



Australian Government

Australian Fisheries Management Authority

South East Management Advisory Committee (SEMAC) Meeting No 39

Meeting minutes

Date: 4-6 February 2020

Venue: Holiday Inn, Melbourne

Attendees

Name	Member type
David McGlennon	Chair
Anissa Lawrence	Environment member
Gerry Geen	Industry member
Michael Steer	Scientific member
Fiona Hill	AFMA member
Simon Boag	Industry member
Sarah Jennings	Economics member
Will Mure	Industry member
John Harrison	Recreational sector member
Debbie Wisby	Industry invited participant
Toni Clarke	Industry invited participant
Veronica Silberschneider	State invited Participant
Daniel Corrie	AFMA presenter
Brodie Macdonald	AFMA presenter
Sally Weekes	AFMA presenter
Natalie Couchman	AFMA observer
Anna Willock	AFMA observer
Brett McCallum	AFMA Commissioner
Latif Siddique	Executive officer
Apology	
Shane Dugins	Industry member

Meeting Minutes

1 Preliminaries

1.1 Introduction and apologies

The Chair opened the meeting at 11:00 am and welcomed participants. The Chair acknowledged the Traditional Owners (the Boon Wurrung and Woiwurrung) past and present on whose land we are meeting. Members were advised the meeting was being recorded to assist with the preparation of the minutes, with audio to be deleted after the minutes are finalised. No objections were raised.

1.2 Adoption of Agenda

The MAC adopted the agenda (**Attachment A**), noting that the agenda items on 'Hagfish' and 'Piece counts in the fishery – costs and options and rationale' had been deferred to the next meeting and the agenda item on 'ERA Update' (5.4) has been changed from 'For noting' to 'For recommendation'. The MAC also noted agenda item 5.3 (LED lights and dolphin bycatch reduction), while provided on an AFMA template, was a paper from the conservation member.

1.3 Declaration of interests

The MAC reviewed the table of standing declarations by members, invited participants and observers. The Chair asked participants to declare any specific conflicts of interest with items on the agenda and any that were not already recorded in the provided table, consistent with requirements in FMP 1.

For simplification, the MAC also decided that for the first and second day of the meeting participants would declare their interests relating only to the agenda item 3.2 (SESSF TAC recommendations for the 2020-21 fishing season) and then those related to the remaining agenda items on third day.

An updated table of declared conflicts of interest is provided at **Attachment B**.

Process for managing declared: The Chair asked members to declare any potential conflicts with each of the items on the agenda. The members who declared potential conflicts with agenda items left the meeting while remaining members discussed the level of involvement that particular member should have in discussions and decision making processes.

- Industry member, Mr Gerry Geen, confirmed a conflict of interest in agenda item 5.2 – Small Pelagic Fishery (SPF) TAC recommendation for the 2020-21 fishing season. The MAC discussed the conflicts, noting that Mr Geen holds a large proportion of quota in the SPF. The MAC agreed that Mr Geen should participate in the discussion but will abstain from recommendations on species where his company has a major holding quota.
- Industry member, Mr Will Mure, confirmed a conflict of interest for agenda item 3.2 – SESSF TAC recommendations for the 2020-21 fishing season (for all species). The MAC discussed the conflicts and recognising Mr Mure’s knowledge and valuable contribution, the MAC agreed that Mr Mure should participate in the discussion and recommendations; noting that he will abstain during MAC decision on recommendations.
- Industry member, Mr Simon Boag, confirmed a conflict of interest for agenda items 3.2 – SESSF TAC recommendations for the 2020-21 fishing season (for all species), 5.2 – SPF TAC recommendations for 2020-2021 season and 5.10 – Western orange roughy research plan. The MAC discussed the conflicts and recognising Mr Boag’s knowledge and valuable contribution, the MAC agreed that Mr Boag should participate in the discussion and recommendations; noting that he will abstain when there is a high degree of interest. Mr Boag also mentioned that he would self-exclude himself from the decision making for the agenda item 5.10.
- Invited industry participant, Ms Toni Clark, confirmed a conflict interest with agenda item 3.2 – SESSF TAC recommendations for the 2020-21 fishing season (all species, but specifically for blue eye trevalla and pink ling). The MAC discussed the conflicts, noting that Ms Clark’s company holds a large proportion of quota in the SESSF, in particular for the declared species. The MAC agreed that Ms Clark should participate in the discussion but will abstain from recommendations on species where her company has a major holding quota.
- Invited industry participant, Ms Debbie Wisby, confirmed a conflict of interest with agenda item 3.2 – SESSF TAC recommendations for the 2020-21 fishing season (specifically for shark, which could be for elephant shark, gummy shark, school shark and saw shark). The MAC discussed the conflicts, noting that Ms Debbie’s company holds a large proportion of shark quota in the SESSF. The MAC agreed that Ms Wisby should participate in the discussion but will abstain from recommendations on species where her company has a major holding quota.

Action item 39.1: Executive Officer to circulate the table of declared conflicts of interest to all MAC members for updating.

1.4 Status of actions arising from previous meetings

A consolidated list of outstanding action items from previous SEMAC meetings (**Attachment C**) was circulated to the MAC prior to the meeting. The MAC discussed the action items and noted that two items are still outstanding:

- Action item 34.6 (SEMAC 34): *AFMA to advise the MAC about the different roles of AFMA's Commonwealth Marine Mammal Working Group and FRDC's newly established marine mammal group and advise on areas for potential alignment of roles to improve efficiency.* The MAC noted that this was a long-standing and unresolved agenda item, and requested AFMA to follow up with FRDC.

Action item 39.2: AFMA to follow up the previous action item 34.6 with FRDC

- Action item 38.13 (SEMAC 38): *AFMA and Industry member Mr Boag to report back at SEMAC 39 on the history, rationale and cost of piece counts in the GHAT Fishery.*

2. Updates

2.1 Managers Update

The AFMA member, Ms Fiona Hill, provided an update to the MAC on the key management issues arising since the last MAC meeting on 6-7 November 2019.

Upper slope dogfish management strategy (the Strategy) review

Southern Dogfish and Harrison's Dogfish, both of which are managed under the Strategy, are listed as conservation dependent under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). As such, the Threatened Species Scientific Committee (TSSC) will consider the potential implications of the proposed changes to management arrangements under the Strategy at its February 2020 meeting. AFMA is reviewing the Strategy and intend to undertake public consultation before coming back to SEMAC for final advice.

Offshore Constitutional Arrangements (OCS)

AFMA are currently working with officials from various State fisheries agencies on OCS-related matters. A number of these discussions have highlighted the need for a formal resource sharing policy. The Department of Agriculture, Water and Environment are currently developing a Commonwealth resource sharing framework, and AMFA will continue to work with its State counterparts to resolve a number of ongoing OCS issues.

Pink ling closure repeal

On 12 December 2019, after receiving advice from SEMAC, AFMA removed the pink closures under "*Fisheries (Southern and Eastern Scalefish and Shark Fishery Closures) Revocation Direction 2019*".

Offal and seabirds

AFMA and Australian Maritime Safety Authority (AMSA) officials are working with the trawl industry regarding the implications of modifying trawl vessels in order gain an exemption from the ban on discharge of biological material (offal) in high risk seabird areas. Officers from both agencies will travel to Lakes Entrance in February 2020 to meet with individual operators. In addition to this, a joint AFMA/AMSA letter is being prepared to distribute to industry members, providing some detail around AMSA's legislative requirements.

Hagfish

A Hagfish Research Plan (the Plan) is currently being developed for SERAG and SEMAC consideration. Once this Plan has been finalised, permits consistent with the Plan will be issued. This approach will be re-evaluated once a review of the AFMA Exploratory Fisheries Policy (the Policy) has been finalised. The South East Resource Advisory Group (SERAG) have requested additional information about recent catches before the Plan is reviewed by SEMAC. AFMA will also consult with Dr Martini, a Hagfish expert from University of Hawaii, before the Plan is finalised.

2.2 Industry update

The Chair asked industry members to provide an update on any items arising since the last MAC meeting on 6-7 November 2019. The MAC noted that:

Small Pelagic Fishing Industry Association (SPFIA)

- **Small pelagic fishing and TEP species:** It was reported that vessels went to fish in the west to avoid interactions with Threatened, Endangered and Protected (TEP) species and reduce the risk of reaching the trigger for dolphin interactions.

South East Trawl Fishing Industry Association (SETFIA)

- **Trawl fishing and bush fire impacts:** Recent trawl fishing catch has been low, however these were not as a direct result of the bushfires. Local coastal small businesses were impacted the most by the fires. Industry have advocated to constrain levies, with the view to free up money to support small businesses in the area. They also suggested to hold MAC and RAG meetings in the bush fire affected coastal towns, such as Ulladulla, Lakes Entrance and Eden to boost small businesses in the areas.

The MAC noted that AFMA are considering holding the June AFMA Commission meeting in Lakes Entrance and that consideration would be given to holding MAC and RAG meetings in regional towns.

- **Oil drilling and seismic survey:** Industry are experiencing difficulties working with some oil and gas companies who are undertaking exploration activities in waters relevant to the SESSF.

Southern Shark Industry Alliance (SSIA)

- **Blue-eye trevalla and pink ling catches:** Catches of pink ling and blue-eye trevalla were poor early in the season in the western part of the fishery. Catches of eastern pink ling were good, with some operators linking this with warmer water on the east coast. Higher recent prices of bait fishes, such as squid, were also affecting profit margins.

Squid fishery

- There were 5-6 squid boats fishing but catches were very low compared to the same period last year.

3.1 Changes to the Harvest Strategy

AFMA introduced proposed changes to the SESSF Harvest Strategy to broaden the parameters that can be considered in the Total Allowable Catch (TAC) setting process, including expanding the assessment tiers for data poor species, the use of recent recruitment scenarios in stock assessments and what to do if a stock assessment is not accepted by the RAG.

Specifically, the changes include:

1. To enable assessments to be considered under different tiers and slightly different parameters for consideration of setting TACs.
2. For tier 4 species:
 - Where the CPUE does not index the biomass of the stock, it should be assessed under a 'tier 5' method, these include catch only approaches.
 - That have high discards should be assessed using a risk-based methodology to ensure an appropriate risk-catch-cost trade-off as they are essentially a by-product species. The TAC setting should be based on the existing TAC, subject to sustainability concerns and whether it restricts the catches of that or other species. Annual monitoring of available fishery indicators should be undertaken.
3. Where there is evidence of a productivity change, recent recruitment scenarios for setting TACs should be used rather than the average recruitment, unless a regime shift has been identified. This is an interim measure until the new SESSF harvest strategy has been developed, as part of this process dynamic reference points are being considered.
4. Where Tier 1 assessments are rejected the TACs should, in the short-term be rolled over subject to sustainability concerns using a weight-of-evidence approach. For future assessments, the assessor will present the RBCs for three years with longer-term projected RBCs used if the assessment is not run at the end of the Multi-Year TAC (MYTAC) period. Additionally, there should be consideration of dropping the tier of the assessment or consideration of satisfactory alternative assessment approaches.

The MAC supported the proposed changes as an interim approach while the broader review of the harvest strategy is being undertaken as part of the FRDC project - *Development and evaluation of multi-species harvest strategies in the SESSF* (2018-021).

The MAC noted the outcomes of this project are still a couple of years away, and implementation of a new harvest strategy in the SESSF is a three to four year process. The next step in the project will be to hold workshop in March 2020.

3.2. SESSF Total Allowable Catch (TAC) recommendations for the 2020-21 fishing season

AFMA introduced the agenda item and asked the MAC to provide recommendations for TAC setting for the SESSF 2020-21 fishing year. The MAC recommendations are recorded in **Attachment D** *SESSF TAC recommendations outcomes 2020-21*.

Action items arising in relation to this agenda item are outlined below and provided in **Attachment E**:

Action item 39.3: AFMA to finalise an agreement with the Southern Shark Industry Alliance to voluntarily limit catches of blue-eye trevalla on the seamount stock for the 2020-21 SESSF season.

Action item 39.4: AFMA to include details of any species-specific research projects underway in future SEMAC TAC recommendations paper.

Action item 39.5: Recognising uncertainty in the Tier 4 blue-eye stock assessment and industry concerns around low catch rates up to January 2020, SEMAC recommended SESSFRAG (August 2020) consider fishery indicator data and:

- consider an alternative approach to assessing the slope stock in 2021 and applying a precautionary reduction to the TAC for the 2021-22 SESSF season; or
- bring the assessment forward to 2020, if the Tier 4 assessment is to be applied again, SERAG should consider application of the 15 per cent discount factor.

Action item 39.6: AFMA to more clearly specify how the TAC is calculated – e.g. why no discards are included in the assessment or deducted from the RBC when calculating the TAC.

Action item 39.7: AFMA to seek advice from SERAG regarding application of a 100 per cent undercatch provision for orange roughy cascade, as is done for eastern orange roughy.

Action item 39.8: The SEMAC Chair to write to the AFMA Commission supporting and emphasising the importance of progressing catch sharing arrangements with NSW.

Action item 39.9: AFMA to discuss eastern school whiting classification with ABARES with respect to the ABARES Status Report.

Action item 39.10: AFMA to encourage collaboration between CSIRO and NSW on the silver trevally Tier 4 assessment, with a particular focus on the inconsistencies in CPUE between the two jurisdictions.

5.2 Small Pelagic Fishery (SPF) TAC recommendation for the 2020-21 fishing season

AFMA introduced the agenda item seeking MAC TAC recommendations for the SPF 2020-21 fishing year.

SEMAC noted:

- SPF Resource Assessment Group (SPFRAG) advice regarding the recommended biological catches (RBC);
- a new biomass estimate underpins the jack mackerel east RBC and consequently TAC, maintaining this stock in Tier 1 for another five years;
- the remaining six stocks stay at the same tier level as the 2019-20 season;
- due to limited information on the stock structure of jack mackerel west, catch in two grids south of Kangaroo Island will continue to be restricted to 20 per cent of the TAC (830 tonnes), and
- a Daily Egg Production Method (DEPM) survey is currently underway for blue mackerel east and a proposal for doing a DEPM redbait east is currently being considered for funding by the AFMA Research Committee.

Recommendation: Consistent with SPFRAG advice and AFMA recommended TACs, SEMAC made the following TAC recommendations as set out in Table 1 below.

Table 1. Summary of SEMAC TAC recommendations for the 2020-21 fishing season in the SPF.

Species	Western Zone TAC	Eastern Zone TAC
Blue mackerel (<i>Scomber australasicus</i>)	3,210 tonnes	11,970 tonnes
Redbait (<i>Emmelichthys nitidus</i>)	6,640 tonnes	3,420 tonnes
Jack mackerel (<i>Trachurus declivis</i> , <i>T. murphyi</i>)	4,170 tonnes	18,580 tonnes

Australian sardine (<i>Sardinops sagax</i>)	N/A	9,190 tonnes
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5.3 Light-emitting Diode (LED) lights and dolphin bycatch reduction

Ms Lawrence, Conservation Member introduced the paper highlighting the positive findings arising from LED trials (Bielli et al (in press)) in the Peruvian small-scale gillnet fishery for deterring marine mammal interactions. Ms Lawrence asked the MAC for advice about what could be done to encourage such trials here. Ms Lawrence highlighted that the trials have shown significant improvement in the reduction of bycatch of small cetaceans where they deployed light emitting diodes (LEDs) - a visual cue - on the floatlines of paired gillnets (control vs illuminated net) during 864 fishing sets on small-scale vessels. For illuminated nets, bycatch probability per set was reduced by up to 74.4% for sea turtles and 70.8% for small cetaceans in comparison to non-illuminated, control nets. For seabirds, nominal BPUEs decreased by 84.0% in the presence of LEDs. Target species CPUE was not negatively affected by the presence of LEDs.

The MAC thanked Ms Lawrence for bringing the matter to the attention of the members and suggested that Ms Lawrence progress these discussions with the relevant industry representatives, Mr Simon Boag and Mr Shane Dugins – including making contact with researchers from NOAA. It was also noted that industry could adopt such innovative measures under the current regulatory framework.

5.4 Ecological Risk Assessment (ERA) Update

The AFMA member introduced the agenda item and summarised the findings of the updated ERAs for the otter board trawl and Danish seine methods of the Commonwealth Trawl Sector (CTS). The Chair clarified that this agenda item was for recommendation, and that the MAC was being asked to support the findings of the ERAs.

ERAs were updated for the following sectors of the SESSF in 2019:

- a) Otter board trawl of the Commonwealth Trawl Sector (CTS)
- b) Danish seine of the CTS
- c) Great Australian Bight Trawl Sector
- d) Gillnet, Hook and Trap – shark gillnet sector

The MAC was asked to consider the findings of (a) and (b), noting that the Great Australian Bight Management Advisory Committee (GABMAC) will consider the results of (c) and the Shark Resource Assessment Group have not yet met to finalise the results of (d).

The MAC noted the following:

- The ERAs have been revised since the first draft in August 2018 to take account of:
 - o A data input error identified in the original assessment with regards to spatial distribution of each species
 - o A more appropriate methodology to calculate effort, whereby intensity of trawling can be accounted for by considering heterogeneous distribution of effort. i.e. areas trawled only once are not as heavily impacted by areas trawled several time.

- The results of each ERA were reviewed and supported by the SESSF Resource Assessment Group (SESSFRAG) in August 2019, and the South East Resource Assessment Group (SERAG) in October 2019.

The excerpt below provides the final list of species assessed as potentially being at high risk in the CTS.

LEVEL 2 ANALYSIS	ERA CLASSIFICATION	TAXA	No. MISSING	SCIENTIFIC NAME	COMMON NAME	HIGH RISK
PSA	BP	INV	10	<i>Sepia braggi</i>	Cuttlefish	x
		INV	5	<i>Sepia grahami</i>	Cuttlefish	x
		INV	5	<i>Sepia rozella</i>	Rosecone cuttlefish	x
		INV	5	<i>Octopus pallidus</i>	Pale octopus	x
		INV	1	<i>Nototodarus gouldi</i>	Gould's squid; Arrow squid	x

Figure 1 Excerpt from *Sporcic et al 2019: Species assessed as potentially high risk in the SESSF Danish seine subfishery*

LEVEL 2 ANALYSIS	ERA CLASSIFICATION	TAXA	NO. MISSING	SCIENTIFIC NAME	COMMON NAME	EXTREME RISK	HIGH RISK
PSA	C1	INV	1	<i>Nototodarus gouldi</i>	Gould's squid		x
	BP#	CH	6	<i>Chimaera ogilbyi</i>	Ogilby's ghostshark^		x
		CH	6	<i>Pavoraja arenaria</i>	Sandy skate		x
	BP	INV	10	<i>Melo miltonis</i>	Southern bailer shell		x
		INV	10	<i>Sepia braggi</i>	Cuttlefish		x
		INV	5	<i>Pinnoctopus cordiformis</i>	Maori octopus		x
	BP	CH	-	<i>Dipturus gudgeri</i>	Bight skate^		x
bSAFE-i		CH ^{T4}		<i>Deania quadrispinosa</i>	Longsnout dogfish		x
	BC	CH	-	<i>Centrophorus squamosus</i>	Leafscale gulper shark^	x	
		CH*	-	<i>Centrophorus zeehaani</i>	Southern dogfish	x	
		CH	-	<i>Centrophorus granulosus</i>	Gulper shark	x	
CH*		-	<i>Centrophorus moluccensis</i>	Endeavour dogfish	x		

Figure 2 Excerpt from *Sporcic et al 2019: Species assessed as potentially high risk in the SESSF otter trawl subfishery*

A number of shark species were identified as species of concern in the 2019 Shark and Ray Status Australia report, having recently being classified as critically endangered in the International Union for Conservation of Nature (IUCN) red List; whitfin swellshark, eastern angelshark and saddled swellshark/northern draughtboard shark. Revisions to the ERA resulted in the risk scores for these species being revised from high risk in the August 2019 report to either low or medium risk in the final assessment, which were supported by SERAG at their October 2019 meeting.

The MAC noted that AFMA will develop management approaches for species assessed as high risk for consideration by SEMAC later in 2020. It was also noted that a separate process will be undertaken for the remaining ERAs, which are scheduled to be finalised later in 2020.

The MAC noted the updated ERAs for otter board trawl and Danish seine and adopted the results.

5.5 Cost effective options for electronic monitoring for the Seabird Threat Abatement Plan

Mr Macdonald, Gillnet Hook and Trap Manager, introduced the agenda item and asked the MAC to provide recommendations on the 'representativeness' of current e-monitoring boats in the longline and dropline sectors of the GHAT.

The MAC noted that e-monitoring coverage (measured by the number of boats) in the manual longline and dropline sectors is low relative to participation in the fishery. Despite this, in the manual longline sector, the actual amount of effort subject to monitoring is reasonably high as the boats subject to monitoring (i.e. those fishing 100 days or more) account for a significant amount of fishing effort. The key question the MAC needed to discuss was how 'representative' these boats were of all boats in the fishery.

To assist the MAC's consideration, it was presented with information on catch, effort, and the spatial distribution of effort by these boats. The MAC also noted that the representativeness is not only related to the spatial distribution of fishery, but also related to the geographic distribution of threat, in particular the threat related to the seabird risks across the fishery. The MAC suggested that overlaying seabird interactions with the spatial distribution of longline effort may also assist in assessing the representativeness of these vessels.

The MAC also discussed alternatives to meeting monitoring targets and increasing e-monitoring coverage in the fishery including

- revising qualifying requirements for e-monitoring and issuing a revised e-monitoring direction (as discussed at SEMAC 38), thereby capturing boats using any combination of fishing methods for greater than 100 days;
- installing additional cameras on dual method boats (e.g. those that use pelagic longlines and currently have e-monitoring installed, but also use the dropline method);or
- deploy human observers on targeted boats to capture higher risk areas.

The MAC recommended -

In short term: Increasing the review of footage from existing EM covered boats; and

In long term: Referring discussions around the representativeness of current boats with EM to SESSFRAG/SERAG.

5.7 School Shark Management

Mr Macdonald introduced the agenda item and asked the MAC to provide a recommendation on the proposal to establish a MAC sub-group to undertake a comprehensive review of the management arrangements implemented under the School Shark Rebuilding Strategy.

The MAC noted that the work of the sub-group will occur in parallel with a technical review of the stock assessment that is currently underway.

The MAC supported the establishment of the group and recommended the following membership for the group who will report back the recommendations in to the next SEMAC meeting:

- Mr Sandy Morison (SharkRAG Chair)
- Mr Kyri Toumazos (SA longline /Bass Strait gillnet)
- Ms Anissa Lawrence (Conservation/SEMAC)
- Dr Sarah Jennings (Economics/SEMAC)
- Mr Shane Dugins (Bass Strait/Tasmanian gillnet SEMAC)
- Leigh Castle (Tasmanian gillnet)
- Ms Natalie Couchman (AFMA Manager)
- Mr Simon Boag (Southern Shark Industry Alliance)
- Mr David Stone (Sustainable Shark Fishery Association)

5.8 Blue warehou rebuilding strategy

The AFMA member, Ms Hill, introduced the agenda item and asked the MAC to:

- consider the findings of the 'Blue Warehou Stock Rebuilding Strategy 2014 – Five Year Review', which includes a review of the 2018 catch and effort data against the performance criteria set out in the annual review template (the annual review);
- provide advice on the effectiveness of the management arrangements outlined in the *Blue Warehou Stock Rebuilding Strategy 2014* and recommend amendments to be considered when drafting the 2020 Blue Warehou Stock Rebuilding Strategy; and
- note SERAG advice to the AFMA Commission on Blue Warehou to support the 2020-21 TAC setting process (Attachment D).

The MAC noted the information provided in the agenda paper and the RAG advice on the five year review and recommendations for inclusion in the 2020 rebuilding strategy. The MAC recommended minor amendments to provisions in the current rebuilding strategy for inclusion in the 2020 rebuilding strategy.

Noting that the current stock status for blue warehou is 'subject to overfished/overfished' and it is unlikely the rebuilding target in the 2014 rebuilding strategy would be met (recover stocks by 2022) the MAC recommended that AFMA maintain precautionary management arrangements for blue warehou in the 2020 rebuilding strategy.

The MAC noted the next steps in developing a revised rebuilding strategy, including the development of a discussion paper for submission to the TSSC, which would then be released for public comment. SEMAC advice will be sought on the final revised rebuilding strategy, prior to it being presented to the AFMA Commission for decision. The 2013 assessment indicated that both the eastern and western stocks of blue warehou are likely to have remained below 20% of unfished spawning biomass.

5.9 Orange roughy rebuilding strategy

The AFMA member, Ms Hill, introduced the agenda item and asked the MAC to:

- consider the findings of the 'Orange Roughy Stock Rebuilding Strategy 2014 – Five Year Review'.

- note and considering the advice and comments provided by SERAG and GABRAG on the effectiveness of the Orange Roughy Stock Rebuilding Strategy 2014; and their recommendations for the 2020 Orange Roughy Stock Rebuilding Strategy.
- provide advice on the effectiveness of the management arrangements outlined in the Orange Roughy Stock Rebuilding Strategy 2014; and recommend any amendments to be considered when drafting the 2020 Orange Roughy Stock Rebuilding Strategy.

The MAC noted the advice from SERAG and GABRAG on the effectiveness of the Orange Roughy Rebuilding Strategy 2014, and recommended some minor amendments to the document to document that the orange roughy eastern stock had rebuilt in 2015-16, which is why the TAC increased, and to note the 100% overcatch arrangements to explain the orange roughy eastern catches in 2018-19.

The MACs discussion was focused on how to treat the orange roughy eastern stock as it has been rebuilt and whether there was scope to delist the eastern stock as conservation dependent and understand any implications for the other stocks.

Action item 39.11: AFMA to liaise with the Department of Agriculture, Water and the Environment regarding the conservation dependant status of orange roughy, with a particular focus on delisting the eastern stock and implications for other stocks if this were to occur.

5.10 Western orange roughy research plan

Industry member, Mr Boag, introduced the agenda item and advised the MAC that the aim of the research plan is to collect biological data to inform a future stock assessment. The MAC was asked to provide advice on:

- a. SERAG recommended 200 tonnes Research Catch Allowance (RCA);
- b. three representative research zones based on historical western orange roughy fishing areas from north to south as 'the bowl', 'coral coast' and 'sandy cape' (Figure 1);
- c. six thousands biological sampling requirements for length frequency and otolith; and
- d. observer requirements.

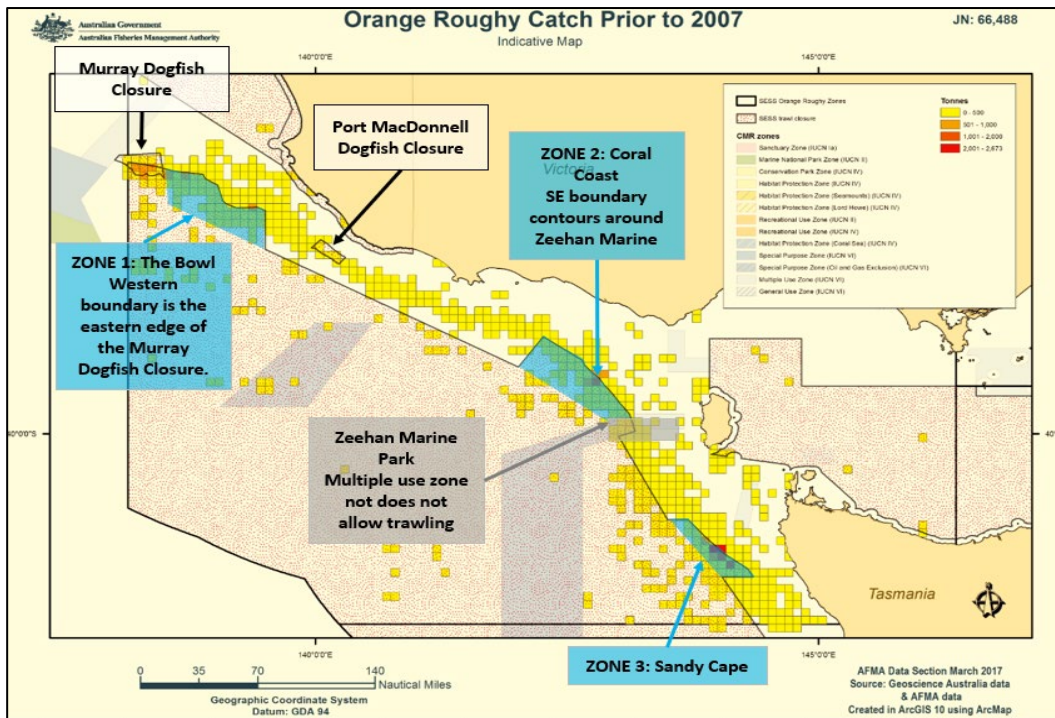


Figure 3: Proposed western orange roughy research zones, overlaid against historical orange roughy west catch.

The MAC noted that regarding timing, SERAG's advice is to undertake research for six months in first year and revisit the outcomes in SERAG, where a recommendation will be made regarding the continuation and/or any changes in the program for the subsequent years.

The MAC rigorously discussed the matter and recommended the following:

- a. the 200 tonnes/year RCA with a review by SERAG after six months and then report back to the MAC for subsequent year;
- b. three representative research zones based on historical western orange roughy fishing areas from north to south as 'the bowl', 'coral coast' and 'sandy cape';
- c. six thousands biological sampling requirements for length frequency and otolith; and
- d. observer requirements for first three trips for each boat and every second trip thereafter (consistent with arrangements in place for Orange Roughy Eastern).

6.1 Other business

There was no other business item to be discussed.

7.1 Review of Actions and close

The MAC agreed that it would be more efficient for AFMA to distribute the action items out of session soon after the meeting.

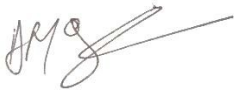
The Chair closed the meeting at 2.05pm.

Next meeting

The next meeting is scheduled on 1/2 July, but the final date and venue will be announced later.

Attachments

- A) Final Agenda
- B) SEMAC 39 Declared conflicts of Interest
- C) A consolidated list of outstanding action items from previous SEMAC meetings
- D) SESSF TAC recommendations outcomes 2020-21
- E) SEMAC 39 Action items



Signed (Chairperson)

Date 16 June 2020

Attachment A

South East Management Advisory Committee (SEMAC) 39 – Agenda

Meeting Date	4-6 February 2020
Time	Day one: 11:00am – 5:30pm Day two: 9:00am – 5:00pm Day three: 9:00am – 3:30pm
Location	Holiday Inn on Flinders Street Melbourne
Chair	David McGlennon

Attendees

Members	Anissa Lawrence	Environment member
	Fiona Hill	AFMA member
	Gerry Geen	Industry member
	Michael Steer	Scientific member
	Shane Dugins	Industry member
	Simon Boag	Industry member
	Will Mure	Industry member
	John Harrison	Recreational Member
	Sarah Jennings	Economics member
Invited Participants	Debbie Wisby	Industry invited participant
	Veronica Silberschneider	NSW State invited participant
	Toni Clark	Industry invited participant
Executive Officer	Latif Siddique	AFMA
Presenters	Brodie Macdonald	AFMA
	Daniel Corrie	AFMA
	Sally Weekes	AFMA
Observers		

Apologies: Shane Dugins

Day one

<i>Agenda item</i>	<i>Speaker</i>	<i>Duration and Paper Action</i>
1. Preliminaries		60 minutes 11:00am -12:00pm
1.1 Welcome and apologies	Chair	For noting
1.2 Acceptance of agenda	Chair	For action
1.3 Declarations of interest	Chair	For action
1.4 Action items	Executive officer	For noting and questions
2. Updates		
2.1 Managers update GHAT simplification, STAG, SPF update, OCS, Ling closure repeal, SA snapper, offal and sea birds, gulper sharks, Hagfish .	Fiona Hill	20 minutes 12:00pm-12:30pm For noting and questions
2.2 Industry update	All	20 minutes 12:30pm -12:50pm For noting and questions
Lunch		45 minutes 12:50pm - 1:35pm
3. Business		
3.1 Changes to the Harvest strategy	Daniel Corrie	45 minutes 1:35pm- 2:20pm For noting
3.2 SESSF TAC recommendations for the 2020-21 fishing season	Daniel Corrie	1hour 20 minutes 2:20pm- 3:40pm For advice
Afternoon tea		20 minutes 3:40pm -4:00pm
3.2 SESSF TAC recommendations for the 2020-21 fishing season (contd.)	Daniel Corrie	1 hour 4:00pm -5:00pm For advice

6:45 pm SEMAC Dinner wharf Hotel Melbourne 18/38 Siddeley St

Day two- 9:00 am – 5:00 pm

<i>Agenda item</i>	<i>Speaker</i>	<i>Duration and Paper Action</i>
4. Business cont.		9:00am
4.1 Welcome and recommence	Chair	10 minutes 9:00am -9:10 am
4.2 SESSF TAC recommendations for the 2020-21 fishing season (contd.)	Daniel Corrie	1hour 10 minutes 9:10-10:20 For advice
Morning tea		20 minutes 10:20am – 10:40am
4.2 SESSF TAC recommendations for the 2020-21 fishing season (contd.)	Daniel Corrie	2 hours 10:40am-12:40pm For advice
Lunch		45 minutes 12:40pm -1:25pm
4.2 SESSF TAC recommendations for the 2020-21 fishing season (contd.)	Daniel Corrie	1hour 45 minutes 1:25pm - 3:10pm For advice
Afternoon tea		20 minutes 3:10pm to 3:30pm
4.2 SESSF TAC recommendations for the 2020-21 fishing season (contd.)	Daniel Corrie	60 minutes 3:30pm- 5:00pm For advice

6:45 pm Informal dinner for anyone who wants to attend

Day three- 9:00 am – 3:30 pm

<i>Agenda item</i>	<i>Speaker</i>	<i>Duration and Paper Action</i>
4. Business cont.		9:00am
5.1 Welcome and recommence	Chair	10 minutes 9:00am -9:10 am
5.2 Small Pelagic Fishery (SPF) TAC recommendation for the 2020-2021 fishing season	Sally Weekes	40 minutes 9:10am -9:50am For advice
5.3 LED lights and dolphin bycatch reduction	Anissa Lawrence	30 minutes 9:50pm – 10:20am For advice
Morning tea		15 minutes 10:20am -10:35am
5.4 ERA Update	Daniel Corrie	30 minutes 10:35am – 11:00am For noting
5.5 Cost effective options for EM for TAP	Brodie Macdonald	30 minutes 11:00am – 11:30am For advice
5.6 Piece counts in the fishery –costs and options and rationale	Simon Boag and Brodie Macdonald	30 minutes 11:30am – 12:00pm For advice
5.7 School Shark Management	Brodie Macdonald	20 minutes 12:00pm -12:30pm For advice
Lunch		45 minutes 12:30pm – 1:15pm
5.8 Blue warehou rebuilding strategy	Daniel Corrie	45 minutes 1:15pm – 2:00pm For advice
5.9 Orange roughy rebuilding strategy	Daniel Corrie	40 minutes 2:00pm – 2:40pm For advice
5.10 Western orange roughy research plan	Daniel Corrie	40 minutes 2:40pm- 3:10 For advice
6.1 Any other business		10 minutes 3:10pm – 3:20pm
7.1 Review of action items		10 minutes 3:20pm - 3:30pm

Day three- 9:00 am – 3:30 pm

8.1 Meeting Close	Chair- David McGlennon	3:30pm
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Next meeting TBC

Date 1/2 July

Time

Location: TBC

The MAC suggested to explore the regional areas to check whether it is feasible to organise next meeting in the bushfire affected coastal town to support small businesses in the area.

Attachment B

South East Management Advisory Committee SEMAC 38

Agenda item 1.3 Declarations of interest

Declared Interest - Last updated: 3 February 2020	
Members	
Ms Anissa Lawrence	Independent consultant. Director of TierraMar Consulting. Undertakes contracts for a number of Conservation Non-Government Organisations, government departments, non-government agencies and the private sector on a range of fishery related matters. No pecuniary interest. President of the SEA LIFE Trust (ANZ). Director of FISHI International.
Dr David McGlennon	SEMAC Chair - No interest pecuniary or otherwise
Mr Gerry Geen	A partner in Seafish Tasmania Pty Ltd that holds approximately 60 per cent of the Small Pelagic Fishery (SPF) Jack Mackerel Statutory Fishing Rights (SFRs), 70 per cent of the Redbait (east) SFRs, 30 per cent of Blue Mackerel (east) SFRs and significant quota holdings in the western zone. Seafish Tasmania Pty Ltd owns a Southern and Eastern Scalefish and Shark Trawl Boat SFR. Declared conflicts of interest with agenda item 5.2.
Mr Will Mure	Sole Director of Mures Fishing P/L Commonwealth fish receiver permit Tasmania Fish Processing licence Scalefish hook boat SFR SEQ Quota Holding Permits Auto longline Fishing Permit High Seas permit Blue eye trevalla SFRs Ling SFRs Ribaldo ITP Mixed species Individual Transferable Quotas (ITQs) and SFRs Member of various fishing related associations including Seafood Industry Australia (SIA), South East Trawl Fishing Industry Association (SETFIA), Southern Shark Industry Alliance (SSIA), Tasmanian Seafood Industry Council (TSIC) Declared conflicts of interest with agenda item 3.2 (all TAC species).
Dr Michael Steer	Acting Research Director at South Australian Research and Development Institute (SARDI) Aquatic Sciences Chair of South East Resource Assessment Group (SERAG) Member of Southern and Eastern Scalefish and Shark Fishery RAG (SESSFRAG) Member of Commercial Marine Scalefish Reform Advisory Committee (SA) Member of Snapper Management Advisory Committee Member of Marine Scalefish fishery Management Advisory Group Member of Charter Boat Management Plan Advisory Group (SA)

	No pecuniary interest in the SESSF.
Dr Sarah Jennings	Economics member on SERAG and SESSFRAG Economics coordinator, FRDC Human Dimensions Research Subprogram. Member of AFMA Economics Working Group. Independent economics consultant. No interest pecuniary or otherwise.
John Harrison	FutureFocused Consulting Northern Territory Coastal Line Fishery MAC representative and Executive Chair for FRDC's Sefood Industry Safety Initiative.
Simon Boag	Non-beneficiary Director of two fishing companies in the SESSF. Industry member on SERAG. Executive Officers to SETFIA, SSIA and SPFIA. Holds management contract for CFA and EastRock (Vic Rock Lobster Association). SETFIA receives funding from various bodies to complete projects and is in a co-management arrangement with AFMA. Undertakes contracts as an independent consultant. Declared conflicts of interest with agenda items 3.2 (all TAC species), 4.2, 5.1 and 5.2.
Mr Shane Dugins	Chair of the Sustainable Shark Fishing Association. Shareholder and Director of multiple Fishing Companies that hold: Commonwealth SFRs, lease quota, holds Victorian and Tasmanian licences and Victorian Crayfish quota Consultation services provided to AFMA for specialist fishery knowledge.
Ms Fiona Hill	AFMA Demersal and Midwater Senior Manager – AFMA SEMAC member - no interest pecuniary or otherwise
Invited participant	
Ms Toni Clark	Employed by Petuna Sealord Deepwater fishing P/L an Australian resident company which holds various fishing rights in, and operates vessels in the SESSF, GHAT, Commonwealth and state (Tasmania) Scallop fishery, East Coast Tuna Fishery, Offshore Fisheries and Tasmania State Fisheries. My pecuniary interest is limited to the extent of an employee of the company. Declared conflicts of interest with agenda item 3.2 (all TAC species, but specifically for Blue Eye Trevalla and Pinkling).
Ms Debbie Wisby	CEO of a fishing company based in Tasmania. Company Director holds Commonwealth squid jig SFRs and various Tasmanian licences. Active fishers in Commonwealth fisheries: Squid Jig, Scallop and Gillnet. Supplier of squid to various other Commonwealth fisheries. Commonwealth Fish Receiver. Member of Squid RAG and Scallop MAC, invited participant SEMAC, industry representative of Tasmanian Scallop FAC. Local Government Councillor and Mayor. Consultant for private enterprises on a range of fishery related matters. Advisor to Fishwell Consulting for Squid project 2016/2017. Declared conflicts of interest with any agenda item dealing with shark, which could be elephant shark, gummy shark, school shark and saw shark.
Dr Veronica Silberschneider	Acting Senior Fisheries Manager, NSW Department Primary Industry Cross jurisdictional management and research interests for NSW DPI, no pecuniary interest.

Mr Brodie Macdonald	AFMA Gillnet Hook and Trap Fishery Manager - no interest pecuniary or otherwise.
Mr Dan Corrie	AFMA Trawl and Scallops Manager - no interest pecuniary or otherwise.
Ms Sally Weekes	AFMA Small Pelagic Fishery Manager - no interest pecuniary or otherwise.
Executive Officer	
Dr Latif Siddique	AFMA – Senior Management Officer, Demersal and Midwater Fisheries. No interest whether pecuniary or otherwise.
Observers	
Anna Willock	AFMA – Executive Manager - no interest pecuniary or otherwise.
Brett McCallum	AFMA Commissioner - no interest pecuniary or otherwise.
Natalie Couchman	AFMA – Senior Management Officer - no interest pecuniary or otherwise.

Attachment C

Action Item		Member to action	Agenda Item in which the matter was raised	Date to be completed by
38.1	AFMA to confirm confidentiality requirements of the MAC agenda and papers	AFMA	1.1	SEMAC 39
38.2	ERA update to be included in agenda for SEMAC 39	AFMA	2.1	SEMAC 39
38.3	AFMA to determine if advice was provided to the TSSSC on the shark listing of three species.	AFMA	2.1	SEMAC 39
38.4	SEMAC request that SharkRAG look at the 20% school shark retention rule and other additional management options as part of the annual review and to provide formal advice to SEMAC on management of school shark	Brodie Macdonald	2.11	Next SharkRAG meeting
38.5	SEMAC Chair and AFMA to response to Mr Dugins regarding his letter to SEMAC	AFMA and David McGlennon	2.11	
38.6	AFMA to look at cost effective options to determine the representativeness of the current four vessels with EM for the Threat Abatement Plan	Brodie Macdonald	4.3	SEMAC 39
38.7	AFMA to notify SharkRAG the potential for changing gear types a part of the 12 month trial and its possible assessment implication	Brodie Macdonald	4.4	Next SharkRAG meeting
38.8	AFMA investigate the options for changing the trip limit for scalefish hook permits to be in line with the auto longline sector as part of simplification	Brodie Macdonald	4.4	SEMAC 39
38.9	AFMA to send FRDC multispecies harvest strategy and workshop outcomes to SEMAC members when finalised	Dan Corrie	4.5	

Action Item		Member to action	Agenda Item in which the matter was raised	Date to be completed by
38.10	AFMA to discuss with legal department about specifying what is meant by fishing event in the SPF EM direction	Sally Weekes	4.7	ASAP
38.11	AFMA to look at the wording regarding catch handling in the SPF EM direction and clarify wording and meaning	Sally Weekes	4.7	ASAP
38.12	AFMA to ensure that all issues relating to species highlighted in the shark report card are being considered as part of the Environmental Risk Assessments (ERA) and any potential risk is identified and managed	AFMA	4.8	SEMAC 39
38.13	AFMA and Industry member Mr Boag to report back at SEMAC 39 on the history, rationale and cost of piece counts in the GHAT Fishery	Mr Boag and Brodie Macdonald	4.8	SEMAC 39

Attachment D

2 Quota species recommendations

2.1 Alfonsino

Application of the SESSF Harvest Strategy			
Stock assessment	Last assessed in 2013 using a Tier 3 assessment. See 2018 Species Summary. SESSFrag (2019) recommended delaying the next assessment until 2020 due to low catches and a lack of data.		
Stock status against reference points and trend	Current 2013: F = 0.022	Target $F_{48}=0.149$	Limit $F_{20}=0.479$
Previous season catch and TAC (2018-19)	Catch (t)	Agreed TAC (t)	TAC (t) after unders/overs
	12	1017	1119
Percentage caught	1%		
RAG comments on data and assessment	Little new data is available given the lack of fishing for operational reasons.		
ABARES status ¹	2019 ABARES biomass		2019 ABARES fishing mortality
Other indicators	N/A		
RAG advice and any dissenting views	Recommended Biological Catch 1070 t (Discounted = 1017 t)	<ul style="list-style-type: none"> SESSFrag recommended extending the MYTAC until 2020 because of a lack of effort and data. 	

BIOMASS	■ NOT SUBJECT TO OVERFISHING / NOT OVERFISHED
	■ SUBJECT TO OVERFISHING / OVERFISHED
	■ UNCERTAIN

Discount factor	Less: 53 t	<ul style="list-style-type: none"> Discount factor of 5%.
State catch	Less: N/A	<ul style="list-style-type: none"> Rarely caught in state fisheries.
Discards	Less: N/A	<ul style="list-style-type: none"> Catches are low and discards considered insignificant.
Recreational catch	Less: N/A	<ul style="list-style-type: none"> Insignificant recreational catch.
Research Catch Allowance	Less: N/A	<ul style="list-style-type: none"> N/A
TAC calculation under the Harvest Strategy	Provisional (Harvest Strategy) TAC 1017 t	<ul style="list-style-type: none"> 5% discount factor applied.
Considerations in addition to the SESSF Harvest Strategy		
Commercial fishers' interest	N/A	
Economic considerations	<p>Figures for the contribution to SESSF GVP in the 2017-18 financial year (\$76 million) are confidential due to the number of vessels.</p> <p>Classified as 'byproduct' under the SESSF Monitoring and Assessment – Strategic Review (SMARP) project.</p>	
Species specific management (target, companion and bycatch)	N/A	
MAC advice and any dissenting views	<p>2020-21 TAC recommendation</p> <p>1017 t</p> <p>Extend the MYTAC to 2020-21.</p> <p>SEMAC advice and any dissenting views</p> <p>There were no dissenting views and SEMAC were comfortable with the advice provided in the paper.</p>	

SEMAC recommended a 2020-21 TAC of 1017 t, extending the MYTAC for another year, with under and overcatch provisions set at 10 per cent and a determined amount of 2 t.

2.2 Blue eye trevalla

Application of the SESSF Harvest Strategy

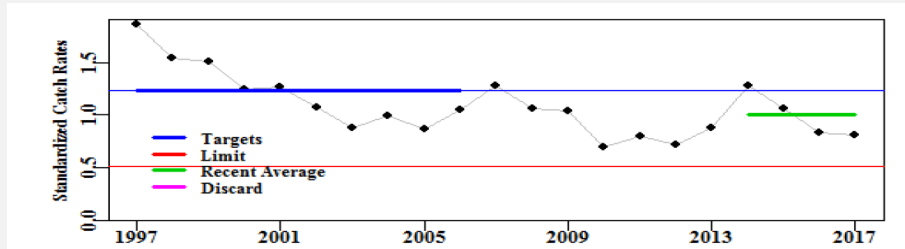
Stock assessment Assessed in 2018 using a Tier 4 assessment for the slope stock and a Tier 5 (catch-based) assessment for the eastern seamount stock. [See 2018 Species Summary](#). [SESSFrag \(2019\)](#) recommended continuing the three year MYTAC and monitoring CPUE in 2020.

Stock status against reference points and trend

Slope stock

A Tier 4 assessment is applied to the slope stock, assuming that stock levels during the reference years 1997-2006 produced MEY. The average CPUE for the reference period is used as the CPUE target.

For the slope stock, standardised CPUE has continued to decline over the last three years from above the target reference point in 2014 to a point between the limit and target reference point in 2017.



Current

Target

Limit

2018: CPUE = 0.9994

CPUE= 1.2288

CPUE = 0.512

Seamount stock

For the eastern seamount stock a catch-MSY analysis and an age-structured stock reduction analysis were considered by the RAG. Catch-MSY predicted that constant

	catches of 40 t over five years would lead to the mean and median depletion levels remaining stable. The age-structured stock reduction analysis predicted that constant catches at about 25 t for lower productivity scenarios and 48 t for higher productivity scenarios would lead to relative stability in depletion.			
Previous season catch and TAC (2018-19)	Catch (t)	Agreed TAC (t)	TAC (t) after unders/overs	Percentage caught
	377	462	502	75%
RAG comments on data and assessment	<p><i>Slope Stock</i></p> <p>The March 2018 blue eye trevalla workshop recommended assessing the slope stock as a whole using a Tier 4 assessment and to monitor catches/CPUE in the Great Australian Bight (GAB). SERAG supported including catches from zone 10 (off NSW) and the GAB in C_{targ}. However catches from Z10 and GAB are small and are not included in the CPUE series.</p> <p>The RAG supported collecting representative age and length data and developing alternative stock assessments approaches such as close-kin in the future.</p> <p><i>Seamount Stock</i></p> <p>SERAG noted there is no agreed harvest control rule for Tier 5 assessments and these assessments are inherently uncertain. The catch-based models used to assess the seamount stock interpret reductions in catches as declines in stock abundance.</p> <p>An industry member noted that the peak of catch between 1985 and 1992 was driven by operators developing catch history for an upcoming quota allocation as well as the introduction of plotters allowing easier access. His best guess for the reduction in catches in 1992-95 was a combination of quota having been allocated and fish being depleted. The RAG noted that drops in catches (e.g. in 2011) may have been related to management changes and closures.</p> <p>As such, the RAG considered the catch-based assessments applied to blue eye trevalla would likely be conservative. However, the RAG noted that blue eye trevalla stock status would not be uniform across the stock and would vary between seamounts.</p>			
ABARES status	2019 ABARES biomass		2019 ABARES fishing mortality	
Other indicators	In 2018 NSW reviewed the stock status for blue eye trevalla. Having regard to the Commonwealth assessment, the status was assessed as uncertain.			

RAG advice and any dissenting views	Recommended Biological Catch Slope: 439 t Seamount: 36 t Total: 475 t	<ul style="list-style-type: none"> SERAG (2018) recommended a three year MYTAC. For the seamount stock, the RAG recommended a constant catch of 36 t, to promote stock stability.
Discount factor	Less: N/A	<ul style="list-style-type: none"> The RAG recommended not applying the discount factor due to the conservative estimate of the Tier 4 RBC (due in part to unaccounted orca predation) and protection afforded by fishing closures.
State catch	Less: 27 t	<ul style="list-style-type: none"> Mostly NSW state catches.
Discards	Less: N/A	<ul style="list-style-type: none"> Discards are not significant and are not used in assessment.
Recreational catch	Less: N/A	<ul style="list-style-type: none"> Not considered in assessment.
Research Catch Allowance	Less: N/A	<ul style="list-style-type: none"> N/A
TAC calculation under the Harvest Strategy	Provisional (Harvest Strategy) TAC 448 t	The RAG suggested up to 50% of the combined seamount stock three year RBC (54 t) could be taken in any given year, within the global TAC.

Considerations in addition to the SESSF Harvest Strategy

Commercial fishers' interest	Industry have noted that the seamount stock of blue eye trevalla is an episodic fishery with high operating costs given the travel time. Some operators may visit the seamounts as part of operations on the high seas. Other operators may fish the seamounts until catch rates are no longer economically viable and then not fish the area for a number of years.
Economic considerations	3.86% contribution to SESSF GVP (\$76 million) in the 2017-18 financial year. Classified as 'primary' under the SMARP project.
Species specific management (target, companion and bycatch)	Trigger to be implemented for the seamount stocks, with no more than 54 t to be taken in any fishing year.

MAC advice and any dissenting views

2020-21 TAC recommendation

448 t

The second of a three year MYTAC.

SEMAC advice and any dissenting views

The Tier 4 assessment for the slope stock is highly uncertain and this species is a candidate for close-kin assessment. SEMAC supported close-kin work being progressed for this species.

Mr Mure noted recent catches have been poor and seem to be driven by environmental factors. Twenty per cent of the 2019-20 NSW TAC (30 t) has been caught to date, and only 26 per cent of the Commonwealth TAC (458 t) has been caught as of the end of January 2020. This is lower than in previous years.

Noting uncertainty around the assessment, and decreasing catch rates over the last three years, Mr Mure suggested the MAC consider a precautionary reduction to the TAC for the 2020-21 TAC to avoid large changes in TAC when the assessment is updated in 2021. This approach was supported by Mr Geen, Mr Harrison and Ms Lawrence.

Recognising uncertainty in the Tier 4 stock assessment and industry concerns around low catch rates up to January 2020, SEMAC recommended SESSFRAG (August 2020) consider fishery indicator data and:

- consider an alternative approach to assessing the slope stock in 2021 and applying a precautionary reduction to the TAC for the 2021-22 SESSF season; or
- bring the assessment forward to 2020, if the Tier 4 assessment is to be applied again, SERAG should consider application of the 15 per cent discount factor.

Mr Boag noted the industry data collection arrangement has not yet been formalised in the co-management agreement. In the absence of the agreement, the TAC on the seamount is Olympic, and difficult to manage. Industry would like to see the agreement finalised for the 2020-21 assessment.

SEMAC recommended a 2020-21 TAC of 448 t, the second of a three year MYTAC, with under and overcatch provisions set at 10 per cent and a determined amount of 2 t.

2.3 Blue grenadier

Application of the SESSF Harvest Strategy												
Stock assessment	Last assessed by SERAG in 2018 using a Tier 1 assessment. See 2018 Species Summary. SESSFRAG (2019) recommended continuing the three year MYTAC.											
Stock status against reference points and trend	<p>Current</p> <p>2019: 122% B₀</p>	<p>Target</p> <p>48% B₀</p>	<p>Limit</p> <p>20% B₀</p>									
	<p>Spawning depletion with forecast with ~95% asymptotic intervals</p> <p>Biomass has increased to above virgin stock biomass due to high recruitment and low fishing effort.</p>											
Previous season catch and TAC (2018-19)	<table border="1"> <thead> <tr> <th>Catch (t)</th> <th>Agreed TAC (t)</th> <th>TAC (t) after unders/overs</th> <th>Percentage caught</th> </tr> </thead> <tbody> <tr> <td>1809</td> <td>8810</td> <td>9636</td> <td>19%</td> </tr> </tbody> </table>	Catch (t)	Agreed TAC (t)	TAC (t) after unders/overs	Percentage caught	1809	8810	9636	19%			
Catch (t)	Agreed TAC (t)	TAC (t) after unders/overs	Percentage caught									
1809	8810	9636	19%									
RAG comments on data and assessment	<p>The 2018 assessment shows biomass dipping below the target reference point in 2014. The RAG questioned what data was driving this change given TACs were significantly undercaught over this period.</p> <p>SESSFRAG (2019) noted the 2018-19 TAC was undercaught because of a lack of vessel capacity.</p>											
ABARES status	2019 ABARES biomass		2019 ABARES fishing mortality									

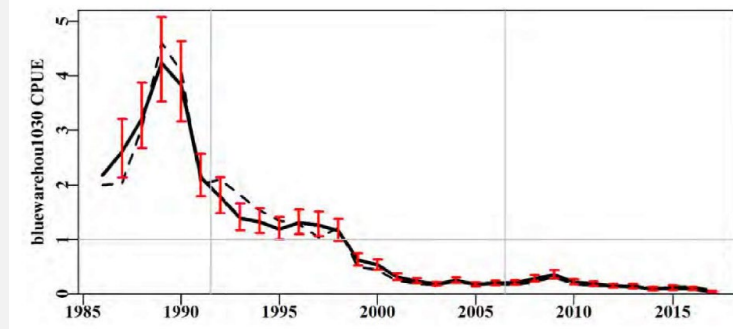
Other indicators	Industry members have reported consistently high catches of blue grenadier over a wide area. This is supported by data showing strong recent recruitment. Recruitment has been more stable than the episodic recruitment observed in the past.	
RAG advice and any dissenting views	Recommended Biological Catch 12,183 t (three year average)	<ul style="list-style-type: none"> • SERAG (Nov 2018) recommended a three year MYTAC using either the yearly RBC or the three year average. • SEMAC (2019) recommended a three year MYTAC using the three year average RBC.
Discount factor	Less: N/A	<ul style="list-style-type: none"> • N/A (Tier 1).
State catch	Less: N/A	<ul style="list-style-type: none"> • Minimal state catches.
Discards	Less: N/A	<ul style="list-style-type: none"> • Estimated discards (four year weighted average) of 540t. • Not deducted from the RBC because discards are factored when calculating the RBC.
Recreational catch	Less: N/A	<ul style="list-style-type: none"> • There are no estimates of recreational catch. Assumed to be low.
Research Catch Allowance	Less: N/A	<ul style="list-style-type: none"> • N/A
TAC calculation under the Harvest Strategy	Provisional (Harvest Strategy) TAC 12,183 t	N/A
Considerations in addition to the SESSF Harvest Strategy		
Commercial fishers' interest	As of 14 January 2020, 6,007 t (49%) of the 12,183 t 2019-20 TAC has been caught, due largely to a factory freezer vessel fishing in 2019.	
Economic considerations	3.68% contribution to SESSF GVP (\$76 million) in the 2017-18 financial year. Classified as 'primary' under the SMARP project.	
Species specific management (target, companion and bycatch)	<p>SERAG (Nov 2018) recommended looking at the proportion of silver warehou bycatch in the grenadier fishery (including factory vessel catches).</p> <p>SERAG (October 2019) noted there had not been a significant increase in silver warehou catch in 2019 with the introduction of the factory freezer vessel.</p>	

MAC advice and any dissenting views	<p>2020-21 TAC recommendation</p> <p>12,183 t</p> <p>Second of a three year MYTAC.</p>
	<p>SEMAC advice and any dissenting views</p> <p>SEMAC questioned the model estimated decrease in the biomass during the period 2012-2013. SEMAC had previously recommended that SERAG consider the fishery indicators, regardless of breakout rules being triggered, with a particular focus on wet-boat CPUE and recent recruitment.</p> <p>SEMAC recommended a 2020-21 TAC of 12,183 t, the second of a three year MYTAC, with under and overcatch provisions set at 10 per cent and a determined amount of 2 t.</p>

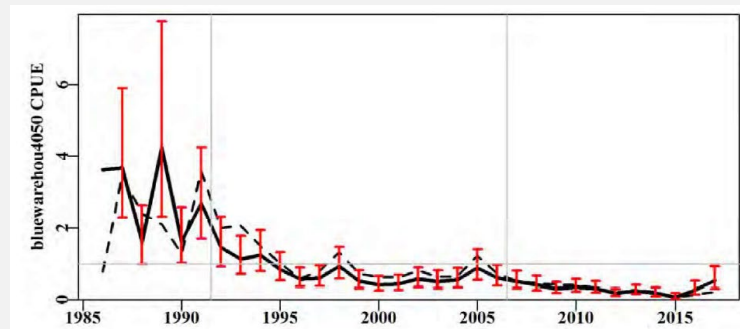
2.4 Blue warehou

Application of the SESSF Harvest Strategy			
Stock assessment	Last assessed 2013 using a Tier 4 assessment. See 2018 Species Summary. Rebuilding species review undertaken by SERAG in December 2019.		
Stock status against reference points and trend	Current	Target	Limit
	<p>East</p> <p>CPUE = 0.1861</p> <p>West</p> <p>CPUE = 0.2681</p>	<p>CPUE = 2.0717</p> <p>CPUE = 1.9249</p>	<p>CPUE = 0.8287</p> <p>CPUE 0.7699</p>
<p>The 2013 assessment indicated that both the eastern and western stocks of blue warehou are likely to have remained below 20% of unfished spawning biomass. CPUE in the east and west has remained low since the assessment, as shown below.</p> <p style="text-align: center;"><i>Standardised CPUE for the eastern stock</i></p>			

Application of the SESSF Harvest Strategy



Standardised CPUE for the western stock



Previous season catch and TAC (2018-19)

Catch (t)	Agreed TAC (t)	TAC (t) after unders/overs	Percentage caught
54	118	118	46%

RAG comments on data and assessment

The method used to estimate discarded catch of blue warehou in the east in 2017 and 2018 was revised to account for a discrepancy between the logbook reported catch and the Catch Disposal Record (CDR) catch, where some operators were recording 'black trevally' (a tropical species) in e-logs. This, in addition to revisions to the Tasmanian blue warehou catch, increased the 2017 estimate of discarded blue warehou from 151.7 t to 215.8 t.

The 2017 estimate remains highly uncertain, and was based on a discard rate obtained from a single Danish seine trip in 2017. The 2018 discard estimate has reduced to 27.6 t, which is more consistent with previous estimates.

Application of the SESSF Harvest Strategy

	<p>CPUE is not a good index of abundance while there is an incidental catch TAC in place as fishers are actively avoiding the species. The RAG recommended that an alternative primary index of abundance be developed as a high priority for use in future stock assessments.</p> <p>Commonwealth catches have always been less than the incidental TAC, however catches in 2018-19 were higher than recent years, with 46% of the TAC (54.2 t) caught. This, combined with potential increases in discarding, suggest there may be some level of recovery.</p>	
ABARES status	2019 ABARES biomass	2019 ABARES fishing mortality
Other indicators	N/A	
RAG advice and any dissenting views	Recommended Biological Catch 0 t	<ul style="list-style-type: none"> Rebuilding species.
Discount factor	Less: N/A	<ul style="list-style-type: none"> N/A
State catch	Less: N/A	<ul style="list-style-type: none"> Average state catches have been 6.8 t in the east and 0.7 t in the west. Not deducted as an incidental catch TAC is being recommended.
Discards	Less: N/A	<ul style="list-style-type: none"> Estimated discards (four year weighted average) of 73.2 t in the east and 10 t in the west. Estimates of discards are uncertain, particularly in the west. Not deducted from RBC as an incidental catch TAC is being recommended.
Recreational catch	Less: N/A	<ul style="list-style-type: none"> Tasmanian recreational catch estimates are available for 1997 (101.9 t), 2001 (19.5 t), 2008 (11.9 t), 2010 (32.5 t), 2013 (15.4 t) and 2018 (0.8 t). Not deducted from RBC as an incidental catch TAC is being recommended.

Application of the SESSF Harvest Strategy

Research Catch Allowance	Less: N/A	<ul style="list-style-type: none"> N/A
TAC calculation under the Harvest Strategy	Provisional (Harvest Strategy) TAC 118 t	<ul style="list-style-type: none"> Incidental catch TAC.

Considerations in addition to the SESSF Harvest Strategy

Commercial fishers' interest	N/A
Economic considerations	0.14% contribution to SESSF GVP (\$76 million) in the 2017-18 financial year. Classified as 'secondary' under the SMARP project.
Species specific management (target, companion and bycatch)	<p>Species is managed under the Blue Warehouse Stock Rebuilding Strategy 2014. This strategy is currently being reviewed, with the revised rebuilding strategy expected to be finalised in 2020.</p> <p>SERAG (October 2019) recommended maintaining the move-on provision for the 2020-21 season, whereby operators must move on if they catch in excess of 200 kg of blue warehouse in any single shot.</p>
MAC advice and any dissenting views	<p>2020-21 TAC recommendation</p> <p>118 t single year incidental TAC</p> <p>SEMAC advice and any dissenting views</p> <p>SEMAC noted the SERAG advice in response to the request from the AFMA Commission for further advice to assist the TAC setting process for the 2020-21 season (see below).</p> <p>SEMAC supported SERAGs recommendation to explore options for establishing an alternative index of abundance, as well as ongoing application of the 200 kg move-on provision, noting this is to be applied to trawlers only.</p> <p>The MAC had nothing further to add and there were no dissenting views.</p> <p>SEMAC recommended a 2020-21 incidental TAC of 118 t, the second of a three year MYTAC, with no under and overcatch provisions, and a determined amount of 2 t.</p>

To further assist the 2020-21 TAC setting process, the AFMA Commission asked SERAG to provide advice on a number of issues. SERAG provided the following advice at its October and December 2019 meetings:

The effectiveness of the current move-on provision

While it may compromise any future companion species analyses, the move-on provision seems to have been complied with by industry, and the discard estimate (while uncertain) has reduced for 2018. The RAG recommended maintaining the move-on provision, in an attempt to reduce the risk of successive large shots of blue warehou, and reinforcing the message to operators via educative campaigns.

An updated companion species and targeting analyses to update estimates of unavoidable bycatch.

A companion species analysis using a metier analysis approach found that changes in the flathead TAC have the most impact on catches of redfish, and to a lesser extent, blue warehou and eastern gemfish. While the analysis isn't designed to provide an indication of targeting, this can be inferred from observations, catch composition or a combination of inputs. There was nothing in this analysis that inferred targeting was occurring.

This is supported by the outcomes of the targeting analysis undertaken by AFMA. This was based on previous targeting analyses, which assumes a species is targeted where it makes up more than 50% of the retained catch in any particular shot, again this did not show any indication of targeting.

The RAG agreed the metier approach could be used to update future estimates of unavoidable bycatch, and would complement the multi-species harvest strategy approach. However, the recent analysis only used SESSF logbook and ABARES price data for the period 2012-2017. SERAG supported undertaking this type of analysis in the future, provided it was using up to date information.

SERAG recommended maintaining the 118 t bycatch TAC for the 2020-21 season.

The likely impact on the stock of recent discards, including the high 2017 estimate

The discard estimates for blue warehou in the east in 2017 and 2018 were revised to account for a discrepancy between the logbook reported catch and the CDR catch, where some operators were recording 'black trevally' (a tropical species) in e-logs. This, in addition to revisions to the Tasmanian blue warehou catch, increased the 2017 estimate of discarded blue warehou from 151.7 t to 215.8 t.

However, the RAG noted this estimate remains highly uncertain, and is based on a discard rate obtained from a single Danish seine trip in 2017. The 2018 discard estimate has reduced to 27.6 t, which is more consistent with previous estimates.

The RAG recommended monitoring future discards but were not concerned that the potential high discards in 2017 had adversely impacted the stock.

The ability to update the stock assessment in light of recent increases in catch and estimates of discards.

Blue warehou is a Tier 4 species which relies on CPUE as an index of abundance. The introduction of a bycatch TAC and operator avoidance behaviour has likely compromised the CPUE series and it is unlikely to be useful as an index of abundance.

The RAG recommended the development of an alternative primary index of abundance as a high priority for use in future stock assessments, and that this species should be considered as a candidate for application of close-kin genetics assessments.

2.5 Deepwater shark (eastern)

Application of the SESSF Harvest Strategy												
Stock assessment	Last assessed by SERAG in 2018 using a Tier 4 assessment. See 2018 Species Summary. SESSFAG (2019) recommended continuing the three year MYTAC of 24 t.											
Stock status against reference points and trend	<p>Current</p> <p>CPUE = 0.5332</p>	<p>Target</p> <p>CPUE = 1.1592</p>	<p>Limit</p> <p>CPUE Limit = 0.483</p>	<p>Standardised CPUE has been relatively flat since 2010.</p>								
	Standardised CPUE remained relatively flat again in 2018, continuing the trend since the 2018 assessment.											
Previous season catch and TAC (2018-19)	<table border="1"> <thead> <tr> <th>Catch (t)</th> <th>Agreed TAC (t)</th> <th>TAC (t) after unders/overs</th> <th>Percentage caught</th> </tr> </thead> <tbody> <tr> <td>19</td> <td>23</td> <td>27</td> <td>71%</td> </tr> </tbody> </table>	Catch (t)	Agreed TAC (t)	TAC (t) after unders/overs	Percentage caught	19	23	27	71%			
Catch (t)	Agreed TAC (t)	TAC (t) after unders/overs	Percentage caught									
19	23	27	71%									

Application of the SESSF Harvest Strategy

RAG comments on data and assessment	<p>This is a basket of species, hence a key assumption is that the combined species' CPUE at least broadly reflects the trends in CPUE for all the contributing species. Note that approximately 80% of the catch was one species, <i>Deania calcea</i> (brier shark).</p> <p>Catches have been stable between 20-30 t since 2012 and the CPUE has remained stable in the open areas.</p> <p>Given stable catches and CPUE over the past eight years, SERAG (2018) advised there was little risk in maintaining the TAC at current catch levels, that is, 24 t, over the next three years.</p> <p>A technical working group (TWG) was established in February 2019 to provide advice on how to set TACs for species identified as 'difficult to assess'. For problematic species being assessed using Tier 4 or Tier 5 assessments, the TWG recommended an interim approach, pending the outcomes of the multi-species harvest strategy:</p> <ul style="list-style-type: none"> • setting a TAC based on the existing TAC, subject to sustainability concerns of the RAG and consideration of whether the TAC is restricting catches of that species or any other species; • annual monitoring of available fishery indicators on a weight of evidence basis, including SAFE assessments, where available; and • if fishing mortality needs to be constrained, management measures other than output controls should be considered by SEMAC and AFMA. 	
ABARES status	2019 ABARES biomass	2019 ABARES fishing mortality
Other indicators	A large proportion (>54%) of the catch (east & west combined) was previously taken in waters deeper than 700m and most of these areas are now closed (AFMA report 2008-836).	
RAG advice and any dissenting views	Recommended Biological Catch 10 t	<ul style="list-style-type: none"> • A large portion of the stock is protected by closures.
Discount factor	Less: N/A	<ul style="list-style-type: none"> • The RAG recommended not applying a discount factor given the protection afforded to the stock by closures.
State catch	Less: N/A	<ul style="list-style-type: none"> • There are no state catches.

Application of the SESSF Harvest Strategy

Discards	Less: N/A	<ul style="list-style-type: none"> Estimated discards (four year weighted average) of 39 t. Discards are not used in assessment and not deducted from the RBC.
Recreational catch	Less: N/A	<ul style="list-style-type: none"> No reported recreational catches.
Research Catch Allowance	Less: N/A	<ul style="list-style-type: none"> N/A
TAC calculation under the Harvest Strategy	Provisional (Harvest Strategy) TAC 10 t	Given stable catches and CPUE over the past eight years, SERAG (2018) advised there was little risk in maintaining the TAC at current catch levels, that is, 24 t . SESSFrag (2019) recommended continuing the three year MYTAC of 24 t.

Considerations in addition to the SESSF Harvest Strategy

Commercial fishers' interest	This species has become a bycatch species in the east and catches have been consistently around 24 t. An RBC/TAC of 10 t is likely to lead to discarding.	
Economic considerations	The contribution to SESSF GVP (\$76 million) in the 2017-18 financial year is not available. A basket of species, classified as 'secondary' under the SMARP project.	
Species specific management (target, companion and bycatch)	A large proportion (>54%) of the catch (east & west combined) was previously taken in waters >700m and most of these areas are now closed (AFMA report 2008-836).	
MAC advice and any dissenting views	2020-21 TAC recommendation 24 t The second of a three year MYTAC.	SEMAC advice and any dissenting views

Application of the SESSF Harvest Strategy

Noting that a large proportion of the grounds are closed, SEMAC recommended a 2020-21 TAC of 24 t, the second of a three year MYTAC, with under and overcatch provisions set at 10 per cent and a determined amount of 2 t.

2.6 Deepwater shark (western)

Application of the SESSF Harvest Strategy				
Stock assessment	Last assessed by SERAG in 2018 using a Tier 4 assessment. See 2018 Species Summary. SESSFrag (2019) recommended continuing the three year MYTAC.			
Stock status against reference points and trend	Current	Target	Limit	
	CPUE = 0.7292	CPUE = 0.6073	CPUE Limit = 0.253	
	CPUE has increased in recent years which has brought the four year average up. The target CPUE was set at half the observed CPUE in the reference period due to the undeveloped state of the fishery.			
	Standardised CPUE increased again in 2018, continuing the trend since the 2018 assessment.			
Previous season catch and TAC (2018-19)	Catch (t)	Agreed TAC (t)	TAC (t) after unders/overs	Percentage caught
	79	264	281	28%
RAG comments on data and assessment	This is a basket of species, hence a key assumption is that the combined species' CPUE at least broadly reflects the trends in CPUE for all the contributing species. Note that approximately 80% of the catch was one species: <i>Deania calcea</i> (brier shark). SESSFrag (2019) noted it was not clear whether the 2018-19 TAC was undercaught due to operational reasons, and suggested plotting effort over 5 years (target and non-targeted fishing) and comparing it with a plot of CPUE. This will be considered at the 2019 SESSFrag data meeting.			

Application of the SESSF Harvest Strategy

A technical working group was established in February 2019 to provide advice on how to set TACs for species identified as 'difficult to assess'. For problematic species being assessed using Tier 4 or Tier 5 assessments, the TWG recommended an interim approach, pending the outcomes of the multi-species harvest strategy:

- setting a TAC based on the existing TAC, subject to sustainability concerns of the RAG and consideration of whether the TAC is restricting catches of that species or any other species;
- annual monitoring of available fishery indicators on a weight of evidence basis, including SAFE assessments, where available; and
- if fishing mortality needs to be constrained, management measures other than output controls should be considered by SEMAC and AFMA.

The deepwater shark will be reviewed in light of the advice above.

ABARES status	2019 ABARES biomass	2019 ABARES fishing mortality
Other indicators	A large proportion (>54%) of the catch of the entire fishery (east & west combined) was previously taken in waters >700m and most of these areas are now closed (AFMA report 2008-836).	
RAG advice and any dissenting views	Recommended Biological Catch 235 t	<ul style="list-style-type: none"> • SERAG (2018) recommended a three year MYTAC.
Discount factor	Less: N/A	<ul style="list-style-type: none"> • The RAG recommended not applying a discount factor given the protection afforded to the stock by closures.
State catch	Less: N/A	<ul style="list-style-type: none"> • An estimate of State catches have not been available since 2008 and are not deducted from the RBC
Discards	Less: N/A	<ul style="list-style-type: none"> • Estimated discards (four year weighted average) of 82 t. • Discards are not used in assessment because they are poorly estimated and are not deducted from the RBC.
Recreational catch	Less: N/A	<ul style="list-style-type: none"> • No reported recreational catches.

Application of the SESSF Harvest Strategy

Research Catch Allowance	Less: N/A	<ul style="list-style-type: none"> N/A
TAC calculation under the Harvest Strategy	Provisional (Harvest Strategy) TAC 235 t	<ul style="list-style-type: none"> SESSFRAG (2019) recommended continuing the three year MYTAC

Considerations in addition to the SESSF Harvest Strategy

Commercial fishers' interest	N/A
Economic considerations	<p>The contribution to SESSF GVP (\$76 million) in the 2017-18 financial year is not available.</p> <p>A basket species, classified as 'secondary' under the SMARP project.</p>
Species specific management (target, companion and bycatch)	A large proportion of the stock is protected by deepwater closures.
MAC advice and any dissenting views	<p>2020-21 TAC recommendation</p> <p>235 t</p> <p>The second of a three year MYTAC.</p> <p>SEMAC advice and any dissenting views</p> <p>SEMAC noted the proposal to fish for western orange roughy in the west, which may result in an increase in catches, and would provide access to grounds which have been closed to date.</p> <p>SEMAC recommended considering the catches that result from fishing under the western orange roughy research program, and any implications to the Tier 4 assessment and application of the discount factor, as access to grounds that have been historically closed.</p> <p>SEMAC recommended a 2020-21 TAC of 235 t, the second of a three year MYTAC, with under and overcatch provisions set at 10 per cent and a determined amount of 2 t.</p>

2.7 Elephantfish

Application of the SESSF Harvest Strategy				
Stock assessment	Last assessed by SharkRAG in 2020 using outcomes of the most recent Ecological Risk Assessment.			
Stock status against reference points and trend	Unknown due to unreliable CPUE indices and high discard rates.			
Previous season catch and TAC (2018-19)	Catch (t)	Agreed TAC (t)	TAC (t) after unders/overs	Percentage caught
	51	114	125	40%
RAG comments on data and assessment	<p>SharkRAG (October 2018) considered that the outcomes of the Tier 4 method were being driven by assumptions about discards and recreational catch. While standardised CPUE suggested that stocks are stable at or above target levels, the RAG did not consider it a reliable index of abundance.</p> <p>SharkRAG (2018) had little concern about the status of the stock, and recommended maintaining the 114 t TAC for the 2019-20 season, and recommended reviewing the TAC subject to advice from the SESSFRAG TWG considering ‘difficult to assess’ species.</p> <p>For Tier 4 species with high discards and/or unreliable CPUE, the TWG recommended an interim approach, pending the outcomes of the multi-species harvest strategy:</p> <ul style="list-style-type: none"> • setting a TAC based on the existing TAC, subject to sustainability concerns and consideration of whether the TAC is restricting catches of that species or any other species; • annual monitoring of available fishery indicators on a weight-of-evidence basis, including SAFE assessments, where available; and • if fishing mortality needs to be constrained, management measures other than output controls should be considered by SEMAC and AFMA. <p>Recognising issues with the Tier 4 assessment, SESSFRAG (2019) recommended setting the 2020-21 TAC for elephantfish using a weight of evidence approach, including recent catches and the outcomes of the most recent ERA.</p> <p>Elephantfish were assessed as ‘low risk’ in the 2019 ERA, which means the instantaneous fishing mortality rate (F) for the period of the assessment (2012-2016) was less than the F required to drive the stock below maximum sustainable mortality (F_{MSM}).</p>			

Application of the SESSF Harvest Strategy

	Considering the outcomes of the ERA, SharkRAG (January 2020, minutes still being finalised) recommended a three year MYTAC of 114 t.	
ABARES status	2019 ABARES biomass	2019 ABARES fishing mortality
Other indicators	SharkRAG (2020) suggested utilising recreational catch data as a potential source of information when considering future TACs.	
RAG advice and any dissenting views	Recommended Biological Catch N/A Three year MYTAC of 114 t	<ul style="list-style-type: none"> TAC based on recent catches and outcomes of ERA assessment.
Discount factor	Less: N/A	<ul style="list-style-type: none"> No longer a Tier 4 species
State catch	Less: N/A	<ul style="list-style-type: none"> Minimal state catch.
Discards	Less: N/A	<ul style="list-style-type: none"> Considered to be high, and are considered as part of the weight of evidence approach, but are not deducted from an RBC when setting the TAC.
Recreational catch	Less: N/A	<ul style="list-style-type: none"> Estimates are available, and are considered as part of the weight of evidence approach, but are not deducted from an RBC when setting the TAC.
Research Catch Allowance	N/A	N/A
TAC calculation under the Harvest Strategy	Provisional (Harvest Strategy) TAC 114 t	<ul style="list-style-type: none"> Three year MYTAC

Considerations in addition to the SESSF Harvest Strategy

Commercial fishers' interest	RAG industry members have previously expressed that a precautionary long term TAC should be set for elephant fish as the TAC level does not influence landings. Industry members have noted that the landed value of elephant fish is less than the cost of leasing quota.
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Application of the SESSF Harvest Strategy

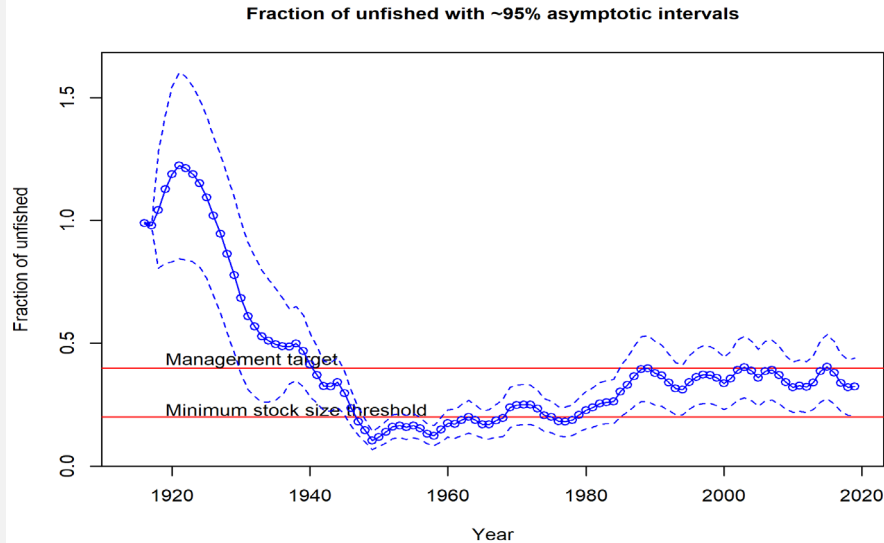
Economic considerations	Contribution to SESSF GVP (\$76 million) in the 2017-18 financial year is not available. Species GVP for the 2016-17 financial year was <\$0.10m Classified as 'byproduct' under the SMARP project.
Species specific management (target, companion and bycatch)	N/A
MAC advice and any dissenting views	<p>2020-21 TAC recommendation 114 t The first of a three year MYTAC.</p> <p>SEMAC advice and any dissenting views SEMAC noted this a low value species, and discards were driven by the cost landing the species outweighing the market value. SEMAC recommended a TAC of 114 t for the 2020-21 fishing year, the first of a three year MYTAC, with under and overcatch provision to be set at 10 per cent with a determined amount of 2 t.</p>

2.8 Flathead

Application of the SESSF Harvest Strategy

Stock assessment	Last assessed as a Tier 1 species by SERAG in December 2019. Updated species summaries are included in the meeting minutes .		
Stock status against reference points and trend	Current (2016)	Target	Limit
	34% B ₀	40% B ₀	20% B ₀
	The last assessment in 2016 estimated the spawning biomass at 42% of unexploited stock biomass. The 2019 assessment estimates the stock has decreased to 34% of B ₀ over the last three years, driven primarily by poor recruitment in 2013.		

Application of the SESSF Harvest Strategy



Previous season catch and TAC (2018-19)

Catch (t)	Agreed TAC (t)	TAC (t) after unders/overs	Percentage caught
2039	2507	2761	74%

RAG comments on data and assessment

Recent recruitments are well estimated, and the last three years of recruitment estimates, including a reduction to the 2012 estimate, have resulted in a lower estimate of current biomass.

At its December 2019 meeting, SERAG considered fixed catch projections using low, average and high recruitment scenarios.

Under average recruitment, the biomass is expected to increase to 36.7% B_0 by 2023 under the harvest control rule with RBCs of 2,334 (2020), 2648 t (2021) and 2706 t (2022). If a three year average is applied (2563 t) the biomass is expected to increase to 36.6% B_0 .

Assuming the RBCs from the average recruitment scenario are fully caught, the biomass is expected to decrease to 29.2% B_0 by 2023 under low recruitment, and to 49.8% B_0 under the high recruitment scenario.

Application of the SESSF Harvest Strategy

	<p>However, the RAG noted, while there were two years of poor recruitment in 2013 and 2014, there is no evidence of ongoing poor recruitment, and the most recent recruitment estimate (2015) is above average. However, the 2015 recruitment estimate may also be revised as additional data is collected on this recruitment event.</p> <p>The RAG recommended a three-year RBC using either the single year RBCs or the three year average RBC.</p> <p>Note</p> <p>An error was identified in the catch series used in the assessment after the December 2019 SERAG. While the changes to the catch series were relatively minor, it resulted in changes to the spawning biomass series and recruitment, and resulting RBCs. These were accepted by SERAG via email correspondence in January 2020 and have been incorporated in the figures above.</p>	
ABARES status	2019 ABARES biomass	2019 ABARES fishing mortality
Other indicators	<p>There has been a general decrease in standardised CPUE for Danish seine and otter trawl methods in all zones since the last assessment.</p>	
RAG advice and any dissenting views	<p>Recommended Biological Catch 2020-21: 2334 t Three year average: 2563 t</p>	<ul style="list-style-type: none"> SERAG recommended using either the single year RBCs or the three year average RBC.
Discount factor	<p>Less: N/A</p>	<ul style="list-style-type: none"> N/A (Tier 1).
State catch	<p>Less: 160 t</p>	<ul style="list-style-type: none"> Currently NSW Southern Fish Trawl operators are subject to a 200 kg trip limit. These operators were expected to transition to the SESSF on 1 May 2020, however this has been delayed. NSW set a 166.9 t tiger flathead TAC for the Ocean Trawl fishery 2019. NSW flathead catches have decreased from 150 t in 2015 to 96 t in 2018. 25% of the 2019-20 NSW TAC has been caught as of 5 Feb 2020.

Application of the SESSF Harvest Strategy

Discards	Less: 164 t	<ul style="list-style-type: none"> The assessment model estimates discards and these are used in determining the TAC.
Recreational catch	Less: N/A	<ul style="list-style-type: none"> Estimates for recreational catch of flathead are available. However, in NSW the primary species is dusky flathead, in Victoria and Tasmania the primary species is sand flathead. These species are not considered in the assessment.
Research Catch Allowance	Less: N/A	<ul style="list-style-type: none"> N/A
TAC calculation under the Harvest Strategy	Provisional (Harvest Strategy) TAC 2010 t (using 2020 RBC) 2239 t (using three year average RBC)	The RAG recommended a three-year RBC using either the single year RBCs or the three year average RBC, noting the expected biomass in 2023 under each scenario is 36.7% B ₀ and 36.6% B ₀ , respectively.

Considerations in addition to the SESSF Harvest Strategy

Commercial fishers' interest	Catches in the 2018-19 fishing year were the lowest since 1995, with only 2039 t caught, compared to 2439 t in 2017-18 and 2876 t in 2016-17.	
Economic considerations	20.76% contribution to SESSF GVP (\$76 million) in the 2017-18 financial year. Classified as 'primary' under the SMARP project.	
Species specific management (target, companion and bycatch)	Based on an industry proposal, the minimum codend mesh size for Danish seine vessels increased from 70mm to 75mm in the 2019-20 fishing year to reduce the catch of small flathead.	
MAC advice and any dissenting views	2020-21 TAC recommendation 2010 t The first of a three year MYTAC. SEMAC advice and any dissenting views	

Application of the SESSF Harvest Strategy

The tiger flathead assessment is regarded as one of the more certain Tier 1 assessments. Recruitment seems to be driving the variation in biomass, however the MAC noted the RAGs advice that there is no evidence of ongoing poor recruitment.

Industry members suggested taking the single year (step-up) approach, and setting the TAC based on the 2020 RBC of 2334 t, resulting in a TAC of 2010 t. In either case, the TAC is unlikely to restrict catches, and is not expected to impact the sustainability of the stock.

The MAC noted that the recommendation to take the step-up approach wasn't related to concerns about sustainability, however there may be some economic benefits of step up approach. The MAC also heard from the industry members that industry would not be surprised by a lower flathead TAC for the coming fishing season.

The MAC support the industry proposal to set the TACs based the single year RBCs, and recommended a 2020-21 TAC of 2010 t, the first of a three year MYTAC, with under and overcatch provisions set at 10 per cent and a determined amount of 2 t.

2.9 Gemfish (eastern)

Application of the SESSF Harvest Strategy

Stock assessment Last assessed by ShelfRAG in 2009 using a Tier 1 assessment. Data limitations mean an assessment has not been able to be undertaken since then. [See 2018 Species Summary](#).
Rebuilding species review undertaken by [SERAG in December 2019](#).

Stock status against reference points and trend	Current (2009)	Target	Limit
	16% B ₀	48% B ₀	20% B ₀

Previous season catch and TAC (2018-19)	Catch (t)	Agreed TAC (t)	TAC (t) after unders/overs	Percentage caught
	39.6	100	100	40%

Application of the SESSF Harvest Strategy

RAG comments on data and assessment	<p>The assessment was updated with new data in 2016 but was not accepted by the RAG. They noted however that the data provided no evidence of stock rebuilding.</p> <p>In 2019, there was an increase in eastern gemfish catch, with 56.3 t reported (as at 19 November 2019) - the highest catch since 2013 (57.6 t).</p> <p>The 2018 estimated discard rate increased to 63.6% - the highest estimated discard rate since 2013 (67.4%). However, there is considerable uncertainty around this estimate.</p> <p>There are some signs of rebuilding, however the spawning CPUE cannot be used as a reliable index of abundance due to avoidance behaviour of operators, which means the assessment is unlikely to be informative.</p> <p>SERAG (2019) suggested options for establishing an index of abundance, including close-kin genetics or targeted surveys.</p>	
ABARES status	2019 ABARES biomass	2019 ABARES fishing mortality
Other indicators	There is some indication of stock rebuilding, however the stock assessment is inhibited by an uninformative CPUE index and poor historical biological sampling.	
RAG advice and any dissenting views	Recommended Biological Catch 0 t	<ul style="list-style-type: none"> Rebuilding species.
Discount factor	Less: N/A	<ul style="list-style-type: none"> N/A
State catch	Less: N/A	<ul style="list-style-type: none"> Estimated state catches of 4 t. Mostly NSW catch. Not deducted given the recommendation is for an incidental catch TAC.
Discards	Less: N/A	<ul style="list-style-type: none"> Estimated discards (four year weighted average) of 45 t however not deducted from the RBC given the recommendation is for an incidental catch TAC.
Recreational catch	Less: N/A	<ul style="list-style-type: none"> No estimates available and not considered in assessment.
Research Catch Allowance	Less: N/A	<ul style="list-style-type: none"> N/A

Application of the SESSF Harvest Strategy

TAC calculation under the Harvest Strategy	Provisional (Harvest Strategy) TAC 100 t	<ul style="list-style-type: none"> Incidental catch TAC
Considerations in addition to the SESSF Harvest Strategy		
Commercial fishers' interest	A code of conduct has been developed by the South East Trawl Fishing Industry Association (SETFIA). The code includes move-on and reporting obligations to assist operators in avoiding incidental catches.	
Economic considerations	0.09% contribution to SESSF GVP (\$76 million) in the 2017-18 financial year. Classified as 'secondary' under the SMARP project.	
Species specific management (target, companion and bycatch)	Historically there were reports of a companion species relationship between mirror dory and eastern gemfish. This is likely to have changed in catch records due to operators avoiding the eastern gemfish spawning run. The species is managed under the Eastern Gemfish Stock Rebuilding Strategy 2015 .	
MAC advice and any dissenting views	<p>2020-21 TAC recommendation 100 t</p> <p>A single year incidental TAC.</p> <p>SEMAC advice and any dissenting views</p> <p>The NSW 2019-20 Ocean Trap and Line TAC was set at 7.1 t, of which 11 per cent has been caught to date. There is an Ocean trawl trip limit of 50 kg.</p> <p>SEMAC recommended a 2020-21 incidental TAC of 100 t, with no under and overcatch provisions and a determined amount of 2 t.</p>	

2.10 Gemfish (western)

Application of the SESSF Harvest Strategy

Stock assessment	Last assessed as a Tier 4 species by SERAG in December 2019. Species summaries are included in the meeting minutes .
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Application of the SESSF Harvest Strategy

Stock status against reference points and trend	Current $CPUE_{current} = 1.0418$	Target $CPUE_{targ} = 0.9942$	Limit $CPUE_{lim} = 0.4143$
	Despite a decrease in CPUE over the last two years, the recent average CPUE remains well above the target reference point.		
Previous season catch and TAC (2018-19)	Catch (t)	Agreed TAC (t)	TAC (t) after unders/overs
	79	200	218
RAG comments on data and assessment	The previous RBC was recommended using a weight of evidence approach. The 2016 Tier 4 assessment produced an RBC of 436 t. The current 2019 assessment produced an RBC of 423 t (difference of 13 t). Estimates of discards are lower in 2018, and seem to be tracking CPUE.		
ABARES status	2019 ABARES biomass		2019 ABARES fishing mortality
Other indicators	Catch in 2018 was the lowest on record.		
RAG advice and any dissenting views	Recommended Biological Catch		
	423 t		
Discount factor	Less: 63 t	<ul style="list-style-type: none"> 15% discount factor applied (Tier 4) 	
State catch	Less: N/A	<ul style="list-style-type: none"> State catches are not included in the assessment and are considered to be low. 	

Application of the SESSF Harvest Strategy

Discards	Less: 42	<ul style="list-style-type: none"> Estimated discards (four year weighted average) of 41.7 t.
Recreational catch	Less: N/A	<ul style="list-style-type: none"> Recreational catch is not significant and is not considered in assessment.
Research Catch Allowance	Less: N/A	<ul style="list-style-type: none"> N/A
TAC calculation under the Harvest Strategy	Provisional (Harvest Strategy) TAC 300 t	Application of large change limiting rule, limiting the increase to 50% from last year's TAC of 200 t.

Considerations in addition to the SESSF Harvest Strategy

Commercial fishers' interest	There is a small amount of western gemfish caught in the GABT however this is managed under a triggers described under the SESSF Harvest Strategy and is not deducted from the RBC.	
Economic considerations	0.22% contribution to SESSF GVP (\$76 million) in the 2017-18 financial year. Classified as 'secondary' under the SMARP project.	
Species specific management (target, companion and bycatch)	<p>The FRDC project '<i>Research to underpin a better understanding of Western Gemfish stocks in the Great Australian Bight</i>' revealed evidence of genetically different populations between the east and west (no gene flow), with a mixing (overlap) of the two stocks in western Bass Strait through to Portland.</p> <p>While western gemfish are known to occur throughout the GABT and into CTS zones 40 and 50, it is only under quota in the CTS and the Tier 4 assessment only includes zone 50. The GABT component of the stock is managed under triggers described in the SESSF Harvest Strategy.</p>	
MAC advice and any dissenting views	<p>2020-21 TAC recommendation 300 t</p> <p>First of a three year MYTAC.</p> <p>MAC advice and any dissenting views</p>	

Application of the SESSF Harvest Strategy

SEMAC noted the outcomes of the stock structure research which revealed evidence of genetically different populations between the east and west (no gene flow), with a mixing of the two stocks in western Bass Strait through to Portland.

SEMAC recommended a 2020-21 TAC of 300 t, the first of a three year MYTAC, with under and overcatch provisions set at 10 per cent and a determined amount of 2 t.

2.11 Gummy shark

Application of the SESSF Harvest Strategy

Stock assessment	Last assessed by SharkRAG in 2016 using a Tier 1 assessment. See 2018 Species Summary. SESSFrag (2019) recommended continuing the current MYTAC and to update the assessment in 2020.		
Stock status against reference points and trend	<p>Current (2016)</p> <p>Bass Strait: 59% B₀ Tasmania: 83% B₀ South Australia: 69% B₀</p>	<p>Target</p> <p>48% B₀</p>	<p>Limit</p> <p>20% B₀</p>
	All three assessed stocks remain above target, with no evidence that stocks were ever below the management target.		

Application of the SESSF Harvest Strategy

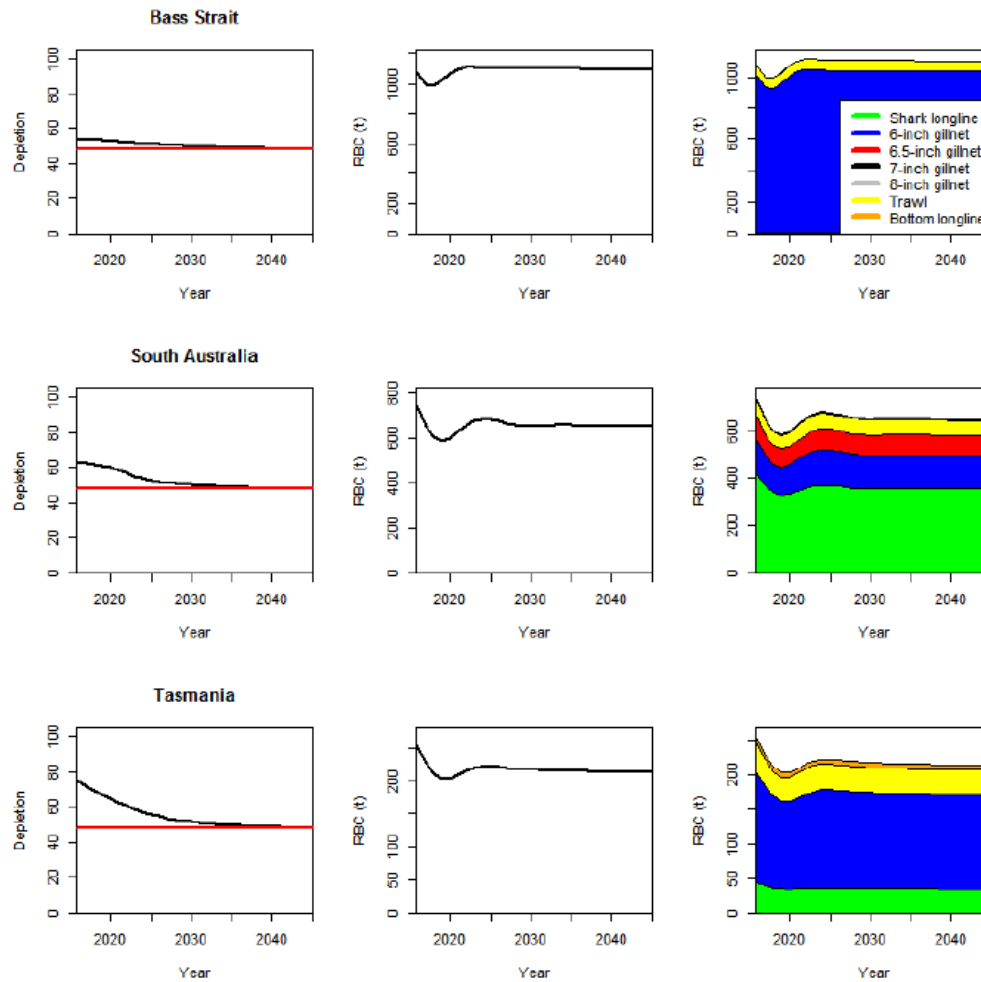


Figure 19. Time-trajectories of depletion (pup production relative to unfished pup production) (left panels), Recommended Biological Catch (center panels), and Recommended Biological Catch by gear-type (right panels) for projections based on Model 5D (the reference case model).

Application of the SESSF Harvest Strategy

	Time trajectories of depletion (pup production relative to unfished pup production (left panels)).			
Previous season catch and TAC (2018-19)	Catch (t)	Agreed TAC (t)	TAC (t) after unders/overs	Percentage caught
	1682	1763	1871	90%
RAG comments on data and assessment	<p>At the 2018 SESSF RAG data meeting there was concern that there was insufficient new data (poor spatial coverage) to run an updated assessment for gummy shark in 2019. The RAG also noted that there are issues with calculation of standardised CPUE by shot, and work is being undertaken to change this to be calculated by metre of net, rather than number of shots.</p> <p>This was considered by SharkRAG in October 2018. Noting that a crew-collected data program was introduced in 2018 by the SSIA and that work was underway to use electronic monitoring data for discard estimates, SharkRAG provided advice to consider delaying the assessment to at least 2020.</p> <p>This was supported at the SESSF RAG 2019 data meeting.</p>			
ABARES status	2019 ABARES biomass		2019 ABARES fishing mortality	
Other indicators	SESSF RAG (2019) noted CPUE has decreased in 2018 for all fleets except trawl.			
RAG advice and any dissenting views	Recommended Biological Catch 1961 t			
Discount factor	Less: N/A		<ul style="list-style-type: none"> N/A (Tier 1). 	
State catch	Less: 121 t		<ul style="list-style-type: none"> Previously the state allocations agreed under the shark memorandum of understanding with South Australia, and Victoria have been deducted from the RBC. However, SharkRAG (2018) recommended deducting the weighted average state catch from the RBC, as is the case for other SESSF species. 	

Application of the SESSF Harvest Strategy

		<ul style="list-style-type: none"> There is no allocation for Tasmania, rather, catch is limited by Tasmania through bycatch trip limits.
Discards	Less: 65 t	<ul style="list-style-type: none"> Weighted average of discards are deducted from the RBC, not the model estimate.
Recreational catch	Less: N/A	<ul style="list-style-type: none"> Recreational catch in South Australia estimated in 2008 (18 t) and 2014 (37 t). Not considered in assessment.
Research Catch Allowance	Less: N/A	<ul style="list-style-type: none"> N/A
TAC calculation under the Harvest Strategy	Provisional (Harvest Strategy) TAC 1775 t	<ul style="list-style-type: none"> Fourth year of a three year MYTAC.

Considerations in addition to the SESSF Harvest Strategy

Commercial fishers' interest	Industry supports the adoption of stable catch levels for gummy shark.
Economic considerations	22.5% contribution to SESSF GVP (\$76 million) in the 2017-18 financial year. Classified as 'primary' under the SESSF Monitoring and Assessment – Strategic Review (SMARP) project.
Species specific management (target, companion and bycatch)	<p>The gillnet sector interacts with Australian sea lions in waters off South Australia. Interactions are mitigated by using trigger limits that close spatial zones for 18 months if an interaction occurs.</p> <p>Dolphin interactions are managed through the GHAT Dolphin Strategy which sets performance criteria for individual operators.</p> <p>To reduce targeting of school shark, GHAT operators (excluding scalefish hook) must limit their total school shark catch to 20% of their gummy shark catches, based on overall quota holdings.</p>

Application of the SESSF Harvest Strategy

MAC advice and any dissenting views

2020-21 TAC recommendation

1775 t

Extending the current three year MYTAC for another year.

SEMAC advice and any dissenting views

SEMAC noted that gummy shark is being assessed in 2020, taking into account a revised CPUE series and biological data collected through the industry-based data collection program (noting there is a three year gap in the time series of this data following the introduction of electronic monitoring in the fishery).

SEMAC recommended a 2020-21 TAC of 1775 t, the fourth year of three year MYTAC, with under and overcatch provisions set at 10 per cent and a determined amount of 2 t.

2.12 Jackass morwong

Application of the SESSF Harvest Strategy

Stock assessment

Last assessed by SERAG in 2018 using a Tier 1 assessment. [See 2018 Species Summary.](#)
[SESSFRAG \(2019\)](#) recommended continuing the three year MYTAC.

Stock status against reference points and trend

Current	Target	Limit
E: 35%B ₁₉₈₈ W: 68%B ₀	48% B ₁₉₈₈ 48% B ₀	20% B ₀

In 2015, biomass was estimated to be 37% of 1988 biomass levels in the east and 69% of B₀ in the west. Recruitment has improved slightly in both the east and west in recent years.

In 2018, biomass was estimated at 35% (95% CI 25-45%) of 1988 biomass levels in the east and 68% (95% CI 55-80%) of B₀ in the west.

Estimates of spawning biomass for the western stock are above the target reference point. Total removals in both east and west remain below the RBC.

Application of the SESSF Harvest Strategy

Previous season catch and TAC (2018-19)	Catch (t)	Agreed TAC (t)	TAC (t) after unders/overs	Percentage caught
	186	505	556	34%
RAG comments on data and assessment	The assessments are uncertain and poor data quality and quantity continues to be an issue, particularly in the west. SESSFrag (2019) noted little has changed since this species was last assessed.			
ABARES status	2019 ABARES biomass		2019 ABARES fishing mortality	
Other indicators	CPUE in the east has declined since 2008 however the series increased in 2016 and 2017. CPUE has been increasing in the west however the fits to the model are poor.			
RAG advice and any dissenting views	Recommended Biological Catch 2020: 494 t or Three year average: 494 t	SERAG (2018) recommended a three year MYTAC using either single year or three year average RBC SEMAG (2019) supported using the three year average.		
Discount factor	Less: N/A	<ul style="list-style-type: none"> N/A (Tier 1) 		
State catch	Less: East: 7.4 t West: 1.6 t Total: 9 t	<ul style="list-style-type: none"> Mostly NSW catches. 		
Discards	Less: East: 12.9 t West: 3.8 t Total: 16.7 t			
Recreational catch	Less: N/A	<ul style="list-style-type: none"> A recreational survey in 2000 estimated that a total of 294 t of jackass morwong was caught across NSW, Victoria, Tasmania, South Australia and Western Australia. A survey in 2013 estimated Tasmanian catches of 18 t. 		

Application of the SESSF Harvest Strategy

		<ul style="list-style-type: none"> There have been no additional surveys and recreational catches are not considered in the assessment.
Research Catch Allowance	Less: N/A	<ul style="list-style-type: none"> N/A
TAC calculation under the Harvest Strategy	Provisional (Harvest Strategy) TAC 468 t	<ul style="list-style-type: none"> Using combined east and west three year average RBCs

Considerations in addition to the SESSF Harvest Strategy

Commercial fishers' interest	Industry noted that catches continued to be patchy, noting jackass morwong were a very temperature-dependant species.	
Economic considerations	0.59% contribution to SESSF GVP (\$76 million) in the 2017-18 financial year. Classified as 'secondary' under the SMARP project.	
Species specific management (target, companion and bycatch)	N/A	
MAC advice and any dissenting views	<p>2020-21 TAC recommendation 468 t The second of a three year MYTAC.</p> <p>SEMAC advice and any dissenting views There were no dissenting views and SEMAC were comfortable with the advice provided in the paper. SEMAC recommended a 2020-21 TAC of 468 t, the second of a three year MYTAC, with under and overcatch provisions set at 10 per cent and a determined amount of 2 t.</p>	

2.13 John dory

Application of the SESSF Harvest Strategy			
Stock assessment	Last assessed in 2017 using a Tier 3 assessment. See 2018 Species Summary. SESSFrag (2019) recommended continuing the three year MYTAC.		
Stock status against reference points and trend	Current (2017) F = 0.036	Target F _{spr40} = 0.126	Limit F ₂₀ = 0.198
	Currently F (0.036) is below the target (0.126) indicating that fishing mortality is at a level that would lead to spawning biomass being above target. Catches have been less than the allocated TAC and fishing mortality rates have been below targets (i.e. no overfishing is occurring). Assessment indicates that biomass is above the limit reference point.		
Previous season catch and TAC (2018-19)	Catch (t)	Agreed TAC (t)	TAC (t) after unders/overs
	62	263	279
			Percentage caught 22%
RAG comments on data and assessment	The age data used in the Tier 3 assessment is in conflict with the standardised CPUE which remains below the Tier 4 limit reference point. In 2017 SERAG was comfortable setting a three year MYTAC using the Tier 3 assessment. SESSFrag (2019) recommended, for non-Tier 1 species with conflicting data, that catch rate assessments are generally more conservative and Tier 4 assessments should be adopted. This will be considered by SERAG in 2020 when updating the assessment.		
ABARES status	2019 ABARES biomass	2019 ABARES fishing mortality	
Other indicators	CPUE remains below the Tier 4 limit reference point. SESSFrag (2019) noted catches have decreased by 20 per cent, but CPUE is relatively flat.		
RAG advice and any dissenting views	Recommended Biological Catch 485 t	<ul style="list-style-type: none"> The 50% large change limiting rule applied when setting the 2019-20 TAC. 	
Discount factor	Less: 24 t	<ul style="list-style-type: none"> A discount factor of 5% applies to Tier 3 assessments. 	

Application of the SESSF Harvest Strategy

State catch	Less: 7 t	<ul style="list-style-type: none"> Mainly NSW state catches.
Discards	Less: 2 t	<ul style="list-style-type: none"> Discards for this species are typically low.
Recreational catch	Less: N/A	<ul style="list-style-type: none"> Not considered in assessment.
Research Catch Allowance	Less: N/A	<ul style="list-style-type: none"> N/A
TAC calculation under the Harvest Strategy	Provisional (Harvest Strategy) TAC 452 t	<ul style="list-style-type: none"> This is a 57 t increase to the 2019-20 TAC, due to application of the 50% large change limiting rule when setting the 2019-20 TAC.

Considerations in addition to the SESSF Harvest Strategy

Commercial fishers' interest	Industry have advised this species is no longer targeted but, because of the good market price, is generally landed when caught.
Economic considerations	1.08% contribution to SESSF GVP (\$76 million) in the 2017-18 financial year. Classified as 'secondary' under the SMARP project.
Species specific management (target, companion and bycatch)	N/A
MAC advice and any dissenting views	<p>2020-21 TAC recommendation</p> <p>452 t</p> <p>The third of a three year MYTAC.</p> <p>SEMAC advice and any dissenting views</p> <p>There were no dissenting views and SEMAC were comfortable with the advice provided in the paper.</p> <p>SEMAC recommended a 2020-21 TAC of 452 t, the third of a three year MYTAC, with under and overcatch provisions set at 10 per cent and a determined amount of 2 t.</p>

2.14 Mirror dory

Application of the SESSF Harvest Strategy

Stock assessment

Last assessed as a Tier 4 species by [SERAG \(October 2019\)](#).

Stock status against reference points and trend

Current

Target

Limit

East

CPUE = 0.6482

CPUE = 1.1542

CPUE = 0.4809

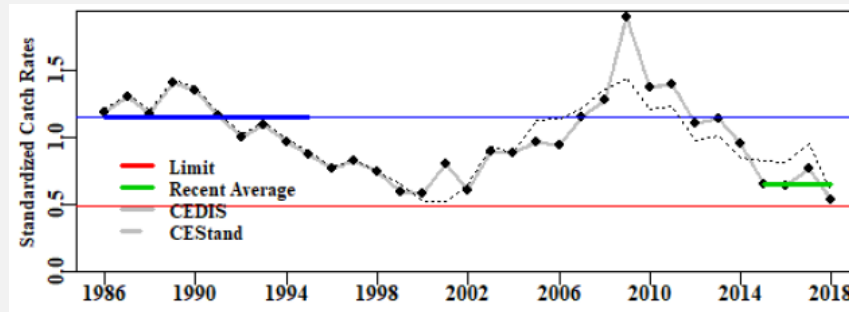
West

CPUE = 0.7488

CPUE = 0.9941

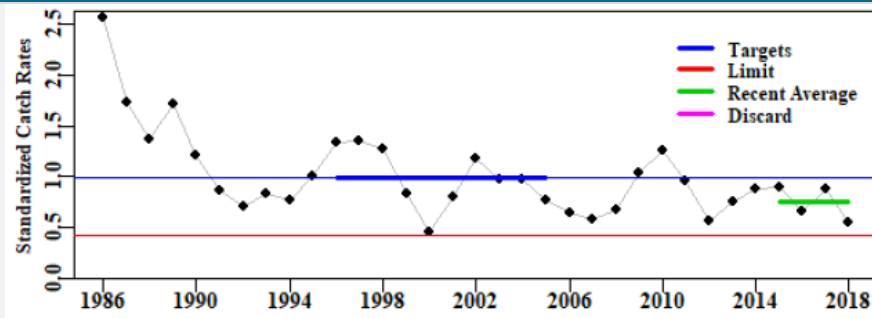
CPUE = 0.4142

East: Standardised CPUE has been cyclical with peaks in 1990 and 2009. CPUE has declined steadily since 2009, and while the recent average CPUE is above the limit reference point, the 2018 estimate is the lowest estimate since 2000.



West: Standardised CPUE has been cyclical since the 1990s, though not as high and low as in the east. It is currently between the limit and target reference point.

Application of the SESSF Harvest Strategy



Previous season catch and TAC (2018-19)	Catch (t)	Agreed TAC (t)	TAC (t) after unders/overs	Percentage caught
	117	253	275	43%
RAG comments on data and assessment	<p>The new methodology for estimating discards has had significant impacts (increase) on discard rates estimated in the early 2000s. There will be additional changes in methodology estimating 2019 discards, these changes will be considered at the SESSF RAG Chairs meeting in March 2020. Until those changes are implemented and accepted by the RAG, the Tier 4 assessment was updated using the previous discard series.</p> <p>This Tier 4 assessment has been applied consistently over time and there were no additional comments.</p>			
ABARES status	2019 ABARES biomass		2019 ABARES fishing mortality	
Other indicators	N/A			
RAG advice and any dissenting views	Recommended Biological Catch	<ul style="list-style-type: none"> The RAG recommended a single year TAC given the cyclical nature of the stock. 		
	West: 76.7 t East: 92.7 t Total: 169 t			
Discount factor	Less: 25 t	<ul style="list-style-type: none"> A 15% discount factor is applied to Tier 4 species. 		

Application of the SESSF Harvest Strategy

State catch	Less: East: 1 t West: N/A	<ul style="list-style-type: none"> • Mostly NSW state catch.
Discards	Less: East: 6 t West: 0 t	<ul style="list-style-type: none"> • Estimated discard rates have decreased in recent years.
Recreational catch	Less: N/A	<ul style="list-style-type: none"> • Recreational catches are not considered in assessment and are assumed to be low.
Research Catch Allowance	Less: N/A	<ul style="list-style-type: none"> • N/A
TAC calculation under the Harvest Strategy	Provisional (Harvest Strategy) TAC 137 t	

Considerations in addition to the SESSF Harvest Strategy

Commercial fishers' interest	Some operators have raised concerns about the TAC not responding quickly enough to changes in stock availability.
Economic considerations	0.76% contribution to SESSF GVP (\$76 million) in the 2017-18 financial year. Classified as 'secondary' under the SMARP project.
Species specific management (target, companion and bycatch)	Restrictions on pink ling catches may have influenced the decrease in catch and discarding for mirror dory east.

Application of the SESSF Harvest Strategy

MAC advice and any dissenting views

2020-21 TAC recommendation

137 t

A single year TAC.

SEMAC advice and any dissenting views

There were no dissenting views and SEMAC were comfortable with the advice provided in the paper.

SEMAC recommended a 2020-21 TAC of 137 t, with under and overcatch provisions set at 10 per cent and a determined amount of 2 t.

2.15 Ocean perch

Application of the SESSF Harvest Strategy

Stock assessment

Last assessed in 2017 using a Tier 4 assessment.
Ocean perch is on a three year MYTAC. A review of fishery indicators was not triggered under the MYTAC review in 2018.

Stock status against reference points and trend

Inshore (reef)

$CPUE_{curr} = 0.9669$

$CPUE_{targ} = 0.9182$

$CPUE_{limit} = 0.4591$

Offshore (bigeye)

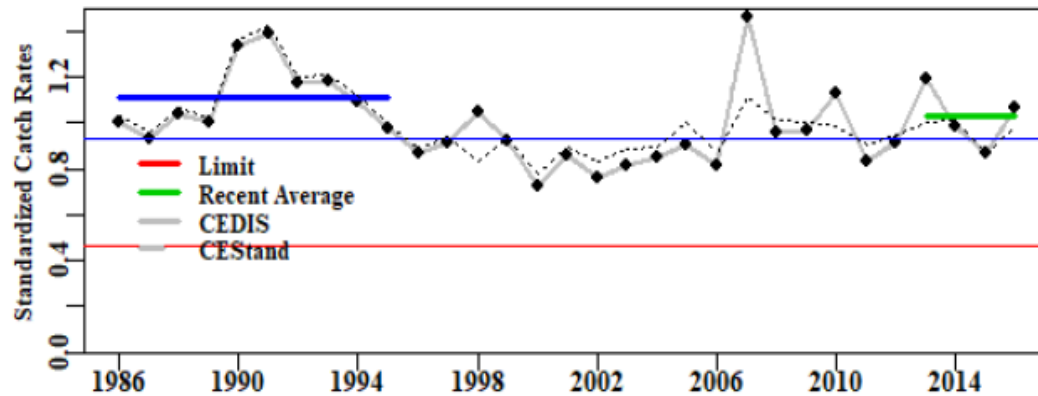
$CPUE_{curr} = 0.9669$

$CPUE_{targ} = 0.9283$

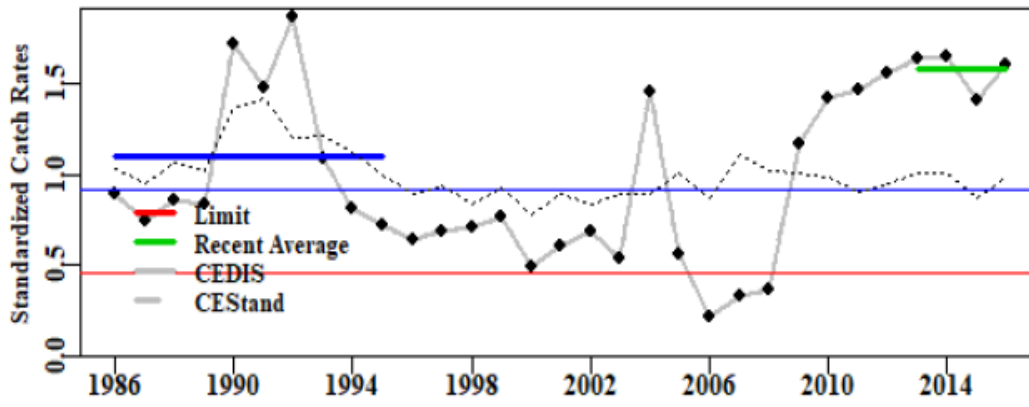
$CPUE_{limit} = 0.4642$

Offshore ocean perch CPUE has been relatively stable since the mid-90s. Catches have decreased over the past four years.

Application of the SESSF Harvest Strategy



Inshore ocean perch CPUE has steadily increased over the past ten years, which is driven by variable but high discard rate estimates.



Previous season catch and TAC (2018-19)

Catch (t)	Agreed TAC (t)	TAC (t) after unders/overs	Percentage caught
195	241	255	77%

Application of the SESSF Harvest Strategy

RAG comments on data and assessment	SESSFRAG considered species that are difficult to assess, including those like inshore ocean perch with high discard rates, in February 2019.	
ABARES status	2019 ABARES biomass	2019 ABARES fishing mortality
Other indicators	N/A	
RAG advice and any dissenting views	Recommended Biological Catch 345 t (offshore species only) 248 t (inshore species only)	<ul style="list-style-type: none"> The RAG recommended continuing with the second year of a three year MYTAC.
Discount factor	Less: Offshore 52 t Inshore 37 t	<ul style="list-style-type: none"> A 15% discount factor is applied to Tier 4 stocks.
State catch	Less: Offshore: 14 t Inshore: 4 t	<ul style="list-style-type: none"> Mostly NSW state catches.
Discards	Less: Offshore: 40 t (2017 estimate) Inshore: 248 t (2017 estimate)	<ul style="list-style-type: none"> The weighted average discards for inshore ocean perch has decreased significantly after revision to the estimates; from 248 t in 2017 to 55 t in 2018. The change was mainly because NSW state catches of ocean perch were reclassified as offshore ocean perch. While this only had a small reduction in total landed catch, the estimated discards reduced significantly. Because the 2017 Tier 4 assessment did not incorporate the revised discard estimates, AFMA has used the 2017 discard estimates for the purposes of its TAC recommendation.
Recreational catch	Less: N/A	<ul style="list-style-type: none"> Not considered in assessment.

Application of the SESSF Harvest Strategy

Research Catch Allowance	Less: N/A	<ul style="list-style-type: none"> N/A
TAC calculation under the Harvest Strategy	Provisional (Harvest Strategy) TAC 239 t (offshore only)	<ul style="list-style-type: none"> Similar to the approach for the 2018-19 TAC, AFMA is proposing to set the TAC based on offshore ocean perch only.

Considerations in addition to the SESSF Harvest Strategy

Commercial fishers' interest	Inshore ocean perch are not considered an economically important species and are generally discarded. AFMA will consult on plans to remove inshore ocean perch from the TAC basket in 2020.	
Economic considerations	0.05% contribution to SESSF GVP (\$76 million) in the 2017-18 financial year. SMARP classification 'secondary' species. 83% TAC caught in the 2017-18 fishing year.	
Species specific management (target, companion and bycatch)	N/A	
MAC advice and any dissenting views	2020-21 TAC recommendation 239 t The third of a three year MYTAC. SEMAC advice and any dissenting views There were no dissenting views and SEMAC were comfortable with the advice provided in the paper. SEMAC recommended a 2020-21 TAC of 239 t, the third of a three year MYTAC, with under and overcatch provisions set at 10 per cent and a determined amount of 2 t.	

2.16 Orange roughy (Cascade)

Application of the SESSF Harvest Strategy											
Stock assessment	Last assessed in 2009 using a Tier 1 assessment. See 2018 Species Summary. SESSFrag (2019) recommended continuing the 500 t TAC for the 2020-21 season. Rebuilding species review undertaken by SERAG in December 2019.										
Stock status against reference points and trend	<p>Current</p> <p>64% B₀</p>	<p>Target</p> <p>60% B₀</p>	<p>Limit</p> <p>20% B₀</p>								
	The last update of the stock assessment (2009) estimated the stock to be at 64% of unfished biomass, above the target reference point. There are no recent data to assess the biomass trend. Catches have remained below the RBC for the past five years.										
Previous season catch and TAC (2018-19)	<table border="1"> <thead> <tr> <th>Catch (t)</th> <th>Agreed TAC (t)</th> <th>TAC (t) after unders/overs</th> <th>Percentage caught</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>500</td> <td>550</td> <td>0%</td> </tr> </tbody> </table>	Catch (t)	Agreed TAC (t)	TAC (t) after unders/overs	Percentage caught	0	500	550	0%		
Catch (t)	Agreed TAC (t)	TAC (t) after unders/overs	Percentage caught								
0	500	550	0%								
RAG comments on data and assessment	A lack of fishing has meant limited data is available to update the assessment.										
ABARES status	<table border="1"> <tr> <td style="background-color: #00FF00;">2019 ABARES biomass</td> <td colspan="2" style="background-color: #00FF00;">2019 ABARES fishing mortality</td> </tr> </table>			2019 ABARES biomass	2019 ABARES fishing mortality						
2019 ABARES biomass	2019 ABARES fishing mortality										
Other indicators	Catches have remained well below the RBC since the assessment and the stock likely remains above the target reference point.										
RAG advice and any dissenting views	Recommended Biological Catch 500 t	<ul style="list-style-type: none"> SESSFrag recommended continuing the 500 t TAC. 									
Discount factor	Less: N/A	<ul style="list-style-type: none"> N/A (Tier 1). 									
State catch	Less: N/A	<ul style="list-style-type: none"> N/A 									
Discards	Less: N/A	<ul style="list-style-type: none"> N/A 									
Recreational catch	Less: N/A	<ul style="list-style-type: none"> Not recreationally caught. 									

Application of the SESSF Harvest Strategy		
Research Catch Allowance	Less: N/A	• N/A
TAC calculation under the Harvest Strategy	Provisional (Harvest Strategy) TAC 500 t	
Considerations in addition to the SESSF Harvest Strategy		
Commercial fishers' interest	There was some effort in 2019, with 23 t caught. There has been very little fishing on the Cascade over the past ten years.	
Economic considerations	0% contribution to SESSF GVP (\$76 million) in the 2017-18 financial year. All orange roughy stocks are classified as 'primary' under the SMARP project.	
Species specific management (target, companion and bycatch)	N/A	
MAC advice and any dissenting views	<p>2020-21 TAC recommendation 500 t – single year TAC</p> <p>SEMAC advice and any dissenting views There were no dissenting views and SEMAC were comfortable with the advice provided in the paper. SEMAC recommended a 2020-21 TAC of 500 t, with under and overcatch provisions set at 10 per cent and a determined amount of 2 t.</p>	

2.17 Orange roughy (eastern)

Application of the SESSF Harvest Strategy	
Stock assessment	Last assessed in 2017 using a Tier 1 assessment. See 2018 Species Summary.

Application of the SESSF Harvest Strategy

	<p>SESSFRAG (2019) recommended continuing the MYTAC. Rebuilding species review undertaken by SERAG in December 2019. Most recent stock assessment estimated biomass to be between the limit and target reference points. Fishing mortality has not exceeded the RBC.</p>										
Stock status against reference points and trend	<p>Current</p> <p>33% B₀</p>	<p>Target</p> <p>48% B₀</p>	<p>Limit</p> <p>20% B₀</p>								
	<p>The stock assessment estimates that the stock has continued to rebuild under current management arrangements.</p>										
Previous season catch and TAC (2018-19)	<table border="1"> <thead> <tr> <th>Catch (t)</th> <th>Agreed TAC (t)</th> <th>TAC (t) after unders/overs</th> <th>Percentage caught</th> </tr> </thead> <tbody> <tr> <td>856</td> <td>698</td> <td>966</td> <td>89%</td> </tr> </tbody> </table>	Catch (t)	Agreed TAC (t)	TAC (t) after unders/overs	Percentage caught	856	698	966	89%		
Catch (t)	Agreed TAC (t)	TAC (t) after unders/overs	Percentage caught								
856	698	966	89%								
RAG comments on data and assessment	<p>There is some uncertainty around estimates of natural mortality used in the assessment and what effect different stock productivity has on rebuilding timeframes. In 2018, SERAG considered catch projections using different productivity models to determine the risk of the stock falling below the limit reference point in the short term. Even under the low productivity scenario, catches from the higher productivity model presented low risk to the stock over the MYTAC period (refer to species summary for results of the risk assessment).</p>										
ABARES status	<p>2019 ABARES biomass</p>		<p>2019 ABARES fishing mortality</p>								
Other indicators	<p>The acoustic survey abundance estimates (2013, 2016 and 2019) support the model predicted spawning biomass estimates.</p>										
RAG advice and any dissenting views	<p>Recommended Biological Catch 1375 t (1279 t for eastern zone, 96 t for Pedra Branca in the southern zone)</p>	<ul style="list-style-type: none"> SESSFRAG recommended continuing with the third year of a three year multi-year TAC. 									
Discount factor	N/A	<ul style="list-style-type: none"> N/A (Tier 1). 									
State catch	N/A	<ul style="list-style-type: none"> There are no state catches. 									
Discards	Less: 3 t	<ul style="list-style-type: none"> Estimated discards (four year weighted average) of 3 t. 									

Application of the SESSF Harvest Strategy

Recreational catch	N/A	<ul style="list-style-type: none"> There are no recreational catches.
Research Catch Allowance	N/A	
TAC calculation under the Harvest Strategy	Provisional (Harvest Strategy) TAC 1276 t	

Considerations in addition to the SESSF Harvest Strategy

Commercial fishers' interest	In February 2020, SETFIA wrote to the AFMA Commission requesting that the provisional harvest strategy is applied for the 2020-21 season, noting the outcomes of the most recent acoustic surveys and positive catch rates during the 2020-21 season.	
Economic considerations	3% contribution to SESSF GVP (\$76 million) in the 2017-18 financial year. All orange roughy stocks are classified as 'primary' under the SMARP project.	
Species specific management (target, companion and bycatch)	Species specific management applies in the spawning period from 1 June to 31 August each year in the eastern Orange Roughy Management Area (ORMA) including: <ul style="list-style-type: none"> observer requirements minimum quota holdings (entry and stop fishing requirements). 	
MAC advice and any dissenting views	<p>2020-21 TAC recommendation</p> <p>1276 t</p> <p>The third of a three year MYTAC</p> <p>SEMAC advice and any dissenting views</p> <p>For the 2019-20 season, given the discussion at SERAG regarding estimates of natural mortality, industry, through SETFIA, proposed to limit catches of eastern orange roughy to 900 t for 2019-20 season. This provided some business certainty to industry, and was consistent with SERAG advice that there was very little risk to the stock in the short term by adopting this TAC. This was supported by SEMAC and the AFMA Commission in 2019.</p>	

Application of the SESSF Harvest Strategy

In February 2020, SETFIA wrote to the AFMA Commission requesting that the provisional harvest strategy is applied for the 2020-21 season, noting the outcomes of the most recent acoustic surveys and positive catch rates during the 2019-20 season.

The recreational member raised concerns regarding process, whereby a letter was sent to the AFMA Commission, and not to the MAC, suggesting a significant increase to the TAC. This information was not provided to the SEMAC until the day of the meeting and was inconsistent with the advice provided by AFMA Management in the TAC paper.

SEMAC noted the outcomes of the 2017 assessment and cross-catch risk assessment, which showed that catches up to 1279 t posed little risk to the stock and would allow for a continued rebuild. SERAG advice in 2017 was to adopt the basecase assessment, which provided an RBC of 1279 t for the eastern stock.

The acoustic survey abundance estimates (2013, 2016 and 2019) also support the model predicted spawning biomass estimates, which predict a rebuilding of the stock.

Despite the concerns regarding process, the MAC considered the SERAG (2017) advice to set the TAC based on the basecase RBC of 1279 t, and recommended a 2020-21 TAC of 1276 t, the third of a three year MYTAC, with undercatch provisions set at 100 per cent and overcatch provisions set at 10 per cent and a determined amount of 2 t.

2.18 Orange roughy (southern) including Pedra Branca

Application of the SESSF Harvest Strategy

Stock assessment	The Pedra Branca portion of orange roughy was assessed as part of the eastern stock in 2017 using a Tier 1 assessment. See 2018 Species Summary . SESSFRAG (2019) recommended continuing the MYTAC. Rebuilding species review undertaken by SERAG in December 2019 .
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	Current	Target	Limit
Stock status against reference points and trend	Southern Zone <20% B ₀ Pedra Branca 33% B ₀	48% B ₀	20% B ₀

Application of the SESSF Harvest Strategy

	<p>The Pedra Branca seamount area is assessed as a part of the eastern zone stock assessment due to the stock structure assumptions. The eastern stock has continued to recover as described above.</p> <p>The most recent accepted assessment (2000) for the southern zone concluded that the stock was less than the limit reference point. Orange Roughy southern is managed under the Orange Roughy Rebuilding Strategy.</p>										
Previous season catch and TAC (2018-19)	<table border="1"> <thead> <tr> <th>Catch (t)</th> <th>Agreed TAC (t)</th> <th>TAC (t) after unders/overs</th> <th>Percentage caught</th> </tr> </thead> <tbody> <tr> <td>79</td> <td>84</td> <td>84</td> <td>94%</td> </tr> </tbody> </table>	Catch (t)	Agreed TAC (t)	TAC (t) after unders/overs	Percentage caught	79	84	84	94%		
Catch (t)	Agreed TAC (t)	TAC (t) after unders/overs	Percentage caught								
79	84	84	94%								
RAG comments on data and assessment	See above under orange roughy (eastern).										
ABARES status	2019 ABARES biomass	2019 ABARES fishing mortality									
Other indicators	N/A										
RAG advice and any dissenting views	<p>Recommended Biological Catch 96 t (Pedra Branca) 0 t for remainder of southern zone</p>	<ul style="list-style-type: none"> Based on an RBC of 1375 t from the eastern orange roughy stock assessment (1279 t for eastern zone, 96 t for Pedra Branca in the southern zone) 									
Discount factor	Less: N/A	<ul style="list-style-type: none"> N/A (Tier 1). 									
State catch	Less: N/A	<ul style="list-style-type: none"> There are no state catches. 									
Discards	Less: N/A	<ul style="list-style-type: none"> There are no estimates of discards for this stock. 									
Recreational catch	Less: N/A	<ul style="list-style-type: none"> Not recreationally caught. 									
Research Catch Allowance	Less: N/A										
TAC calculation under the Harvest Strategy	Provisional (Harvest Strategy) TAC	Orange roughy (southern) TAC consists of two components:									

Application of the SESSF Harvest Strategy

	<p>94 t (Pedra Branca) 31 t (Incidental)</p>	<ul style="list-style-type: none"> • 94 t for the Pedra Branca area, (being assessed as part of the eastern stock described above), after application of the 50% large change limiting rule. • To distribute the RBC from the eastern orange roughy stock assessment between the eastern and southern zones, the total catch that came from the eastern zone and the Pedra Branca area between 1996 (when VMS was introduced) and 2005 (when the Orange Roughy Conservation Program was implemented) is used giving an RBC of 93% for the eastern zone and 7% for the southern zone. • 31 t for incidental catches for the remainder of the zone. This incidental catch continues the Southern Zone bycatch TAC excluding catches taken in the Pedra Branca box between 2006 and 2014 (12%).
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Considerations in addition to the SESSF Harvest Strategy

Commercial fishers' interest	N/A
Economic considerations	0.24% contribution to SESSF GVP (\$76 million) in the 2017-18 financial year. All orange roughy stocks are classified as 'primary' under the SMARP project.
Species specific management (target, companion and bycatch)	<p>Species specific management applies in the spawning period from 1 June to 31 August each year in the eastern Orange Roughy Management Area (ORMA) including:</p> <ul style="list-style-type: none"> • observer requirements; and • minimum quota holdings (entry and stop fishing requirements).
MAC advice and any dissenting views	<p>2020-21 TAC recommendation</p> <p>94 t (Pedra Branca), third of a three year MYTAC</p>

Application of the SESSF Harvest Strategy

31 t (Southern Zone) single year incidental TAC

SEMAC advice and any dissenting views

Noting SEMACs [recommendation](#) to base the eastern orange roughy TAC on the RBC from the 2017 Tier 1 stock assessment in the eastern zone, and not limit it to the 900 t proposed by industry in 2019, SEMAC was comfortable applying the same principle to the Pedra Branca area of the Southern Zone.

The Pedra Branca TAC is set based on seven per cent of the eastern stock RBC, which results in a 2020-21 TAC of 96 t. Application of the 50% large change limiting rule means the TAC can only increase to 94 t for the 2020-21 season.

SEMAC recommended a 2020-21 TAC of 94 t for the Pedra Branca area of the Southern zone, the third of a three year MYTAC, and a 2020-21 incidental TAC of 31 t for the remainder of the Southern zone.

2.19 Orange roughy (western)

Application of the SESSF Harvest Strategy

Stock assessment	Last assessed in 2002 using a Tier 1 assessment. See 2018 Species Summary. Rebuilding species review undertaken by SERAG in December 2019.		
Stock status against reference points and trend	Current (2002) <30% B ₀	Target 48% B ₀	Limit 20% B ₀
	Stock status is uncertain in the western zone with no assessment since 2002. Given that there has been minimal fishing in the western zone and that the eastern stock has rebuilt to a harvestable level, similar rebuilding may have occurred in the western zone.		
Previous season catch and TAC (2018-19)	Catch (t) 19	Agreed bycatch TAC (t) 60	TAC (t) after unders/overs 60
			Percentage caught 32%
RAG comments on data and assessment	Stock status is unresolved in the western zone, however, considering that there has been minimal fishing in the western zone and that the eastern stock has rebuilt to a harvestable level it is not inconsistent to think that similar rebuilding may have occurred in the western zone.		

Application of the SESSF Harvest Strategy

	Due to incidental catch TAC with no targeted fishing, CPUE is not a reliable index of abundance.	
ABARES status	2019 ABARES biomass	2019 ABARES fishing mortality
Other indicators	The RAG considered a review of the Orange Roughy Rebuilding Strategy 2014. The RAG agreed there was little evidence to show targeting behaviour, and that the current management arrangements are appropriate.	
RAG advice and any dissenting views	Recommended Biological Catch 0 t	<ul style="list-style-type: none"> Rebuilding species.
Discount factor	Less: N/A	<ul style="list-style-type: none"> N/A
State catch	Less: N/A	<ul style="list-style-type: none"> There are no estimated state catches.
Discards	Less: N/A	<ul style="list-style-type: none"> Estimated discards (four year weighted average) of 30 t. Discards are not deducted because an incidental catch TAC is recommended.
Recreational catch	Less: N/A	<ul style="list-style-type: none"> N/A
Research Catch Allowance	200 t	<ul style="list-style-type: none"> To support the development of a Western Orange Roughy Research Plan
TAC calculation under the Harvest Strategy	Provisional (Harvest Strategy) TAC 60 t	<ul style="list-style-type: none"> SERAG (2019) recommended maintaining the 60 t bycatch TAC.

Considerations in addition to the SESSF Harvest Strategy

Commercial fishers' interest	A draft Western Orange Roughy Research Plan (the Plan) has been developed to allow fishing under scientific permit and collect data to inform an updated stock assessment. The SERAG (2019) recommended a 200 t research catch allowance to support the development of the Plan.
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Application of the SESSF Harvest Strategy

	The Plan was supported by SEMAC at its February 2020 meeting, and will be considered by the AFMA Commission at its March 2020 meeting (see Agenda Item 8.9).
Economic considerations	1.1% contribution to SESSF GVP (\$76 million) in the 2017-18 financial year. All orange roughy stocks are classified as 'primary' under the SMARP project.
Species specific management (target, companion and bycatch)	N/A
MAC advice and any dissenting views	<p>2020-21 TAC recommendation</p> <p>60 t – single year incidental TAC</p> <p>200 t research allocation</p> <p>SEMAC advice and any dissenting views</p> <p>SEMAC recommended a 2020-21 incidental TAC of 60 t, with no under and overcatch provisions and a determined amount of 2 t.</p> <p>SEMAC considered the draft Western Orange Roughy Research Plan and made recommendations in relation to observer requirements. SEMAC also recommended a 200 t research catch allowance, to be allocated under scientific permits, to support the Western Orange Roughy Research Plan (noting the research plan is subject to AFMA Commission approval – see Commission Agenda Item 8.9).</p>

2.20 Oreo, basket

Application of the SESSF Harvest Strategy												
Stock assessment	Last assessed in 2017 using a Tier 4 assessment. See 2018 Species Summary. SESSFRAG (2019) recommended continuing the current MYTAC and updating the assessment in 2020.											
Stock status against reference points and trend	<p>Current (2017)</p> <p>CPUE = 0.4297</p>	<p>Target</p> <p>CPUE = 0.441</p>	<p>Limit</p> <p>CPUE = 0.1837</p>	<p>Standardised CPUE is above the target reference point and has been for the last three years. The target CPUE is set at half the observed CPUE in the reference period due to the undeveloped state of the fishery.</p>								
Previous season catch and TAC (2018-19)	<table border="1"> <thead> <tr> <th>Catch (t)</th> <th>Agreed TAC (t)</th> <th>TAC (t) after unders/overs</th> <th>Percentage caught</th> </tr> </thead> <tbody> <tr> <td>82</td> <td>185</td> <td>197</td> <td>41%</td> </tr> </tbody> </table>	Catch (t)	Agreed TAC (t)	TAC (t) after unders/overs	Percentage caught	82	185	197	41%			
Catch (t)	Agreed TAC (t)	TAC (t) after unders/overs	Percentage caught									
82	185	197	41%									
RAG comments on data and assessment	<p>Discards are relatively high but cyclical, partly due to changes in fishing practices. Discards are included in the assessment.</p> <p>SESSFRAG (2019) noted CPUE was very close to the target reference point when last assessed.</p>											

Application of the SESSF Harvest Strategy

ABARES status	2019 ABARES biomass	2019 ABARES fishing mortality
Other indicators	N/A	
RAG advice and any dissenting views	Recommended Biological Catch 256 t	<ul style="list-style-type: none"> • SESSFRAG recommended continuing with the third year of a three year MYTAC.
Discount factor	Less: N/A	<ul style="list-style-type: none"> • Not applied: 40 per cent of the fishery is protected by deepwater closures.
State catch	Less: N/A	<ul style="list-style-type: none"> • State catches are considered low and are not included in the assessment.
Discards	Less: 71 t (2017 estimate)	<ul style="list-style-type: none"> • The weighted average discards for oreos (basket) has increased significantly after changes to the methodology and an inclusion of another species in the basket since the last assessment. The discard estimate increased from 71 t in 2017 to 257 t in 2018, and 156 t in 2019. • Until the Tier 4 assessment has been updated to include the additional species and the revised discard estimate, AFMA has used the 2017 discard estimate for the recommended TAC in 2020-21.
Recreational catch	Less : N/A	<ul style="list-style-type: none"> • N/A
Research Catch Allowance	Less: N/A	<ul style="list-style-type: none"> • N/A
TAC calculation under the Harvest Strategy	Provisional (Harvest Strategy) TAC 185 t	

Considerations in addition to the SESSF Harvest Strategy

Application of the SESSF Harvest Strategy

Commercial fishers' interest	While mixed oreos can be targeted, they are not an economic driver in the fishery.
Economic considerations	0.13% contribution to SESSF GVP (\$76 million) in the 2017-18 financial year. Classified as 'byproduct' under the SMARP project.
Species specific management (target, companion and bycatch)	SERAG have previously noted that mixed oreos are a potential candidate for a lower target reference point (e.g. B ₄₀). Catches of mixed oreos are expected to increase if operators are provided access to the western orange roughy grounds under the proposed Western Orange Roughy Research Plan. However, the TAC is significantly undercaught and discarding due to quota availability is unlikely to be an issue.
MAC advice and any dissenting views	<p>2020-21 TAC recommendation</p> <p>185 t</p> <p>The third of a three year MYTAC</p> <p>SEMAC advice and any dissenting views</p> <p>There were no dissenting views and SEMAC were comfortable with the advice provided in the paper.</p> <p>SEMAC recommended a 2020-21 TAC of 185 t, the third of a three year MYTAC, with under and overcatch provisions set at 10 per cent and a determined amount of 2 t.</p>

2.21 Pink ling

Application of the SESSF Harvest Strategy

Stock assessment	Last assessed in 2018 using a Tier 1 assessment. See 2018 Species Summary. SESSFRAG (2019) recommended continuing the current MYTAC.		
Stock status against reference points and trend	<p>Current</p> <p>East: 30% B₀ (95%CI: 22-42%) West: 84% B₀ (95%CI: 69-100%)</p>	<p>Target</p> <p>48% B₀</p>	<p>Limit</p> <p>20% B₀</p>
	In 2018, SERAG considered a new eastern pink ling stock assessment. The RAG was presented with three base case options covering alternative CPUE series and values		

Application of the SESSF Harvest Strategy

	<p>for natural mortality. The RAG adopted the most conservative of these base cases (recognising that the CPUE in the base case does not account for AFMA management and industry arrangements to restrict catch). This resulted in an estimated biomass in 2019 of 30% of unfished stock biomass.</p> <p>While this is the same stock status as the 2015 assessment, it is estimated using more conservative parameters. Further, the RAG noted the 2018 assessment indicated there had been an increase in biomass over the last three years under the current management arrangements.</p> <p>In the west, biomass continues to increase above the management target.</p>			
Previous season catch and TAC (2018-19)	Catch (t)	Agreed TAC (t)	TAC (t) after unders/overs	Percentage caught
	952	1117	1203	79%
RAG comments on data and assessment	<p><i>East</i></p> <p>Current pink ling stock status in the east is not well estimated. It varies across model runs and is heavily dependent on values adopted for natural mortality.</p> <p>The CPUE series that has been adopted for the assessment is conservative in that it does not account for management arrangements that restrict catches (e.g. trip limits and voluntary industry restrictions).</p>			
ABARES status	2019 ABARES biomass		2019 ABARES fishing mortality	
Other indicators	<p>A 2018 NSW assessment of the eastern stock found it to be 'sustainable', relying primarily upon the Commonwealth assessment.</p> <p>SESSF-RAG (2019) noted little had changed since the 2018 assessment and a review of fishery indicators did not give rise to any concern.</p>			
RAG advice and any dissenting views	<p>Recommended Biological Catch</p> <p>East: 260 t</p> <p>West: 1150 t</p>	<ul style="list-style-type: none"> • SERAG (2018) recommended a three year MYTAC, with catch restrictions to apply in the east. 		
Discount factor	Less: N/A	<ul style="list-style-type: none"> • N/A Tier 1 species. 		
State catch	Less: East: 56 t	<ul style="list-style-type: none"> • NSW allocated a TAC for pink ling of 67.7 t, commencing on 1 May 2019, for the Ocean Trap & Line Fishery. 		

Application of the SESSF Harvest Strategy

	West: 0 t Combined: 56 t	<ul style="list-style-type: none"> The deduction was calculated based on the four year weighted average as agreed under the SESSF Harvest Strategy.
Discards	Less: East: 23 t West: 21 t Combined: 44 t	
Recreational catch	Less: N/A	<ul style="list-style-type: none"> There are reports of increasing recreational catch of this species but catches are not estimated and unlikely to be significant.
Research Catch Allowance	Less: N/A	<ul style="list-style-type: none"> N/A
TAC calculation under the Harvest Strategy	Provisional (Harvest Strategy) TAC East: 181 t West: 1129 t Combined: 1310 t	See comments below regarding constant catch scenarios.

Considerations in addition to the SESSF Harvest Strategy

Commercial fishers' interest	Pink ling is caught in close association with blue-eye trevalla in the line sector and slope species such as blue grenadier in the trawl sector. Both the line and trawl industry have noted the difficulty in constraining catches in the east.
Economic considerations	6.6% contribution to SESSF GVP (\$76 million) in the 2017-18 financial year. Classified as 'primary' under the SMARP project.

Application of the SESSF Harvest Strategy

Species specific management (target, companion and bycatch)

While the pink ling TAC is set globally (east and west), pink ling is assessed separately as an eastern and western stock.

The eastern stock, although above the limit reference point, requires rebuilding to meet the target reference point. Similar to the approach adopted for the previous three year MYTAC, SEMAC (2019) recommended setting a notional eastern TAC based on constant catches (see table below) rather than the RBC. This allows:

- a level of incidental catch of pink ling to be landed instead of discarded;
- a less than 10% probability of declining below the limit reference point; and
- the stock to rebuild (although at a slower rate than under the RBC).

Constant catches of 600 t or more lead to a greater than 10% probability of eastern pink ling declining to below the limit reference point by 2028 and substantially increases the time taken to rebuild the stock to the target reference point.

Annual catch (t)	Cth notional eastern TAC	E (B ₂₁ /B ₀)	E (B ₂₈ /B ₀)	P (SS ₂₁ <0.2)	P (SS ₂₈ <0.2)	Rebuild year to B ₄₈
0	N/A	42	72	0.00	0.00	2023
300	221	37	53	0.01	0.00	2026
400	321	35	47	0.02	0.01	2030
450	371	34	44	0.02	0.01	2033
500	421	33	41	0.04	0.02	2040
550	471	32	38	0.05	0.05	>2050
600	521	32	35	0.06	0.11	>2050
650	571	31	31	0.08	0.18	>2050

2019 Closure Revocation

AFMA completed a review of the pink ling closures at Maria Island, Seiner's Horseshoe and Everard Horseshoe in December 2019. SEMAC supported repealing the closures, noting they were not providing the intended level of protection and the voluntary industry arrangements had been successful at restricting eastern pink ling catches since 2013.

MAC advice and any dissenting views

2020-21 TAC recommendation

1310 t

Application of the SESSF Harvest Strategy

The second of a three year MYTAC

Notional TAC of 446 t to be applied in the east

SEMAC advice and any dissenting views

Since 2013, AFMA has used a combination of trip limits, closures and industry agreements to limit catch in the east where the biomass is not considered overfished but requires rebuilding to reach the target reference point. The pink ling closures were repealed in December 2019, following SEMAC advice that they were not offering the level of protection they were originally implemented for, and that output based catch controls, including the industry-led initiatives, have proven to be successful at limiting catches in the east.

AFMA management is continuing to consult on a proposal to regionalise Statutory Fishing Rights to reflect the eastern and western pink ling stock structure. In the interim, AFMA management recommends maintaining a notional TAC in the east to restrict catches and supports ongoing industry voluntary catch restrictions.

For the 2019-20 season, operators have opted to either limit their catches under the SETFIA arrangement (SETFIA vessels), or are subject to a 200 kg trip limit. As of 16 January 2020, all SETFIA vessels remain within their agreed catch limits, and total catches are on track to remain below the notional TAC of 428 t.

The 2019-20 TAC of 428 t was based on constant catch of 525 t (between 500 t and 550 t scenarios, see table above) and deducting recent average discards (62 t) and State catches (35 t). The 2019 estimates of State catches and discards have decreased, with a four year weighted average of 56 t and 23 t, respectively. Deducting the revised estimates from a fixed catch of 525 t results in a notional TAC of 446 t.

SEMAC recommended a 2020-21 TAC of 1310 t, of which no more than 446 t can be taken from the east. This is second of a three year MYTAC, with under and overcatch provisions set at 10 per cent and a determined amount of 2 t.

2.22 Redfish

Application of the SESSF Harvest Strategy

Stock assessment

Last assessed in 2017 using a Tier 1 assessment. [See 2018 Species Summary.](#)
Rebuilding species review undertaken by [SERAG in December 2019.](#)

Stock status against reference points and trend

Current (2018)

8% B₀

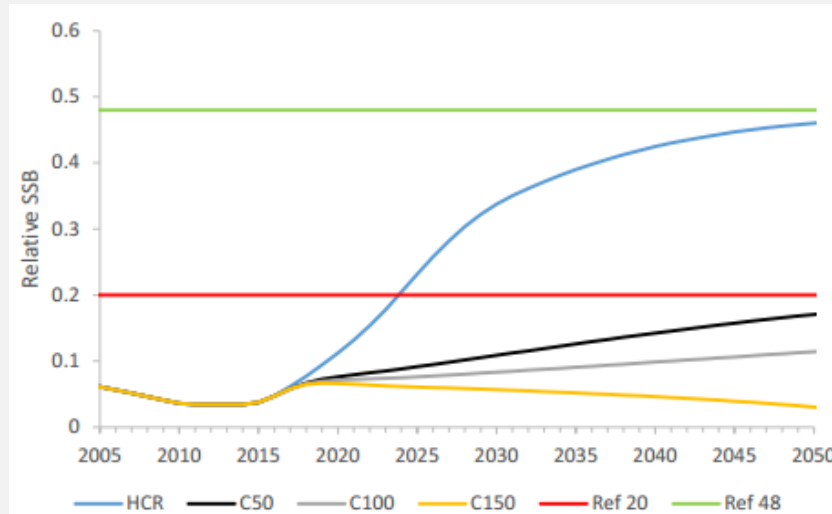
Target

48% B₀

Limit

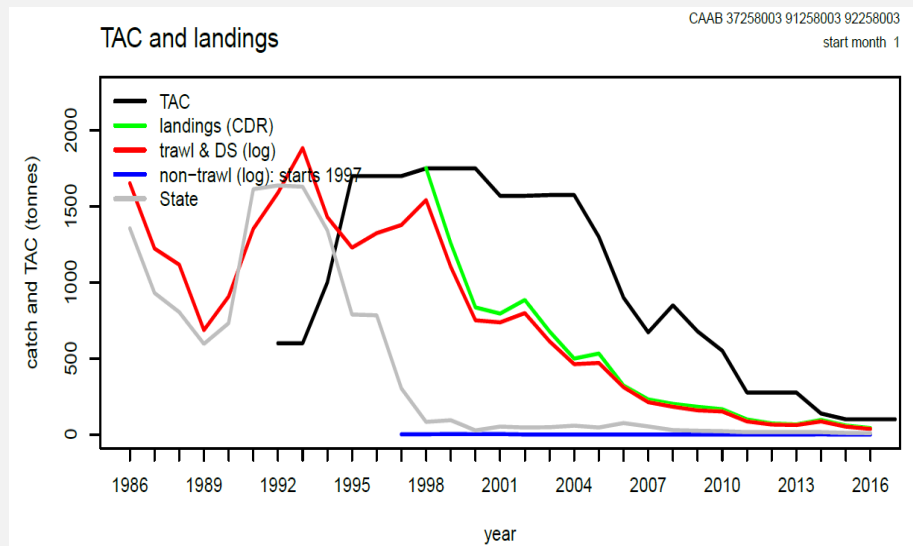
20% B₀

The 2017 assessment estimated that the stock was below the limit reference point at an estimated 2018 stock status of 8% of unexploited levels.



The accepted base case ('HCR' above) estimated the redfish spawning biomass will exceed the limit reference point by approximately 2024. Noting however, that the rebuild timeframes are based on average recruitment estimates and recruitment has been below average since the early 2000s.

Application of the SESSF Harvest Strategy



Previous season catch and TAC (2018-19)	Catch (t)	Agreed TAC (t)	TAC (t) after unders/overs	Percentage caught
	31	100	100	31%
RAG comments on data and assessment	<p>SERAG (2017) noted the recruitment pulse predicted by the 2014 assessment had eventuated but not to the degree expected, and catches and catch rates in 2016 were the lowest on record.</p> <p>SERAG (2019) noted the collection of age and length information for redfish is improving, however, at low catch levels, CPUE may be becoming less informative as an index of abundance. The next assessment is scheduled for 2020.</p>			
ABARES status	2019 ABARES biomass		2019 ABARES fishing mortality	
Other indicators	SERAG (2019) noted there was some evidence of recruitment (from 2017) but sampling has not been of sufficient quality to indicate whether it's occurring across the range of the stock distribution.			
RAG advice and any dissenting views	Recommended Biological Catch 0 t	<ul style="list-style-type: none"> SERAG (2019) recommended maintaining the incidental catch TAC of 50 t, as 		

Application of the SESSF Harvest Strategy

		determined by the AFMA Commission in 2019.
Discount factor	Less: N/A	<ul style="list-style-type: none"> N/A
State catch	Less: N/A	<ul style="list-style-type: none"> Estimated state catch of 7 t. Not deducted given that an incidental catch TAC is being recommended.
Discards	Less: N/A	<ul style="list-style-type: none"> Estimated discards (four year weighted average) of 21 t. Not deducted given that an incidental catch TAC is being recommendation.
Recreational catch	Less: N/A	<ul style="list-style-type: none"> Some recreational catch in NSW but not estimated.
Research Catch Allowance	Less: N/A	<ul style="list-style-type: none"> N/A
TAC calculation under the Harvest Strategy	Provisional (Harvest Strategy) TAC 50 t	<ul style="list-style-type: none"> Incidental catch TAC.

Considerations in addition to the SESSF Harvest Strategy

Commercial fishers' interest	N/A
Economic considerations	0.14% contribution to SESSF GVP (\$76 million) in the 2017-18 financial year. Classified as 'secondary' under the SMARP project.
Species specific management (target, companion and bycatch)	The species is managed under the Redfish Stock Rebuilding Strategy 2016-2021 .
MAC advice and any dissenting views	2020-21 TAC recommendation 50 t – single year incidental TAC SEMAC advice and any dissenting views

Application of the SESSF Harvest Strategy

SEMAC noted the SERAG advice with regards to the Commission request for further advice to assist the TAC setting process for the 2020-21 season (see below).

SEMAC supported the SERAG recommendation to explore options for establishing an alternative index of abundance. The MAC had nothing further to add and there were no dissenting views.

SEMAC recommended a 2020-21 incidental TAC of 50 t, with no under and overcatch provisions and a determined amount of 2 t.

To further assist the 2020-21 TAC setting process, the AFMA Commission asked SERAG to provide advice on a number of issues. SERAG provided the following advice at its October and December 2019 meetings:

Recent recruitment to the fishery as an indicator of likely recruitment scenarios to inform rebuilding timeframes

There is some evidence of recruitment from 2017, however sampling has not been of sufficient quality to indicate whether it's occurring across the range of the stock distribution. Rebuilding timeframes and recent recruitment to the fishery cannot be estimated until the Tier 1 assessment is updated, which is currently scheduled for 2020.

The available data with a view of updating the stock assessment in 2020

Collection of age and length data has significantly improved, however, avoidance behaviour and low catches may mean that CPUE is becoming less informative as an index of abundance. SESSFRAG will consider available data at its 2020 data meeting and recommend whether the assessment scheduled for 2020 should proceed.

An updated companion species and targeting analyses to update estimates of unavoidable bycatch & the potential impact of revised flathead TACs for the 2020-21 season.

A companion species analysis using a metier analysis approach found that changes in the flathead TAC have the greatest impact on catches of redfish, and to a lesser extent, blue warehou and eastern gemfish. The RAG noted that the flathead TAC is likely to decrease for the 2020-21 season. There is no evidence of targeting, and operators are becoming increasingly better at avoiding redfish.

The RAG agreed the metier approach could be used to update future estimates of unavoidable bycatch, and would complement the multi-species harvest strategy approach. However, the recent analysis only used SESSF logbook and ABARES price data for the period 2012-2017. SERAG supported undertaking this type of analysis in the future, provided it was using up to date information. SERAG recommended maintaining the 50 t bycatch TAC for the 2020-21 season.

2.23 Ribaldo

Application of the SESSF Harvest Strategy				
Stock assessment	Last assessed in 2017 using a Tier 4 assessment. See 2018 Species Summary. SESSFrag (2019) recommended continuing the three year MYTAC.			
Stock status against reference points and trend	Current (2017)	Target	Limit	
	CPUE = 0.7978	CPUE = 0.3597	CPUE = 0.1799	
	Standardised CPUE has been relatively flat since the early 2000s and remains above the target reference point. The target CPUE is half the observed CPUE due to the undeveloped state of the fishery in the reference period.			
Previous season catch and TAC (2018-19)	Catch (t)	Agreed TAC (t)	TAC (t) after unders/overs	Percentage caught
	107	430	465	23%

Application of the SESSF Harvest Strategy

RAG comments on data and assessment	Only trawl data is used in the assessment. The next assessment is scheduled for 2020.	
ABARES status	2019 ABARES biomass	2019 ABARES fishing mortality
Other indicators	N/A	
RAG advice and any dissenting views	Recommended Biological Catch 430 t	<ul style="list-style-type: none"> • SESSFRAG recommended continuing with the third year of the three-year MYTAC.
Discount factor	Less: N/A	<ul style="list-style-type: none"> • The RAG recommended not applying a discount factor because deepwater closures provide protection to the stock.
State catch	Less: 3 t	<ul style="list-style-type: none"> • State catches are included in the Tier 4 assessment and deducted from the RBC. • Mostly NSW state catches; consistently low.
Discards	Less: 5 t	<ul style="list-style-type: none"> • Estimated discards between 5-11 t over past five years.
Recreational catch	Less: N/A	<ul style="list-style-type: none"> • Not considered in the stock assessment with no estimates of recreational catch available (likely insignificant).
Research Catch Allowance	Less: N/A	<ul style="list-style-type: none"> • N/A
TAC calculation under the Harvest Strategy	Provisional (Harvest Strategy) TAC 422 t	

Considerations in addition to the SESSF Harvest Strategy

Commercial fishers' interest	Industry members have previously noted the undercatch is due to the fact that a large portion of the stock is unavailable due to closures.
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Application of the SESSF Harvest Strategy

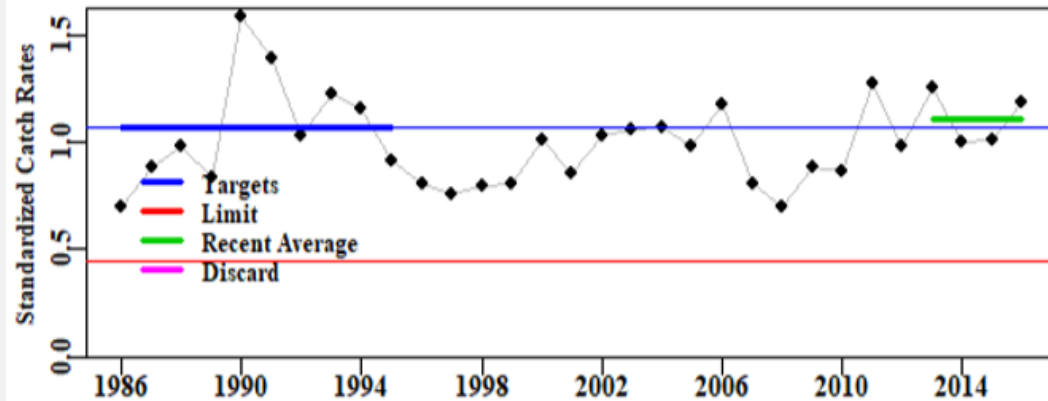
Economic considerations	0.29% contribution to SESSF GVP (\$76 million) in the 2017-18 financial year. Classified as 'byproduct' under the SMARP project.
Species specific management (target, companion and bycatch)	Deepwater closures currently providing significant protection.
MAC advice and any dissenting views	<p>2020-21 TAC recommendation</p> <p>422 t</p> <p>Third of a three year MYTAC.</p> <p>SEMAC advice and any dissenting views</p> <p>There were no dissenting views and SEMAC were comfortable with the advice provided in the paper.</p> <p>SEMAC recommended a 2020-21 TAC of 422 t, the third of a three year MYTAC, with under and overcatch provisions set at 10 per cent and a determined amount of 2 t.</p>

2.24 Royal red prawn

Application of the SESSF Harvest Strategy

Stock assessment	Last assessed in 2017 using a Tier 4 assessment. See 2018 Species Summary . SESSFRAG (2019) recommended continuing the three year MYTAC.		
Stock status against reference points and trend	Current	Target	Limit
	CPUE = 1.1114	CPUE = 1.0692	CPUE = 0.4455
	Standardised CPUE has displayed a cyclical trend around the target with a general increase from 2010. Recent average CPUE (up to 2016) was above the limit reference point.		

Application of the SESSF Harvest Strategy



Previous season catch and TAC (2018-19)

Catch (t)	Agreed TAC (t)	TAC (t) after unders/overs	Percentage caught
147	381	418	35%

RAG comments on data and assessment

When considering the updated assessment in 2017, SERAG noted that CPUE had been noisy but effectively flat since 2003 and was currently above the target reference point. SESSFRAG (2019) noted recent CPUE is increasing, though may not be accurately indexing the stock.

ABARES status

2019 ABARES biomass	2019 ABARES fishing mortality
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Other indicators

Operators are avoiding a productive area where a vessel approximately 18 months ago.

RAG advice and any dissenting views

Recommended Biological Catch
431 t

- SESSFRAG (2019) recommended continuing with the third year of a three year MYTAC.

Discount factor

Less: N/A

- A discount factor is not applied because of the protection afforded by deepwater closures.

State catch

Less: 10 t

- Majority of State catch is from NSW operators.

Application of the SESSF Harvest Strategy

Discards	Less: 18 t	<ul style="list-style-type: none"> The estimated discard rate in 2017 was higher than the rate in previous years. The 2018 estimate did not pass the validity test, and the 2017 discard rate was used to estimate total discards Catches were approximately 15 t higher in 2018, and so the total estimated discard amount increased proportionately.
Recreational catch	Less: N/A	<ul style="list-style-type: none"> N/A
Research Catch Allowance	Less: N/A	<ul style="list-style-type: none"> Research into gulper shark exclusion grids is no longer proceeding.
TAC calculation under the Harvest Strategy	Provisional (Harvest Strategy) TAC 403 t	

Considerations in addition to the SESSF Harvest Strategy

Commercial fishers' interest	N/A
Economic considerations	1.2% contribution to SESSF GVP (\$76 million) in the 2017-18 financial year. Classified as 'secondary' under the SMARP project.
Species specific management (target, companion and bycatch)	Royal Red Prawn fishing grounds off Sydney occur in areas of core habitat for Harrison's and southern dogfish and much of the fishing grounds have been closed under the Upper Slope Dogfish Management Strategy.
MAC advice and any	2020-21 TAC recommendation 403 t The third of a three year MYTAC.

Application of the SESSF Harvest Strategy

dissenting views

SEMAC advice and any dissenting views

There were no dissenting views and SEMAC were comfortable with the advice provided in the paper.

SEMAC recommended a 2020-21 TAC of 403 t, the third of a three year MYTAC, with under and overcatch provisions set at 10 per cent and a determined amount of 2 t.

2.25 Sawshark

Application of the SESSF Harvest Strategy

Stock assessment

Last assessed in 2017 using a Tier 4 assessment. [See 2018 Species Summary. SESSFRAG \(2019\)](#) recommended continuing the three year MYTAC.

Stock status against reference points and trend

Current

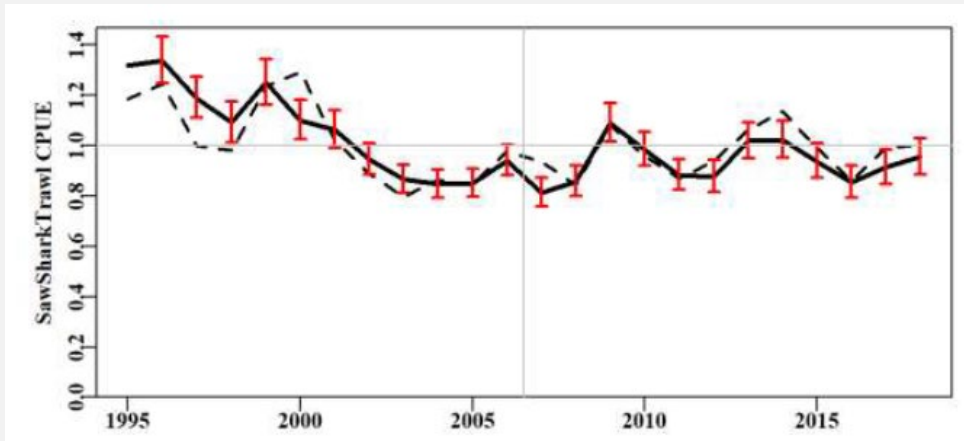
CPUE = 0.9119

Target

CPUE = 0.7237

Limit

CPUE = 0.3618



Application of the SESSF Harvest Strategy

	The standardised trawl CPUE has been relatively flat. In the 2017 Tier 4 assessment, the recent average standardised CPUE-based proxy for biomass was above the target reference point.		
Previous season catch and TAC (2018-19)	Catch (t)	Agreed TAC (t)	TAC (t) after unders/overs
	179	430	472
RAG comments on data and assessment	N/A		
ABARES status	2019 ABARES biomass		2019 ABARES fishing mortality
Other indicators	N/A		
RAG advice and any dissenting views	Recommended Biological Catch 519 t	<ul style="list-style-type: none"> Continue with the third year of a three year multi-year TAC. 	
Discount factor	Less: 78 t	<ul style="list-style-type: none"> 15% discount factor for Tier 4 species. 	
State catch	Less: 9 t	<ul style="list-style-type: none"> Estimated state catches of 11 t. 	
Discards	Less: N/A	<ul style="list-style-type: none"> Estimated discards (four year weighted average) of 34 t however are not included in the assessment and not deducted from the RBC. 	
Recreational catch	Less: N/A	<ul style="list-style-type: none"> No reliable estimate of recreational catch. 	
Research Catch Allowance	Less: N/A	<ul style="list-style-type: none"> There is no research catch allowance. 	
TAC calculation under the Harvest Strategy	Provisional (Harvest Strategy) TAC 432 t		

Considerations in addition to the SESSF Harvest Strategy

Application of the SESSF Harvest Strategy

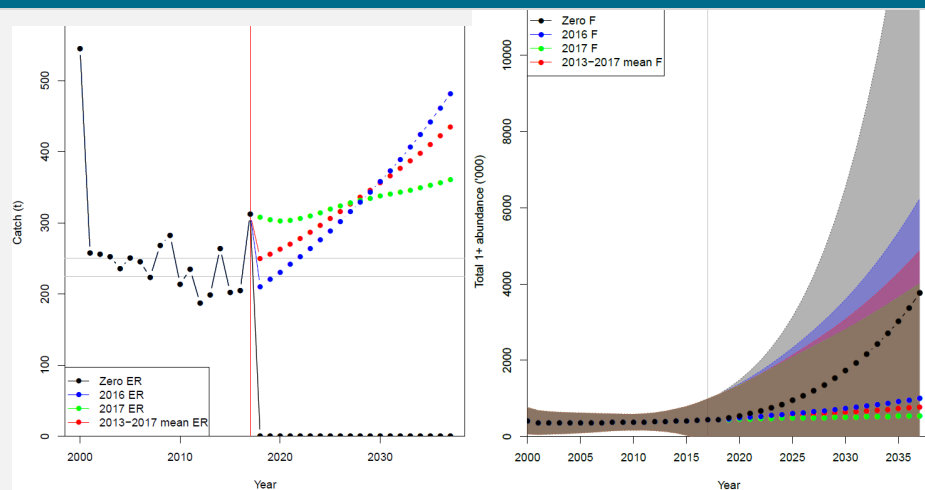
Commercial fishers' interest	N/A
Economic considerations	0.63% contribution to SESSF GVP (\$76 million) in the 2017-18 financial year. SMARP classification 'secondary'.
Species specific management (target, companion and bycatch)	N/A
MAC advice and any dissenting views	<p>2020-21 TAC recommendation</p> <p>432 t</p> <p>The third of a three year MYTAC.</p> <p>SEMAC advice and any dissenting views</p> <p>There were no dissenting views and SEMAC were comfortable with the advice provided in the paper.</p> <p>SEMAC recommended a 2020-21 TAC of 432 t, the third of a three year MYTAC, with under and overcatch provisions set at 10 per cent and a determined amount of 2 t.</p>

2.26 School shark

Application of the SESSF Harvest Strategy

Stock assessment	Last assessed in 2018 using a Tier 1 assessment (close-kin (CK) assessment model), assuming a single stock.		
Stock status against reference points and trend	Current	Target	Limit
	Unknown	48% B ₀	20% B ₀
	<p>The CK model provides an estimate of current absolute abundance with trend back to 2000. It does not provide an estimate of depletion from B₀.</p> <p>The CK model indicates that the stock had recovered slightly during the period from 2000 to 2017.</p>		

Application of the SESSF Harvest Strategy



Previous season catch and TAC (2018-19)

Catch (t)	Agreed TAC (t)	TAC (t) after unders/overs	Percentage caught
196	215	215	91%

RAG comments on data and assessment

In 2018 the RAG accepted the CK assessment model noting high confidence in the absolute estimate of abundance produced by the model, but accepting lower confidence in the estimates of trend.

The RAG recommended setting an incidental catch TAC based on projections using the average fishery mortality rates over the last five years (2013-17 mean F, red line in figures above). This rate, taking into account increasing stock size due to rebuilding, gives total fishing mortality estimates of 256 t in 2019-20, 263 t in 2020-21 and 270 t in 2021-22. This level of fishing mortality provides for consistent recovery, whereas projections using the 2017 fishing mortality rate (green line in figures above) would lead to an initial reduction (first two years) in stock size before recovery due to the effect of age class inputs in the model.

The CK assessment model considers only one region, one population, starts in 2000 and does not allow (or need to take account of) movement between regions (because there is only one region).

Application of the SESSF Harvest Strategy

The base case model shows a population that is relatively small compared with that estimated by the previous stock assessment model. However the model is inconsistent with the catches taken during the 1990s which brings into question whether or not the stock from which the CK sample was taken is different from the stock that sustained catches prior to 2000. That is, the stock being assessed may have been a different and smaller stock than the stock that was historically fished. Any future consideration of B_0 and associated reference points will need to take this into account.

In 2019, the Southern Shark Industry Alliance (SSIA) commissioned an independent review of the 2018 stock assessment that was followed by a formal response from CSIRO in late 2019. The Fisheries Research and Development Corporation (FRDC) is also initiating a review of the original stock assessment report, as part of its normal project review process.

SharkRAG met via teleconference on 16 January 2020 to discuss the process for considering the review of the assessment. SharkRAG agreed to a process for undertaking an independent review of the assessment model, taking into account the industry commissioned review, the response from the CSIRO and the FRDC review process. AFMA is currently working to identify suitable reviewers and to develop terms of reference.

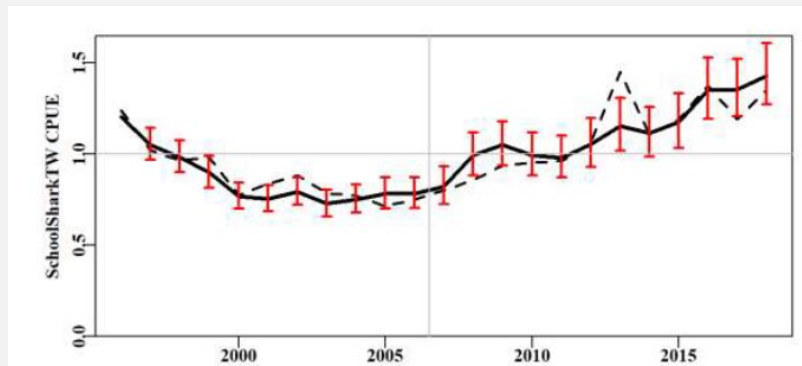
ABARES status

2018 ABARES biomass

2018 ABARES fishing mortality

Other indicators

Gillnet CPUE is not considered a reliable index of abundance as school shark are actively avoided by gillnet fishers. Although representing only a small proportion of total catch, the trawl CPUE shows an increasing trend since 2003.



RAG advice and any

Recommended Biological Catch
263 t

- Rebuilding Species.

Application of the SESSF Harvest Strategy

dissenting views		
Discount factor	Less: N/A	<ul style="list-style-type: none"> N/A
State catch	Less: 28 t	<ul style="list-style-type: none"> The RAG noted the importance of ensuring that State catches do not exceed the agreed levels allocated through the Memorandum of Understanding with Victoria, South Australia and Tasmania.
Discards	Less: 40 t	<ul style="list-style-type: none"> Uses 2014 ISMP discard estimate of 15.1% (estimate not available from ISMP for later years due the introduction of e-monitoring in the GHAT sector).
Recreational catch	Less: N/A	<ul style="list-style-type: none"> Recreational catch in South Australia estimated in 2008 (9.4 t) and 2014 (53 t). Not used in the assessment and not deducted from the incidental catch TAC.
Research Catch Allowance	Less: N/A	<ul style="list-style-type: none"> N/A
TAC calculation under the Harvest Strategy	Provisional (Harvest Strategy) TAC 195 t	<ul style="list-style-type: none"> Incidental catch allowance only.

Considerations in addition to the SESSF Harvest Strategy

Application of the SESSF Harvest Strategy

Commercial fishers' interest	School shark is caught in association with gummy shark by gillnet and longline fishers and may be a choke species, limiting gummy shark catches. Fishers have expressed that it is difficult to avoid school shark in Tasmanian and South Australian waters.
Economic considerations	2.07% contribution to SESSF GVP (\$76 million) in the 2017-18 financial year. SMARP classification 'secondary'. 91% TAC caught in the 2018-19 fishing year.
Species specific management (target, companion and bycatch)	<p>School shark is subject to a rebuilding strategy with the objective to rebuild the stock to above 20% of unfished biomass levels within three generation times.</p> <p>The following management measures have been implemented to ensure that fishing mortality is limited to levels that support rebuilding:</p> <ul style="list-style-type: none"> • Incidental catch TAC and State catch allocations. • 20% quota ratio limit with gummy shark. • Release of all live school shark. • Pupping ground and other fishery closures. • 100kg bycatch limit on Scalefish Hook SFRs. • Cumulative school shark catch trigger limit of 5 t on automatic longline permits. <p>It is proposed that a review of these management measures will be undertaken by a sub-group of the SEMAC in 2020.</p>
MAC advice and any dissenting views	<p>2020-21 TAC recommendation</p> <p>195 t</p> <p>A single year incidental TAC.</p> <p>SEMAC advice and any dissenting views</p> <p>Noting the work being undertaken to review the school shark stock assessment, SEMAC recommended a 2020-21 TAC of 195 t. Taking into account the Commission advice from 2019 the MAC did not make a recommendation to increase the catch limit to account for a level of released school shark survivability.</p>

2.27 School whiting

Application of the SESSF Harvest Strategy				
Stock assessment	<p>Last full assessment in 2017 using a Tier 1 assessment.</p> <p>In November 2019, the stock assessment was updated to include recent catch (including NSW) and CPUE data to assess the impact on the long-term sustainability of the stock of catches in excess of the RBC over the next two SESSF seasons.</p>			
Stock status against reference points and trend	<p>2017 Assessment</p> <p>47% B₀</p>	<p>2019 Update</p> <p>35%B₀</p>	<p>Target</p> <p>48% B₀</p>	<p>Limit</p> <p>20% B₀</p>
	<p>The 2017 assessment estimated the stock dropped below the target reference point in to approximately 39% in 2009 and increased to 47% at the start of 2018.</p> <p>Re-running the assessment resulted in a downward revision to the 2018 estimated spawning stock biomass from 47% B₀ to 36% B₀, driven mostly by a downward turn in CPUE as well as revisions to the NSW catch data from 2017.</p> <p>Under the updated 2019 assessment, the biomass is estimated to be 35% B₀ at the beginning of 2020.</p>			
Previous season catch and TAC (2018-19)	<p>Catch (t)</p> <p>537</p>	<p>Agreed TAC (t)</p> <p>820</p>	<p>TAC (t) after unders/overs</p> <p>915</p>	<p>Percentage caught</p> <p>59%</p>
RAG comments on data and assessment	<p>The 2017 Tier 1 school whiting stock assessment estimated the spawning stock biomass to be 47% B₀ at the beginning of 2018.</p> <p>In December 2019, the stock assessment was updated to include recent catch and CPUE data. Updates to the assessment have resulted in a downward revision to the 2018 estimated spawning stock biomass from 47% B₀ to 36% B₀.</p> <p>These changes are largely driven by:</p> <ul style="list-style-type: none"> • a downward turn in CPUE; • revisions to the NSW catch data from 2017 and 2018, which when combined with Commonwealth catches, have resulted in the RBC being exceed for the last two years; and • predicted combined catches for 2019, which are expected to exceed the RBC again. <p>Re-running the 2017 assessment with recent catches and CPUE data in December 2019 resulted in a biomass estimate of 35% B₀ at the beginning of 2020. The resulting</p>			

Application of the SESSF Harvest Strategy

RBCs were 1165 t for 2020-21, 1357 t for 2021-22, 1433 t for 2022-23, or a three year average of 1318 t, which is 297 t less than the previous three year average (1615 t).

Noting the AFMA Commission's in-principle agreement to maintain the Commonwealth TAC at 788 t for the 2020-21 and 2021-22 SESSF seasons, SERAG considered the impact to the sustainability of the stock under various catch and recruitment scenarios for the next two years.

For the purpose of the scenarios, 'catch' is taken to be total mortality, and includes discards. For example, 1900 t (scenario 4) consists of state catches + Commonwealth catches + discards for both jurisdictions.

Estimated relative biomass at the start of 2022

Biomass in 2022		Catch scenarios			
		1*	2	3	4
		HCR RBC	1600	1800	1900
Recruitment scenarios	High ¹	48.3	48.3	N/A ²	43.8
	Average	43.5	38.5	35.6	34.1
	Low ¹	30.6	25.8	N/A ²	21.7

* RBCs from the projected 'average recruitment' scenario is applied.

¹ Recruitment is fixed for the period 2014-2021

² Recruitment scenario not considered

Application of the SESSF Harvest Strategy

	<p>Under a low recruitment scenario, the biomass is expected to decrease under all catch scenarios. Under a high recruitment scenario, the biomass is expected to increase under all catch scenarios.</p> <p>Noting recruitment has only been estimated up to 2013, SERAG advised there is no evidence of a long-term shift to below average recruitment, and it would be reasonable to consider the projections under average recruitment.</p> <p>The current (2020) biomass is estimated to be 35% B_0. Under the average recruitment scenario, the biomass is expected to:</p> <ul style="list-style-type: none"> • increase to 43.5% B_0 at the beginning of 2022 if the (much lower) RBCs from the revised assessment are applied. • remain stable at around 36% B_0 at catches up to 1800 t each year • decrease to 34.1% B_0 at catches up to 1900 t each year. <p>If NSW and Commonwealth TACs were to be allocated within a total catch of 1800 t, the combined TACs for each jurisdiction would need to be around 1600 t to allow for discards.</p>	
ABARES status	2019 ABARES biomass 2019 ABARES fishing mortality	
Other indicators	N/A	
RAG advice and any dissenting views	<p>Recommended Biological Catch</p> <p>The three year average RBC from the 2017 assessment is 1615 t.</p>	<ul style="list-style-type: none"> • The 2019 re-run of the assessment produced a single year RBC for 2020-21 of 1165 t and a three year average of 1318 t. These estimates were not considered for recommendation by SERAG, and will only be used for the purpose of proving advice to the Commission.
Discount factor	Less: N/A	<ul style="list-style-type: none"> • N/A (Tier 1).
State catch	Less: 1154 t	<ul style="list-style-type: none"> • NSW catches have increased significantly over the last three years, and are expected to be high again for 2019.
Discards	Less: 192 t	<ul style="list-style-type: none"> • Model estimated discards are used to calculate the TAC.

Application of the SESSF Harvest Strategy

Recreational catch	Less: N/A	<ul style="list-style-type: none"> Recreational catch estimates are uncertain and species (including King George whiting) are not clearly delineated. Not considered in the assessment.
Research Catch Allowance	Less: N/A	<ul style="list-style-type: none"> N/A
TAC calculation under the Harvest Strategy	Provisional (Harvest Strategy) TAC 269 t	

Considerations in addition to the SESSF Harvest Strategy

Commercial fishers' interest	<p>NSW introduced quota shares in 2019, including a combined school whiting and stout whiting TAC of 1189 t, close to the highest historical catch over the last nine years.</p> <p>Under the 2019 update, the 2020 RBC is less than recent NSW landed catches alone, and RBCs for all years are significantly less than the combined Commonwealth and NSW catches in 2017 and 2018, which were 2151 t and 1943 t, respectively.</p>
Economic considerations	<p>3% contribution to SESSF GVP (\$76 million) in the 2017-18 financial year.</p> <p>Classified as 'primary' under the SMARP project.</p> <p>Application of the SESSF Harvest Strategy would result in a 447 t (56%) decrease in the TAC for the 2020-21 season. This would have significant economic impacts, particularly for the Danish seine fleet.</p> <p>The AFMA Commission agreed in-principle to maintain the 2019-20 school whiting TAC of 788 t for the 2020-21 and 2021-22 SESSF fishing years, subject to considering SERAG advice regarding the long-term impact to sustainability of exceeding the RBC for the next two seasons.</p>
Species specific management (target, companion and bycatch)	<p>There is uncertainty around the stock structure as well as the species composition of NSW catches, particularly north of Barrenjoey Head. An FRDC project is currently underway, led by Dr Karina Hall (NSW DPI) and scheduled for completion by May 2022, to better understand stock structure. The results from this project will not be available to feed into the stock assessment for several years.</p>

Application of the SESSF Harvest Strategy

MAC advice and any dissenting views

2020-21 TAC recommendation

788 t

The third of a three year MYTAC.

SEMAC advice and any dissenting views

SEMAC noted the recent increases in NSW catches have resulted in the RBC being exceeded for the last two seasons, which will likely occur again in 2019-20. The NSW TAC is a combined school whiting and stout whiting TAC, and was set based on the highest catches over an eight year period (2010-2016). The NSW Total Allowable Fishing Committee met during January 2020 and is currently considering the NSW TAC for 2020-21 season. A formal decision is expected to be made by mid-March 2020.

As of February 2020, the NSW TAC is 54 per cent caught, however current catches from the Southern Fish Trawl sector are unknown because of logbook delays. Given the management complexity in the quota-managed part of the NSW fishery, the MAC noted some risk that NSW operators would move south to the SFT, where catches are currently unrestricted.

AFMA and NSW are currently in discussions regarding catch sharing arrangements, however it is unlikely an agreement will be reached for the 2020-21 season, and will more likely be considered for 2021-22 season.

SEMAC strongly supported resolving the catch sharing arrangements between the Commonwealth and NSW, and has resolved to write to the AFMA Commission offering their support.

The current school whiting Tier 1 assessment only uses CPUE information from the Commonwealth Danish seine fleet, which is then applied to the NSW vessels catches. This is a key component of the assessment, and SEMAC encouraged AFMA and NSW to work with CSIRO to ensure the CPUE data is made available for the 2020 assessment.

There was some comfort within the MAC that the stock is assessed as being at 35% B_0 , which is well above the target. However, if catches were to be sustained at current levels, and if recruitment was below average, the biomass is expected to decrease again over the next few years.

SEMAC supported maintaining the TAC for one year, noting the assessment is scheduled to be externally reviewed and updated in 2020. The fully updated

Application of the SESSF Harvest Strategy

assessment will be informed by more recent catch data, including CPUE data from NSW and updated recruitment estimates.

Maintaining the Commonwealth TAC at 788 t would require NSW to limit its catches of school whiting to around 800 t, which is 400-500 t less than NSW catches over the last three years. It is important to note:

- the NSW ‘trawl whiting’ TAC is a basket species TAC, and was set at 1189 t for the 2019-20 fishing season. Restricting catches of eastern school whiting within that TAC is not currently possible.
- catches of whiting from the NSW Southern Fish Trawl sector are not part of the TAC, and remain unrestricted.

The NSW Total Allowable Fishing (TAF) Committee met in mid-January 2020 to recommend a combined whiting TAC for the 2020-21 season. AFMA will continue to work with NSW to establish catch and cost sharing arrangements to ensure the eastern school whiting RBC is not exceeded in the future.

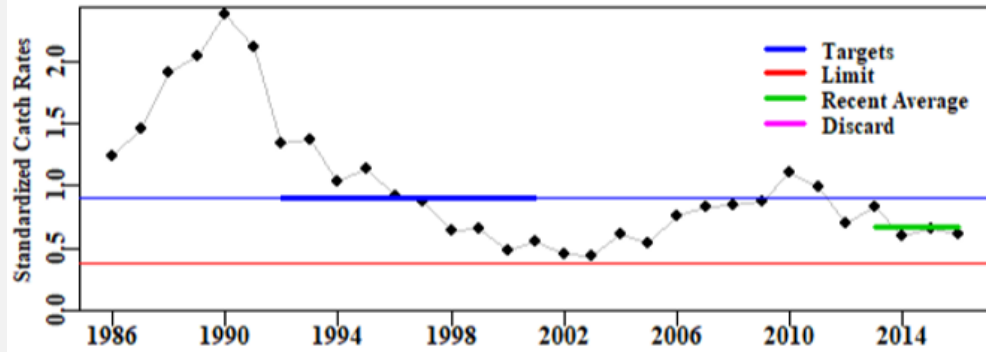
At its December 2019 meeting, SERAG supported an external review of the school whiting Tier 1 assessment prior to the assessment being undertaken in late 2020. The updated 2020 assessment will include another year of data, including recruitment estimates, 2019 catches (Commonwealth & State), and estimates of 2020 catches based on the NSW and Commonwealth TACs and expected catches from the NSW SFTF. Discussions with NSW are ongoing regarding NSW providing CPUE data to CSIRO to use in the 2020 assessment.

2.28 Silver trevally

Application of the SESSF Harvest Strategy

Stock assessment	Last assessed in 2017 using a Tier 4 assessment. See 2018 Species Summary. SESSFRAG (2019) recommended continuing the three year MYTAC.		
Stock status against reference points and trend	Current CPUE = 0.6722	Target CPUE = 0.9026	Limit CPUE = 0.3761
	CPUE has recently declined to between the target and limit reference point having been above the target in 2010 and 2011. While there has been a general decline in CPUE since 2010, it has remained relatively stable since 2014.		

Application of the SESSF Harvest Strategy



Previous season catch and TAC (2018-19)	Catch (t)	Agreed TAC (t)	TAC (t) after unders/overs	Percentage caught
	8	307	368	2%
RAG comments on data and assessment	Only data from outside the Batemans Bay Marine Park closure is used in the Tier 4 assessment.			
ABARES status	2019 ABARES biomass		2019 ABARES fishing mortality	
Other indicators	In 2018, NSW classified silver trevally as 'transitional depleting' using a weight of evidence approach including declining CPUE from state boats. CPUE has declined over the last two years, and the long-term trend is also declining.			
RAG advice and any dissenting views	Recommended Biological Catch 445 t			
Discount factor	Less: N/A		<ul style="list-style-type: none"> The Tier 4 discount factor is not applied because of the protection afforded by the Batemans Bay Marine Park closure. 	
State catch	Less: 120 t		<ul style="list-style-type: none"> Mostly NSW state catches. 	

Application of the SESSF Harvest Strategy

Discards	Less: 36 t	<ul style="list-style-type: none"> The discard rate has been variable over the last seven years.
Recreational catch	Less: N/A	<ul style="list-style-type: none"> Recreational catch is not included in the Tier 4 assessment because of a lack of reliable catch estimates over time. Recreational catch of silver trevally in NSW was estimated in 2012 at between 54 -120 t.
Research Catch Allowance	Less: N/A	<ul style="list-style-type: none"> N/A
TAC calculation under the Harvest Strategy	Provisional (Harvest Strategy) TAC 289 t	

Considerations in addition to the SESSF Harvest Strategy

Commercial fishers' interest	NSW set a 26.8 t TAC for the first time in 2019. The 2020 TAC was considered by the NSW TAF Committee in January 2020.	
Economic considerations	0.3% contribution to SESSF GVP (\$76 million) in the 2017-18 financial year. Classified as 'secondary' under the SMARP project.	
Species specific management (target, companion and bycatch)	The Batemans Bay Marine Park closure overlaps fishing ground that was preferred by Commonwealth operators.	
MAC advice and any dissenting views	<p>2020-21 TAC recommendation 289 t</p> <p>The third of a three year MYTAC.</p> <p>SEMAC advice and any dissenting views</p> <p>Silver Trevally are classified as 'transitional depleting' in NSW based on state catch and effort data.</p> <p>Commonwealth catches have been low for the last six years, with less than 15 per cent of the Commonwealth TAC caught since 2013. While it is unclear whether the TAC is</p>	

Application of the SESSF Harvest Strategy

undercaught due to declines in abundance or operational reasons, industry have suggested that silver trevally need to be targeted, with faster trawling required to catch them.

The Commonwealth assessment relies on Commonwealth catch and effort data only, despite being a shared stock with NSW. The assessment is scheduled for 2020, and SEMAC encouraged AFMA and NSW to work with CSIRO on a joint approach to updating the stock assessment.

SEMAC recommended a 2020-21 TAC of 289 t, the third of a three year MYTAC, with under and overcatch provisions set at 10 per cent and a determined amount of 2 t.

2.29 Silver warehou

Application of the SESSF Harvest Strategy

Stock assessment

Last assessed in 2018 using a Tier 1 assessment. [See 2018 Species Summary.](#) [SESSFRAG \(2019\)](#) recommended continuing the three year MYTAC.

Stock status against reference points and trend

Current

31% B₀

Target

48% B₀

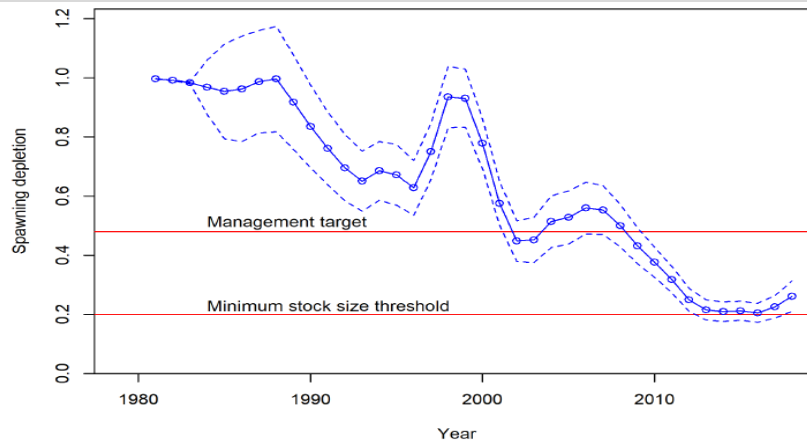
Limit

20% B₀

Biomass has declined since mid-2000s.

The 2018 assessment estimates the stock was close to the limit reference point in 2016 increasing to an estimated biomass in 2019 of 31% B₀. However, previous silver warehou assessments have shown a similar pattern where optimistic recent increases in biomass were revised down in the next assessment. For this reason, SERAG recommended using a low recruitment scenario (the average of the last five years) for the purposes of setting a TAC. This is the same approach used in 2015.

Application of the SESSF Harvest Strategy



Previous season catch and TAC (2018-19)

Catch (t)	Agreed TAC (t)	TAC (t) after unders/overs	Percentage caught
352	600	652	54%

RAG comments on data and assessment

Although the 2018 assessment predicts above average recruitment, given previous assessments, the RAG recommended using a low recruitment scenario for TAC setting on a precautionary basis.

The 2018 assessment notes that the increase in spawning biomass in recent years may be overly optimistic and that stock depletion may currently be around the limit reference point.

ABARES status

2019 ABARES biomass

2019 ABARES fishing mortality

Other indicators

SESSFRAG (2019) noted:

- Eastern and western CPUE has increased over the last two years.
- Age and length frequency data indicated there might have been recruitment in the last two years.
- Collection of biological samples has improved in 2019 with 582 samples collected in the west and 324 in the east.

Application of the SESSF Harvest Strategy

RAG advice and any dissenting views	Recommended Biological Catch N/A	<ul style="list-style-type: none"> An application of the Tier 1 harvest control rule, assuming average recruitment, leads to an RBC for 2019-20 of 942 t. However, SERAG recommended setting a three year MYTAC based on constant catch scenarios developed using low recruitment projections (average recruitment over the last five years). 																																																																								
Discount factor	Less: N/A	<ul style="list-style-type: none"> N/A (Tier 1). 																																																																								
State catch	Less: N/A	<ul style="list-style-type: none"> Estimated state catch of 1 t. 																																																																								
Discards	Less: N/A	<ul style="list-style-type: none"> Estimated discards (four year weighted average) of 75 t. Not deducted from the RBC because a TAC based on constant catch is recommended. 																																																																								
Recreational catch	Less: N/A	<ul style="list-style-type: none"> Not considered in the assessment. 																																																																								
Research Catch Allowance	Less: N/A	<ul style="list-style-type: none"> N/A 																																																																								
TAC calculation under the Harvest Strategy	Provisional (Harvest Strategy) TAC 450 t	<ul style="list-style-type: none"> The proposed TAC is based on the 'low recruitment' constant catch scenario: <table border="1"> <thead> <tr> <th>Catch</th> <th>mean RBC (t)</th> <th>Mean discard (t)</th> <th>2019</th> <th>2020</th> <th>2021</th> <th>2022</th> <th>2023</th> </tr> </thead> <tbody> <tr> <td>348</td> <td>375.0</td> <td>26.9</td> <td>28.4%</td> <td>30.1%</td> <td>31.4%</td> <td>32.6%</td> <td>33.9%</td> </tr> <tr> <td>400</td> <td>431.1</td> <td>31.1</td> <td>28.4%</td> <td>29.9%</td> <td>31.0%</td> <td>32.0%</td> <td>33.1%</td> </tr> <tr> <td>450</td> <td>485.3</td> <td>35.3</td> <td>28.4%</td> <td>29.6%</td> <td>30.5%</td> <td>31.4%</td> <td>32.3%</td> </tr> <tr> <td>500</td> <td>539.5</td> <td>39.5</td> <td>28.4%</td> <td>29.4%</td> <td>30.1%</td> <td>30.7%</td> <td>31.5%</td> </tr> <tr> <td>550</td> <td>593.8</td> <td>43.8</td> <td>28.4%</td> <td>29.2%</td> <td>29.6%</td> <td>30.1%</td> <td>30.7%</td> </tr> <tr> <td>600</td> <td>648.2</td> <td>48.2</td> <td>28.4%</td> <td>29.0%</td> <td>29.2%</td> <td>29.5%</td> <td>29.9%</td> </tr> <tr> <td>750</td> <td>811.8</td> <td>61.8</td> <td>28.4%</td> <td>28.3%</td> <td>27.9%</td> <td>27.6%</td> <td>27.5%</td> </tr> <tr> <td>2019 RBC*</td> <td>854.0</td> <td>70.0</td> <td>28.4%</td> <td>27.8%</td> <td>25.3%</td> <td>22.7%</td> <td>20.4%</td> </tr> </tbody> </table> <p>* RBC under average recruitment</p>	Catch	mean RBC (t)	Mean discard (t)	2019	2020	2021	2022	2023	348	375.0	26.9	28.4%	30.1%	31.4%	32.6%	33.9%	400	431.1	31.1	28.4%	29.9%	31.0%	32.0%	33.1%	450	485.3	35.3	28.4%	29.6%	30.5%	31.4%	32.3%	500	539.5	39.5	28.4%	29.4%	30.1%	30.7%	31.5%	550	593.8	43.8	28.4%	29.2%	29.6%	30.1%	30.7%	600	648.2	48.2	28.4%	29.0%	29.2%	29.5%	29.9%	750	811.8	61.8	28.4%	28.3%	27.9%	27.6%	27.5%	2019 RBC*	854.0	70.0	28.4%	27.8%	25.3%	22.7%	20.4%
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Application of the SESSF Harvest Strategy

- The 2018 assessment noted that under a low recruitment scenario, catches up to 600 t would allow for rebuilding.
- Current catches are around 350 t.

Considerations in addition to the SESSF Harvest Strategy

Commercial fishers' interest	SERAG noted industry advice that silver warehou had not been targeted by many boats but there had been positive conditions and increasing catches of smaller fish indicating a level of recruitment.
Economic considerations	0.75% contribution to SESSF GVP (\$76 million) in the 2017-18 financial year. Classified as 'primary' under the SMARP project.
Species specific management (target, companion and bycatch)	
MAC advice and any dissenting views	<p>2020-21 TAC recommendation</p> <p>450 t</p> <p>The second of a three year MYTAC.</p> <p>SEMAC advice and any dissenting views</p> <p>There were no dissenting views and SEMAC were comfortable with the advice provided in the paper.</p> <p>SEMAC recommended a 2020-21 TAC of 450 t, the third of a three year MYTAC, with under and overcatch provisions set at 10 per cent and a determined amount of 2 t.</p>

2.30 Smooth oreodory (cascade)

Application of the SESSF Harvest Strategy																																						
Stock assessment	<p>Last assessed in 2010 using a Tier 4 assessment. See 2018 Species Summary.</p> <p>SlopeRAG has previously advised that current low effort and catches of smooth oreodory on the Cascade Plateau meant that a Tier 4 assessment for this stock would not be reliable. The RAG recommended maintaining the TAC of 150 t until catches reach at least 10 t.</p> <p>SESSFRAG (2019) recommended continuing the three year MYTAC.</p>																																					
Stock status against reference points and trend	Current (2009)	Target	Limit																																			
	CPUE = 1.3575	CPUE = 0.4989	CPUE = 0.1996																																			
	<p>The most recent assessment (a Tier 4 assessment in 2010 using data up to 2009) concluded that the CPUE-based biomass proxy was above the target reference point. CPUE had been extremely variable and the fluctuations were considered not to be indicative of changes in stock status.</p>																																					
	<table border="1"> <caption>Standardized Catch Rates Data (Estimated from Graph)</caption> <thead> <tr> <th>Year</th> <th>Standardized Catch Rate</th> </tr> </thead> <tbody> <tr><td>1993</td><td>0.2</td></tr> <tr><td>1994</td><td>0.4</td></tr> <tr><td>1995</td><td>0.45</td></tr> <tr><td>1996</td><td>0.5</td></tr> <tr><td>1997</td><td>0.6</td></tr> <tr><td>1998</td><td>0.9</td></tr> <tr><td>1999</td><td>0.8</td></tr> <tr><td>2000</td><td>1.2</td></tr> <tr><td>2001</td><td>0.6</td></tr> <tr><td>2002</td><td>0.7</td></tr> <tr><td>2003</td><td>2.4</td></tr> <tr><td>2004</td><td>1.3</td></tr> <tr><td>2005</td><td>2.6</td></tr> <tr><td>2006</td><td>1.2</td></tr> <tr><td>2007</td><td>1.2</td></tr> <tr><td>2008</td><td>0.2</td></tr> </tbody> </table>				Year	Standardized Catch Rate	1993	0.2	1994	0.4	1995	0.45	1996	0.5	1997	0.6	1998	0.9	1999	0.8	2000	1.2	2001	0.6	2002	0.7	2003	2.4	2004	1.3	2005	2.6	2006	1.2	2007	1.2	2008	0.2
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Previous season catch and TAC (2018-19)	Catch (t)	Agreed TAC (t)	TAC (t) after unders/overs	Percentage caught																																		
	0	150	169	0%																																		

Application of the SESSF Harvest Strategy

RAG comments on data and assessment	Low catch and effort levels since 2009 have precluded any updates to the Tier 4 assessment. Catches remained low in 2019 and SERAG (2019) recommended rolling over the 150 t TAC, which is subject to a 10 t review trigger.	
ABARES status	2019 ABARES biomass	2019 ABARES fishing mortality
Other indicators	N/A	
RAG advice and any dissenting views	Recommended Biological Catch N/A	<ul style="list-style-type: none"> SERAG recommended maintaining a TAC of 150 t until catches reach at least 10 t.
Discount factor	Less: N/A	<ul style="list-style-type: none"> N/A
State catch	Less: N/A	<ul style="list-style-type: none"> N/A
Discards	Less: N/A	<ul style="list-style-type: none"> N/A
Recreational catch	Less: N/A	<ul style="list-style-type: none"> N/A
Research Catch Allowance	Less: N/A	<ul style="list-style-type: none"> N/A
TAC calculation under the Harvest Strategy	Provisional (Harvest Strategy) TAC 150 t	
Considerations in addition to the SESSF Harvest Strategy		
Commercial fishers' interest	N/A	
Economic considerations	0% contribution to SESSF GVP (\$76 million) in the 2017-18 financial year. Classified as 'byproduct' under the SMARP project.	

Application of the SESSF Harvest Strategy

Species specific management (target, companion and bycatch)	Catches are reliant on trawl fishing (primarily for orange roughy) occurring on the Cascade Plateau.
MAC advice and any dissenting views	<p>2020-21 TAC recommendation</p> <p>150 t – single year TAC</p> <p>SEMAC advice and any dissenting views</p> <p>There were no dissenting views and SEMAC were comfortable with the advice provided in the paper.</p> <p>SEMAC recommended a 2020-21 TAC of 150 t, the third of a three year MYTAC, with under and overcatch provisions set at 10 per cent and a determined amount of 2 t.</p>

2.31 Smooth oreodory (other)

Application of the SESSF Harvest Strategy

Stock assessment	Last assessed by SERAG in 2019 using a weight of evidence approach, considering recent catches and outcomes of the most recent Ecological Risk Assessment (ERA).			
Stock status against reference points and trend	<p>Current</p> <p>unknown% B₀</p>	<p>Target</p> <p>48% B₀</p>	<p>Limit</p> <p>20% B₀</p>	
Previous season catch and TAC (2018-19)	When last assessed using a Tier 5 assessment, the CPUE was variable but with a slight positive trend. Low catch and effort levels since 2009 have precluded any updates to the Tier 5 assessment.			
	Catch (t)	Agreed TAC (t)	TAC (t) after unders/overs	Percentage caught
	81	90	99	82%
RAG comments on data and assessment	Smooth Oreo (other) was assessed using a Tier 5 depletion based stock reduction analysis (DBSRA) for the first time in 2015. This generated an RBC of 90 t of which 50-80% has been caught over the last few years.			

Application of the SESSF Harvest Strategy

[SERAG \(2018\)](#) noted there was no basis for changing RBC advice on this species since the last assessment and agreed to roll over the RBC into the fourth year.

The RAG suggested there was little risk to the stock, and suggested the assessment be reviewed in 2019 pending advice from the SESSF TAC TWG tasked with considering the difficult to assess species.

The TWG recommended an interim approach, pending the outcomes of the multi-species harvest strategy:

- setting a TAC based on the existing TAC, subject to sustainability concerns and consideration of whether the TAC is restricting catches of that species or any other species;
- annual monitoring of available fishery indicators on a weight-of-evidence basis, including SAFE assessments, where available; and
- if fishing mortality needs to be constrained, management measures other than output controls should be considered by SEMAC and AFMA.

[SESSF TAC TWG \(2019\)](#) recommended assessing Smooth Oreo (other) as an 'ERA species' recognising issues with the Tier 5 assessment, specifically that a key underlying assumption of the methodology – that catch is an indicator of abundance – is undermined because catch has been affected by the closure and then reopening of orange roughy fishing grounds.

Smooth oreo (other) were assessed as 'low risk' in the draft 2019 ERA, which means the instantaneous fishing mortality rate (F) for the period of the assessment (2012-2016) was less than the F required to drive the stock below maximum sustainable mortality (F_{MSM}).

Considering the outcomes of the ERA and recent catches, SERAG recommended rolling over the 90 t TAC for a single year, and reviewing catches 2020.

ABARES status	<table border="1"> <tr> <td data-bbox="400 1163 925 1225">2019 ABARES biomass</td> <td data-bbox="925 1163 1435 1225">2019 ABARES fishing mortality</td> </tr> </table>		2019 ABARES biomass	2019 ABARES fishing mortality
2019 ABARES biomass	2019 ABARES fishing mortality			
Other indicators	The RBC is conservative as 90% of the smooth oreodory catch was historically taken from waters that are now closed to fishing.			
RAG advice and any dissenting views	Recommended Biological Catch 90 t (single year TAC)	<ul style="list-style-type: none"> • SERAG recommended rolling over the 90 t TAC as a single year TAC. 		

Application of the SESSF Harvest Strategy

Discount factor	Less: N/A	
State catch	Less: N/A	<ul style="list-style-type: none"> N/A
Discards	Less: N/A	<ul style="list-style-type: none"> Average weighted discards were estimated at 4 t in 2019. Not deducted from the TAC
Recreational catch	Less: N/A	<ul style="list-style-type: none"> N/A
Research Catch Allowance	Less: N/A	<ul style="list-style-type: none"> N/A
TAC calculation under the Harvest Strategy	Provisional (Harvest Strategy) TAC: 90 t (single year)	

Considerations in addition to the SESSF Harvest Strategy

Commercial fishers' interest	N/A
Economic considerations	0.18% contribution to SESSF GVP (\$76 million) in the 2017-18 financial year. Classified as 'byproduct' under the SMARP project.
Species specific management (target, companion and bycatch)	Primarily caught when targeting orange roughy. 90% of the smooth oreodory catch was taken from waters that are now closed - the deepwater area of the fishery was previously closed to protect orange roughy.
MAC advice and any dissenting views	<p>2020-21 TAC recommendation</p> <p>135 t – single year TAC</p> <p>SEMAC advice and any dissenting views</p> <p>The catch of smooth oreo (other) tends to increase relative to the take of orange roughy in the Pedra Branca area of the Southern orange roughy zone. The TAC was 82 per cent caught in the 2018-19 season.</p>

Application of the SESSF Harvest Strategy

Given the proposed increase to the orange roughy TAC in the Pedra Branca area for the 2020-21 season, the MAC was concerned that smooth oreo could become a choke species, and prevent the orange roughy TAC being fully utilised.

SERAG (Dec 2019) noted similar concerns, and resolved to review the smooth oreo RBC at its 2020 meetings, dependant on orange roughy catches during the 2020-21 season. However, this was based on the assumption that the Pedra Branca orange roughy TAC would be maintained at 63 t, whereas, based on SEMAC advice, it is recommended to increase to 94 t for the 2020-21 season.

SEMAC recommended setting the smooth oreo (other) TAC at 135 t for the 2020-21 season, subject to a trigger at 70 t, at which point SERAG advice would be sought regarding catches up to the 135 t TAC. If SERAG did not support exceeding the existing 90 t TAC, AFMA would explore options for closing the Pedra Branca area once 90 t was caught.

3 Non-Quota species recommendations

12. Boarfish and orange roughy are non-quota species in the East Coast Deepwater Trawl (ECDWT) Sector and are managed under catch triggers. These triggers were reviewed at the December 2019 SERAG meeting.
13. There has been very little effort in the ECDWT sector during the 2019-20 fishing season, with only 6 t of Alfonsino and less than 100 kg of boarfish caught as of 17 January 2020. SERAG (2019) recommended maintaining the catch triggers for boarfish and orange roughy in the ECDWT for the 2020-21 fishing year, at 200 t and 50 t respectively.
14. AFMA Management recommends maintaining the catch triggers for boarfish and orange roughy in the ECDWT for the 2020-21 fishing year, at 200 t and 50 t respectively.
15. There are no undercatch or overcatch provisions for these species in the ECDWT sector.

Summary of SEMAC recommendations for non-quota species

Non-quota species	2019-20 Catch trigger (t)	2020-21 Catch trigger (t)	Change in triggers from 2019-20 (t)
Boarfish	200	200	0
Orange roughy	50	50	0



Australian Government

Australian Fisheries Management Authority

Action items arising from SEMAC 39 meeting

SEMAC 39

Action Item	Member to action	Agenda Item in which the matter was raised	Date to be completed by	
39.1	Circulate the table of declared conflicts of interest to all MAC members for updating.	Executive Officer	1.4	Ongoing. Awaiting responses from some members.
39.2	Follow up the previous action item 34.6 – <i>'AFMA to advise the MAC about the different roles of AFMA's Commonwealth Marine Mammal Working Group and FRDC's newly established marine mammal group and advise on areas for potential alignment of roles to improve efficiency.'</i>	Ryan Murphy	1.4	Complete. The FRDC Marine Mammal group is high level group tasked with identifying research priorities and opportunities for funding marine mammal research and to ensure consistency across various jurisdictions where as the AFMA Commonwealth Fisheries Marine Mammal Working Group (MMWG) is a more operational level committee tasked with provided advice and input on the development of options to minimise and avoid marine mammal in fishing operations.
39.3	AFMA to finalise an agreement with the Southern Shark Industry Alliance to voluntarily limit catches of blue-eye trevalla on the seamount stock for the 2020-21 SESSF season.	Brodie Macdonald / Natalie Couchman	3.2 (Blue-eye trevalla)	April 2020

Action Item		Member to action	Agenda Item in which the matter was raised	Date to be completed by
39.4	AFMA to include details of any species-specific research projects underway in future SEMAC TAC recommendations paper.	AFMA	3.2 (Blue-eye trevalla)	SEMAC TAC meeting 2021
39.5	<p>Recognising uncertainty in the Tier 4 blue-eye stock assessment and industry concerns around low catch rates up to January 2020, SEMAC recommended SESSFRAG (August 2020) consider fishery indicator data and:</p> <ul style="list-style-type: none"> consider an alternative approach to assessing the slope stock in 2021 and applying a precautionary reduction to the TAC for the 2021-22 SESSF season; or bring the assessment forward to 2020, if the Tier 4 assessment is to be applied again, SERAG should consider application of the 15 per cent discount factor. 	SESSFRAG	3.2 (Blue-eye trevalla)	August 2020
39.6	AFMA to more clearly specify how the TAC is calculated – e.g. why no discards are included in the assessment or deducted from the RBC when calculating the TAC.	AFMA	3.2 (Blue Warehou)	SEMAC TAC meeting 2021
39.7	AFMA to seek advice from SERAG regarding application of a 100 per cent undercatch provision for orange roughy cascade, as is done for eastern orange roughy.	Dan Corrie	3.2 (Orange roughy (Cascade))	SERAG1 2020
39.8	The SEMAC Chair to write to the AFMA Commission supporting and emphasising the importance of progressing catch sharing arrangements with NSW.	SEMAC Chair	3.2 (School whiting)	Immediately Report back at SEMAC 40
39.9	AFMA to discuss eastern school whiting classification with ABARES with respect to the ABARES Status Report.	Fiona Hill	3.2 (School whiting)	As soon as possible Report back at SEMAC 40

Action Item		Member to action	Agenda Item in which the matter was raised	Date to be completed by
39.10	AFMA to encourage collaboration between CSIRO and NSW on the silver trevally Tier 4 assessment, with a particular focus on the inconsistencies in CPUE between the two jurisdictions.	Dan Corrie	3.2 (Silver trevally)	As soon as possible Report back at SEMAC 40
39.11	AFMA to liaise with the Department of Agriculture, Water and the Environment regarding the conservation dependant status of orange roughy, with a particular focus on delisting the eastern stock and implications for other stocks if this were to occur.	AFMA	5.9 (Orange roughy rebuilding)	As part of orange roughy rebuilding strategy review Report back at SEMAC 40