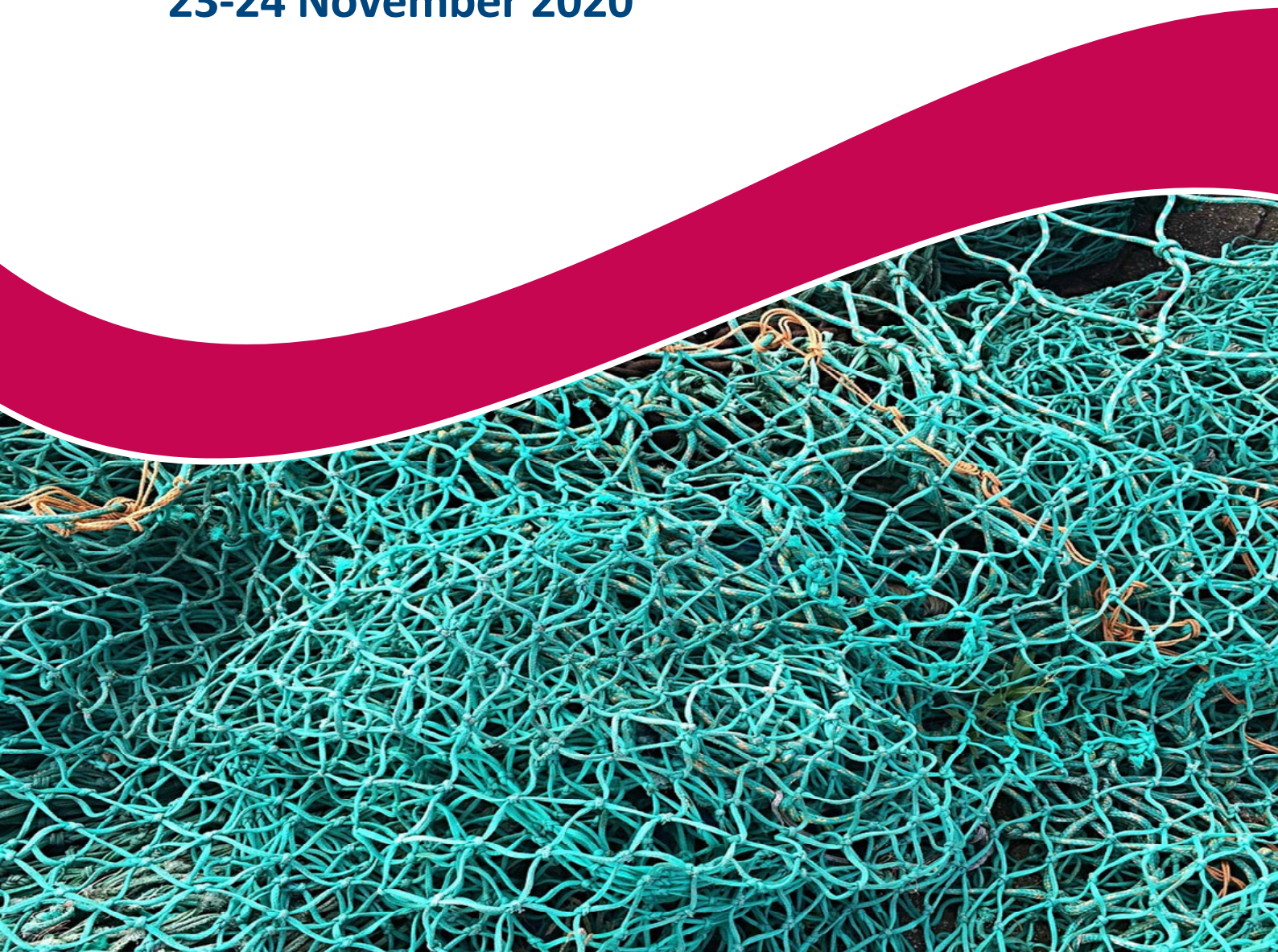


**South East Resource
Assessment Group
Meeting 2.1 Minutes**

23-24 November 2020



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Agenda Item 1: Preliminaries

1.1 Welcome and apologies

1. Dr. Michael Steer (Chair) welcomed members, invited participants and observers to the meeting and made an Acknowledgement of Country Statement recognising the Aboriginal people as the traditional custodians of the land on which we meet and paid our respects to their Elders, both past and present. Each attendee's Declaration of Interest was provided prior to meeting and noted by exception. Some attendees arrived later and at that point, they introduced themselves.
2. Apologies were tabled from Mr. Ross Winstanley and Mr. John Jarvis, and Mr. Simon Boag was absent for Day 1.

Member	Role
Dr. Michael Steer	Chair
Dr. Ian Knuckey	Scientific member, Fishwell Consulting
Mr. Ross Winstanley (apology)	Recreational member
Dr. Sarah Jennings	Scientific (economics) member
Mr. Daniel Hogan	Industry member - west
Mr. Simon Boag	Industry member - SETFIA
Mr. James Woodhams	Scientific member, ABARES
Dr. Geoff Tuck	Scientific member, CSIRO
Mr. Andrew Penney	Scientific member, Pisces Australis
Mr. Daniel Corrie	AFMA member
Ms. Mardi Albert	AFMA, executive officer
Mr. John Jarvis (apology)	Industry member - east

Invited Participants	
Dr. Miriana Sporcic	Assessment scientist, CSIRO
Dr. Jemery Day	Assessment scientist, CSIRO
Dr. Paul Burch	Assessment scientist, CSIRO
Dr. Pia Bessell-Browne	Assessment scientist, CSIRO
Dr. Geoff Liggins	Senior fisheries scientist, NSW DPI
Dr. Veronica Silberschneider	Senior fisheries manager, NSW DPI
Mr. Nicholas Hill	Fisheries scientist, IMAS (minute taker)
Mr. Charles Heaphy	Industry observer – blue grenadier
Ms. Fiona Hill	AFMA – senior manager
Dr. Tim Emery	ABARES – fisheries scientist

1.2 Declarations of Interest

3. Declarations of interest ([Attachment A](#)) were declared prior to the meeting.
4. The RAG decided that when management advice was being determined, any member with declared conflicts of interest would leave the meeting but remain present during the discussions.
5. Additional declarations of interest included:
 - Daniel Hogan and Simon Boag declared conflicts with agenda items where TAC or RBC recommendations were being made which included agenda items 2, 4, 5 and 6.
 - CSIRO attendees, Mr. Andrew Penny, Dr. Ian Knuckey, Dr. Mike Steer and Dr. Veronica Silberschneider declared a conflict of interest in agenda item 8.

1.3 Adoption of agenda

6. The agenda was adopted with no major changes ([Attachment B](#)).

1.4 Action items review

7. Action items were reviewed with no major changes ([Attachment C](#)).
 - Action Item 2 (2020.10 Agenda item 2) – Dr. Paul Burch retrospective review of changes to discard rate estimates. Underway – To be completed by the end of 2020 to inform 2021 SESSF TAC setting process.
 - Action item 5 (2020.10 Agenda item 4) – Natalie Couchman development of hagfish research plan. Underway – To be presented at SERAG #2.2 December 2020.
 - Action item 13 (2020.10 Agenda item 5) – Dr. Miriana Sporcic review of blue-eye trevalla catch series. Completed – CSIRO contacted the Department of Primary Industries, Water and Environment (DPIPWE) and the 2015 catch entry for blue-eye trevalla was erroneous. Therefore, this value was not used in the subsequent Tier 4 CPUE standardisation.
 - Action Item 14 (2020.10 Agenda item 5) – Dr. Geoff Liggins NSW historical catch series. Underway – Historical catch time series was provided to CSIRO, however, cross-validation and comparing with CSIRO records are still ongoing.
 - Action Item 11 (2019.12 Agenda item 9) - Kehani Mason bycatch TAC justification. Paper being drafted detailing the justification and history surrounding the selection of initial bycatch TACs. To be completed for SERAG#2.2 2020.
 - Action Item 1 (2019.11 action items review) – CAPAM workshop. To be absorbed into action item 18 (2020.10). Any relevant outcomes from the CAPAM workshop in 2021 to be incorporated into the natural mortality paper to be produced by Dr. Paul Burch (CSIRO) and the natural mortality working group.
 - Action item 18 (2020.10 Agenda item 8) – Dr. Paul Burch (CSIRO) natural mortality estimation – SERAG agreed with the process put forward by Dr. Paul Burch (CSIRO) to estimate M for the 2021

eastern orange roughy stock assessment. Sensitivities and alternate options to be explored when the stock assessment is conducted.

- Action item 18 (2020.10 Agenda item 8) – Dr. Paul Burch (CSIRO) natural mortality steering committee – Mr. Andrew Penney to join natural mortality steering committee. Steering committee to meet out of session as required.

2. Agenda Item 2: Tier 1 eastern redfish

8. Dr. Pia Bessell-Browne (CSIRO) provided an overview of the 2020 eastern redfish stock assessment and updates undertaken based on recommendations from the SERAG#1 meeting, October 2020. Projected biomass trajectories based on different fixed catch projections were also presented.

2.1 2020 stock assessment

- The updated 2020 stock assessment incorporated updated catch, CPUE and biological data, and two regions to account for differences in the lengths of fish sampled in NSW and eastern Bass Strait. The updated assessment produced improved fits to the data with less uncertainty around estimates of biomass. Estimates of current biomass were reduced compared to the 2017 assessment largely due to the lower estimate of natural mortality than the previously used fixed value in the 2017 assessment.
- The estimated value of unexploited spawning biomass increased from around 100,000 t in the 2017 assessment to around 150,000 t in 2020.
- The current biomass is estimated to be at 3.8 per cent of virgin stock biomass (3.8% SSB_0).
- Fishing mortality only fell below the target fishing mortality in the most recent three years. It was noted that catches of 52 t were resulting in a fishing mortality greater the target due to the relative reduction in spawning biomass from large catches in the historical period. Similar levels of catch allow a recovery in biomass (see projections) due to the gradual reduction in relative fishing mortality as biomass increases.

Likelihood profiles

- Likelihood profiles were constructed for a range of parameters and derived quantities.
- Steepness (h). The likelihood profile indicates h should not be estimated. CPUE and length data have conflicting influence on h .
- Natural mortality (M). The likelihood profile for M , indicates a plausible range between 0.06 – 0.083. M was estimated within the model at 0.075. Age data supported a higher value for M , while length data supported a lower value for M .
- Depletion. The likelihood profile indicates a plausible range for 2019 stock status between 2% and 5% of unexploited Spawning Stock Biomass.

Sensitivities

- The estimated current stock status ranged from 2% to 6% per cent across all sensitivities. The model was remarkably insensitive to the sensitivity tests undertaken.
- As requested from SERAG#1 2020, a sensitivity to the inclusion of a time block on retention was completed. This led to very minor changes to the Spawning Stock Biomass time series. This sensitivity

produced better fits to the discard rates from 2013 onwards for NSW but not for eastern Bass Strait. However, the fits to the discard length composition data deteriorated.

Constant catch projections

- A number of constant catch projection scenarios were modelled (Figure 1).
- Projected fixed catches of 0 t, 50 t, 100 t, and 150 t with both average and below average future recruitment through to 2050, in addition to projections with catches set at the RBC were conducted. See Tables 7 and 8 in the report for detailed results.

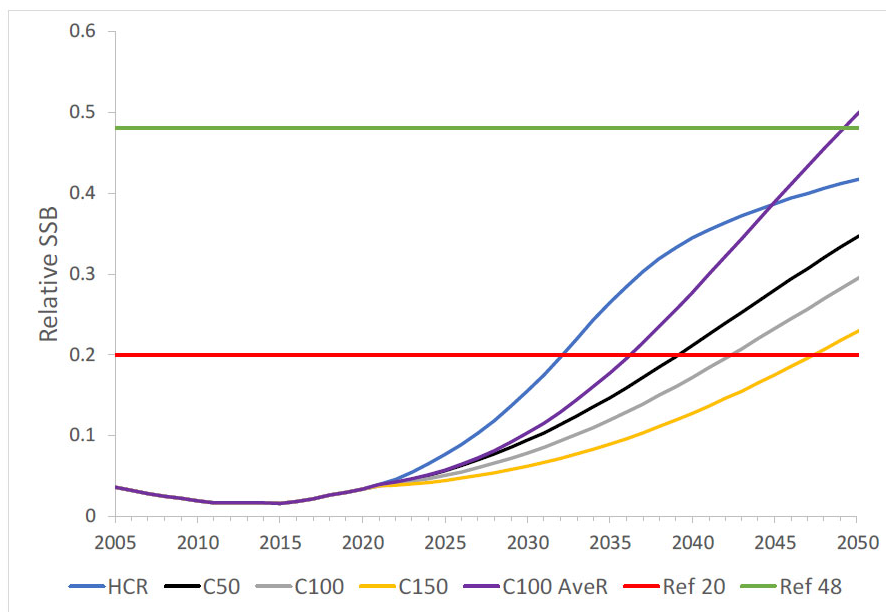


Figure 1 Relative spawning biomass time-series for standard SESSF harvest control rule (blue HCR), and four alternative constant catch scenarios: three with low recruitment (catches of 50t, 100t, 150t; black, grey and orange respectively) and one with standard recruitment drawn from the S-R curve with 100t annual catch from 2018 onwards (purple C100 aveR). The red and green lines are the limit (Ref 20) and target (Ref 48) biomass depletion levels.

2.2 General discussion

9. Dr. Geoff Tuck (CSIRO) noted uncertainty as to whether CPUE was a useful index of abundance considering eastern redfish is no longer targeted. He also noted that the model estimate of stock status is largely driven by CPUE.
 - Biomass of eastern redfish has been below the LRP since the 1980s.
 - Dr. Ian Knuckey noted that SERAG should acknowledge that the eastern redfish stock may not recover in expected timeframes, if at all, given past experience with other depleted stocks from the SESSF over the last 15 years, and the challenges associated with their recovery.
 - Discussion was had around whether discard estimates are accounted for within the model or would need to be considered by SERAG in the constant catch projections. CSIRO clarified that the model estimates discard data based on the retention and selectivity functions used, and the fixed catches pertaining to the projections were the retained component of the total kill only, with discards estimated.

- Mr. James Woodhams (ABARES) noted that the recovery timeframe outlined in the Harvest Strategy Policy is the lesser of 3 times the mean generation times, or one generation time plus 10 years. The policy further dictates that the recovery timeframe should be somewhere between T_{MIN} (time of recovery with zero fishing) and $2 \times T_{MIN}$.
- Fiona Hill noted that eastern redfish may be recommended for listing under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) this year as a conservation dependent species given its depleted state.
- Dr. Ian Knuckey noted that larger mesh size panels had been recommended in the past as a potential management tool to reduce the discard rate and total mortality of eastern redfish.
- SERAG noted that TACs are only one management tool used to limit the mortality of eastern redfish and that the use of TACS alone may be ineffective in reducing total mortality of eastern redfish to a level that would allow recovery.
- Daniel Hogan noted that industry representation from the east coast would be beneficial for this discussion.
- SERAG noted that:
 - TAC restrictions are likely to be a relatively ineffective management tool on their own;
 - the use of increased mesh size should be considered as a future management tool; and
 - projections of stock biomass are uncertain, given changing environmental conditions. Eastern redfish may not recover regardless of management action taken.
- SERAG raised concerns around attempting to monitor trends in the recovery of depleted stocks using CPUE as an index of abundance where species are no longer targeted and catches reduce to very low levels, also corresponding with increased difficulty to meet length and age monitoring targets.

2.3 Actions/recommendations for agenda item 2

Recommendation:

- SERAG's advice is to continue to implement management that reduces total mortality of eastern redfish to improve the prospects of the stock rebuilding.
- An RBC of 0 t is recommended for the 2021-22 fishing season. Projected catch scenarios (0 t, 50 t, 100 t) under average and low recruitment will be presented to SEMAC for consideration.
- The RAG notes the likelihood that the recovery of this stock could be limited by factors other than fishing mortality, and that an incidental TAC of 50 t may not result in stock recovery.
- SERAG notes that increasing the codend mesh size could reduce redfish fishing mortality and reduce discarding. The RAG recommends that an analysis be undertaken during the review of the redfish rebuilding strategy in 2021 to determine the operational and economic impact of increased mesh size.

3. Agenda Item 4: John Dory TAC advice

10. Daniel Corrie (AFMA) presented this agenda item seeking recommendation from SERAG for a John dory Total Allowable Catch (TAC) for the 2021-22 SESSF fishing season. Dr. Malcolm Haddon and Mr. Andrew Penney presented catch-MSY and surplus production analyses to inform the discussion.

3.1 Catch-MSY and Surplus Production Analyses

11. Dr. Malcolm Haddon presented a Tier 5 Catch-MSY analysis and surplus production model of John dory to SERAG.

Catch-MSY analysis

- Catch has declined since the 1980s. Catch-MSY uses catch as a proxy for abundance and therefore perceives this decline in catch as a decline in biomass, but which may instead be driven by other factors such as declining effort or management intervention.
- Catch-MSY estimated that biomass declined below the limit reference point in the 2000s before recovering given reduced catches in recent years and the deterministic model design of Catch-MSY.
- Dr. Malcolm Haddon noted that caution must be taken when TACs or other management restrictions have been implemented to limit catch, as the model will assume that reduced catches reflect a decline in biomass.
- John dory biomass crosses the target reference point (TRP) in ~1985. i.e. it was fully fished.

Surplus production model

- Given concerns in the outcomes of the Catch-MSY analysis, Dr. Malcolm Haddon also applied a surplus production model using CPUE as an index of abundance.
- The model struggled to produce a good fit to the CPUE, so the results should be treated with some caution.
- This analysis also showed that biomass has declined, and that biomass is below the limit reference point of 20% SSB_0 .
- John dory biomass crossed the TRP at a similar time to the catch-MSY analysis.

Andrew Penney complementary analysis

- Mr. Andrew Penney undertook similar analyses to Dr. Malcolm Haddon.
- It was noted that both the catch-MSY analysis and the surplus production model passed the biomass target reference point of 48% SSB_0 at a similar time (1985-1990) which is important for determining a potential reference period for future John dory CPUE standardisation analysis.
- However, Mr. Andrew Penney noted that the two analyses produced markedly different estimates of MSY for John dory, with an estimate of 180 t from catch-MSY and 60 t for the surplus production model.

3.2 General discussion

12. Given the outcomes of these analyses, SERAG discussed the implications of selecting a reference period to undertake a Tier 4 CPUE standardisation.
- Uncertainties in the outcomes of the analyses undertaken and which of these should be used, or how they should be used, to inform decision making were discussed.
 - SERAG discussed the implications of a productivity shift and what this may mean for the status of John dory and the implications of setting a relevant reference period and associated reference points.
 - Daniel Corrie (AFMA) noted that over the last 10 years, a southern shift in the distribution of John dory catch had occurred from NSW to the eastern Bass Strait.
 - Dr. Ian Knuckey noted that the impact of climate change on South East Australian fisheries needs greater emphasis and consideration by the RAGs and MACs, as it is clearly impacting multiple stocks. This

presents significant challenges in fisheries assessment as it is unclear how the impacts of environmental change on productivity can be disentangled from fishing activity and how to account for this in providing advice for the management of stocks.

3.3 Actions/recommendations for agenda item 4

Recommendation:

- SERAG recommends catches of John dory should not exceed 60 t for the 2021-22 SESSF fishing season.
- SERAG notes that factors other than fishing mortality could be reducing the recovery of this stock. Current research projects (including the Multispecies Harvest Strategy and Dynamic B_0 projects) should help improve understanding of the effect of these external factors. These factors may need to be more explicitly considered in future management.

Action item 1: Dr. Miriana Sporcic (CSIRO) to produce standardised CPUE for John Dory for zones 10, 20 and if possible, zone 30 as a potential indicator of range shift. To be presented at SESSFRAG data meeting 2021.

4. Agenda item 5: Blue Grenadier

13. Daniel Corrie (AFMA) presented this agenda item which seeks advice from SERAG regarding any potential impacts on the long term sustainability of blue grenadier if a large proportion of the annual TAC is taken from the winter spawning aggregation off the west coast of Tasmania. Recent catch and TACs were presented along with trends of increasing catches on the west coast of Tasmania where a winter spawning aggregation is regularly fished. In 2020, 9 120 t of the 12 183 t blue grenadier TAC (74.6%) was taken from the spawning fishery.

4.1 General discussion

14. Dr. Geoff Tuck (CSIRO) noted that, based on the outcomes of the 2018 stock assessment that all of the RBC should be able to be caught, and it should not matter if this is taken from the spawning aggregation. Further, the TAC has been consistently under-caught in recent years, so there should not be significant sustainability concerns simply due to increased targeting of the spawning aggregation.
 - It was noted that the stock assessment model has two different selectivity curves to account for the winter spawning fleet and the non-spawning fleet.
 - The potential impacts of fishing gear on spawning behaviour and spawning success were noted, and while unknown for this stock, were not considered to be a major issue.
 - The RAG noted that a fishery independent acoustic survey of the blue grenadier spawning aggregation has not occurred since 2010, which is important for estimating spawning stock biomass.
 - Recent length and age data showed a number of years of recruits entering the fishery, unlike historical recruitment events which have been marked by episodic large recruitments at intervals of approximately 7 years.

4.2 Actions/recommendations for agenda item 5

Recommendation:

- SERAG supported use of the third year of the TAC from the existing three-year MYTAC.
- SERAG notes the assessment model projections assume that the full RBC is caught and it assumes the fish continue to be caught in roughly the same ratio (by fleet) as has occurred in the recent past. This stock has shown highly episodic recruitment but is now exhibiting more consistent annual recruitment. A large proportion of the TAC has historically been taken from the spawning aggregation in some years without any apparent adverse effects on subsequent recruitment events.
- The RAG was not concerned that catching a large proportion of the TAC from the spawning aggregation would have any long-term unexpected impacts on sustainability, which can also be monitored in future stock assessments.
- SERAG supports conducting an acoustic survey of the blue grenadier spawning aggregation in 2021, and analysing the 2019 and 2020 survey data, provided this is appropriately planned and implemented. Substantial time has elapsed since the last scientific acoustic survey (2010) and another survey would be useful in providing the assessment with additional fishery-independent data providing information on spawning stock biomass.

5. Agenda item 6: Orange roughy – rebuilding strategy review and TAC advice

15. Daniel Corrie (AFMA) presented this agenda item seeking advice from SERAG regarding the setting of a TAC for orange roughy in the Cascade Plateau zone, and incidental bycatch TACs for orange roughy in the Southern and Western Zones for the 2021-22 SESSF fishing season. AFMA are also seeking advice on the potential sustainability risk of exceeding the Pedra Branca TAC for the 2019-20 season. A general overview of recent catch history and management for each of the orange roughy stocks was provided.

5.1 General discussion

16. SERAG discussed the implications of the Pedra Branca orange roughy stock TAC (63t) being overcaught by 11 t in the 2019-20 SESSF fishing season.
- SERAG expressed no significant sustainability concerns towards the overcatch of the Pedra Branca orange roughy stock by 11 t given this catch does not exceed the RBC of 94 t set in 2017.
 - No age data is available for Pedra Branca orange roughy.
 - SERAG noted a need to better understand and discuss the scientific principles and reasoning behind overcatch and undercatch provisions as a management tool (Action item 2).
17. The abundance of Cascade Plateau orange roughy stocks was also discussed:
- This stock was last assessed to be at 61% SSB_0 with a constant TAC set of 500 t since 2009 with very little catch recorded since. See [AFMA Catchwatch](#) reports for an overview of catches.
 - Two boats fished the area during the 2020-21 fishing season, with approximately 212 t caught. One of the boats reported large aggregations of orange roughy.
 - It was noted that length data is not generally used in orange roughy stock assessments given that most fish captured are a very similar size, and that length data gives little information to an age-based model for a species with such slow growth and so many age classes.

- SERAG discussed the requirements for delisting orange roughy stocks from the conservation dependent species list, and shifting stocks from a rebuilding plan to a harvest strategy (action item 3).
- Given the number of orange roughy stocks that require management, the range of data types collected, and assessments used for each stock, SERAG noted the need for a more holistic approach across all stocks (action item 4).
- Dr. Paul Burch (CSIRO) raised the point that many of the TACs for these stocks have been continually rolled over for multiple years without exploration of updated data or stock assessments. SERAG discussed the need for a formal decision-making process that outlined how TACs should be set (and reset) in the absence of new information.

5.2 Actions/recommendations for agenda item 6

Recommendation:

- SERAG did not consider there to be any sustainability concerns with the 2019-20 Pedra Branca orange roughy TAC being overcaught by 11 t in 2019-20 SESSF fishing season. The RAG did not consider there to be any sustainability issues, as the catch (74 t) was still below the RBC of 94 t as recommended by SERAG in 2017.
- The RAG repeated its previous advice (October 2020), to roll over the 2020-21 RBC for the Pedra Branca area for the 2021-22 fishing season, the fourth of a 3-year MYTAC.
- SERAG recommends rolling over the 2020-21 TAC recommendations for the 2021-22 SESSF fishing season for Cascade Plateau (500 t), Southern incidental (31 t) and Western Zone (60 t) orange roughy stocks. The RAG will reconsider these TACs next year based on the outputs of the orange roughy working group being led by Dr. Paul Burch.

Action item 2: An agenda item is to be tabled at the time of the next assessment to discuss the implications of 100% overcatch/undercatch provisions for orange roughy and the scientific justifications underpinning these for SERAG#1 2021.

Action item 3: Replace part a) of action item 2020.10 from Agenda item 1.4 of SERAG#1 2020 with the following: AFMA to invite a representative from the Department of Agriculture, Water and Environment (DAWE) to SERAG#1 2021 to inform and discuss the process of delisting a conservation dependent species.

Action item 4: Dr. Paul Burch (CSIRO) and the orange roughy working group to produce a document outlining assessment options, including data requirements and metrics, for orange roughy stocks, with a view to demonstrating recovery.

Action item 5: AFMA and CSIRO to confirm spatial reporting boundaries for orange roughy management areas.

6. Agenda item 7: Stock structure report

18. Dr. Pia Bessell-Browne (CSIRO) presented this agenda item which detailed a review of stock structure for blue warehou, jackass morwong and pink ling. There is some evidence that each of these species form

separate stocks to the east and west of Bass Strait and AFMA is seeking advice as to whether there is information which should change the current approach to managing these species. As such, this review was undertaken to present the available evidence on stock structure for each species. SERAG is requested to provide advice prior to finalising the report, with any future research priorities to be included in the SESSF 2022-23 Research Statement.

6.1 General discussion

19. A summary of the outcomes of the review for each of the three species were presented (Table 1).
 - Evidence for separate stocks for each species includes:
 - Blue warehou: A combination of differences in mitochondrial DNA, otolith microchemistry, spawning location and timing, size, age and growth.
 - Jackass morwong: Differences in fleet dynamics, productivity of the stocks, size and age.
 - Pink ling: Differences in the age and size structures .
 - SERAG discussed the implications of assuming separate stocks for stock assessment and management.
 - The RAG noted that it is pertinent to continue assessing stocks separately regardless of whether they are genetically distinct given differences in fishery and life history dynamics between the two regions.
 - Industry concerns may arise if management of these species is separated regionally, as this will require a process of creating/updating Statutory Fishing Rights.
 - SERAG considered the option for undertaking genetic analysis for each of the three species, however questioned whether the outcomes would be likely to influence the current approach to assessing and managing the stocks. Even if genetic analyses were to show genetically homogenous stocks, the fishery dynamics are such that the regions should continue to be assessed separately.
 - SERAG noted there was no new evidence or reasoning to suggest that any of the three species should be assessed as single stocks.

Table 1: Summary of differences investigated for Blue Warehou, Jackass Morwong and Pink Ling.

Characteristics	Common name		
	Blue Warehou	Jackass Morwong	Pink Ling
Genetics	Differences between east and west, although non-significant	No genetic differences between east and west	No genetic differences between east and west
Otolith microchemistry	Differences in both microchemistry and shape	Unknown, spatial scale insufficient to determine differences	Unknown, no investigations
Evidence of mixing	Limited information on mixing, but a highly mobile schooling species	Limited movement of adults, offshore pelagic larval phase in the east possibly impacted by changes in the EAC	Unknown larval dispersal, largely sedentary as adults
Biological parameters – (growth and morphology)	Differences in growth curves and morphology	Limited information	Differences in growth curves
Length frequency	No difference between east and west	Larger in west than east	Larger in west than east
Age frequency	Older in west than east	Older in west than east	Older in west than east
Discards	Similar trends between east and west	Sporadic and variable	Higher in east than west since 2003
Current CPUE	Similar overall trends between east and west	Similar overall trends between east and west	Similar overall trends between east and west
Historical Stock Assessment split reasoning	Separate main spawning areas. Differences in size, age and growth.	Fishing began in 1915 in the east and 1986 in the west. Effort and catch are much lower in west than east. A productivity shift is evident in the east but not the west.	Differences in size and age compositions along with differences in the trends observed in standardised catch rates.

6.2 Actions/recommendations for agenda item 7

Recommendation:

- SERAG considers that there is sufficient evidence to continue assessing blue warehou, jackass morwong and pink ling as separate eastern/western stocks, given clear regional differences in fishery dynamics and biological characteristics.
- While further genetic analysis could be undertaken, the outcomes are unlikely to change the current advice – to assess these species as separate eastern and western stocks – and as such further genetic investigation is not considered a priority by the RAG at this stage.

7. Agenda item 8: SESSF research priorities

20. Daniel Corrie (AFMA) presented this agenda item requesting advice from SERAG on the proposed research priorities in the 2022-2023 SESSF research plan. A timeline was presented for the development of the 2022-23 SESSF research plan, indicating where SERAG advice and action is required. A number of potential research priorities have been identified for the 2021-22 and 2022-23 financial years and SERAG provided recommendations for each.

7.1 Actions/recommendations for agenda item 8

Recommendation:

AFMA Research Committee - research proposals

- Pink Ling Tier 1 Stock Assessment 2021 – The proposal to undertake the 2021 stock assessment by Dr Patrick Cordue was endorsed by SERAG. However, SERAG recommends that a standard set of diagnostics (depending on the capability of the assessment software being used) be identified and requested as part of the assessment. (Action item 6).
- Analysis of Blue Grenadier acoustic survey data – The proposal to analyse data collected in 2019 and 2020, and to undertake surveys in 2021 was endorsed by SERAG. SERAG agreed ongoing acoustic surveys should be prioritised, and to modify the proposed timeline to account planned surveys and end of financial year processes (overlap). SERAG will provide feedback to the ARC that the 2021-22 survey methodology needs to be appropriately structured and should include engagement with stock assessment scientists (Action item 7).

Research priorities for SESSF 2022-23 Research Plan

- Investigation of factors that influence length frequencies for all species and ISMP port sampling – SERAG does not consider this an immediate research priority. SERAG recommended a broader priority of ensuring data collection plans are appropriate and are met for all species.
- Non-extractive survey methodology for Eastern Gemfish – SERAG agreed that this should be put on hold pending a decision on the FRDC project proposal to investigate Close-kin Mark-recapture (CKMR) methodologies for rebuilding species.
- Herding behaviour of stocks for ERA - SERAG does not consider this an immediate research priority. SERAG recommends updating the 2019 otter board trawl ERA to increase estimates of swept area as a sensitivity to demonstrate the change in risk scores. If the change is significant, then characterising herding behaviour for vulnerable species may be reconsidered as a future research priority.
- Stock assessments for SESSF quota species for 2022-23 – Endorsed by SERAG.
- Fish ageing for SESSF quota species 3-year project ending 2025/26 – Endorsed by SERAG.
- Significance of recreational catch for SESSF species – SERAG does not consider this an immediate research priority, noting that CSIRO already engage with the states to request recreational catch data each year. There are a number of SESSF and SERAG action items related to engaging state fisheries agencies and determining the relative importance of key SESSF species in recreational fisheries.
- Genetic analysis of pink ling stock structure - SERAG does not consider this an immediate research priority given that sufficient differences in fishery and stock dynamics are already apparent to warrant assessing pink ling as two stocks (east/west). Genetic analysis would be unlikely to provide evidence that would change current assessments.
- Alternative methods for establishing an index of abundance for rebuilding species - Endorsed by SERAG. SERAG noted that even if an abundance index may inform an estimate of stock size, it does not address issues relating to a lack of recovery. The RAG noted that it will probably be necessary in future to account for environmental factors which may be preventing the recovery of some species, and contributing to the continued decline of other species.
- Blue grenadier 2022 acoustic survey – Endorsed by SERAG. A milestone will also be included in the 2022-23 financial year to prepare for the 2023-24 survey.

Action item 6: AFMA to identify a standard minimum set of stock assessment diagnostics and provide these (a) in the ARC feedback form for the 2021 pink ling stock assessment, and (b) as part of future research calls for stock assessments in the SESSF.

Action item 7: AFMA to include in the ARC feedback form for the 2021-22 blue grenadier acoustic data analysis (a) that the survey should follow a robust scientific design and proponents should engage with stock assessment scientists to ensure the data can be input into future stock assessments, and (b) that a milestone be included to allow preparation for the 2022-23 survey.

8. Agenda item 9: FRDC project – reviewing biological parameters

21. Dr. Jemery Day (CSIRO) presented this agenda item presenting an ongoing project aiming to collate and review the sources of biological parameters used in stock assessments for many of Australia's fish stocks. This included collating biological parameters for each stock and recording the source, date of data collection or last estimation and robustness of each parameter, to determine where future research should be focused in regards to understanding the life history and biology of fish stocks. Dr. Jemery Day (CSIRO) provided information on the project to SERAG.

8.1 General discussion

22. The project had four main objectives:
- Identify the provenance of existing biological parameter information for each stock.
 - Assess the implications and risk associated with using current potentially outdated biological parameter estimates.
 - Identify methods (including novel approaches) that might be applied to update priority biological parameters.
 - Articulate a work plan including appropriate sampling regimes required for updating priority biological sampling.
- This project will help to identify 'pinch points', which are those parameters that have the greatest influence on stock assessments, so that robust information can be sourced for these.
 - SERAG encouraged the work of this project and its continuation.

9. Addendum 1: School whiting

23. Dr. Jemery Day (CSIRO) presented updated outputs for the 2020 Tier 1 school whiting stock assessment based on actions and recommendations from SERAG#1 2020. An overview was provided of the updated five-fleet model, incorporating updates to: catch history; conditional age-at-length data; ageing error

matrices for NSW fleets; and discard rate estimates for NSW fleets. Dr Day (CSIRO) requested advice from SERAG on consideration of NSW discard sensitivities and fixed catch projections under low recruitment.

9.1 General discussion

24. Discard rate estimates were obtained for the NSW trawl and prawn trawl fleets.

- Feedback was requested as to whether to conduct sensitivities to explore the impact of discard rate data for these NSW fleets.
- Dr. Geoff Liggins (NSW DPI) noted that the discard data should be robust given its sample size.
- SERAG recommended that this additional sensitivity was not required.

Estimated recruitment deviations were shown for the updated five-fleet model to help determine whether low recruitment fixed catch projections were required.

- Of the last 10 estimated recruitment deviations, one was above average, four were average and five were below average
- Dr. Jemery Day (CSIRO) requested advice on which fixed catch projections should be considered.

9.2 Actions/recommendations for Addendum 1

Recommendation:

- Newly available estimates of discard rates for the NSW trawl and prawn trawl fleets are included in the updated five fleet model.
- No sensitivity is required by SERAG for the NSW fleet discard rates.
- A range of fixed catch projections will be considered for both average and low recruitment scenarios for a range of catch levels ranging between recent landed catches and the RBC.
- Low recruitment fixed catch scenarios will be projected through to 2024. Projections will also be carried out for both the average and low recruitment scenarios, with catches set to the calculated RBC, to enable the expected time frame for the biomass to rebuild close to the target biomass level (48% SSB_0).

Action item 8: Daniel Corrie (AFMA) and Dr. Jemery Day (CSIRO) to determine suitable catch levels for school whiting catch projections for consideration at SERAG#2.2 2020.

10. Addendum 2: Tier 4 catch time series

25. Dr. Miriana Sporcic (CSIRO) presented updated results and queries regarding Tier 4 CPUE standardisation assessments for selected SESSF species. Dr. Sporcic requested feedback from SERAG on how to incorporate conflicting, additional historical catch time series from NSW DPI.

10.1 General discussion

- Historical NSW catch time series data were provided to CSIRO for incorporation into Tier 4 stock assessments for selected SESSF species.
- However, these data often conflict with existing historical catch time series in CSIRO's catch database. SERAG discussed how to handle these conflicts such that the Tier 4 CPUE analyses could be undertaken.
- For example, discrepancies in catch of about 10 – 100 t exist between the two datasets from 1985-1996 for offshore ocean perch.
- Catch provided by NSW DPI presented higher estimates of state catch. It is unclear whether this updated data contains catch data from dual registered NSW and Commonwealth vessels which could include some catches already included in the Commonwealth catch totals (potential double-counting).
- Dr. Geoff Liggins (NSW DPI) noted that it would be a significant undertaking to properly verify the historical catch time series and would be outside the scope of the current CSIRO data contract. i.e. it would need additional funding and resources.
- SERAG noted that both Dr. Sporcic and Dr. Liggins were best placed to determine which data were most appropriate and accurate to use in the current Tier 4 stock assessments.

10.2 Actions/Recommendations for Addendum 2

Recommendation:

- Dr. Sporcic and Dr. Liggins to liaise to collate historical catch time series for key SESSF species. When the appropriate historical catch series is clear, revised historical catch time series will be incorporated into 2020 Tier 4 analyses. Where there is uncertainty, the existing historical catch time series will be used as the default. These data will be further reviewed prior to next year's Tier 4 assessments.

Attachment A: Declaration of Conflicts of interest

Member	Declaration
Dr Michael Steer (Chairperson)	A/Research Director SARDI Aquatic Sciences Chair of SERAG Member of SEMAC Member of SESSFRAG No pecuniary interest in the SESSF.
Dr Sarah Jennings	Economics member on SESSFRAG. Economics member on SEMAC. Economics member on SERAG. Economics coordinator, FRDC Human Dimensions Research Subprogram. Member of AFMA Economics Working Group. Adjunct Senior Researcher, TSBE, University of Tasmania. Casual employee, IMAS, University of Tasmania Independent economics consultant. No pecuniary or other interest.
Mr Daniel Corrie	Employed by AFMA. Manager of Southern Trawl, Scallop and Squid Fisheries. No pecuniary or other interest in the SESSF.
Dr Geoff Tuck	CSIRO. 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 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

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	<p>Chair – Tropical Rock Lobster Resource Assessment Group</p> <p>Chair – Victorian Rock Lobster and Giant Crab Assessment Group</p> <p>Chair – Victorian Central Zone Abalone Fisheries Resource Advisory Group</p> <p>Chair – Gulf of St Vincent’s Prawn Fishery MAC Research Scientific Committee</p> <p>Scientific Member – Northern Prawn Management Advisory Committee</p> <p>Scientific Member – SESSF Shark Resource Assessment Group</p> <p>Scientific Member – SESSF Great Australian Bight Resource Assessment Group</p> <p>Scientific Member – Gulf of St Vincent’s Prawn Fishery Management Advisory Committee</p> <p>Scientific Member – Tropical Tuna Resource Assessment Group</p> <p>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 GABTS</p> <p>FRDC 2019-072 A survey to detect change in Danish Seine catch rates of Flathead and School Whiting resulting from CGG seismic exploration.</p> <p>FRDC 2019-129 Potential transition of shark gillnet boats to longline fishing in Bass Strait - ecological, cross-sectoral, and economic implications</p> <p>FRDC 2017-069 Indigenous Capacity Building</p> <p>FRDC 2016-116 5-year RD&E Plan for NT fisheries and aquaculture</p> <p>FRDC 2018-021 Development and evaluation of SESSF multi-species harvest strategies</p> <p>FRDC 2017-014 Informing structural reform of South Australia's Marine Scalefish Fishery</p> <p>AFMA 2020/0807 Bass Strait Scallop Fishery Survey – 2020-22</p> <p>Traffic Project Shark Product Traceability</p> <p>NT Fisheries Design and implementation of a tropical snapper trawl survey</p> <p>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</p> <p>Australia Bay Information to support Wildlife Trade Operation for the Queensland Gulf of Carpentaria Developmental Fin Fish Trawl Fishery</p> <p>Tas. Abalone Scientific Advisor for Tasmanian Abalone Council Ltd</p> <p>PEMSEA Developing EAFM Plan of Red Snapper for Arafura and Timor Seas Region</p>
Mr James Woodhams	<p>ABARES. No current interest pecuniary or otherwise. Any potential future interest in research funding will be declared as necessary.</p>

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Mr Ross Winstanley	No pecuniary interest in SESSF however declares he has a brother-in-law that holds a Victorian Inshore Trawl Licence.
Mr Daniel Hogan	Owner operator of trawler Zeehaan out of Portland, Vic. Commonwealth Trawl Sector boat and quota SFR holder.
Mr John Jarvis	Commonwealth Trawl Sector boat and quota SFR holder. Member of SETFIA. 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, SPFIA 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 Seine and Trawl Advisory Group (STAG).
EO Ms Mardi Albert	Employed by AFMA. Executive Officer of SERAG. No interest in SESSF, pecuniary or otherwise.
Invited Participant	Declaration
Dr Robin Thomson	CSIRO, assessment scientist. Acquiring funding for research purposes. Principal Investigator for close kin project for school shark. PI on close kin scoping study for blue-eye trevalla.
Dr Miriana Sporic	CSIRO, Assessment scientist. Acquiring funding for research purposes.
Dr Jemery Day	CSIRO, Assessment scientist. Acquiring funding for research purposes. PI – SESSF species stock structure review. Interests in promoting good science. Scientific Member – Sub-Antarctic Resource Assessment Group (SARAG)
Dr Paul Burch	CSIRO, assessment scientist. Principal Investigator for data services project. CSIRO representative at the Fisheries Statistics and Information Working Group (a sub-committee of the Australian Fisheries Management Forum). Acquiring funding for research purposes.
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.

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Dr Ashley Fowler	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 Karina Hall	NSW DPI, Fisheries scientist. Involvement in NSW resource assessments. Potential interest in the acquisition of funding for research/assessment purposes concerning cross-jurisdictional stocks.
Mr Nick Hill	IMAS UTAS/CSIRO, Fisheries scientist. Potential interest in the acquisition of funding for research/assessment purposes concerning cross-jurisdictional stocks.

Attachment B: SERAG 2.1 2020 meeting agenda

AGENDA

Day 1: Monday 23 November 2020

Time: 9am to 4.45pm

Chair: Dr Michael Steer

Time	Item	Presenter
09:00	Agenda item 1. Preliminaries Acknowledgement of country, introductions and apologies Declarations of interest Adoption of agenda Action items review	Chair (45 mins)
09:45	Agenda item 2. Tier 1 eastern redfish Updates from base case Discussion RBC recommendation	Pia Bessell-Browne Geoff Tuck (1.5 hours)
11:15	<i>15 min break</i>	
11:30	Agenda item 4. John Dory TAC advice Discussion and advice	Dan Corrie (2 hours)
13:30	<i>LUNCH – 30 min break</i>	
14:00	Agenda item 5. Blue grenadier Proportion of TAC caught from spawning aggregation Discussion	Dan Corrie (1 hour)
15:00	<i>15 min break</i>	
15:15	Agenda item 7. Stock structure report Report findings and future work	CSIRO (1.5 hours)
16:45	<i>End of Day 1</i>	

Day 2: Tuesday 24 November**2020 Time: 9am to 4.15pm**

Time	Item	Presenter
09:00	Agenda item 6. Orange roughy - Rebuilding strategy review and TAC advice Rebuilding strategy Annual review Input to 5-year review TAC Advice Southern & Western Zones - Incidental TACs Cascade Plateau - TAC and triggers	Dan Corrie (2 hours)
11:00	<i>15 min break</i>	
11:15	Agenda item 8. SESSF research priorities Input into 2022-23 SESSF research statement ARC proposals <ul style="list-style-type: none">- Pink ling Tier 1 assessment in 2021- Blue grenadier acoustic survey data	Dan Corrie (3 hours)
12:45	<i>LUNCH – 30 min break</i>	
13:15	Continued – SESSF research priorities	
14:45	Agenda item 9. FRDC project – reviewing biological parameters Update	Jemery Day (30 mins)
15:15	<i>15 min break</i>	
15:30	Other business and action items review	Chair (45 mins)
16:15	<i>Close of meeting</i>	



Attachment C: action items review



Table 1. Progress of action items from previous meeting (SERAG#1 Oct 2020)

Meeting & agenda item ref	No.	Description	Responsibility	Timeframe	Status update after SERAG #1 (2020)
2020.10 Agenda item 1.4	1	Daniel Corrie (AFMA) to produce a document outlining the process for a) delisting a conservation dependent species, noting this is not an AFMA process, and b) transitioning a species from management under an approved rebuilding strategy to management under a harvest strategy. To be completed for the next SESSFRAG or SERAG 2021 meeting.	AFMA (Dan Corrie)	By SESSFRAG or SERAG 2021	Yet to be started.
2020.10 Agenda item 2	2	Dr. Paul Burch (CSIRO) to undertake retrospective analysis on catch from 2016-2018 to determine the impact of the discard estimation error where the error resulted in a change of 5% or more in catch. Provide information discerning if this has impacted management advice and resultant RBCs and quotas for anglers.	CSIRO (Paul Burch)	As soon as practical	This will be completed by end of Dec 2020 to assist the TAC setting process in early 2021.
2020.10 Agenda item 2	3	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)	Not yet started

2020.10 Agenda item 3	4	Daniel Corrie (AFMA) to investigate the possible grading of school whiting catches at some ports which may be influencing the port-based size frequency distributions being input into the stock assessment. To be completed in time for SERAG 2.2.	AFMA (Dan Corrie)	By SERAG #2.2 (Dec 2020)	Underway
2020.10 Agenda item 4	5	Natalie Couchman (AFMA) to seek contractor to analyse existing 5 years of hagfish logbook and observer data to help inform the design of the hagfish research plan. To be completed and presented at SERAG 2.	AFMA (Natalie Couchman)	By SERAG #2.2 (Nov 2020)	The analyses are underway, to be presented at SERAG #2.2 (Dec 2020).
2020.10 Agenda item 5	6	AFMA and CSIRO to undertake a process of improving and validating historical catch time series to get accurate 'total' catch records for species across all jurisdictions. This will include a process of validating catch time series currently within CSIROs database which have been constructed from multiple sources (logbooks, CDRs, Neil Klaer spreadsheet), and via the sourcing of additional, verified data from State jurisdictions.	AFMA and CSIRO	By SESSFRAG Data meeting (Aug 2021)	Not yet started.
2020.10 Agenda item 5	7	AFMA to facilitate greater cooperation and participation of State fishery representatives in future RAG meetings to improve data sharing and insights into fleet behaviour, gear configurations etc. This may be assisted by discussion at the Fisheries Statistics Working Group (a sub-committee of the Australian Fisheries Managers Forum). This action will occur outside of the 2020 assessment period.	AFMA	By SERAG 2021	Underway. Dan Corrie will present to the Fisheries Statistics Working Group on 18 November 2020.
2020.10 Agenda item 5	8	Dr. Geoffrey Liggins (NSW DPI) to provide Dr. Miriana Sporcic (CSIRO) with historical John dory catch from NSW with an emphasis on reconciling disparities in 1994-1996 catches in time for SERAG 2.	NSW DPI	By SERAG #2.1 (Nov 2020)	This provision of missing NSW data also included checks and recommended revisions for the 1990s and the first decade of the 2000s. Completed.

2020.10 Agenda item 5	9	AFMA and CSIRO to establish an approach for determining a reference period for the John dory Tier 4 assessment, with a particular focus on early State catches and the likely stock status for the selected reference period. To be completed for the SESSFRAG 2021 Data meeting and outcomes reported back to SERAG in 2021.	AFMA and CSIRO	By SESSFRAG Data meeting (2021)	Not yet started. John Dory will be considered at SERAG #2.1 (Nov 2020), including a catch-MSY and surplus production model approach undertaken by Dr Haddon in 2020.
2020.10 Agenda item 5	10	Dr. Miriana Sporcic (CSIRO) to explore if the discrepancy in mirror dory west historical catch time series between logbook and CDR data is also present in mirror dory east in time for SERAG 2.	CSIRO (Miriana Sporcic)	By SERAG #2.2 (Dec 2020)	Update to be provided at SERAG #2.2 (Dec 2020).
2020.10 Agenda item 5	11	Daniel Corrie (AFMA) and Simon Boag to engage with industry regarding identification issues between oxeve and spikey oreo 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.
2020.10 Agenda item 5	12	Dr. Geoffrey Liggins (NSW DPI) to provide Dr. Miriana Sporcic (CSIRO) with NSW State catch data for royal red prawn pre-1993 in time for SERAG 2.	NSW DPI	By SERAG #2.1 (Nov 2020)	Completed.
2020.10 Agenda item 5	13	Dr. Miriana Sporcic (CSIRO) to contact DPIPWE TAS to provide blue-eye trevalla catches from 2015 onwards in time for SERAG 2. DPIPWE will clarify the 2015 State-Tas catch estimate. In the absence of clarification from DPIPWE, by 6 November 2020, a zero catch will be used instead.	CSIRO (Miriana Sporcic)	By 6 Nov 2020	Completed.
2020.10 Agenda item 5	14	Dr. Geoffrey Liggins (NSW DPI) to provide NSW 1992-1993 blue-eye trevalla catch to Dr. Miriana Sporcic (CSIRO) by SERAG 2.	NSW DPI	By SERAG #2.1 (Nov 2020)	Completed.
2020.10 Agenda item 6	15	AFMA to undertake a risk assessment to explore the risk associated with increasing the smooth oreo (other) TAC to 135 t. This will occur outside of the 2020 assessment period.	AFMA	By SERAG 2021	Not yet started.

2020.10 Agenda item 7	16	CSIRO to provide Dr. Geoffrey Liggins (NSW DPI) with historical redfish catch data to allow for confirmation and cross-checking with NSW DPI records – results to be provided to Dr. Bessell-Browne and Dr. Geoff Tuck (CSIRO) prior to SERAG 2.	CSIRO and NSW DPI	By SERAG #2.1 (Nov 2020)	Completed.
2020.10 Agenda item 8	17	AFMA to consider updating the SESSF Harvest Strategy to provide a process for setting TACs when a species is no longer within its initial MYTAC period and an assessment has not been completed. To be undertaken in time for SERAG 2021.	AFMA	By SERAG 2021	Not yet started. This has been included in a group of work for AFMA to coordinate – forwarded to Cate Coddington (SESSFRAG EO).
2020.10 Agenda item 8	18	Dr. Paul Burch, Dr. Geoff Tuck, Dr. Andre Punt, Dr. Malcolm Haddon and Nicholas Hill to produce a document that outlines a robust process (or range of potential processes) for estimating natural mortality for the 2021 eastern orange roughy stock assessment. This work is to be presented at SERAG 2.	CSIRO (Paul Burch, Geoff Tuck, Nick Hill et al.)	By SERAG #2.1 (Nov 2020)	This is underway and Dr Burch will provide a document for consideration at SERAG #2.1 (Nov 2020).
2020.10 Agenda item 8	19	Lead stock assessor (Dr. Paul Burch, CSIRO) to develop a steering committee that will meet as required to help inform/guide the development of the 2021 eastern orange roughy stock assessment. Members: Daniel Corrie, Dan Hogan, Dr. Mike Steer, Dr. Geoff Tuck, Dr. Paul Burch, one independent scientific rep (Dr. Ian Knuckey and/or Mr. Andrew Penney), Dr. Andre Punt. This will be done when the stock assessment commences.	CSIRO (Paul Burch)	By early 2021.	Not yet started.
2020.10 Agenda item 9	20	AFMA to update the western orange roughy research plan to include guidance on how the data collected under the program can be used to inform future management decisions – include likely timeframes and metrics.	AFMA	By May 2021.	Not yet started.

Table 2. Action items from all previous meetings that are outstanding

	Meeting & agenda item ref	No.	Description	Responsibility	Timeframe	Status update after SERAG #2 (2019)
	2019.12 Agenda item 2	1	AFMA and Simon Boag to investigate with industry to identify 'soft skinned shark' that is caught inside 300 metres, including species ID and whether it is part of the deepwater shark quota basket. If not part of the quota basket, then AFMA to ensure industry are not incorrectly recording it as part of the deepwater shark quota species in CDRs.	AFMA and Simon Boag	ASAP	AFMA and SETFIA are yet to confirm the species ID for 'soft skinned shark'. CSIRO will provide an overview of deepwater shark data to SERAG in November 2020, for the purpose up implementing a Tier 5 assessment in 2021. Currently, catches in water shallower than 300m are not included in the Tier 4, and so clarifying the species ID should not impact the outcomes of the assessment. Regardless, it is a quota issue and needs to be resolved. To be updated after SERAG #2.1 (Nov 2020).
	2019.12 Agenda item 2	2	For each of the species in the DW shark basket, investigate catch at depth and provide data to Robin Thomson, including the CAAB codes for each species.	AFMA	Before the AFMA/CSIRO pre data transfer meeting (March 2020 TBC)	Data was provided to Robin Thomson in September 2020. This will be discussed at SERAG in November 2020. To be updated after SERAG #2.1 (Nov 2020).
	2019.12 Agenda item 2	3	In addition to decision rules being considered by the discard working group, Paul Burch 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	At its August 2020 data meeting, SESSFRAG established a working group to discuss application of Commonwealth discard rates to State gear types. An update will be provided to SERAG once this is resolved. There will be no change for 2020.
	2019.12 Agenda item 8	5	AFMA to finalise the Hagfish research plan for consideration by SEMAC at its February 2020 meeting. SERAG have requested additional information before the plan is taken to SEMAC, including a thorough analysis of: (1) the existing scientific literature,	AFMA	By SEMAC Feb 2020	This was presented at SERAG #1 2020 and will be considered again at SERAG #2.2 (Dec 2020).

			<p>(2) the management arrangements in other jurisdictions, and</p> <p>(3) the current operator's logbook data from the preceding four years to better understand spatial extent of catches.</p>			
2019.12 Agenda item 3	7	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	Not yet started, will commence in 2021.	
2019.12 Agenda item 7	8	AFMA to ensure the revised pre-1998 ISMP dataset is captured in the AFMA database and Dr Koopman's code corrections are stored and the old data rebadged appropriately.	AFMA	SERAG #1, 2020	This has been referred to John Garvey (AFMA) and is in progress. Note that data was not included in 2020 transfer to CSIRO.	
2019.12 Agenda item 11	10	AFMA to liaise with e-Log providers regarding the inability to change species in the "targeted species" field in the e-Log software.	AFMA	ASAP	This is a software issue, and not one that AFMA has the ability to change. The AFMA data and licencing team have requested that industry engage directly with the relevant e-log provider to address the issue. Completed.	
2019.12 Agenda item 9	11	AFMA to investigate and document the original justification for setting incidental TACs for all rebuilding species. This includes documenting the evidence base for showing where the bycatch TACs are currently set or historically set and providing to the RAG when setting bycatch TACs in future RAG meetings.	AFMA	SERAG #1, 2021	AFMA will provide a response at SERAG #2.1 (orange roughy) in November 2020 and other species at SERAG #2.2 (Dec 2020). Item can be closed after 2020 meetings.	
2019.12 RECOMMENDATION		<p>RECOMMENDATION 1</p> <p>SERAG recommends that eastern Orange Roughy is removed from the rebuilding strategy.</p>	AFMA	SERAG #1, 2020	AFMA have been advised by the Department of Agriculture, Water and Environment that the stock must remain in the Strategy for the species across its range to continue to be classified as conservation dependent. Item closed.	

	Meeting & agenda item ref	No.	Description	Responsibility	Timeframe	Status update after SERAG #2 (2019)
	2019.11 (Action items review)	1	Geoff Tuck to provide feedback from CAPAM workshop (Seattle, March 2020) to the SESSFRAG data meeting in August 2020, to inform discussions and the stock assessment for Orange Roughy, including issues around natural mortality and stock recruitment relationships.	Geoff Tuck, CSIRO	By Aug 2020 (SESSFRAG data meeting)	<p>Due to Covid, the workshop has been delayed until June 2021 and will be held online.</p> <p>An agenda item was included in the 2020 SERAG #1 meeting to discuss natural mortality for orange roughy. A workplan has been established.</p> <p>This work will be covered under action item 18 (from SERAG #1 Oct 2020) and this item will be closed after this meeting.</p>
	2019.11 (Action items review)	2	AFMA to ensure that the SiDAC data collection includes total and partial lengths of school and gummy shark including school sharks larger than 160cm, 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 (Natalie Couchman)	As soon as possible	<p>SharkRAG to discuss ongoing collection of this data at their next meeting, scheduled for December 2020. AFMA has had discussions with the SiDaC Program and CSIRO concerning the collection of blue-eye trevalla tissue samples. AFMA is looking to source funding for this work, and notes that operational limitations caused by COVID may delay commencement. Update to be provided after SharkRAG (Dec 2020).</p>
	2019.11 Agenda item 3	4	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 is Blue Warehou. If so, AFMA will correct data records and correct recording practices.	AFMA	By SERAG #2, Dec 2019	<p>AFMA have confirmed the species is blue warehou. The skippers have been informed and will record future catches as blue warehou.</p> <p>AFMA are yet to update the database – but will close this action item once done. Keep this item open until records are corrected.</p>
	2019.11 Agenda item 10.2	10	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	<p>Since 2010, 97% 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 CTS. Keep item open until observer data has been reviewed.</p>

	<p>2019.11 Agenda item 10.1</p> <p>OUTCOME</p>		<p>SERAG recommends a targeting analysis for Blue Warehou is completed as part of the March 2020 package to the Commission, to inform the TAC for the 2020/21 season.</p>			<p>Dr Burch presented a draft targeting and companion species analysis at SERAG #2 (2019), Agenda Item 11. SERAG requested to keep this item open.</p> <p>An updated targeting analysis will be provided at SERAG #2, 2020 for all rebuilding species. Item can be closed after SERAG #2.2.</p>
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	<p>2017.11 Agenda item 5</p>	5	<p>Dr Thomson to include NSW recreational catch data in the SESSF catch and discard summary for redfish.</p>	CSIRO	2018 Data Summary.	<p>SESSFrag considered the availability of recreational catch data for various SESSF species at the August 2020 data meeting. The RAG recommended that CSIRO request recreational catch data from the relevant States as part of the annual request to be included in catch reports. There is also a SESSFrag action for AFMA to liaise with the States to discuss, amongst other things, which SESSF species are considered important recreational species. AFMA recommended closing this action item for SERAG and pursuing further work associated with the SESSFrag action items. Item closed.</p>
	<p>2018.09 Agenda item 8</p>	6	<p>AFMA/Industry to clarify how observers have recorded discards of Silver Warehou on the factory boats (suggesting it was discarded but covered by quota, so should be in CDR records).</p>	Dan Corrie	ASAP	<p>AFMA have confirmed that all silver warehou are retained and processed as fish meal on the factory boats.</p> <p>However, a discrepancy remains in the logbooks and CDRs. AFMA are following up (query sent to Licensing team 16/11/20).</p> <p>Item to remain open until completed.</p>

Attachment D: Summary of action items from SERAG 2.1 (Nov 2020)

ACTION ITEM	Agenda Item Ref	Description	Responsibility	Timeframe
1	4	Dr. Miriana Sporcic (CSIRO) to produce standardised CPUE for John Dory for zones 10, 20 and if possible, zone 30 as a potential indicator of range shift. To be presented at SESSFRAG data meeting 2021.	CSIRO (Miriana Sporcic)	By SESSFRAG Data Meeting (Aug 2021)
2	6	An agenda item is to be tabled at the time of the next assessment to discuss the implications of 100% overcatch/undercatch provisions for orange roughy and the scientific justifications underpinning these for SERAG#1 2021.	AFMA	By SERAG 1, 2020
3	6	Replace part a) of action item 2020.10 from Agenda item 1.4 of SERAG#1 2020 with the following: AFMA to invite a representative from the Department of Agriculture, Water and Environment (DAWE) to SERAG#1 2021 to inform and discuss the process of delisting a conservation dependent species.	AFMA	By SERAG 1, 2020
4	6	Dr. Paul Burch (CSIRO) and the orange roughy working group to produce a document outlining assessment options, including data requirements and metrics, for orange roughy stocks, with a view to demonstrating recovery.	CSIRO (Paul Burch)	By August 2021
5	6	AFMA and CSIRO to confirm spatial reporting boundaries for orange roughy management areas.	AFMA and CSIRO	Complete.
6	8	AFMA to identify a standard minimum set of stock assessment diagnostics and provide these (a) in the ARC 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 Andre Punt for the 2021 stock assessment. To be included in future calls for research.

ACTION ITEM	Agenda Item Ref	Description	Responsibility	Timeframe
7	8	AFMA to include in the ARC feedback form for the 2021-22 blue grenadier acoustic data analysis (a) that the survey should follow a robust scientific design and proponents should engage with stock assessment scientists to ensure the data can be input into future stock assessments, and (b) that a milestone be included to allow preparation for the 2022-23 survey.	AFMA	Completed.
8	Addendum 1	Daniel Corrie (AFMA) and Dr. Jemery Day (CSIRO) to determine suitable catch levels for school whiting catch projections for consideration at SERAG#2.2 2020.	AFMA and CSIRO	By SERAG 2.2 (2020)