



Australian Government

Australian Fisheries Management Authority

South East Resource Assessment Group (SERAG) Meeting 2 2021

Meeting minutes

19–20 October 2021

Microsoft Teams Meeting

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Agenda

Day 1: 19 October 2021

Time (AEDT): 09:00–17:00

Location: Microsoft Teams meeting

Chair Name: Dr Paul McShane

Approximate time	Item	Purpose	Lead presenter
9:00 30 mins	Agenda item 1. Preliminaries		
	1.1 Acknowledgement of country, introductions and apologies	For noting	Chair
	1.2 Declaration of interests	For noting	Chair
	1.3 Adoption of agenda	For action	Chair
	1.4 Actions items review (all previous action items)	For noting	Chair
9:30 3 hours	Agenda item 2. Jackass morwong		
	2.1 Tier 1 preliminary base case (east)	For noting	Jemery Day (CSIRO)
	2.2 Weight of evidence – TAC advice (west)	For noting	Jemery Day (CSIRO)
	2.3 Future assessment options (west)	For advice	Jemery Day (CSIRO)
11:00 15 mins	<i>Break</i>		
11:15	Agenda item 2 continued...	For noting	
12:45 30 mins	<i>Lunch Break</i>		
13:15 2 hours	Agenda item 3. Blue grenadier		
	3.1 Tier 1 Preliminary Base Case	For noting	Geoff Tuck (CSIRO)
	3.2 Discussion	For advice	Geoff Tuck (CSIRO)
15:15 15 mins	<i>Break</i>		
15:30 1.5 hours	Agenda item 4. John dory		
	4.1 Tier 4 assessment	For noting	Miriana Sporcic (CSIRO)
	4.2 Discussion	For advice	Miriana Sporcic (CSIRO)
	4.3 RBC advice	For advice	Miriana Sporcic (CSIRO)
17:00	<i>End of Day 1</i>		

Day 2: 20 October 2021**Time (AEDT): 08:30–17:00****Location:** Microsoft Teams meeting

Approximate time	Item	Purpose	Lead presenter
8:30 30 mins	Agenda item 5. Silver trevally		
	5.1 Presentation of Commonwealth Tier 4 assessment	For noting	Miriana Sporcic (CSIRO)
	5.2 NSW assessment presentation	For noting	Ashley Fowler (NSW DPI)
	5.3 RBC advice	For advice	
10:00 15 mins	<i>Break</i>		
10:15 2 hours	Agenda item 6. Orange roughy		
	6.1 Tier 1 preliminary base case	For noting	Paul Burch (CSIRO)
	6.2 Discussion	For advice	Paul Burch (CSIRO)
12:15 30 mins	<i>Lunch break</i>		
12:45 1.5 hours	Agenda item 7. Flathead		
	7.1 Tier 1 assessment update	For noting	Jemery Day (CSIRO)
	7.2 Discussion	For advice	Jemery Day (CSIRO)
	7.3 RBC advice	For advice	Jemery Day (CSIRO)
	7.4 Fixing 'steepness' (preparation for the 2022 assessment)	For advice	Jemery Day (CSIRO)
14:15 45 mins	Agenda item 8. Mirror dory		
	8.1 Tier 4 assessment	For noting	Miriana Sporcic (CSIRO)
	8.2 Discussion	For advice	Miriana Sporcic (CSIRO)
	8.3 RBC advice	For advice	Miriana Sporcic (CSIRO)
15:00 15 mins	<i>Break</i>		
15:15 1.5 hours	Agenda item 9. Deepwater shark		
	9.1 Tier 5 assessment (east)	For noting	Robin Thomson (CSIRO)
	9.2 Tier 5 assessment (west)	For noting	Robin Thomson (CSIRO)
	9.3 Discussion	For advice	Robin Thomson (CSIRO)
	9.4 RBC advice	For advice	Robin Thomson (CSIRO)
16:45 15 mins	Other business and action items review	For discussion	Chair
17:00	<i>Close of meeting</i>		

The Chair opened the meeting at 09:00.

Agenda item 1. Preliminaries

1.1 Welcome and apologies

1. Dr Paul McShane, the Chair, welcomed members and observers to the meeting and made an Acknowledgement of Country paying our respects to this country's First People and Traditional Custodians of the land throughout Australia. He acknowledged Australia's Traditional Custodians of Country and recognised their continued connection to land, waters and community. He paid respect to them and their cultures and to Elders past, present, and emerging.
2. SERAG (the RAG) members noted the Acknowledgement of Country, that the meeting was being recorded, and commenced proceedings.
3. The RAG noted the current membership and attendees ([Table 1](#)), and that Mr John Jarvis was an apology for this meeting.

Table 1. A list of SERAG members and other attendees.

Members	Position
Dr Paul McShane	Chair
Dr Ian Knuckey	Scientific member
Dr Geoff Tuck	Scientific member
Mr Andrew Penney	Scientific member
Mr James Woodhams	Scientific member
Dr Sarah Jennings	Scientific (Economics) member
Mr Simon Boag	Industry member
Mr John Jarvis	Industry member (apology)
Mr Daniel Hogan	Industry member
Mr Ross Winstanley	Recreational member
Mr Daniel Corrie	AFMA member
Executive Officer	Organisation
Mr Aaron Puckeridge	AFMA
Invited Participants	Organisation
Dr Paul Burch	CSIRO ¹
Dr Miriana Sporcic	CSIRO
Dr Pia Bessell-Browne	CSIRO
Dr Robin Thomson	CSIRO
Dr Jemery Day	CSIRO
Dr Geoffrey Liggins	NSW DPI ²
Ms Frances Seaborn	DNRET ³
Mr Nicholas Hill	CSIRO

¹ [Commonwealth Scientific and Industrial Research Organisation](#)

² [NSW Department of Primary Industries](#)

³ [Department of Natural Resources and Environment Tasmania](#)

Dr Ashley Fowler ⁴	NSW DPI
Ms Veronica Silberschneider ⁵	NSW DPI
Dr Kevin Stokes ⁶	Stokes.net.nz Ltd
Dr Caroline Sutton	CSIRO
Prof Colin Sempford ⁷	JCU ⁸ , IMAS ⁹
Observers	Organisation
Dr Krystle Keller	ABARES ¹⁰
Dr Daniel Wright	ABARES
Dr Tim Emery	ABARES
Mr Les Scott ¹¹	Peter and Una Fishing Co
Dr Sandra Curin Osorio	CSIRO
Mr Tony Lavallo ¹²	Industry
Dr Natalie Dowling ¹³	CSIRO
AFMA Attendees	Role
Ms Fiona Hill	Demersal Section Senior Manager

1.2 Declarations of interest

- The RAG members followed the conflict of interest declarations as outlined in [Fisheries Administration Paper 12](#). Members and participants reviewed and updated the Declarations of Interest included in [Attachment A](#).
- The RAG decided that when management advice was being determined, any member with declared conflicts of interest ([Table 2](#)) would leave the meeting but remain present during the discussions.

Table 2. Participation in items where there are declared conflicts of interest

Agenda Item	Potential conflicts of interest	Discussion Participation	Recommendation Participation
4. John dory	Mr Simon Boag Mr Daniel Hogan Mr Tony Lavallo	Present	Absent
5. Silver trevally	Mr Simon Boag Mr Daniel Hogan Mr Tony Lavallo	Present	Absent
8. Mirror dory	Mr Simon Boag Mr Daniel Hogan	Present	Absent
9. Deepwater shark	Mr Simon Boag Mr Daniel Hogan	Present	Absent

⁴ Only present for [agenda item 5](#)

⁵ Only present for day 2

⁶ Only present for [agenda item 6](#)

⁷ Only present for [agenda item 9](#)

⁸ [James Cook University](#)

⁹ [Institute for Marine and Antarctic Studies](#)

¹⁰ [Australian Bureau of Agricultural and Resource Economics and Sciences](#)

¹¹ Only present for [agenda item 3](#)

¹² Only present for [agenda items 4](#) and [5](#)

¹³ Only present for [agenda item 9](#)

1.3 Adoption of agenda

6. The RAG adopted the [agenda](#) as final.

1.4 Minutes of previous meeting

7. The RAG noted that the final minutes of SERAG meeting 1 of 28–29 September 2021 were being finalised and would be published on the [AFMA website](#).

1.5 Actions arising from previous meetings

8. The RAG noted the action items from previous meetings and the updates provided by the Executive Officer at [Attachment B](#). Specifically, the RAG discussed the following action items:

- [Action item 24](#): Dr Paul Burch to produce a paper on orange roughy overcatch/undercatch provisions. This action item is ongoing and will be presented at SERAG 3 in November 2021.
- [Action item 26](#): Mr Daniel Corrie and Mr Patrick Cordue to discuss model diagnostics for the pink ling stock assessment. This action item is ongoing and will be presented at SERAG 3.
- [Action item 6](#) (2020.11 agenda item 6): AFMA and CSIRO to explore non-eastern roughy stock assessment options. This action item has been supported by SERAG and GABRAG¹⁴ and is expected to be delivered by March/April 2022.

Agenda item 2 – Jackass morwong

9. Dr Jemery Day introduced the agenda item to the RAG, outlining the 2021 stock assessment of eastern jackass morwong (*Nemadactylus macropterus*) and asked for the RAG to endorse the preliminary base case. He also presented changes relative to the 2018 stock assessment.

10. The RAG noted the following background:

- The 2018 stock assessment estimated eastern jackass morwong spawning biomass to be at 35 per cent of B_0 ¹⁵ at the start of 2019.
- The stock assessment includes an additional 3 years of catch, discard rate estimates, CPUE¹⁶, length and age data (with updated ageing error estimates).
- The stock assessment used the current version of Stock Synthesis and the latest tuning protocols. It was noted that the first method of bridging (Bridge 1) led to minimal changes in biomass estimates from 2000–2020, but that large changes in spawning biomass estimates were apparent in the early part of the biomass time series (1915–1970). The second method of bridging (Bridge 2) led to considerable changes to estimates of absolute biomass from 2015–2021 in addition to earlier changes in spawning biomass.
- Historical estimates of discard rates used as inputs to the stock assessment were revised, including some changes to historical discard data selection protocols.
- The model structure includes:
 - single sex;
 - 6 fleets;
 - a single stock in 3 zones;
 - selectivity estimated for each fleet; and
 - a fixed value for M ¹⁷ of 0.15.

¹⁴ [Great Australian Bight Resource Assessment Group](#)

¹⁵ Virgin biomass

¹⁶ Catch Per Unit Effort

¹⁷ Natural mortality

- In contrast to the 2018 assessment, the preliminary 2021 stock assessment (assuming average recruitment from 2016 onwards) estimated that eastern jackass morwong biomass had dropped below B_{Lim} ¹⁸ for the period 2013–2021. However, it was estimated to reach a minimum of 15 per cent in both 2018 and 2019, followed by recovery to 22 per cent (of the post-productivity shift from 1998 equilibrium spawning biomass) in 2022. The change in recent estimates of stock status from the 2018 assessment was largely driven by negative recruitment deviations (2007–2012), as well as below average recruitment for the three new estimated recruitment deviations (2013–2015), which were unable to be estimated in the 2018 assessment.
- Dr Jemery Day recommended a model scenario that incorporated updated FIS¹⁹ abundance indices (FIS2 rather than FIS1) as the updated base case stock assessment for eastern jackass morwong.
- The updated stock assessment model estimated current biomass to be at 22 per cent of B_0 in 2022.
- Dr Jemery Day also presented model outputs showing the influence of modelling static compared to dynamic B_0 .
- The last 12 recruitment deviations (up to 2015) have all been estimated to be below average.
- It was noted that if the 1988 productivity shift is not incorporated into the model, eastern jackass morwong spawning biomass remains below the B_{Lim} at 14 per cent in 2022.
- Some work still needs to be completed on the final base case, including jitter analysis, construction of likelihood profiles, and retrospective analyses.
- A brief background on low recruitment scenarios for eastern jackass morwong in comparison to the recruitment projections for silver warehou (*Seriolella punctata*), school whiting (*Sillago flindersi*), and tiger flathead (*Platycephalus richardsoni*) was also presented.

11. The RAG made the following key points:

- Discards have increased in recent years. The Chair noted that he had spoken to Mr John Jarvis (apology) regarding jackass morwong prior to the meeting. Mr John Jarvis suggested that discards may be increasing because of the low market price for jackass morwong, meaning they are not worth retaining. Discards may also be affected by the prevalence of small fish. This could also indicate improving recruitment.
- The RAG enquired about the impact of increasing discards on the model and how this influences the CPUE index, which does not consider discards. It was noted that discards had only increased in one fleet overall and so should not have substantial impacts on the model.
- Industry have noticed a decrease in jackass morwong abundance despite an influx of small fish (new recruits). Input from an eastern trawl operator would be valuable.
- The RAG noted that it was concerning how high current jackass morwong catch is if the preliminary stock assessment estimate of current spawning biomass is accurate.
- Given that the eastern jackass morwong stock is now being considered as below the B_{Lim} , AFMA will need to consider implementing a formal recovery plan.
- The recent average poor recruitment estimates should be considered in projecting RBC²⁰ advice. This was further discussed in [agenda item 7](#), where the RAG recommended that the most recent 10-year average of recruitment deviations should be used to project recruitment for eastern jackass morwong from 2016 onwards.

¹⁸ Biomass limit reference point

¹⁹ Fishery Independent Survey

²⁰ Recommended Biological Catch

2.1 Western jackass morwong

12. Mr Daniel Corrie and Dr Miriana Sporcic introduced this portion of the agenda item, presenting an updated tier 4 stock assessment of western jackass morwong.
13. The RAG noted the following background:
 - Updated catch, effort and CPUE time series data were presented across various factors such as depth, area and vessel.
 - Jackass morwong catches have been low in the west, with only 7.8 t caught in 2020.
 - The previous stock assessment (2018) predicted western jackass morwong spawning biomass in 2019 to be at 68 per cent of B_0 . However, this estimate was based on a highly uncertain tier 1 stock assessment.
 - The tier 4 stock assessment showed a low but stable trend in CPUE over the last 5–10 years.
14. The RAG made the following key points:
 - It is difficult to provide updated advice given uncertainties in the data and stock assessment.
 - Mr Daniel Corrie noted that although catches are low, AFMA requires scientific advice and input that can be justified to inform management advice and to produce an RBC recommendation.
 - Catches of jackass morwong in the Great Australian Bight were also low and declining.
 - The RAG noted that given the low jackass morwong catches and the lack of concerning trends in the limited data available, current management advice should persist until better information is available.
 - The long-term yield (assuming average recruitment in the future) from the 2018 tier 1 stock assessment was 158 t.
 - The RAG agreed to recommend an RBC for western jackass morwong at SERAG 3 in November 2021.

2.2 Actions and recommendations for agenda item 2

Action item 1: Dr Jemery Day (CSIRO) to model low recruitment scenarios of eastern jackass morwong using the mean recruitment deviations from the most recent 10 years (2003–2012) to be presented at SERAG 3.

Action item 2: Dr Jemery Day (CSIRO) to incorporate recovery timelines consistent with the requirement of the Harvest Strategy Policy into model outputs for the eastern jackass morwong stock assessment. Dr Jemery Day will also aim to incorporate an MCMC²¹ analysis if time permits.

Recommendations:

- The RAG accepts the 2021 eastern jackass morwong stock assessment model incorporating updated FIS data as the new base case.

Agenda item 3 – Blue grenadier

15. Dr Geoff Tuck introduced the agenda item, presenting the 2021 stock assessment of blue grenadier (*Macrurus novaezelandiae*). The RAG was provided with the following background on the blue grenadier stock assessment:
 - The projected 2022 spawning stock biomass is 126 per cent of virgin female spawning biomass.
 - The model includes updated catch, discard estimates, CPUE, length, FIS, and age data – specifically updated estimates of age reading error.

²¹ Markov Chain Monte Carlo

- The model also uses the current version of Stock Synthesis software and the latest tuning protocols.
- The RAG noted the process and results of bridging the model including the sequential addition of recent data inputs and extending the number of recruitment deviations. It was noted that the stepwise addition of data sources resulted in considerable variation in biomass estimates.
- Blue grenadier catches have increased in recent years because of vessels targeting the spawning aggregation off the west coast of Tasmania.
- The model structure includes:
 - two sexes;
 - two fleets (spawning and non-spawning);
 - an estimated M value for females and fixed M multiplier of the female M at 1.2 for males.
- Updating discard data had the greatest impact on the model outputs.
- A strong cohort of new recruits across multiple years seems to be driving an increase in stock biomass, with biomass estimates near B_0 .
- The model estimates of recent recruitment strength were consistently above average recruitment.

16. The RAG made the following key points:

- The spawning aggregation FIS index should be used with caution given it is reflective of an aggregation.
- The RAG inquired about estimating M for each of the sexes. Dr Geoff Tuck noted that the current model estimates values of M were higher than previous assessments and that New Zealand uses similarly high values. The RAG discussed these implications and suggested that a likelihood profile of M may be required to show how well the model is estimating M .
- The RAG discussed the implications of including or excluding different abundance indices, particularly the spawning aggregation FIS data. It was noted that given so few data points, these indices should not be overly influential in informing the model.
- It was noted that the inter-annual fluctuations in the FIS indices for both spawning and non-spawning components are large and well beyond the biological capability of the stock.

3.1 Actions and recommendations for agenda item 3

Recommendations:

- The RAG accepted the 2021 blue grenadier stock assessment that excludes the FIS indices and estimates M separately for each sex as the new base case. Dr Geoff Tuck (CSIRO) is to incorporate a likelihood profile analysis for M for both sexes of blue grenadier and to present biomass projections assuming average recruitment at SERAG 3.

Agenda item 4 – John dory

17. Dr Miriana Sporic introduced the agenda item and asked for SERAG to provide recommendations on the outcomes of the 2021 tier 4 stock assessment of John dory (*Zeus faber*). The RAG was provided with the following background on the tier 4 assessment:

- John dory was previously assessed using tier 3 methods. However, SESSFRAG²² ([February 2019](#)) agreed to using a tier 4 to increase certainty in the assessment. The 2017 tier 3 assessment produced an RBC of 485 t.

²² [Southern and Eastern Scalegfish and Shark Resource Assessment Group](#)

- The 2021 tier 4 for John dory includes updated catch, discards and effort data, and a CPUE time series presented relative to various factors including depth, vessel, and area.
- CPUE is stable but low compared to historical values.
- The 2021 tier 4 stock assessment estimated John dory to be below the B_{Lim} , producing an RBC of 0 t.

18. The RAG made the following key points:

- Industry noted it was odd to see such high estimates of discards given the market value of John dory. The RAG noted results showing that the inclusion or exclusion of discards in the tier 4 stock assessment had little effect on the RBC.
- Noting that the TAC²³ has remained stable for a long period and that John dory are a by-product species that are not actively targeted, the RAG expressed uncertainty as to how the assessment and TAC could shift so dramatically. It was asked whether a tier 4 stock assessment, based on CPUE, is appropriate for a by-product species.
- Reducing the John dory TAC will affect industry's catches and fishing behaviour, as they may need to actively avoid John dory.
- Mr Tony Lavalle noted a potential southward shift in John dory abundance, with substantial catches occurring south of Eden. CSIRO commented that the metier analysis corroborated this observation.
- The RAG noted that the reference period chosen for the tier 4 stock assessment will influence the outcomes of the assessment and that a productivity shift was not considered. It was suggested that a dynamic B_0 reference point may help inform an assessment of John dory.
- The RAG also commented that there are 43 stocks managed in the SESSF²⁴ and many seem to have declined or be declining. TACs are currently the primary management response being used, and they seem to be ineffective. It was suggested alternate management responses should be considered.
- The Large Change Limiting Rule defined in the [Harvest Strategy Framework for the SESSF](#), can be overridden as there are sustainability concerns to the John dory stock.
- A tier 1 stock assessment could be attempted given the availability of biological data. This may help to better inform the status of John dory.
- Industry participants questioned the appropriateness of a reference period set in the 1980s and 1990s, noting that targeting practices are constantly evolving in the SESSF.
- Mr Simon Boag noted that catch was unlikely to change regardless of the TAC set because John dory are a by-product species. Constraining catches with a low TAC would likely lead to an increase in discards.
- The RAG noted that applying the default reference period to the John dory CPUE time series assumes there has been no change in productivity. It is possible there has been a change in stock productivity, in which case the CPUE time 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 accepted tier 4 assessment.

4.1 Actions and recommendations for agenda item 4

Recommendations:

- Based on the outputs of the tier 4 assessment, the RAG recommended an RBC of 0 t. The RAG 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.

²³ Total Allowable Catch

²⁴ Southern and Eastern Scalefish and Shark Fishery

Agenda item 5 – Silver trevally

5.1 Commonwealth tier 4 assessment

19. Dr Miriana Sporcic presented an updated tier 4 stock assessment of silver trevally (*Pseudocaranx georgianus*) and requested feedback on its outcomes from the RAG. The RAG noted the following background on the assessment:

- The 2021 tier 4 stock assessment includes updated catch, discards, and an updated standardised CPUE time series.
- The 2020 catch of silver trevally was 125 t including discards and approximately 109 t excluding discards.
- The 2021 tier 4 stock assessment produced an RBC of 179 t, a decrease of 190.8 t compared with the 2020 RBC of 370 t.
- Including discard estimates had very little effect on the CPUE time series.

5.2 NSW DPI silver trevally stock assessment

20. Dr Ashley Fowler presented a stock assessment of silver trevally from the NSW DPI so that the RAG could compare outputs across the different stock assessment approaches. The RAG noted the following points regarding NSW DPI's assessment:

- A background of the NSW fishery was presented including fishery zones, fleets, depths fished, catch, effort and management arrangements over time.
- There have been several substantial changes in reporting requirements and management over time in NSW, with four distinct periods in the time series data:
 - Pre-1984 there is no vessel or effort data recorded.
 - From 1984–1997 catch and effort data was recorded but not by gear or fleet.
 - From 1997–2010 catch and effort was recorded by gear and fleet but at monthly timesteps.
 - From 2010-present catch and effort is being recorded by gear and fleet per day.
- It was noted that catches peaked in the 1980s and have since stabilised at a current historical low.
- NSW DPI applied several stock assessment approaches including standardised CPUE, boosted regression tree, an optimised catch-only model, a length-based SPR²⁵ model, and an analysis of the proportion of mature fish using length frequency data.
- The results of each of these stock assessments were presented. These were variable but consistently showed declining trends in the status of silver trevally.
 - The CPUE time series was declining but variable across time and fleets.
 - The length structure is truncated, with the proportion of mature fish declining from 46–72 per cent in 1993–1995 to only 6 per cent in 2020.
 - The catch-only method estimated biomass to be at 15 per cent of B_0 .
 - The boosted regression tree estimated biomass to be at 20 per cent of B_{MSY} ²⁶.
 - Length-based SPR estimated biomass to be at 18 per cent of B_0 .
- On weight of evidence, the NSW DPI assesses silver trevally to be depleted.
- NSW DPI expressed their desire to continue collaborating with the Commonwealth and to further combine stock assessments and data in the future.

21. The RAG made the following key points:

²⁵ Spawn Per Recruit

²⁶ Maximum Sustainable Yield

- Silver trevally is an important recreational species, and recreational catches are not considered in the 2021 tier 4 stock assessment because there is inadequate data available.
- State catches are incorporated into CSIRO's tier 4 stock assessment.
- The discard estimates used to forward fill missing years is an anomalously high value. The RAG discussed using an averaged value to forward and backfill to avoid the discard time series being overly influenced by spikes in data.
- The NSW CPUE data is highly uncertain give the three 'breaks' in the time series as reporting requirements changed over time.
- Industry participants noted that catches of large silver trevally are no longer common, which corroborates the length frequency analysis undertaken by the NSW DPI.
- NSW DPI do not have a harvest strategy in place for silver trevally.
- The discrepancies between the NSW and Commonwealth assessments were discussed. NSW currently considers silver trevally to be depleted and the Commonwealth tier 4 assessment considers the stock to be above the B_{Lim} but below the B_{Targ} ²⁷.
- The RAG noted that there are no significant grounds to reject the current tier 4 stock assessment. Therefore, its RBC recommendation should be accepted. The tier 4 discount factor has not been applied to silver trevally in previous years but will be applied this year. Given the sustainability concerns, the RAG cannot justify not applying a discount factor.
- The Commonwealth stock assessment only considers the CPUE from Commonwealth fisheries and therefore reflects only a portion of overall fishing effort. Consequently, the stock assessment may not be representative of the stock at a population level.
- Discard estimates are poor and greater effort should be made to improve records of discards to help inform future stock assessments.

5.3 Actions and recommendations for agenda item 5

Recommendations:

- The RAG accepts the 2021 silver trevally tier 4 stock assessment and its RBC of 179 t, with a discount factor to be applied, recommending that this RBC be applied to a single year TAC. The RAG noted that the Large Change Limiting Rule may need to be considered.

Agenda item 6 – Orange roughy

22. Dr Paul Burch presented an updated tier 1 stock assessment of eastern orange roughy (*Hoplostethus atlanticus*) and the RAG noted the following background:

- The stock assessment includes updated input data, catch (including discard estimates), age data, and indices of abundance from two acoustic surveys and one egg survey.
- The stock assessment also uses the current version of Stock Synthesis and the latest tuning protocols. Dr Paul Burch presented the process and results of bridging the model including addition of recent data, estimation of addition recruitment deviations, the inclusion of new catch data, the 2019 acoustic biomass index, and 2019 age data. There was little difference in the biomass time series across the different bridging models.
- Previous orange roughy stock assessments have been highly sensitive to the assumed value of M . The ORSC²⁸, which includes Dr Paul Burch, was tasked with identifying alternative approaches for accounting for the uncertainty of M within the 2021 stock assessment and it was decided to estimate M within the assessment using an informative prior developed from the M value for New Zealand orange roughy stocks.

²⁷ Biomass Target Reference Point

²⁸ Orange Roughy Steering Committee

- The prior for M was developed from the posteriors of M from the most recent available assessments for New Zealand orange roughy assessments for orange roughy 2A+2B+3A, orange roughy 3A (North West Chatham Rise), orange roughy 3B (East and South Chatham Rise), and orange roughy (Puysegur).
- Following a recommendation from the August 2021 meeting of the ORSC that the impact of the plus group age on the assessment (specifically the estimate of M) be evaluated, models with plus group ages 100 and 120 years were considered in addition to the existing model with a plus group at 80 years, along with the model where M was fixed at 0.04 yr^{-1} .
 - All four models had very similar trends with estimated biomass falling below the B_{Lim} in the 1990s, but biomass recovered to be above the B_{Lim} around 2010 and has continued to increase.
 - The posteriors for M from the three models that estimated M showed that M was being well estimated, with the range of plausible values for orange roughy of between $M=0.03 \text{ yr}^{-1}$ and $M=0.045 \text{ yr}^{-1}$. The fits to biomass indices and the age data was similar for all four models. The RAG endorsed the natural mortality estimate within the assessment.
 - Of the three models that estimated M , the model with a plus group age at 80 years had the lowest estimate of M , whilst the model with a plus group at 120 years had the highest estimate of M .
 - The fit of biomass indices for the three models were almost indistinguishable.
 - The model with a plus group age at 80 years did not fit the age data as well as the models with plus group ages at 100 or 120 years. Distinguishing between the models with plus groups at 100 and 120 years was challenging because there was little difference in the fits to the age data between the two models. Both models also had a small proportion of individuals in the plus group and a small number of age classes with no individuals, at least for the early age samples.
- It was noted that different data sources support conflicting values for M , with age data suggesting a higher M and the biomass indices a lower M .

23. The RAG made the following key points:

- Dr Geoff Tuck noted that in determining how many age classes to include, that you should consider which model fits best, minimise the number of individuals in the plus group and minimise the number of age classes with zero or little data.
- As there was no evidence to reject the model with the higher plus group, the model that estimated M with a plus group age at 120 years was supported as the base case for the 2021 assessment.
- There is likely to be ageing error in older orange roughy samples, but it is hard to determine its effect.
- The ORSC suggested creating a decision table exploring 5 different M values taken from quantiles of the likelihood distribution of M . It was also noted that too many scenarios could complicate the TAC setting process for SEMAC²⁹.
- Dr Geoff Tuck noted that to reduce the number of scenarios run, the lowest productivity and highest catch scenarios could be run because these would provide the most conservative estimates of spawning biomass trajectories.
- Dr Paul Burch noted that over/undercatch provisions could be incorporated into the model projections if desired. He suggested that M could be incorporated into any overcatch, which would likely lead to a decline of 3–5 per cent in the TAC.

²⁹ [South East Management Advisory Committee](#)

6.1 Actions and recommendations for agenda item 6

Action item 3: AFMA to clarify when the overcatch provisions for eastern orange roughy changed from 0 per cent to 10 per cent as management advice.

Recommendations:

- The RAG accepted the 2021 eastern orange roughy stock assessment with 120 age classes and model estimated M as the new base case. A decision table will not be presented to limit the amount of work required and scenarios presented, but any uncertainty present in model outputs will be appropriately characterized using MCMC. In addition to the standard sensitivities, the impact of uncertainty in M is to be investigated using sensitivity scenarios with fixed M values at the 12.5 per cent and 87.5 per cent quantiles of the estimated value of M are to be presented at SERAG 3.

Agenda item 7 – Flathead

24. Dr Jemery Day presented the 2021 tier 1 stock assessment of tiger flathead and the RAG noted the following background:

- The RAG considered a tier 1 stock assessment for flathead in [December 2019](#). In 2021, the AFMA Commission noted that flathead CPUE had continued to decline for the Danish seine and otter board trawl fleets since the assessment was updated in 2019. The Commission requested that the 2019 assessment be updated in 2021 to include catch and CPUE data from 2019 and 2020. The Commission will seek RBC advice from SERAG for the 2022-23 fishing season.
- There were minimal data updates, which included: updated catch data (for 2017 and 2018 only); new catch data (for 2019 and 2020 only); updated CPUE (full series revisions from 1986–2020) for eastern trawl, Danish seine and Tasmanian trawl fleets; and the final (model) year for data inputs extended to 2020. There was no change to discard rates, length or age data used in the 2019 assessment.
- These minor data updates were incorporated in the 2019 stock assessment with no further structural changes or updates to the assessment. There was little difference in the estimated spawning biomass time series when these data updates were included.
- Alternative catch projection scenarios explored included:
 - The 2019 stock assessment with projected catches (from 2020 onwards) set at the RBC calculated in 2019 (3-year average of 2,563 t).
 - The 2019 stock assessment with updated catch and CPUE data with fixed projected catches (from 2022 onwards) set at 2,400 t.
- The 2019 stock assessment with updated catch and CPUE data.
- Changes to the CPUE time series and model fits were presented for the three current CPUE fleets.
- The model demonstrated a slight decline in spawning stock biomass from 34 per cent in 2019 to 32 per cent in 2020. Current estimated biomass is stable and has oscillated between 30 and 40 per cent of B_0 over the last 30 years.

25. The RAG made the following points:

- The Danish seine CPUE shows a less optimal trend than the model.
- The RAG noted that industry had expressed concerns about declining trends in tiger flathead abundance in the eastern Bass Strait, with catches decreasing in recent years.
- The impact of seismic testing, particularly on the Danish seine fleet was noted. Fishwell Consulting have completed work which showed an 80 per cent reduction in flathead catch rates

after a seismic survey occurred off Lakes Entrance. Seismic surveys may need to be considered in future stock assessments and management decisions.

- The RAG noted uncertainty in the steepness value used with the likelihood profile indicating that the model is unable to estimate steepness well. Three fixed estimates of steepness were suggested including 0.62, 0.72, and 0.75. The value of 0.75 is a default used in many assessments. In 2019, sensitivities to fixed values of steepness were examined (0.75, 0.65, and 0.85), which resulted in estimated values of stock status in 2020 of 0.34, 0.35 and 0.37 B_0 , respectively (i.e., little effect). Mr Daniel Corrie asked if there was any evidence to change the advice given in 2019.
- Mr Simon Boag asked that the RAG consider the impacts of seismic testing on SESSF fisheries, particularly tiger flathead and school whiting and the decline in Danish seine CPUE.
- Dr Geoff Tuck noted this was only an update of the 2019 stock assessment model, not the application of a new stock assessment. The point of this process is to see if any substantial shifts have occurred that would lead to a 'break out' or if existing advice should remain in place.

7.1 Actions and recommendations for agenda item 7

Recommendations:

- While noting the recent decline in the Danish seine CPUE for tiger flathead, the same decline was not evident in the eastern trawl and Tasmanian CPUE. Therefore, the RAG recommended maintaining the RBC advice for 2022 based on the outputs of the 2019 tiger flathead stock assessment. A fixed value of 0.75 should be used to define steepness in the proposed 2022 assessment.

Agenda item 8 – Mirror dory

26. Dr Miriana Sporcic introduced this agenda item and asked the RAG to consider the 2021 tier 4 stock assessment of mirror dory (*Zenopsis nebulosa*) stocks in the east and west.

27. The RAG noted the following key points for mirror dory east:

- Updated catch, discards, and standardised CPUE data were presented.
- The 2020 catch of mirror dory east was approximately 77 t including discards and approximately 70 t excluding discards.
- The 2021 estimated RBC was 112.9 t, a 32.76 t decrease compared to the 2020 RBC of 145.69 t.
- The CPUE time series is declining and is now at the proxy for B_{Lim} .

28. The RAG noted the following key points for mirror dory west:

- Updated catch, discard, effort, and standardised CPUE data were presented.
- The 2020 catch of mirror dory west was 34 t, the lowest catch since 2000.
- The 2021 estimated RBC was 56.18 t, a 5.4 t decrease compared to the 2020 RBC of 61.57 t.
- Standardised CPUE is low but stable between the proxy values for B_{Lim} and B_{Targ} .

29. The RAG made the following key points:

- Mr Daniel Hogan noted that the discard estimates used for mirror dory east are higher than those likely present in the trawl fleet. It was also noted that discards have decreased in recent years and therefore using a long-term average for forward/back filling may not be appropriate.
- Mr Daniel Hogan noted that catch for mirror dory west had stabilised in recent years and that the stock assessment aligns with the trends seen by industry.
- Mr Andrew Penney noted that given sustainability concerns about mirror dory east, maybe the RBC should be split between regions to ensure that all catch does not come from the western region.

8.1 Actions and recommendations for agenda item 8

Recommendations:

- The RAG accepts the recommended RBC values for mirror dory east (112 t) and west (56 t) from the 2021 tier 4 stock assessment for the 2022–23 SESSF fishing season with a discount factor to be applied. It was noted that the eastern mirror dory stock is near the B_{Lim} and currently mirror dory are managed under a shared TAC for eastern and western regions. The TAC should be applied so that eastern mirror dory is not overcaught.

Agenda item 9 – Deepwater shark

30. Dr Robin Thomson introduced the agenda item and discussed a weight of evidence approach for the assessment of the SESSF deepwater shark species basket. The RAG noted the following key points:

- Dr Robin Thomson presented a background to the deepwater shark basket species, their life histories, and an overview of the fishery.
 - The deepwater shark basket includes 18 species belonging to 4 families. Four species in this basket are considered Near Threatened and the remaining 14 are considered Least Concern by the IUCN³⁰ Red List of Threatened Species.
 - Many species are difficult to identify.
 - Deepwater shark catches are highly variable through space and time.
 - Operators commonly retain 3–4 species whilst others are mainly discarded.
- Survey data and orange roughy surveys could be useful indicators of stock status.
- The 700 m closure was introduced to protect deepwater sharks and other deepwater species.
- The Deepwater shark basket contains target, by-product, and by-catch species. This makes it difficult to manage using a TAC and difficult to give targeted management advice. Discarding rates are high so landings are not a good indication of actual catches.
- Given the lack of data and the issues identifying species, a quantitative assessment for all species in the deepwater shark basket is not currently viable.
- Recent catches are low relative to historical levels. It was also noted that a 20 t TAC is currently in place for the eastern stock of the deepwater shark basket.
- Some potential approaches to help develop a deepwater shark stock assessment include:
 - constructing a catch/CPUE time series for brier/platypus shark (*Deania calcea*);
 - developing a tier 5 harvest control rule;
 - examining the orange roughy survey bycatch index;
 - examining catches inside and outside of marine protected areas; and
 - estimating discards across different species.

31. The RAG made the following points:

- The RAG noted that they need to provide RBC advice for the 2022–23 SESSF fishing season.
- The RAG discussed the level of protection provided to the deepwater shark species basket by the 700 m closure.
- Prof Colin Simpfendorfer noted that based on the outcomes of the recent IUCN Shark Action Plan, if current catches are maintained then risks are expected to be low. Catches are spatially spread, meaning that localised depletion is unlikely. Despite this, further data collection is required.
- There is no new information with which to update current management advice.

³⁰ [International Union for Conservation of Nature](https://www.iucn.org/)

- Dr Natalie Dowling recommended using [FishPath](#) to identify appropriate quantitative methods that could be applied for the two *Deania* species.
- The RAG noted that there are currently large spatial closures, no clear negative indicators in terms of sustainability despite uncertainty in the data available, and a program of work to improve understanding.
- Dr Robin Thomson noted that analyses could be undertaken to show the spatial overlap of species distribution and the closures to better understand how much protection is afforded to each deepwater shark species by the 700 m closures.
- Dr Robin Thomson suggested a steering committee be formed to help guide the development of a report on the information available for deepwater sharks. This steering committee would include members of the Deepwater Shark Working Group and Ross Daly.

9.1 Actions and recommendations for agenda item 9

Recommendations:

- Based on a weight of evidence approach, the RAG recommended continuing the current RBC with no discount factor to be applied for the deepwater shark basket in the 2022–23 SESSF fishing season, considering the existing 700 m closures. The RAG noted and endorsed the proposal to undertake research into the deepwater shark species basket with a steering committee (consisting of working group members and Ross Daley) to help assess and manage these species.

Other business and action items review

32. The RAG did not raise any further business.

33. The RAG agreed that the action items and recommendations would be circulated out of session.

Close of meeting

34. The Chair thanked the RAG for their contribution and closed the meeting at 15:36.

Attachment A – Register of interest

Members	Declaration
Dr Paul McShane (Chairperson)	Chair of SERAG and a member of SEMAC and SESSFRAG. No pecuniary interest in the SESSF. Principal of Global Marine Resource Management Pty Ltd. Adjunct Professor (Fisheries and Aquaculture) College of Science and Engineering, James Cook University.
Mr Daniel Corrie	Employed by AFMA as the Manager of the Commonwealth Trawl sectors. No pecuniary or other interest in the SESSF.
Dr Sarah Jennings	Economics member on SERAG, SESSFRAG and SEMAC. Economics coordinator, FRDC ³¹ Human Dimensions Research Subprogram. Member of AFMA Economics Working Group. Adjunct Senior Researcher, TSBE ³² , University of Tasmania. Casual employee, IMAS, University of Tasmania. Independent economics consultant. No pecuniary or other interest.
Dr Geoff Tuck	Employed by CSIRO and involved in stock assessments. Interest in obtaining funding for future research. Principal investigator on SESSF stock assessment project.
Mr Andrew Penney	Director of Pisces Australis Pty Ltd, an Australian registered marine/coastal research and management consultancy based in Canberra - interests in any opportunities in this regard. Currently Principal Investigator on FRDC Projects Nos 2017-180: Design and implementation of an Australian National Bycatch Report: Phase 1 – Scoping; and 2019-036: Implementation of dynamic reference points and harvest strategies to account for environmentally-driven changes in productivity in Australian fisheries. Independent scientific member on the AFMA Southeast RAG, the Tropical Rock Lobster RAG, and the Small Pelagic Fishery RAG. Member of the AFMA ERA ³³ Technical Working Group. Deputy Scientific Member on the New South Wales Fisheries Total Allowable Fishing Committee Sep 2020 to Sep 2023. No shareholding and hold no positions relating to any other companies, including any fishing companies or industry associations.
Dr Ian Knuckey	Positions: Director – Fishwell Consulting Pty Ltd Director – Olrac Australia (Electronic logbooks) Deputy Chair – Victorian Marine and Coastal Council Chair – Northern Prawn Fishery Resource Assessment Group Chair – Tropical Rock Lobster Resource Assessment Group Chair – Victorian Rock Lobster and Giant Crab Assessment Group Chair – Victorian Central Zone Abalone Fisheries Resource Advisory Group Chair – Gulf of St Vincent’s Prawn Fishery MAC Research Scientific Committee Scientific Member – Northern Prawn Management Advisory Committee

³¹ [Fisheries Research and Development Corporation](#)

³² [Tasmanian School of Business and Economics](#)

³³ Ecological Risk Assessment

	<p>Scientific Member – SESSF Shark Resource Assessment Group Scientific Member – SESSF Great Australian Bight Resource Assessment Group Scientific Member – Gulf of St Vincent’s Prawn Fishery Management Advisory Committee Scientific Member – Tropical Tuna Resource Assessment Group Scientific Member – SESSF Resource Assessment Group</p> <p>Current projects:</p> <p>FRDC 2019-027 Improving and promoting fish-trawl selectivity in the SESSF and GABT³⁴ sector FRDC 2019-072 A survey to detect change in Danish Seine catch rates of Flathead and School Whiting resulting from CGG seismic exploration. FRDC 2019-129 Potential transition of shark gillnet boats to longline fishing in Bass Strait - ecological, cross-sectoral, and economic implications FRDC 2017-069 Indigenous Capacity Building FRDC 2016-116 5-year RD&E³⁵ Plan for NT fisheries and aquaculture FRDC 2018-021 Development and evaluation of SESSF multi-species harvest strategies FRDC 2017-014 Informing structural reform of South Australia's Marine Scalefish Fishery AFMA 2020/0807 Bass Strait Scallop Fishery Survey – 2020–22 Traffic Project Shark Product Traceability NT Fisheries Design and implementation of a tropical snapper trawl survey Sea Cucumber Ass. Design and implementation of a sea cucumber dive survey Information to support non-detrimental finding of fisheries for Black Teatfish and White Teatfish Australia Bay Information to support Wildlife Trade Operation for the Queensland Gulf of Carpentaria Developmental Fin Fish Trawl Fishery Tas. Abalone Scientific Advisor for Tasmanian Abalone Council Ltd PEMSEA³⁶ Developing EAFM³⁷ Plan of Red Snapper for Arafura and Timor Seas Region</p>
Mr James Woodhams	<p>Employed by ABARES. ABARES has a minor financial stake in the project ‘2019-036: Implementation of dynamic reference points and harvest strategies to account for environmentally-driven changes in productivity in Australian fisheries’. Mr Woodhams has non-financial roles on the steering committee for the Multi species harvest strategy project led by CSIRO, the Reviewing biological parameters project led by CSIRO, and Alternate indicators for the SESSF Working Group (reports to SESSFrag).</p>
Mr Ross Winstanley	<p>No pecuniary interest in SESSF however declares he has a brother-in-law that holds a Victorian Inshore Trawl Licence.</p>
Mr Daniel Hogan	<p>Owner operator of trawler Zeehaan out of Portland, Vic. Commonwealth Trawl Sector boat and quota SFR³⁸ holder.</p>

³⁴ Great Australian Bight Trawl

³⁵ Research Development and Extension

³⁶ Partnerships in Environmental Management for the Seas of East Asia

³⁷ Ecosystem Approach for Fisheries Management

³⁸ Statutory Fishing Right

Mr John Jarvis	Commonwealth Trawl Sector boat and quota SFR holder. Member of SETFIA ³⁹ . Worked with NSW Primary Industry Minister for Comfish.
Mr Simon Boag	Runs a fisheries consulting firm Atlantis Fisheries Consulting Group. Clients include associations such as SETFIA, SSIA ⁴⁰ , SPFIA ⁴¹ but also other private clients. SSIA was engaged by AFMA to collect biological data in the shark fishery. Non-beneficiary Director of two fishing companies in the SESSF one of which is a significant quota owner. Industry member on SERAG and SEMAC. Member (Chair) of STAG ⁴² .
Executive Officer	Declaration
Mr Aaron Puckeridge	Employed by AFMA. Executive Officer of SERAG. No interest in SESSF, pecuniary or otherwise.
Invited participants	Declaration
Dr Robin Thomson	CSIRO, assessment scientist. Acquiring funding for research purposes. PI ⁴³ for the close kin project for school shark. PI on the close kin scoping study for blue-eye trevalla.
Dr Miriana Sporcic	CSIRO, Assessment scientist. Acquiring funding for research purposes.
Dr Jemery Day	CSIRO, Assessment scientist. Acquiring funding for research purposes. Scientific member of SARAG ⁴⁴ .
Dr Paul Burch	CSIRO, Assessment Scientist. Acquiring funding for research purposes. CSIRO representative on the Fisheries Statistics and Information Work Group. PI on the data services contract.
Dr Pia Bessell-Browne	CSIRO, Assessment scientist. Acquiring funding for research purposes.
Dr Geoff Liggins	NSW DPI, Fisheries scientist. Involvement in NSW resource assessments. Potential interest in the acquisition of funding for research/assessment purposes concerning cross-jurisdictional stocks.
Dr Ashley Fowler	NSW DPI, Fisheries scientist involved in NSW resource assessments. Potential interest in the acquisition of funding for research/assessment purposes concerning cross-jurisdictional stocks.
Ms Frances Seaborn	DNRET Senior Fisheries Management Officer. No interest, pecuniary or otherwise.
Mr Nick Hill	IMAS UTAS/CSIRO, Fisheries scientist. Potential interest in the acquisition of funding for research/assessment purposes concerning cross-jurisdictional stocks.
Prof Colin Simpfendorfer	Employed by the University of Tasmania and adjunct at JCU. Receives funding from the FRDC for research.

³⁹ [South East Trawl Fishing Industry Association](#)

⁴⁰ [Southern Shark Industry Alliance](#)

⁴¹ Small Pelagic Fishery Industry Association

⁴² Seine and Trawl Advisory Group

⁴³ Principal Investigator

⁴⁴ [Sub-Antarctic Resource Assessment Group](#)

	Member of the Commonwealth Threatened Species Scientific Committee.
Dr Kevin Stokes	Director of Stokes.net.nz Ltd. Member of the Orange Roughy Natural Mortality Working Group. No interest pecuniary or otherwise.
Dr Caroline Sutton	Employed by CSIRO. Acquiring funding for research purposes.
Observers	Declaration
Dr Tim Emery	Employed by ABARES. No current interest pecuniary or otherwise. Any potential future interest in research funding will be declared as necessary.
Dr Krystle Keller	Employed by ABARES. No current interest pecuniary or otherwise. Any potential future interest in research funding will be declared as necessary.
Dr Daniel Wright	Employed by ABARES. No current interest, pecuniary or otherwise. Any potential future interest in research funding will be declared as necessary.
Mr Les Scott	CEO Peter and Una Fishing Co Pty Ltd, which holds various fishing rights and operates a longline vessel in the GHaT ⁴⁵ fishery/Coral Sea and High Seas fishery. Pecuniary interests are limited to the extent of being an employee of the company. Neither myself, nor the company I represent, are aware of or are involved in litigation with AFMA.
Mr Tony Lavalle	Commonwealth SFR and quota holder. Owns and operates two trawlers in the SESSF.
Ms Sandra Curin Osorio	Employed by CSIRO. Acquiring funding for research purposes.
Dr Natalie Dowling	Senior Scientist Employed by CSIRO. PI on various projects developing harvest strategies for data-limited fisheries Australia and internationally.
AFMA Attendees	Declaration
Ms Fiona Hill	Employed by AFMA, Senior Manager of the Demersal and Midwater Fisheries. No interest, pecuniary or otherwise.

⁴⁵ Gillnet, Hook and Trap

Attachment B – Action items

Complete/Redundant

Underway

Yet to start

Needs further advice

	Meeting and Agenda Item	No.	Description	Responsibility	Timeframe	Status update
	2020.12 Agenda Item 2	1	AFMA to investigate the peak of 24 cm fish in the 2018 trawl onboard length data for school whiting.	AFMA	By SESSFRAG Data Meeting (August 2021)	<p>Following SERAG 1 September 2021, AFMA and CSIRO restarted conversation on this action item. Mr Tamre Sarhan (AFMA) provided CSIRO with the raw observer data, identifying that the peak in 24 cm fish was caused by a single trawl shot of large fish and there is no indication that there were measuring errors. It was noted that there was an inconsistency in the number of fish measured between the original data provided to CSIRO, and the updated data Mr Tamre Sarhan provided.</p> <p>This item will remain open, however if the issue cannot be resolved, then all trawl length data for 2018 (179 LFs) will need to be excluded because there are insufficient samples for that year.</p>
	2020.12 Agenda Item 2	2	SESSFRAG to consider updating the 'TAC setting and assessment guidelines' document to include priorities for undertaking sensitivities, likelihood profiles, retrospectives etc. by SESSFRAG 2021 Data meeting.	AFMA (refer to SESSFRAG)	By SESSFRAG Data Meeting (August 2021)	<p>The document was revised at SESSFRAG in August 2021 to incorporate guidance on timing for provision of data.</p> <p>Guidance on including sensitivities, retrospectives, likelihood profiles, etc. has not yet been considered.</p> <p>This will be postponed until the SESSFRAG Chair's meeting in March 2022.</p>

2020.12 Agenda Item 3	3	<p>Daniel Corrie (AFMA) and Dr. Michael Steer (Chair), to draft a letter to the AFMA Commission for its March 2021 meeting on behalf of SERAG (and to be endorsed by SERAG) expressing its concern around:</p> <ul style="list-style-type: none"> - the difficulty of disentangling environmental changes, recruitment failure and fishing mortality as reasons for several depleted stocks failure to rebuild. - the increasing number of SESSF quota species is assessed as declining. 	Mike Steer and Dan Corrie	By March 2021	A letter was submitted as part of the TAC recommendations paper in March 2021. AFMA will provide a letter once the Commission has responded.
2020.12 Agenda Item 6	4	Dr Miriana Sporcic (CSIRO) to work in collaboration with Geoffrey Liggins (NSW DPI) to develop a preliminary historical catch time series for offshore ocean perch. It should be noted that the early period catch history may require further validation before an agreed series can be reached.	Miriana Sporcic (CSIRO) and Geoff Liggins (NSW DPI)	By next Tier 4 assessment (2023)	This will be progressed during 2022. Keep open until completed.
2020.12 Agenda Item 7	5	AFMA to provide the evidence base for orca depredation being used to exclude the use of discount factors in blue-eye trevalla tier 4 stock assessments.	AFMA	By SESSFRAG Data Meeting (August 2021)	This has been added to the agenda for SERAG 3.
2020.11 Agenda Item 6	6	Dr. Paul Burch (CSIRO) and the orange roughy steering committee to produce a document outlining assessment options including data requirements and metrics for orange roughy stocks for the purpose of demonstrating recovery.	CSIRO (Paul Burch)	By April 2022	This work is underway. However, the eastern roughy stock assessment has taken priority. Dr Burch has run western orange roughy through FishPath and it supports data collection for the development of a Tier 1 or 2 assessment. AFMA will work with CSIRO to develop a document subject to resourcing availability. This includes updating the WORRP ⁴⁶ to include guidance on how the data collected under the program can be used to

⁴⁶ [Western Orange Roughy Research Plan](#)

						inform future management decisions – include likely timeframes and metrics.
2020.11 Agenda Item 8	7	AFMA to identify a standard minimum set of stock assessment diagnostics and provide these (a) in the ARC ⁴⁷ feedback form for the 2021 pink ling stock assessment, and (b) as part of future research calls for stock assessments in the SESSF.	AFMA	To be provided to P Cordue for the 2021 stock assessment. To be included in future calls for research.	The ARC was provided with general feedback from SERAG and Patrick Cordue was provided with more specific requests for diagnostics once the research has been approved. AFMA will consider including the guidance in future calls for research.	
2020.10 Agenda item 1.4	8	AFMA to invite a representative from the DAWE ⁴⁸ to SERAG 1 2021 to inform and discuss the process of delisting a conservation dependent species.	AFMA (Dan Corrie)	By SESSFRAG or SERAG 2021	AFMA have contacted DAWE and are waiting on a response.	
2020.10 Agenda item 2	9	AFMA to compare logbook discard records of deepwater flathead and Bight redfish in the GABT against observer records to determine their accuracy.	AFMA	By SESSFRAG Data meeting (Aug 2021)	This work has not started and will be scheduled for 2022.	
2020.10 Agenda item 5	10	Mr Daniel Corrie (AFMA) and Mr Simon Boag to engage with industry regarding identification issues between oxeye and spikey oreodories to improve logbook records	AFMA (Dan Corrie) and Simon Boag	As soon as practical	AFMA have had initial discussions with operators. AFMA and SETFIA will consider developing a Communications package to distribute to broader industry. AFMA will maintain this action item until there is confidence the issue has been resolved.	
2020.10 Agenda item 6	11	AFMA to undertake a risk assessment to explore the risk associated with increasing the smooth oreo (other) TAC to 135 t. This will occur after the 2020 assessment period.	AFMA	By SERAG 2021	Not yet started. This will be included in the SERAG 3 (November 2021) TAC paper for smooth oreo (other).	

⁴⁷ AFMA Research Council

⁴⁸ [Department of Agriculture, Water and the Environment](#)

2019.12 Agenda item 2	12	In addition to decision rules being considered by the discard working group, Paul Burch is to consider the decision rules regarding application of Commonwealth discard rates to State fisheries catches with a particular focus on different gear types.	Paul Burch	SESSFRAG Chair's meeting	This action item has been picked up by Dan Corrie and referred to SESSFRAG for resolution. The action has not yet been resolved. This action will be coordinated by SESSFRAG and can be removed from the SERAG action item list after this meeting.
2019.12 Agenda item 3	13	At its first meeting in 2021, SERAG to consider how to fix steepness (h) for Tiger Flathead, in preparation for the 2022 stock assessment.	AFMA	SERAG #1, 2021	This has been added to agenda of SERAG 2 and was discussed under agenda item 7 . This action item can be closed after SERAG 2.
2019.12 Agenda item 7	14	AFMA to ensure the revised pre-1998 ISMP ⁴⁹ dataset is captured in the AFMA database and Dr Koopman's code corrections are stored, with old data rebadged appropriately.	AFMA	SERAG #1, 2020	A meeting was held between AFMA's trawl and data teams, CSIRO, and Dr Koopman in October 2021. Dr Koopman is providing the data team with an updated pre-1998 ISMP data set to facilitate it being integrated into AFMA's database. AFMA aims to complete this by early 2022.
2019.11 (Action items review)	15	AFMA to ensure that the SIDaC ⁵⁰ data collection includes total and partial lengths of school and gummy shark including school sharks larger than 160 cm, and tissue samples of blue-eye trevalla for CSIRO's close-kin work and for ageing: (a) Start collecting 20 samples from approximately 20% of the shots, and (b) The SSIA co-management contract needs to be finalised and this action item incorporated into the SIDaC Data Plan.	AFMA (GHaT manager)	As soon as possible	Shark samples – completed – considered by SharkRAG ⁵¹ in March 2021, included in the SESSF data plan that will inform the 2021 SIDaC contract. Blue-eye sample collection underway – sample collection is pending the outcomes of AFMA project '190842, <i>Scoping study for application of Close Kin Mark Recapture to blue-eye trevalla caught in the SESSF</i> . This project will produce a sampling design for the collection of

⁴⁹ Integrated Scientific Monitoring Program

⁵⁰ Shark Industry Data Collection

⁵¹ [Shark Resource Assessment Group](#)

						blue-eye trevalla samples to support a close kin assessment. Project will be completed by end of August 2021, the outcomes of which will inform sample design and be incorporated into the SIDaC program.
2019.11 Agenda item 3	16	AFMA to investigate logbook records of catches of 'Black Trevally' (also called Black Snotty) from the last 2 years and verify with skippers whether species recorded on CDRs ⁵² is Blue Warehou. If so, AFMA will correct data records and correct recording practices.	AFMA	By SERAG 2, Dec 2019	AFMA have confirmed the species is blue warehou. The skippers have been informed and will record future catches as blue warehou. AFMA are yet to update the database – and will update SERAG once done. Keep item open until records are corrected.	
2019.11 Agenda item 10.2	17	AFMA to investigate CDR data for redfish catches in the west - how it is reported as either Bight Redfish or redfish, and correct errors.	AFMA	By SERAG #2, Dec 2019	Since 2010, 97 per cent of the catches in the west are recorded as eastern redfish. Observer data could be reviewed to determine if there is a mixing of the species in the western part of the Commonwealth Trawl Sector. Keep item open until observer data has been reviewed.	
2 SERAG 1 September 2021	18	AFMA are to close the action item '2020.10 agenda item 5' regarding john dory. CSIRO (Dr Miriana Sporcic) are to use the default reference period (1986–1995) in the upcoming tier 4 stock assessment of john dory.	Miriana Sporcic (CSIRO)	SERAG 2 October 2021	The default reference period was used in the tier 4 stock assessment and presented during agenda item 4. This item can be closed.	
4 SERAG 1 September 2021	19	AFMA to capture historical RAG advice and the basis for setting the 150 t TAC for Cascade smooth oreo in species summary reports.	AFMA	As soon as practicable	Not yet started.	
4 SERAG 1 September 2021	20	AFMA to confirm that Cascade orange roughy otolith ageing is present in the Fish Ageing Services work plan.	AFMA	As soon as practicable	Not yet started.	

⁵² Catch Disposal Records

6 SERAG 1 September 2021	21	AFMA to interrogate data of those vessels that have increased redfish catch in recent years in collaboration with Dr Paul Burch (CSIRO). This could include developing a statistic or a plot that captures vessels returning to locations of high Redfish bycatch.	AFMA	As soon as practicable	Not yet started.
6 SERAG 1 September 2021	22	AFMA to investigate recent redfish catch records as the eastern redfish targeting analysis appears to incorporate GABT Bight redfish catches.	AFMA	As soon as practicable	Not yet started.
7 SERAG 1 September 2021	23	AFMA to compile a report detailing the history and decision making used to set previous catch triggers and TACs for the non-quota species of ECDWT for SERAG 2022.	AFMA	SERAG 2022	Not yet started.
8 SERAG 1 September 2021	24	Dr Paul Burch (CSIRO) to produce a background paper that discusses the implications of over/undercatch provisions on orange roughy (east) and will explore their incorporation into the current stock assessment and their impacts on upcoming RBC advice.	Paul Burch (CSIRO)	SERAG 3 November 2021	SERAG considered overcatch/undercatch provisions at its September 2021 meeting. Dr Paul Burch will include overcatch/undercatch provisions in the final tier 1 base case being presented at the November 2021 SERAG meeting, and the effect overcatch/undercatch has on the RBC.
9 SERAG 1 September 2021	25	AFMA and CSIRO to produce a background paper summarising the outputs of the 2010 eastern gemfish stock assessment, including how the model considers discards and how this informs current management advice relative to the status of eastern gemfish.	AFMA and CSIRO	As soon as practicable	Not yet started.
10 SERAG 1 September 2021	26	CSIRO, AFMA, and Mr Patrick Cordue to discuss and decide on what diagnostics should be provided/produced as outputs for stock assessments going forward, and for pink ling CPUE in particular.	CSIRO, AFMA and Patrick Cordue	As soon as practicable	This action item is ongoing and will be presented at SERAG 3 (November 2021).

10	SERAG 1 September 2021	27	Mr Daniel Corrie (AFMA) to talk with Mr Patrick Cordue to discuss catch projections based on MCMC outcomes for both high and low natural mortality (<i>M</i>) scenarios. Also, to incorporate monthly length sample summaries.	AFMA	SERAG 3 November 2021	This action item is ongoing and will be presented at SERAG 3 (November 2021).
11	SERAG 1 September 2021	28	Ms Fiona Hill (AFMA) to produce a paper outlining a research priority for a pilot study on effort creep in the SESSF to be presented at SERAG 3.	AFMA	SERAG 3 November 2021	This is being prepared for SERAG 3 in November 2021.

Attachment C – Action items arising from the meeting

No.	Agenda Item / Meeting Date	Action Item	Agency / Person	Timeframe
1	1 SERAG 2 October 2021	Jemery Day (CSIRO) to model low recruitment scenarios of eastern jackass morwong using the mean recruitment value of the most recent 10 years to be presented at SERAG 3.	Jemery Day (CSIRO)	For SERAG 3 November 2021
2	1 SERAG 2 October 2021	Jemery Day (CSIRO) to incorporate recovery timelines consistent with the requirement of the Harvest Strategy Policy into model scenarios for the eastern jackass morwong stock assessment. Also aim to incorporate MCMC analysis if time permits.	Jemery Day (CSIRO)	For SERAG 3 November 2021
3	6 SERAG 2 October 2021	AFMA to clarify when the overcatch provisions for eastern orange roughy changed from 0 per cent to 10 per cent as management advice.	AFMA	As soon as practical