Assessment Groups (RAGs) peer review scientific data and information and provide advice to the AFMA Commission on the status of fish stocks, sub stocks, species (target and non-target species) and the impact of fishing on the marine environment.

There is no substantial evidence that the fishery has a significant negative impact on the marine ecosystem. **R1, R2, R8**

F3.3:

The ecosystem in Southern and Eastern Australia is not highly dependent on these target species. Research by CSIRO (Smith et al 2015) has found that depletion of the four main target species in the SPF (jack mackerel, redbait, blue mackerel and Australian sardine) has only minor impacts on other parts of the ecosystem. The research suggested that, unlike other areas that show higher levels of dependence on similar species, such as in Peru the food web in southern and eastern Australia does not appear to be highly dependent on SPF target species, and none of the higher trophic–level predators, including tunas, seals and penguins, has a high dietary dependence on the species.

The AFMA Bycatch and Discard Program develops policy and management strategies to manage the impact of commercial fishing on non-target and protected species. Work involves trialling and assisting in the development of new bycatch reduction devices and practices. Bycatch species may include fish, crustaceans, sharks, molluscs, marine mammals, reptiles and birds. Discards can apply to fish of a commercial species that are not kept (because they are undersize, or the fishers could not obtain quota, or trip limits apply) and to the disposal of incidental species taken during fishing operations. Handling practices for commonly caught bycatch species are published regularly by AFMA.

Additional precaution is included in recommendations relating to the total permissible fishery removals. **R20**.

References

R20 AFMA Bycatch and Discarding Workplans: https://www.afma.gov.au/sustainability-environment/bycatch-discarding/bycatch-discard-workplans

R21 AFMA Protected Species Management Strategies: https://www.afma.gov.au/sustainability-environment/protected-species-management-strategies

R22 Commonwealth Scientific and Industrial Research Organisation (CSIRO): Smith et al (2015): MSC Low Trophic Level Project: South Eastern Australian case study https://publications.csiro.au/rpr/pub?list=SEA&pid=csiro

Standard clause 1.3.3.3