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Global Standard for Responsible Supply of Marine Ingredients

Fishery Assessment Methodology and Template Report V2.0

Fishery Under Assessment	Small Pelagics Fishery Australia FAO 81
Date	December 2019
Assessor	Jim Daly

Application details and summary of the assessment outcome				
Name: Proteins Australia Pty Ltd.				
Address: 3260 Princes Highway, Moruya				
Country: New South Wales		**Zip:** 2537		
Tel. No.:		**Fax. No.:**		
Email address: jeff@afflicks.com.au		**Applicant Code**	IFFO 200	
Key Contact: Joe Rossignuolo		**Title:** Business Development Manager		
Certification Body Details				
Name of Certification Body:		**SAI Global Ltd**		
Assessor Name	**Peer Reviewer**	**Assessment Days**	**Initial/Surveillance/Re-approval**	**Whole fish/ By-product**
Jim Daly	Conor Donnelly	3	Surveillance	Whole fish
Assessment Period	2019			

Scope Details	
Management Authority (Country/State)	Australian Fisheries Management Authority (AFMA)
Main Species	Jack Mackerel (*T. declivis,*); Blue Mackerel (*S. australasicus*); Red Bait/Cape Bonnetmouth (*E. nitidus*); Australian Sardine (*S. sagax*).
Fishery Location	FAO 81.
Gear Type(s)	Purse seine; mid-water trawl; jigging; minor
Outcome of Assessment	
Overall Outcome	PASS
Clauses Failed	NONE
Peer Review Evaluation	AGREE
Recommendation	PASS

Assessment Determination

The Australian Fisheries Management Authority (AFMA) is the Government agency responsible for the efficient management and sustainable use of Commonwealth fish resources. Almost all stocks in the Small Pelagic Fishery (SPF) are managed by both Australian (Commonwealth) and State governments under Offshore Constitutional Settlement (OCS) arrangements.

State Governments manage fishing from the Australian coast out to 3 nautical miles including commercial and recreational fishing. AFMA and SEMAC (South East Management Advisory Committee) jointly manage the Small Pelagic Fishery (SPF) in the assessment area. With the exception of the Australian sardine *S.sagax* each target species is assessed in two sub areas, east and west of latitude 146°30′ due to evidence of stock separation in the area assessed.

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 limit reference point of 20% ($0.2B_0$) of unfished levels. The current Harvest Strategy (2016) is being reviewed (2019, not yet published) as part of a three-year cycle.

All stocks in the assessment area are considered by AFMA (Jan 2019) to be not subject to overfishing (fishing mortality) and are not overfished (biomass). Jack Mackerel, Blue Mackerel and Red Bait/Cape Bonnetmouth were assessed as Category A stocks; Australian Sardine was assessed as a Category C stock (<5% of landings, subject to a species-specific management regime) Redeye Round Herring was assessed as a Category D stock (<5% by volume of landings, no species-specific management regime).

A SFP Scientific Panel provides advice and recommendations to AFMA and SEMAC on stock status. The Panel (2019) noted that Victorian catches (Australian sardine) have still not been provided due to confidentially concerns. The issue of data sharing is becoming a concern in multiple jurisdictions for a number of jointly managed stocks.

Jack Mackerel, Blue Mackerel, Red Bait/Cape Bonnetmouth, Australian Sardine and Red-eye Round Herring (Maray) are not listed in the current CITES appendices of endangered species and are not listed in the current IUCN Redlist of threatened or endangered species (websites accessed 12.12.19).

The Species listed in this report are approved for use in the assessment area under the current IFFO-RS Standard v 2.0 for whole fish.

Peer Review Comments

Agree
Notes for On-site Auditor

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 Fishery *Source ABARES (see M1.2) Fishery Status Reports (2019) R15*

Category	Species	% landings	Outcome (Pass/Fail)	
Category A	Jack Mackerel (*T. declivis*)	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

[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

Data derived from ABARES (see M1.2) Fishery Status Reports (2018-19 Fishing Season) **R15**

Common name	Latin name	Stock	% of landings	Management	Category
Jack Mackerel	*T. declivis*	Jack Mackerel East	52.4	AFMA	A
Blue Mackerel	*Scomber Australianises*	Blue Mackerel East	40.4	AFMA	A
Redbait/Cape Bonnetmouth	*E. nitidus*	Red Bait East	5.7	AFMA	A
Australian Sardine	*S. sagax*	Sardine East	1.4	AFMA	C
Red-eye round herring	*E. sadina*	Round herring East	<1%	AFMA	D

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. The South East Management Advisory Committee (SEMAC) is the overarching committee that provides management advice to AFMA.

A Five-Year Strategic Research Plan 2017-18 to 2021-22 was published by AFMA in 2017. The Plan was developed in consultation with the SPF's Scientific Panel (see below) and identifies areas of high priority research. A Management Arrangements Booklet (41pp) for the current fishing season (2019-20) was published by AFMA in 2019.

Almost all Australian stocks in the Small Pelagic Fishery (SPF) are multijurisdictional (managed by both Australian and State governments). The exception is the Australian sardine (*S. sagax*) stock, managed by the States of South Australia and Victoria. State Governments manage fishing from the Australian coast out to 3 nautical miles including commercial and recreational fishing. With the exception of the Australian sardine stock the remainder of the assessment area (Figure 1) is under Commonwealth management.

M1.2:

The SPF Scientific Panel provides advice and recommendations to SEMAC and AFMA on the status of target stocks in the (SPF), harvest rates, TACs, and the impact of fishing on the marine environment. Members of the Scientific Panel consist of fisheries scientists, marine ecologists and natural resource management economists. The Panel also meets with stakeholders (Forums) at least twice a year to report findings and gather relevant information from them.

The Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES) is the science and economics research division of the Department of Agriculture. ABARES provides independent research, analysis and advice for government and private sector decision-makers. Fishery status reports published by ABARES cover 96 fish stocks across 22 fisheries, including the SPF. The 24th edition of these reports was published in 2019.

M1.3:

The Fisheries Management Act 1991 Part 1 (Preliminary) Section 3A Principles of ecologically sustainable development gives legal empowerment to AFMA to develop sustainability objectives.

These principles state that:

- Decision-making processes should effectively integrate both long-term and short-term economic, environmental, social and equity considerations.
- 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.
- The principle of inter-generational equity: the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations;
- The conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making;

M1.4:

AFMA Objectives (Fisheries Management Plans) are set out in Section 3 of the Fisheries Management (1991) Act as follows:

- Implementing efficient and cost-effective fisheries management on behalf of the Commonwealth;
- 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), the need to have regard to the impact of fishing activities on non-target species and the long-term sustainability of the marine environment;
- Maximizing net economic returns to the Australian community from the management of Australian fisheries;
- Ensuring accountability to the fishing industry and to the Australian community in AFMA's management of fisheries resources;
- Achieving government targets in relation to the recovery of the costs of AFMA.

M1.5:

AFMA Resource Assessment Groups (RAGs) and Management Advisory Committees (MACs) play a role in identifying research needs, assessing proposals and the outcomes of research, both essential stock assessment type research and other relevant management related projects. The SPF Scientific Panel is considered a RAG. AFMA's Research Committee (ARC) determines research priorities and projects for funding.

Members of Committees and Groups include AFMA fishery managers, fishing operators, scientists and researchers, State and territory governments, conservation groups and recreational fishers.

From 2019 the SPF Resource Assessment Group (SPFRAG) will be the primary source of scientific and economic advice to AFMA regarding this fishery. The return to a more conventional RAG model comes after a two-year trial of a Scientific Panel (SP) and Stakeholder Forum model. SEMAC will continue to be the source of management advice on SPF to AFMA.

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 organizations (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 Government agencies to publish certain information on their website (from May 2011).

Information available on AFMA's website includes:

- AFMA's organizational structure; functions and powers
- Details of statutory appointments
- AFMA's annual reports, including TAC's
- Current agency consultations
- Information AFMA routinely provides to Parliament

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.

R1- R8

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Standard clauses 1.3.1.1, 1.3.1.2

	Surveillance, Control and Enforcement - Minimum Requirements

M2	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:

AFMA's National Compliance and Enforcement Program is conducted via the use of a risk-based approach, which enables resources to be targeted to the areas where they are most needed.

The main functions of the Program are:

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

Compliance Risk Management Teams (CRMTs) are prioritised for action (in the annual compliance program) by the Operational Management Committee (OMC). Teams are generally multi-disciplinary, and/or multi-agency with team members determined by the risk being addressed and/or the type of program proposed.

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).

M2.2:

Statutory Fishing Rights (SFRs) allow fishers take a percentage of the TAC that has been set for each quota species. SFR's granted under the 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 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 species on the last day of the fishing season. AFMA then deduct this amount from the Quota SFR (fisher) 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 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 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

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.

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. The register can be found on the AFMA website.
If the VMS is not operating or is malfunctioning the boat must remain in port until the VMS is inspected, repaired if necessary and AFMA has received confirmation from an authorised technician that the automatic location communicator (ALC) is functioning normally

Onboard Scientific Observers are employed by AFMA to independently record catch, effort and biological information of each fishing trip. Vessels in the SPF must carry an AFMA observer when requested by AFMA. Observers have no authority to direct fishing operations of the boat or act in an enforcement role. However, observers are required to report their observations. Observer coverage targets at least 10% of effort for purse seine and mid-water trawler vessels.

R2; R7; R9-R12

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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*) Eastern and Western Stocks**	
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:
The fishing season is a 12-month season, beginning each May and is divided into two sub areas, east and west of latitude 146°30' due to evidence of separate stocks in the fishery (**Figure 1**):

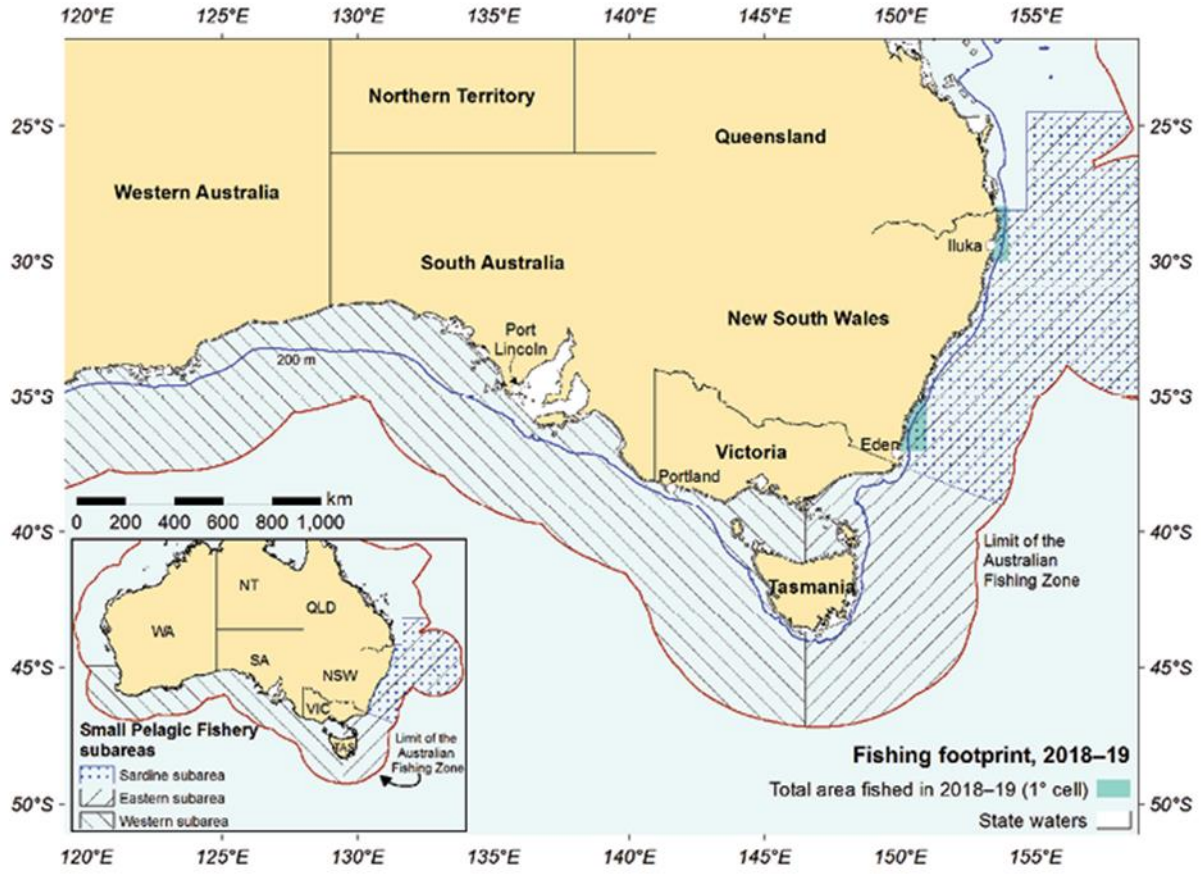
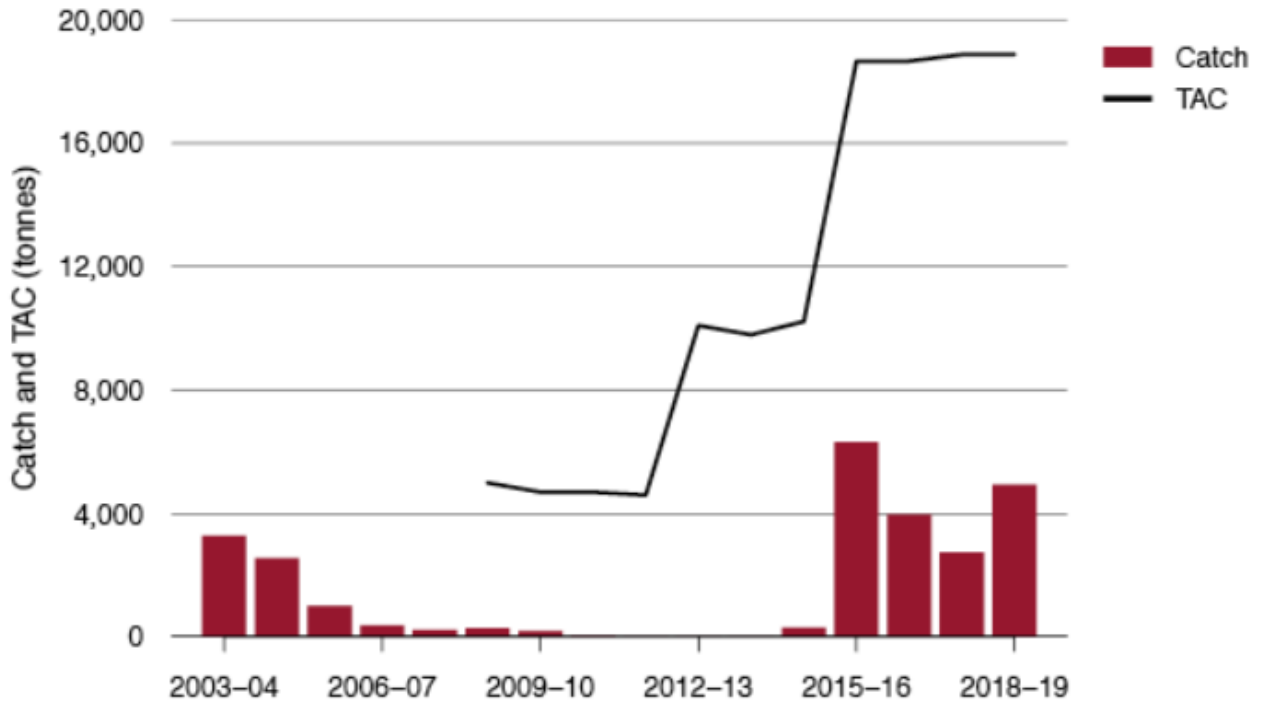


Figure 1: Australian Fishing Zones (AFZ) and Small Pelagic Fishery subarea **R15**

All Commonwealth fishers must record all catch and effort details (including gear and spatial position) in their official AFMA daily fishing logbooks. Catch weights are used in combination with gear, effort and spatial data to inform fishery stock assessments. A Harvest Strategy Policy (HSP see A3.1) makes provision for the monitoring of all fishery–dependent data (catch, effort and size/age catch structure).

Jack mackerel Eastern stock:

State catches have been negligible in recent years; however, Commonwealth catch has increased, reaching 6,316 t in 2015–16 before decreasing to 4,942 in 2018–19. The total combined catch (state and Commonwealth) for 2017–18 was 2,751 t, comprising 2,748 t of Commonwealth catch and 3 t of state catch. Commonwealth catch for 2018–19 was 4,942 t; State catches are not yet available for 2018-2019 (**Figure 2**):

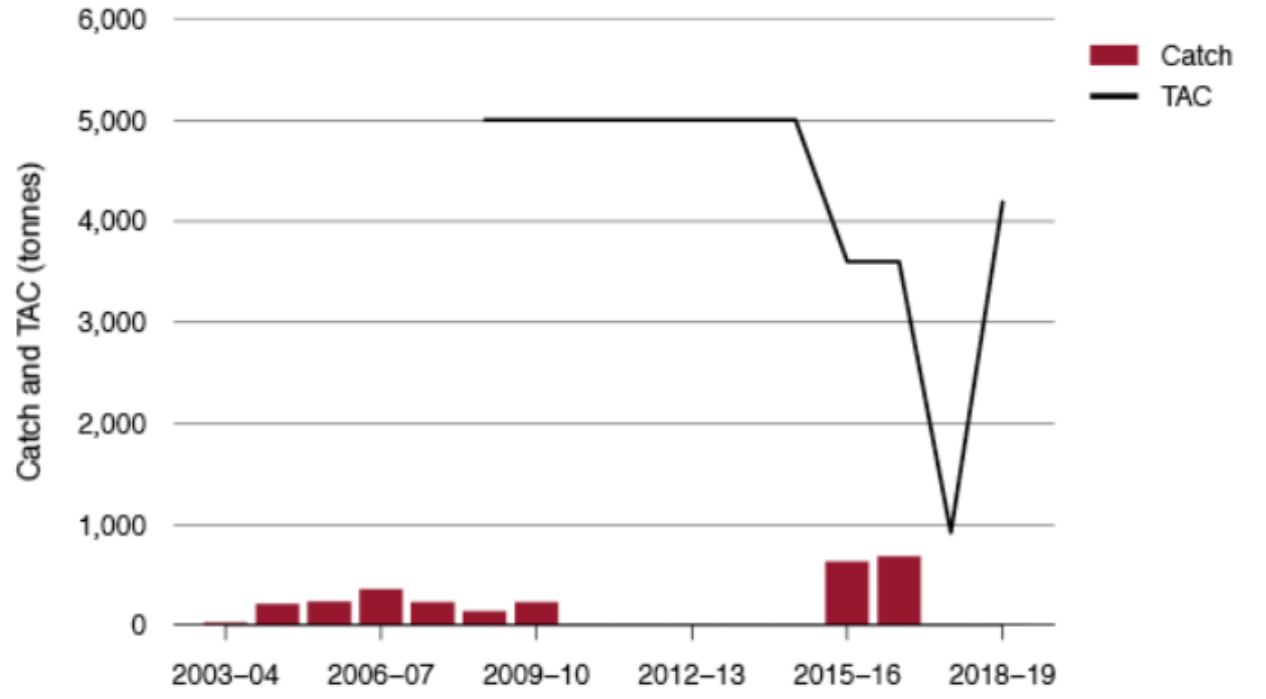


Note: **TAC** Total allowable catch.

Figure 2 Commonwealth eastern Jack mackerel catch and TAC, 2003–04 to 2018–19 **R15**

Jack mackerel Western Stock:

Commonwealth catch was zero or negligible from 2011–12 to 2014–15 and increased to 634t in 2015–16 and 686 t in 2016–17. No Commonwealth catch was reported for 2017–18 or 2018–19. State catches are not available for 2018–19 and have been confidential for the preceding three years:



Note: **TAC** Total allowable catch.

Figure 3: Commonwealth Jack mackerel West catch and TAC (2003 to 2019) **R15**

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). 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 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.

Atlantis is an ecosystem model that provides estimates of the likely biomass of key species required to support the functioning of the modelled ecosystem. The model uses all available information on species distribution, relative abundance and dietary requirements. The SPF Harvest Strategy (HS) explicitly recognises that biomass estimates derived from the Atlantis–SPF model are more uncertain than those based on DEPMs.

Jack mackerel Eastern stock:

The industry directly funded the field component of the latest Jack mackerel East survey (2018-19). A proposal has been considered (January 2019) for submission to ARC to fund remaining laboratory work, statistical analysis and drafting of the DEPM survey report. Field work was to be completed in early 2019 with a view to preventing the stock dropping from Tier 1 to Tier 2 (see A3.1) stock and the consequential halving of the TAC in 2020-21.

Jack mackerel Western stock:

Between December 2016 and February 2017, Jack mackerel West was surveyed to estimate biomass using DEPM.

R15-R17

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Standard clause 1.3.2.1.1

Species name		**Jack Mackerel (*T. declivis*) Eastern and Western Stocks**	
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:

Annual fisheries assessments include updated catch and effort data from the previous fishing season in addition to length–frequency and age information from catches. Adjustments for catches taken in other fisheries are based on the SPF Scientific Panel's best estimate of future catch in other fisheries (e.g. average of recent recorded annual catches). Information on changes in spatial and temporal patterns of effort and catch are also included in these annual assessments.

Annual Fishery Assessments also aim to provide evidence suitable for detecting stock depletion, localised depletion or changes in the size and age structure of the catch that cannot be adequately explained by reasons other than a decline in abundance.

On the basis of information provided, the Scientific Panel (Jan 2019) agreed that survey results (2017-19) were appropriate for setting Jack mackerel RBCs (both stocks) under the Harvest Strategy (HS) for the 2019-20 season.

A2.2:

The Harvest Strategy applies harvest control rules to available biomass estimates (SSB) from DEPM surveys to determine a Recommended Biological Catch (RBC) for each stock. Other sources of mortality are then applied to RBCs to derive total allowable catch (TAC) recommendations by AFMA. Reference points are set as a % of B_0. See A3.1.

A2.3:

Jack mackerel East:

A spawning biomass of 157,805 t (95% CI 59,570–358,731 t) was estimated using DEPM (January 2014, results published in March 2015). This is the stock's fifth season at Tier 1 (see A3.1) equivalent to a maximum exploitation rate (2019/20) of 12% of SSB giving a RBC of 18,937t (157, 805t x 12%). 2017/18 catches were 1.74% of DEPM biomass estimate and 14.5% of TAC. There is no discernible trend in CPUE.

Previous Management Strategy Evaluation (MSE see A3.1) 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 0.2B0 for more than 90% of the time, in line with the HSP.

Jack mackerel West:

The DEPM survey conducted in 2017 provided a best estimate of biomass (SSB) of 34,978 tonnes (31, 069t plus Bass Strait estimate) equivalent to a TAC (2019-20) of 4,197 tonnes (Tier 1 exploitation rate (A3.1) as a DEPM survey is now available). The CPUE is low but reflective of very low effort in the area. There is no discernible trend in CPUE. The Panel agreed that due to variability in the data and sporadic fishing effort in the fishery over recent years that there is no reason for concern with the stock.

In years when catches have been taken, they have been below the RBC calculated using an MSE-tested harvest strategy and are a small proportion of the most recent estimate of biomass (peaking at approximately 2.2% in 2016–17). This level of fishing mortality is unlikely to have substantially reduced spawning biomass. On this basis, the western jack mackerel stock is classified as not overfished and not subject to overfishing.

A2.4:

The SPF Scientific Panel last met in January 2019 in order to peer review scientific and economic data provided by ABARES and in turn provide advice to SEMAC and AFMA (Commission). During the 2019 meeting the Panel noted that no issues were raised at the Stakeholder forum regarding annual assessments of SPF Stocks
including Jack mackerel and RBC advice. The Panel confirmed its previous recommendations for RBCs, based on the 2017 SPF Harvest Strategy and DEPM Survey results

A2.5:

Minutes of annual meetings of the SPF Scientific Panel summarise findings of stock assessment studies and list agreed RBC's and SSB's for each managed stock on their website. Detailed information on stock assessments is available on request through the Freedom of Information Act.

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 including Jack mackerel and the economic status of fisheries managed, or jointly managed, by the Australian Government (Commonwealth fisheries). ABARES uses data and information sourced from AFMA and Regional Fisheries Management Organisations (RFMO's). Fishery status reports are published annually on the ABARES website.

R6; R15-R17

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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**

Evidence

A3.1:

Commonwealth Fisheries Harvest Strategy Policy (HSP) and Guidelines allow for a science–based approach to setting catch limits and offers advice on how to interpret and apply policy to fisheries.

The Harvest Strategy (HS) applies harvest control rules to available biomass estimates (from Daily Egg Production Method (DEPM) surveys) to determine a Recommended Biological Catch (RBC) for each quota species. Other sources of mortality are then applied to RBCs to derive the total allowable catch (TAC) recommendations by AFMA's Commission.

A Harvest Strategy Policy (HSP) adopts exploitation rates (see below) to maintain 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 50year period of the SSB falling below limit reference point (LRP) of 20% of unfished levels ($0.2B_0$). Recent catches of a number of SPF stocks have been limited by economic constraints. A review of the HSP is expected in 2019 (not available at time of drafting).

Target and limit reference levels are consistent with those established in the Harvest Control Plan (HCP) and have been shown to be ecologically sound for small pelagic stocks including Jack mackerel as a result of low dietary dependency of higher trophic level predators in south east Australia on targeted SPF species (see F 3.3).

Exploitation rates to be used are:

Tier 1: Maximum Exploitation Rate: based on a quantitative stock assessment and an annual fishery assessment (see below) incorporating Daily Egg Production Method (DEPM) estimates. This 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 will move to being assessed under Tier 2:

Tier 2 provides a medium level of assessment based on annual fishery assessments and previous DEPM assessments and allows a lower potential harvest rate than for Tier 1. Because of the different productivity of each target species maximum exploitation rates and maximum time at Tier 2 level varies.

Tier 3 Exploitation rates are the lowest level of assessment and apply when 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.

Annual Fishery Assessments include:

- Length–frequency and age information from catches for each stock fished. Guidelines on the quantity of length–frequency data and otolith information required have been developed.
- Updated catch and effort data.
- Information on changes in spatial and temporal patterns of effort and catch.

Annual Fishery Assessments also aim to provide evidence suitable for detecting stock depletion, localized depletion or changes in the size and age structure of the catch that cannot be adequately explained by reasons other than by a decline in abundance.

Management strategy evaluation (MSE) is a procedure used on occasion by AFMA whereby strategies are tested and compared using simulations of stock and fishery dynamics.

Spatial management arrangements, in the form of regional catch limits, apply to all vessels operating in the SPF (regardless of fishing method). Closed areas are in operation when regional catch limits are exceeded.

A3.2:

Jack mackerel East:

Commonwealth catches 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% of 2014 SSB and 34% of RBC and TAC. Total fishery removals of this species do not regularly exceed the level indicated or stated in the stock assessment (Figure 2).

Jack mackerel West:

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 to 2015 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 1970's biomass estimates and 19% of RBC. There was very little catch of this stock during the previous 16 years. Total fishery removals of this species do not regularly exceed the level indicated or stated in the stock assessment (Figure 3).

A3.3:

The National Compliance and Enforcement Program is conducted via the use of a risk-based approach, which enables AFMA's resources to be targeted to areas where they are most needed and

where they will prove most effective. Features of the programme include ensuring compliance with AFMA's domestic fisheries management measures. Fisheries Officers conduct targeted inspections of Commonwealth endorsed operators. All Commonwealth fishing boats are tracked via satellite – to vessel monitoring systems. Catch monitoring includes electronic logbooks, a Catch Documentation Scheme, electronic monitoring, logbooks, observers, audits and inspections.

AFMA enforces the provisions of the Fisheries Management Act 1991, Torres Strait Fisheries Act 1984 and the Maritime Powers Act 2013; including the power to close a fishery should the stock be estimated to be below the limit reference point or proxy. To date this has not happened for the Jack mackerel stock.

R2; R15-R17

References p36

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:

Jack mackerel East:

Peak harvest during the past 30 years in this fishery was 4% of SSB, with most catches far below this. This level of fishing mortality is unlikely to have substantially reduced SSB (source SFP Panel (2019)). Current fishing mortality remains a small proportion of biomass and below previous RBC's.

The Scientific Panel (2019) concluded that the stock was not subject to overfishing (fishing mortality) and not overfished (biomass).

Jack mackerel West:

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.

The Scientific Panel (2019) concluded that the stock was not subject to overfishing (fishing mortality) and not overfished (biomass

R13, R15-R17

References p 36

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 East:

Length frequency and ageing data are used to assess the stock. There is no discernible trend in CPUE. Uncertainty around adult parameters used in the calculation of biomass estimates remain. The Panel noted (2019) that a more precautionary exploitation rate adopted in the harvest strategy than the original MSE work suggested could be applied in order to account for uncertainties in DEPM biomass estimates.

Commonwealth catch began exceeding state catch in 2015–16 and continues to be higher. Total combined catch in 2017–18 was 3,119 t, comprising 2,858 t from the Commonwealth and 261 t from state fisheries. The highest reported catches were in 2018–19 when Commonwealth catch was 3,811 t (**Figure 4**). State catches for the 2018-19 season are not yet available:

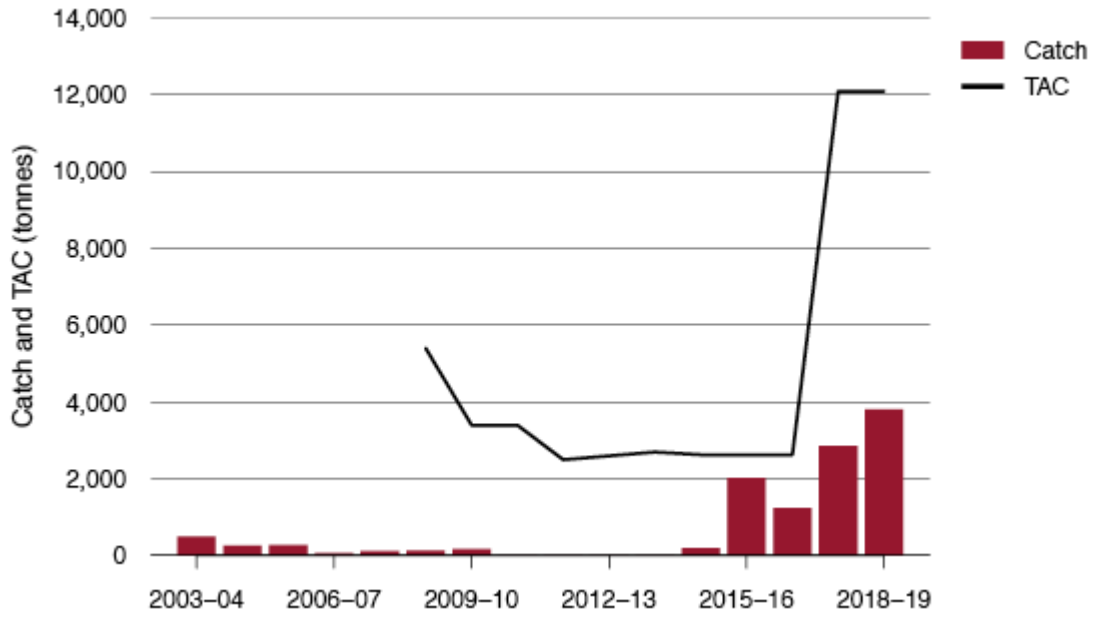

Figure 4: Commonwealth eastern blue mackerel catch and TAC, 2003–04 to 2018–19 **R15**

Blue mackerel West:

No Commonwealth catch was reported in 2017–18 or 2018–19 (Figure 5), State catches have been either negligible or confidential (not reported) in recent years. State catches are not available for the 2018–19 season:

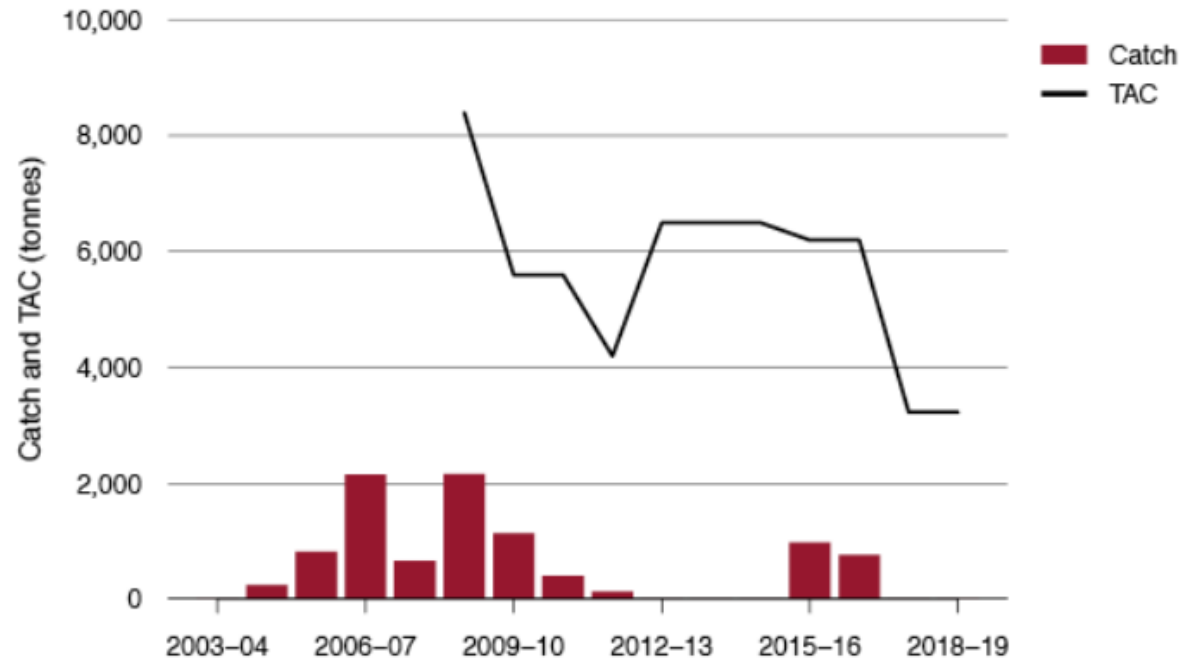

Figure 5: Commonwealth western blue mackerel catch and TAC, 2003–04 to 2018–19 **R15**

There are no discernible trends in the CPUE data (given very low effort).

A1.2:

Blue mackerel East:

Egg surveys for the eastern stock were last conducted in August–September 2014. The SPF Scientific Panel used the 2014 DEPM estimate for the first time in 2017 to recommend an RBC. Because of the age of the DEPM-based biomass estimate, the 2018–19 season was treated as season three of five at tier 1, despite it only being the second season that tier 1 had been used.

Blue mackerel West:
An egg survey for the stock was conducted in 2005, and a spawning biomass estimated using DEPM. However, the SPF Resource Assessment Group (SPFRAG) considered this to be too low and adjusted the estimate.

In 2019 the Scientific Panel confirmed its previous support of the SPFRAG approach which adopted biomass estimates for this stock based on the results of two surveys (2005,2006) that covered most of the western spawning area.

Under the current order of DEPM surveys Blue mackerel East will be assessed in 2019-20 and Blue mackerel West in 2020-21 in line with the Harvest Strategy framework allowing the level of investment in research to be varied to match commercial interest in exploiting the resource
R15-R17

References p 36

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:

Under the current order of DEPM surveys Blue mackerel East will be assessed in 2019-20 and Blue mackerel West in 2020-21.

Annual fisheries assessments include updated catch and effort data from the previous fishing season in addition to Length–frequency and age information from catches for each stock fished. Information on changes in spatial and temporal patterns of effort and catch are also included in annual assessments.

.

A2.2:

Blue mackerel East:

While there is uncertainty associated with adult parameters used in the DEPM, the 2014 DEPM survey biomass estimates were deemed appropriate by the Panel to be used as the basis for providing RBC advice and 2019-2020 TAC's. Reference points are set as a % of B0. **See A3.1**.

Blue mackerel West:

The Panel confirmed its previous support of the SPFRAG approach which adopted biomass estimates based on the results of two surveys (2005, 2006) that covered most of the western spawning area.

A2.3:

Blue mackerel East:

This is the stocks fourth season at Tier 1. A RBC (2019-2020) of 83,300t x 15% = 12,495t was published by the AFMA Commission (January 2019)

Blue mackerel West:

This is the stocks third season at Tier 3. A RBC (2019-2020) of 86,500t x 3.75% = 3,243 tonnes was published by the AFMA Commission (January 2019).

Historically catches of both stocks have been low as a proportion of estimated biomass. The level of fishing mortality for the 2019/2020 season is unlikely to substantially reduce SSB (SFP Scientific Panel January 2019).

A2.4:

The SPF Panel met (January 2019) in order to peer review scientific and economic data from ABARES and provide advice to SEMAC and 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 including advice for Blue mackerel. The Panel confirmed its previous recommendations for RBCs, based on the 2017 SPF Harvest Strategy and DEPM Survey results for the stocks.

A2.5:
Minutes of annual meetings of the Scientific Panel summarise findings of stock assessment studies and list agreed RBC's and SSB's for each managed stock on their website. Detailed information on stock assessments is available on request through the Freedom of Information Act.

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). ABARES uses data and information sourced from AFMA and Regional Fisheries Management Organisations (RFMO's). Fishery status reports are published annually on the ABARES website.

Assessments are subject to peer review and are made publically available. **R13, R15-R17**

References p 36

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 Policy (HSP) adopts exploitation rates to maintain 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 50year period of the SSB falling below limit reference point (LRP) of 20% of unfished levels (0.2B0). Recent catches of a number of SPF stocks have been limited by economic constraints. A review of the HSP is expected in 2019 (not available at time of drafting).

Target and limit reference levels are consistent with those established in the HSP for Blue mackerel 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 (Section F3.3). Other sources of mortality are also applied to RBCs to derive TAC recommendations by AFMA.

Spatial management arrangements, in the form of regional catch limits, apply to all vessels operating in the SPF (regardless of fishing method). Closed areas are in operation when regional catch limits are exceeded.

A3.2:
Blue mackerel East:
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 were 2,367t in 2015-16, which is the peak catch for the fishery representing 3% of 2014 SSB. The Commonwealth catch in 2016-17 was 67% of RBC, 76% of TAC and less than 2% of the 2014 SSB. Total fishery removals of this species do not regularly exceed the level indicated or stated in the stock assessment (**Figure 4**).

Blue mackerel West:
Very little Blue Mackerel (West) was caught before 200405. 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. Total fishery removals of this species do not regularly exceed the level indicated or stated in the stock assessment (**Figure 5**).

A3.3:
The National Compliance and Enforcement Program is conducted via the use of a risk-based approach, which enables AFMA's resources to be targeted to areas where they are most needed and where they will prove most effective. Features of the programme include ensuring compliance with AFMA's domestic fisheries management measures. Fisheries Officers conduct targeted inspections of Commonwealth endorsed operators. All Commonwealth fishing boats are tracked via satellite – to vessel monitoring systems. Catch monitoring includes electronic logbooks, a Catch Documentation Scheme, electronic monitoring, logbooks, observers, audits and inspections.

AFMA enforces the provisions of the Fisheries Management Act 1991, Torres Strait Fisheries Act 1984 and the Maritime Powers Act 2013; including the power to close a fishery should the stock be estimated to be below the limit reference point or proxy.

R10; R15-R17
References p36
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:

Eastern stock:

The 2019 annual assessment provided no basis to change the Panel's previous advice for this species. The current exploitation rate is considered to be precautionary. The stock is considered to be not subject to overfishing (fishing mortality) and is not overfished (biomass). Historical catches have been low and are not likely to have reduced biomass below the limit reference point.

Western stock:

The 2019 annual assessment provided no basis to change the Panel's previous advice for this species. The current exploitation rate is considered to be precautionary. The stock is considered to be not subject to overfishing (fishing mortality) and is not overfished (biomass). Historical catches have been low and are not likely to have reduced biomass below the limit reference point.

R15-R17

References p 36
Standard clause 1.3.2.1.4

Species Name		Redbait/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 East:

Catch data reported includes retained and discarded figures for purse seine and midwater trawl vessels operating in the SPF:

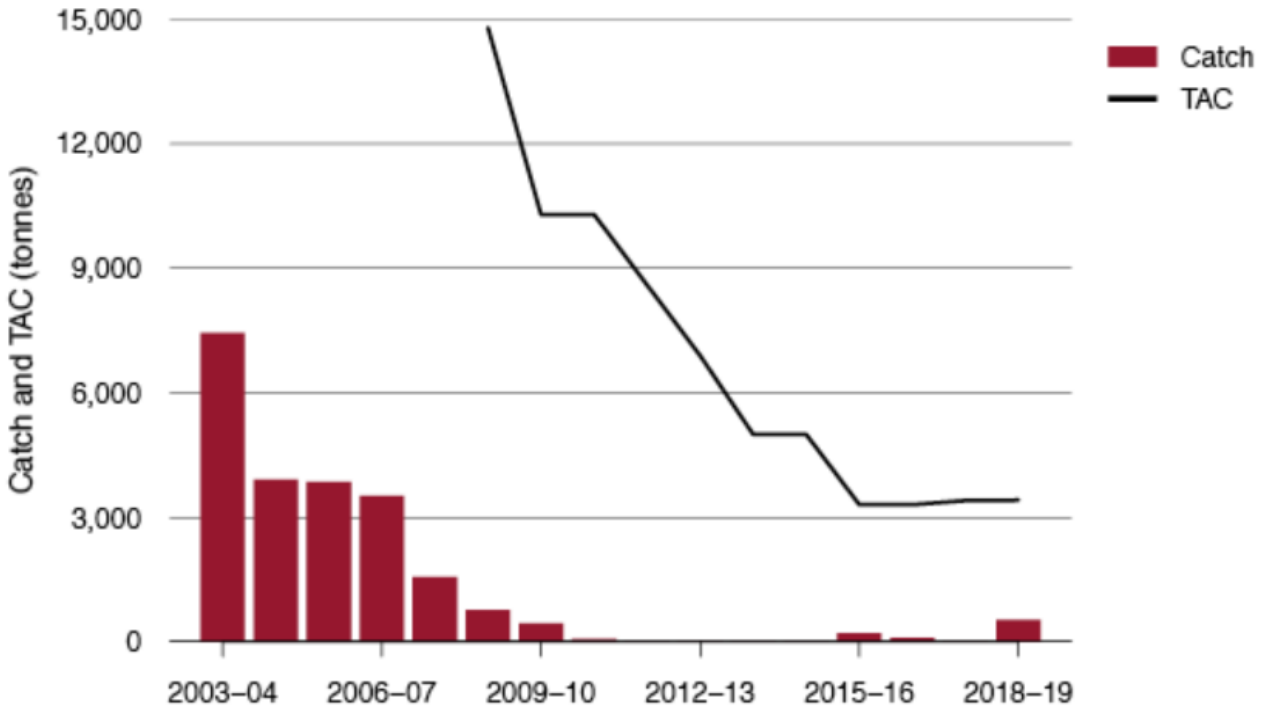

Figure 6: Commonwealth eastern redbait catch and TAC, 2003–04 to 2018–19 **R15**

Commonwealth catch for 2018–19 was 539 t. State catches have been negligible or confidential in recent years and are not available for 2018–19. There were no discernible trends in the CPUE data, with highly variable fishing effort and catches for this species and very low catches over the last 5 years.

Redbait West:

No catch was reported in 2017–18 or 2018–19 (Figure 7). No state catches have been reported in recent years:

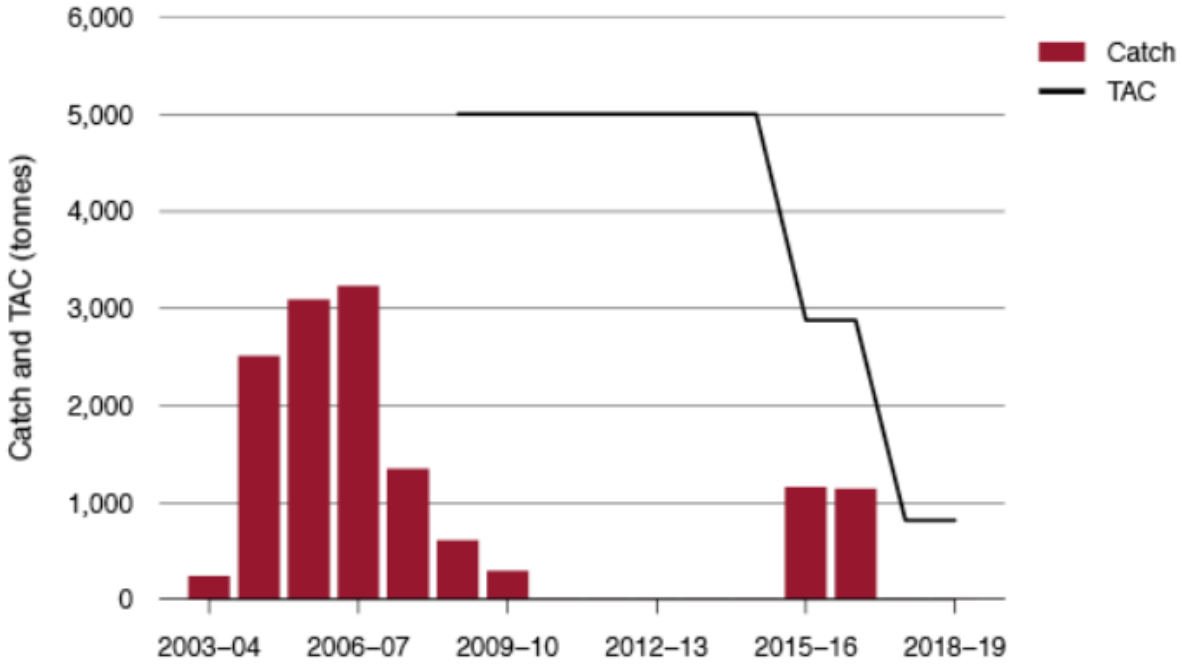

Figure 7: Commonwealth western redbait catch and TAC, 2003–04 to 2018–19 **R15**

A RBC was calculated based on mean biomass estimates from the Atlantis-SPF model in 2015.

A1.2:

The most recent DEPM surveys for Red bait East were conducted in 2005 and 2006. The average of these two spawning biomass estimates was used to estimate annual RBC's the latest of which was calculated for 2019-2020 following the annual fishery assessment.

RBC's and TAC's are set using 2015 harvest strategy control rules and the Atlantis ecosystem model for Red bait West. The Atlantis model provides estimates of the likely biomass of key species required to support the functioning of the modelled ecosystem. The model uses all available information on species distribution, relative abundance and dietary requirements. The SPF Harvest Strategy (HS) explicitly recognises that biomass estimates derived from the Atlantis–SPF model are more uncertain than those based on DEPMs. A daily egg production method (DEPM) survey was undertaken during 2017 for this stock for the first time.

R15-R17

References p 36

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:

Redbait East:

RBC's and TAC's are set using 2015 harvest strategy control rules and latest DEPM biomass estimates using the Atlantis ecosystem model. Annual fisheries assessments are undertaken and include updated catch and effort data from the previous fishing season in addition to Length–frequency and age information from catches for each stock fished.

Redbait West:

RBC's and TAC's are set using 2015 harvest strategy control rules and latest DEPM biomass estimates using the Atlantis ecosystem model. Annual fisheries assessments are undertaken and include updated catch and effort data from the previous fishing season in addition to Length–frequency and age information from catches for each stock fished. A daily egg production method (DEPM) survey was undertaken during 2017 for the western Redbait stock for the first time.

A2.2:

For both stocks annual fisheries assessments provide calculations of DEPM biomass estimates (SSB) and RBC's. Reference points are set as a % of B0. See A3.1.

A2.3:

Redbait East:

This is the stock's eighth season at Tier 2. The Panel (2019) noted that the most recent biomass estimates from DEPMs in October 2005 and October 2006 were of 86,990t and 50,782t, respectively. The Panel also noted that the approach used by SPFRAG of adopting the average of these DEPM estimates (68,886t) should be continued.

The Harvest Strategy Tier 2 harvest rate for redbait of 5% continues to be used as the basis for RBC advice. A TAC of 68,886t x 5% = 3,444t was published by the AFMA Commission for the 2019/2020 season.

Redbait West:

Because of the lack of data in recent years SPFRAG estimated SSB by drawing on expert opinion and experience of similar stocks (Management Strategy Evaluation). In the absence of empirically derived biomass estimates, the RBC was based on a model-derived one (Atlantis-SPF ecosystem model) and a Tier 2 harvest rate.

A new DEPM survey for this stock was completed in 2017 with the Panel recommending that a spawning biomass estimate of 66,787t be used for the RBC.

With the new survey results accepted by the Panel, this species moves into Tier 1 under the Harvest Strategy with an exploitation rate of 10%. A TAC of 6, 678t (66, 787 x 10%) was published by the AFMA Commission for the 2019/2020 season.

A2.4:
The SPF Scientific Panel last met in January 2019 in order to peer review scientific and economic data from ABARES and provide advice to SEMAC and 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 including Red bait. The Panel confirmed its previous recommendations for RBCs, based on the 2017 SPF Harvest Strategy and DEPM Survey results.

A 2.5:
Minutes of annual meetings of the Scientific Panel summarise findings of stock assessment studies and list agreed RBC's and SSB's for each managed stock on their website. Detailed information on stock assessments is available on request through the Freedom of Information Act.

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). ABARES uses data and information sourced from AFMA and Regional Fisheries Management Organisations (RFMO's). Fishery status reports are published annually on the ABARES website.

R15-R17

References p 36

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 Policy (HSP) adopts exploitation rates to maintain 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 50year period of the SSB falling below limit reference point (LRP) of 20% of unfished levels (0.2B0). Recent catches of a number of SPF stocks have been limited by economic constraints. A review of the HSP is expected in 2019 (not available at time of drafting).

Target and limit reference levels are consistent with those established in the HSP 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. Other sources of mortality are also applied to RBCs to derive TAC recommendations by AFMA.

Spatial management arrangements, in the form of regional catch limits, apply to all vessels operating in the SPF (regardless of fishing method). Closed areas are in operation when regional catch limits are exceeded. A framework of sanctions is applied when laws and regulations are discovered to have been broken.

A 3.2:
Redbait East:
The fishery started in the early 1980s. At its peak total (Commonwealth and state) catch in 2003-04 was 10% of the estimated SSB average. No catch was reported in 2017-18. Commonwealth catch in 2015-16 was less than 1% of the SSB estimate, and 5% of the RBC and TAC. 2017/18 SPF catches were 0.02% of agreed DEPM biomass estimate and 0.3% of the TAC.

Redbait West:
Catches have historically been low in the 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 to a peak of 3,228 t in 2006-07 (5% of estimated SSB of 66,000t) and decreased steadily thereafter. This is the stock's first season at Tier 1 with an RBC set at 66,787t x 10% = 6,678t.

A3.3:

The National Compliance and Enforcement Program is conducted via the use of a risk-based approach, which enables AFMA's resources to be targeted to areas where they are most needed and where they will prove most effective. Features of the programme include ensuring compliance with AFMA's domestic fisheries management measures. Fisheries Officers conduct targeted inspections of Commonwealth endorsed operators. All Commonwealth fishing boats are tracked via satellite – to vessel monitoring systems. Catch monitoring includes electronic logbooks, a Catch Documentation Scheme, electronic monitoring, logbooks, observers, audits and inspections.

AFMA enforces the provisions of the Fisheries Management Act 1991, Torres Strait Fisheries Act 1984 and the Maritime Powers Act 2013; including the power to close a fishery should the stock be estimated to be below the limit reference point or proxy.

R2, R10; R15-R17

References p 36

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:

For the Redbait East stock the Panel (2019) concluded that the stock is not subject to overfishing and is not being overfished. Recent catches have been below the RBC. Historically catches have been low and are not likely to have reduced biomass below limit reference point.

For the Redbait West stock the Panel (2019) concluded that the stock is not subject to overfishing and is not being overfished. Recent catches have been below the RBC. Historically catches have been low and are not likely to have reduced biomass below limit reference point.

The stock is at or above the target reference point **R13, R15-R17**

References p 36

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. State catches comprise most of the total catch. Unlike in the Commonwealth fishery, State catches are not constrained by catch limits. For 2017/18, total catch was 429 t (excludes Victorian catch data). Excluding the increase in 2016/17, catches were relatively stable at around 1,300 t from 2012-13 and 2015-16. The agreed TAC for 2019/20 was 9,515t (SFP Scientific Panel, 2019).

The Panel (2019) noted that Victorian catches have still not been provided due to confidentially concerns. The issue of data sharing is becoming a concern in multiple jurisdictions for a number of jointly managed stocks.

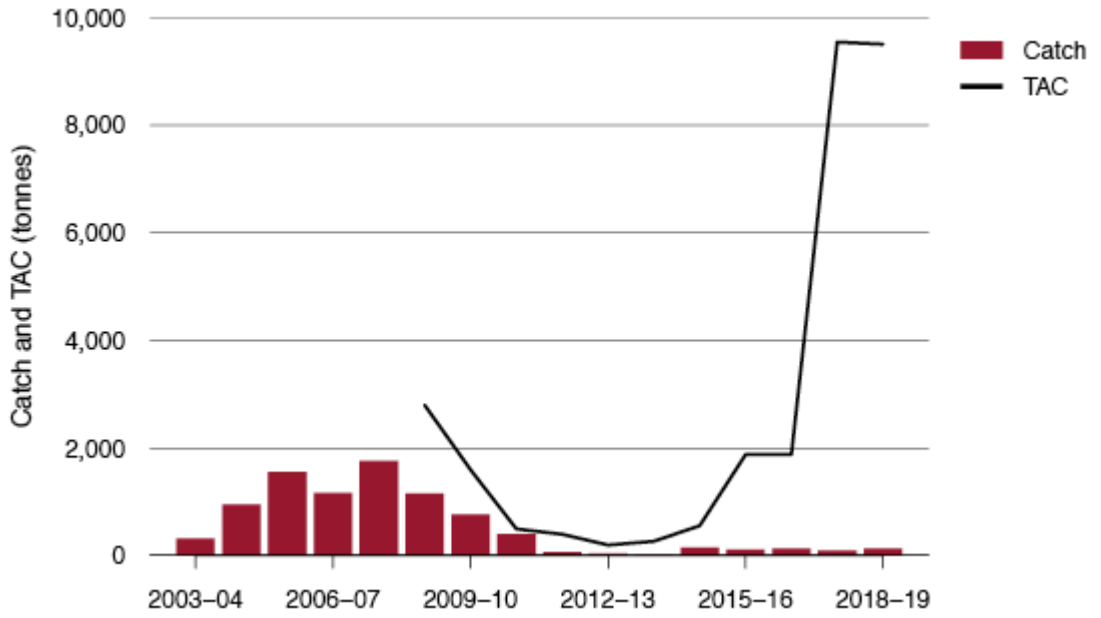

Figure 8 Commonwealth Australian sardine catch and TAC in the SPF, 2003–04 to 2018–19 **R15**

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.

Two DEPM surveys were undertaken for this species, a southern area survey (biomass estimate 10,962 (2015) and a northern area survey (biomass estimate 49,575 (2015)) conducted at the same time as the blue mackerel east survey.

C 1.2:

A spawning biomass of 49,575t (95% CI 24,200-213,300 t) was estimated with the 2015 DEPM for the northern area. This is the fourth year at Tier 1 with an RBC recommended (2019-2020 season) of 9,915t.

The annual assessment provided no basis to change the Panel's previous advice for this species. The Panel confirmed its previous recommendation to use biomass estimates from the northern survey to determine an RBC for the northern area and that only the NSW State catches should be taken off the RBC when setting the TAC.

Recent catches have been below RBC (**Figure 8**). Historical catches have been low and are not likely to have reduced biomass below the limit reference point. The panel have concluded (2019 assessment) that the stock is not subject to overfishing (fishing mortality) and is not overfished (biomass).

For 2017/18, total catch of the stock was 429t (excludes Victorian catch data). Excluding the increase in 2016/17, catches were relatively stable at around 1,300 t from 2012-13 and 2015-16. The 2017-18

SPF catches were 0.86% of DEPM biomass estimate and 4.33% of TAC. There were no discernible trends in the CPUE data. **R13-R17**
References p 36
Standard clauses 1.3.2.2

CATEGORY D SPECIES

In a whole fish assessment, Category D species are those which make up less than 5% of landings and are not subject to a species-specific management regime. In the case of mixed trawl fisheries, Category D species may make up the majority of landings. In a by-product assessment, Category D species are those which are not subject to a species-specific management regime. In both cases, the comparative lack of scientific information on the status of the population of the species means that a risk-assessment style approach must be taken.

The process for assessing Category D species involves the use of a Productivity-Susceptibility Analysis (PSA) to further subdivide the species into 'Critical Risk', 'Major Risk' and 'Minor Risk' groups. If there are no Category D species in the fishery under assessment, this section can be deleted.

Productivity and susceptibility ratings are calculated using a process derived from the APFIC document "Regional Guidelines for the Management of Tropical Trawl Fisheries, which in turn was derived from papers by Patrick *et al* (2009) and Hobday *et al* (2007). Table D1 should be completed for each Category D species as follows:

- Firstly, the best available information should be used to fill in values for each productivity and susceptibility attribute.
- Table D2 should be used to convert each attribute value into a score between 1 and 3.
- The average score for productivity attributes and the average for susceptibility attributes should be calculated.
- Table D3 should be used to determine whether the species is required to meet the requirements of Table D4. A species which does not need to meet the requirements of D4 is automatically awarded a pass.
- Table D4 should be used to assess those species indicated by Table D3 to determine a pass/fail rating.
- Any Category D species which has been categorised by the IUCN Red List as Endangered or Critically Endangered, or which appears in the CITES appendices, automatically results in a fail.

D1	**Species Name:**	Red-eye round herring Maray *Etrumeus sadina* synonym *Etrumeus teres*	
	Productivity Attribute	**Value**	**Score**
	Average age at maturity (years)	1.7	1
	Average maximum age (years)	3	2
	Fecundity (eggs/spawning)	Egg >10000	1

	Average maximum size (cm)	33	1
	Average size at maturity (cm)	16.4	1
	Reproductive strategy	Pelagic eggs	1
	Mean trophic level	3.6	3
	Average Productivity Score		**1.4**
	Susceptibility Attribute	**Value**	**Score**
	Overlap of adult species range with fishery	25-50%	3
	Distribution	N/A	
	Habitat	Pelagic	1
	Depth range	N/A	
	Selectivity	1-2	2
	Post-capture mortality	Retained	3
	Average Susceptibility Score		**2.25**
	PSA Risk Rating (From Table D3)		**Pass**

References:

D1 Fishbase (accessed 12.12.19) https://www.fishbase.de/summary/Etrumeus-sadina.html

D2 FAO Guidance Document (2018): Ecuador National Fisheries Legislation Overview 3pp http://www.fao.org/fishery/species/2902/en

D3 CITES Species Endangered list: http://checklist.cites.org/#/en

D4 IUCN Redlist: http://www.iucnredlist.org/

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:

AFMA now publish preliminary reports (as well as final reports) on their website to allow interested stakeholders have earlier access to this information. Quarterly reports on protected species interactions with stakeholders in fishery are provided:

Gear Type	Common name	Total	Life status				Interaction type[1]
			Alive	Dead	Injured	Unknown	
Midwater otter trawl	Common dolphin	3	1	2	-	-	Entangled
	New Zealand fur seal	4		4			Entangled
	Total interactions	7	1	6			

Figure 10 Small Pelagic Fishery Preliminary Report Protected species interactions (April-June 2019) **R23**

Reports are compiled by AFMA from official logbook records submitted to AFMA by fishers.

F1.2:

The Scientific Panel (2019) noted that for protected species marine mammals and large bycatch monitoring should be reduced from 100 to 10% of Electronic Monitoring footage. This recommendation was based on the outcomes of footage reviewed in the SPF to date, as well as evidence from both AFMA-managed fisheries and international work that this level of review is sufficient to achieve accurate reporting in logbooks. As risk to seabird interactions in the fishery is low (due to very little discarding of catch and the use of bird mitigation devices) it was decided that the deployment of mitigation be audited by electronic monitoring.

F1.3:

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

Additional management responses are triggered if the maximum interaction rate for a vessel is exceeded. The minimum management response requires the holder to immediately cease fishing and return to port until authorised by AFMA to recommence fishing using trawl gear

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.

AFMA-managed fisheries have accreditation (Department of the Environment and AFMA) for interactions with protected species under Part 13 of the Environment Protection and Biodiversity Conservation Act 1999. Without this accreditation, fishing operators may be liable for prosecution for the capture of protected species.

Observer reports, in addition to other duties, record observations such as whether birds and other wildlife could be seen during a fishing trip. All operators are required to carry observers when requested by AFMA.

R13; R17; R20

References p 36

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. Assessment results help prioritise management, research, data collection and monitoring needs for the fishery.

The Ecological Risk Management (ERM) framework is used to assist decision makers in developing fisheries management arrangements consistent with Ecologically Sustainable Development (ESD) objectives. The framework uses 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.

ERAEF provides a hierarchical framework for a comprehensive assessment of ecological risks arising from fishing, with impacts assessed against five ecological components including habitats. The latest

Ecological Risk Assessment (ERA) for the effects of fishing report (midwater trawl small pelagic fishery) was published in September 2017. For the purse seine fishery, the latest report was published in 2007.

As the gear is designed to fish in the water column it is a rare event that the gear does come into contact with the bottom. Impact on benthic habitats is likely to be minimal compared to demersal trawling.

F2.2:

ERAEF proceeds through four stages of analysis: scoping; an expert judgement-based Level 1 analysis (SICA – Scale Intensity Consequence Analysis); an empirically based Level 2 analysis (PSA – Productivity Susceptibility Analysis); and a model-based Level 3 analysis. This hierarchical approach provides a cost-efficient way of screening hazards, with increasing time and attention paid only to those hazards that are not eliminated at lower levels in the analysis. Risk management responses may be identified at any level in the analysis.

The assessment (2017) of the SPF Midwater Trawl Sub-fishery included a scoping stage and a Level I analysis. All hazards (fishing activities) were eliminated at Level 1 (risk scores 1 or 2, Table 1). All ecological components (including habitats) were eliminated at Level 1 i.e. there were no risk scores of 3 – moderate – or above for any component (see F 3.2).

Fishing methods used do not cause damage to the bottom: the mid-water trawl is designed and rigged to fish in midwater and is 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.

F2.3:

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.

R19; R22

References p 36

Standard clause 1.3.3.2

	Ecosystem Impacts - Minimum Requirements

F3	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:

A Five-Year Strategic Research Plan (2017-2022) for the SPF has been published by AFMA. The Plan aims to address AFMA's strategic research objectives including preventing unacceptable impacts of Commonwealth fisheries on marine ecosystems and organisms. Each year the SPF Scientific Panel reviews research needs and develops an annual set of research priorities and work plans.

A key goal is the annual monitoring, reporting and assessment of the effectiveness of current mitigation measures and the impact of the fishery on protected species. Marine mammal bycatch data are collected through observer and camera coverage and reported through regular SPF reports on protected species interactions.

A Bycatch and Discard workplan includes specific measures to address risks highlighted by the ERA and to minimise the risk of further interactions with non-target species. Management actions under the Bycatch and Discard workplan include implementing upward-opening Seal Excluder Devices and developing other equipment for each mid-water trawl vessel operating in the fishery to minimise the risk of interactions with seabirds; seals and dolphins. This workplan will be replaced by a chapter in the Fishery Management Strategy (FMS); currently under development (January 2019).

The FMS will incorporate previously existing fishery management strategies (i.e. harvest strategies, ecological risk management strategies, bycatch strategies, research strategies and data strategies) into a single document.

F3.2:

SICA (Scale, Intensity, Consequence Analysis) analysis evaluates the risk to ecological components resulting from stakeholder-agreed set of activities. SICA elements are scored on a scale of 1 to 6 (negligible to extreme) using a "plausible worst case" approach. Level 1 analysis potentially result in the elimination of activities (hazards) and in some cases whole components. Any SICA element that scores 2 or less is documented, but not considered further for analysis or management response.

The assessment (2017) of the SPF Midwater Trawl Sub-fishery included a scoping stage and a Level I analysis (AFMA 2017). All hazards (fishing activities) were eliminated at Level 1 (risk scores 1 or 2, Table 1). All ecological components were eliminated at Level 1 i.e. there were no risk scores of 3 – moderate – or above for any component.

Significant external hazards were from other fisheries in the region. Risks rated as major or above (risk scores 4 or 5) were all related to other fishing activities on protected species and habitats and coastal development for protected species.

Table 1: Comparison of previous and current Level 1 (SICA) analyses: components to be examined at Level 2 (PSA) (- = none identified, Y=Level 2 conducted, N= Level 2 not conducted.) **R23**

ECOLOGICAL COMPONENT	2006 (PREVIOUS)	2016 (CURRENT)
Key/secondary commercial species	Level 2 (Y)	-
Byproduct and bycatch	Level 2 (Y)	-
Protected species	Level 2 (Y)	-
Habitats	-	-
Communities	Level 2 (N)	-

F3.3:

The ecosystem in Southern and Eastern Australia is not highly dependent on species targeted In the SPF. Research by CSIRO has found that depletion of the four main target species in the fishery has minor impacts on other parts of the ecosystem. The research suggested that the food web does not appear to be highly dependent on SPF target species. None of the higher trophic–level predators, including tunas, seals and penguins, have a high dietary dependence on the species.

References

R1 Areas fished in the small pelagic fishery 2018-19 R1 http://agriculture.gov.au/abares/research-topics/fisheries/fishery-status/small-pelagic

R2 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

R3 Australian Fisheries Management Authority AFMA (Home page): https://www.afma.gov.au/fisheries

R4 South East Management Advisory Committee (SEMAC): https://www.afma.gov.au/sites/default/files/semac_36_final_minutes_-_signed.pdf

R5 AFMA Commission: https://www.afma.gov.au/about/afma-commission

R6 SPF Scientific Panel and Stakeholder Forum Meetings https://www.afma.gov.au/news-media/news/spf-scientific-panel-and-stakeholder-forum-meetings

R7 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

R8 Small Pelagic Fishery (SPF) Resource Assessment Group (SPFRAG): https://www.afma.gov.au/sites/default/files/uploads/2015/01/March-2013-SPFRAG-meeting-minutes-PDF-381-KB.pdf

R9 AFMA Small Pelagic Fishery Management Arrangements (2019-20) 41pp: https://www.afma.gov.au/fisheries-services/fisheries-management-plans

R10 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

R11 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

R12 Satellite monitoring of fishing boats https://www.afma.gov.au/monitoring-enforcement/satellite-monitoring-fishing-boats

R13 AFMA Observer program: https://www.afma.gov.au/monitoring-enforcement/observer-program

R14 Small Pelagic Fishery Harvest Strategy June 2008 (Last Revised April 2017) 11pp https://www.afma.gov.au/sites/default/files/uploads/2017/04/SPF-Harvest-Strategy_April-2017_FINAL.pdf

R15 ABARES Fishery Status Reports 2019: http://www.agriculture.gov.au/abares/research-topics/fisheries/fishery-status/small-pelagic

R16 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 https://pdfs.semanticscholar.org/96e2/6a48c421a08ed67477473e2a057cf80f1065.pdf

R17 Small Pelagic Fishery Scientific Panel (the Panel) Meeting Minutes (Jan 2019) https://afma.govcms.gov.au/sites/default/files/spf_panel_meeting_minutes_17_january_2019_final.pdf

R18 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

R19 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

R20 AFMA Protected species interactions reported in Commonwealth Fishery logbooks for the period 1 April to 30 June 2019 8pp https://www.afma.gov.au/sustainability-environment/protected-species-management/protected-species-interaction-reports

R21AFMA Bycatch and Discarding Workplans: https://www.afma.gov.au/sustainability-environment/bycatch-discarding/bycatch-discard-workplans

R22 AFMA Protected Species Management Strategies: https://www.afma.gov.au/sustainability-environment/protected-species-management-strategies

R23 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

R24 Ecological Risk Assessment for Effects of Fishing Report for the Midwater Trawl Sub-fishery of the Small Pelagic Fishery September 2017 144p https://www.afma.gov.au/sites/default/files/era_spf_mwt_sica_report_6_nov2017.pdf

R25 ABARES Catch data small pelagics fishery: https://www.afma.gov.au/fisheries/small-pelagic-fishery/spf-catch-data

Standard clause 1.3.3.3