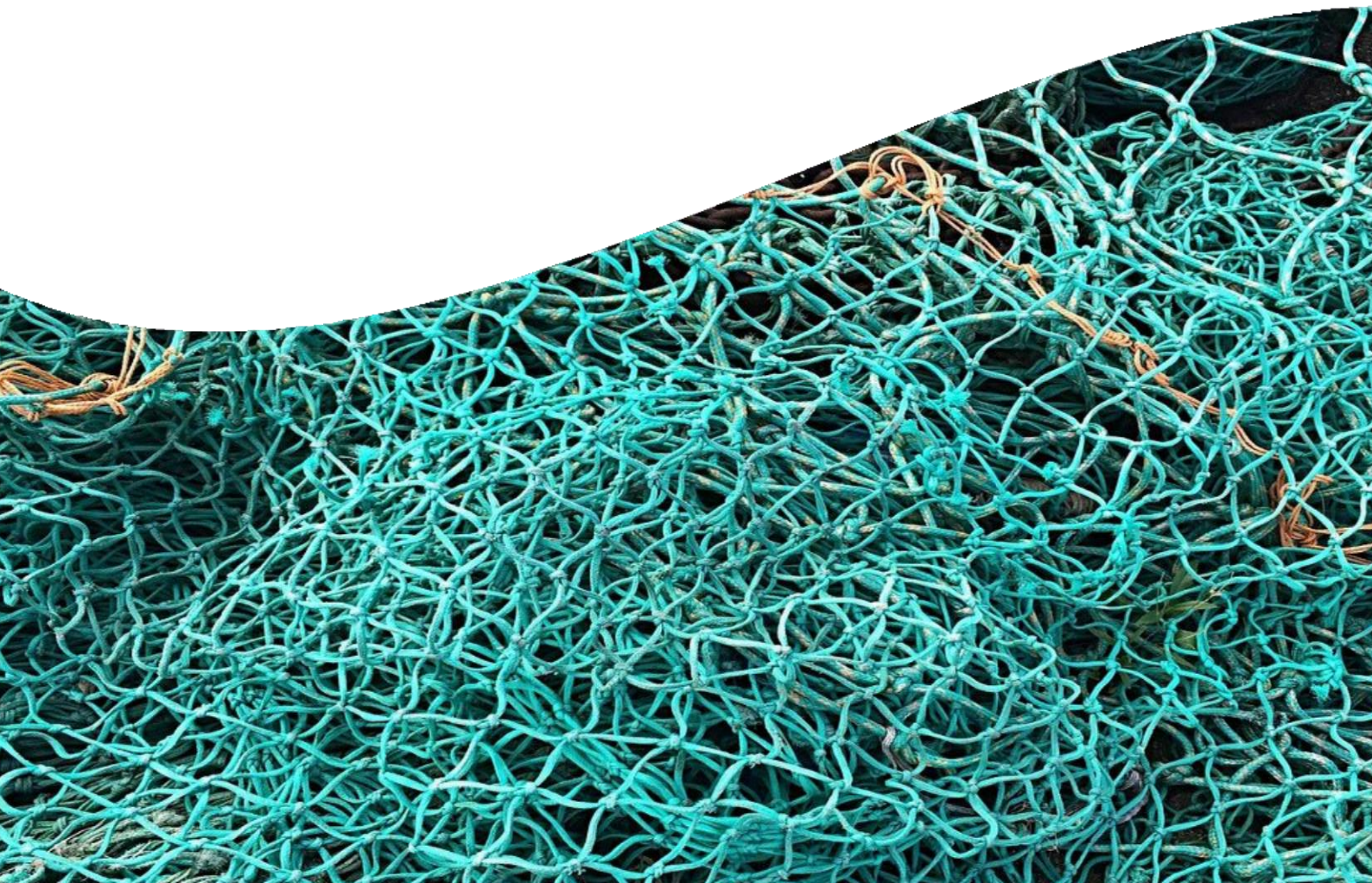
Australian Government

Australian Fisheries Management Authority

Southern and Eastern Scalefish and Shark Fishery (SESSF)

Species Summaries 2025

FOR SEMAC, FEBRUARY 2025



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Summary of Total Allowable Catch (TAC)

Species	Agreed TAC (t) for 2024–25	AFMA recommendation for 2025–26 TAC (t)	Change in TAC
Alfonsino	1,017	1,017	0
Bight redfish	959	935	-24
Blue eye trevalla	263 (36 seamount)	282 (36 seamount)	+19
Blue grenadier	17,084	17,084	0
Blue warehou	30	30	0
Deepwater flathead	940	940	0
Deepwater shark (eastern)	24	24	0
Deepwater shark (western)	327	327	0
Elephant fish	114	114	0
Flathead	2,333	2,333	0
Gemfish (eastern)	100	100	0
Gemfish (western)	180	180	0
Gummy shark	1558	TBC	
Jackass morwong	50	50	0
John dory	60	60	0
Mirror dory	182	273	+91
Ocean perch	318	318	0
Orange roughy (Albany and Esperance)	50	50	0
Orange roughy (Cascade)	397	397	0
Orange roughy (Eastern)	879	880	+1

Species	Agreed TAC (t) for 2024–25	AFMA recommendation for 2025–26 TAC (t)	Change in TAC
Orange roughy (Southern) including Pedra Branca	98 (67 Pedra Branca, 31 incidental)	98 (67 Pedra Branca, 31 incidental)	0
Orange roughy (Western)	60	60	0
Oreo, basket	137	137	0
Pink ling	1,533	1,581	+48
Redfish	30	30	0
Ribaldo	393	393	0
Royal red prawn	628	628	0
Sawshark	525	525	0
School shark	197	207	+10
School whiting	914	1,202	+288
Silver trevally	25	25	0
Silver warehou	350	350	0
Smooth oreo dory (Cascade)	150	150	0
Smooth oreo dory (other)	90	90	0
Non-quota Species	**2024–25 catch limit (t)**	**AFMA recommendation for 2025–26 catch limit (t)**	**Change in catch limit**
Boarfish[1] (ECDWT)	200	200	0
Orange roughy[2] (ECDWT)	50	50	0
Hagfish[3]	80	80	0

[1] Subject to a 10 t catch trigger and a 6-year time trigger following the trigger species approach.
[2] Catch limit proposed through the annual review of rebuilding species TAC undertaken by SERAG.
[3] No new information received in 2024 to support a change to the Hagfish catch limit.

Purpose

These species summaries provide information on quota and non-quota species assessed by the various Resource Assessment Groups (RAGs) for the Southern and Eastern Scalefish and Shark Fishery (SESSF) including the Great Australian Bight RAG (GABRAG), South East RAG (SERAG) and SharkRAG.

The summaries contain information on stock status, catch trends, assessment details, Recommended Biological Catch (RBC) recommendations from the relevant RAG, Total Allowable Catch (TAC) advice from the relevant Management Advisory Committee (MAC) and AFMA TAC advice for the 2025-26 SESSF season (1 May 2025 to 30 April 2026).

The summaries are designed to be a quick reference and should be read in conjunction with relevant RAG and MAC minutes and the applicable species stock assessments – links to the relevant documents are provided throughout where available.

The SESSF Harvest Strategy Framework 2009 (the SESSF Harvest Strategy) provides the basis for TAC calculations. Other relevant considerations are included in this paper.

TAC considerations

Ecological considerations

Fishery Harvest Strategy (commercial & byproduct)

A new SESSF Harvest Strategy is currently being developed. This follows the introduction of the *Commonwealth Fisheries Harvest Strategy Policy 2009* (HSP) and is in response to significant changes in the fishery since the current Harvest Strategy was implemented in 2009 including:

- structural adjustment reducing the number of boats in the fishery
- changing fisher behaviour with fewer species being targeted
- greater use of multi-year RBCs/TACs, and
- environmental change.

The FRDC Project 'Development and evaluation of multi-species harvest strategies in the SESSF' (MSHS) (FRDC 2018-021) developed and evaluated options for multi-species harvest strategies, including monitoring and assessment options identified in the SESSF Monitoring and Assessment Research Project (SMARP) (Knuckey, et al., 2017).

The project conducted analyses to expand the options for several of the components needed to construct a multi-species harvest strategy, recognising that the ability of a harvest strategy to satisfy the objectives of fisheries management relates to the data available and how those data are analysed.

The MSHS project identified a number of options but only undertook management strategy evaluation for a few species in the SESSF, as a proof-of-concept approach. Elements of this project that need exploration include, among other things, dynamic reference points, climate resilience and risk equivalency. Further specification and testing is required to understand how these approaches could be applied, and to what extent they would be effective in the SESSF. AFMA is currently developing a funding proposal to support this additional work.

The SESSF Harvest Strategy 2009 was amended in 2024 to include the trigger species category. The criteria for categorisation as a trigger species are outlined below, as are the catch and time triggers that initiate reviews of TAC and assessment options for this group.

Ecological Risk Assessment results (bycatch & protected species)

Ecological Risk Assessments (ERAs) were undertaken between 2019 and 2021 for the sectors of the SESSF identified below and were supported by the South East Management Advisory Committee (SEMAC) and Great Australian Bight MAC (GABMAC). The reports for the following sectors are available on the AFMA website:

- Commonwealth Trawl Sector (CTS) otter board fleet
- CTS Danish seine fleet
- Great Australian Bight Trawl Sector (GABTS)
- Gillnet Hook and Trap Sector (GHATS) Shark Gillnet fleet
- Gillnet Hook and Trap Sector (GHATS) Auto Longline fleet
- Gillnet Hook and Trap Sector (GHATS) Manual Longline fleet

Other relevant considerations

Climate change

Information on the sensitivity of each species to climate change has been included in the summaries in a row titled “Climate Sensitivity”. The information presented for each species draws upon three types of assessments conducted by CSIRO:

1. Atlantis ecosystem modelling of the effect of climate on key species in the SESSF fishery, as reported in ‘Fulton, E. A., Mazloumi, N., Puckeridge, A., Hanamseth, R., Modelling perspective on the climate footprint in south east Australian marine waters and its fisheries, *ICES Journal of Marine Science*, 2023; https://doi.org/10.1093/icesjms/fsad185’
2. Preliminary biomass trajectories from species distribution models and various ecosystem models as reported in Summary of Commonwealth Fishery Climate Sensitivity (Appendix to ‘Fulton, E.A. et al (2021) Guidance on Adaptation of Commonwealth Fisheries management to climate change. CSIRO Report for FRDC. Hobart.’) These preliminary projections utilise quantitative models, similar to a level 3 ERA.
3. Climate sensitivity assessments following the method of Pecl. et al (2014) models as reported in Summary of Commonwealth Fishery Climate Sensitivity. This assessment is based purely on life history characteristics and could be considered an “information poor” assessment.

These assessments represent cascading levels of sophistication, with the Atlantis ecosystem model (point 1 above) representing the most sophisticated analyses and providing the most robust results, while the climate sensitivity assessment (point 3) is the least sophisticated. In the species summaries, the most robust results available for each species are included in the “Climate Sensitivity” row.

Non-recovering species

The prevalence of non-rebuilding stocks in the SESSF is strongly suggestive that the various versions of the SESSF Harvest Strategy used are not as robust to uncertainties as we thought. The single species Management Strategy Evaluation (MSE) that have been relied on to test the effectiveness of the various harvest control rules have apparently failed to capture the full effects of fishing and/or the impacts of other processes (including, but not limited to climate change) that have been important determinants of stock trajectories.

Discussions at RAG meetings so far have focussed on fishing mortality and climate change as the cause/solution for non-recovering stocks. While these are the obvious and significant drivers, what might be missing is an appreciation of the changes in ecosystem properties that might also be impeding recovery. For example, within the trophic structure of the ecosystem, these stressors might have non- intuitive ramifications such as release/increase of depredation or competition that leads to non-recovery of a species. The stressors or drivers might be anthropogenic or “natural” causes – e.g., directly from extraction, climate change, rebuilding of higher trophic level predators to pre-exploitation levels (e.g., fur seals and whales) but now within a changed environment as a result of not only climate change, but also coastal development, aquaculture, and associated activities.

Taking a broader cumulative ecosystem approach may explain the non-recovery of some species, and perhaps an acceptance of non-recovery or permanent change in state. To this end, ecosystem models are being produced which might allow exploration of various factors, including teasing apart the environmental factors from fishery driven factors, and determine which are most influential on stock dynamics. However, these are not used directly to inform the TAC setting process under the current SESSF Harvest Strategy.

Economic considerations

Reports on Gross Value Production (GVP) for the SESSF are available in the Australian Bureau of Agriculture and Resource Economics and Sciences (ABARES) annual status reports (Butler, et al, 2024).

Social considerations

In November 2017, a new objective was introduced in the *Fisheries Management Act 1991* requiring AFMA to have regard to the interests of commercial, recreational, and Indigenous fishers and ensure these interests are taken into account.

Commonwealth fisheries are a shared resource that provide a range of benefits to the Australian community. With many groups accessing Commonwealth fisheries, sharing these resources fairly has been a priority for the Government and Australian fishers for many years. To address this priority, the Commonwealth Fisheries Resource Sharing Framework (the Framework) was released in 2020. The Framework outlines the Government’s approach to sharing fisheries resources across commercial, recreational, and Indigenous fishing sectors and between the Commonwealth, the States and the Northern Territory. The Framework provides a principles-based approach to creating resource sharing arrangements to manage access and allocation issues in Commonwealth fisheries. No resource sharing arrangements have yet been developed that impact the SESSF sectors. However, other sources of mortality on a stock, such as recreational catch, is accounted for in the TAC setting process where there is a reliable estimate of those catches.

Commercial fishers' interests

SESSF operators have raised concerns about resource sharing and access rights between sectors, jurisdictions and between other user proponents and are concerned with the potential impact on Commonwealth TAC's.

The concerns raised are in relation to:

1. The take of key Commonwealth managed species including gummy shark and school shark in South Australia (SA) and Western Australia (WA), and eastern school whiting in New South Wales (NSW):

   SA successfully strengthened measures in 2024 to ensure the catches of shark remain within SA's agreed allocation. AFMA is continuing to work with WA regarding its take of school shark. AFMA has also worked closely with NSW to develop complementary management arrangements for shared stocks, including participating in meetings held by the NSW Department of Primary Industries (DPI) in relation to developing harvest strategies for relevant fisheries, including the NSW Trawl Whiting Sector. The NSW Trawl Whiting Harvest Strategy was published in May 2022 and is the first harvest strategy for the Trawl Whiting Fishery to be developed for NSW.

2. Increasing competition for access and use of marine space is threatening to 'squeeze' Commonwealth fishing businesses out of well established, productive fishing grounds as well as constrain industry's ability to adapt its operations to account for environmental variability caused by climate change.

   Key competing pressures are the emerging offshore renewable energy footprint, petroleum acreage releases, seismic surveys (to detect fossil fuel reserves), and the prospect of increased protection within existing Commonwealth marine parks or an expansion of parks and/or fishing closures. AFMA is increasing engagement with proponent processes to provide data, advise of important fishing areas and propose modifications to proposals to mitigate fishery impacts. Additionally, AFMA is contributing to a range of research through the Blue Economy CRC, FRDC and the Department of Climate Change, Energy, the Environment and Water (DCCEEW) to explore marine spatial planning and better account for all users of the marine environment needs.

Recreational fishers' interests

Recreational fishing members on SEMAC and SERAG contribute recreational fishing knowledge and expertise to committee deliberations, including the catch-setting processes.

The SESSF Harvest Strategy provides for recreational catches to be deducted from the RBC to produce a TAC, where recreational catches are known and included in the assessment.

Recreational catch information is listed in the relevant species summary below. Estimates for most species are currently uncertain and not available consistently through time. For species in this category, recreational catches have not been incorporated into the assessment and TAC calculations. Where reliable data is available, such as recreational survey information, it may be considered by the relevant RAG as a line of evidence when recommending RBCs and TACs and / or incorporated into the assessment.

There is a paucity of recreational catch data, particularly for recreationally important species such as gummy shark, school shark, blue-eye trevalla, and silver trevally. The Commonwealth Scientific and Industrial Research Organisation (CSIRO) continues to liaise with each of the state agencies to obtain all available state data and emphasise the need for

regular and ongoing surveys to obtain reliable data to inform assessments and management decisions. A research priority was included in the FRDC November call for research titled "Quantifying Indigenous and recreational (including charter) catch of key commercial species in the Southern Eastern Scalefish and Shark Fishery: A workshop approach". Research applications are due by 16 February 2024. Once submitted, the FRDC will assess each application as well as seeking an external review by end users and/or technical experts in some instances.

Indigenous fishers' interests

AFMA is in the process of establishing how best to consider Indigenous fishers' interests and ensure that they are considered appropriately. In 2012, the Fisheries Research and Development Corporation (FRDC) established an Indigenous Reference Group (IRG) to assist in working towards a Fisheries Research, Development and Extension (RD&E) plan for indigenous Australians.

In February 2020, the *Integrating indigenous fishing: extending adoption pathways to policy and management project* (FRDC 2019-168) commenced, which will identify impediments and opportunities for Indigenous engagement and adoption of IRG project outputs across fisheries management jurisdictions in Australia.

As at the date of this paper, no Indigenous fishers' interests have been identified that would impact on SESSF TACs for the 2025–26 fishing year.

Intersection with State and International fisheries

Where State catches are included in an assessment, estimates of State catches for the upcoming fishing year are deducted from the RBC to produce a Commonwealth TAC. Future State catches are estimated using a four-year weighted average of catches reported by the relevant State fisheries agency. However, the impact of management changes in State fisheries can be considered in forecasting the State catch in the upcoming fishing year.

In 2019, NSW introduced TACs for a range of species, some of which are also subject to a Commonwealth TAC[4]. When accounting for total mortality of a species in the stock assessment and then calculating the Commonwealth TAC, the key consideration is actual catches, not the NSW TAC. For this reason, the four-year weighted average for NSW catches is considered when making Commonwealth TAC recommendations in this paper for species where NSW State catches are deducted.

No developments in fisheries on the high seas or other countries' exclusive economic zones have impacted on these Commonwealth TAC recommendations.

Key fishery projects and developments relating to TACs

A number of research projects relevant to stock assessments and the TAC setting process are underway, many of which are interlinked and at various stages of completion. A summary of the relevant projects is provided below.

Understanding factors influencing under-caught TACs, declining catch rates and failure to recover for many species in the SESSF (FRDC 2016-146) made a number of

[4] This includes the following species relevant to the SESSF: big eye ocean perch, blue eye trevalla, gemfish, hapuku, pink ling, blue spotted flathead, eastern school whiting and stout whiting (combined), silver trevally and tiger flathead.

recommendations including incorporating the potential impacts of climate change on species abundance into assessments and developing an approach to determine if there has been a productivity change in a species. These issues are being further considered as part of the development of a new Harvest Strategy and a number of other initiatives.

Implementation of dynamic reference points and harvest strategies to account for environmentally-driven changes in productivity in Australian fisheries (FRDC 2019-036). This project is considering the use of dynamic reference points and will make recommendations on future stock assessment approaches, data requirements, harvest control rules and management approaches incorporating environmental indicators and dynamic productivity and dynamic reference points. The project uses four SESSF stocks[5] as case studies covering a variety of different recruitment patterns and historical trends in dynamic B_0.

Revisiting biological parameters and information used in the assessment of Commonwealth fisheries: a reality check and work plan for future proofing (FRDC 2019-010) aimed to identify the origin of current biological information used in assessments, assess the implications and risks associated with using dated and borrowed information in assessments, and identify the methods that might be applied to update priority biological parameters. The Final Report was published in December 2022.

Biological parameters for stock assessments in South Eastern Australia – an information and capacity uplift follows on from the previous project and aims to develop a series of projects that directly address priority areas for updating biological parameters for target species in the SESSF.

Identifying biological stocks of Silver Trevally and Ocean Jackets for assessment and management aimed to resolve tock uncertainty for two priority species across their national distributions, being Silver Trevally and Ocean Jackets to benefit future collaborative research, stock assessments and management arrangements.

An updated understanding of Eastern School Whiting stock structure and improved stock assessment for cross-jurisdictional management aims to fill uncertain stock structure of Eastern School Whiting, mixed species composition of whiting in northern NSW and representativeness of biological parameters currently used in the joint stock assessment to increase confidence in stock assessment outputs and help develop appropriate cross-jurisdiction management arrangements.

Improving and promoting fish-trawl selectivity in the Commonwealth Trawl Sector (CTS) and Great Australian Bight Trawl Sector (GABTS) of the Southern and Eastern Scalefish and Shark Fishery (SESSF) aims to quantify the performance of discard and bycatch reduction strategies in the GABTS and SET sector and additionally providing recommendations for reducing discards and increasing net economic return and boat level profits in the trawl fisheries.

The South East Australian Maine Ecosystem Survey: untangling the effects of climate change and fisheries aims to establish new biological and environmental baselines, updates of completed voyages can be found on the CSIRO website.

Trials of oceanographic data collection on commercial fishing vessels in SE Australia aiming to increase the spatial resolution of oceanographic data collected in Australia's inshore, shelf, upper-slope and offshore waters.

[5] Redfish, Jackass Morwong east, Silver Warehou and Blue Grenadier

Climate Adaptation Program

The effects of climate change on Commonwealth fisheries are becoming increasingly evident, to the point where management advice that does not consider this change could be rendered invalid. AFMA is undertaking a range of activities to ensure that management of Commonwealth fisheries is adaptive to the impacts of climate change.

Climate Risk Framework

AFMA is developing the Climate Risk Framework (CRF) to formally integrate climate risk into management decisions for Commonwealth-managed stocks. The stepped approach considers the risk to a stock based on climate change impacts, relative to the biological status of the stock, and then prompts consideration of the most effective combination of management settings to respond to that risk. In this context, 'management' refers broadly to the best mix of science, regulation and industry responses available. The framework is being trialled across Commonwealth fisheries in 2024 and 2025, including in the SESSF.

Climate and Ecosystem Status Report for the SESSF

AFMA is working with CSIRO to prepare Climate and Ecosystem Status Reports for key fisheries to support discussions on climate and environmental variables that may influence the fishery. This report incorporates readily accessible indicators and forecasts of environmental variables relevant to the SESSF and is to be used as contextual information in the RAGs consideration of stock assessments and TACs. The information in the report is general and preliminary in nature, to support discussion and feedback on relevant indicators. It is intended that these reports will be refined over time, based on RAG and MAC feedback, and building upon relevant research as it becomes available.

You can find the draft Climate Risk Framework and Climate and Ecosystem Status Reports on the AFMA Climate Change Webpage - https://www.afma.gov.au/climate-change.

Explanation of RBC and TAC calculations

RBC and TAC recommendations

For the purpose of scheduling stock assessments and setting TACs, SESSF species are categorised into one of three groups based on current stock status (or estimate of fishing mortality - *F*), percentage of TAC caught, and whether they are a commercial species likely to be nominated as indicators or non-indicators under a revised multi-species harvest strategy (MSHS)[6].

Each year, SESSFRAG identifies species belonging to one of the categories and provides advice regarding TACs, including timeframes and assessment options.

Trigger Species

Trigger species are those that meet the following criteria:

- Stock status is estimated to be above the target reference point (TRP), or F<FMSY, and
- TAC is less than 75% caught, and
- Flagged as a non-indicator species under MSHS approach.

[6] Multi-species Harvest Strategy (MSHS) approach – see FRDC Project Report and SESSF Harvest Strategy Transitional Arrangements.

TACs are maintained for trigger species, subject to a 6-year threshold since the last stock assessment, at which point the relevant RAG will review available fishery indicator data and provide advice about stock assessment options and TACs for the following 6-year period.

Table 1 below includes a summary of the species in the trigger category, the year each species is scheduled to be reviewed, TAC, and review 'trigger' that prompts early consideration of the species by the relevant RAG. More detailed, historical assessment information for trigger species is available in the SESSF species summaries 2024.

Multi-year RBC species[7]

Multi-year RBC species are those that meet the following criteria:

- Stock status is estimated to be between the limit reference point (LRP) and target reference point (TRP), or
- TAC is more than 75% caught, or
- Flagged as a commercial indicator species under a MSHS approach.

The way in which the RBCs and TACs are applied depends on the assessment tier and length of the RBC period, as follows:

- **Tier 1**: The RBC is based on modelled-projections from the most recent stock assessment, as either a single-year or multi-year RBC, for the year following the stock assessment through to the end of the recommended RBC period (or until the next scheduled assessment).
- **Tier 4**: The RBC is recommended based on the single-year RBC from the most recent stock assessment, for the year following the stock assessment through to the end of the recommended RBC period (or until the next scheduled assessment). The **Dynamic Tier 4 (DT4)** method is used for stocks that have limited available information, namely catch and standardized catch-per-unit-effort (CPUE), akin to the long-standing traditional empirically based Tier 4 assessment method (Little et al., 2009) that has been used in the SESSF for many stocks for over 10 years. A major difference between these two methods is that the DT4 is based on a Biomass Dynamics Model (BDM) which can be fitted to multiple CPUE series, while the traditional Tier 4 method is empirically based. Both methods rely on the reference period, where the stock is assumed to be at the target reference point.
- **Tier 5 and 'weight-of-evidence' approach**: RBCs are based on the outputs of the 'preferred' Tier 5 methods identified using the FishPath tool. If harvest control rules cannot be specified using this approach, a weight-of-evidence approach may be used without an RBC being recommended.

TACs are then calculated by applying discount factors to the RBC (where required) and deducting all other known sources of mortality as follows:

- **Discount factors -** the SESSF Harvest Strategy provides for application of a 15 per cent discount factor to RBCs derived from Tier 4 assessments, however exceptions may be considered where demonstrable alternative equivalent precautionary measures are in

[7] Previously known as MYTAC species. AFMA has adopted the nomenclature "multi-year RBC" to limit confusion as the deduction of state catches and discards often produced different TACs during a MYTAC period. AFMA will update this nomenclature in historical documents as they are reviewed or replaced.

place. Detail relevant to the application of the discount factor is included in each of the individual species summaries below.

- **Discards, State and recreational catch and research catch allowances (RCAs)** - When other sources of mortality arising from discarded catch, catch taken by States, recreational or an RCA are included in an assessment, they are subtracted from the RBC to produce a Commonwealth TAC.

Depleted Species

Depleted species are those that have a biomass estimated to be below the limit reference point (LRP). A single-year bycatch is recommended each year in accordance with the relevant Rebuilding Strategy.

Table 1. Trigger species summary (footnotes overleaf)

Species/stock	Previous assessment or review	Assessment tier	Current biomass (or proxy)	Target biomass (or proxy)	Limit biomass (or proxy)	Review year	GVP 22–23 FY ($M)	Fishing mortality	Biomass	Climate sensitivity	TAC or catch limit (t)	Catch trigger (t)	24–25 Catch (t) @20/01/25	24–25 %TAC @20/01/25	RAG review outcome
Alfonsino[a]	2013	3	0.022	0.149	0.479	2024	0				1,017	50	0	0%	Footnote (i)
Royal Red Prawn[b]	2020	4	1.605	0.946	0.394	2024	0.06				628	50	92.2	14%	Footnote (ii)
Smooth Oreo - Cascade[b]	2010	4	1.358	0.499	0.200	2024	n/a				150	50	0	0%	Footnote (iii)
Elephant Fish[c]	2020	WoE	F<F_{MSY}	0.130	0.190	2026	0.11				114	86	23.4	19%	-
Smooth Oreo - other[c]	2020	WoE	F<F_{MSY}	0.160	0.230	2026	0.09				90	68	0.1	<1%	-
Ocean Perch[b]	2020	4	1.077	0.927	0.464	2026	0.75				318	236	87.2	25%	-
Ribaldo[b]	2020	4	0.789	0.373	0.186	2026	0.13				393	295	59.5	14%	-
Saw Shark[b]	2020	4	0.948	0.729	0.365	2026	0.93				525	395	83.8	10%	-
Blue-eye Trevalla seamount[d]	2021	5	33%	48%	20%	2027	n/a				36	27	1.6	4%	-
Gemfish - West[b]	2022	4	1.046	1.029	0.429	2028	0.19				180	135	32.7	17%	-
Boarfish ECDWT[c] (catch limit)	2023	WoE	Using Boarfish in CTS as proxy			2029	0				200	10	0	0%	-

Table 1 Footnotes

Reference points for each species/stock

a = *F*-based reference points: F_{48} (target) and F_{20} (limit)

b = CPUE-based reference points

c = Weight of Evidence (WoE) approach based on outputs of ecological risk assessments and recent catches

d = Relative biomass reference points: B_{48} (target) and B_{20} (limit)

2024 RAG review outcomes for relevant species

(i) Alfonsino (time period triggered): At its November 2024 meeting, SERAG noted concerns from Fish Ageing Services on the veracity of a recent ageing paper on Alfonsino and found no evidence to deviate from previous TAC or trigger advice for this species. AFMA intends to implement a permit condition requiring prior notice when fishing in the area of the ECDTWS to improve biological data collection from this sector.

(ii) Royal Red Prawn (catch triggered): The 50 t catch trigger for Royal Red Prawn was breached in September 2024. One operator owns >95% of Royal Red Prawn quota and has MSC certification for the harvest of this species. Industry intends to progress an assessment of Royal Red Prawn in the near future to satisfy an MSC condition. AFMA will review the categorisation of Royal Red Prawn as a trigger species following any such assessment.

(iii) Smooth Oreo Cascade (time period triggered): SERAG found no evidence to deviate from the previous TAC or trigger advice for Smooth Oreo Cascade when it met in November 2024. AFMA intends to implement a condition on SESSF Trawl Boat SFRs requiring prior notice when fishing the Cascade Plateau to improve biological data collection from this area.

Explanation of colour coding used in Table 1.

ABARES stock status from Butler *et al*. 2024.
Uncertain
No overfishing (Fishing mortality)
Not overfished (Biomass)

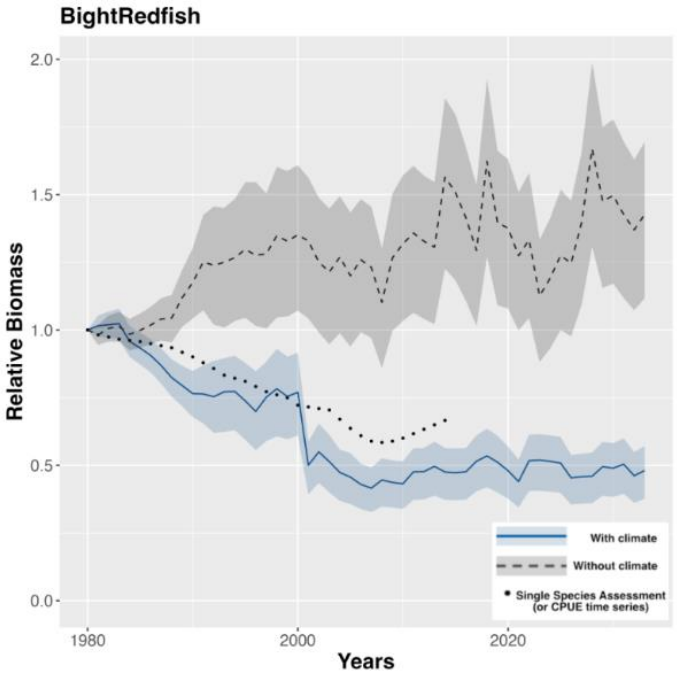
Climate sensitivity from Fulton *et al*. 2024
Uncertain
Low
Medium
High

Great Australian Bight Species

Bight Redfish

Centroberyx gerrardi

Species Summary						
Stock Assessment	Tier 1 Species – last assessed by GABRAG in 2022					
Stock Structure	Assessed as a single stock.					
Stock status against reference points %B_0 in year +1)	**Tier**	**Assessment Year**	**Biomass (from assessment year)**	**Biomass (revised in most recent assessment)**	**Target**	**Limit**
	1	2022	66	66	41	20
	1	2019	64	64		
	1	2015	62	60		
Stock trend and other indicators	Modelling suggests a slow decline in spawning biomass, consistent with the fish-down of a developing fishery to near the target in 2009. Annual catches peaked in the mid-2000s, before declining to 200-300 t p.a. which has resulted in a steady increase of the stock to an estimated biomass of 67% B0 at the start of 2023-24. Depletion of the stock occurred more rapidly in the mid-2000s, when substantial fishing effort occurred, but the stock has never fallen below the Maximum Economic Yield (MEY) biomass target. Annual standardised CPUE trend is flat since 1992 and oscillating above and below average and this is despite major changes in the distribution of the log (CPUE) from 2012–2022. The number of vessels involved in the fishery are now low (< 10 since 2006), so the interpretation of CPUE should also consider which vessels are fishing and where (Sporcic, 2022).					
Species Category MYTAC	**TAC setting approach**					
	The current season (2024–25) is the 2nd year of a 3-year MYTAC. The next assessment is scheduled for 2025.					
Catch and TAC (t)	**SESSF season**	**Agreed TAC**	**TAC after unders/overs**	**Commonwealth Retained Catch**		
	2024-25	959	1055	-		
	2023-24	959	1048	209		
	2022-23	890	979	215		

Economics (Primary) Great Australian Bight Trawl	Financial Year	Species GVP ($m)	Fishery GVP ($m)	% Fishery GVP
	2022-23	0.77	8.78	8.77
	2021-22	0.94	9.45	9.95
	2020-21	1.08	10.64	10.15
ABARES Status (2024 report)	**Fishing mortality: Not subject to overfishing**		**Biomass: Not overfished**	
Climate Sensitivity **High**	 Atlantis modelling suggests that climate change has a major influence on the biomass of Bight Redfish and is contributing to a much lower biomass than would have occurred otherwise.			

Assessment summary

Key Model technical assumptions/ parameters	Single stock (Zone 80). Two sex model. One fleet: Trawl (separated for different sources of length data – ISMP, Industry, GAB-FIS). Selectivity is allowed to vary between the GAB-FIS and the trawl fleet. Discards are minimal and not included in the assessment. Natural morality rate (M): estimated at 0.1049 (well estimated, range 0.091-0.107). Recruitment deviations: estimated (1960-61 – 2007-08).
Significant Changes to data inputs	The catches from South Australia were aggregated by financial year. The catch series was revised to include catches from southern Western Australia (535 t total).

	Male and female Bight Redfish were assumed to have different growth parameters including growth coefficient, asymptotic length, & length at age-0.
Assessment results and RAG comments	GABRAG (Dec 2022) noted the following from Curin-Osorio & Burch (2022): - The likelihood profile for natural mortality indicates that M is quite well estimated and similar to the 2019 assessment. The age data are most influential, with the index (higher mortality) and length data (lower mortality) showing some conflict. The estimated range (95% CI) is from 0.091 to 0.107 which is slightly lower than the 2019 assessment. - The likelihood profile for steepness of the Beverton Holt stock recruitment relationship (h) suggests it is poorly estimated, flat, and uninformative. The likelihood profile shows h cannot be estimated and is therefore fixed at h=0.75 in the base case. - The model is unable to fit the recent GAB-FIS indices and the recent trawl CPUE estimates between 2016-17 and 2021-22. - The 2022 base case assessment estimated the unexploited female spawning stock biomass (B0) to be 4,535 t, compared to 4,019 in the 2019 assessment. Average estimated length for females was 42.54 cm and for males was 38.98 cm. The length at one year old for females was estimated at 19.66 cm and males at 19.87 cm. The growth rate is estimated to be 0.07 for females and 0.08 for males. Spawning biomass declined from 2005-06 until 2009-10. From 2010-11 until 2021-22 there has been a reduction of fishing mortality with an increase in biomass to well above the target level. Fishing pressure was above the target from 2005-06 to 2008-09, however has since dropped below the target level over the last 13 years. Under the 20:35:41 harvest control rule, the 2023-24 RBC is 1,056 t, with a 3-year average of 994 t and a long-term yield of 595 t per annum. The projected 2023-24 spawning stock biomass is estimated to be 67% SSB_0, compared with 68% in the 2022 preliminary base case and 64% for 2020-21 in the 2019 assessment. At its October 2023 meeting, GABRAG noted the potential impacts of climate change on Bight Redfish (as suggested by the Atlantis model) as well as the fact the TAC has been significantly under caught for many years. Reasons for this undercatch include that: - Fleet size is small (generally four or fewer vessels) - Catches of Bight Redfish are seasonal and are of lower unit value compared to Deepwater Flathead - Some operators work under a self-imposed trip limits to avoid flooding the market with Bight Redfish and reducing the price, and - Deepwater Flathead is the key targeted species in the GAB as it holds its value even when large volumes enter the market. GAB operators tend to fish their quota for Deepwater Flathead before they target other species. At its November 2024 meeting, GABRAG considered a request from the Great Australian Bight Industry Association (GABIA) for an increase in the undercatch provisions for Bight Redfish and Deepwater Flathead during the

	current (2024–25) season (as this determines the percentage of the TAC that can be carried over to the subsequent season). This request followed mechanical issues with two of the three otter trawlers in the fleet and the recent retirement of the single Danish seiner, which significantly reduced fishing effort (and consequently catch) during the first six months of the 2024–25 season. Catch rates of both species were high when the boats were operational, potentially due a strong Bonney upwelling. This matter will be considered by the AFMA Commission before the end of the current season and is separate issue to the TAC advice for the 2025–26 season (which is the focus this edition of the species summaries).

RAG Recommendations

GABRAG (November 2024) recommended maintaining the 3-year average RBC of 994 t for Bight Redfish during the 2025–26 SESSF season. The RAG also considered that a temporary increase in the undercatch provision (of up to 50%) would pose negligible risk to the sustainability of this species during the current MYTAC period and deferred advice on the exact value of the undercatch provision to GABMAC.

	Year	RBC (t)	RBC arrangements
RBC (t)	2025-26	934	Static 3-year RBC of 994 t based on the 3-year average RBC from the 2022 assessment
	2024-25	993	
	2023-24	1,056	
	3-year average	994	
Discount Factor (t)	N/A	Discount factors are not applied to Tier 1 assessments.	
State catches (t)	59	State catches from SA (23 t) and southern WA waters (36 t) are deducted from the RBC.	
Discards (t)	N/A	Estimates of discards are considered low and are not deducted from the RBC.	
Recreational Catch (t)	N/A	Estimates of recreational catch available for SA, 19 t in 2014, and Western Australia (WA), 13.3 t in 2008. Recreational catches are not included in the assessment and are not deducted from the RBC.	
RCA (t)	N/A	There has been no specific research catch allocated.	
Provisional TAC under the Harvest Strategy		935 t	

AFMA Advice

AFMA Management recommends a TAC of 935 t for Bight Redfish during the 2025–26 season (the third year of a 3-year TAC period) with undercatch and overcatch provisions set at 10% and a determined amount of 2 t.

MAC Recommendations

Commercial fishers' interest	The Great Australian Bight Trawl Sector received Marine Stewardship Council (MSC) certification for the harvest of Deepwater Flathead, Bight Redfish, and Gummy Shark in August 2023. This certificate expires in August 2028.
Species specific management (target, companion, and bycatch)	There are no identified implications for target, companion, or bycatch species.
MAC advice and any dissenting views	GABMAC recommended a TAC of 935 t for Bight Redfish during the 2025–26 season, with undercatch and overcatch provisions set at 10% and a determined amount of 2 t.

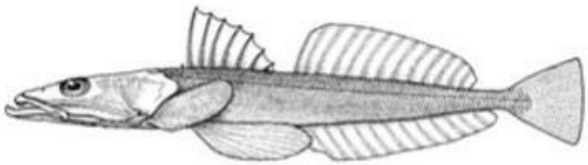
Undercatch (%)	Overcatch (%)	Determined amount (t)	TAC (t)
10%	10%	2	935

Final agreed TAC

2024-25 agreed TAC (t)	2025-26 recommended TAC (t)	Overcatch and undercatch (%)	Determined amount (t)	Change in TAC (t)
994				

Deepwater Flathead

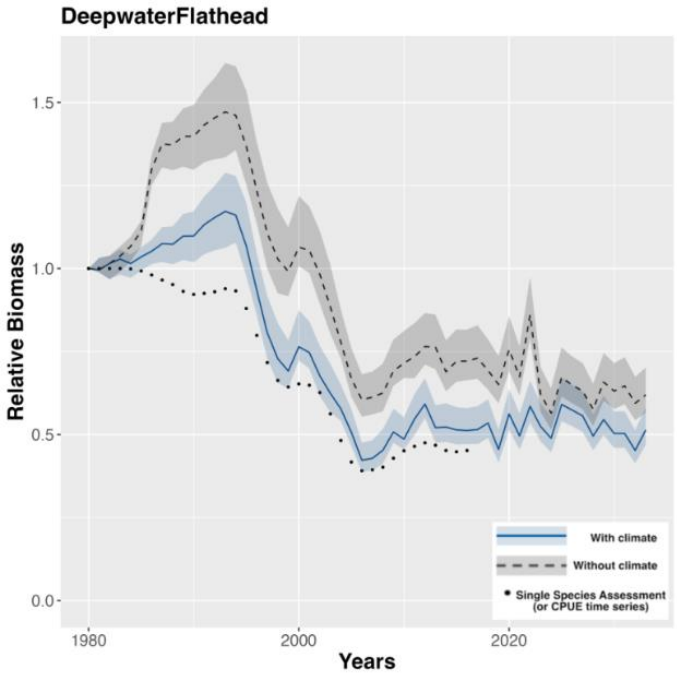
Neoplatycephalus conatus



Species Summary

Stock Assessment	Tier 1 Species - last assessed by GABRAG in November 2023.					
Stock Structure	Assessed as a single stock.					
Stock status against reference points %B_0 in year +1)	**Tier**	**Assessment Year**	**Biomass (from assessment year)**	**Biomass (revised in most recent assessment)**	**Target**	**Limit**
	1	2023	44	44	43	20
	1	2019	45	45		
	1	2016	45	34		
Stock trend and other indicators	Estimated spawning biomass has decreased since the last assessment (in 2019) and is now just above the target of 43% Annual standardized CPUE has been cyclical in the early years following the increases and decreases in catches (prior to 2007) and relatively flat and mostly below average since 2005, despite the small increases since after 2017. The 2023 standardized CPUE is slightly above the long-term average, the first time since 2010. The total GAB catch of 522 t in 2023 is the highest since 2016.					
Species Category MYTAC	**TAC setting approach** The current season (2024-25) is the 1st year of a 3-year MYTAC. The next assessment will be conducted in 2026.					
Catch and TAC (t)	**SESSF season**	**Agreed TAC**	**TAC after unders/overs**	**Commonwealth Retained Catch**		
	2024-25	940	1,064	-		
	2023-24	1,238	1,357	721		
	2022-23	1,238	1,362	676		
Economics (Primary) Great Australian Bight Trawl	**Financial Year**	**Species GVP ($m)**	**Fishery GVP ($m)**	**% Fishery GVP**		
	2022-23	4.32	8.78	49.20		
	2021-22	5.50	9.45	58.20		
	2020-21	5.92	10.64	55.64		
ABARES Status (2024 report)	**Fishing mortality: Not subject to overfishing**		**Biomass: Not overfished**			

Climate Sensitivity
Medium



Atlantis modelling suggests that both fishing and climate change have influenced the state of the stock.

Assessment summary

Key Model technical assumptions/ parameters

Description	Parameter		
Years	y	1988/89 – 2022/23	
Recruitment Deviates	r	estimated 1980 - 2016	
Fleets		Trawl and DS	
Abundance indices		GABFIS, Trawl CPUE	
Discards		negligible, not fitted	
Age classes	a	0 – 29 years	
Sex ratio	p_s	0.5 (1:1)	
Natural mortality	M	estimated (male and female equivalent)	
Steepness	h	0.75	
Recruitment variation	σ_r	0.7	
Female maturity		40 cm (TL)	
		Female	Male
Growth	L_{max}	fitted	fitted
	K	fitted	fitted
	L_{min}	fitted	fitted
	CV young	fitted	fitted
	CV old	fitted	fixed
Length-weight (based on standard length)	f_1	0.002 cm (TL)/gm	0.002
	f_2	3.332	3.339

Significant Changes to data inputs

GABRAG reviewed the preliminary base case for the Tier 1 assessment of Deepwater Flathead in October 2023 and accepted the inclusion of Danish seine as a separate fleet in the assessment model, noting that the likelihood profiles and retrospectives are not likely to be very different.

Assessment results and RAG comments	The assessment projected that Spawning Stock Biomass (SSB) at the start of the 2024–25 season will be 44% of virgin stock biomass. This concurs with the SSB estimates from the three previous Deepwater Flathead assessments (in 2013, 2016 and 2019) which have ranged from 44–45% of virgin stock biomass. The 2024–25 RBC for Deepwater Flathead under the 20:35:43 harvest control rule is 1,220 t. The average RBC over the four-year period 2024–25 to 2027–28 is 1,209 t. The long-term RBC is 1,199 t. While reviewing the preliminary base case, GABRAG noticed that the estimated recruitment deviations were below the long-term average in 8 of the 10 years up to the point where they are fixed in the model (i.e., from 2017 onwards). GABRAG requested that a sensitivity be conducted using the average of the estimated recruitment deviations from 2007–2016 (hereafter referred to as the 'recent 10-year average recruitment') applied from 2017 onwards. Fixed catch scenarios were then projected under the recent 10-year average recruitment scenario, with values chosen between current catches and the 2024 RBC. GABRAG reviewed these projections when it met again on 22 November 2023 and noted that fixed catches of approximately 940 t will maintain the stock near the target of 43% of virgin spawning biomass under the recent 10-year average recruitment scenario. Fixed catches of 1070 t and 1200 t were predicted to reduce the relative spawning biomass over time, but it would take 20 years of constant catches of 1200 t (under the recent 10-year average recruitment scenario) to reduce SSB below 30% of virgin stock biomass The RAG noted that using projections with most recent biological parameters, including recruitment, is considered best practice globally, but ultimately accepted the finalised base case and associated 4-year average RBC value of 1,209 t. The decision to adopt this RBC value was not unanimous, with one member suggesting that the RBC be set at 940 t on the basis that recent recruitment appears to be below average and that the TAC is not currently constraining catches (which have averaged around 560 t over the last decade). The AFMA Commission ultimately set the TAC for Deepwater Flathead at 940 t to limit the likelihood of the stock falling below the biomass target. At its November 2024 meeting, GABRAG considered a request from the Great Australian Bight Industry Association (GABIA) for an increase in the undercatch provisions for Bight Redfish and Deepwater Flathead during the current (2024–25) season (as this determines the percentage of the TAC that can be carried over to the subsequent season). This request followed mechanical issues with two of the three otter trawlers in the fleet and the recent retirement of the single Danish seiner, which significantly reduced fishing effort (and consequently catch) during the first six months of the 2024–25 season. Catch rates of both species were high when the boats were operational, potentially due a strong Bonney upwelling. This matter will be considered by the AFMA Commission before the end of the current season and is separate issue to the TAC advice for the 2025–26 season (which is the focus this edition of the species summaries).

RAG Recommendations

GABRAG (November 2024) recommended TAC of 940 tonnes for the 2025–26 season following the March 2024 Commission decision to base the TAC on a constant catch projection.

The RAG also considered that a temporary increase in the undercatch provision (of up to 50%) would pose negligible risk to the sustainability of this species during the current MYTAC period (given the history of significant under-catches) and deferred advice on the exact value of the undercatch provision to GABMAC.

	Year	RBC (t)	RBC arrangements
RBC (t)	2027	1,200	3-year RBC of 1,209 t based on the 4-year average RBC from the 2023 assessment
	2026	1,204	
	2025	1,211	
	2024	1,220	
	4-year averag	1,209	
Discount Factor (t)	N/A	Discount factors are not applied to Tier 1 assessments.	
State catch (t)	N/A	There are no estimates of State catches.	
Discards (t)	N/A	Discards are considered low and are not included in the RBC.	
Recreational Catch (t)	N/A	There are no estimates of recreational catch.	
RCA (t)	N/A	There has been no specific research catch allocated.	
Provisional TAC under the Harvest Strategy		1,209 t (noting the Commission decision to set the TAC based on a constant catch projection of 940 t in 2024-25).	

AFMA Advice

AFMA Management recommends a TAC of 940 t for Deepwater Flathead during the 2025–26 season (the 2nd year of a 3-year MYTAC), with undercatch and overcatch provision set at 10% and a determined amount of 2 t.

MAC Recommendations

Commercial fishers' interest	The Great Australian Bight Trawl Sector received Marine Stewardship Council (MSC) certification for the harvest of Deepwater Flathead, Bight Redfish, and Gummy Shark in August 2023. This certificate expires in August 2028.
Species specific management (target,	There are no identified implications for target, companion, or bycatch species

companion, and bycatch)	
MAC advice and any dissenting views	GABMAC recommended a TAC of 940 t for Deepwater Flathead during the 2025–26 season, with undercatch and overcatch provision set at 10% and a determined amount of 2 t.

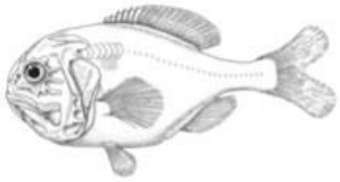
Undercatch (%)	Overcatch (%)	Determined amount (t)	TAC (t)
10	10	2	940

Final agreed TAC

2024-25 agreed TAC (t)	2025-26 recommended TAC (t)	Overcatch and undercatch (%)	Determined amount (t)	Change in TAC (t)
940				

Orange Roughy Albany and Esperance

Hoplostethus atlanticus

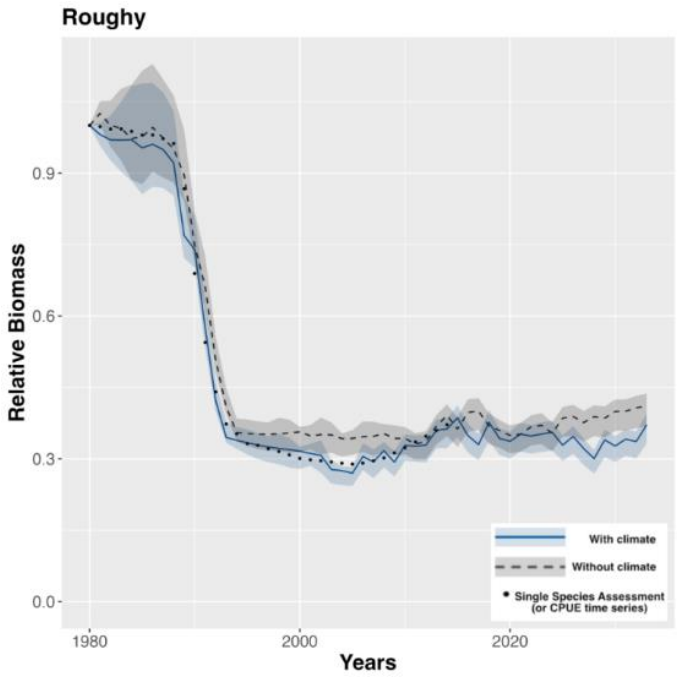


ABARES (2012): Line Drawing – Rosalind Poole

Species Summary

Stock Assessment	No quantitative assessment undertaken to date.			
Stock Structure	The stock structure of Orange Roughy in the AFZ remains unresolved. Multiple regional stocks of Orange Roughy are assumed. Orange Roughy in the GAB is managed as a non-target, bycatch only species.			
Stock trend and other indicators	In 2006, the SESSF (including the GAB but excluding the Cascade Plateau) was closed to targeted Orange Roughy fishing, due to stocks being below the limit reference point. Biomass was uncertain but predicted to be below 20%B_0 based on depletion of other Orange Roughy stocks.			
Species Category Depleted	**TAC setting approach** Annual bycatch TAC set in accordance with the Orange Roughy Stock Rebuilding Strategy 2022.			
Catch and TAC (t)	**SESSF season**	**Agreed TAC**	**TAC after unders/overs**	**Commonwealth Retained Catch**
	2024-25	50	50	-
	2023-24	50	50	0
	2022-23	50	50	0
Economics[8] **(Primary)** **Great Australian Bight Trawl**	**Financial Year**	**Species GVP ($m)**	**Fishery GVP ($m)**	**% Fishery GVP**
	2022-23	0.42	8.78	4.78
	2021-22	0.18	9.46	1.90
	2020-21	0.002	10.64	0.02
ABARES Status (2024 report)	**Fishing mortality: Not subject to overfishing**		**Biomass: Uncertain**	

[8] *Note numbers have been updated since 2024-25 Species summaries due to calculation error.*

Climate Sensitivity **Neutral**	 Atlantis modelling suggests that climate change has a minor influence on the biomass of Orange Roughy. Depletion by fishing in the 1980s-1990s affected the species much more strongly than any climate related shifts.

Assessment summary

Assessment results and RAG comments	No quantitative stock assessment has been conducted for Orange Roughy in the GAB (including in the Albany and Esperance Quota Zones), as the available data are spatially and temporally dispersed, with no recent surveys or representative catch-trend data available to determine stock abundance. Albany and Esperance Orange Roughy are subject to an incidental bycatch TAC, implemented under the Orange Roughy Rebuilding Strategy.

RAG Recommendations

GABRAG (September 2024) recommended maintaining the bycatch TAC at 50 tonnes for Orange Roughy Albany and Esperance Quota zones during the 2025-26 SESSF season. There was one dissenting view on this advice with a suggestion of a bycatch TAC of either 20 or 25 t due to low catches.

GABRAG (September 2024) also supported a base RCA of 200 t for the 2025-26 SESSF season with an additional 200 t RCA to be granted if at least 150 t of the base RCA is caught.

RBC (t)	0 t	The RBC is set at zero for all depleted species.
Discount Factor (t)	N/A	Discount factors are not applied to the incidental bycatch TAC
State catch (t)	N/A	There are no estimates of State catches.
Discards (t)	N/A	There are no estimates of discards.
Recreational Catch (t)	N/A	There are no known recreational catches for Orange Roughy.

RCA (t)	200 t Additional 200 t only considered if trigger met	A base 200 t RCA to be issued under the Orange Roughy Research Plan for the GAB Trawl Fishery. The issue of an additional 200 t RCA will only be considered if 150 t of the base RCA is caught.
Provisional TAC under the Harvest Strategy		50 t - incidental bycatch TAC

AFMA Advice

AFMA recommends an incidental bycatch TAC of 50 t for Orange Roughy Albany and Esperance during the 2025–26 season, with under/overcatch provisions set at 0 t, and a determined amount of 2 t.

AFMA also recommends a 200 t RCA for Orange Roughy Albany and Esperance during the 2025–26 season, with an additional 200 t RCA to be issued (within this season) if at least 150 t of Orange Roughy is caught in one or two of the more accessible Orange Roughy Management Zones (near Port Lincoln). The additional 200 t RCA would only apply to those remaining zones where minimal research fishing has occurred. These arrangements mirror those in place for the current season.

MAC Recommendations

Commercial fishers' interest	Two scientific permits were issued during the 2024–25 fishing year to fish under the GABT Orange Roughy Research Plan.
Species specific management (target, companion, and bycatch)	This species is managed under the Orange Roughly Rebuilding Strategy 2022.
MAC advice and any dissenting views	GABMAC supported the continuation of the 50 t bycatch TAC for this stock. The MAC also recommended a base RCA of 200 t for the 2025-26 SESSF season and provisionally approved an additional 200 t RCA if at least 150 t of the base RCA is caught.

Undercatch (%)	Overcatch (%)	Determined amount (t)	TAC (t)
0	0	2	50

Final agreed TAC

2024-25 agreed TAC (t)	2025-26 recommended TAC (t)	Overcatch and undercatch (%)	Determined amount (t)	Change in TAC (t)
50				

Shark Species

Gummy Shark

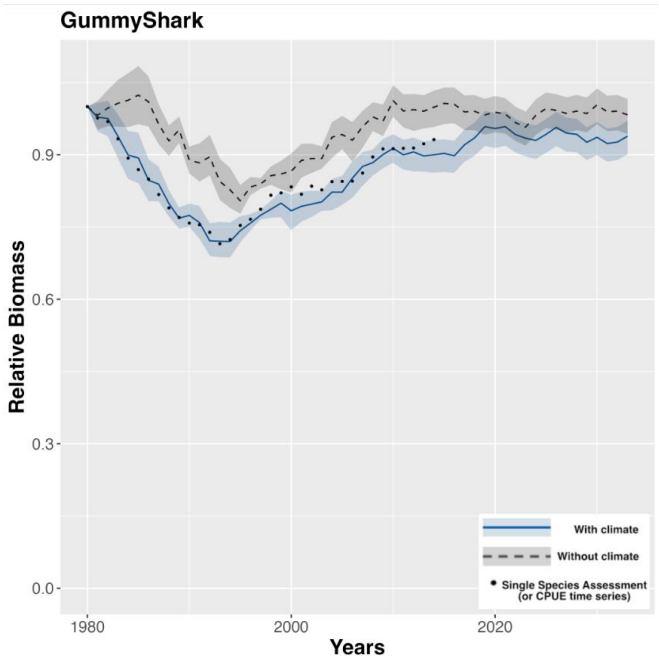
Mustelus antarcticus

Fisheries Research & Development Corporation (2012)

Species Summary						
Stock Assessment	Tier 1 species – last assessed by SharkRAG in December 2023.					
Stock Structure	Gummy shark is endemic to southern Australia. It is considered a single genetic stock across the SESSF extending from Bunbury in WA to Jervis Bay in NSW. The single genetic stock is assessed as 3 separate sub stocks within broad regions on the continental shelf of Bass Strait, Tasmania, and SA.					
<u>Bass Strait</u> Stock status against reference points %B_0 in year +1)	**Tier**	**Assessment Year**	**Biomass (from assessment year)**	**Biomass (revised in most recent assessment)**	**Target**	**Limit**
	1	2023	50	50	48	20
	1	2020	48	47		
	1	2016	59	49		
<u>Tas</u> Stock status against reference points %B_0 in year +1)	**Tier**	**Assessment Year**	**Biomass (from assessment year)**	**Biomass (revised in most recent assessment)**	**Target**	**Limit**
	1	2023	69	69	48	20
	1	2020	68	69		
	1	2016	83	67		
<u>SA</u> Stock status against reference points %B_0 in year +1)	**Tier**	**Assessment Year**	**Biomass (from assessment year)**	**Biomass (revised in most recent assessment)**	**Target**	**Limit**
	1	2023	63	63	48	20
	1	2020	67	66		
	1	2016	69	61		
Stock trend and other indicators	<u>Spawning biomass</u> Pup production is used as a proxy for spawning biomass; this is the number of pups, on average, expected to be produced each year by the stock's mature females. Pup depletion is the pup production in any year compared the unfished pup production and is the value used in the harvest control rule. Estimated pup production shows an increasing trend in recent years in SA and, while it has been steady in Bass Strait and Tasmania, it is now increasing in these areas.					

<table>
<tr><td></td><td colspan="4">The 2023 preliminary base case model indicates pup depletion is well above the 48% target reference point in SA and Tasmania according to the base case model (63% and 69% respectively). For the Bass Strait, the base case model estimates depletion to be just above the target (50%). Pup depletion is above the 20% limit reference point for all stocks and all sensitivity models.

The 2023 gillnet catch was the highest in the series since 2018 and corresponds to an 19% increase relative to 2018. The gillnet CPUE in SA was at the long-term average in 2022 but decreased in 2023 to be below average. Gillnet CPUE in Bass Strait is cyclical and was above the long-term average between 2021-2022 but is on average in 2023. Trawl CPUE has increased above the long-term average since 2012 despite the decrease in the most recent estimate. Manual line CPUE has mostly exceeded the long-term average between 2018-2023 while Danish seine CPUE has been mostly increasing above the long-term average since 2010 (Sporcic 2024).</td></tr>
<tr><td rowspan="2">Species Category
MYTAC</td><td colspan="4">TAC setting approach</td></tr>
<tr><td colspan="4">The current season (2024–25) is the 1st year of a 3-year MYTAC. The next assessment is scheduled for 2026.</td></tr>
<tr><td rowspan="4">Catch and TAC (t)</td><td>SESSF Fishing Year</td><td>Agreed TAC</td><td>TAC after unders/overs</td><td>Commonwealth Retained Catch</td></tr>
<tr><td>2024-25</td><td>1,558</td><td>1,710</td><td>-</td></tr>
<tr><td>2023-24</td><td>1,672</td><td>1,771</td><td>1,579</td></tr>
<tr><td>2022-23</td><td>1,672</td><td>1,666</td><td>1,535</td></tr>
<tr><td rowspan="4">Economics (Primary) Gillnet, Hook and Trap</td><td>Financial Year</td><td>Species GVP ($m)</td><td>Fishery GVP ($m)</td><td>% Fishery GVP</td></tr>
<tr><td>2022-23</td><td>19.99</td><td>23.92</td><td>83.57</td></tr>
<tr><td>2021-22</td><td>18.41</td><td>21.06</td><td>87.42</td></tr>
<tr><td>2020-21</td><td>22.25</td><td>24.84</td><td>89.57</td></tr>
<tr><td>ABARES Status (2024 report)</td><td colspan="2">Fishing Mortality: Not subject to overfishing</td><td colspan="2">Biomass: Not overfished</td></tr>
</table>

Climate Sensitivity **Neutral**	Atlantis modelling indicates that climate change does not have an influence on the stock abundance. 

Assessment summary

Key Model technical assumptions/ parameters	**Stock Assumptions:** • Models three stocks (BS, SA and TAS), each with its own recruitment series and CPUE power parameter, but with shared adult natural mortality parameter, gear selectivity's, and productivity/density dependence. • Model's sexes separately with fixed sex-specific growth rates, but shared adult natural mortality parameter. • Catch data for 1927 to 2022 for each stock and gear. • Stock-specific standardised gillnet CPUE data where effort is reported in net length (for combined mesh sizes) for BS (1976-2022), SA (split into 1984-1995 and 1996-2009 – series ends at 2009 because of management changes to protect Australian Sea Lions), and TAS (1990-2022). • Standardised trawl CPUE for BS (split into 1996-2005 and 2008-2022 to recognize the effect of management changes from 2005), SA (1996-2022) and TAS (1996-2022). • Shallow (<183m) line standardised CPUE for all stocks combined (bottom line CPUE from Sporcic (2023) using data for 0-200m). • Uses stock, sex, and gear-specific age composition data from 1986-2008 for 6-inch and 7-inch gillnet with a plus group of 10 years. • Conditional age-at-length data for 1995-2022, plus a group of 20 years. • Uses stock, sex, and gear specific length frequency data from 1974-2022. • Tag-recapture data for releases between 1952-2004. • Estimates effort saturation for each stock. • Does not estimate selectivity for gillnet, but does estimate logistic selectivity for trawl, shallow line, and deep line. • Estimates adult natural mortality for all stocks combined. • Does not use Danish seine fleet.

	• Does not use port length data (apart for SIDaC combined with ISMP onboard observer data). • Uses both the age and length measurements when shark vertebrae are sampled and both are available, but only uses age data when length data is unavailable. **Number of fleets:** 7 fleets (6, 6.5, 7, 8-inch gillnets, trawl, shallow and deep line). **Natural Mortality:** 0.18 **Stock recruitment:** Above average recruitment for SA and BS stocks in recent years. Tasmania is also above average but is more recent and less pronounced. Recruitment deviations are at, or near, maximum estimated values for all stocks**.**
Significant Changes to data inputs	Changes to the base case model in 2023 from the 2020 base case model: • Updated input data (e.g., catch, CPUE, length, age-at-length) from 2020 up to, and including, 2022, greatly increasing the number of annual length frequencies for shallow line. • Corrections made to data processing that impacted data to 2019, including several corrections for condition age-at-length, which had only minor impact on model results. • Extended the plus age group in the model from 10 to 20, improving model fits to the conditional age-at-length data. • the SA gillnet CPUE time series was split at 1995 into two sections for 1984-1995 and 1996-2009 to reflect improvements in fishing efficiency possibly due to the introduction of colour sounders or a switch in targeting away from school shark towards gummy shark – this improved model fit.
Assessment results and RAG comments	**Model Fits:** Generally, fits for the various parameters in the model are solid. However, the data did not fit well to the female growth curve as it is mis-specified with the model underestimating the ages of females at larger sizes. Sensitivities were tested that applied different growth curves but were not successful. Acknowledging the uncertainty, as the estimates of productivity are well above the LRP the RAG were comfortable with the outcomes of the assessment. In addition, the RAG recommended that there is work undertaken to expand the sample collection from SA and Tasmania, and to undertake work to improve the female growth curve before the next assessment. **Discards:** 4.9% discard rate **Stock Status:** The base model has the stock status above the target reference point for the three areas (BS, TAS and SA). **RBC outputs:** Unusually, despite the stock status remaining above target levels, the three-year average gummy shark RBC option (at 1,733 t) is lower than the long-term RBC (at 1,755 t). **Sensitivity testing:** The model is stable, with all sensitivity tests being relatively similar and above the target reference point of 48%. Only two sensitivities for the Bass Strait area (using updated growth figures for both sexes and updated for only females) were below the target reference point. **TAC adjustment to school shark:** To constrain the catches of school shark bycatch in the gummy shark fishery to the CKMR mortality threshold of 306 tonnes, the RAG recommended that if required, AFMA should adjust the gummy shark TAC using the 3-year average RBC.

RAG Recommendations

SharkRAG (November 2024) re-iterated its previous advice that either the 'Annual' RBC or the '3-year average' RBC be used to determine a TAC, noting that both would be conservative as the TAC was constrained in the 2024-25 season to reduce school shark bycatch.

SharkRAG also recommended that should an adjustment to the gummy shark TAC be required in response to the currently high level of school shark discards (as at Nov 2024 noting only six months of data are available and could change by the end of the fishing season), that the approach used for the 2024-25 fishing season to estimate the proportional reduction and applying it to the three-year average RBC of 1,733 tonnes, is reasonable.

RBC option	Bass Strait	SA	Tasmania	Total
Annual	2024 – 1,026 t 2025 – 971 t 2026 – 956 t	2024 – 597 t 2025 – 548 t 2026 – 525 t	2024 – 208 t 2025 – 189 t 2026 – 179 t	2024 – 1,831 t 2025 – 1,708 t 2026 – 1,660 t
3-year average	984 t	557 t	192 t	1,733 t

	Year	RBC (t)	RBC arrangements
RBC (t)	2026	Annual – 1,660 t 3-year – 1,733 t	A multi-year RBC was recommended by SharkRAG (December) 2023; however, a one-year RBC was set subject to review in light of the need to constrain the school shark catch
	2025	Annual – 1,708 t 3-year – 1,733 t	
	2024	Annual – 1,831 t 3-year – 1,733 t	
Discount Factor (t)	N/A	Discount factors are not applied to Tier 1 assessments.	
State catch (t)	96 t	The 2020-2023 weighted average State catches is 96.1 tonnes (Althaus et al. 2024), excluding NSW. Previously the State allocations agreed under the shark memorandum of understanding with SA, and Victoria were 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. There is no allocation for Tasmania, rather, catches are limited in Tasmania through bycatch trip limits. NSW catches are not included in the assessment.	
Discards (t)	48 t	The 2020-2023 weighted average discards of 48 tonnes (Althaus et al. 2024). was deducted from the RBC, based on the last 4 years of annual discard estimates (derived from logbooks for gillnet and hook methods and Berg method for trawl).	
Recreational Catch (t)	N/A	Estimates of recreational catches are available from South Australia in 2001 and 2008 but are considered uncertain and as such are not included in the assessment or deducted from the RBC.	

RCA (t)	N/A	There has been no specific research catch allocated.
Provisional TAC under the Harvest Strategy		Provisional TAC options (RBC less state catch and weighted average) 1,564 t (2nd year of Annual RBC) 1,589 t (3-year average RBC)

AFMA Advice

TBC

MAC Recommendations

Commercial fishers' interest	
Species specific management (target, companion, and bycatch)	
MAC advice and any dissenting views	

Undercatch (%)	Overcatch (%)	Determined amount (t)	TAC (t)

Final agreed TAC

2024-25 agreed TAC (t)	2025-26 recommended TAC (t)	Overcatch and undercatch (%)	Determined amount (t)	Change in TAC (t)

School Shark

Galerhinus galeus

Fisheries Research & Development Corporation (2012)

Species Summary

Stock Assessment	Tier 1 species – last assessed by SharkRAG in 2018 (CKMR assessment model)				
Stock Structure	Tagging and genetic data suggests a relatively well mixed stock with some evidence for localisation of stocks, or reproductively isolated sub-stocks.				
Stock status against reference points %B_0 in year +1)	**Tier**	**Assessment Year**	**Biomass**	**Target**	**Limit**
	1	2018	50 000 mature individuals in 2000 and increasing at ~ 3% p.a. Status unknown relative to B_0	48	20
	1	2016	<20		
	1	2012	<20		
Stock trend and other indicators	The CKMR assessment model provides an estimate of current absolute abundance with trends back to 2000. It does not provide an estimate of depletion relative to B_0. The CKMR model indicates that the stock had recovered slightly during the period from 2000 to 2017 although the CV on trend is so large that it also allows for a declining scenario. 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. In 2016, SharkRAG noted that this is a positive sign suggesting that School Shark is rebuilding. This is consistent with advice from industry that School Shark, particularly juveniles, are in relatively high abundance. Interpretation of the trawl CPUE is complicated by a lack of available quota for trawl operators. Annual standardized CPUE has been above the long-term average since 2016. The 2023 estimate has decreased relative to the previous estimate, but remains above average (Sporcic, 2024a).				
Species Category Depleted	**TAC setting approach**				
	Annual bycatch TAC set in accordance with the School Shark Rebuilding Strategy.				
Catch and TAC (t)	**SESSF Fishing Year**	**Agreed TAC**	**TAC after unders/ overs**	**Commonwealth Retained Catch**	

	2024-25	197	196	-
	2023-24	225	225	219
	2022-23	250	250	234
Economics (Secondary) **Gillnet, Hook and Trap**	**Financial Year**	**Species GVP ($m)**	**Fishery GVP ($m)**	**% Fishery GVP**
	2022-23	2.89	23.92	12.08
	2021-22	2.06	21.06	9.78
	2020-21	1.96	24.84	7.89
ABARES Status (2024 report)	**Fishing Mortality: Subject to overfishing**		**Biomass: Overfished**	
Climate Sensitivity **Medium**	Preliminary projections indicate a decline of up to 20% in abundance through to 2040, with high confidence, due to climate sensitivity.			
Assessment summary				
Key Model technical assumptions/ parameters	The CKMR assessment model assumes there is one well mixed stock.			
Significant Changes to data inputs	The Shark Industry Data Collection (SIDaC) program continues to collect kin samples as a key input to the CKMR assessment.			
Assessment results and RAG comments	Assessments (since 1991) have consistently estimated the school shark population to be below the limit reference point of 20%of unfished levels. The objective of the current rebuilding strategy is to rebuild the stock to B_{20} in 66 years since it was first implemented in 2009. In October 2018, SharkRAG accepted the new CKMR assessment. The CKMR assessment model provides an estimate of current absolute abundance with trend back to 2000. It does not provide an estimate of depletion from B_0. SharkRAG noted high confidence in the absolute estimate of abundance produced by the model, but lower confidence in the estimate of trend. SharkRAG also noted that confidence in the trend will improve with additional data and discussed that if the school shark population is increasing, the likely increased rate of incidental catch should be considered when setting future incidental catch allowances. While the results were accepted, the CKMR assessment only provided projected TACs for three years (to the 2021-22 fishing year). In the absence of an updated CKMR assessment, setting the TAC has been applied by a different, but largely consistent, methodology that sets an incidental bycatch TAC to minimise the total mortality (state + Comm) of school shark. This method accounts for the minimum unavoidable catch of the Commonwealth fishery, including associated discards of this fishery and state catch, as well as reflecting the estimated 3%p.a. rate of increase in the population from the CKMR assessment over two years.			

To ensure a precautionary approach was taken when calculating the TAC, SharkRAG advised that total mortality (state + Comm) was capped at whichever is lower of either the total mortality threshold derived from the CKMR assessment (estimated at 306,000 kg for 2025-26) or total removals (i.e. the unavoidable by-catch of the Commonwealth fishery and state catches).

Total removals (state + Comm) were estimated using the formula:

(C + S) * (1 + 0.03) * (1 + 0.03), where:

- C is the 4-year weighted average of the annual removals of the Commonwealth fishery. This is calculated by adding the landings with the discards and assuming live release school shark survival rate of 11.5% (landings plus 0.885 * discards). This survival rate was based on Braccini et al (2012).
- S is calculated as the 4-year average of state catch with 4% discard rate to account for discarding of lice damaged fish. Note that for the 2025-26 season catch by South Australia is assumed to be 13 tonnes, as it is a more reliable representation of recent catches following the introduction of management measures to constrain the catch of school shark in this state.

As the estimate of total removals (state + Comm) for 2025-26 of 342,639 kg was higher than the CKMR total mortality threshold of 306,000 kg, the latter was used by SharkRAG to cap removals in the calculation of the incidental by-catch TAC using the formula:

CKMR total mortality (state + Comms) – S * (1 + 0.03) * (1 + 0.03) – D, where:

- D is the expected future discard, calculated as 0.885 times the 4-year weighted average of past discards with a 3% annual population increase.

Based on this methodology, the incidental by-catch school shark TAC for 2025-26 was calculated at 207,092 kgs.

RBC calculation	
Total mortality (state + Comm)	**322,971**
Gummy TAC change	1
Popn increase	1.0609
Forecast removal (state + Comm)	**342,639**
CKMR for 2025	306,000
Capped removals	**306,000**
Forecast State removals	47,255
Discard average (allow survival)	51,653
Comm TAC	**207,092**

RAG Recommendations

For the 2025-26 SESSF season, SharkRAG recommended a 207 tonnes school shark incidental bycatch TAC that:

- is based on the logbook recorded catches and discards as the best estimate of the total mortality for the recent years;

- assumes an 11.5% survival rate for discards and a projected population increase of 3% per annum.
- uses a 4-year weighted average to predict state catches in the next year, except for SA, where 13 tonnes was used because it was considered a much more reliable estimate of next year's catch; and
- uses the CKMR total mortality threshold of 306 tonnes to cap mortality because it is lower than the ~343 tonnes estimated by adding together the unavoidable by-catch of the Commonwealth fishery and state catches.

This is largely consistent with the methodology used last year to set the TAC and provides for the unavoidable bycatch of the gummy shark fishery,

RBC (t)	0 t	The RBC is set at zero for all depleted species
Discount Factor (t)	N/A	Discount factors are not applied to bycatch TACs.
State catch (t)	47.3	This is the 4-year weighted average of state catches (WA, NSW, Tas, Vic); for SA 13 tonnes was used because it was considered a much more reliable estimate of next year's catch due to management arrangements in place and effective.
Discards (t)	51.6 t	88.5% of Commonwealth discard 4-year average (assuming an 11.5% survival rate)
Recreational Catch (t)	N/A	Recreational catch estimates are uncertain. Recreational catch is not included in the assessment and not deducted from the RBC.
RCA (t)	N/A	There has been no specific research catch allocated.
Provisional TAC under the Harvest Strategy		207 t – incidental bycatch TAC

AFMA Advice

AFMA management recommends a TAC of 207 tonnes for school shark for the 2025-26 fishing season,

AFMA management also recommends no undercatch or overcatch provisions, and a determined amount of 2 tonnes.

MAC Recommendations

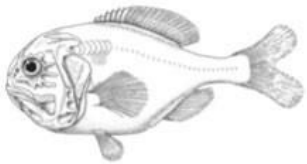
Commercial fishers' interest	
Species specific management (target, companion, and bycatch)	
MAC advice and any dissenting views	

Undercatch (%)	Overcatch (%)	Determined amount (t)	TAC (t)

Final agreed TAC

2024-25 agreed TAC (t)	2025-26 recommended TAC (t)	Overcatch and undercatch (%)	Determined amount (t)	Change in TAC (t)
197	207			

Deepwater Species

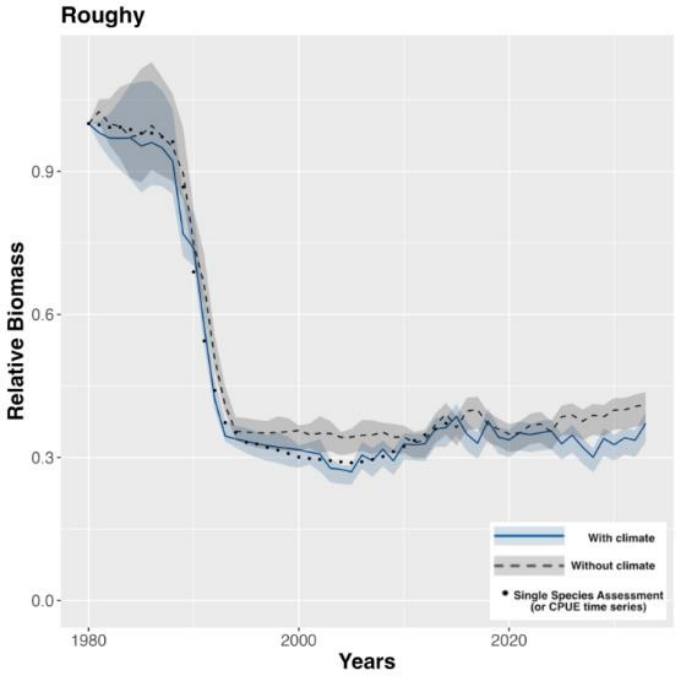


ABARES (2012): Line Drawing – Rosalind Poole

Orange Roughy Eastern Zone

Hoplostethus atlanticus

Species Summary						
Stock Assessment	Tier 1 Species - Last assessed by SERAG in 2021					
Stock Structure	Based on the existing data and fishery dynamics, multiple regional stocks of Orange Roughy are assumed, and the fishery is managed and assessed as a number of discrete regional stocks. Recent genetic studies indicate little genetic diversity between all South East Australian stocks. However, they may be demographically separate. For assessment purposes the eastern stock (primarily St. Helens Hill and St. Patricks Head) is assumed to also include catches taken from the Pedra Branca area in the Southern Zone.					
Stock status against reference points %B_0 in year +1)	**Tier**	**Assessment Year**	**Biomass (from assessment year)**	**Biomass (revised in most recent assessment)**	**Target**	**Limit**
	1	2021	30	30	48	20
	1	2017	33	26		
	1	2014	26	24		
Stock trend and other indicators	Stock status: The most recent assessment (2021) indicates that the stock is above the limit reference point and is estimated to be at 30% of unfished biomass (B0) in 2021 and projected to be at 30%B0 at the beginning of 2022 (Burch et al, 2021). Biomass trend: the 2021 stock assessment indicates that biomass is continuing to increase, however revisions to the model have resulted in an overall downward revision to the estimate of relative biomass – see 'Biomass revised in most recent assessment' above. Recent acoustic surveys (1999, 2006, 2010, 2012, 2013, 2016 and 2019) undertaken at St. Helen's Hill and St. Patricks' Head have estimated an increase in abundance, which supports the estimated increase in abundance from the Tier 1 stock assessments.					
Species Category MYTAC	**TAC setting approach**					
	The current season (2024–25) is the third year of four-year MYTAC. The next assessment is scheduled for 2026.					
Catch and TAC (t)	**SESSF season**	**Agreed TAC**	**TAC after unders/overs**	**Commonwealth Retained Catch**		

	2024-25	879	1,320	-
	2023-24	975	995	538
	2022-23	1,074	1,187	1,162
Economics (Primary) Commonwealth Trawl and Scalefish Hook	**Financial Year**	**Species GVP ($m)**	**Fishery GVP ($m)**	**% Fishery GVP**
	2022-23	10.17	65.88	15.43
	2021-22	8.95	80.00	11.19
	2020-21	9.27	64.00	14.48
ABARES Status (2024 report)	**Fishing mortality: Not subject to overfishing**		**Biomass: Not overfished**	
Climate Sensitivity **Low**	 Atlantis modelling suggests that climate change has a minor influence on the biomass of Orange Roughy. Depletion by fishing in the 1980s-1990s affected the species much more strongly than any climate related shifts.			
Assessment summary				
Key Model technical assumptions/parameters	The model assumptions include the single stock structure hypothesis; Eastern Zone spawning roughy and Pedra Branca non-spawning roughy. The biomass is assumed to have been unfished at the start of 1979. Plus group age was set at 120 years. Recruitment deviations (1905-1986) Natural mortality (M) estimated at 0.0393 Steepness fixed at 0.75 Recruitment variability fixed at 0.7			

Significant Changes to data inputs	Age data and acoustic biomass data from the 2019 eastern survey were included in the 2021 assessment.
Assessment results and RAG comments	The 2017 eastern orange roughy assessment used natural mortality of 0.04. For the 2021 assessment, M was estimated in the model to be 0.0393. 2021 Estimating M – The 2017 Eastern Zone Orange Roughy assessment highlighted the model was highly sensitive to the fixed value of natural mortality (*M*) used in the assessment. For the 2021 assessment CSIRO was asked to develop a process to account for uncertainty in *M*. A working group recommended estimate *M* using an informative prior developed from New Zealand Orange Roughy stocks. Age data was re-processed to provide models with 80, 100 and 120 age classes, and the ageing error for the model with 120 age-classes was used for assessments with 100 and 120 age classes. Natural mortality was estimated using the log-normal informative prior for 80, 100 and 120 age-classes. The number of age classes in the model was influential on the estimated value of *M*, with MPD estimates ranging from *M*=0.0344 for 80 classes, *M*=0.0373 (95%CI: 0.0326 – 0.0454) for 100 age classes and *M*=0.0386 (95%CI: 0.0331 – 0.0452) for 120 age classes. There was little information in the analyses to separate the models with 100 and 120 age classes - SERAG recommended the model with 120 age classes be adopted as the base case. Likelihood profiles for natural mortality show a conflict between age data, which prefers a higher estimate of *M* (~0.038), and the acoustic index data, which prefers a lower *M* (~.025). The likelihood profile on *M* was consistent with the estimated value of *M*. MCMC analysis SERAG (Nov 2021) requested using 12.5% and 87.5% quantiles of the estimated value of natural mortality from MCMC analysis as sensitivities to the base-case. The MPD estimates of current stock status (SSB_0/SSB_{2022}) for the low (M=0.0358) and high (M=0.0432) natural mortality scenarios are 29.7% and 37.0% respectively, compared with the MPD estimate from the base-case of 32.4%. The status from the median of the MCMC was lower than the MPD estimate, and the selectivity width parameter was quite uncertain. The working group recommended that the MCMC analysis that estimates the width parameter of the logistic selectivity function should be retained and used to provide advice in setting RBCs, not the MPD. The MCMC model estimates stock status in 2021 to be 30%B_0 and produces a 2022 RBC of 681 t, or a 3-year average of 737 t. The working group also requested several constant catch projections to understand the uncertainty in future stock status (See 'projected biomass'). Undercatch A sensitivity to the base case (not the MCMC) was undertaken to understand the impact of allowing 100% undercatch from the 2021-22 fishing year to be

caught in the 2022-23 fishing year – the biomass in 2022 is expected to be 32.32%B_0 if undercatch is fully caught, compared to 32.46%B0 if it were not caught. SERAG were supportive of the current undercatch provisions to remain in place, noting there is very little impact on the estimate of relative biomass.

SERAG recommended a 3-year MYTAC for orange roughy east using the outputs of the MCMC analysis. If a TAC greater than the RBC were to be set in the east, the constant catch scenarios and associated risk profiles should be used as basis for determining the TAC. The orange roughy Pedra Branca area 3-year MYTAC will constitute 7 per cent of this RBC apportioned to the eastern zone.

Projected Biomass

Estimated female spawning stock biomass (SSB), stock status and the probability of being below the limit reference point in 2024 and 2031 under different fixed catch scenarios and the industry proposal (Ind. Prop.) of 1,166 t in 2022, 1,055 t in 2023 and 950 t per year thereafter.

Catch Scenario	SSB 2024	SSB 2031	Status 2024	Status 2031	Prob<LRP 2024	Prob<LRP 2031
HCR	12,269	12,831	0.3162	0.3295	<0.001	<0.001
550	12,378	13,609	0.3165	0.3481	<0.001	<0.001
650	12,325	13,364	0.3152	0.3419	<0.001	<0.001
737	12,279	13,149	0.3139	0.3363	<0.001	<0.001
850	12,215	12,887	0.3129	0.3294	0.001	0.001
950	12,123	12,583	0.3115	0.3230	0.003	0.002
Ind. Prop.	12,041	12,504	0.3093	0.3208	0.004	0.002

RAG Recommendations

SERAG (Nov 2023) noted that the AOS for the Orange Roughy Eastern Zone was postponed from 2023 to 2024, meaning that the next assessment for this stock will now be conducted in 2025. The RAG stressed the importance of ensuring that the AOS is completed in 2024. At the same meeting, SERAG acknowledged the low risk to the stock of delaying the assessment by one year and recommended extending the 950 t RBC for eastern zone Orange Roughy into the 2025-26 SESSF season.

SERAG (Nov 2024) noted the results of the AOS conducted in July 2024 that showed large aggregations of Orange Roughy on St Helens Hill and St Patrick Head.

	Year	RBC (t)	RBC arrangements
RBC (t)	2025	772 (93% of 830)	Yes. (93% of the Eastern Zone Tier 1 stock assessment, with 7% apportioned to the Pedra
	2024	734 (93% of 789)	

	2023	688 (93% of 740)	Branca area of the Southern Zone.)
	2022	633 (93% of 681)	
Discount Factor (t)	N/A	Discount factors are not applied to Tier 1 assessments.	
State catch (t)	N/A	There are no estimates of State catches.	
Discards (t)	3.4	Estimated discards (four-year weighted average 2020-2023).	
Recreational Catch (t)	N/A	There are no known recreational catches for Orange Roughy.	
RCA (t)	N/A	There has been no specific research catch allocated.	
Provisional TAC under the Harvest Strategy		767 t noting the TAC based on constant catch projection is 880 t.	

AFMA Advice

AFMA management recommends a TAC of 880 t for Orange Roughy Eastern Zone during the 2025-26 season (i.e. 93% of the 2024 constant catch projection of 950 t, minus discards), as the 4th year of a 4-year TAC period, an undercatch provision of 100 per cent, an overcatch provision of 10 per cent and a determined amount of 2 t.

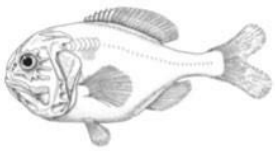
MAC Recommendations

Commercial fishers' interest	
Species specific management (target, companion, and bycatch)	
MAC advice and any dissenting views	

Undercatch (%)	Overcatch (%)	Determined amount (t)	TAC (t)

Final agreed TAC

2024-25 agreed TAC (t)	2025-26 recommended TAC (t)	Overcatch and undercatch (%)	Determined amount (t)	Change in TAC (t)
879				



ABARES (2012): Line Drawing – Rosalind Poole

Orange Roughy Cascade Plateau

Hoplostethus atlanticus

Species Summary

Stock Assessment	Tier 1 Species - last assessed by DeepRAG in 2009.
Stock Structure	The stock structure of Orange Roughy in the AFZ remains unresolved. Based on the existing data fishery dynamics multiple regional stocks of Orange Roughy are assumed. The Cascade Plateau, however, holds Orange Roughy with distinct morphometrics, parasite populations, size, and age composition, and which also have a distinct spawning time from other adjacent stocks. For assessment and management purposes they are regarded as a separate stock.

Stock status against reference points $\%B_0$ in year +1)

Tier	Assessment Year	Biomass (from assessment year)	Target	Limit
1	2009	64	48	20
2	2006	73		
2	2005	30-60		

Stock trend and other indicators	There are no recent data to assess the biomass trend. Catches have remained below the RBC since the last assessment and the stock likely remains above the target reference point.
Species Category MYTAC	**TAC setting approach** Orange Roughy Cascade Plateau is categorised as a MYTAC species but is currently subject to an annual TAC, having not been assessed since 2009.

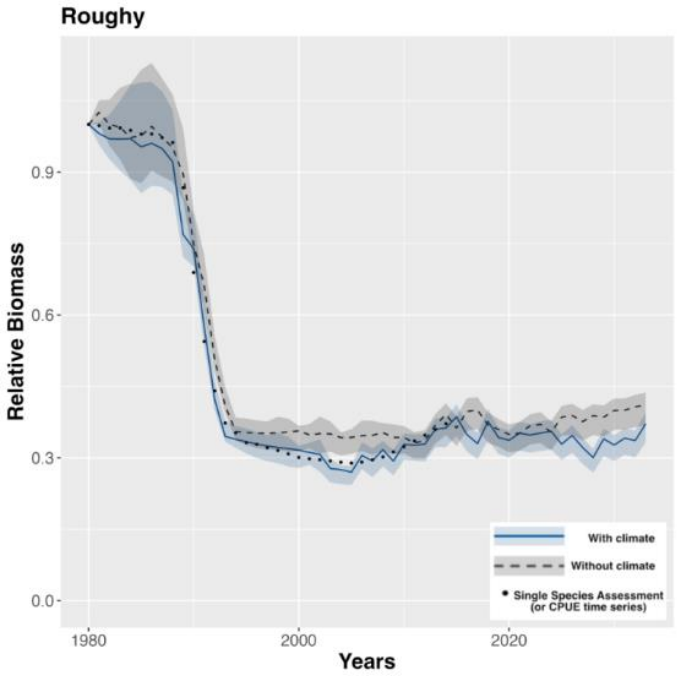
Catch and TAC (t)

SESSF season	Agreed TAC	TAC after unders/overs	Commonwealth Retained Catch
2024-25	397		-
2023-24	397	437	7
2022-23	397	447	16

Economics (Primary) Commonwealth Trawl and Scalefish Hook

Financial Year	Species GVP ($m)	Fishery GVP ($m)	% Fishery GVP
2022-23	Not Available	65.88	Not Available
2021-22	Not Available	80.00	Not Available
2020-21	Not Available	64.00	Not Available

ABARES Status (2024 report)	**Fishing mortality: Not subject to overfishing**	**Biomass: Not overfished**

Climate Sensitivity **Low**	 Atlantis modelling suggests that climate change has a minor influence on the biomass of Orange Roughy. Depletion by fishing in the 1980s-1990s affected the species much more strongly than any climate related shifts.

Assessment summary

Assessment results and RAG comments	The first quantitative stock assessment of the Cascade Plateau orange roughy population was produced in 2004 (Wayte, 2004). The 2004 assessment used catch records, biological data collected over the previous 6 years, and the 2003 acoustic biomass estimate. The 2004 stock assessment estimated the orange roughy biomass at Cascade Plateau to be between 7,000 and 18,700 t and the long-term sustainable catch to be 300-400 t. In 2006, the assessment was again updated, using the acoustic biomass estimate from the 2005 winter spawning aggregation which was about three times larger than previous estimates. The 2006 assessment estimated the stock to be about 20,000 t and the current biomass as 72-73% of the unfished biomass (B0) approximately 20% higher than the target reference point and 12% higher than the target under the Conservation Program. At the DeepRAG meeting in 2009, DeepRAG requested a re-run of the assessment using an alternative 2005 acoustic biomass estimate of 18,400 t, instead of the 31,600 t estimate used in the 2006 assessment. Using these data the assessment estimated a female spawning stock status of 64%B0, and produced an RBC of 492 t under the 20:35:48 harvest control rule, or a long term RBC of 397 t. There were low levels of fishing on the Cascade Plateau (<1% of TAC caught) during 2011 and 2012. An update to the assessment was due for 2012 but this was deferred due to the lack of new data and a higher priority being assigned to other species.

	SERAG (November 2022) A hull-mounted acoustic survey was completed for orange roughy (Cascade Plateau) in 2021 and 2022. A towed body acoustic optical survey (AOS) was identified as a research priority to support a potential stock assessment in 2024. However, the unpredictable nature of the aggregation on the Cascade Plateau, evident through the lack of catch in 2022, means there is a risk that an AOS will not provide useful data. SESSFRAG considered a CSIRO paper in April 2023 discussing alternative assessment approaches that may be useful for Cascade Orange Roughy as well as comparisons of fish-length/otolith weight ratios. A data limited assessment approach is being progressed. SERAG (Sep 2023) noted that the assessment will be updated in 2025 and that there was nothing in the updated age data to suggest the need to deviate from the current TAC.

RAG Recommendations

SERAG (Oct 2024) recommended maintaining the 397 t TAC for Cascade Orange Roughy for the 2025–26 season and that this stock be categorised as a trigger species, with a catch trigger set at 295 t.

SERAG also noted that AFMA intends to implement a trawl boat concession condition that requires pre-departure notifications (for the first trip of the season) when operators intend to fish the Cascade Plateau. The intent being to increase observer coverage on the rare occasions that this area is fished.

	Year	RBC (t)	RBC arrangements
RBC (t)	2025	397	The TAC mirrors the RBC for Cascade Orange Roughy as there are no deductions from the RBC.
Discount Factor (t)	N/A	Discount factors are not applied to Tier 1 assessments.	
State catch (t)	N/A	There are no State catches.	
Discards (t)	N/A	There are no estimates of discards.	
Recreational Catch (t)	N/A	There are no known recreational catches for Orange Roughy.	
RCA (t)	N/A	There has been no specific research catch allocated.	
Provisional TAC under the Harvest Strategy		397 t	

AFMA Advice

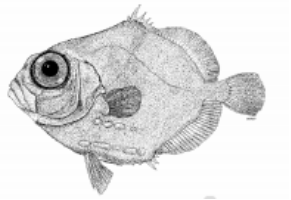
AFMA management recommends a TAC of 397 t for Orange Roughy Cascade Plateau during the 2025–26 season, with undercatch and overcatch provisions set at 10 per cent and a determined amount of 2 t.

AFMA management supports the recommendation to categorise Cascade Orange Roughy as a trigger species, with a catch trigger set at 295 t.

MAC Recommendations			
Commercial fishers' interest			
Species specific management (target, companion, and bycatch)			
MAC advice and any dissenting views			
Undercatch (%)	**Overcatch (%)**	**Determined amount (t)**	**TAC (t)**

Final agreed TAC				
2024-25 agreed TAC (t)	**2025-26 recommended TAC (t)**	**Overcatch and undercatch (%)**	**Determined amount (t)**	**Change in TAC (t)**
397				

Oreo basket



Species Summary

Species	Black oreodory (*Allocyttus niger*), spikey oreodory (*Neocyttus rhomboidalis*), warty oreodory (*Allocyttus verrucosus*) and other *Neocyttus spp*.
Stock Assessment	Tier 4 Species – last accepted assessment by SERAG in 2020
Stock Structure	Little is known about the stock structure of the oreo species in this basket quota. They are bentho-pelagic species that are caught mainly below 600 m. For assessment and management purposes they are treated as a single unit of stock through the SESSF.

Stock status against reference points (CTarg/CLim)

Tier	Assessment Year	$CPUE_{Recent}$	$CPUE_{Target}$	$CPUE_{Limit}$
4	2020	0.3986	0.4855	0.2023
4	2017	0.4297	0.4743	0.1976
4	2013	0.4076	0.464	0.1856

Stock trend and other indicators

Catches have been variable through time with spikes in 1992 and elevated catches from 1995–2001 after which catches declined and have remained relatively low since the implementation of the 700 m closure in 2007. The catch during the 10 years to the end of 2023 averaged 108 t. The majority of catch was taken from Orange Roughy zone 30, 20 followed by 50 (Sporcic, 2024d).

After an initial period of volatility from 1986–1994, standardised CPUE has been essentially flat and stable since 2000. For another analysis that uses a shorter time series (i.e., from 1995–2021), the standardised CPUE has been essentially flat and mostly below average from 2002–2019. There have been increases to the long-term average between 2020 to 2022, and a subsequent decrease to below average in 2023, based on 95% confidence intervals. (Sporcic, 2024d).

Species Category
MYTAC

TAC setting approach

The current season (2024–25) is the fourth year of three-year MYTAC.

Catch and TAC (t)

SESSF season	Agreed TAC	TAC after unders/overs	Cth Retained Catch
2024-25	137	148	-
2023-24	137	149	68
2022-23	137	150	78

Economics (Byproduct) Commonwealth Trawl and Scalefish Hook

Financial Year	Species GVP ($m)	Fishery GVP ($m)	% Fishery GVP
2022-23	0.38	65.88	0.57

	2021-22	1.00	80.00	1.25
	2020-21	0.40	64.00	0.67
ABARES Status (2024 report)	**Fishing mortality: Uncertain**		**Biomass: Uncertain**	
Climate Sensitivity Uncertain	There is currently no available information regarding climate change sensitivity for mixed oreos.			

Assessment summary

Key Model technical assumptions/ parameters	The Tier 4 assessment assumes there is a linear relationship between catch rates and exploitable biomass; if there is hyper-stability (catch rates remain stable while stock size changes) or hyper-depletion (catch rates decline much faster than stock size changes) then the standard Tier 4 analysis would provide biased results.
Significant Changes to data inputs	No significant changes to data inputs for 2020 assessment.
Assessment results and RAG comments	It has become apparent that spikey oreodory are being reported as 'oxeye' in logbooks. For the purpose of the Tier 4 assessment, logbook records of oxeye are assumed to be spikey oreodory. Most catches are from Zones 10 and 20. Estimated discards for 2021 were 196 t, resulting in a 4-year weighted average of 128.4 t. Once deducted from the RBC, the resulting TAC is approximately 42 t. Including discard estimates from 1986-2006 in the updated assessment has resulted in an increase in CTarg. SERAG (Dec 2020) recommended a 3-year MYTAC using the RBC of 170.2 t from the 2020 Tier 4 assessment. Discard estimates for Oreo basket have shown large fluctuations in recent years and have failed the validity criteria imposed by CSIRO in most instances. The last accepted discard estimate for this basket of species (using data for the 2020 calendar year) was 33.2 t. Deduction of this amount from 170.2 t RBC produced a TAC 137 t for the 2022–23 season. AFMA sought advice from SERAG in January 2023 regarding potential over-estimation of oreo discards given the broad depth range of the strata from which the discards were extrapolated. AFMA provided SERAG with recent catch and discard maps for flathead and oreos which showed a clear depth delineation between the two groups of fishes. On this basis SERAG were comfortable with maintaining the 137 t TAC for the 2023–24 season. AFMA provided updated catch and discard maps for flathead and oreos to SESSFRAG in August 2023 and the RAG recommended that the 2023–24 TAC be maintained for the 2024–25 season (as the 4th year of a 3-year MYTAC). Investigations by CSIRO into potential "hidden" strata in zones 30, 40 and 50 began in 2024 but were unable to be completed before the assessments

	year. This work will continue in 2025 with the outcomes to be considered by SESSFRAG later in the year.

RAG Recommendations

SERAG considered a Tier 4 assessment for Oreo Basket when it met in November 2024.The estimated RBC produced by this assessment was 548 t, more than three times the 170 t RBC produced by the 2020 assessment. The RAG expressed concern that CPUE may no longer be an appropriate index of abundance for this stock and that the assessment was heavily influenced by a single discard estimate.

SERAG (Nov 2024) recommended maintaining the RBC of 170 t from the 2020 assessment until such time as the discard strata investigations by CSIRO are completed and another assessment attempted.

	Year	RBC (t)	RBC arrangements
RBC (t)	2023	170.2	Yes. 3-year RBC.
	2022	170.2	
	2021	170.2	
Discount Factor (t)	N/A	SERAG (December 2020) recommended not applying the discount factor due to 40 per cent of the historical oreo fishing grounds being protected by deepwater closures.	
State catch (t)	N/A	There are no estimates of State catch.	
Discards (t)	145.3	Four-year weighted averaged (2019-2022). See 'Data and RAG comments' above regarding discard estimates.	
Recreational Catch (t)	N/A	There are no known recreational catches as oreo are a deepwater species and are not targeted by recreational fishers.	
RCA (t)	N/A	There has been no specific research catch allocated.	
Provisional TAC under the Harvest Strategy		N/A – invalid discard estimates do not allow for calculation of a provisional TAC. See 'Assessment and RAG comments' above.	

AFMA Advice

AFMA management recommends maintaining the 137 t TAC for Oreo basket during 2025–26 season (using the 170 t RBC from the previous assessment and the 33 t discard estimate from 2020), as the fifth year of a three-year TAC period, with undercatch and overcatch provisions set at 10 per cent and a determined amount of 2 t.

MAC Recommendations

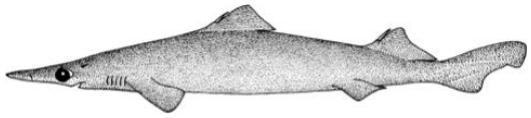
Commercial fishers' interest	
Species specific management (target, companion, and bycatch)	
MAC advice and any dissenting views	

Undercatch (%)	Overcatch (%)	Determined amount (t)	TAC (t)

Final agreed TAC

2024-25 agreed TAC (t)	2025-26 recommended TAC (t)	Overcatch and undercatch (%)	Determined amount (t)	Change in TAC (t)
137				

Deepwater Shark basket - East



Species Summary

Stock Assessment	Tier 4 assessment noting that a Dynamic Tier 4 is underdevelopment.				
Stock Structure	Little is known about the stock structure of Deepwater Sharks. They are bentho-pelagic species that have been sampled in oceanic environments over the abyssal plains and are distributed widely across ocean basins and along the middle and lower continental shelves. The eastern management area extends south from NSW, clockwise around Tasmania to approximately 42ºS on its western coast, including to the centre of Bass Strait to 146º22'E.				
Stock status against reference points	**Tier**	**Assessment Year**	**$CPUE_{Recent}$**	**$CPUE_{Target}$**	**$CPUE_{Limit}$**
	Weight of Evidence	2023	SERAG considered available indicator data in 2022 and 2021 and noted that there were no immediate risks to stock sustainability.		
	Weight of Evidence	2022 2021	SERAG considered available indicator data in 2022 and 2021 and noted that there were no immediate risks to stock sustainability.		
	Standard Tier4	2018	0.5332	1.1592	0.4830
Stock trend and other indicators	Catches for eastern Deepwater Sharks with closures declined steadily from 1996 to a low in 2007 when the 700 m closure was introduced. Since the borders of this closure were modified in 2009 (and 2016) catches have increased again to reach an average of 34 t per annum (i.e., since 2016) with fewer vessels contributing significantly to this fishery relative to the 1990's. The 50 t catch in 2019 was the highest recorded since 2006 (i.e., for the period after 2005). Nevertheless, fishing appears to be consistent and the standardised CPUE trend has been essentially low and flat since 2010 (Sporcic, 2024d). Standardised CPUE in the open area exhibits a relatively flat and mostly below average trend since 2010. The removal of catch from the 700 m closure, made minimal differences to standardized CPUE compared to CPUE indices which included the closure in analyses. (Sporcic, 2024d).				
Species Category MYTAC	**TAC setting approach**				
	The deepwater shark basket (east) is currently managed through a single-year TAC.				
Catch and TAC (t)	**SESSF season**	**Agreed TAC**	**TAC after unders/overs**		**Commonwealth Retained Catch**
	2024-25	24	26		-
	2023-24	24	26		13
	2022-23	24	26		11

Economics (Secondary) Commonwealth Trawl and Scalefish Hook	Financial Year	Species GVP ($m)	Fishery GVP ($m)	% Fishery GVP
	2022-23	Not Available	65.88	Not Available
	2021-22	Not Available	80.00	Not Available
	2020-21	Not Available	64.00	Not Available

ABARES Status (2024 report)	Fishing mortality: Uncertain	Biomass: Uncertain

Climate Sensitivity **Uncertain**	There is currently no available information regarding climate change sensitivity of Deepwater Sharks.

Assessment summary

Key Model technical assumptions/ parameters	The Tier 4 assessment assumes there is a linear relationship between catch rates and exploitable biomass, and that the character of the estimated catch rates has not changed significantly since the reference period to the end of the most recent year. This is a basket of species, and a key assumption is that the combined species CPUE broadly reflects the trends in CPUE for all the contributing species. Approximately 80% of the catch is *Deania calcea* (brier shark). The assessment is based on open areas of the fishery only. The catch rates used in the analysis are based on log-transformed catches rather than log-transformed catch/effort. This was a SERAG decision relating to how the sharks are fished.
Significant Changes to data inputs	N/A
Assessment results and RAG comments	SERAG (November 2018) accepted the results of the Tier 4 assessment and the 2019 RBC of 10 t. However, given that deepwater sharks are typically considered as bycatch, a reduction in the TAC would likely lead to discarding, with implications for the CPUE series. The RAG therefore recommended that the TAC be set the current catch level at the time, that is 24 t., noting that there would be minimal risk associated with maintaining current catch levels. This TAC has been applied since the 2019–20 season, initially as a 3-year MYTAC and then as a single-year TAC. Fishery indicators were reviewed by SERAG (Nov 2022) noting the following: • Catches are low relative to past but increasing. • Commercial CPUE is increasing. • Lengths (*D. calceus*) not showing a trend and large females are still present. • Research surveys not showing trend, (except in a past survey Kapala on the upper shelf). • Species composition is variable but not alarming (Thomson et al. 2022). Thomson et al. 2022 found that any quantitative assessment, up to an including a Tier 1-style age-structured assessment model could be applied, albeit with unavoidable uncertainty regarding catches and catch-per-unit-effort (CPUE), particularly during 1985–1996 as well as likely unrepresentativeness of length composition data due to spatial population structure.

	A Tier 4 assessment is a possibility for Deania spp., with the new 'dynamic Tier 4' (if MSE testing shows it to be reliable) likely to be an improvement on the traditional Tier 4 because it will estimate depletion during the reference period. It also identified further work that might be done to refine the estimated catch and CPUE time series, as well as to better understand the spatial structuring of the population through characterisation of habitat preferences by Deania calceus. Better understanding of habitat would improve understanding of the level of protection provided by the spatial closures. Declining catches between 1997 and 2000, and a significant reduction in FRV Kapala survey catch rate for Deania spp. (in 200–605 m depth off New South Wales, NSW) caused concern in the past, but current indicators of stock health (rising catches and catch rates, noisy but stable length frequencies) show no cause for concern in recent years (but do not provide a measure of Deania spp. abundance on the NSW upper slope, specifically) (Thomson et al. 2022). SERAG (Nov 2023) noted that the 2023 RBC estimate for Deepwater Shark (East) produced by the Dynamic Tier 4 assessment was ~8.2 t; less than both the reported catch in 2022 (~12.2 t) and the current (2023–24) TAC of (24 t). The RAG advised that the Dynamic Tier 4 assessment for Deepwater Shark (East) requires further refinement, a complete catch history and MSE testing before the method is accepted. SESSFRAG (Apr 2024) considered the results of the MSE of the Dynamic Tier 4 assessment method and recommended the use of this approach in preference to empirical Tier 4 assessments where practicable. The MSE showed that the Dynamic Tier 4 approach has improved performance compared to the empirical Tier 4 because it provided improved performance statistics, reduced variability in RBCs and reduced sensitivity to chosen reference years with fewer assumptions required and the option to fit multiple CPUE series. A Dynamic Tier 4 assessment of deepwater shark (east) was scheduled for 2024 but had to be deferred once it became apparent that further work was required on the catch reconstruction for both this and the deepwater shark (west) basket. The timing of the next assessment of each deepwater shark basket is yet to be confirmed.

RAG Recommendations

SERAG (Nov 2024) recommended maintaining the 10 t RBC for deepwater shark east (from the 2018 Tier 4 assessment) for the 2025–26 season and supported the continued use of the 24 t TAC that has been applied in recent years to limit discarding.

RBC (t)	10 t	RBC maintained since the 2018 assessment.
Discount Factor (t)	N/A	SERAG recommended not applying a discount factor given the protection afforded to the stock by closures (Knuckey *et al.* 2009).
State catch (t)	0.9	A small amount of deepwater shark is caught in NSW waters.
Discards (t)	N/A	There are no reliable estimates of discards for the eastern species basket.
Recreational Catch (t)	N/A	There are no estimates of recreational catch.

RCA (t)	N/A	There has been no specific research catch allocated.
Provisional TAC under the Harvest Strategy		24 t – to limit discarding when incidentally caught.

AFMA Advice

AFMA management recommends a TAC of 24 t for the deepwater shark east basket during 2025–26 season, with undercatch and overcatch provisions set at 10 per cent and a determined amount of 2 t.

MAC Recommendations

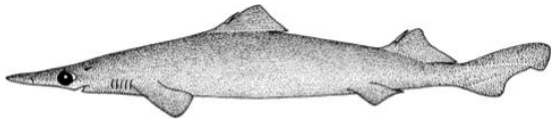
Commercial fishers' interest	
Species specific management (target, companion, and bycatch)	
MAC advice and any dissenting views	

Undercatch (%)	Overcatch (%)	Determined amount (t)	TAC (t)

Final agreed TAC

2024-25 agreed TAC (t)	2025-26 recommended TAC (t)	Overcatch and undercatch (%)	Determined amount (t)	Change in TAC (t)
24				

Deepwater Shark basket - West



Species Summary

Stock Assessment	Tier 4 Species - last assessed by SERAG in 2023.
Stock Structure	Little is known about the stock structure of deepwater sharks. They are bentho-pelagic species that have been sampled in oceanic environments over the abyssal plains and are distributed widely across ocean basins and along the middle and lower continental shelves. The western management area extends from the Tasmanian west coast Latitude 42º S (approximately Strahan), around to WA.

Stock status against reference points (C_{Lim}/C_{Targ})

Tier	Assessment Year	$CPUE_{Recent}$	$CPUE_{Target}$	$CPUE_{Limit}$
4	2023	0.9272	0.6157	0.2565
Weight of Evidence	2022	SERAG re-considered available indicator data and noted there were no immediate risks to stock sustainability. A Tier 4 assessment will be completed for Deania spp. in 2023.		
Weight of Evidence	2021	SERAG considered available indicator data and noted there were no immediate risks to stock sustainability.		

Stock trend and other indicators	Catches of western Deepwater Sharks with closures decreased from a high in 1997 and 1998 to a low in 2007 after the introduction of the 700 m closure, picking up again after the modifications in 2009 and 2016, with a mean of ~99 t over the last five years. The 108 t catch in 2020 was the highest recorded since 2005 (i.e., for the period after 2004). Standardised CPUE of western Deepwater Sharks in open areas has been approximately cyclic since about 2007 with lows over 2012-2014 period, and since then, there has been an overall increasing trend reaching the long-term average in 2018 and between 2020-2022, based on 95% confidence intervals. The most recent standardized estimate is below average. There were no discernible differences between this year's and last year's standardized CPUE series. The removal of catch from the 700 m closure, made minimal differences to standardized CPUE compared to CPUE indices which included the closure in analyses (Sporcic, 2024d).
Species Category MYTAC	**TAC setting approach** The current season (2024–25) is the first year of a three-year MYTAC for deepwater shark west.

Catch and TAC (t)	**SESSF season**	**Agreed TAC**	**TAC after unders/overs**	**Commonwealth Retained Catch**
	2024-25	327	344	-
	2023-24	235	252	82
	2022-23	235	258	85
Economics (Secondary) Commonwealth Trawl and Scalefish Hook	**Financial Year**	**Species GVP ($m)**	**Fishery GVP ($m)**	**% Fishery GVP**
	2022-23	Not Available	65.88	Not Available
	2021-22	Not Available	80.00	Not Available
	2020-21	Not Available	64.00	Not Available
ABARES Status (2024 report)	**Fishing mortality: Uncertain**		**Biomass: Uncertain**	
Climate Sensitivity **Uncertain**	There is currently no available information regarding climate change sensitivity of deepwater sharks.			

Assessment summary

Key Model technical assumptions/ parameters	The Tier 4 assessment assumes there is a linear relationship between CPUE and exploitable biomass, and that the character of the estimated CPUE has not changed in significant ways.
Significant Changes to data inputs	Catches in this assessment are based on open areas Tier 4 assessment: Western Deepwater Sharks only. Discards were not used in this assessment as agreed by SERAG (26-27 September 2023) given they are poorly estimated - there is only one available estimate in 2018 and it also differs from the corresponding logbook recorded estimate (Sporcic, 2023b).
Assessment results and RAG comments	The 2023 estimated RBC is 326.7 t, an increase of 92.7 t compared to the 2018 estimated RBC (235 t; see Sporcic 2018). The increase in RBC of approximately 93 t can be mostly attributed to an increase in the most recent CPUE and hence the mean of the most recent four-year average which is used to calculate the RBC. Also, the CPUE in 2023 is above the CPUE target based on the Tier 4 Harvest Control Rule (0.62) and has been above target since 2015 (Sporcic, 2023b). SERAG (Nov 2023) recommended the RBC (326.7 t) produced by the Tier 4 for the Deepwater Shark West assessment. SERAG supported the use of this RBC for a three-year period but noted that a Dynamic Tier 4 may become available (subject to MSE testing) in 2024. SESSFRAG (Apr 2024) considered the results of the MSE of the Dynamic Tier 4 assessment method and recommended the use of this approach in preference to empirical Tier 4 assessments where practicable. The MSE showed that the Dynamic Tier 4 approach has improved performance compared to the empirical Tier 4 because it provided improved performance statistics, reduced variability in RBCs and reduced sensitivity to chosen

	reference years with fewer assumptions required and the option to fit multiple CPUE series. A Dynamic Tier 4 assessment of deepwater shark (west) was scheduled for 2024 but had to be deferred once it became apparent that further work was required on the catch reconstruction for both this and the deepwater shark (east) basket. The timing of the next assessment of each deepwater shark basket are yet to be confirmed.

RAG Recommendations

SERAG (Nov 2024) recommended maintaining the 327 t RBC for deepwater shark west during the 2025–26 season, as the second year of a three-year RBC.

RBC (t)	**Year**	**RBC (t)**	**RBC arrangements**
	2026	327	Static 3-year RBC of 327 t
	2025	327	
	2024	327	
Discount Factor (t)	N/A	SERAG recommended not applying a discount factor given the protection afforded to the stock by closures (Knuckey *et al.* 2009).	
State catch (t)	N/A	Previously recorded by SA however there are no recent catches,	
Discards (t)		There are no reliable estimates of discards for the western species basket. Discards were not used in the Tier 4 assessment because they are poorly estimated and as such were not deducted from the RBC.	
Recreational Catch (t)	N/A	There are no estimates of recreational catch.	
RCA (t)	N/A	There has been no specific research catch allocated.	
Provisional TAC under the Harvest Strategy		327 t	

AFMA Advice

AFMA management recommends a TAC of 327 t for the deepwater shark west during 2025–26 season, as the second year of a three-year MYTAC, with undercatch and overcatch provisions set at 10 per cent and a determined amount of 2 t.

MAC Recommendations

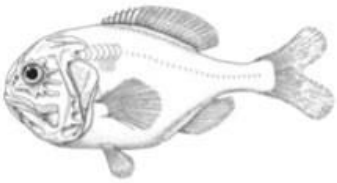
Commercial fishers' interest	
Species specific management (target, companion, and bycatch)	
MAC advice and any dissenting views	

Undercatch (%)	Overcatch (%)	Determined amount (t)	TAC (t)

Final agreed TAC

2024-25 agreed TAC (t)	2025-26 recommended TAC (t)	Overcatch and undercatch (%)	Determined amount (t)	Change in TAC (t)
327				

Orange Roughy Southern Zone



ABARES (2012): Line Drawing – Rosalind Poole

Hoplostethus atlanticus

Species Summary

Stock Assessment	Tier 1 Species – Southern Zone last assessed by SlopeRAG in 2000 Pedra Branca has been assessed as part of the Eastern Zone Tier 1 stock assessment since 2002 and was last assessed by SERAG in 2021.
Stock Structure	Multiple regional stocks of orange roughy are assumed and the fishery is managed and assessed as a number of discrete regional stocks. Recent genetic studies indicate little genetic diversity between all south east Australian stocks, however they may be demographically separate. The part of the Southern Zone catch that is caught on the Pedra Branca grounds is assumed to be part of the eastern stock.

Southern Stock status against reference points (%B0 in year +1)

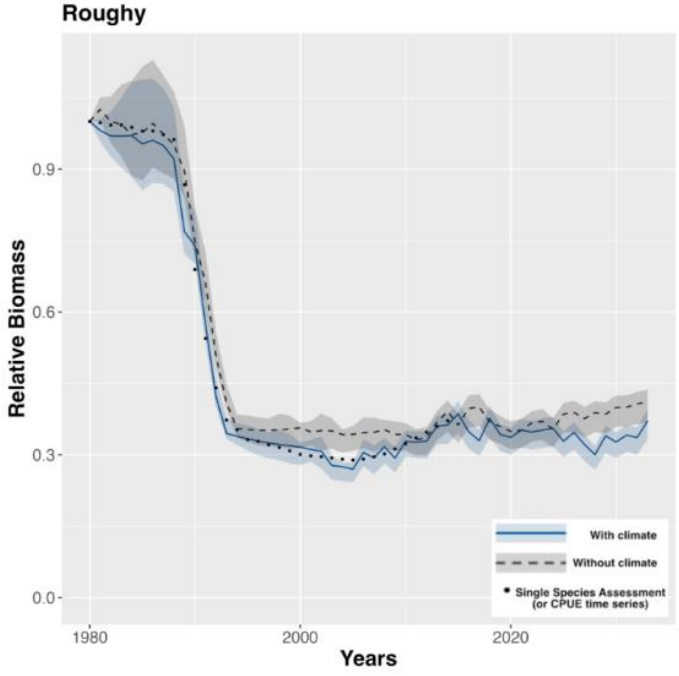
Tier	Assessment Year	Biomass	
-	2000	<30 (95% probability)	Maintain spawning biomass above 30% of the spawning biomass at the onset of significant commercial fishing (1988). Where there is a greater than 50% probability that a stock is below 30%, the TAC will be set such that the biomass reaches 30%B0 by 2004
-	1996	<30 (56–68% probability)	
-	1995	<30 (9–55% probability)	

Pedra Branca Stock status against reference points (%B0 in year +1)

Tier	Assessment Year	Biomass (from assessment year)	Biomass (revised in most recent assessment)	Target	Limit
1	2021	30	30	48	20
1	2017	33	26		
1	2014	26	22		

Stock trend and other indicators	Southern Zone Stock status: unresolved in the Southern Zone. The most recent accepted assessment (2000) concluded that the stock was less than the limit reference point. The component of the Southern Zone stock that resides in the Pedra Branca seamounts is assessed as a part of the Eastern Zone stock assessment due to the stock structure assumptions. The Eastern Zone assessment in 2021 estimated the stock status in the Pedra Branca area to be 30% of unfished biomass in 2021 and projected to be at 30% B0 at the beginning of 2022 (Burch et al, 2021).

<table>
<tr><td></td><td>Biomass trend: the 2021 stock assessment indicates that biomass is continuing to increase, however revisions to the model have resulted in an overall downward revision to the estimate of relative biomass – see ‘Biomass revised in most recent assessment’ above.

Recent acoustic surveys (1999, 2006, 2010, 2012, 2013, 2016 and 2019) undertaken at St. Helen’s Hill and St. Patricks’ Head have estimated an increase in abundance, which supports the estimated increase in abundance from the Tier 1 stock assessments.</td></tr>
<tr><td>Species Category
Depleted</td><td>TAC setting approach
Annual bycatch TAC set in accordance with the Orange Roughy Rebuilding Strategy with an additional allocation for the Pedra Branca management area.</td></tr>
<tr><td>Catch and TAC (t)</td><td>
<table>
<tr><th>SESSF season</th><th>Agreed TAC</th><th>TAC after unders/overs</th><th>Commonwealth Retained Catch</th></tr>
<tr><td>2024-25</td><td>98</td><td>98</td><td>-</td></tr>
<tr><td>2023-24</td><td>105</td><td>105</td><td>49</td></tr>
<tr><td>2022-23</td><td>113</td><td>113</td><td>50</td></tr>
</table>
</td></tr>
<tr><td>Economics (Primary) Commonwealth Trawl and Scalefish Hook</td><td>
<table>
<tr><th>Financial Year</th><th>Species GVP ($m)</th><th>Fishery GVP ($m)</th><th>% Fishery GVP</th></tr>
<tr><td>2022-23</td><td>Not Available</td><td>65.88</td><td>Not Available</td></tr>
<tr><td>2021-22</td><td>Not Available</td><td>80.00</td><td>Not Available</td></tr>
<tr><td>2020-21</td><td>Not Available</td><td>64.00</td><td>Not Available</td></tr>
</table>
</td></tr>
<tr><td>ABARES Status (2024 report)</td><td>Fishing mortality: Uncertain | Biomass: Overfished</td></tr>
<tr><td>Climate Sensitivity
Low</td><td> 

Atlantis modelling suggests that climate change has a minor influence on the biomass of Orange Roughy. Depletion by fishing in the 1980s-1990s affected the species much more strongly than any climate related shifts.</td></tr>
</table>

Assessment summary

Key Model technical assumptions/ parameters	For Pedra Branca, see Orange Roughy East.
Significant Changes to data inputs	For Pedra Branca, see Orange Roughy East.
Assessment results and RAG comments	SERAG has previously agreed that, despite the absence of an agreed assessment model for the Southern Zone stock, the data show there is little targeting or bycatch of orange roughy. As such, the incidental bycatch TAC is applicable and does not impede recovery of the stock. For the Pedra Branca area: SERAG (2021) recommended a 3-year TAC period for Orange Roughy (East) using the outputs of the MCMC analysis (see Orange Roughy East). If a TAC greater than the RBC were to be set in the east, the constant catch scenarios and associated risk profiles should be used as basis for determining the TAC. The orange roughy Pedra Branca area 3-year MYTAC will constitute 7 per cent of this RBC apportioned to the eastern zone. For more detail on the assessment, see Orange Roughy East. SERAG (Nov 2022) recommended maintaining the 31 t incidental bycatch TAC for the remainder of the Southern zone.

RAG Recommendations

SERAG (2021) recommended a 3-year TAC period for orange roughy (East) using the outputs of the MCMC analysis (see Orange Roughy East). If a TAC greater than the RBC were to be set in the east, the constant catch scenarios and associated risk profiles should be used as basis for determining the TAC. The Orange Roughy Pedra Branca TAC will constitute 7 per cent of this RBC apportioned to the eastern zone.

SERAG (Oct 2024) recommended maintaining the existing TACs for Southern Zone Orange Roughy and Pedra Branca Orange Roughy noting there is insufficient evidence to warrant a change.

	Year	RBC (t): Southern	RBC (t): Pedra Branca	RBC arrangements
RBC (t)	2025	0	58 (7% of 830)	Southern: No. Rebuilding species. Pedra Branca: Yes – (93% of the Eastern Zone Tier 1 stock assessment, with 7% apportioned to the Pedra Branca area of the Southern Zone.)
	2024	0	55 (7% of 789)	
	2023	0	52 (7% of 740)	
	2022	0	48 (7% of 681)	
Discount Factor (t)	N/A	Discount factors are not applied to Tier 1 stock assessments (Pedra Branca) and there is no assessment for the Southern Zone.		
State catch (t)	N/A	There are no estimates of State catches.		

Discards (t)	N/A	There are no estimates of discards.
Recreational Catch (t)	N/A	There are no known recreational catches for Orange Roughy.
RCA (t)	N/A	There has been no specific research catch allocated.
Provisional TAC under the Harvest Strategy		Southern Zone: 31 t - Incidental bycatch TAC Pedra Branca: 58 t noting that the TAC based on constant catch projections is 67 t for this area.

AFMA Advice

AFMA management recommends a single-year TAC of 98 t for Orange Roughy South during the 2025–26 season (comprising of a 31 t incidental bycatch allocation and a 67 t allocation to the Pedra Branca management area based on 7% of the constant catch projection for Eastern Zone Orange Roughy of 950 t), with no overcatch or undercatch provisions and a determined amount of 2 t.

MAC Recommendations

Commercial fishers' interest	
Species specific management (target, companion, and bycatch)	
MAC advice and any dissenting views	

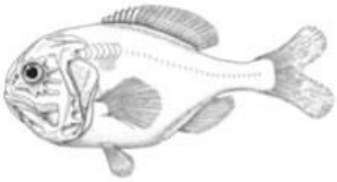
Undercatch (%)	Overcatch (%)	Determined amount (t)	TAC (t)

Final agreed TAC

2024-25 agreed TAC (t)	2025-26 recommended TAC(t)	Overcatch and undercatch (%)	Determined amount (t)	Change in TAC (t)
98				

Orange Roughy Western Zone

Hoplostethus atlanticus



ABARES (2012): Line Drawing – Rosalind Poole

Species Summary

Stock Assessment	Tier 1 Species – Last assessed by SlopeRAG in 2002			
Stock Structure	Based on the existing data and fishery dynamics multiple regional stocks of orange roughy are assumed and the fishery is managed and assessed as a number of discrete regional stocks. Recent genetic studies indicate little genetic diversity between all South Eastern Australian stocks, however they may be demographically separate.			
Stock status against reference points (%B_0)	**Tier**	**Assessment Year**	**Biomass (revised in most recent assessment)**	**Target Limit**
	-	2002	<30 (>50% probability)	Maintain spawning biomass above 30% of the spawning biomass at the onset of significant commercial fishing (1988). Where there is a >50% probability that a stock is below 30%, the TAC will be set such that the biomass reaches 30%B_0 by 2004.
	-	2000	<20 (97% probability)	
Stock trend and other indicators	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 appropriate to consider that similar rebuilding may have occurred in the Western Zone.			
Species Category Depleted	**TAC setting approach**			
	Annual bycatch TAC set following the Orange Roughy Rebuilding Strategy			

Catch and TAC (t)	**SESSF season**	**Agreed TAC**	**TAC after unders/overs**	**Cth Retained Catch**
	2024-25	60	60	-
	2023-24	60	60	19
	2022-23	60	60	12

Economics (Primary) Commonwealth Trawl and Scalefish Hook	**Financial Year**	**Species GVP ($m)**	**Fishery GVP ($m)**	**% Fishery GVP**
	2022-23	Not Available	65.88	Not Available
	2021-22	Not Available	80.00	Not Available
	2020-21	Not Available	64.00	Not Available

ABARES Status (2024 report)	Fishing mortality: Uncertain	Biomass: Overfished
Climate Sensitivity Low	Atlantis modelling suggests that climate change has a minor influence on the biomass of Orange Roughy. Depletion by fishing in the 1980s-1990s affected the species much more strongly than any climate related shifts.	

Assessment summary

Key Model technical assumptions/parameters	N/A
Significant Changes to data inputs	N/A
Assessment results and RAG comments	SERAG has previously agreed that, despite the absence of an agreed assessment model, the data show there is little targeting or bycatch of western orange roughy. As such the incidental catch TAC is applicable and does not impede recovery of the stock. Bearing in mind the rebuild of the eastern stock from a low biomass it could be argued that the Southern and Western Zones should have recovered somewhat. This is tempered by not knowing if recruitment processes and stock movement in the Southern and Western Zones are similar or different to those in the Eastern Zone. SERAG (Dec 2022) noted that the Western Zone continues to be managed under an incidental bycatch TAC and noted there was no additional information that would provide a basis for SERAG to change its' previous TAC advice. SERAG recommended that the Western Zone orange roughy incidental bycatch TAC remain unchanged – 60 t. SERAG noted that given the life history of orange roughy, multiple years of sufficient data will be required to provide informed advice on the recovery of western orange roughy. SERAG recommended maintaining the Western Orange Roughy Research Plan, including the research catch allowance of 200 t.

RAG Recommendations

SERAG (Oct 2024) recommended maintaining the existing bycatch TAC for Western Zone Orange Roughy (at 60 t) noting there is insufficient evidence to warrant a change.

SERAG (Nov 2024) recommended maintaining the 200 t RCA for the 2025-26 SESSF season (to support the WORRP), with catch triggers of 100 t for each of the three sampling areas within this zone.

RBC (t)	0 t	The RBC is set to zero for all depleted species.
Discount Factor (t)	N/A	Discount factors are not applied to bycatch TACs.
State catch (t)	N/A	There are no estimates of State catches.
Discards (t)	N/A	Discards are not deducted from the bycatch TAC.

Recreational Catch (t)	N/A	There are no known recreational catches for Orange roughy.
RCA (t)	200	Research catch allocated under the Western Orange Roughy Research Plan.
Provisional TAC under the Harvest Strategy		60 t - Incidental bycatch TAC

AFMA Advice

AFMA Management recommends an incidental bycatch TAC of 60 t for the Orange Roughy Western Zone during the 2025–26 season, with no undercatch or overcatch provisions and a determined amount of 2 t.

AFMA Management also recommends a 200 t RCA for the Orange Roughy Western Zone during the 2025–26 season with a catch trigger of 100 t for each of the three sampling areas within this zone.

MAC Recommendations

Commercial fishers' interest	
Species specific management (target, companion, and bycatch)	
MAC advice and any dissenting views	

Undercatch (%)	Overcatch (%)	Determined amount (t)	TAC (t)

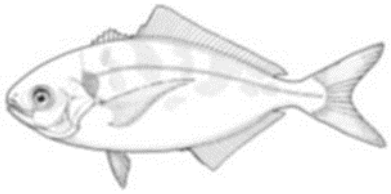
Final agreed TAC

2024-25 agreed TAC (t)	2025-26 recommended TAC (t)	Overcatch and undercatch (%)	Determined amount (t)	Change in TAC (t)
60				

Shelf Species

Blue Warehou

Seriolella brama



ABARES (2012): Line Drawing – Rosalind Poole

<table>
<tr><th colspan="6">Species Summary</th></tr>
<tr><td>Stock Assessment</td><td colspan="5">Tier 4 Species - last assessed by ShelfRAG in 2013.</td></tr>
<tr><td>Stock Structure</td><td colspan="5">There is evidence that there are two stocks of Blue Warehou, east and west of the Bass Strait. However, the stock is managed under a single TAC.</td></tr>
<tr><td rowspan="4"><u>East</u>
Stock status against reference points (CLim/CTarg)</td><td>Tier</td><td>Assessment Year</td><td>CPUE_{Recent}</td><td>CPUE_{Target}</td><td>CPUE_{Limit}</td></tr>
<tr><td>4</td><td>2013</td><td>0.1861</td><td>2.0717</td><td>0.8287</td></tr>
<tr><td>4</td><td>2012</td><td>0.2214</td><td>2.0055</td><td>0.8022</td></tr>
<tr><td>4</td><td>2011</td><td>0.2219</td><td>1.939</td><td>0.7756</td></tr>
<tr><td rowspan="4"><u>West</u>
Stock status against reference points (CLim/CTarg)</td><td>Tier</td><td>Assessment Year</td><td>Biomass</td><td>Target</td><td>Limit</td></tr>
<tr><td>4</td><td>2013</td><td>0.2681</td><td>1.9249</td><td>0.7699</td></tr>
<tr><td>4</td><td>2012</td><td>0.307</td><td>1.8679</td><td>0.7472</td></tr>
<tr><td>4</td><td>2011</td><td>0.349</td><td>1.8175</td><td>0.727</td></tr>
<tr><td>Stock trend and other indicators</td><td colspan="5">The last agreed Tier 1 assessment in 2006, estimated the eastern stock to be depleted below the limit reference point. In 2013, blue warehou was assessed as a Tier 4 species and was assessed as being below the limit reference point.

In contrast, the western stock was estimated to be above the limit reference point and close to the biomass maximum sustainable yield (B40) level. However, the 2006 assessment predicted that the western stock will have dropped below the limit reference point by 2007 if the landed catches remained high and if recruitment was average.

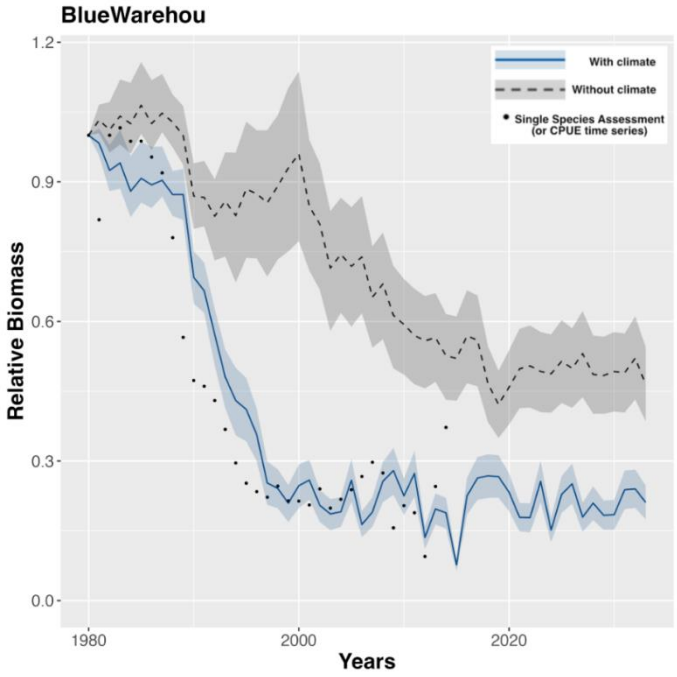
<u>Biomass trend</u>

<u>Zone 10-30</u> – Annual standardised CPUE has been below average since about 1996 and shows a relatively (Sporcic, 2024a)
flat trend.
<u>Zone 40-50</u> – Annual standardised CPUE has been mostly below average since about 1996 while the trend has been mostly flat (Figure 114). CPUE are consistent from 1988 - 1991 (i.e., before the introduction of quotas in 1992) but are double that following the introduction of quota. Relatively very few vessels now contribute to significant catches. (Sporcic, 2024a).

<u>Catch against TAC</u>

Since the implementation of the Blue Warehou Rebuilding Strategy in 2008, the TAC has decreased from 365 t in 2008-09, to an incidental bycatch TAC of</td></tr>
</table>

<table>
<tr><td></td><td>183 t in 2009-10 and 2010-11, 133 t in 2011-12, 118 t in 2012-13, 50 t in 2021-22 and then 30 t in 2023-24 and 2024-25.

Commonwealth catches have always been less than the incidental TAC, with the TAC being 6 per cent caught in 2022-23.</td></tr>
<tr><td>Species Category
Depleted</td><td>TAC setting approach
Annual bycatch TAC set in accordance with the Blue Warehou Stock Rebuilding Strategy.</td></tr>
<tr><td>Catch and TAC (t)</td><td>
<table>
<tr><th>SESSF Fishing Year</th><th>Agreed TAC</th><th>TAC after unders/overs</th><th>Commonwealth Retained Catch</th></tr>
<tr><td>2024-25</td><td>30</td><td>30</td><td>-</td></tr>
<tr><td>2023-24</td><td>30</td><td>30</td><td>3</td></tr>
<tr><td>2022-23</td><td>50</td><td>50</td><td>3</td></tr>
</table>
</td></tr>
<tr><td>Economics (Secondary) Commonwealth Trawl and Scalefish Hook</td><td>
<table>
<tr><th>Financial Year</th><th>Species GVP ($m)</th><th>Fishery GVP ($m)</th><th>% Fishery GVP</th></tr>
<tr><td>2022-23</td><td>0.01</td><td>65.88</td><td>0.02</td></tr>
<tr><td>2021-22</td><td>0.03</td><td>80.00</td><td>0.04</td></tr>
<tr><td>2020-21</td><td>0.01</td><td>64.00</td><td>0.02</td></tr>
</table>
</td></tr>
<tr><td>ABARES Status (2024 report)</td><td>East -Fishing mortality: Subject to overfishing
West -Fishing mortality: Subject to overfishing
Biomass: Overfished</td></tr>
<tr><td>Climate Sensitivity
High</td><td> 

Atlantis modelling suggests the current state of these species has been much more strongly influenced by climate change than fisheries and that current fisheries management may have been sufficient to keep the stocks sustainable in the absence of climate change.</td></tr>
</table>

Assessment summary	
Key Model technical assumptions/ parameters	The Tier 4 assessment assumes there is a linear relationship between catch rates and exploitable biomass, and that the character of the estimated catch rates has not changed significantly since the reference period to the end of the most recent year. Due to low catches and avoidance behaviour, CPUE is no longer considered a reliable index of abundance for this species.
Significant Changes to data inputs	N/A
Assessment results and RAG comments	Logbook catch and effort data is the only information available for this species – age and length data are not collected. SERAG (Nov 2018) noted a significant increase in estimated discards in 2017 for the eastern stock – 91 per cent and 216 t. This was influenced by a single observed Danish seine trip where large amounts of small fish were discarded. Discards rates for Blue Warehou remain high; the 2022 estimate was 95 per cent (23 t), following figures of 97 per cent (43 t) in 2021 and 73 per cent (6 t) in 2020. There is evidence of considerable unreported blue warehou discards across the fleet. For example, blue warehou were only reported in 0.4% of Danish seine logbooks shots in 2021 compared to 43% of observed shots. Similarly, blue warehou were only reported in 0.9% of board trawl shots, compared to approximately 20% of observed shots. An alternative primary index of abundance needs to be developed as a high priority for use in future stock assessments, and this species should be considered as a candidate for application of close-kin genetics assessments. SERAG (Nov 2021) considered a companion species analysis which investigated the link between target species catch and the associated level of unavoidable bycatch of recovering species. The analysis incorporated a range of factors such as area, depth fished and gear type – also known as métiers. Using logbook data from 2019 and 2020, and expected 2022-23 TACs for the main companion species, the estimated unavoidable bycatch of blue warehou for 2022 was 11.4 t, with a range between 7.0 and 17.6 t. SERAG (Nov 2022) noted the revised Blue Warehou Rebuilding Strategy had been completed and uploaded to AFMA website. SERAG (Nov 2023) noted that additional trawl closures, the buyback of trawl boat statutory fishing rights (SFRs), and changes to Danish seine gear in 2023, while beneficial to depleted shelf species, will have a significant impact on the key index of abundance (CPUE) for these species and make it difficult to evaluate the effectiveness of these (and other) conservation measures contained in the relevant rebuilding strategies.

RAG Recommendations
SERAG (Oct 2024) recommended maintaining the existing bycatch TAC for Blue Warehou (of 30 t) on the basis that there is no new information that indicates a need to change the TAC.

RBC (t)	0 t	The RBC is set to zero for all depleted species.
Discount Factor (t)	N/A	Discount factor not applied to incidental bycatch TAC.
State catch (t)	East = 6.8 West = 2	State catches are not deducted from the bycatch TAC.
Discards (t)	East = 160.2 West = N/A	There are no estimates of discards in the west. Discards are not deducted from the bycatch TAC. The high weighted average discard estimate is driven by observed discard rates in 2021 applied across Commonwealth and State catches (see "Data and RAG Comments")
Recreational Catch (t)	N/A	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).
RCA (t)	N/A	There has been no specific research catch allocated.
Provisional TAC under the Harvest Strategy		30 t – incidental bycatch TAC

AFMA Advice

AFMA Management recommends an incidental bycatch TAC of 30 t for Blue Warehou during the 2024–25 season, with no overcatch or undercatch provisions and a determined amount of 2 t.

MAC Recommendations

Commercial fishers' interest	
Species specific management (target, companion, and bycatch)	
MAC advice and any dissenting views	

Undercatch (%)	Overcatch (%)	Determined amount (t)	TAC (t)

Final agreed TAC

2024-25 agreed TAC (t)	2025-26 recommended TAC (t)	Overcatch and undercatch (%)	Determined amount (t)	Change in TAC (t)
30				

Flathead

Neoplatycephalus richardsoni

Species Summary

Stock Assessment	Tier 1 Species - last assessed by SERAG in 2022.
Stock Structure	For management purposes a single continuous stock has been assumed throughout all zones of the SESSF.

Stock status against reference points ($\%B_0$ in year +1)

Tier	Assessment Year	Biomass (from assessment year)	Biomass (revised in most recent assessment)	Target	Limit
1	2022	40	40	40	20
1	2019	34	33		
1	2016	42	34		

Stock trend and other indicators

Otter board trawl CPUE in Zone 30 (east coast of Tasmania) - The annual standardised CPUE trend was noisy and flat between 1986 - 2001, and after a transitional period between 2002 - 2006 during which catches surged, was noisy and flat from 2007 to 2023 (Figure 79). The catch in 2023 (195.6 t) from zone 30 increased compared to the previous year (Sporcic,2024).

Otter board trawl CPUE in Zones 10 and 20 – Annual standardised CPUE appears cyclical above and below average, has remained below average in 2017-2018, increased to the long-term average in 2021, and subsequently decreased to below average based on the 95% confidence intervals. The structural adjustment had a profound effect upon the influence of the vessel factor reducing the standardised trend well below the nominal geometric mean CPUE. (Sporcic, 2024a).

Danish seine in Zone 20 and 60 – Annual standardised CPUE appears cyclical above and below average and remained below average over 2012-21, based on 95% confidence intervals (Figure 93). There has also been an overall decrease in standardised CPUE over 2007-2020 and significant increases in CPUE since 2020 (i.e., 2021, 2022, 2023). The 2023 standardised CPUE has reached the long-term average. (Sporcic, 2024a).

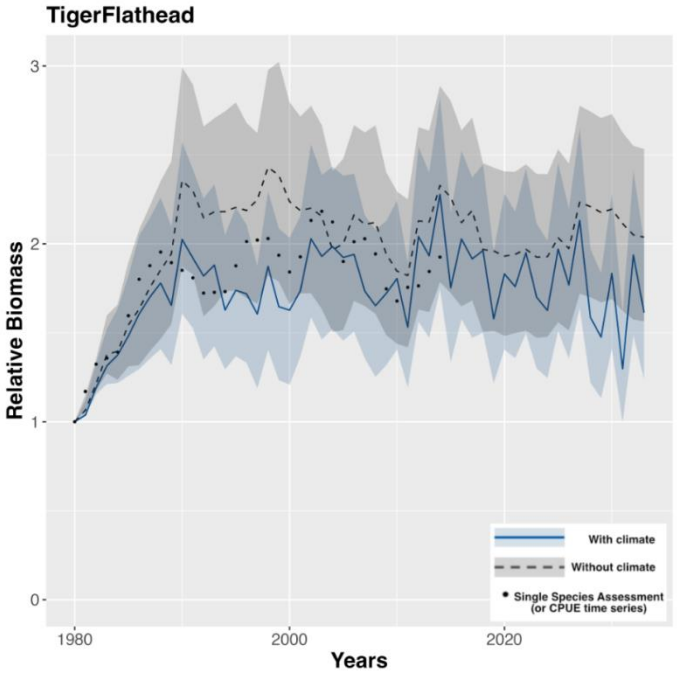
Species Category
MYTAC species

TAC setting approach

The current season (2024–25) is the 2nd year of a 3-year MYTAC. The next assessment is scheduled for 2026.

Catch and TAC (t)

SESSF season	Agreed TAC	TAC after unders/overs	Commonwealth Retained Catch
2024-25	2,333	2,520	-
2023-24	2,333	2,510	1,798

	2022-23	2,333	2,483	1,860
Economics (Primary) Commonwealth Trawl and Scalefish Hook	**Financial Year**	**Species GVP ($m)**	**Fishery GVP ($m)**	**% Fishery GVP**
	2022-23	14.05	65.88	21.32
	2021-22	14.13	80.00	17.66
	2020-21	17.06	64.00	26.66
ABARES Status (2024 report)	**Fishing mortality: Not subject to overfishing**		**Biomass: Not overfished**	
Climate Sensitivity **Low**	 Atlantis modelling indicates that climate change does not have an influence on the stock abundance.			

Assessment summary

Key Model technical assumptions/parameters	The current 2022 assessment models growth separately for both Males and Females. Tiger Flathead constitute a single stock within the area of the fishery, from zone 10 (NSW), through zone 20 (eastern Bass Strait), zone 60 (Bass Strait) and zone 30 (eastern Tasmania). While alternative stock structures have been previously suggested, with the eastern Tasmanian stock potentially a separate stock (Cui et al. (2004); Punt (2005a); Punt (2005b); Klaer (2006); Klaer (2009); Klaer (2010)), this is the current stock structure agreed to by the SERAG. The stock is assumed to be unexploited at the start of 1915 when the steam trawl fishery commenced. Catches prior to this time are thought to have been minimal. The CVs of all abundance indices (including the FIS) were initially set to the root mean squared deviation from a loess fit to the fleet specific indices

	(Sporcic, 2022), and then tuned to match the model-estimated standard errors by estimating an additional variance parameter within SS. Six fishing fleets are modelled. Selectivity is assumed to vary among fleets, but the selectivity pattern for each separate fleet is modelled as length-specific, logistic, and mostly time-invariant. The selectivity for Danish seine is allowed to change in 1978, and that of the East trawl is changed in 1985. The two parameters of the selectivity function for each fleet are estimated within the assessment. Retention is also defined as a logistic function of length, and the inflection and slope of this function are estimated for the 3 fleets where discard information is available (Danish seine, East trawl and Tas trawl). Retention for the Steam trawl fleet was implicitly assumed to be independent of length as no length frequency composition data is available on discards for this fleet. The sample sizes for length and age frequencies were tuned for each fleet so that the input sample size was approximately equal to the effective sample size calculated by the model. Before this retuning of length frequency data was performed, any sample sizes with a sample size greater than 200 shots or trips were individually down-weighted to a maximum sample size of 200. Samples with fewer than 100 measured fish were excluded from the analysis. This is because the appropriate sample size for length frequency data is more closely related to the number of shots or trips sampled, rather than the number of fish measured (Bessell-Browne 2022).
Significant Changes to data inputs	The following were included in the updated 2022 assessment: Steepness (h) was fixed at 0.75. rather than estimated in the base case. This change resulted from likelihood profiles in the 2019 assessment and 2022 preliminary base case highlighting that there was limited information in the available data to inform estimation of this parameter. This meant that each time the assessment was conducted, h was estimated to be higher (0.62, 0.72 and 0.85 in 2016, 2019 and 2022 respectively), resulting in undesirable retrospective patterns. Fixing h at the SESSF default value of 0.75 resolved this problem, however, future work should investigate whether another fixed value of h may be more suitable for tiger flathead (Bessell-Browne 2022). The maximum length bin was extended from 59 cm to 65 cm. This change was made because there was a large proportion of measured lengths, in both the East trawl and Tas trawl fleets, in the 59 cm plus group over the past 10 years. Extending the plus group to 65 cm removed the large peak of measured fish in the maximum length bin and allows more accurate estimation of growth parameters (Bessell-Browne 2022).
Assessment results and RAG comments	There are poor fits to the end of the Danish seine CPUE index from 2013 onwards, where the model is overestimating the input values, this trend was also apparent in the 2019 assessment (Day, 2019). While sensitivities have shown that this is not due to fitting the Tas trawl CPUE series further investigation into the cause of this misfit would benefit future assessments (Bessell-Browne 2022), SERAG (Nov 2022) supports this investigation.

	Discard proportion was showing cycler patterns in all fleets while the input data was remaining relatively flat. The RAG hypothesised this was perhaps due to smaller fish coming through the fishery. The RAG noted the increase in estimated stock status was in-part influenced by the new age and length data. Likelihood profiles have demonstrated there is conflict between different data sources in the assessment when estimating key parameters. The profile on MM suggests higher parameter values are preferred by the model and this is also supported by sensitivity results. The preference of the model to estimate higher values of MM has been evident since the 2010 assessment and investigating this alternative parameter space and its feasibility should be a focus of future work (Bessell-Browne 2022). The 2019 assessment and the 2022 preliminary base case identified a very flat likelihood profile for h, suggesting that there is insufficient data in the assessment to allow estimation of this parameter. This led to fixing this parameter at 0.75, the default value used in the SESSF, for this assessment. As likelihood profiles on h are not available for assessments prior to 2019 it is difficult to determine whether earlier assessments were able to accurately estimate h, or whether similar issues persisted. There is a likelihood profile on h that was conducted in Punt et al. (2014), which revealed a minimum log likelihood was obtained at h values around 0.6, suggesting that earlier assessments may have had adequate information in the data to inform estimation of this parameter. Given this estimated value of around 0.6 and the 2010 stock assessment h estimate of 0.62, these informed values would be a better choice to base the pre-specified value rather than the default value of 0.75, which has no specific relation to Tiger Flathead (Bessell-Browne 2022). SERAG (Nov 2022) noted this should be considered in future assessments. The assessment estimates that the projected 2023 stock status will be 40% of unfished spawning stock biomass (SSB0), assuming 2021 catches are maintained in 2022. Under the 20:35:40 HCR, the 2023 RBC is 2,838 t, while the long-term yield is 2,867 t. The average RBC over the 3-year period 2023-2025 is 2,831 t. Exploration of model sensitivity showed a variation in spawning biomass from 28% to 68% of SSB0 in 2022, which occurred when natural mortality (M) was fixed (M= 0.22) and estimated (M = 0.37), respectively. For the other standard sensitivities, the variation in spawning biomass was narrower, ranging between 33% and 45% of SSB0 (Bessel-Browne 2022). SERAG (Nov 2022) recommended a 3-year MYTAC using the average RBC of 2,831 t. It is premature to deviate from the base case agreed at SERAG 1 (Oct 2022) which used a fixed steepness value (0.75), fixed natural mortality of 0.27 and a target reference point of B40. SERAG (Nov 2022) recommended that additional work be undertaken on estimating growth parameters, developing an informative prior on h, investigating the different trends apparent between CPUE series between fleets and whether these are indexing abundance, and the preference of the model to estimate higher values of M. The results should be presented as

	advice before the next scheduled Tier 1 tiger flathead assessment commences.

RAG Recommendations

SESSFRAG (August 2023) recommended that the 3-year average MYTAC be revisited to ensure catches of eastern Jackass Morwong continue to be constrained.

SERAG (Oct 2024) noted concerns around discard rates of eastern Jackass Morwong (and associated uncertainty of totally mortality) and recommended the Flathead MYTAC stays constrained at its current level of 2,333 t.

SERAG (Oct 2024) noted the importance of the Tiger Flathead fishery and recommended priority be placed on working towards a more accurate estimation of total mortality (in particular discards) for companion species in the SESSF, whether through observer coverage or implementation of electronic monitoring.

	Year	RBC (t)	RBC arrangements
RBC (t)	2025	2,828	Yes. Using the 3-year average value as fluctuations are minor.
	2024	2,827	
	2023	2,838	
	3-year average	2,831	
Discount Factor (t)	N/A	Discount factors are not applied to Tier 1 assessments.	
State catch (t)	132.1	Mostly NSW catches	
Discards (t)	213 t (2023) 214 t (2024) 215 t (2025)	The 3-year average modelled discards (i.e. 214 t) for the period 2023-2025 are deducted from the 3-year average RBC.	
Recreational Catch (t)	N/A	Assessment only considers tiger flathead, which are not considered a key recreational species.	
RCA (t)	N/A	There has been no specific research catch allocated	
Provisional TAC under the Harvest Strategy		2,485 t	

AFMA Advice

AFMA Management recommends that the TAC for Flathead continue to be constrained at 2,333 t for the 2025–26 season (unchanged from the current season), as the third year of a three-year TAC period, with overcatch and undercatch provisions set at 10 per cent and a determined amount of 2 t.

MAC Recommendations

Commercial fishers' interest	

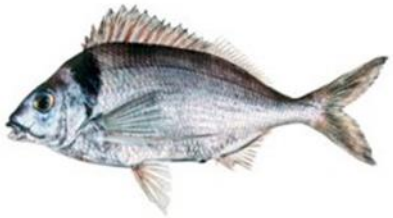
Species specific management (target, companion, and bycatch)	
MAC advice and any dissenting views	

Undercatch (%)	Overcatch (%)	Determined amount (t)	TAC (t)

Final agreed TAC

2024-25 agreed TAC (t)	2025-26 recommended TAC (t)	Overcatch and undercatch (%)	Determined amount (t)	Change in TAC (t)
2,333				

Jackass Morwong



Nemadactylus macropterus

Species Summary

Stock Assessment	Tier 1 Species (East), weight of evidence (West) - last assessed by SERAG in 2021.
Stock Structure	For assessment purposes it is assumed there are separate stocks of jackass morwong in the Eastern and Western Zones.

West
Stock status against reference points (%B0 in assessment year +1)

Tier	Assessment Year	Biomass (from assessment year)	Biomass (revised in most recent assessment)	Target	Limit
1	2018	68	68	48	20
1	2015	69	61		
1	2011	67	38		

East
Stock status against reference points (%B0 in assessment year +1)

Tier	Assessment Year	Biomass (from assessment year)	Biomass (revised in most recent assessment)	Target	Limit
1	2021	15	15	48	20
1	2018	35	15		
1	2015	37	17		

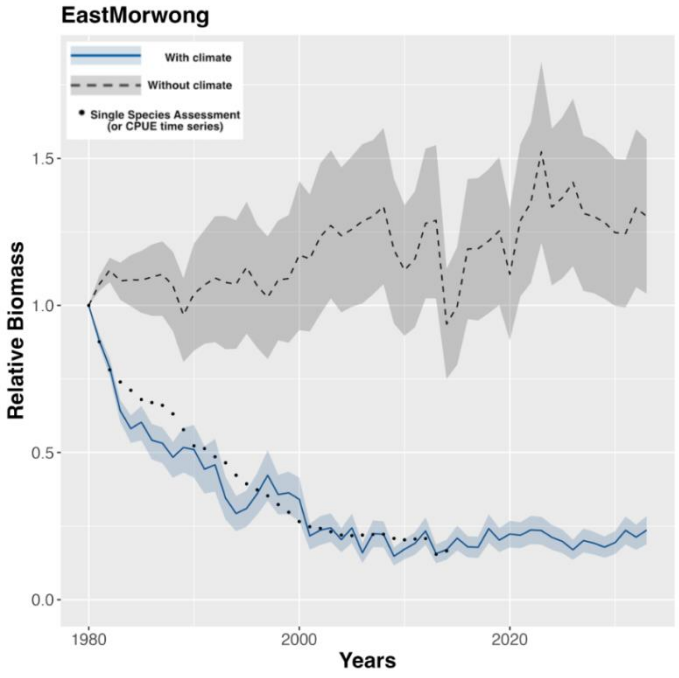
Stock trend and other indicators

Zone 30 – Annual standardised CPUE has been below the long-term average since about 2001. More recently, the relative CPUE trend has been flat since at least 2015 (i.e., statistically insignificant from each other over the last 10 years) (Figure 44). The recorded catch of 54 t from zone 30 in 2019 was the highest since 2013. By contrast, the recorded catch (3.6 t) from zone 30 in 2023 was the lowest in the series. (Sporcic, 2024a).

Zone 10-20 – Most catch was reported in zone 20 in less than 200 m. Annual standardised CPUE has been below the long-term average since about 2000 with apparent periodicity. The recorded catch (8 t) from zones 10 and 20 in 2023 was the lowest in the series. (Sporcic, 2024a).

Zone 40-50 – Most catch from zone 40 occurred at a shallower depth compared to zone 50. Since 2007,standardised CPUE has been below the long-term average, with the most recent estimate decreased relative to the previous year (Figure 58). The recorded catch of 4.5 t from the west in 2023 was the lowest in the series and corresponds to the lowest number of vessels (4). (Sporcic, 2024a).

Species Category	**TAC setting approach**
Depleted	Subject to an annual incidental bycatch TAC. Rebuilding strategy to be developed.

<table>
<tr><td rowspan="4">Catch and TAC (t)</td><td>SESSF Fishing Year</td><td>Agreed TAC</td><td>TAC after unders/overs</td><td>Commonwealth Retained Catch</td></tr>
<tr><td>2024-25</td><td>50</td><td>50</td><td>-</td></tr>
<tr><td>2023-24</td><td>50</td><td>50</td><td>32</td></tr>
<tr><td>2022-23</td><td>20</td><td>65</td><td>36</td></tr>
<tr><td rowspan="4">Economics (Secondary) Commonwealth Trawl and Scalefish Hook</td><td>Financial Year</td><td>Species GVP ($m)</td><td>Fishery GVP ($m)</td><td>% Fishery GVP</td></tr>
<tr><td>2022-23</td><td>0.17</td><td>65.88</td><td>0.26</td></tr>
<tr><td>2021-22</td><td>0.39</td><td>80.00</td><td>0.49</td></tr>
<tr><td>2020-21</td><td>0.33</td><td>64.00</td><td>0.52</td></tr>
<tr><td>ABARES Status (2024 report) Eastern Zone</td><td colspan="2">Fishing mortality: Subject to overfishing</td><td colspan="2">Biomass: Overfished</td></tr>
<tr><td>ABARES Status (2024 report) Western Zone</td><td colspan="2">Fishing mortality: Not subject to overfishing</td><td colspan="2">Biomass: Not overfished</td></tr>
<tr><td>Climate Sensitivity
High</td><td colspan="4"> 
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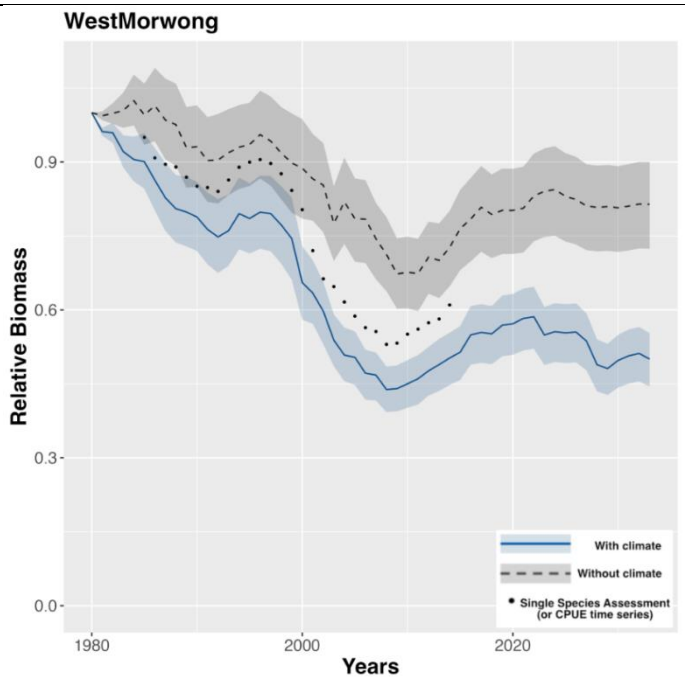


Atlantis modelling suggests that climate change has a major influence on the biomass of Jackass morwong and is contributing to a much lower biomass than would have occurred otherwise, particularly in the east.

Assessment summary

Key Model technical assumptions/parameters	West (2018) Single sex model and single stock in Zones 40 and 50 One fleet: trawl Natural mortality (M) fixed at 0.15 (agreed by SERAG) Recruitment is estimated from 1989 to 2012 East (2021) Single sex model and single stock in Zones 10, 20 and 30 Six fleets: eastern trawl (Zones 10 and 20), Danish seine, Tasmanian trawl (Zone 30), steam trawl (1915-1961), early Danish seine (1929-1967), Mixed (DS + trawl) (1968-1985). Natural mortality fixed at 0.15 (agreed by SERAG) Recruitment is estimated from 1945 to 2015.
Significant Changes to data inputs	There were no significant changes to data inputs from the 2018 assessment.
Assessment results and RAG comments	West The 2015 Tier 1 assessment (Tuck et al, 2015) estimated a 2016 spawning stock biomass of 69%B0. The 2018 assessment estimated the biomass had fallen below the target reference point between 2006 and 2014, increasing to a 2019 spawning stock biomass of 68%B0. The initial western stock assessments were considered “preliminary” and then later classified as “increasingly uncertain” with concerns expressed about

	limited sampling effort, unrepresentative sampling, conflict between different data sources (highlighting potential unrepresentative sampling), very low catches and problematic retrospective patterns (Day et al, 2021). The results should be treated with considerable caution due to the limited data quality and quantity. SERAG (Oct 2021) noted there were no concerns in the few available indicator data, and on the basis that there had been very little recent catch, there was no reason to deviate from the previous management advice. East Bridging from 2018 assessment: estimates of absolute and relative spawning biomass in the early part of the time series were revised downwards, especially during the step where recruitment deviations were extended from 2015 to 2018, and the projected increase in biomass from 2015-2019 in the 2018 assessment now shows a flat to declining trend in the same time period. Recruitment has been below the long-term average since 2004. There has been a downward revision to the recruitment estimates from the 2018 assessment for the period 1998-2012, and the recruitment deviations in 2013 and 2014 are the lowest on record. The 2018 assessment estimated biomass trajectory has an increase at the end of the series, which has been revised down in the 2021 assessment. The fit to the CPUE at the end of the series in the 2021 assessment is better than it was in the 2018 assessment. SERAG agreed to project low recruitment (from 2016 onwards) in the base case (a 'low recruitment base case'), on the basis that recruitment has been below average for the last 12 years in which it was estimated (2004-2015), and that projections should be based on a low recruitment scenario using the mean recruitment deviation of the most recent 10 years (2006-2015). Retrospective analyses show the estimated value of virgin biomass declines as each year of recent data is added to the model, as do recruitment deviations. There appears to have been a steady decline in productivity since around 1990, suggesting the 'stepped' shift in productivity accepted in 2011 was inappropriate. Under a dynamic B0, stock status first drops below B48 in the late 60's and is just above the limit reference point in 2020. Under static B0, the stock status dropped below the target in 2003 and has been below the limit reference point since 2013. Under the 'low recruitment' base case, the time series of relative spawning biomass has shifted lower in recent years with a minimum stock status of 14% in 2020, which was projected to be 36% from the 2018 assessment, however this was based on average recruitment, which has proven to be optimistic. The stock is estimated to be 15% in 2022. See projected rebuild timeframes under 'projected biomass' below. SERAG considered a companion species analysis which investigated the link between target species catch and the associated level of unavoidable bycatch of recovering species, incorporating a range of factors such as area, depth fished and gear type – also known as métiers. Using logbook data from 2019 and 2020, and expected 2022-23 TACs for the main companion species (mostly flathead), the estimated unavoidable bycatch of eastern jackass

	morwong for 2022 ranged between 100-118 t, depending on assumed catches of flathead. The eastern stock is assessed to be below the limit reference point, and SERAG recommended a 0 t RBC, consistent with the requirements of the SESSF Harvest Strategy. Noting the requirement in the Commonwealth Harvest Strategy Policy to rebuild a stock to the limit reference point within TMIN (the minimum time that would be taken to rebuild in the absence of any commercial fishing), or up to 2xTMIN after assessing the trade-off between costs and benefits of alternative recovery trajectories, SERAG recommended restricting total mortality to 50 t. Recovery projections are based on landed catches of 50 t with discards estimated to be 2.5 t in addition to landed catch. This is consistent with the requirement under the HSP to rebuild the stock to the limit reference point within ten years ($2xT_{MIN}$). A métier analysis was not completed in 2022 because fishing effort will be impacted by closures and the structural adjustment. In the absence of a métier analysis, SERAG (2022) considered a bycatch TAC of 60 t would be sufficiently low to allow some catch in the west, while constraining catches in the east. SERAG (Nov 2023) noted that additional trawl closures, the buyback of trawl boat SFRs, and changes to Danish seine gear in 2023, while beneficial to depleted shelf species, will have a significant impact on the key index of abundance (CPUE) for these species and make it difficult to evaluate the effectiveness of these (and other) conservation measures contained in the relevant rebuilding strategies.

RAG Recommendations

SERAG (Oct 2024) recommended maintaining the incidental bycatch TAC of 50 t for Jackass Morwong during the 2025–26 season on the basis that there is no new information that indicates a need to change the TAC.

RBC (t)	0 t	The RBC is set at zero for all depleted species.
Discount Factor (t)	N/A	SERAG did not recommend applying a discount factor on the basis that an incidental bycatch TAC in the east will require a global TAC well below the western RBC.
State catch (t)	East = 9.2 West = 0.3	Four-year (2019–2022) weighted average state catch - mostly NSW from. These are not deducted from the Commonwealth bycatch TAC but should be considered as a source of total mortality.
Discards (t)	N/A	Modelled discards in the east depend on the level of catch permitted under an incidental bycatch TAC. Discards in 2024 are estimated to be 2.4 t under an incidental bycatch TAC of 50 t (total mortality of 52.5 t), and 5.1 t under 100 t (total mortality of 105.1 t).

Recreational Catch (t)	N/A	A recreational survey in 2000 estimated that a total of 294 t of jackass morwong was caught across NSW, Victoria, Tasmania, SA and WA. A survey in 2013 estimated Tasmanian catches of 18 t. There have been no additional surveys and recreational catches are not considered in the assessment.
RCA (t)	N/A	There has been no specific research catch allocated.
Provisional TAC under the Harvest Strategy		50 t – incidental bycatch TAC

AFMA Advice

AFMA Management recommends an annual incidental bycatch TAC of 50 t for Jackass Morwong during the 2025–26 season with no overcatch or undercatch provisions and a determined amount of 2 t.

MAC Recommendations

Commercial fishers' interest	
Species specific management (target, companion, and bycatch)	
MAC advice and any dissenting views	

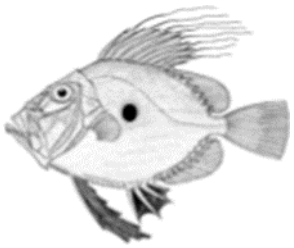
Undercatch (%)	Overcatch (%)	Determined amount (t)	TAC (t)

Final agreed TAC

2024-25 agreed TAC (t)	2025-26 recommended TAC (t)	Overcatch and undercatch (%)	Determined amount (t)	Change in TAC (t)
50				

John Dory

Zeus faber



Species Summary

Stock Assessment	Last assessed as a Tier 4 by SERAG in 2021.				
Stock Structure	For management purposes, a single stock is assumed for the SESSF.				
Stock status against reference points (C_{Lim}/C_{Targ})	**Tier**	**Assessment Year**	**$CPUE_{Recent}$**	**$CPUE_{Target}$**	**$CPUE_{Limit}$**
	4	2021	0.4695	1.464	0.7320
	-	2020	N/A – Weight of evidence		
	3	2017	F_{CUR} = 0.036	F_{MSY} = 0.126	F_{LIM} = 0.198
Stock trend and other indicators	Catches and catch rates have declined since the early part of the time series – 1970. The status of the stock during the default reference period is uncertain for the purpose of estimating a current depletion level, however standardised catch rates show a continued long-term decline. The CPUE fluctuated around the limit reference point between 2002 and 2009 and has been below the limit since 2010. Zone 10-20 – Standardised CPUE has been below the long-term average since 1997. Also, there has been a gradually declining trend since at least 1996, with a small increase in CPUE in the last three years relative to 2019, but with a marked increase in the 2022 CPUE. The total catch in 2023 is the lowest in the series. (Sporcic, 2024a).				
Species Category Depleted	**TAC setting approach**				
	Subject to an annual incidental bycatch TAC. Rebuilding strategy to be developed.				
Catch and TAC (t)	**SESSF Fishing Year**	**Agreed TAC**	**TAC after unders/overs**	**Commonwealth Retained Catch**	
	2024-25	60	60	-	
	2023-24	60	60	39	
	2022-23	60	60	43	
Economics (Secondary) Commonwealth Trawl and Scalefish Hook	**Financial Year**	**Species GVP ($m)**	**Fishery GVP ($m)**	**% Fishery GVP**	
	2022-23	0.39	65.88	0.60	
	2021-22	0.23	80.00	0.29	
	2020-21	0.58	6400	0.91	

ABARES Status (2024 report)	Fishing mortality: Uncertain	Biomass: Overfished
Climate Sensitivity Medium	Preliminary projections indicate (with low-medium confidence) a 40% decline in abundance through to 2040.	
Assessment summary		
Key Model technical assumptions/parameters	The Tier 4 assessment assumes there is a linear relationship between standardised CPUE and exploitable biomass, and that the character of the estimated CPUE has not changed significantly since the reference period to the end of the most recent year. The assessment assumes the biomass was around the target reference point proxy of 48%B during the reference period 1986-1995. The average of discard rate estimates from 1998-2006 have been used to backfill discard proportion estimates pre-1998. This is consistent with estimates that NSW DPI have on record. Forward fill missing discards in the time series repeating 2019 discard data in 2020. The catch time series used was derived in Sporcic and Day (2021), which incorporated the July 2021 revised NSW estimates and was endorsed by SERAG (28-29 September 2021) (Sporcic, 2021d).	
Significant Changes to data inputs	This is the first Tier 4 completed for this species.	
Assessment results and RAG comments	Based on the results of the 2020 catch-MSY and SPM assessment for 1970 – 2019, and assuming that productivity has remained unchanged over the history of the fishery, the John dory stock is estimated to have been at a 40%B0 target in about 1985 (catch-MSY) or 1990 (SPM). This would indicate that the conventional reference period for SESSF Tier 4 assessments of 1986-1992 could be appropriate, assuming that productivity has not changed (Penney, 2020). SERAG (Oct 2021) considered a Tier 4 assessment (Sporcic, 2021d) for the purpose or providing RBC advice for the 2022-23 fishing year and noted the following: • The recent CPUE (0.4695) is below the CPUE limit (0.732) and has been since 2010 on the basis of the Tier 4 assessment. • There was insufficient catch in zone 30 to inform a revised CPUE series to account for the suspected southerly shift in catch. • John dory discards were estimated to be 8 t in 2020. • The dynamics of the fishery have changed over time and John dory are not a targeted component of the fishery. SERAG considered the 'alternative' CPUE series (requested by SESSFRAG) which excluded catch and effort from boats that are no longer a major part of the fishery – this made very little difference to the CPUE series. SERAG noted that the application of the default reference period and assumed stock status (48%B0 during the period 1986-92) assumes there has been no change in productivity. There is the potential for a change in productivity, in which case the CPUE series would be compromised,	

	however there is little current evidence to support this and the RBC advice should be based on the outputs of the Tier 4 assessment. On the basis of the outputs of the Tier 4 assessment, SERAG recommended an RBC of 0 t. SERAG noted it is unlikely that fishing is driving the decline in abundance, and as a non- targeted species, total mortality is unlikely to be constrained by TACs. SERAG (Nov 2021) considered a companion species analysis which investigated the link between target species catch and the associated level of unavoidable bycatch of recovering species. The analysis incorporated a range of factors such as area, depth fished and gear type – also known as métiers. Using logbook data from 2019 and 2020, and expected 2022-23 TACs for the main companion species (trawl caught flathead) the estimated unavoidable bycatch of John dory for 2022 is 61.3 t, with a range between 56.5 and 66.4 t. This is close to the 60 t MSY value from the 2020 Surplus Production model. SERAG (Nov 2022) noted the absence of a métier analyses to inform bycatch TACs due to the impending significant structural changes and did not recommend any changes to the bycatch TAC. SERAG (Nov 2023) noted that additional trawl closures, the buyback of trawl boat SFRs, and changes to Danish seine gear in 2023, while beneficial to depleted shelf species, will have a significant impact on the key index of abundance (CPUE) for these species and make it difficult to evaluate the effectiveness of these (and other) conservation measures contained in the relevant rebuilding strategies.

RAG Recommendations

SERAG (Oct 2024) recommended maintaining the incidental bycatch TAC of 60 t for John Dory during the 2025–26 season on the basis that there is no new information that indicates a need to change the TAC.

RBC (t)	0 t	The RBC is set at zero for all depleted species.
Discount Factor (t)	N/A	A discount factor is not applied to the bycatch TAC.
State catch (t)	4.2	Four-year weighted average – mostly NSW catch. State catches are not deducted from a bycatch TAC but should be considered as a source of mortality.
Discards (t)	5	Four-year weighted average. Discards are not deducted from a bycatch TAC but should be considered as a source of mortality.
Recreational Catch (t)	N/A	There are no estimates of recreational catch.
RCA (t)	N/A	There has been no specific research catch allocated.
Provisional TAC under the Harvest Strategy		60 t – incidental bycatch TAC

AFMA Advice

AFMA Management recommends an annual incidental bycatch TAC of 60 t for John Dory during the 2025–26 season with no undercatch or overcatch provisions and a determined amount of 2 t.

MAC Recommendations			
Commercial fishers' interest			
Species specific management (target, companion, and bycatch)			
MAC advice and any dissenting views			
Undercatch (%)	**Overcatch (%)**	**Determined amount (t)**	**TAC (t)**

Final agreed TAC				
2024-25 agreed TAC (t)	**2025-26 recommended TAC (t)**	**Overcatch and undercatch (%)**	**Determined amount (t)**	**Change in TAC (t)**
60				

Mirror Dory

Zenopsis nebulosus

<table>
<tr><th colspan="6">Species Summary</th></tr>
<tr><td>Stock Assessment</td><td colspan="5">Tier 4 Species – last assessed by SERAG in 2024.</td></tr>
<tr><td>Stock Structure</td><td colspan="5">An eastern and western stock is currently assumed for assessment purposes. However, Mirror Dory is managed under a global TAC.</td></tr>
<tr><td rowspan="4"><u>East</u>
Stock status against reference points
(C_{Lim}/C_{Targ})</td><td>Tier</td><td>Assessment Year</td><td>$CPUE_{Recent}$</td><td>$CPUE_{Target}$</td><td>$CPUE_{Limit}$</td></tr>
<tr><td>4</td><td>2024</td><td>1.0218</td><td>1.1657</td><td>0.4857</td></tr>
<tr><td>4</td><td>2023</td><td>0.8759</td><td>1.1686</td><td>0.4869</td></tr>
<tr><td>4</td><td>2022</td><td>0.7170</td><td>1.1842</td><td>0.493</td></tr>
<tr><td rowspan="4"><u>West</u>
Stock status against reference points
(C_{Lim}/C_{Targ})</td><td>Tier</td><td>Assessment Year</td><td>$CPUE_{Recent}$</td><td>$CPUE_{Target}$</td><td>$CPUE_{Limit}$</td></tr>
<tr><td>4</td><td>2024</td><td>0.8568</td><td>1.0196</td><td>0.4248</td></tr>
<tr><td>4</td><td>2023</td><td>0.733</td><td>1.0219</td><td>0.4258</td></tr>
<tr><td>4</td><td>2022</td><td>0.6374</td><td>1.0244</td><td>0.4268</td></tr>
<tr><td>Stock trend and other indicators</td><td colspan="5">Zones 10 - 30 exhibits large scale, apparently cyclical changes in CPUE. It appears that as catches decline so does CPUE, and as catches increase so does the CPUE. This is unexpected as the intensity of fishing is usually expected to be negatively correlated with CPUE. It may be the case that catches and CPUE change relative to availability of the stock rather than the influence of the fishery on the stock. Better evidence is needed to make such an assertion with confidence. Over the period when CPUE was lower than average (about 1995 - 2004) there was an increase in small shots of < 30 kg, which is suggestive of either low availability or high levels of small fish. Standardised CPUE has declined on average from 2009 to 2016. It differs from unstandardised CPUE early in the fishery (1986 - 1990), in the second half of the fishery (2000 - 2007), over the 2014 - 2017 period and over the last five years. The most recent changes appear strongly correlated with changes in the average depth of fishing with a shift to more relatively shallow water fishing, compared to the second half of the fishery. Standardised CPUE increased in 2023 relative to the previous year and has been below the long-term average and relatively stable for the past six years. The recorded catch of 52.7 t from the east in 2023 has increased compared to the previous year. (Sporcic, 2024a).

Zones 40-50 – Mirror Dory catches in the west appear to be episodic with peaks in 1997, 2001 - 2003, and 2010 and 2011, which roughly coincides with minor peaks in CPUE in a manner similar to that observed in the east, although with a more rapid cycle and less extreme variation. There has been an increase of reported catches in waters of 200 m, relative to the start of the series, which is unusual for Mirror Dory in the west. The</td></tr>
</table>

<table>
<tr><td></td><td>statistical model fit is very good with the deviations at the extremes in the qqplot being made up of far less than 5% of records at each end.

The amount of catch remains minor until about 1995 (Table 27) after which the amount of catch and the number of records remains at levels that permit usable analyses, with relatively tight precision levels around the mean estimates to be made. From 1990 the CPUE trend for Mirror Dory in the west appears to be relatively periodic and noisy around the long-term average with periods above and below. The 2023 estimated standardised CPUE has exceeded the long-term average, the first time since 2010. (Sporcic, 2024a).</td></tr>
<tr><td>Species Category
MYTAC species</td><td>TAC setting approach
Mirror Dory has historically been managed through a single year TAC but may move to a two-year MYTAC subject to Commission determination.</td></tr>
<tr><td>Catch and TAC (t)</td><td>
<table>
<tr><th>SESSF Fishing Year</th><th>Agreed TAC</th><th>TAC after unders/overs</th><th>Commonwealth Retained Catch</th></tr>
<tr><td>2024-25</td><td>182</td><td>185</td><td>-</td></tr>
<tr><td>2023-24</td><td>121</td><td>130</td><td>122</td></tr>
<tr><td>2022-23</td><td>129</td><td>140</td><td>94</td></tr>
</table>
</td></tr>
<tr><td>Economics (Secondary) Commonwealth Trawl and Scalefish Hook</td><td>
<table>
<tr><th>Financial Year</th><th>Species GVP ($m)</th><th>Fishery GVP ($m)</th><th>% Fishery GVP</th></tr>
<tr><td>2022-23</td><td>0.47</td><td>65.88</td><td>0.71</td></tr>
<tr><td>2021-22</td><td>0.13</td><td>80.00</td><td>0.16</td></tr>
<tr><td>2020-21</td><td>0.50</td><td>64.00</td><td>0.78</td></tr>
</table>
</td></tr>
<tr><td>ABARES Status (2024 report)</td><td>Fishing mortality: Not subject to overfishing</td><td>Biomass: Not overfished</td></tr>
<tr><td>Climate Sensitivity
Medium</td><td>Preliminary projections indicate (with medium confidence) a 15% decline in abundance through to 2040.</td></tr>
<tr><td colspan="2">Assessment summary</td></tr>
<tr><td>Key Model technical assumptions/parameters</td><td>The Tier 4 assessment assumes there is a linear relationship between catch rates and exploitable biomass, and that the character of the estimated catch rates has not changed significantly since the reference period to the end of the most recent year.</td></tr>
<tr><td>Significant Changes to data inputs</td><td>The Mirror Dory east Tier 4 assessment used mean discard estimates from years where data exists (over the 1998-2020 period) to backfill discard estimates (1986-1997). The same average discard estimates will be used to forward fill any missing years (i.e. 2011-2014, 2016 and 2018).</td></tr>
</table>

Assessment results and RAG comments	East The increase in RBC of approximately 103 t, a 38% increase from the year prior, can be mostly attributed to an increase in the most recent four-year average CPUE (including discards) which was used to calculate RBC. The RAG (Nov 2024) noted the discard estimates used in the eastern assessment are high. Industry members noting there are significant catches of Mirror Dory being constrained by quota availability. West The increase in RBC of approximately 31 t, a 40.98% increase from the year prior, can be mostly attributed to an increase in the most recent four-year average CPUE which was used to calculate the RBC.

RAG Recommendations

SERAG (Nov 2024) recommended a combined RBC of 480 t (107.60 t West + 372.92 t East) for Mirror Dory during the 2025–26 season, as the first year of a two-year TAC period.

	Year	RBC (t)		RBC arrangements
RBC (t)	2026	East: 372.92 West: 107.60	Total: 480.52	Static two-year RBC of 481 t
	2025	East: 372.92 West: 107.60	Total: 480.52	
Discount Factor (t)	72	The default Tier 4 discount factor of 15 per cent is applied.		
State catches (t)	East: N/A West: N/A	There are no estimates of State catches for Mirror Dory (east or west).		
Discards (t)	East: 75.2 West: 1.3	Discards are considered low for the west and are not included in the Tier 4 assessment. Estimated discards in the east decreased to 75.23 t in the 2024 assessment compared to 92.1 t in 2023. These discard estimates result in an increase to the 4-year weighted average discard estimate that is deducted from the RBC.		
Recreational Catch (t)	N/A	Recreational catches are not considered in assessment and are assumed to be low.		
RCA(t)	N/A	There has been no specific research catch allocated.		
Provisional TAC under the Harvest Strategy		The TAC of 334 t from the 2024 assessments (481 t RBC - 72 t discount - 75 t discards) exceeds the current TAC (of 182 t) by more than 50%. Application of the large change limiting rule produces a TAC of 273 t.		

AFMA Advice

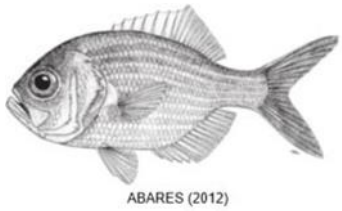
AFMA management recommends a TAC of 273 t for Mirror Dory during the 2025–26 season, as the first year of a two-year TAC period, with overcatch and undercatch provisions set at 10 per cent, and a determined amount of 2 t.

MAC Recommendations			
Commercial fishers' interest			
Species specific management (target, companion, and bycatch)			
MAC advice and any dissenting views			
Undercatch (%)	**Overcatch (%)**	**Determined amount (t)**	**TAC (t)**

Final agreed TAC				
2024-25 agreed TAC (t)	**2025-26 recommended TAC (t)**	**Overcatch and undercatch (%)**	**Determined amount (t)**	**Change in TAC (t)**
182				

Redfish

Centroberyx affinis


ABARES (2012)

Species Summary

Stock Assessment	Tier 1 Species - last assessed by SERAG in 2020
Stock Structure	No formal stock discrimination studies have been conducted in Australia. Tagging studies suggested a single unit stock of redfish off NSW. Previous studies of mean length at age suggest differences in growth rates between the 'northern' and 'southern' sectors of the fishery off eastern Australia. The boundary being Latitude 36°S (just north of Montague Island).

Stock status against reference points $\%B_0$ in year +1)

Tier	Assessment Year	Biomass (from assessment year)	Biomass (revised in most recent assessment)	Target	Limit
1	2020	4	4	48	20
1	2017	8	3		
1	2014	12	2		

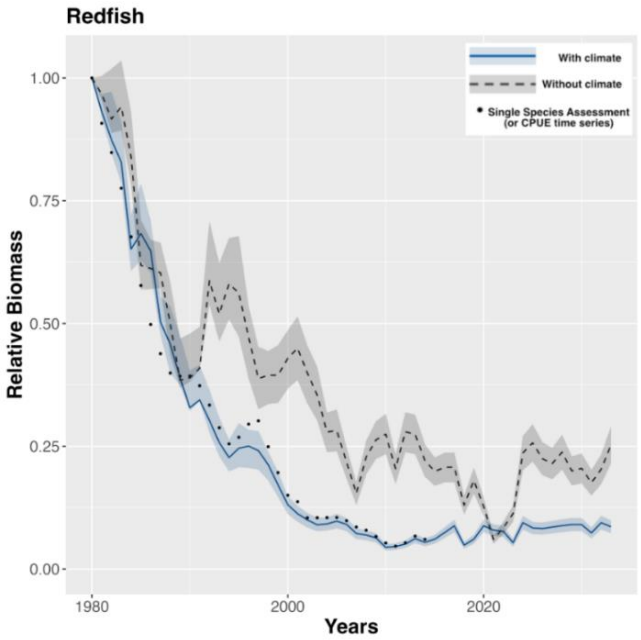
Stock trend and other indicators	The 2020 Tier 1 assessment estimates a slightly larger absolute spawning biomass compared to the 2017 assessment. However the relative spawning biomass has decreased from 7.8%B0 to 3.8%B0. Zones 10-20 – Annual standardised CPUE has declined since 1994 (relative to the previous year) and has been below average since 2000 (Figure 100). There have been minimal increases in four of the last five years. (Sporcic, 2024a).
Species Category Depleted	**TAC setting approach** Annual bycatch TAC set in accordance with the Redfish Stock Rebuilding Strategy.

Catch and TAC (t)

SESSF season	Agreed TAC	TAC after unders/overs	Clth Retained Catch
2024-25	30	30	-
2023-24	30	30	14
2022-23	30	30	17

Economics (Secondary) Commonwealth Trawl and Scalefish Hook

Financial Year	Species GVP ($m)	Fishery GVP ($m)	% Fishery GVP
2022-23	0.13	65.88	0.20
2021-22	0.22	80.00	0.28
2020-21	0.16	64.00	0.25

ABARES Status (2024 report)	Fishing mortality: Uncertain	Biomass: Overfished
Climate Sensitivity **Medium**	 Atlantis modelling suggests that both fishing and climate change have influenced the state of the stock. Climate change has a moderate influence on the biomass of Redfish and is contributing to a lower biomass than would have occurred otherwise.	

Assessment summary

Key Model technical assumptions/parameters	Two sex, single stock in two regions; NSW and East Bass Strait. Steepness is fixed at 0.75. Natural mortality (M) estimated at 0.075 (range 0.066 - 0.083) Recruitment deviations are estimated to 2015. The previous assessment (2017) estimated two selectivity patterns, one for onboard data and another for port, with one retention function. The current assessment structure only estimates one selectivity pattern for both NSW and eastern Bass Strait. The current assessment estimates two retention functions, one for each region to allow for differences in discard practices between each region.
Significant Changes to data inputs	There were no significant changes to data inputs other than the standard inclusion of revised catch, CPUE, discards and biologicals.
Assessment results and RAG comments	Length composition data is missing for the period 1993–1998 which has been filtered out in the data processing due to missing length type and location information Fits to CPUE: Fitting to two separate catch rate indices results in similar fits to NSW catch rates as in the 2017 assessment, while also fitting to the eastern Bass Strait index.

	Recruitment: The model estimates above average recruitment in 2013, returning to below average recruitment in 2014 and 2015 and addresses the retrospective pattern revising recruitment deviations down with the inclusion of additional years of data. Biomass Estimate: The new model structure reduces uncertainty in the biomass estimate in the early part of the time series, and results in a lower estimate of absolute and relative biomass. Likelihood profiles: Natural Mortality (*M*) – the likelihood profile suggests a range of values from 0.066 - 0.083, with the most likely value 0.075. Steepness (*h*):There is little information in the model that can inform estimation of *h* and it is fixed at 0.75 in the model. SS_{B2019} - the likelihood profile suggests that the model estimates depletion in 2019 with high certainty, between 2% and 4.75% of unfished levels. Fixed catch projections from the 2020 Tier 1 assessment suggested there is three years difference in expected rebuilding timeframes for catches of 0 t, 50 t or 100 t under average recruitment, and five years between catch scenarios under a low recruitment scenarios (see Projected Biomass, Fig 18). However, catch projections should be treated with caution given the limited recovery of this species observed to date (Figure 16). SERAG (Nov 2020) considered a companion species analysis which investigated the link between target species catch and the associated level of unavoidable bycatch of recovering species. The analysis incorporated a range of factors such as area, depth fished and gear type – also known as metiers. Using logbook data from 2018 and 2019, and expected 2021-22 TACs for the main companion species, the estimated unavoidable bycatch of Redfish for 2021 is 32.2 t, with a range between 26.7 and 38.7 t. SERAG (November 2021) noted that the majority of catch is taken off the east coast of NSW, and there has been no apparent shift distribution. There are two boats which have consistently caught redfish in high amounts, relative to other boats in the fleet, and a third boat has appeared in 2020 and has caught more than any other boat in recent years – this may be evidence of targeting. SERAG (Nov 2022) noted there was no metier analyses being presented at this meeting as they rely on fishing activity as a predictor of catches for next year. SERAG (Nov 2023) noted that additional trawl closures, the buyback of trawl boat SFRs, and changes to Danish seine gear in 2023, while beneficial to depleted shelf species, will have a significant impact on the key index of abundance (CPUE) for these species and make it difficult to evaluate the effectiveness of these (and other) conservation measures contained in the relevant rebuilding strategies. The RAG also noted that AFMA has begun to collect tissue samples from Redfish for CKMR analysis (to estimate population size).

RAG Recommendations

SERAG (Oct 2024) recommended maintaining the incidental bycatch TAC of 30 t for Redfish during the 2025–26 season on the basis that there is no new information that indicates a need to change the TAC.

RBC (t)	0	The RBC is set at zero for all depleted species.
Discount Factor (t)	N/A	Discount factors are not applied to Tier 1 assessments.
State catch (t)	7.3	State catches are not deducted from the bycatch TAC but are considered as part of the annual review of the rebuilding strategy each year. The four-year (2020-2023) weighted average catch for the states is 7.3 t.
Discards (t)	N/A	Discards are modelled in the Tier 1 assessment but are not deducted from the bycatch TAC. The estimate for 2025 is 17.1 t.
Recreational Catch (t)	N/A	There are no estimates of recreational catch.
RCA(t)	N/A	There has been no specific research catch allocated.
Provisional TAC under the Harvest Strategy		30 t – incidental bycatch TAC

AFMA Advice

AFMA Management recommends an incidental bycatch TAC of 30 t for Redfish during the 2025–26 season with no undercatch or overcatch provisions and a determined amount of 2 t.

MAC Recommendations

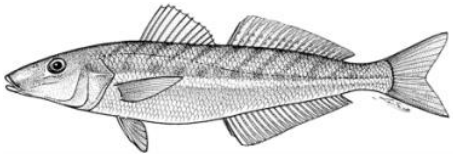
Commercial fishers' interest	
Species specific management (target, companion, and bycatch)	
MAC advice and any dissenting views	

Undercatch (%)	Overcatch (%)	Determined amount (t)	TAC (t)

Final agreed TAC

2024-25 agreed TAC (t)	2025-26 recommended TAC (t)	Overcatch and undercatch (%)	Determined amount (t)	Change in TAC (t)
30				

School Whiting



Sillago flindersi

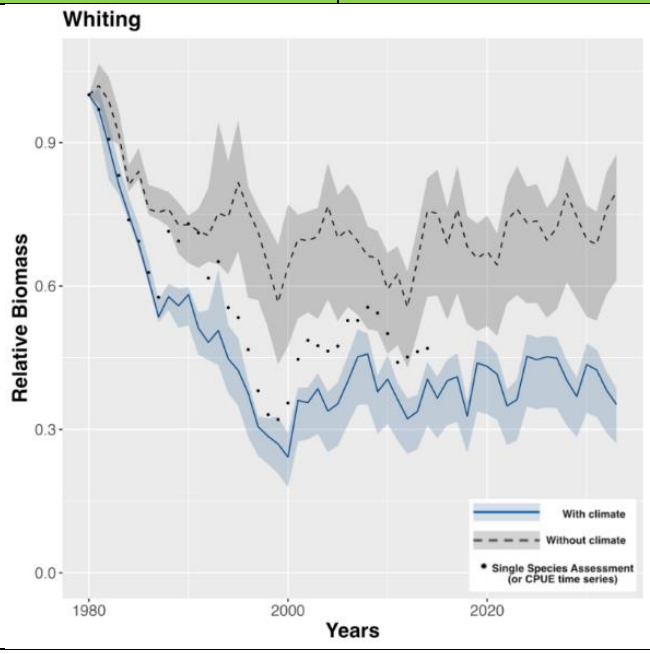
Species Summary

Stock Assessment	Tier 1 Species - Last assessed by SERAG in 2024
Stock Structure	Eastern school whiting is currently managed as a single stock from western Victoria, around Tasmania and along the east coast of Australia to southern Queensland. Dixon et al. (1986, 1987) report a discontinuity in the relatedness between samples observed between Forster and Coffs Harbour, which may indicate some degree of separation between the fish from northern and southern NSW. FRDC 2019-030 project demonstrated that School Whiting form a single stock on the east coast of mainland Australia and in Bass Strait (Hall et al. 2024). While there is some evidence of stock separation with the east coast of Tasmania, catches of School Whiting are low in this area (zone 30).

Stock status against reference points ($\%B_0$ in year +1)

Tier	Assessment Year	Biomass (from assessment year)	Biomass (revised in most recent assessment)	Target	Limit
1	2024	54	54	48	20
1	2020	41	41		
1	2017	47	36		

Stock trend and other indicators	Annual standardised CPUE in the base case assessment varies among the fleets in the assessment, with the difference primarily associated with location. Standardised CPUE for the two Commonwealth fleets was sourced from Sporcic (2024), while CPUE for NSW fleets was standardised by Karina Hall (NSW DPI) using similar methods to Sporcic (2024). The recent standardised CPUE for Victorian Danish seine, which operates predominately in Bass Strait (zone 60), declined around 50% from 2014–2020, reaching its lowest recorded level. Standardised CPUE increased in 2021, before declining to be just above the 2020 value in 2023. The Commonwealth trawl fleet operates predominately in Commonwealth waters off southern NSW, eastern Victoria and northern Tasmania (zones 10 and 20). Its standardised CPUE increased rapidly over the past decade to be four times higher in 2023 than it was in 2013. A similar trend in standardised CPUE was observed for the NSW southern trawl fleet, that operates in NSW State waters south of Barrenjoey (Sydney, zone 10). Its standardised CPUE also increased around four times over 2013–2023. The two other NSW fleets with CPUE indices (northern trawl and prawn trawl), operating in NSW State waters north of Barrenjoey (zone 91) all experienced relatively variable, but generally flat standardised CPUE over the past decade.

<table>
<tr><td></td><td>The assessment is unable to simultaneously fit to the separate trends in CPUE observed in Bass Strait, southern NSW and northern NSW. The base case assessment fits more closely to the Victorian Danish seine CPUE, which is declining, so in this respect the assessment is more precautionary than if it were to fit to the Commonwealth trawl and NSW southern trawl CPUE. The discrepancy between the CPUE series was the main motivation to consider separate NSW and Victorian assessment models.</td></tr>
<tr><td>Species Category
MYTAC species</td><td>TAC setting approach
The current season (2024–25) is the fourth year of a three-year MYTAC</td></tr>
<tr><td>Catch and TAC (t)</td><td>
<table>
<tr><th>SESSF season</th><th>Agreed TAC</th><th>TAC after unders/overs</th><th>Cth Retained Catch</th></tr>
<tr><td>2024-25</td><td>914</td><td>998</td><td>-</td></tr>
<tr><td>2023-24</td><td>914</td><td>998</td><td>259</td></tr>
<tr><td>2022-23</td><td>917</td><td>1,004</td><td>399</td></tr>
</table>
</td></tr>
<tr><td>Economics (Primary) Commonwealth Trawl and Scalefish Hook</td><td>
<table>
<tr><th>Financial Year</th><th>Species GVP ($m)</th><th>Fishery GVP ($m)</th><th>% Fishery GVP</th></tr>
<tr><td>2022-23</td><td>1.44</td><td>65.88</td><td>2.20</td></tr>
<tr><td>2021-22</td><td>7.48</td><td>80.00</td><td>9.35</td></tr>
<tr><td>2020-21</td><td>2.22</td><td>64.00</td><td>3.47</td></tr>
</table>
</td></tr>
<tr><td>ABARES Status (2024 report)</td><td>Fishing mortality: Not subject to overfishing | Biomass: Not overfished</td></tr>
<tr><td>Climate Sensitivity
Medium</td><td> 
</td></tr>
</table>

	Atlantis modelling suggests that climate change has a moderate influence on the biomass of Whiting and is contributing to a lower biomass than would have occurred otherwise.
Assessment summary	
Key Model technical assumptions/parameters	The 2024 base case assessment of School Whiting uses an age and size structured model implemented in the generalised stock assessment software package, Stock Synthesis (SS) (Version 3.30.22.01). The base case assumes School Whiting forms a single stock across south eastern Australia (zones 10–60 and 91). The vast majority of catches are taken in zones 10, 20, 60, 91 and adjacent NSW State waters. The stock assumed to be unexploited at the start of 1942, as catches prior to this time are thought to have been minimal. Six fishing fleets are modelled: 1. Victorian Danish seine: Danish seine vessels operating in eastern Victoria, Bass Strait and Tasmania (1947–2023). 2. Commonwealth trawl: Commonwealth otter trawlers operating in south eastern Australia (1947–2023). 3. NSW Danish seine: Danish seine vessels operating in NSW regulated waters (1942–1994, 2010–2023). 4. NSW northern trawl: otter trawlers operating in NSW regulated waters north of the Barrenjoey (Sydney, 1942–2023). 5. NSW prawn trawl: prawn trawlers targeting Eastern King Prawns (*Melicertus plebejus*) in NSW state waters north of Barrenjoey (Sydney, 1942–2023). 6. NSW southern trawl: otter trawlers operating in NSW waters south of Barrenjoey (Sydney, 1942–2023). The population plus-group is modelled at age 9 years. Recruitment to the stock is assumed to follow a Beverton-Holt stock recruitment relationship, parameterised by the average recruitment at unexploited spawning biomass, R_0, and the steepness parameter, h. Steepness for the base case is pre-specified to be 0.75. The parameter determining the magnitude of the process error in annual recruitment, σ_R, is set to 0.7. Growth is assumed to follow the von Bertalanffy growth equation and is estimated within the assessment separately for both sexes combined. Natural mortality (M) is pre-specified within the assessment to be 0.6.
Significant Changes to data inputs	<u>Maximum Modelled Length</u> The maximum length in the 2020 assessment model was limited to 25 cm, with only a small proportion of School Whiting have been observed to grow larger than this. The 2024 assessment increased the maximum length in the model to 30 cm, resulting is an increase in the estimated growth rate and maximum length (Burch et al. 2024).

	Limiting the maximum length in previous models appears to have impacted the estimation of growth, resulting in biomass estimated to be lower than it would have been had the maximum modelled length been higher (Burch et al. 2024). Time Varying Discarding Time-block discarding for Commonwealth vessels in 2017-2019 to accommodate an increase in observed discards, Industry noted this may be market driven. Change to fleet structure The southern trawl fleet (named Commonwealth trawl in the 2020 assessment) that comprised NSW registered otter trawlers operating in zone 10 (south of Barrenjoey, Sydney) and Commonwealth otter trawlers operating in south eastern Australia (zones 10, 20, 91) was split into separate NSW and Commonwealth fleets. This was done because the southern trawl fleet used discard rate estimates from Commonwealth trawl vessels, however, NSW vessels south of Barrenjoey are estimated to have much lower discard rates (as they are not under quota). Stock Structure While FRDC 2019-030 found little evidence of biological differences across its range, the 2020 review of the School Whiting assessment (Smith, 2020) noted that even if School Whiting formed a single biological stock over south eastern Australia, separating the assessment may still be justified based on differing exploitation patterns. In an attempt to accommodate differences in CPUE trends between the Commonwealth Danish seine and the Commonwealth trawl and NSW southern trawl fleets and following the recommendations of the 2020 Smith review, the 2024 assessment explored separating the combined assessment was subsequently split into complementary NSW and Victorian components (Burch et al. 2024). The complementary assessments retained the same model structure, pre-specified and estimated model parameters as the final combined assessment.
Assessment results and RAG comments	The base case (the final combined assessment) fits reasonably well to the recent CPUE for the Victorian Danish seine fleet and the early and late NSW northern trawl and prawn trawl CPUE, but poorly to the recent Commonwealth trawl and NSW southern trawl CPUE. The failure to fit the Commonwealth trawl and NSW southern trawl CPUE is due to the other CPUE series declining or remaining relatively constant over 2019–2023 and the model not being able to fit both trends simultaneously. Fits to the discards proportions were generally good, with the time-blocks added for the two Commonwealth fleets accommodating the increase in discarding observed from 2017–2019. Fits to aggregated length data and the conditional age-at-length data were relatively good for most fleets. Separating the assessment into complementary NSW and Victorian components led to similar fits to most of the data sources. The exception was the fits to the CPUE data, with the NSW only assessment fitting more closely to the Commonwealth trawl and NSW southern trawl fleets than the combined assessment. The fits of the Victorian assessment were very similar to the combined assessment.

	The combined estimate of SSB_0 for these two complementary assessments is 13,992 t, quite similar to the estimate from the final combined assessment. Trends in spawning biomass and stock status between the final combined assessment and the total of the two complementary assessments are quite similar until 2018 when the combined assessment stabilises at 40–48% SSB_0, over 2020–2024 while the total of the two complementary assessments increases to be 72.0% of SSB_0 at the beginning of 2025 (Burch et al. 2024, Figure 3). This difference appears to be driven by the NSW assessment fitting the increase in recent CPUE of the Commonwealth trawl and NSW southern trawl fleets, fleets which catch a small proportion of the total catch (16–25% of the catches in the NSW assessment for 2009–2023). SERAG accepted the final combined assessment as the base case due to concerns about the NSW only assessment showing an increase in stock status of the NSW assessment to 81% of SSB_0 that was driven by the model was fitting to the Commonwealth trawl and NSW southern trawl Catch Per Unit Effort (CPUE), which takes only a small proportion of the catch, compared to the NSW Danish seine, northern trawl and prawn trawl fleets. SERAG 2024 recommended the 2-year average RBC of 3,024 t (Retained Catch 2,432 t and Discarded Catch 592 t) produced by the combined Tier 1 assessment for School Whiting for the 2025–26 and 2026–27 SESSF seasons.

RAG Recommendations

SERAG (Nov 2024) recommended an RBC of 3,024 t for School Whiting during the 2025–26 season, as the first year of a static two-year RBC.

RBC (t)	**Year**	**RBC (t)**	**RBC arrangements**
	2026	2,961	Static 2-year RBC using the 2-year average from the 2024 assessment
	2025	3,086	
	2-year average	3,024	
Discount Factor (t)	N/A	Discount factors are not applied to Tier 1 assessments	
State catch (t)	764 t (4-year average) (29 t non-NSW)	State catches have declined and averaged 764 t from 2020–2023.	
Discards (t)	592 t (2-year average)	Model estimated discards from the most recent assessment are deducted from the RBC.	
Recreational Catch (t)	N/A	Recreational catch estimates are uncertain, and species (including King George whiting) are not clearly delineated.	
RCA (t)	N/A	There has been no specific research catch allocated	
Provisional TAC under the Harvest Strategy		1,668 t (3024 t RBC – 764 t state – 592 t discard)	

AFMA Advice

AFMA Management recommends a TAC of 1,202 t for School Whiting during the 2025–26 season, as the first year of a two-year TAC period with undercatch and overcatch provisions set at 10 per cent and a determined amount of 2 t.

The above TAC includes the 50:50 catch split with NSW and is calculated by deducting the model estimated discards (592 t) and non-NSW catches (29 t) from the 2-year average RBC (3,024 t) then multiplying by 0.5.

MAC Recommendations

Commercial fishers' interest	
Species specific management (target, companion, and bycatch)	
MAC advice and any dissenting views	

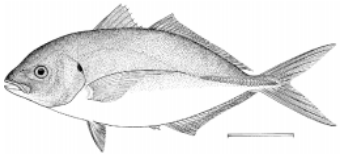
Undercatch (%)	Overcatch (%)	Determined amount (t)	TAC (t)

Final agreed TAC

2024-25 agreed TAC (t)	2025-26 recommended TAC (t)	Overcatch and undercatch (%)	Determined amount (t)	Change in TAC (t)
914				

Silver Trevally

Pseudocaranx georgianus



Species Summary

Stock Assessment	Tier 1 Species – Joint assessment (Commonwealth and NSW DPI) presented to SERAG in 2023
Stock Structure	Preliminary research suggests that the silver trevally off south-eastern Australia consist of a single stock.

Stock status against reference points ($\%B_0$ in year +1)

Tier	Assessment Year	Biomass (from assessment year)	Target	Limit
1	2023	26.7	48	20

Tier	Assessment Year	$CPUE_{Recent}$	$CPUE_{Target}$	$CPUE_{Limit}$
4	2022	0.4787	0.9504	0.396
4	2021	0.5172	0.9418	0.3924

Stock trend and other indicators

Zones 10-20 including MPA- Annual standardised CPUE trend is noisy and relatively flat since about 1992 and has remained mostly below average since 2012, despite recent increases towards average between 2020 and 2023 relative to 2019, based on 95% confidence intervals. A major change from the nominal geometric mean occurs from 2013 onwards and this is mainly due to changes in the vessels operating, the depths in which they fish, and the reduced the quantity of fish caught. The number of vessels actively contributing to this fishery has reduced to low numbers and this may also be related to the recent major deviation from the nominal CPUE. Seven vessels operated in 2019 contributing to a total of only 1.9 t, the lowest in the series. By contrast, annual catches have increased between 2020-2022 which corresponds to more vessels operating across these years. The 2020 catch (32.7 t) is comparable with the 2018 catch (30 t). The 2023 catch (13.2 t) is about 48% less than the 2022 catch (25.4 t). (Sporcic, 2024a).

Zones 10-20 excluding MPA- Annual standardised CPUE trend is noisy and relatively flat since about 2012 and mostly below average, despite recent increases towards average between 2020 and 2023 relative to 2019, based on 95% confidence intervals (Figure 250). A deviation similar to that in the 'include MPA' scenario is apparent where the standardised trend deviates markedly from the nominal geometric mean trend from 2013 - 2017 and for the same reasons of changes in vessels fishing, low numbers of significantly contributing vessels, changes in the depth distribution of fishing and lower catches and numbers of records. (Sporcic, 2024a).

Species Category	**TAC setting approach**
MYTAC	Silver Trevally is currently (2024-25) in the 1st year of a 3-year MYTAC.

Catch and TAC (t)	**SESSF Fishing Year**	**Agreed TAC**	**TAC after unders/overs**	**Commonwealth Retained Catch**
	2024-25	25	25	-
	2023-24	25	25	13
	2022-23	51	70	40
Economics (Secondary) Commonwealth Trawl and Scalefish Hook	**Financial Year**	**Species GVP ($m)**	**Fishery GVP ($m)**	**% Fishery GVP**
	2022-23	0.23	65.88	0.35
	2021-22	0.20	80.00	0.25
	2020-21	0.08	64.00	0.12
ABARES Status (2023 report)	**Fishing mortality: Not Subject to Overfishing**		**Biomass: Uncertain**	
Climate Sensitivity **Medium**	These species were assessed to be moderately sensitive to climate change using an information poor assessment based on life history characteristics.			

Assessment summary

Key Model technical assumptions/parameters

The summary below was sourced from Burch *et al.* (2023).

Stock Structure and Data

The assessment assumes a single stock of Silver Trevally in NSW and Victorian state waters and in the adjacent Commonwealth waters (CTS zones 10, 20 and 60). This region provides more than 95% of the catches and all of the available biological data (lengths, ages, biological parameters).

Commercial and recreational landed catch estimates from NSW, Victoria and Commonwealth CTS zones 10, 20 and 60 (the areas off NSW and Victoria) from 1955–2022.

Seven catch fleets: NSW trawl, NSW trap, NSW line, NSW estuary, Commonwealth trawl, the NSW and Victorian recreational sector and Victorian commercial.

Estimated discards for the NSW trawl fleet after the introduction of the minimum legal length (MLL) in 2007. Other NSW fleets do not select fish below the MLL.

Length data for six of the catch fleets and the Kapala survey, with selectivity estimated for all fleets except NSW trawl (fixed at values estimated from an earlier model due to difficulties implementing the retention function) and Victorian commercial (mirrored to Commonwealth trawl).

Age-at-length data for 1998 from NSW trawl, NSW trap, NSW line and NSW estuary fisheries.

Standardised CPUE for the NSW trawl, NSW trap and Commonwealth trawl fisheries.

Low Recruitment

Several SESSF stocks have shown evidence of below average recruitment over the last two decades, including eastern Jackass Morwong, eastern Redfish, eastern Gemfish, Blue Warehou and Silver Warehou. For Silver

<table>
<tr><td></td><td>Trevally, the estimated recruitment deviations provide a reasonable level of evidence that this stock has experienced below average recruitment over much of the last 30 years. SERAG directed that the base case assessment be projected assuming future recruitment remains below the long-term average. Future recruitment was set to the average of the most recent 10 years of estimated recruitments (2010–2019).

<u>Natural Mortality</u>

Estimates of natural mortality for Silver Trevally from life history studies in south-eastern Australia are M=0.12–0.19 yr^{-1}, while the estimate from New Zealand is M=0.10 yr^{-1}. The New Zealand estimate is based on a maximum age of 45 years, which is almost double the maximum age of 25 years observed in Silver Trevally from south-eastern Australia. Additionally, New Zealand Silver Trevally also mature at 32–37cm, much larger than the 19–23cm for Silver Trevally in south-eastern Australia. Finally, the growth rates of Silver Trevally in south-eastern Australia and New Zealand are substantially different. Based on these differences, natural mortality for the 2023 base case Silver Trevally assessment was pre-specified at the estimate of M=0.18yr^{-1} derived from life history correlates in the most recent NSW assessment (Fowler et al. 2023).</td></tr>
<tr><td>Significant Changes to data inputs</td><td>N/A - this is the first Tier 1 assessment on Silver Trevally.</td></tr>
<tr><td>Assessment results and RAG comments</td><td>The base case assessment estimates unfished female spawning biomass (SSB_0) at 5,091t and current spawning biomass (SSB_{2024}) at 1,360 t with current stock status (SSB_{2024}/SSB_0) estimated to be 26.7%. If average recruitment is assumed, then current stock status is estimated to be 32.8%. The assessment is very sensitive to the assumed value of natural mortality, with the base case assuming M = 0.18 yr-1. Current stock status estimates from models with plausible natural mortality values of M = 0.11–0.18 yr^{-1} are 12.8–26.7%. For catches of 50–150 t per annum, stock status in 2027 is estimated to increase to 30.3–32.9% for the base case and 22.3–24.5% for a low recruitment scenario with M = 0.14 yr^{-1} (Burch et al. 2023).

Table 1. Selected sensitivity scenarios to the 2023 base case Silver Trevally model. Estimates of current stock status and the difference between the current stock status from the base case and the sensitivity (Δ Stock Status). All models assume below average recruitment during the projection period (2020 onwards), with the exception of the 2023 base case with average recruitment. † Denotes models that have had their Francis weighting recalculated, while the other models retain the base case Francis weighting.

<table>
<tr><th>Sensitivity Scenario</th><th>Current Stock Status (%)</th><th>Δ Stock Status (%)</th></tr>
<tr><td>†2023 base case (M=0.18yr^{-1})</td><td>26.7</td><td>-</td></tr>
<tr><td>†2023 base case (M=0.18yr^{-1}) assuming average recruitment</td><td>32.8</td><td>6.1</td></tr>
<tr><td>†Low natural mortality (M=0.14yr^{-1})</td><td>18.6</td><td>-8.1</td></tr>
<tr><td>Very low natural mortality (M=0.11yr^{-1})</td><td>12.8</td><td>-13.9</td></tr>
<tr><td>Low steepness (h=0.6)</td><td>22.7</td><td>-4.0</td></tr>
<tr><td>High steepness (h=0.8)</td><td>30.3</td><td>3.6</td></tr>
<tr><td>†Remove NSW trap CPUE</td><td>23.8</td><td>-2.9</td></tr>
<tr><td>Commonwealth CPUE 1992–2022</td><td>23.3</td><td>-3.4</td></tr>
<tr><td>Halve the weighting on the CPUE data</td><td>24.4</td><td>-2.4</td></tr>
<tr><td>Double the weighting on the CPUE data</td><td>29.0</td><td>2.2</td></tr>
</table>

SERAG (Nov 2023) noted if models can estimate M this is often a preferred approach, however estimating natural mortality will not be possible for this year's assessment. CSIRO noted most assessments where an estimation of M is used there is a reasonable set of age data available, this assessment is</td></tr>
</table>

	only using the one year of age data. This highlights the need to collect Silver Trevally otoliths for ageing. SERAG (Nov 2023) was comfortable with accepting the base case (low productivity scenario) as it reflects the decisions agreed to by SERAG 1 (2023) and that of the Silver Trevally Working Group.

RAG Recommendations

SERAG (Nov 2023) noted the different rebuilding rates produced by the constant catch projections and that a range of catches allow for rebuilding to the target, albeit over different timeframes. SERAG noted recent catches (from all sources) have been around 100 t.

SERAG (Nov 2023) noted that for scenarios where *M* was reduced to 0.14 (with the low recruitment assumption) the rebuilding rates are similar to those for the base case in the medium to long term.

SERAG (Nov 2023) deferred the decision on an RBC/TAC for Silver Trevally to SEMAC.

RBC (t)	**Year**	**RBC (t)**	**RBC recommendations**
	2026	25	Yes 3-Year RBC using average RBC 25 t.
	2025	25	
	2024	25	
Discount Factor (t)	N/A	Discount factor no longer applied to this species due to the assessment method becoming a Tier 1.	
State catch (t)	70.5 WAC 2019–22 70.1 WAC 2020–23	There has been a minor decrease in the state Weighted-Average Catch (WAC) between the 2019–22 period (that informed the TAC decision for the current season) and the 2020–23 period.	
Discards (t)	N/A	Discards are accounted for in the catch projections	
Recreational Catch (t)	19.1-19.2	NSW and Vic Recreational catches for 2019–2022	
RCA (t)	N/A	There has been no specific research catch allocated.	

Provisional TAC under the Harvest Strategy	Provisional TACs under fixed catch projections: 50 t yr^{-1} – 0 t TAC 70 t yr^{-1} – 0 t TAC 100 t yr^{-1} – 27 t TAC 125 t yr^{-1} – 52 t TAC 150 t yr^{-1} – 77 t TAC

AFMA Advice

AFMA management recommends a TAC of 25 t be applied to Silver Trevally for the 2025–26 season, as the second year of a three-year TAC period with undercatch and overcatch provisions set at 10 per cent and a determined amount of 2 t.

MAC Recommendations

Commercial fishers' interest	
Species specific management (target, companion, and bycatch)	
MAC advice and any dissenting views	

Undercatch (%)	Overcatch (%)	Determined amount (t)	TAC (t)

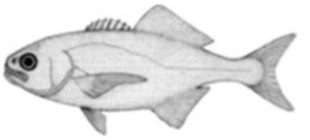
Final agreed TAC

2024-25 agreed TAC (t)	2025-26 recommended TAC (t)	Overcatch and undercatch (%)	Determined amount (t)	Change in TAC (t)

Slope Species

Blue-eye Trevalla

(Hyperoglyphe antarctica)



ABARES (2012): Line drawing – FAO

<table>
<tr><th colspan="7">Species Summary</th></tr>
<tr><td>Stock Assessment</td><td colspan="6">A Dynamic Tier 4 (DT4) assessment for the Blue-eye Trevalla slope stock was considered by SERAG in 2024

Catch-Maximum Sustainable Yield (MSY) and age-structured stock reduction analyses for the seamount stock were considered by SERAG in 2018 and 2021</td></tr>
<tr><td>Stock Structure</td><td colspan="6">Variation in age and growth, otolith chemistry and potential larval dispersal, indicate there is likely to be one stock on the continental slope (from which most of the catch is taken) which is separate from the stock/s found on the east coast seamounts.

Fish on the seamounts are assumed to be reproductively isolated from the slope stock. Potential stock structure among the seamounts is not clear.

Separate RBCs were determined for the slope and seamount stocks for the first time in 2018. However, a combined TAC continues to be set for Blue-eye Trevalla.</td></tr>
<tr><td rowspan="4"><u>SLOPE</u>
Stock status against reference points</td><td colspan="2">Tier</td><td>Assessment Year</td><td>Biomass</td><td>Target</td><td>Limit</td></tr>
<tr><td>DT4</td><td>2024</td><td>36</td><td colspan="2">48</td><td>20</td></tr>
<tr><td colspan="2">4</td><td>2023</td><td>$CPUE_{Recent}$ = 0.8131</td><td>$CPUE_{Target}$ = 1.2285</td><td>$CPUE_{Limit}$ = 0.5119</td></tr>
<tr><td colspan="2">4</td><td>2022</td><td>$CPUE_{Recent}$ = 0.7917</td><td>$CPUE_{Target}$ = 1.2286</td><td>$CPUE_{Limit}$ = 0.5119</td></tr>
<tr><td rowspan="4"><u>SEAMOUNT</u>
Stock status against reference points (%B_0)</td><td colspan="2">Tier</td><td>Assessment Year</td><td>Stock Status</td><td>Target</td><td>Limit</td></tr>
<tr><td colspan="2">5</td><td>2021</td><td>33*</td><td>48</td><td>20</td></tr>
<tr><td colspan="2">5</td><td>2018</td><td>33*</td><td>48</td><td>20</td></tr>
<tr><td colspan="6">No assessment prior to 2018.

*Current depletion for the seamount stock was estimated to be about 0.33B_0 although the uncertainty about that value is extreme. SERAG (November 2021) considered the</td></tr>
</table>

<table>
<tr><td></td><td>available data and agreed there was no basis on which to revise the outputs of the 2018 catch-MSY analysis.</td></tr>
<tr><td>Stock trend and other indicators</td><td>Total Blue-eye Trevalla retained catches have declined from 700 t in 2004 to 235.2 t in 2023.

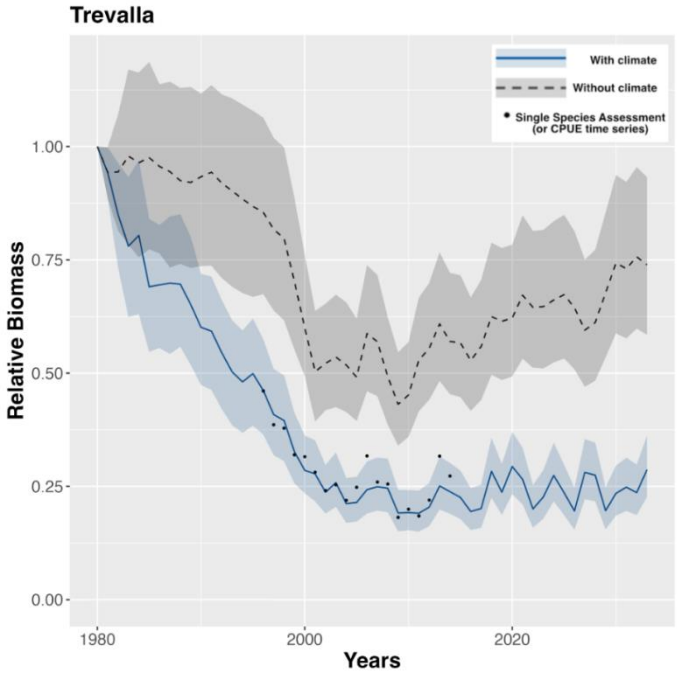
Slope

Zone 20-30 - Annual standardised CPUE has been below average since about 1996 and shows a relatively flat trend (Sporcic, 2024).

Zone 40-50 - Annual standardised CPUE has been mostly below average since about 1996 while the trend has been mostly flat. CPUE are consistent from 1988–1991 (i.e., before the introduction of quotas in 1992) but are double that following the introduction of quota. Relatively very few vessels now contribute to significant catches (Sporcic, 2024).

Seamount

Catch from the seamounts has been less than 40 t for the past 3 years.</td></tr>
<tr><td>Species Category</td><td>TAC setting approach</td></tr>
<tr><td>Slope:
MYTAC species</td><td>The Blue-eye Trevalla slope stock has historically been managed through a single year TAC but may move to a two-year MYTAC subject to Commission determination.</td></tr>
<tr><td>Seamount:
Trigger species</td><td>A review of available data and assessment options for the Blue-eye Trevalla seamount stock is scheduled for 2027, in accordance with the 6-year threshold, or if 27 t (i.e., 75% of the seamount TAC) is landed, whichever occurs first.</td></tr>
<tr><td>Catch and TAC (t)</td><td>
<table>
<tr><th>SESSF Season</th><th>Agreed TAC</th><th>TAC after unders/overs</th><th>Cth Retained Catch</th></tr>
<tr><td>2024-25</td><td>263</td><td>267</td><td>-</td></tr>
<tr><td>2023-24</td><td>238</td><td>242</td><td>235</td></tr>
<tr><td>2022-23</td><td>241</td><td>247</td><td>235</td></tr>
</table>
</td></tr>
<tr><td>Economics (Primary) Commonwealth Trawl and Scalefish Hook</td><td>
<table>
<tr><th>Financial Year</th><th>Species GVP ($m)</th><th>Fishery GVP ($m)</th><th>% Fishery GVP</th></tr>
<tr><td>2022-23</td><td>3.79</td><td>65.88</td><td>5.75</td></tr>
<tr><td>2021-22</td><td>3.09</td><td>80.00</td><td>3.86</td></tr>
<tr><td>2020-21</td><td>2.48</td><td>64.00</td><td>3.87</td></tr>
</table>
</td></tr>
<tr><td>ABARES Status (2024 Report)</td><td colspan="2">Fishing Mortality: Not subject to overfishing</td><td>Biomass: Not overfished</td></tr>
</table>

Climate Sensitivity **Medium**	 Atlantis modelling suggests that climate change has a moderate influence on the biomass of Blue-eye trevalla and is contributing to a lower biomass than would have occurred otherwise.

Assessment summary

Key Model technical assumptions/ parameters

Slope:

The DT4 assessment method has recently been developed for Australia's Southern and Eastern Scalefish and Shark Fishery (SESSF) (Bessell-Browne et al., in press). This method can be used for stocks that have limited available information, namely catch and standardised catch-per-unit-effort (CPUE), akin to the long-standing traditional empirically based Tier 4 assessment method (Little et al., 2009) that has been used in the SESSF for many stocks for over 10 years. A major difference between these two methods is that the DT4 is based on a Biomass Dynamics Model (BDM) which can fit multiple CPUE series, while the traditional Tier 4 method is empirically based. Both methods rely on a reference period, where the stock is assumed to be at the target reference point.

Seamount

Catch-MSY

The catch-MSY assessment is a data-poor approach which makes assumptions about unfished biomass as well as a range of other assumptions around carrying capacity, intrinsic growth, maximum harvest rate, and current stock status, and requires a time series of known catches that have not been impacted by management.

Age-structured stock reduction analysis

Noting that not all seamounts would be fished in a given year, the model has assumed that harvest rates do not exceed 50 per cent in a single year. This adds

	constraints to the analysis and assumes that there must have been at least twice the biomass relative to what was caught in any year. Known biological parameters (length at age, length at maturity, weight at length) are used and plausible ranges are assumed for steepness, natural mortality, unfished stock size and current stock status.
Significant Changes to data inputs	Slope The 2024 assessment uses a new catch history series spanning 1969–2023 inclusive, compared with the previous assessment that commenced much later i.e., 1997–2022. The 2024 DT4 assessment uses two new standardised CPUE series, (i) dropline-CPUE between 1997-2006, and autoline-CPUE that incorporates Pink Ling (*Genypterus blacodes*) as a covariate in the statistical standardisation analysis - between 2005–2023, as requested by the Blue-eye Trevalla and Pink Ling Working Group (Nov 2024). Seamount The 2021 update to both data-poor methods included catches from the Tasman seamounts plus the Lord Howe Rise whereas the 2018 assessment did not include the Lord Howe Rise. Catch data were provided by NSW fisheries and the Commonwealth logbooks. Discard rates are negligibly low. SERAG (2021) agreed that data should be collected to move this stock out of the Tier 5 assessment method, noting that the Close Kin Mark Recapture scoping project currently underway may provide a reasonable avenue to do this.
Assessment results and RAG comments	Slope *Dynamic Tier 4 (2024)* The 2025 RBC was approximately 295.71 t, corresponding to a 20.55 t increase compared to the 2024 RBC (275.16 t), based on the traditional Tier 4 assessment. This increase in RBC may be attributed to the use of new assessment method, standardised CPUE series for autoline and dropline and annual catch history series. The DT4 assessment requires the same data inputs, namely catch, CPUE and a reference year period as a traditional Tier 4 assessment. However, it allows multiple CPUE series to be fitted unlike the traditional Tier 4 method and is model-based compared with empirical-based traditional Tier 4 method. While the DT4 assessment is an improvement on the empirical Tier 4 assessment, SERAG (Nov 2024) noted that it still has limitations, and recommended that work be undertaken to support a Tier 1 assessment of this commercially valuable stock. Seamount The AFMA Commission has set a long-term TAC of 36 t for the Blue-eye Trevalla seamount stock (following the trigger species approach), based on the recommendation by SERAG in November 2021.

RAG Recommendations

The recommended long-term TAC for the Blue-eye Trevalla seamount stock is 36 t, with TAC review triggers of 27 t annual catch or 6 years elapsed since the last assessment (i.e. 2021 + 6 = 2027).

SERAG (Nov 2024) recommended an RBC of 296 t for the Blue-eye Trevalla slope stock during the 2025–26 and subsequent season.

RBC (t)	Year		RBC (t): Slope	RBC (t): Seamount	RBC arrangements
	2026	296	36	2-year static RBC of 296 t	
	2025		296	36	
Discount Factor (t)	44 t (applied to DT4 4 RBC)		SERAG (November 2023) supported the application of the 15 per cent discount factor to the RBC for the slope stock. No discount factor is applied to the seamount stock. It is managed as a trigger species with a catch trigger of 27 t.		
State catches (t)	5.8 t		Mostly NSW catches – declining in recent years.		
Discards (t)	N/A		Estimates of discards are considered to be low and are not used in assessment. As such, they are not deducted from the RBC.		
Recreational Catch (t)	N/A		There are no records of recreational catches.		
RCA (t)	N/A		There has been no specific research catch allocated.		
Provisional TAC under the Harvest Strategy			282 t TAC (246 t slope + 36 t seamount)		

AFMA Advice

AFMA management recommends a TAC of 282 t for Blue-eye Trevalla during the 2025–26 season, as the first year of a two-year TAC period, with overcatch and undercatch provisions set at 10 per cent, and a determined amount of 2 t.

AFMA will review TAC and assessment options for the seamount stock in 2027 unless the 27 t catch trigger is breached prior to that time.

MAC Recommendations

Commercial fishers' interest	
Species specific management (target, companion, and bycatch)	
MAC advice and any dissenting views	

Undercatch (%)	Overcatch (%)	Determined amount (t)	TAC (t)

Final Agreed TAC

2024-25 agreed TAC (t)	2025-26 recommended TAC (t)	Overcatch and undercatch (%)	Determined amount (t)	Change in TAC (t)
263				

Blue Grenadier

Macruronus novaezelandiae

ABARES (2012) Line drawing - Rosalind Poole

Species Summary

Stock Assessment	Tier 1 Species - last assessed by SERAG in 2022.
Stock Structure	Blue grenadier is assessed as one stock, however there is some evidence of separate stocks occurring across the SESSF. There are two defined sub-fisheries, the spawning fishery dominated by catches off western Tasmania and the widely spread catches of the non- spawning fishery.

Stock status against reference points %B_0 in year +1)

Tier	Assessment Year	Biomass (from assessment year)	Biomass (revised in most recent assessment)	Target	Limit
1	2022	124	124	48	20
1	2021	155	123		
1	2018	122	109		

Stock trend and other indicators	Annual standardised CPUE were below average from 1993–2013, with two apparent cycles, peaking in 1999 and 2008 respectively. From 2014–2015, these indices were above average. Also, there was a consistent and above average increase from 2018–20, then a decrease in 2021 and 2022. The 2023 standardised CPUE dropped below the long-term average. (Sporcic, 2024a).

Species Category
MYTAC

TAC setting approach

The current season (2024–25) is the second year of a three-year MYTAC.

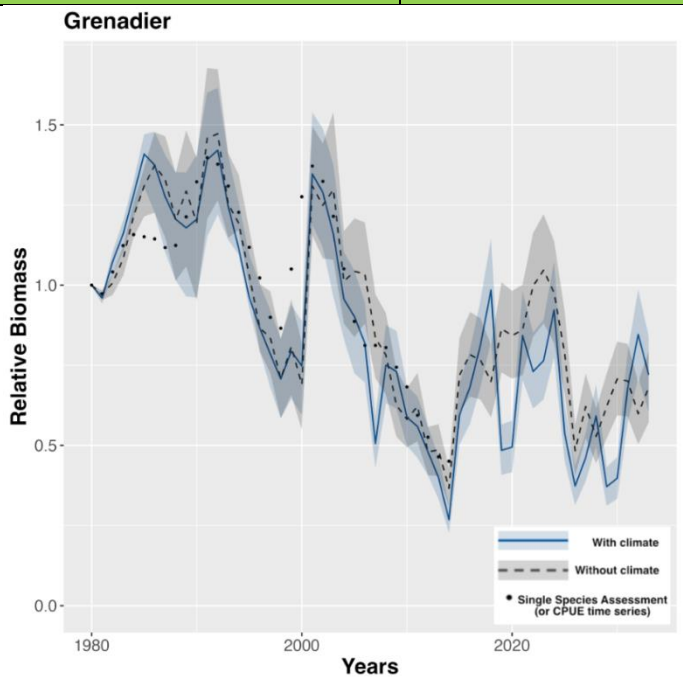
The next assessment is scheduled for 2025 and a new, 4-year MYTAC period is expected to commence in 2026–27.

Catch and TAC (t)

SESSF Season	Agreed TAC	TAC after unders/overs	Cth Retained Catch
2024-25	17,084	18,585	-
2023-24	17,084	18,899	6,655
2022-23	18,275	19,217	6,265

Economics (Primary) Commonwealth Trawl and Scalefish Hook

Financial Year	Species GVP ($m)	Fishery GVP ($m)	% Fishery GVP
2022-23	14.46	65.88	22.00
2021-22	33.12	80.00	41.40
2020-21	21.86	64.00	34.16

ABARES Status (2024 Report)	Fishing Mortality: Not subject to overfishing	Biomass: Not overfished
Climate Sensitivity **Neutral**	 Atlantis modelling suggests that climate change does not have an influence on the biomass of Blue Grenadier. While greater climatic variability may contribute to increased variability in recruitment success and stock abundance, there is no apparent long-term influence of climate.	

Assessment summary

Key Model technical assumptions/parameters	2 sex model, age-structured Steepness (h) is fixed at 0.75 Recruits estimated between 1974 and 2018 Maturity: 50% female maturity at 63.7 cm The base case estimates natural mortality for females at 0.23 and males at 0.24
Significant Changes to data inputs	The base case specifications agreed by the SERAG in 2021 were maintained into the preliminary base case. The main difference between the assessment model of 2021 and 2022 is the inclusion of 2020 and 2021 acoustic survey estimates of biomass. This was recommended due to the high degree of uncertainty in the 2021 assessment.
Assessment results and RAG comments	The assessment has been updated since the previous full assessment by including recent length-composition and conditional age-at-length data from the spawning and non-spawning fisheries; updated standardised CPUE series (Sporcic, 2022a), the total mass landed and discarded and updated age-reading error matrices. Acoustic estimates of spawning biomass (2003–2010; 2020–2021) and estimates of the female spawning biomass in 1994 and 1995 from egg surveys (Bulman et al., 1999) are included. Data were formulated by calendar year, as in previous models (Tuck and Bessell-Browne, 2022).

	SERAG (Oct 2022) noted adding the new data did not affect the assessment history greatly and reduced uncertainty in the estimate of biomass, however, there has been a downward revision to recruitment estimates. Results of the base case show reasonably good fits to the length-composition data, conditional age at length, egg and discard mass. Fits to the newly included 2020 and 2021 acoustic survey biomass estimates are reasonable but with a preference for the higher 2020 survey point. As has been noted in previous blue grenadier assessments, the fit to the standardised non-spawning CPUE index is generally poor; the model is unable to fit to the high early catch rates and over-estimates catch rates during the early 2000s. More recent catch rates fit reasonably well, with a reduction in recent estimated catch rates coinciding with a decrease in the observed catch rate value in 2021 (Tuck and Bessell-Browne 2022). The estimated virgin female spawning biomass (B0) is 35,680 tonnes (compared to 37,445 tonnes in the 2021 assessment) and the projected 2023 spawning stock biomass will be 124% of virgin female spawning biomass (projected assuming 2021 catches in 2022), compared to 155% at the start of 2022 from the 2021 assessment. The reduction in estimated relative spawning biomass is likely due to the reduced 2021 catch rate, the inclusion of the acoustic survey points and updated composition data leading to slightly reduced estimates of recent recruitment. The 2023 RBC under the 20:35:48 harvest control rule is 20,168 t that includes 240 t of estimated discards (19,928 t retained). The long-term RBC is approximately 7,200 t with 200 t discards. 155% at the start of 2022 from the 2021 assessment. The reduction in estimated relative spawning biomass is likely due to the reduced 2021 catch rate, the inclusion of the acoustic survey points and updated composition data leading to slightly reduced estimates of recent recruitment (Tuck and Bessell-Browne 2022). The likelihood profiles reinforce that initial biomass is uncertain, as is the estimate of current stock status. The stock status uncertainty has reduced somewhat when compared to the broader estimates of the 2021 assessment, which may reflect the inclusion of more recent survey estimates of biomass. All model sensitivities showed current relative biomass being well above the target and likely to be above virgin biomass levels. There continues to be strong estimates of recent recruitment (the most recent nine years are above average) which is a positive sign for the fishery. As has been observed in previous assessments of blue grenadier, the fit to the non-spawning fleet CPUE, especially in the early years, is poor. Further refinement of the model should consider alternative GLM models for CPUE standardisation, or potential changes to model structure to account for the poor fit. The assessment shows retrospective patterns of concern for recruitment. This result suggests that there could be some misspecification in the assessment with a time varying factor that may not be accounted for in the assessment. Further investigation of these patterns in future assessments is warranted (Tuck and Bessel-Browne 2022). At SERAG (Oct 2022) Industry members noted that this fishery is well suited to cope with recruitment-driven fluctuations in biomass. Freezer boats are unlikely to fish when TACs are low.

	SERAG (Nov 2022) noted that the recent high RBC's have resulted from consecutive strong recruitment pulses into the fishery, possibly influenced by environmental drivers such as westerly winds.

RAG Recommendations

SERAG (Nov 2022) recommended that the 3-year average RBC of 17,313 t be used as the basis for a 3-year RBC for Blue Grenadier.

RBC (t)	**Year**	**RBC (t)**	**RBC arrangements**
	2025	14,590	Static RBC based on the three-year average
	2024	17,182	
	2023	20,168	
	3-year average	17,313	
Discount Factor (t)	N/A	A discount factor was not applied.	
State catches (t)	N/A	State catches are negligible and not included in the assessment.	
Discards (t)	229 t (3 yr ave.)	Model estimated discards are 240 t (2023), 225 t (2024), 222 t (2025).	
Recreational Catch (t)	N/A	There are no estimates of recreational catch.	
RCA (t)	N/A	There has been no specific research catch allocated.	
Provisional TAC under the Harvest Strategy		17,084 t	

AFMA Advice

AFMA Management recommends a TAC of 17,084 t for Blue Grenadier during the 2025–26 season, the third year of a three-year TAC period, with overcatch and undercatch provisions set at 10% and a determined amount of 2 t.

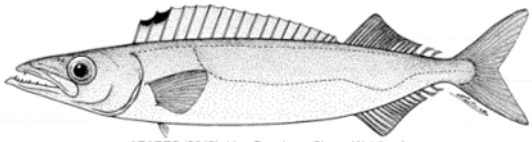
MAC Recommendations

Commercial fishers' interest			
Species specific management (target, companion, and bycatch)			
MAC advice and any dissenting views			
Undercatch (%)	**Overcatch (%)**	**Determined amount (t)**	**TAC (t)**

Final Agreed TAC				
2024-25 agreed TAC (t)	**2025-26 recommended TAC (t)**	**Overcatch and undercatch (%)**	**Determined amount (t)**	**Change in TAC (t)**
17,084				

Gemfish East

Rexea solandri


ABARES (2012): Line Drawing – Shane Weidland

Species Summary

Stock Assessment	Tier 1 Species - last assessed by ShelfRAG in 2010.
Stock Structure	Recent genetic research (Ovenden et al. 2020) has revealed evidence of genetically different populations between the east and west (boundary: west of 146°22'E, north of 42°43'S) (with no gene flow), with a mixing (overlap) of the two stocks in western Bass Strait, through to Portland. The current assessment is based solely on eastern gemfish, caught south of Latitude 43° south off western Tasmania, and east of longitude 146° 22`.

Stock status against reference points $\%B_0$ in year +1)

Tier	Assessment Year	Biomass (from assessment year)	Target	Limit
1	2010	15.6	48	20
1	2008	16.5		
1	2007	10		

Stock trend and other indicators

Non spawning stock: Following a large spike in standardised CPUE in the late 1980s, which coincided with a large spike in catches, the annual standardised CPUE trend dropped rapidly despite large reductions in catches and, since 1995 has been relatively flat and below average although with what appears to be a 14–15 year cycle (Figure 264). The 2021 estimate increased significantly relative to the previous year and there was no discernible difference between the last three years. It has been reported that there have been efforts to actively avoid eastern Gemfish for the last few years and this may have been reflected in the change apparent in the depth of fishing. If these reports are correct, this means that the most recent CPUE, from about 2013, will not be representative of the state of the stock.(Sporcic, 2024a).

Spawning stock: Annual standardised CPUE trend has declined since 2010 and remained below average since 2011, with the last two years either below or above average, based on 95% confidence intervals (Figure 271). This reflects what appears to be a longer term cycle of CPUE values, which suggests that CPUE values would soon be expected to rise, which occurred in 2019 and 2020. However, the relatively low catches since the past nine years indicate that industry avoidance strategies are effective, and this means the recent CPUE may not provide an unbiased representation of relative stock status. (Sporcic, 2024a).

Species Category

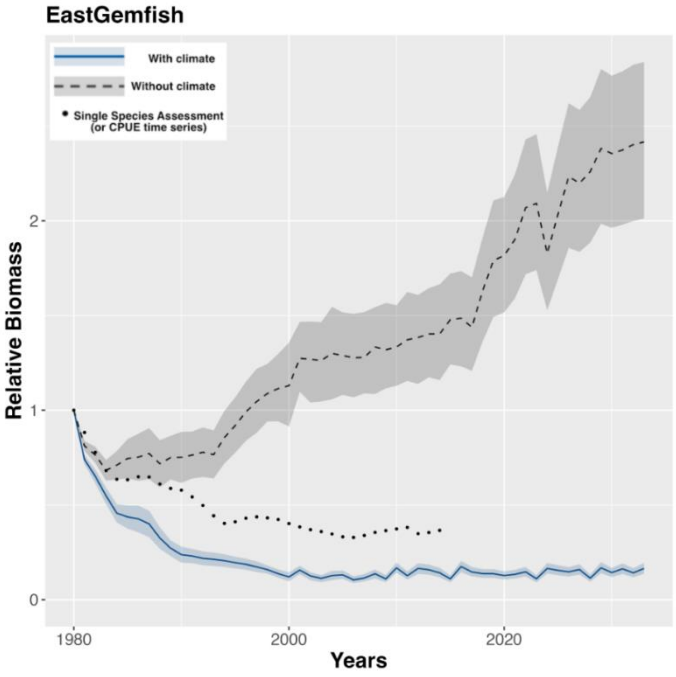
Depleted

TAC setting approach

Annual bycatch TAC set in accordance with the Eastern Gemfish Stock Rebuilding Strategy.

Catch and TAC (t)

SESSF Season	Agreed TAC	TAC after unders/overs	Commonwealth Retained Catch
2024-25	100	100	-
2023-24	100	100	31

	2022-23	100	100	37
Economics (Secondary) Commonwealth Trawl and Scalefish Hook	**Financial Year**	**Species GVP ($m)**	**Fishery GVP ($m)**	**% Fishery GVP**
	2022-23	Not Available	65.88	Not Available
	2021-22	0.23	80.00	0.29
	2020-21	0.16	64.00	0.25
ABARES Status (2024 Report)	**Fishing Mortality: Uncertain**		**Biomass: Overfished**	
Climate Sensitivity High	 Atlantis modelling suggests that climate change has a major influence on the biomass of Gemfish East and is contributing to a much lower biomass than would have occurred otherwise.			

Assessment summary

Key Model technical assumptions/ parameters	The data in the model is divided into four fleets: i. A non-trawl fleet (1993 – 2009) ii. A fleet targeting the winter spawning run (1975 – 2000 and inclusion of the results of the 2007 and 2008 surveys) iii. A non-spawning (summer) season fleet (1975 – 2009), and iv. A recent (spawning season) winter bycatch fleet (2000 – 2009).
Significant Changes to data inputs	N/A
Assessment results and RAG comments	SERAG (Dec 2020) noted the non-spawning CPUE index has increased over the last 3- years, which is consistent with industry reports of higher catch rates in 2019 and 2020. Total Commonwealth landings for 2019 were 72 t, more than double the 2018 catch of 34 t.

	The stock assessment has not been formally updated since 2010 due to a paucity of data, and the main index of abundance is no longer considered reliable due to avoidance behaviour. Model fits to the non-spawning trawl fleet in the 2010 Tier 1 stock assessment were good. While not as valuable as the winter spawning index, it could be considered as an alternative index of abundance. CSIRO will clarify what is required to update the assessment, including whether the non-spawning CPUE index can be used as an index of abundance. Fixed catch projections from the 2010 Tier 1 assessment estimate catches of up to 100 t will allow for recovery under average recruitment. However, catch projections should be treated with caution given the failure of this species to recover since the 2010 stock assessment. SERAG has previously pointed out the eastern gemfish stock may now be at a new equilibrium and the stock may not rebuild under current conditions. Recent research by (Ovenden, et al., 2020) identified genetic drift and divergence as potential factors influencing the ability of gemfish stocks to rebuild. SERAG (Dec 2020) noted that total mortality for the 3 years immediately after the 2010 stock assessment were higher than those expected to allow for rebuilding of the stock. While the projections are based on landed catches of 100 t, the discard proportion for those years was high, between 55 and 67 per cent, resulting in total mortality of nearly double the projected catches. Total mortality from 2014 to 2018 was less than 100 t, and recent increases in CPUE are consistent with the modelled predicted increase in biomass when total mortality is less than 100 t. Eastern gemfish was scheduled for a Tier 1 stock assessment in 2022. The main index of abundance from the spawning stock is not thought to be reliable because of avoidance behaviour, so completing a new assessment might not be possible. However, SERAG recommended at least updating the 2010 stock assessment to include catches up to 2020, and projecting forward using various fixed catches and recruitment scenarios. SERAG (Nov 2021) considered a targeting analysis for eastern gemfish as part of the 2021 annual review of the rebuilding strategy and noted: - While catches in the northern part of the fishery have reduced, there is no apparent shift in the spatial distribution of catches. - There is no evidence of boats targeting eastern gemfish. - There are higher catches in the automatic longline hook sector in 2020, however these need to be understood before any advice around targeting or indicators of stock status can be resolved. - Standardised spawning and non-spawning CPUE has increased over the last 3 years, but without an assessment it isn't possible to determine whether this is indicative of an increase to biomass. - There is still some uncertainty around whether total mortality is sufficiently low to allow rebuilding – this will need to be resolved as part of updating the stock assessment in 2022. SERAG (Nov 2021) considered a companion species analysis which investigated the link between target species catch and the associated level of

	unavoidable bycatch of recovering species. The analysis incorporated a range of factors such as area, depth fished and gear type– also known as métiers. Using logbook data from 2019 and 2020, and expected 2022-23 TACs for the main companion species (blue-eye trevalla, pink ling and blue grenadier) the estimated unavoidable bycatch of eastern gemfish for 2022 is 88.7 t, with a range between 68.9 and 111.9 t. SERAG (Nov 2022) noted the absence of métier analyses to inform bycatch TACs due to the significant structural changes occurring next year. SERAG (Nov 2023) noted the spatial closures, structural adjustment and gear changes, while beneficial to the species, have significant impacts on the key index of abundance (CPUE) for many rebuilding species and that this makes it very difficult to measure the performance of the rebuilding strategies.

RAG Recommendations

SERAG (Oct 2024) recommended maintaining the 100 t bycatch TAC for Gemfish East noting there is insufficient evidence to warrant a change in the TAC.

RBC (t)	0 t	The RBC is set at zero for all depleted species.
Discount Factor (t)	N/A	Discount factors are not applied to Tier 1 assessments.
State catches (t)	N/A	State catches, 0.4 t are not deducted from the bycatch TAC but should be considered as a source of mortality.
Discards (t)	N/A	Projections from the 2010 Tier 1 assessment are based on landed catch, and so estimates of discards (23.1 t) are not deducted from the bycatch TAC but should be considered as a source of mortality.
Recreational Catch (t)	N/A	There are no estimates of recreational catch.
RCA (t)	N/A	There has been no specific research catch allocated
Provisional TAC under the Harvest Strategy		100 t – Incidental bycatch TAC

AFMA Advice

AFMA Management recommends an incidental bycatch TAC of 100 t for Gemfish east during the 2025–26 season, with no undercatch or overcatch provisions, and a determined amount of 2 t.

MAC Recommendations

Commercial fishers' interest	
Species specific management (target, companion, and bycatch)	
MAC advice and any dissenting views	

Undercatch (%)	Overcatch (%)	Determined amount (t)	TAC (t)

Final agreed TAC			

2024-25 agreed TAC (t)	2025-26 recommended TAC (t)	Overcatch and undercatch (%)	Determined amount (t)	Change in TAC (t)
100				

Pink Ling

Genypterus blacodes

Species Summary

Stock Assessment	Tier 1 Species - last assessed by SERAG in 2024
Stock Structure	Pink ling are assessed as separate stocks east and west of Longitude 147° East. Genetic variation between eastern and western pink ling has not been found, however, there are differences in size and age structure, growth and catch rates between the Eastern and Western Zones. These differences suggest there is little mixing of pink ling between the zones, and that fishing in one area will have limited impact on fish in the other area.

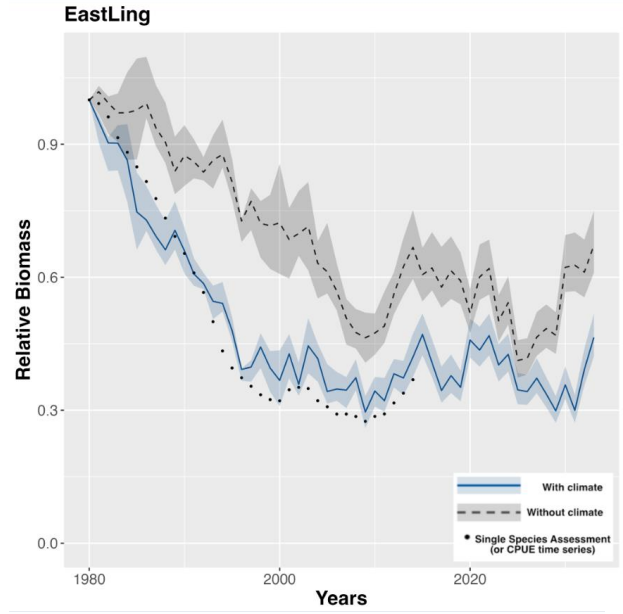
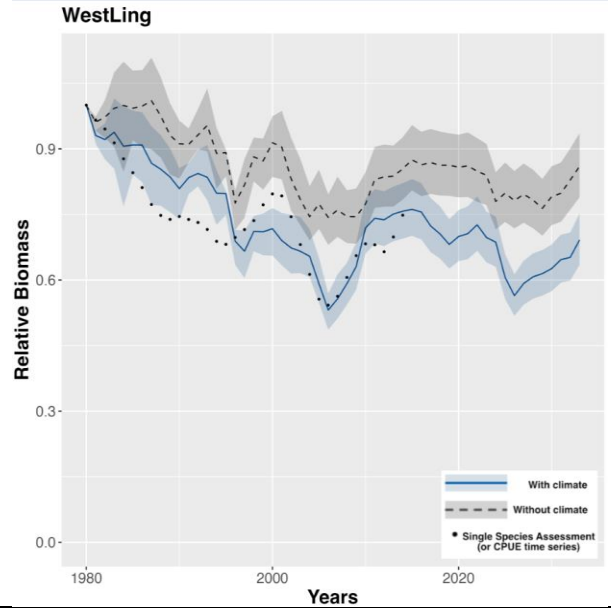
East
Stock status against reference points (%B0 in year +1

Tier	Assessment Year	Biomass	Target	Limit
1	2024	43	48	20
1	2021	34		
1	2018	30		

West
Stock status against reference points (%B0 in year +1)

Tier	Assessment Year	Biomass	Target	Limit
1	2021	91	48	20
1	2018	84		
1	2015	73		

Stock trend and other indicators	Zones 10-30: Annual standardised CPUE has been below average corresponding to a relatively flat trend from 2001–19, with the most recent estimate just below the long-term average, based on 95% confidence intervals. CPUE has increased since 2015, despite the decreases in both 2021 and 2023 relative to the previous years' respectively. The first structural adjustment had a major influence on the vessel factor from 2006 or 2007 onwards. (Sporcic, 2024a). Zones 40-50: Annual standardised CPUE declined to its lowest point in 2005 then increased to the long-term average from 2013–2016. CPUE fluctuated around the long term average thereafter and has been above average since 2020, based on the 95% confidence intervals. (Sporcic, 2024a).
Species Category MYTAC	**TAC setting approach** The current season (2024–25) is the third year of a three-year MYTAC for Pink Ling (east) and Pink Ling (west).

Catch and TAC (t)	**SESSF Season**	**Agreed TAC**	**TAC after unders/overs**	**Cth Retained Catch**
	2024-25	1,533	1,657	-
	2023-24	1,565	1,677	951
	2022-23	1,568	1,653	983
Economics (Primary) Commonwealth Trawl and Scalefish Hook	**Financial Year**	**Species GVP ($m)**	**Fishery GVP ($m)**	**% Fishery GVP**
	2022-23	7.51	65.88	11.38
	2021-22	9.10	80.00	11.38
	2020-21	6.76	64.00	10.56
ABARES Status (2024 Report)	**Fishing Mortality: Not subject to overfishing**		**Biomass: Not overfished**	
Climate Sensitivity Medium	 			

	Atlantis modelling suggests that climate change has a moderate influence on the biomass of Pink Ling and is contributing to a lower biomass than would have occurred otherwise.
Assessment summary	
Key Model technical assumptions/ parameters	The 2024 base case assessment for Pink Ling (east) uses an age and size structured model implemented in the generalized stock assessment software package, Stock Synthesis (SS) (Version 3.30.22.01). Eastern Pink Ling forms a single stock, with western Pink Ling assessed separately. The stock is assumed to be unexploited at the start of 1970, as catches prior to this time are thought to have been minimal. Four fishing fleets are modelled: 1. Trawl: otter trawlers 1970-2023 2. Non-trawl: non trawl vessels 1970-2023 3. Fishery independent survey: fishery independent survey operating in NW, eastern Victoria and Bass Strait 2008-2016 4. Kapala survey: fishery independent survey 1975-1996 The population plus-group is modelled at age 20 years. Recruitment to the stock is assumed to follow a Beverton-Holt stock recruitment relationship, parameterised by the average recruitment at unexploited spawning biomass, R_0, and the steepness parameter, h. Steepness for the base case is pre-specified at 0.75. The initial value of the parameter determining the magnitude of the process error in annual recruitment, σ_R, is set to 0.7. Growth is assumed to follow the Von Bertalanffy growth equation and is estimated within the assessment separately for males and females. Natural mortality (M) is pre-specified within the assessment at 0.23. This value is taken from the estimate in the 2021 western Pink Ling assessment. M is assumed to be sex and time invariant.
Significant Changes to data inputs	The 2024 assessment for Pink Ling (east) was an update of the 2021 assessment with some key changes. These changes include: 1. Transition from CASAL to Stock Synthesis. 2. Different CPUE standardisation methods. 3. Fitting to discard information for the trawl fleet. 4. Using length-based rather than age-based selectivity. 5. Including all available composition data. 6. Using 2 cm rather than 5 cm length bins. 7. Extending the maximum length from 115 to 150 cm.

Assessment results and RAG comments	<u>West (2020 - CASAL)</u> A comparison of trawl CPUE series across the last four stock assessments shows a similar trend, with western CPUE trending upwards. Western MPD runs estimate relative biomass ranging from 78%B_0 to 93%B_0 based on the addition of data since the 2018 stock assessment. Estimates of relative spawning biomass are highly dependent on values of M, and range 71%B_0 to 95%B_0 under high (0.26) and low (0.2) values of M. Model fits to trawl CPUE are good in the later part of the time series. Model fits to FIS and trawl length frequencies are also good, but less so for the FIS indices. There is a 'spike' in fish around 90-95cm in 2018 which the model cannot fit. The likelihood profile for B_0 showed little conflict between the data sets with the MPD estimate at 5910 t and little support for values below 4000 t. The likelihood profile for M showed little conflict between the data sets with most information coming from age data. This provides a good basis for estimating M in the model (the MPD estimate was 0.22 and the MCMC estimate was 0.23). <u>East (2024 – Stock synthesis)</u> The base case assessment estimated the unexploited female spawning stock biomass, SSB_0 was 7,297 t (compared to 5,886 tonnes from the 2021 assessment). This decreases to 3,156 t by 2024. This change in SSB_0 is due to changes in model structure, mainly the inclusion of additional conditional age-at-length data and transition to length-based selectivity. The change in stock status is due to recovery towards the target reference points, changes in the processing of age data (mix of age composition data and conditional age-at-length data to all conditional age-at-length), and using length rather than age-based selectivity (Bessell-Browne, 2024). Results show reasonable fits to the CPUE abundance indices, although some residual patterns are evident in fits to the trawl series. Fits to the discard data are reasonable given the variability observed from year to year for some estimates. The fits to the length composition and the conditional age-at-length data are very good There is some uncertainty surrounding the pre-specified values of *M* in the assessment. The pre-specified value of M is the same value as used in the 2021 assessment (Cordue, 2021). The assessment of the western stock in 2021 estimated M to be 0.23 and this parameter was borrowed for the eastern assessment. Given this value is higher than used for Pink Ling stock assessments in New Zealand (M=0.18), and the model preference for lower values, further investigation of suitable values of M is required. This work should include development an informative prior for M to reduce the uncertainty associated with the pre-specified value of this parameter in the assessment. To further understand this uncertainty a cross-catch risk assessment has been completed to investigate the risk of applying the SESSF HCR to the base case assessment with M=0.23 and M=0.18. This investigation demonstrated no increased risk to stock status over the next four years if catches are implemented following standard protocols. No scenarios resulted in a decline in female spawning stock biomass or stock status. SERAG noted no major concerns to the stock from model diagnostics and adopted the 4-year MYTAC based on model estimated RBCs.

RAG Recommendations

East

SERAG (Nov) recommended an RBC of 661 t for Pink Ling (east) during the 2025–26 season, as the first year of a static, four-year RBC. The RAG noted that the model diagnostic for the Pink Ling (east) assessment show no major concerns, although there is a small retrospective pattern in recruitment that should be monitored for persistence in future assessments.

West

SERAG (Nov 2024) recommended RBCs of 1,004 t and 924 t for Pink Ling (west) during the 2026–27 season for Pink Ling (west). These values continue the ~8.5% stepwise reduction in the RBC for Pink Ling (west) adopted after the 2021 assessment.

SERAG (Nov 2024) requested that SESSFRAG considers the impact of data availability on assessment options for Pink Ling (west) as well as an appropriate discount factor for this stock in the absence of an updated assessment.

	Year	RBC (t): East	RBC (t): West	Combined (t)	RBC arrangements
East RBC (t)	2028	677	-	-	**East:** static 4-year 661 t RBC from the 2024 assessment **West:** 2-year ~8.5% stepdown RBC following the pattern from the 2021 assessment.
	2027	669	-	-	
	2026	657	924	1,585	
	2025	642	1,004	1,665	
	Long term yield	726	730	1,456	
	Long term average	661	-	-	
Discount Factor (t)	N/A	A discount factor is not applied.			
State catch (t)	E = 46.5 W = 0.8	The majority of State catches were recorded in NSW (east) and TAS (west) and are deducted from the RBC.			
Discards (t)	E = 25.8 W = 9.9	Discards are not modelled in the Tier 1 assessment – weighted average discards are deducted from the RBC.			
Recreational Catch (t)	N/A	There are reports of increasing recreational catch of Pink Ling. Catches are not estimated and unlikely to be significant.			
RCA (t)	N/A	There has been no specific research catch allocated.			
Provisional TAC under the Harvest Strategy		East: 588 t (661 t RBC – 47 t state – 26 t discards) West: 993 t (1,004 t RBC – 1 t state – 10 t discards) Combined: 1,581 t			

AFMA Advice

AFMA recommends a combined TAC of 1,581 t (East:588 t, West:993 t) for Pink Ling during the 2025–26 season, as the first year of a four-year TAC period, with overcatch and undercatch provisions set at 10 per cent, and a determined amount of 2 t.

MAC Recommendations

Commercial fishers' interest	
Species specific management (target, companion, and bycatch)	
MAC advice and any dissenting views	

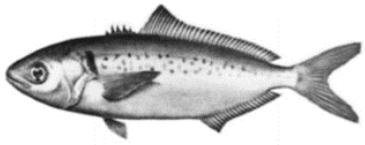
Undercatch (%)	Overcatch (%)	Determined amount (t)	TAC (t)

Final agreed TAC

2024-25 agreed TAC (t)	2025-26 recommended TAC (t)	Overcatch and undercatch (%)	Determined amount (t)	Change in TAC (t)
1533				

Silver Warehou

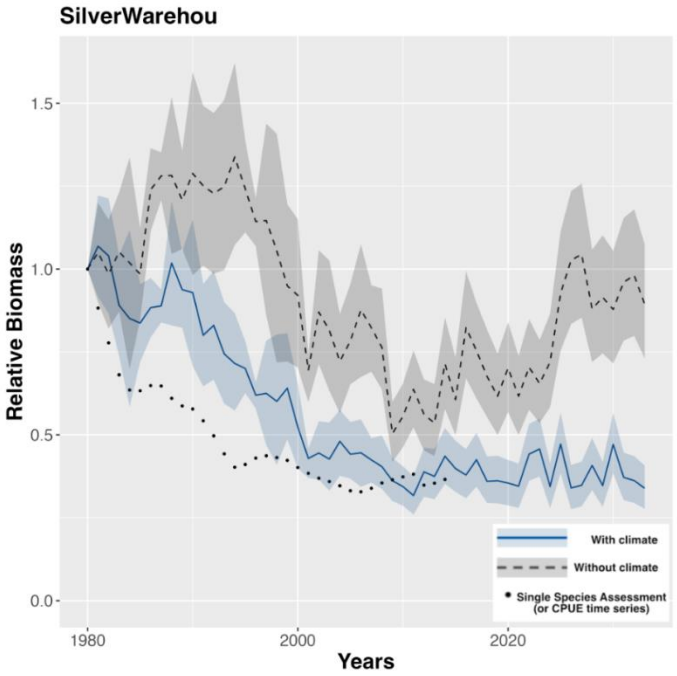
Seriolella punctata



ABARES (2012): Line drawing – FAO

Species Summary

Stock Assessment	Tier 1 Species - last accepted assessment by SERAG in 2021					
Stock Structure	Considered to be a single stock in the SESSF.					
Stock status against reference points (%B_0 in year +1)	**Tier**	**Assessment Year**	**Biomass (from assessment year)**	**Biomass (revised in most recent assessment)**	**Target**	**Limit**
	1	2021	29	29	48	20
	1	2018	31	25		
	1	2015	40	22		
Stock trend and other indicators	Annual standardised CPUE has declined since 1994, has been below average since 2000 and flat since about 2013. The 2022 catch (37.0 t) of Silver Warehou east of 147° longitude is the lowest in the series (i.e., since 1986). Also, the 2023 recorded catch (37.2 t) is very similar to the previous year. (Sporcic, 2024a).					
Species Category MYTAC	**TAC setting approach**					
	The current season (2024–25) is the third year of a three-year MYTAC. The timing of the next assessment is yet to be decided.					
Catch and TAC (t)	**SESSF Season**	**Agreed TAC**	**TAC after unders/overs**	**Cth Retained Catch**		
	2024-25	350	383	-		
	2023-24	350	384	106		
	2022-23	350	387	125		
Economics (Primary) Commonwealth Trawl and Scalefish Hook	**Financial Year**	**Species GVP ($m)**	**Fishery GVP ($m)**	**% Fishery GVP**		
	2022-23	0.59	65.88	0.90		
	2021-22	0.50	80.00	0.63		
	2020-21	0.73	64.00	1.14		
ABARES Status (2024 Report)	**Fishing Mortality: Not subject to overfishing**		**Biomass: Not overfished**			

Climate Sensitivity **Medium**	 Atlantis modelling suggests that climate change has a moderate influence on the biomass of Silver Warehou and is contributing to a lower biomass than would have occurred otherwise.
Assessment summary	
Key Model technical assumptions/ parameters	2021 assessment: Single stock model with two fleets, one in the east and one in the west Von Bertalanffy growth curve estimated males and females combined. Natural mortality (M) fixed at 0.3. Stock recruitment steepness fixed at 0.75. The initial value of the parameter determining the magnitude of process error in annual recruitment is set to 0.7. Selectivity estimated for both fleets. Retention estimated for both fleets, with a time block included in 2002, with all sizes discarded earlier and sized based discarding after this time. In the east trawl fleet an additional retention time block is included in 2018 to allow the model to fit increased discard estimates between 2018 and 2020. The age observation plus group is modelled to be 23 years. The length-weight relationship is fixed based on previously determined estimates (a = 0.0000065 g-1 cm, bb = 3.27). Female length at 50% maturity is fixed at 37 cm.
Significant Changes to data inputs	There were no significant changes to data inputs for the 2021 assessment.

Assessment results and RAG comments	**2021 Tier 1 assessment:** Recruitment has been below the long-term average since 2004. Only one additional recruitment deviation was estimated from the previous assessment rather than the usual 3 (removing a known retrospective pattern in estimation). This had no impact in the estimation of stock status. An extra time-block on retention from 2018 onwards for the east trawl fleet was also included to allow the model to fit the dramatic increase in discard estimates. This improved the model fits to discard estimates and CPUE in the east trawl fleet. The rapid increase in the estimated stock status at the end of the series, which uses assumed catches in 2021 based on those in 2020 was discussed by SERAG. This projected estimate is not constrained by data inputs, most notably CPUE, and may be an overoptimistic representation of recovery. On the basis that recruitment has been below average since 2004, SERAG recommended adopting a 'low recruitment' base case to use the average of recruitment deviations from 2011-2015 from 2016 onwards. SERAG requested fixed catch projections under the low recruitment scenario and fixed catch projections using the RBC produced from the HCR, and a range of lower catches. The 2021 base case stock assessment estimates that the 2022 spawning stock biomass will be 29% of virgin stock biomass (projected assuming 2020 catches in 2021 under low recruitment scenario) and a 2022 RBC of 587 t . Retrospective analyses under the low recruitment scenario have alleviated concerning patterns observed in previous assessments and in the model with average recruitment projections. Application of the harvest control rule catches estimate that there is no increase in stock status towards the target reference point (48%B0) and stock status remains at 29%B0. Projected stock status under constant catch scenarios and the low recruitment scenario are provided below. SERAG noted silver warehou are not a targeted species, and that a reduction to the TAC alone is not likely to constrain total mortality. The TAC is currently set at 450 t, of which 289 t and 307 t was caught in the 2020-21 and 2019-20 season, respectively. **2024 Tier 1 assessment:** SERAG considered a Tier 1 assessment of Silver Warehou when it met in November 2024. This assessment was not accepted on the basis that: • There was general lack of model fit to the data. • CPUE (i.e. the index of abundance) for a major part of the fishery, the western area, is not well fitted for the most recent years and is the lowest on record, noting that this period also corresponds to the lowest number of boats.

	• Recent discard estimates are large and highly uncertain, especially in the east. These appear to be, at least in part, driving increased estimates of recent recruitment and subsequent spawning biomass (current stock status estimated to be 48% of unfished biomass). • Silver Warehou is second to eastern Jackass Morwong in terms of being affected by climate change and there is a concern there could have been a change in productivity in the stock. SERAG recommended that the existing 350 t TAC (based on the constant catch projections from the 2021 assessment) be maintained for Silver Warehou. The RAG also recommended reviewing the Silver Warehou assessment in 2026.

Constant catch scenarios developed using low recruitment projections (average recruitment over the last five years).

Retained catch scenario (t)	Mean Discards (t)	2022 (%B_0)	2023 (%B_0)	2024 (%B_0)	2025 (%B_0)	2026 (%B_0)
0	0	29	31	34	36	37
250	59	29	30	31	32	33
350	85	29	30	30	31	31
450	110	29	29	29	29	29
2022 RBC	118	29	29	29	29	29

RAG Recommendations

SERAG (Nov 2024) recommended maintaining the existing 350 t TAC for Silver Warehou based on the constant catch projections from the 2021 assessment.

	Year	RBC (t)	RBC arrangements
RBC (t)	2025	N/A	2024 assessment was not accepted by the RAG
	2024	575	2021 Assessment: The RBCs from the HCR (left) would not result in any rebuilding towards the TRP (and the stock status would remain at 29%B_0). TAC advice for the 2022–23 and subsequent seasons was based on a constant catch of 350 t.
	2023	580	
	2022	587	
	3-year average	581	
Discount Factor (t)	N/A	Discount factors are not applied to Tier 1 assessments.	
State catch (t)	N/A	State catches are very low and are not deducted from the RBC because a TAC based on constant catch is recommended.	
Discards (t)	84	Modelled discards from the 2021 stock assessment.	

Recreational Catch (t)	N/A	There are no estimates of recreational catch.
RCA (t)	N/A	There has been no specific research catch allocated.
Provisional TAC under the Harvest Strategy		No provisional TAC under the Harvest Strategy as 2024 assessment was not accepted. SERAG recommended continuing to set the TAC based on the fixed catch projection of 350 t.

AFMA Advice

AFMA Management recommends a TAC of 350 t for Silver Warehou during the 2025–26 season, the fourth year of a three-year TAC period, with undercatch and overcatch provisions set at 10 per cent, and a determined amount of 2 t.

MAC Recommendations

Commercial fishers' interest	
Species specific management (target, companion, and bycatch)	
MAC advice and any dissenting views	

Undercatch (%)	Overcatch (%)	Determined amount (t)	TAC (t)

Final agreed TAC

2024-25 agreed TAC (t)	2025-26 recommended TAC (t)	Overcatch and undercatch (%)	Determined amount (t)	Change in TAC (t)
350				

Non-Quota species recommendations

Boarfish and Orange Roughy are non-quota species in the East Coast Deepwater Trawl (ECDWT) Sector. Boarfish is managed in the Trigger Species category with a TAC of 200 t and catch trigger of 10 t. For ECDWT caught Orange roughy, a bycatch TAC of 50 t is set annually through the annual review of TACs for rebuilding species.

Targeted fishing for hagfish (*Eptatretus cirrhatus*) commenced in 2015 and is managed as a non-quota species in the Gillnet, Hook and Trap (GHAT) sector of the SESSF. AFMA sets a precautionary TAC on an annual basis based on the best available information and advice. The current TAC of 80 tonnes is based on the maximum annual landed catch of the fishery taken during the 2018–19 and 2019–20 fishing seasons and is split across two zones via concession conditions (north and south of the latitude 36°45'South) that restricts catch to 40 tonnes in each zone. The AFMA Commission considers this to be a precautionary catch limit that is unlikely to pose a risk to the sustainability of the hagfish stock.

Since the introduction of the TAC during 2020–21 fishing season, the annual landed catch of hagfish has ranged between 20 and 68 tonnes and averaged 45 tonnes per fishing season. This average represents 56.25% of the TAC.

Species specific research and priorities

Escape holes are required for hagfish traps to allow for the escapement of individuals smaller than the desired commercial size (> 100 g). At the SERAG meeting in November 2021, preliminary results of the escape hole trial were presented which suggested that 16 mm hole size may be appropriate to allow smaller animals to escape while optimising commercial catch. The trial was continued into 2023 to further examine the use of mm escape holes with various diameters for optimising commercial catch. Continued support for the escape hole trial in 2023 and 2024 was provided by both SERAG and SEMAC. The data from the trial are being compiled. AFMA is waiting on industry to collate and provide the data from the escape hole size trial.

RAG advice

Boarfish: SERAG (September 2023) supported the use of a Trigger Species category for Boarfish and recommended that a catch limit be set at 200 t for the 2024-25 season with a catch trigger set at 10 t.

Orange roughy: SERAG recommended maintaining the bycatch TAC of 50 t and for this bycatch TAC to be considered through the annual rebuilding species reviews in future.

Hagfish: The data from the escape hole size trial has yet to be collated by industry and provided to AFMA. Without new information, SERAG (November 2024) advised there is no justification to change the TAC for the 2025-26 fishing season.

AFMA management recommends:

Boarfish: see Trigger Species

Orange Roughy: Maintain bycatch TAC of 50 t for the 2025-26 fishing year.

Hagfish: Maintain TAC of 80 tonnes for hagfish for the 2025-26 fishing year

Undercatch an overcatch: There are no undercatch or overcatch provisions for non-quota species.

SEMAC advice:

Table 1 Summary of TACs for Non-Quota species determination

Non-Quota species	2024-25 TAC (t)	2025-26 Recommended Catch Trigger (t)	Change from 2024-25 (t)
Boarfish (ECDWT)	200	10	0
Orange Roughy (ECDWT)	50	50	0
Hagfish	80 40 t each north and south of 36˚45'South	80	0

Glossary

Biological reference points – quantitative values, often stated in terms of fishing mortality or stock size, that summarise either a desired state for the stock (a target) or a state of the stock that should be avoided (a threshold).

Biomass – the total weight of all the fish in a stock or a component of a stock.

B_{LIM} (biomass limit reference point) – The point beyond which the risk to the stock is regarded as unacceptably high.

B_{MEY} (biomass at maximum economic yield) – Average biomass corresponding to maximum economic yield.

B_{MSY} (biomass at maximum sustainable yield) – Average biomass corresponding to maximum sustainable yield.

B_{TARG} (target biomass) – The desired biomass of the stock.

B_0 (mean equilibrium unfished biomass) – Average biomass level if fishing had not occurred.

CASAL (C ++ Algorithmic Stock Assessment Laboratory) - an advanced software package developed by the National Institute of Water and Atmospheric Research (NIWA, New Zealand) for fish stock assessment. The software implements a generalised age or length structured fish stock assessment model that allows a great deal of choice in specifying the population dynamics, parameter estimation and model outputs.

Catch Per Unit Effort (CPUE) – the number or biomass of fish caught as by a unit of fishing effort. Often used as a measure of fish abundance.

C_{TARG} (Catch target) – The target catch level.

CE_{LIM} (CPUE limit reference point) – the point below which CPUE is too low and can indicate stock depletion.

CE_{TARG} (CPUE target) – The target CPUE rate.

Close Kin Mark Recapture (CKMR) – uses advances in genetics to affordably and reliably identify parent-offspring pairs (and conceivably other types of kin), and then analyses the number and pattern of pairs in a mark-recapture framework.

Commonwealth Trawl Sector Fishery Independent Survey (CTS FIS) - a survey undertaken in the CTS to provide a time-series of abundance indices that are independent from commercial fishing.

Confidence interval – also called the confidence bound, a range of values within which the true value most likely lies.

Determined amount - for a quota species and a fishing year, means the amount (in kilograms) of that species specified in a determination made by AFMA for section 22A of the *Southern and Eastern Scalefish and Shark Fishery Management Plan 2003* for that species and year.

F (fishing mortality) – The instantaneous rate of fish deaths due to fishing a designated component of the fish stock. F reference points may be applied to entire stocks or segments of the stocks and should match the scale of management unit. Instantaneous fishing mortality rates of 0.1, 0.2 and 0.5 are equivalent to 10 per cent, 18 per cent and 39 per cent of deaths of a stock due to fishing.

F_{LIM} (fishing mortality limit reference point) – The point above which the removal rate from the stock is too high.

F_{MEY} (fishing mortality at maximum economic yield) – The fishing mortality rate that corresponds to maximum economic yield.

F_{MSY} (fishing mortality maximum sustainable yield) – The fishing mortality rate that achieves maximum sustainable yield.

F_{TARG} (fishing mortality target) – The target fishing mortality rate.

Great Australian Bight Fishery Independent Survey (GABFIS) - a survey undertaken in the GAB to provide a time-series of abundance indices that are independent from commercial fishing.

Index of abundance – numerical value used to demonstrate the trend in relative abundance over time.

Markov Chain Monte Carlo (MCMC) – an approach to estimate uncertainty in a statistical model by beginning with a final model and shifting its associated parameter values slightly to recalculate the model's goodness of fit thousands or millions of times.

Maximum economic yield (MEY) – The sustainable catch level for a commercial fishery that allows net economic returns to be maximised. For most practical discount rates and fishing costs, MEY implies that the equilibrium stock of fish is larger than that associated with maximum sustainable yield (MSY). In this sense, MEY is more environmentally conservative than MSY and should, in principle, help protect the fishery from unfavourable environmental impacts that could diminish the fish population.

Maximum sustainable yield (MSY) – The maximum average annual catch that can be removed from a stock over an indefinite period under prevailing environmental conditions. MSY defined in this way makes no allowance for environmental variability, and studies have demonstrated that fishing at the level of MSY is often not sustainable.

Mortality – Deaths from all causes (usually expressed as a rate or as the proportion of the stock dying each year).

Multi-Year Total Allowable Catch (MYTAC) – MYTACs are applied for Tier 1, Tier 3, and Tier 4 species where suitable. The Harvest Strategy outlines criteria that should be considered when determining whether a stock is suitable for a MYTAC.

Overfished – A fish stock with a biomass below the biomass limit reference point. 'Not overfished' implies that the stock is not below the threshold.

Overfishing, subject to – A stock that is experiencing too much fishing, and the removal rate from the stock is unsustainable. Also:

- Fishing mortality (F) exceeds the limit reference point (F_{LIM}). When stock levels are at or above B_{MSY}, F_{MSY} will be the default level for F_{LIM}.
- Fishing mortality in excess of F_{LIM} will not be defined as overfishing if a formal 'fish down' or similar strategy is in place for a stock and the stock remains above the target level (B_{TARG}).
- When the stock is less than B_{MSY} but greater than B_{LIM}, F_{LIM} will decrease in proportion to the level of biomass relative to B_{MSY}.
- At these stock levels, fishing mortality in excess of the target reference point (F_{TARG}) but less than F_{LIM} may also be defined as overfishing, depending on the harvest strategy in place and/or recent trends in biomass levels.
- Any fishing mortality will be defined as overfishing if the stock level is below B_{LIM},

unless fishing mortality is below the level that will allow the stock to recover within a period of 10 years plus one mean generation times the mean generation time, whichever is less.

Spawning stock biomass (SB) – the total weight of all adult (reproductively mature) individuals in a population. Also called spawning biomass.

SB_{MSY} – Spawning or 'adult' equilibrium biomass at maximum sustainable yield.

Stock assessment – an evaluation of the past, present and future status of the stock that includes a range of life history characteristics for a species, such as the geographical boundaries of the population and the

stock; information on age, growth, natural mortality, sexual maturity, and reproduction, feeding habits and habitat preferences; and the fisheries pressures affecting the species.

Stock Synthesis (SS) – is a statistical age-structured population modeling framework that has been applied in a wide variety of stock assessments globally (Methot & Wetzel, 2013).

Von Bertalanffy (VB) growth model – used in stock assessments to model the mean length or weight of fishes.

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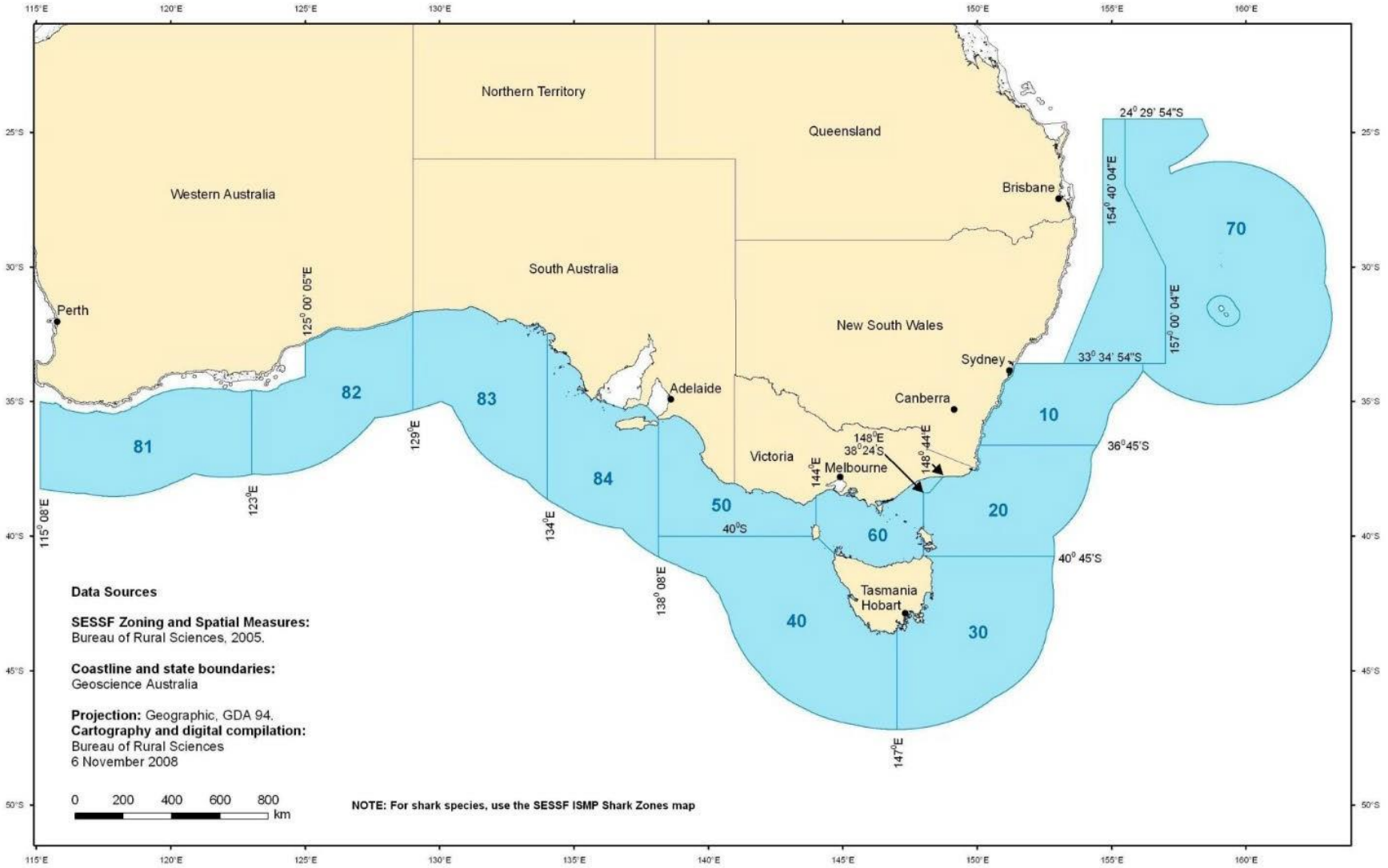
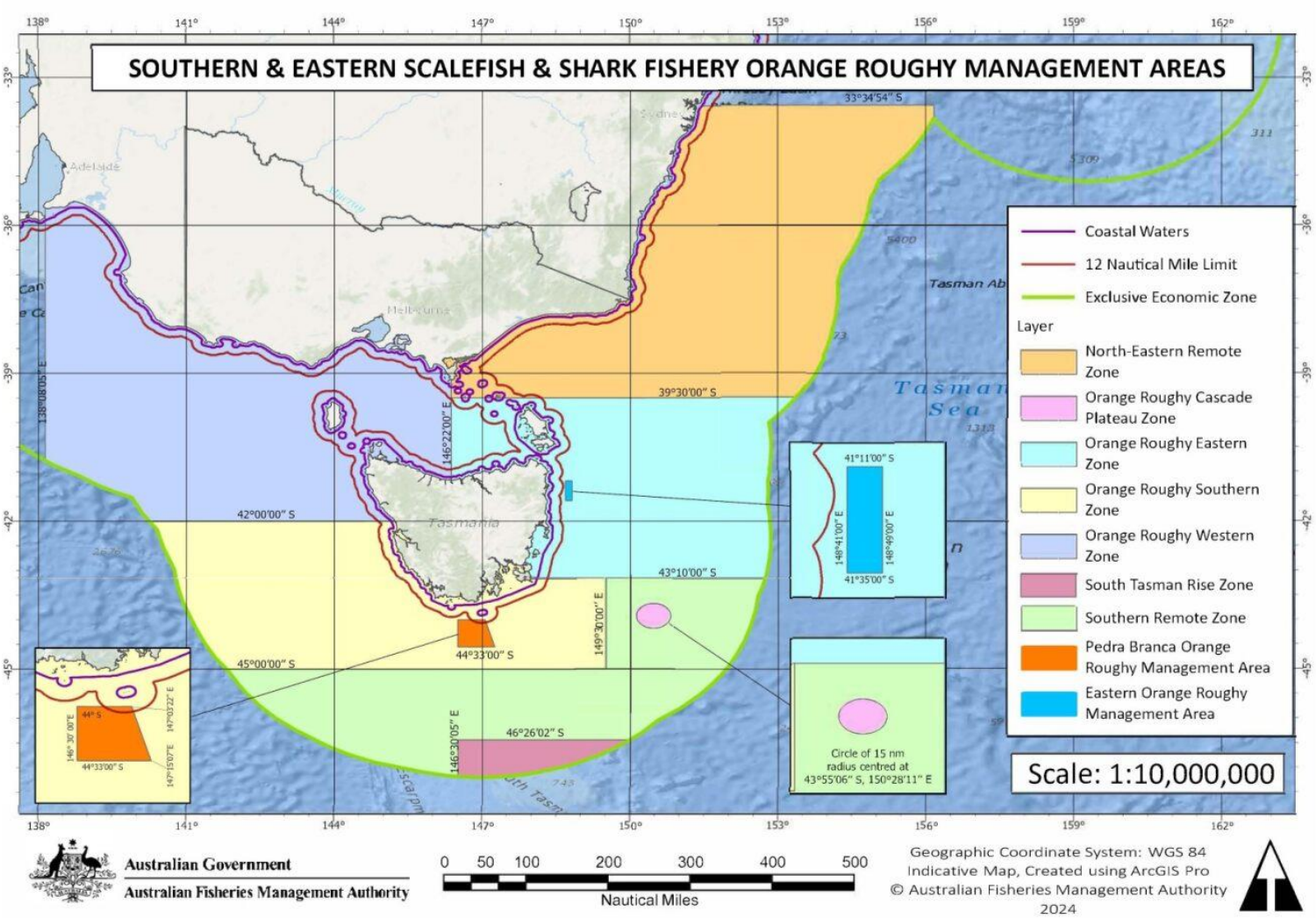
Appendix A – SESSF ISMP Scalefish Zones



Appendix B - Orange Roughy Zones