Australian Government
Australian Fisheries Management Authority

Southern and Eastern Scalefish and Shark Fishery Resource Assessment Group (SESSFRAG) Chair's Meeting 2023

Meeting minutes

18 – 20 Apr 2023
Melbourne

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Agenda

Location: Melbourne/MS Teams
Chair Name: Dr Cathy Dichmont

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2. SESSF History document update	For advice	Sally Weekes
3. Overview of TAC setting process – guidelines for the provision of data and stock assessments	For recommendation	Sally Weekes
4. Update from the RAG Chairs and EWG	For information	Chair / EWG
5. Options for alternative stock assessments (e.g., dynamic Tier 4 and Tier 3)	For discussion	Pia Bessell-Browne
6. Deepwater Shark assessment	For advice	Robin Thomson
7. CKMR[1] - Summary of steering committee recommendations a) Indicator species harvest strategy b) Monitoring vs bycatch CKMR c) Species prioritisation d) Preliminary design for Tiger Flathead, Eastern Redfish, Eastern Jackass Morwong and Blue-eye Trevalla	For discussion	Beth Fulton / Robin Thomson
8. CPUE standardisation accounting for closures and structural adjustment	For advice	Miriana Sporcic
9. Management of climate change impacts on the SESSF	For discussion	Beth Fulton / Alice McDonald
10. Application of discount factors in the SESSF	For advice	Sandra Curin-Osorio
11. FRDC-CSIRO project: Biological parameters for stock assessments in South Eastern Australia – an information and capacity uplift	For information	Karen Evans
12. 2024-25 Research Statement and Assessment Schedule	For recommendation	Sally Weekes
13. 2024-25 Research Statement and Assessment Schedule (continued)	For recommendation	Sally Weekes
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[1]CKMR– Close Kin Mark Recapture

Agenda item 1. Preliminaries

1.a. Welcome and apologies and Declarations of interest

The Chair welcomed participants and opened the meeting with an Acknowledgement of Country.

Table1. Meeting attendees

Chair	**Dr Cathy Dichmont**	
SESSFRAG members	Mr Lance Lloyd, Scientific Member (GABRAG[1] Chair)	Dr Sarah Jennings, Economic member
	Dr Paul McShane, Scientific Member (SERAG[2] Chair)	Ms Sally Weekes, AFMA member
	Mr Sandy Morison, Scientific Member (SharkRAG Chair)	Dr Beth Fulton, Scientific member (CSIRO)
Invited participants	Ms Franzis Althaus, CSIRO	Dr Rich Little, CSIRO
	Mr Neil MacDonald, Industry	Dr Miriana Sporcic, CSIRO
	Dr Paul Burch, CSIRO	Dr Robin Thomson, CSIRO
	Dr Pia Bessell-Browne, CSIRO	Dr Geoff Tuck, CSIRO
	Dr Sandra Curin Osorio, CSIRO	Dr Ian Knuckey, Fishwell Consulting
	Dr Alice McDonald	Dr Karen Evans, CSIRO
AFMA	Dr Mark Grubert	Ms Anna Willock, Deputy CEO
	Dr Lara Ainley	
Observers	Dr Geoff Liggins, NSW DPI	Dr Ashley Fowler, NSW DPI
	Mr Daniel Wright, ABARES[3]	
Exec. officer	Dr Nastaran Mazloumi, AFMA	

[1]GABRAG –Great Australian Bight Resource Assessment Group, [2]SERAG –South East Resource Assessment Group, [3]ABARES –Australian Bureau of Agricultural and Resource Economics and Sciences

The RAG followed the conflict-of-interest management process (as outlined in *Fisheries Administration Paper 12*) and updated the Declarations of Interest (**Attachment A**) via email prior to the meeting**.**

The RAG members considered the potential for some pecuniary interest for particular research and industry attendees with agenda items listed in Table 2.

The RAG recognised the attendees' knowledge and ability to contribute to the discussions and agreed that it was appropriate for them to participate in the discussion. However, formal recommendations would be finalised by the members in the absence of conflicted members and attendees.

Table 1: Agenda items with declared conflicts of interest

Agenda Item	Declared conflict
6. Deepwater Shark assessment	CSIRO
7. CKMR - Summary of steering committee recommendations	CSIRO

8. CPUE standardisation accounting for closures and structural adjustment	CSIRO
10. Application of discount factors in the SESSF	Industry
12 & 13. 2024-25 Research Statement and Assessment Schedule	All members of the Committee

1.b. Adoption of agenda

The RAG adopted the agenda (Page 3) as final.

1.c. Minutes of previous meeting

The RAG endorsed the August 2022 Data Meeting minutes as a true representation of the outcomes of that meeting.

1.d. Actions arising from previous meetings

The status of existing action items is detailed in **Attachment B**. Items marked in green have been completed. Those in yellow are underway and those marked in red require advice from SESSRAG.

AFMA provided the RAG with an update on the status of action items arising from previous SESSFRAG meetings. The following points were discussed:

- *Action item 1 "CSIRO to provide a reference to requirements in the Harvest Strategy Policy regarding choice of target reference points and other key policy settings within the TAC setting guideline document"*

Members agreed that this information is already captured in other documents and does not need to be duplicated. This item was marked as redundant and will be removed from the list of actions.

- *Action item 20 "CSIRO/SharkRAG 2023 to review GHAT logbook data to see if there are any boat-level trends in reporting behaviour that would undermine the outcomes of the ABARES congruence analysis"*

The SharkRAG chair advised this approach would mainly be used for monitoring changes in reporting behaviour and should be retained. The SESSFRAG agreed this item be removed from the SESSFRAG action list and considered as an agenda item at the next SharkRAG meeting.

- *Action item 24 "AFMA and FAS to provide SERAG an overview of the fish-length/otolith-weight ratio for Cascade orange roughy with a view to determining if there are different stocks aggregating on the Cascade plateau each year"*

To support TAC setting for Cascade orange roughy until a new assessment is undertaken, the RAG recommended AFMA to liaise with FAS to identify any sub-structures present to calculate the mean age and assess if older fish are in the population. Subject to what the age data look like, AFMA/FAS to provide an overview of the fish/length/otolith-weight ratio to determine if there are different stocks aggregating on the Cascade plateau each year. This item was marked as underway.

- *Action item 27 "AFMA to evaluate the benefits of undertaking another analysis of discard reporting for fisheries that have EM to determine if there are continuing improvements in reporting (as per the review that ABARES undertook)"*

SESSFRAG members agreed to revise the wording of this action to AFMA and CSIRO to review the recommendations from the ABARES congruence analysis of logbook and EM data and determine what additional work is required.

- *Action item 29 "AFMA to incorporate the process for periodic review of stock assessments in the document 'Total Allowable Catch (TAC) setting process – Guidelines for provision of data and stock assessment processes' for further consideration by SESSFRAG. Timeline is subject to other priorities"*

The Chair agreed to draft the text to address this action item.

Agenda item 2: SESSF History document update

Purpose of the agenda:

To provide SESSFRAG with the updated Southern and Eastern Scalefish and Shark Fishery (SESSF) management history document and seek advice as to any further items for inclusion.

SESSFRAG noted:

- Three new inclusions into the SESSF history document including: 1) an extension to no take measure for snapper for the relevant Commonwealth concessions, mainly off South Australia on the 1st of February 2023 to the 30th of June 2026, 2) inclusion of five spatial closures for trawl operators that come into effect on 1 May 2023 and, 3) Danish seine gear modification and changes to the mesh size in response to closures.
- The outcomes of the structural adjustment process in the Commonwealth Trawl Sector, including the number of trawl boat SFRs surrendered, will be incorporated into the 2024 update of this document.

SESSFRAG advice and recommendation:

- SESSFRAG accepted the new changes and endorsed the document.

Action item 1 - In relation to the SESSF History Document, AFMA to include the Upper-slope Dogfish Management Strategy in 2012. The implementation of this may have prompted improved reporting of species in the Deepwater shark's quota basket despite the strategy not applying to the quota basket species or any changes being made to the species included in the quota basket.

Agenda item 3: Overview of TAC setting process – guidelines for the provision of data and stock assessments

Purpose of the agenda:

For SESSFRAG to endorse the document that outlines the process for the provision of data and stock assessments required to support the Total Allowable Catch setting process that AFMA undertakes for the 34 quota and non-quota species in the Southern and Eastern Scalefish and Shark Fishery (SESSF).

SESSFRAG noted:

- The document should include guidance on the independent review of stock assessments as per the existing action item.
- The impacts of climate and non-stationarity parameters in the assessments may need to be included in future iterations of the document.
- This is a living document and can be updated as required.

SESSFRAG advice and recommendation:

- SESSFRAG endorsed the document as drafted. The RAG asked that Dr Beth Fulton assess how climate change can be addressed in stock assessments for the next SESSFRAG Chair's meeting 2024. And, for AFMA to consider this as an agenda item for the next Chair's meeting in March 2024.

Action item 2 - Dr Beth Fulton to draft a document on climate change and its potential implications for stock assessments that can be considered by SESSFRAG at its March 2024 meeting. The outcomes of this discussion may require further amendment to the Overview of TAC setting process document (or another document).

Agenda item 4: Update from the RAG Chairs and EWG

Purpose of the agenda:

To provide a summary for SESSFRAG on the progress of the SERAG, SharkRAG and GABRAG.

SESSFRAG noted:

Updates from Dr Paul McShane (SERAG Chair):

- SERAG met twice in 2022.

The RAG considered:

- Tier 1 assessments of flathead and blue grenadier,
- Tier 4 assessments of mirror dory, blue eye trevalla, gemfish west and silver trevally (silver trevally will be updated under a joint assessment with NSW Fisheries),
- Future data collection and assessment approaches for deepwater sharks and hagfish.

Many of the resource assessment issues presented to SERAG stem from the non-recovery of overfished stocks caught by the east coast trawl/Danish seine sector including:

- jackass morwong
- gemfish
- John Dory
- redfish
- blue warehou

Other matters discussed at SERAG in 2022 included:

- Spatial closures in the CTS and changes to Danish seine mesh size,
- Structural adjustment for the trawl sector,
- Consideration of TACs for co-occurring target species particularly flathead,
- Consideration of environmental drivers captured in several ongoing projects
    - Dynamic B_0
    - Multi-species Harvest Strategy
    - Climate change impacts
- These changes will have implications for stock assessments and management.

Research Priorities supported by SERAG at the 2022 meetings included:

- Blue grenadier acoustic survey 2024 (winter spawning aggregation),
- Evaluating contributing factors to CPUE standardisation in the SESSF (fishing efficiency, environment, fishery dynamics),
- Identify environmental indicators of ecosystem health to inform species management. Links to the multi-species harvest strategy project and dynamic B_0 project,
- Independent review of blue grenadier tier 1 stock assessment,
- Tender for the undertaking of a Pink ling stock assessment in 2024.

Updates from Mr Lance LIoyd (GABRAG Chair):

- GABRAG met twice last year, in November and December.
- The fishers reported that the catches had recovered somewhat but were limited by operational issues with boats being out of service.

GABRAG considered the Bight redfish assessment in 2022:

- The Bight redfish assessment model has been refined, and while stock status remains well above the target, model fits to CPUE and the FIS index remain poor.
- Previous concerns for the stock were somewhat alleviated by the results.
- The RAG supported the final base case and recommended a 3-year MYTAC based on a 3-year average RBC of 994 t.
- The deepwater flathead assessment has been brought forward to 2023 to enable the two main stocks to follow a 3-year MYTAC cycle, offset by one year.
- There were some positive developments on orange roughy data collection and possible assessment in the near future. A FishPath analysis has helped identify what data is needed for future assessments which may lead to commercial fishing of the species in the GAB – a research catch allowance is available which assists in collecting necessary data.
- A "Climate and ecosystem update" is now a standing agenda item – reflecting the importance of this topic to the GAB fishery.

Other matters discussed at GABRAG in 2022 include:

- The GABRAG recognised that while the GABFIS is well designed and provides valuable information, it is expensive and difficult for industry to support. After much discussion, the GABRAG supported the discontinuation of the FIS in its current form and recommended an alternative broad-scale survey be considered for funding by alternative sources. The RAG recognised such a survey will not provide an index of abundance for Bight redfish or deepwater flathead but could still provide useful ecosystem information.
- GABRAG plans to meet twice in 2023.
- Industry has pursued and are in the final phase of gaining MSC certification.

Updates from Mr Sandy Morison (SharkRAG chair):

- SharkRAG held three meetings in 2022 and discussed the following:
    - implications of transitioning from hooks and to gillnets on assessments,
    - reviewed net efficiency for incorporating net length in the CPUE,
    - reviewing the proposal made by industry to reduce the EM review rate, in conjunction with a review of the ABARES congruence report,
    - reviewed options provided by AFMA about the School shark live release rule,
    - reviewed the school shark metier analysis, including an alternative 'logbook' method,
    - reviewed progress of Close Kin study on school shark and,
    - advice provided on school shark and gummy shark TACs.

The RAG noted there that the Economic Working Group had not met for the previous two years in 2021/22 and 2022/3.

- The Chair raised concerns about the lack of routine consideration of economic information at the RAG and that incorporating the economics of the fishery into the discussion is very important. This is especially relevant for the economic viability of the sector following the structural adjustments.

SESSFRAG advice and recommendation:

The RAG recommended that AFMA assess and report back to the RAG on the implications of the structural adjustment on the economics of the SESSF and what this means in terms of research and data collection to support the fishery.

Action item 3 - AFMA to summarise the potential impacts of the structural adjustment on the economics of the SESSF and what this means in terms of research and data collection for the next Chair's meeting in 2024. Previous economic indicators produced by the Economic Working Group should also be considered at that meeting and whether any of them should be adopted by the RAG for regular review.

Agenda item 5: Options for alternative stock assessments (e.g., dynamic Tier 4 and Tier 3)

Purpose of the agenda:

CSIRO proposed to add new stock assessment methods to the SESSF assessment toolbox and seeks guidance from SESSFRAG on the process to obtain approval to use these methods to provide resource science and management advice.

Dr Pia Bessell-Browne and Dr Paul Burch (CSIRO) presented work on progress towards a joint assessment for silver trevally with NSW Fisheries scientists and the development of alternative assessment approaches for the Tier 3 and Tier 4 categories.

SESSFRAG noted:

Data Limited Stock Synthesis (SS-DL)

- Data limited stock synthesis "SS-DL" was used to assess silver trevally and is proposed for use as a Tier 3 assessment for orange roughy.
- CSIRO has been exploring the use of SS-DL to undertake data-poor to data-moderate stock assessments and requests advice from SESSFRAG on how to proceed with its use to develop assessment approaches to provide management advice.
- There are benefits of SS-DL, however, approval would be based on an evaluation of the individual stock assessment methods that are implemented using SS-DL.
- A summary of two workshops held at the Sydney Institute of Marine Science in September 2022 and March 2023 between scientists from CSIRO and NSW Fisheries to progress the development of a joint assessment for silver trevally, was presented.
- Provisional results from the development of a Tier 1 assessment for silver trevally were presented:
    - Reference points used by the Commonwealth are consistent with those used by NSW.
    - Catches from TAS and VIC were not included in the assessment, however, they are small and can be considered using a sensitivity analysis.
    - Fits to the CPUE indices were poor in the early years, but reasonable in recent years.
    - Fits to the combined length data for the Commonwealth and NSW trawl fleets were reasonable, while fits to the NSW trap fleets were poor.
    - Fits to the age-at-length data were generally good.
    - With the exception of 2016, the model estimated annual recruitment deviations to be below the long-term average from 2009–2019. The stock status was estimated to have been below 20% of unfished spawning biomass since the mid-1990s (including the majority of the Tier 4 reference period) and the current spawning biomass was estimated to be around 8% of unfished spawning biomass.

It is important to note that the results are preliminary as the final Silver Trevally assessment requires:

1. updated catch, CPUE, length and age data to the end of 2022,
2. the use of calendar year for all inputs (NSW CPUE currently uses financial year),
3. the estimation of selectivity and
4. application of Francis weighting.

- SESSFRAG discussed differences between the stock status estimates from the provisional Tier 1 assessment for silver trevally and the current Tier 4 assessment with a focus on the likely stock status during the Tier 4 reference period (1992–2001).

- It was noted that the reason silver trevally has a later reference period than most other Tier 4 stocks is because ShelfRAG was concerned that a number of vessels were targeting silver trevally with modified gear and increased engine capacity. This impacted the representativeness of silver trevally CPUE in the late 1980s and early 1990s, hence the use of a later reference period for this stock. It would also impact the Commonwealth trawl CPUE used in the assessment if it is not accounted for appropriately.
- Dr Geoff Liggins from NSW DPI mentioned that further work on the model is required prior to final consideration. For example, including length frequency data due to fleet dynamics changes and selectivity issues.

SESSFRAG advice and recommendation for Silver Trevally assessment approach:

- AFMA to establish a RAG sub-committee to provide inter-sessional review of the Tier 1 assessment undertaken by CSIRO and NSW Fisheries.
- AFMA to provide CSIRO with the names of the vessels with modified gear and increased engine capacity, and the years which they fished with the improved gear/engine capacity so that they could be considered in the Commonwealth CPUE standardization. If this information is not available, then the regular CPUE standardization would be applied for this species and used in the integrated assessment.
- The Tier 1 assessment would be reviewed at the first SERAG meeting of 2023 and either be accepted and taken forward to provide management advice or rejected.
- Should the Tier 1 assessment be rejected by SERAG then, at the same meeting, SERAG will review the appropriateness of the reference period for the current Tier 4 assessment. If SERAG considers the Tier 4 reference period for Silver Trevally is not appropriate it will consequently reject the current Tier 4 assessment and assess the stock using a weight of evidence approach.
- If SERAG decide the Tier 4 reference period for Silver Trevally is appropriate, then a Tier 4 assessment, using data to the end of 2022 would be prepared by CSIRO to be available approximately two weeks after the first SERAG meeting, or for the second SERAG meeting.

Age-based assessments of non-Eastern Orange Roughy stocks

- Dr Paul Burch (CSIRO) presented a summary of work planned for assessing non-eastern orange roughy stocks and requested SESSFRAG's advice on the process for the approval of an existing age-based assessment method for inclusion in the Tier 3 category of the approved assessment methods in the SESSF (i.e., the SESSF assessment toolbox).
- CSIRO is scheduled to undertake age-based assessments of Cascade Plateau and GAB orange roughy in 2025 and propose the use of SS-DL to implement age-based assessments.
- While SS-DL implements a range of data-poor to data-moderate assessment methods using Stock Synthesis, it is unclear what an age-based assessment implemented using SS-DL would represent.
- Simulation testing led to the rejection of the previous SESSF catch curve-based Tier 3 method because of the inherent bias in any implementation of the catch curve method, due to the assumption of stationarity. This bias would also result if SS-DL is implementing a catch curve.
- SESSFRAG recommended AFMA to update the TAC setting guidelines document to clarify how the approval of assessment methods that have been simulation tested differs from untested methods.

Action item 4 - CSIRO to consult with Jason Cope (SS-DL developer) and prepare a paper for the August 2023 SESSFRAG Data Meeting that describes the age-based assessments that are implemented in SS-DL, particularly in relation to how it differs from the old Tier 3 (catch curve) assessments. The paper should include any simulation / MSE testing of these methods. If age-based assessments implemented in SS-DL are the equivalent of Catch Curve based assessments, then it would be likely that SESSFRAG would recommend this approach is not pursued as there is a high probability it would fail.

Dynamic Tier 4 assessment method

- Dr Pia Bessell-Browne (CSIRO) presented a summary of a new Dynamic Tier 4 assessment method that was developed as part of the Multi Species Harvest Strategy project.
- The Dynamic Tier 4 method is a surplus production model fitted to CPUE data where the sustainable yield is assumed to occur during a historical period of pre-determined reference years.
- Depending on data availability, the Dynamic Tier 4 assessment method can estimate some or all of the parameters of the production function (the intrinsic rate of population increase parameter (r), mortality corresponding to B_{MSY}/B_0 (z), and the maximum population size parameter (K)).
- Data inputs include catch and CPUE, and the model can accommodate multiple CPUE series over varying time periods, which is not possible using the current Tier 4 method.
- Management strategy evaluation (MSE) results show improved performance statistics for Dynamic Tier 4 compared to the current Tier 4 assessment for three SESSF species (tiger flathead, redfish, school whiting) using the same data inputs.
- One key result of testing the Dynamic Tier 4 assessment method is the reduced sensitivity to the chosen reference years and to recent changes in CPUE values, and reduced variability in recommended biological catches (RBCs), compared with the current Tier 4 method.
- SESSFRAG noted benefits of the Dynamic Tier 4 method compared with the current Tier 4 and approved the inclusion of the Dynamic Tier 4 assessment method in the Tier 4 category of the SESSF assessment toolbox, on the basis that it had been MSE tested.
- SESSFRAG discussed how the new Dynamic Tier 4 method should be applied to current Tier 4 stocks and noting that a change in assessment method would likely result in a change in RBCs recommended, that it be compared to the current Tier 4 method in two stocks where the reliability of the current Tier 4 has been questioned. The deepwater shark basket and the slope stock of blue-eye trevalla were selected for this purpose.

SESSFRAG recommended that the deepwater shark basket and the slope stock of blue-eye trevalla be used as test cases for the dynamic Tier 4 method for consideration by SERAG in 2023 noting that the existing assessment approaches would also be tabled at the same meeting, to allow for comparison. Noting that a decision on which methodology should be used to inform the TAC process would be made prior to seeing the RBCs.

Action item 5 - Dynamic Tier 4 assessments be undertaken for the Deepwater Shark basket and the slope stock of Blue-eye Trevalla, along with an update to the existing Tier 4 for Blue-eye Trevalla and 'roll-over' for deepwater sharks, for consideration by SERAG 2023. The RBCs from each assessment type will not be viewed until the RAG has decided on the assessment methodology to use for each stock for the 2023 TAC setting round.

Agenda item 6: Deepwater Shark Working Group Outcomes

Purpose of the agenda:

To consider the outcomes of the deepwater shark working group meeting held on the 30th March 2023 and provide advice on an assessment approach for 2023 and future data needs for the deepwater shark basket.

SESSFRAG noted:

- The purpose of the working group was to consider possible assessment approaches with the current data and to prioritise future work.
- Issues with misreporting of deepwater shark species prior to 2012.

- Discarding practices differ greatly among deepwater shark species (e.g., lantern shark family is 100% discarded whereas *Deania* is highly retained).
- Deepwater shark species have a very low productivity and in the past were assessed by Tier 4 assessment. They have high rates of discarding which are poorly recorded in logbooks.
- The TACs are uncertain and set as 24 t in the east and 235 t in the west.
- Deepwater sharks are protected through extensive closures.
- Species identification in logbooks is poor, and observers also have some difficulty identifying species.
- The need to hold species identification workshop for observers was discussed at the deepwater shark working group in 2023.
- The whole deepwater shark basket was assessed through FishPath and it was concluded that there was no suitable assessment for the entire basket.
- The catch time series for deepwater sharks were recently assessed. Logbooks catch reports prior to 1985 were negligible; there were some reporting on catch and effort in trawl logbooks from 1985 to 1996, when the market for deepwater shark was established.
- Catch time series were reconstructed and discrepancies between the logbook and Catch Disposal Records (CDR) were noted.
- CPUE standardisation results showed no differences in results with closures and without closures.
- SESSFRAG advice is required for the assessment of deepwater shark in the 2023 fishing season noting the Commission's concerns about increased CPUE.
- There is a need for a longer-term work plan rather than just Multi-Year Total Allowable Catch (MYTAC) assessments.
- Length frequency data for the west population of *Deania* spp. is available from historical surveys. However, much of the data still needs to be entered from paper data sheets.
- There is a value in identifying *Deania* spp. habitats based on the data that is available from surveys on their sex and size. According to the work of Ian Knuckey in 2009, around 54% of the catch *Deania* spp. were from the closed area. The value of this work would be in refining estimates of CPUE, quantifying protection in closed areas and improving the representativeness of length frequency data.
- Proposed assessment options for deepwater sharks were:
    - Tier 4,
    - Dynamic Tier4,
    - Assessment within the closed areas,
    - Data limited assessment approach.
- Potential future work proposed by the working group were:
    - Management approaches,
    - Improved catch time series,
    - Improving CPUE as an index of abundance,
    - Characterising habitat preferences of each species.

SESSFRAG advice and recommendation:

- SESSFRAG agreed to progress the Dynamic Tier 4 assessment in 2023, using the existing agreed method of standardisation by Dr Miriana Sporcic.
- AFMA to organise a species identification workshop.
- AFMA to send observers to relevant ports to monitor species composition of the Deepwater shark catch.
- Identifying *Deania* spp. habitats based on data from surveys on their sex and size was agreed for inclusion as a research priority.

Agenda item 7: CKMR - Summary of steering committee recommendations

Purpose of the agenda:

To provide SESSFRAG with the outcomes of the Close Kin Mark Recapture (CKMR) Steering Committee meeting 1 convened on 3 April 2023 and to seek advice on species prioritisation for the CKMR project.

SESSFRAG noted:

The CKMR project details and design (Dr Robin Thomson),

- CKMR methodology can estimate absolute rather than relative abundance in addition to better calculate time-series of mortalities based on absolute abundance.
- CKMR is a fisheries independent methodology and some sample collection can be undertaken in port.
- CKMR has been very well used in managing the Southern Bluefin Tuna fishery and school shark. School shark management under an *F* based harvest control rule is now currently underway by FRDC funded project.

Project design:

The CKMR project is looking at the feasibility of undertaking this assessment approach for a range of SESSF species. The working group met to identify a list of priority species to consider the project.

- Dr Beth Fulton's work on indicator species selection was used as a guide for developing the CKMR species list (as per below). The CKMR steering committee then considered the traits and available data for the different species/stocks listed.
    - In the table below, 1 = non-CKMR stock, 2 = candidate for CKMR stock, 3 = candidate for Bycatch CKMR stock.
    - The list of Candidate species that scored 2 in the final column will be further refined based on sampling requirements (including associated costs/benefits) to determine suitability and prioritisation.

Species	CKMR hard or easy? • Does it match the current software?	CKMR biologically feasible? 1. Current Abundance 2. Fishing Pressure 3. Turnover 4. Catch Composition (selectivity) 5. Stock Structure	Historic catch series	Management priority (general + AFMA)	1. non-CKMR stock 2. CKMR stock 3. Bycatch CKMR stock
Tiger flathead	✓	✓	✓	4	2
Blue warehou	E: ✓ W: ✓	E: X 2 W: X 2	E: ✓ W: ✓	4	3
Silver warehou	✓	✓	✓	4-5	2
Jackass morwong	E: ✓ W: ✓	E: ✓ W: ✓	E: ✓ W: ✓	5	2,3
Redfish	✓	✓	✓	4-5	2,3
Pink ling	E: ✓ W: ✓	E: ✓ W: ? 4	E: ✓ W: ✓	4-5	2
Eastern Gemfish	✓	? 2,4	✓	5	3
Blue-eye trevalla	✓	? 4,5	✓	4	2
School whiting	✓	✓1	✓	3	2
Orange roughy	✓	X 3,4	✓	4	1
Blue grenadier	✓	? 4,5	✓	3	2
Jack mackerel (East)	✓	✓ 5	✓	4	2
redbait	✓	✓ 5	✓	4	2
GAB flathead	✓	✓	✓	3	2
GAB redfish	✓	? 4	✓	3-4	2
Gummy shark (3 Stocks)	?	? 4,5	?	3	2
Ocean Jacket	?	?	?	2	2

- Dr Robin Thomson presented the sampling design for eastern redfish, eastern jackass morwong and tiger flathead as examples in terms of distribution of the age, the proportion of samples to the catch and the spawning biomass. She then presented the expected Coefficient of Variation (CVs) for spawning biomass and age estimations based on sample numbers.
- The differences in age distribution of samples influence the precision of age estimations.
- The spawning biomass and the fishing mortality CV plots were presented. Using Tiger Flathead as an example, Dr Thomson explained that in order to have a 12% CV, a sample size 50,000 was required over six years.
- The possibility of having lower sample size with higher CVs was discussed and Dr Thomson acknowledged that this can be done when the Harvest Control Rules (HCR) are tested and we better understand the sample size and sampling timeframe required to attain a desired CV.

Stock	Total sample size over 6 years	Sample size p.a.	% catch no. over 6 years	% catch no. final year
Eastern Redfish	20,000-25,000	3,300-4,200	1%	2%
Eastern Jackass Morwong	20,000-25,000	3,300-4,200	1%	2%
Tiger Flathead	30,000-50,000	5,000-8,300	<1%	<1%
Blue-Eye Trevalla	20,000-25,000	3,300-4,200	6%	9%

- The main reason for having lower CVs here is that there is no other information to support the CKMR. However, the only way to estimate the most appropriate CV is to run simulations that specify target harvest level.

SESSFRAG advice and recommendation:

SEESFRAG supported the use of the species list developed by the CKMR steering committee.

Action item 6 - SESSFRAG Chair and AFMA to review the membership of the CKMR Steering Committee to ensure completeness.

Action item 7 - In relation to the number of sample sizes required to support a CKMR assessment for each species, Dr Robin Thomson to prepare two sets of plots per species for the CKMR study: a) proportion catch-at-age and CV plots against year as before although, smaller sample sizes may be needed; b) a plot of CV against sample size (in place of the table of sample sizes which means a CV does not need to be selected) but ensure that these plots cover the range of CVs from 0.12 to 0.25.

Agenda item 8: CPUE standardisation accounting for closures and structural adjustment

Purpose of the agenda item:

For SESSFRAG to consider CPUE standardisation approaches (using example species) presented by Dr Miriana Sporcic (CSIRO), and provide advice on a preferred standardisation approach.

SESSFRAG noted:

- The discrepancies between jackass morwong and flathead CPUE standardisation in South East Tasmania in 2022 and 2023.
- The percentage of catch and effort was reviewed inside and outside the closures over a five-year period as well as for ratio of CPUE inside and outside closures.
- The species reviewed included: jackass morwong, silver trevally, John dory, tiger flathead, silver warehou, blue grenadier, mirror dory, school whiting and gummy shark.
- To calculate the influences of the closures on CPUE standardisations, a retrospective analysis should be done across each of the stocks that are caught within the closures. In addition, information is required about the buyout to understand the cumulative impacts of closures and structural adjustments on CPUE standardisation.

- SESSFRAG discussed at length the point that there are so many factors impacting CPUE such as oil and gas activities, in addition to a large number of spatial closures (including marine parks), that mean the RAG has lost confidence in CPUE as an indicator of abundance, and hence the ability to provide advice based on this. Attendees also discussed the need, in their view, for an independent source of data collection, noting that under AFMA's cost-recovery model, it is cost prohibitive in some instance.

SESSFRAG advice and recommendation:

- Further discussion regarding how to revise the CPUE standardisation in light of the structural adjustment, is required, once the boats to be removed are known (March 2024 meeting).
- SESSFRAG members to draft a letter for the Commission outlining their concerns about the lack of confidence in CPUE as an indicator of abundance and the need for a fishery independent data collection program to support stock assessments.

Action item 8 - Dr Miriana Sporcic and AFMA to investigate the reasons for discrepancies in the catch figures from the closed areas presented in the preliminary CPUE work presented by Dr Sporcic at the SESSFRAG Chairs meeting in April 2023 and those provided in the letter from the AFMA Commission to industry regarding the implementation of the closures.

Agenda item 9: Management of climate change impacts on the SESSF

Purpose of the agenda item:

To present the results of Atlantis ecosystem modelling of the influence of climate change on SESSF species; to provide an updated Draft Climate and Ecosystem Report for the SESSF; and to request feedback from SESSFRAG on the next steps for climate adaptation in the SESSF.

SESSFRAG noted:

Dr Beth Fulton from CSIRO discussed the impact of climate change on species, noting:

- The parameters influencing the fishery including geophysical drivers, ecological processes, fishing impact, and social and economic impact.
- Environmental and ecosystem parameters that are changing as a result of climate change, as well as fishing operations, species, socio-economic factors, and the management of the fishery are considered in the Atlantis model.
- Warming is happening four times faster in south-east Australia compared with other parts of the world.
- Potential climate drivers include changes in the ocean currents, temperature, primary production, reproductive capacity, locations, predation, disease and parasites, and human behaviour.
- Stock biomass of key species with and without climate change were modelled. The results indicate that climate change and fishing behaviour is likely to have contributed to the depletion of Blue warehou, Eastern gemfish and Jackass morwong. The research also found that climate change is likely to undermine management interventions and recovery plans for some of these species.

Alice McDonald from AFMA presented the Climate Adaptation Program for SESSF (future steps for the fishery).

- AFMA is integrating climate change impacts into the management of Commonwealth fisheries through:

    - including research and information on climate impacts in decision making processes, for example incorporating the information into SESSF Species Summary report,
    - identifying adaptive fisheries management options,
    - preparing Climate and Ecosystem status reports (including hindcasts and forecasts of climate indicators), and
    - incorporating climate change into TAC and TAE setting process (e.g., including climate impacts into stock assessment, harvest strategies and Ecological Risk Assessment (ERA) in future).

- A draft Climate and Ecosystem Report for the SESSF was presented to the RAG, with some hindcasts and forecasts of basic environmental and climatic indicators relevant to the fishery.
- A transitional framework to integrate climate risk in TAC/Es is currently being developed by AFMA. The draft approach would first assess the climate risk to a species (based on the best available information including ecosystem modelling and projections), then consider whether that climate risk is already integrated into the assessment or whether the TAC is sufficiently precautionary, and if not, to guide consideration of additional precautionary approaches.

SESSFRAG discussion:

- One member was of the view that the colour coding of climate impacts could be misinterpreted, and that the transitional framework was not something that the RAG could implement. However, most members supported the transitional framework concept, with some considering that the transitional method would legitimise actions that the RAG had already been taking to respond to uncertainty, including the use of lower recruitment deviations in the stock assessments of three species.
- Members thought it important that the potential for a species to be positively influenced by climate influence should be incorporated into the transitional mechanism (i.e., increase in TAC).
- The economic impacts of climate change need to be quantified.
- The transitional framework should be presented in the context of methods to include climate risks in stock assessments, including incorporating the existing climate data into CPUE standardisations, stock assessments and risk assessments.
- The other projects currently underway, including dynamic B_0, Multi-Species Harvest Strategy framework, updating biological parameters will also have capacity to guide the integration of climate change impacts into the management of the fishery.

SESSFRAG noted that the next steps were for AFMA to further develop that transitional framework and would consult further with the relevant RAGs in due course.

Agenda item 10: Application of discount factors in the SESSF

Purpose of the agenda item:

To update the SESSFRAG on the progress of determining stock-specific buffers and discount factors for species in the SESSF and seek advice on the utility of the proposed approach.

SESSFRAG noted:

- Buffers or discount factors are used to address uncertainty in stock assessments and associated risks in the harvest strategy.

- CSIRO are exploring the impacts on risk and yield of implementing buffers (species and time buffer) into the SESSF harvest strategy through:
    - Incorporating the variations in mortality (*M*) and steepness (*h*) into stock assessments (this includes several scenarios that will be tested through MSE),
    - Determining the risk associated with multi-year TACs,
    - Setting a buffer in the assessments to reduce the risk of falling below the biomass limit reference point.
- If the risk (the probability of being below the limit reference point) is within an acceptable level (less than 10%), no buffer is required. However, if the risk is unacceptable (more than 10%) then several steps could be followed, as below:
    - Calculate the species specific buffer to account for stock assessment uncertainty for a particular stock, that reduces the risk below 10%,
    - If multi-year TACs are applied, calculate the annual compounding time buffers (together with the species buffer) that reduce RBCs over time so that the risk is below 10%,
    - Potential loss in yield from the application of buffers can be calculated.
- The relationship between the probability of stock falling below the limit reference point and the species buffer values were presented for tiger flathead, school whiting and redfish (as examples).
- The result of the preliminary analysis for using buffers demonstrate that:
    - buffers should be considered on a species-by-species basis,
    - the stock productivity level and the risks associated with the stock status falling below the limit reference point (LRP) should influence the decisions on setting buffers for species,
    - while buffers can reduce the risk of falling below the LRP, they can also increase the catch if the stock would otherwise collapse,
    - species with stable population dynamics and lower assessment uncertainty require smaller buffers, and
    - short-lived species and species that are under the 20% of the LRP require higher buffers.

SESSFRAG advice and recommendation:

- Tier 1 assessments should have buffers to account for assessment uncertainty.
- There is an uncertainty about choosing the relevant discount factor or buffer for stocks with different productivity levels (low, medium, and high).
- AFMA and CSIRO to organise a Steering Committee, once suitable to establish, on the buffer project and the SESSFRAG to review the outcomes at the next meeting.
- The steering committee should consider the buffer scenarios for application, noting that current buffers are predicated on a productivity scenario that has the worst risk of all scenarios considered.
- SESSFRAG supported the approach being undertaken by the assessment team while including the above advice.

Agenda item 11: FRDC-CSIRO project: Biological parameters for stock assessments in South Eastern Australia – an information and capacity uplift

Purpose of the agenda item:

To provide an overview of the FRDC project "Biological parameters for stock assessments in South Eastern Australia – an information and capacity uplift" (undertaken by CSIRO) and an opportunity to contribute to the development of discrete components of this work.

SESSFRAG noted:

Dr Karen Evans from CSIRO opened the agenda item and discussed following:

- This project follows on from a previous FRDC project which reviewed biological parameters used in stock assessments across Commonwealth fisheries. Concerns raised in that project included:
    - Age of the information (very old),
    - Unknown source of information.
- The Tier 1 species biological parameters were considered for this project.
- The uncertainties within the biological parameters were assessed.
- Running simulation tests to review the consequences for productivity if the mortality and growth parameters are not representative.
- Ecosystem models were used to understand the underlying drivers of change on the parameters and for the sensitivity analysis to understand whether they capture the variability of biological parameters in their models.
- In the SESSF, estimates of most of the biological parameters are more than 20 years old and need to be updated.
- The base case analysis of a stock assessment should be modified to include model sensitivity to biological parameters
- The project produced a number of recommendations, including:
    - Better understanding uncertainties,
    - Improving information flow,
    - Streamlining and innovating processes, improving cost-effectiveness,
    - Increasing capability,
    - Implementing a prioritisation framework.
- The project main objectives are to:
    - Develop consultation with key stakeholders,
    - Reduce uncertainties in the stock assessments and,
    - Progress methods development associated with ascertaining biological parameters.
- CSIRO with project partners will co-design a series of postgraduate projects that address priorities identified in the FRFDC project.
- Two early to mid-career research projects will also be designed to focus on delivery of advancement in methodologies associated with application of machine learning approaches to image analysis and next generation assessment approaches to species in the SESSF and better understanding of key uncertainties in the assessments.

- Several workshop with stakeholders will be held.
- The project will incorporate direct involvement in the SEA-MES voyages and delivery to overall aims of SEA-MES and regular provision of updates to SESSFRAG.
- The project team will report back to SESSFRAAG on progress for the duration of the project.

SESSFRAG advice and recommendation:

- Spatial and temporal resolution of the biological samples should be considered (when taken).
- There is a value in incorporating the outcomes of the species listing assessment for Multi-Species Harvest Strategy (MSHS) project into the biological parameters work.
- Organising a Steering Committee that enables people to have regular contact with the project team should be considered
- Growth should not be the only parameter considered in this work (e.g., fecundity should be examined as well).

Agenda item 12: 2024-25 Research Statement and Assessment Schedule

Purpose of the agenda item:

To seek advice from SESSFRAG on research priorities to be included in the 2024–25 Annual Research Statements for the Southern and Eastern Scalefish and Shark Fishery (SESSF) and the Great Australian Bight Trawl (GABT) Fishery, including the assessment schedule for relevant species. The RAG noted the research cycle for priorities.

The RAG discussed the research priorities identified for AFMA funding in 2024-25 and made the following points:

New identified research for 2024–25 in SERAG

<u>Blue grenadier acoustic survey 2024</u>

- The RAG supported the survey due to the high economic value of Blue Grenadier.
- High priority, high feasibility

<u>Evaluating contributing factors to catch per unit effort (CPUE) standardisation in the SESSF</u>

- The RAG recommended splitting this project into two parts, the first a low-cost desk top scoping study and the second, a more involved project to do the work. The second part should depend on the outcomes of the second.
- Part 1 – A species specific scoping project to:
    - identify the species that the project needs to focus on noting that some species already have acoustic surveys (e.g. orange roughy) and others CKMR (e.g. school shark) so should therefore not be included.
    - Identify what data is influential, what data is available and what the data gaps are that need to be filled.
    - Include consideration of the impacts of climate change, closures and fishing power.
    - Be informed by the MSHS and other related projects that are due for completion in 2023/24 as these will inform what species are selected for the project.
    - Specifically include exploration/identification of what are targeted versus non-targeted shots for the deepwater shark basket quota to assist in refining the CPUE series for this species group.
    - Incorporate the ‘Environmental Indicators of Ecosystem Health’ project scope, into this project as it will ask the same questions in terms of identifying the key environmental

drivers of important species (under Part 1), and then use those indicators to establish environmental triggers for management purposes that may potential be done under Part 2 or as a separate project).
    - Identify the next steps for the CPUE standardisation project Part 2.
    - Identify the next steps for the development of environmental trigger indicators.
    - Low cost (less than $50k), high feasibility
- Part 2 – To be informed by Part 1 with the expectation that the CPUE standardisations will be developed and refined for the species identified.
    - Medium cost (~$200k), high feasibility

Identify environmental indicators of ecosystem health to inform species management

- SESSFRAG recommended the environmental indicators project be combined with the abovementioned CPUE standardisation project.

Independent review of blue grenadier tier 1 stock assessments

- Given the high economic importance of this species, SESSFRAG supported the project as a high priority at a cost of not less than $50K to ensure that a fulsome review is done, noting that this assessment has not been independently reviewed and there are some potential concerns related to the CPUE

Pink Ling stand-alone stock assessment

- The RAG noted that funding is already provided for a pink ling stock assessment in 2024 but that a scope needs to be published given interest in seeking an alternative service provider to undertake the assessment.

- SESSFRAG supported a stand-alone assessment for Pink Ling in 2024 as a high priority and high feasibility.

Deepwater sharks (*Deania* spp. habitat)

- The outcome of the Deepwater Shark Working Group recommended that, because spatial closures play a large role in the management of the deepwater shark basket, that a project to undertake a habitat analysis for this group be included in the research statement to establish if the closures have been successful in affording protection to this groups of species.
- This project should overlay historical catches and (where available) biological data (different sexes / life stages) of the deepwater shark basket on contemporary GIS habitat layers (which have improved substantially in recent years) to determine any patterns in habitat associations for different species (or species groups) over time. This would provide a means of assessing the impact of the closures on this species group. Furthermore, characterise habitat associations for *Deania* spp.
- Medium priority, high feasibility

SESSFRAG discussed the need to still account for the impact of the structural adjustment and new closures in CPUE standardisation sooner than the more detailed CPUE project outlined above. The RAG recommended that CSIRO undertake this work and provide a draft to the March SESSFRAG meeting and noted that AFMA and CSIRO would work out how to fund the additional work.

New identified research for 24-25 in GABRAG

Development of alternative survey methodologies to collect biological and environmental data from the Great Australian Bight (GAB) Trawl Sector to inform future assessments

- Following discontinuation of the GABFIS, GABRAG agreed on the need to develop an alternative survey methodology to collect biological and environmental samples from the GAB to inform future assessments.
- The SESSFRAG did not support this project in its current form and requested more clarity on the title and objectives.

Action item 9 - Refer the research project "Development of alternative survey methodologies to collect biological and environmental data from the Great Australian Bight Trawl Sector to inform future assessments" back to GABIA and GABRAG for clarification on what is intended for this project in terms of both its title and objectives and how it is distinguished from the previous FIS.

Stock assessment schedule for SESSF species

- SESSFRAG supported the stock assessment schedule.
- SESSFRAG suggested including making a reference in the table where CKMR work for rebuilding species is being undertaken for the key re-building species, e.g., gemfish, redfish, blue warehou.
- SESSFRAG discussed the need to keep track of increases in the catch of non-quota species to the point that some form of assessment might need to be undertaken.
- SESSFRAG also discussed the merits of reviewing protected species interactions given the increasing need to take a wholistic view of the fishery. While it was unclear what role the RAG would play in terms of giving specific advice regarding protected species management, it was agreed that reviewing interactions on an annual basis provided an opportunity for oversight and may assist identify emerging issues.

Action item 10 - To assist with a holistic view of the SESSF in terms of species caught and interacted with, AFMA to include an agenda item for the data meeting to include (a) catch composition data for non-quota species so that any large changes are identified, and appropriate management action can be progressed which may include, for example, a stock assessment, and (b) protected species interactions.

Action item 11 –AFMA to table the quarterly TEP interaction report that is published on AFMA's website for SESSFRAG at the data meeting.

Action item 12 –AFMA to liaise with Fish Ageing Services (FAS) to review Orange roughy otolith weight to fish length ratios to determine if there are multiple stocks in on the Cascade Plateau and in the GAB.

Agenda item 13: 2023 Data meeting dates

- The MYTAC meeting was scheduled for 2 half days on 18th and 25th of August 2023.
- The SESSFRAG Data meeting was scheduled for 30–31 of August 2023.

Agenda item 14: Other business

No other businesses were discussed

Close of meeting

The Chair thanked SESSFRAG members and invited participants for their contributions and closed the meeting.

Attachment A - Register of Interest

Participant	Organisation	conflict
Dr Cathy Dichmont	Cathy Dichmont Consulting	Director of Cathy Dichmont Consulting. Chair of ComRAC (FRDC) Contracted by various state and Commonwealth agencies to undertake various reviews and consultancies not related to SESSF. No pecuniary interest in the SESSF.
Mr Lance Lloyd	Lloyd Environmental	GABRAG Chair Member of GABMAC Board Member, AwF – Aquaculture without Frontiers (Australia) Director; Lloyd Environmental Pty Ltd. Research Fellow; Federation University Australia No pecuniary interest.
Dr Paul McShane	Global Marine Resource Management	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 Sandy Morison	Morison Aquatic Sciences	Director of Morison Aquatic Sciences Chair of SharkRAG Contracted by government departments, non-government agencies and companies for a range of fishery related matters including research and for MSC assessments of AFMA managed and other Australian and international fisheries. No pecuniary or other interest in the SESSF.
Dr Sarah Jennings	Independent economics consultant	Adjunct Senior Researcher, TSBE Economics member of SERAG Economic member of SEMAC Member of AFMA EWG Independent economics consultant No pecuniary or other interest in the SESSF.

Ms Franzis Althaus	CSIRO	Research Interests as sub-lead on the CSIRO Data Project funded by AFMA, and as team member of a AFMA Project to monitor the recovery of Gulper sharks
Dr Beth Fulton	CSIRO	Ecosystem and climate scientist, Portfolio Leader for Integrated Marine Management. Adjunct with the University of Tasmania (Deputy Director for the Centre of Marine Socioecology). Acquiring funding for research purposes
Ms Sally Weeks	AFMA	Employed by AFMA, no interest, pecuniary or otherwise
Dr Nastaran Mazloumi	AFMA	Employed by AFMA, no interest, pecuniary or otherwise
Mr Neil MacDonald	GABIA	**PECUNIARY INTEREST** Director NMAC(SA) P/L **ORGANISATION SUPPORT** • Executive officer Great Australian Bight Industry Association (GABIA) • Executive officer Charter Boat Association South Australia (CBASA) • Executive officer Southern Fishermen's Association (SFA) • Executive officer Saint Vincent Gulf Prawn Boat Owner's Association (SCGPBOA) • Executive officer Marine Scale Net Fishers Association (MSNFA) • Committee support services South Australian Rock Lobster Management Advisory Committee & Research Sub-Committee (SARLAC) • Support services South Australian Professional Fishers Association **COMMITTEE MEMBERSHIP** • Great Australian Bight Management Advisory Committee (AFMA) - Member • Great Australian Bight Research Advisory Committee (AFMA) - Member • Gulf St Vincent Prawn Fishery Management Advisory Committee (SVGPBOA) - Member • Gulf St Vincent Prawn Fishery Research Sub-Committee (SVGPBOA) - Member • Lakes & Coorong Fishery Management Advisory Committee (LCFMAC) - Member • CGG Gippsland MSS Scientific Advisory Committee – Chair • Australian Council of Prawn Fisheries - Director

Dr Paul Burch	CSIRO	Employed by CSIRO, assessment scientist. CSIRO representative on the Fisheries Statistics and Information Working Group. Acquiring funding for research purposes. PI on data services contract.
Dr Pia Bessell-Browne	CSIRO	CSIRO assessment scientist. Acquiring funding for research purposes. PI on FRDC project: Developing a harvest control rule to use in situations where depletion can no longer be calculated relative to unfished levels.
Dr Rich Little	CSIRO	Acquiring funding for research purposes. Member of the Total Allowable Fishing Committee for NSW, conflicts with all items with state fisheries and in particular involved with setting the TAC for school whiting. Principal Investigator of the SESSF Multi-Species Harvest Strategy project Project leader CSIRO Marine Visual Technologies project team on automated catch detection and species identification. Project leader Southeast Australian Marine Ecosystem Survey (SEA-MES)
Dr Miriana Sporcic	CSIRO	Assessment scientist. Acquiring funding for research purposes Project Leader CSIRO Ecological Risk Assessments
Dr Robin Thomson	CSIRO	Assessment scientist. Acquiring funding for research purposes PI on close kin project for school shark. PI on blue-eye trevalla close kin scoping project
Dr Geoff Tuck	CSIRO	Involved in Stock assessments. Interest in obtaining funding for future research. Principle investigator on the SESSF stock assessment project. Project leader CSIRO Marine Visual Technologies project team on automated catch detection and species identification
Dr Sandra Curin Osorio	CSIRO	Employed by CSIRO, Assessment scientist. Acquiring funding for research purposes
Dr Ian Knuckey	Fishwell Consulting	**Positions**: Director – Fishwell Consulting Pty Ltd Director – Olrac Australia (Electronic logbooks) 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 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 Councillor – Victorian Marine and Coastal Council Member – The Geelong Agri Collective **Fishwell current projects:** DAWE Project – Multi-sector fisheries capacity building AFMA 2022 – Annual monitoring, reporting and assessment of SPF marine mammal interactions, including effectiveness of mitigation measures AFMA 2020-0807 – Bass Strait Scallop Fishery Survey – 2020-22 AFMA project – Design sea cucumber fishery-independent survey for Coral Sea FRDC 2019-027 – Improving and promoting fish-trawl selectivity in the SESSF and GABTS FRDC 2018-021– Development and evaluation of SESSF multi-species harvest strategies Traffic Project– Shark Product Traceability Sea Cucumber Ass –Design and implementation of various sea cucumber dive surveys. Australia Bay – Queensland Gulf of Carpentaria Developmental Fin Fish Trawl Fishery Expert Witness– Gladstone Harbour development impacts
Dr Karen Evans	CSIRO	Employee of CSIRO. No pecuniary interest in Australian south east scalefish and shark fisheries. Has been a PI on multiple projects focused on Australian fisheries in the past funded through AFMA and FRDC, leads the FRDC-CSIRO project "FRDC-CSIRO project: Biological parameters for stock assessments in South Eastern Australia – an information and capacity uplift"

		and is a team member on the FRDC-CSIRO project “South East Australian Marine Ecosystem Study”. Was a past member on the AFMA Commonwealth Fisheries Marine Mammal Working Group.
Mr Daniel Wright	ABARES	Employed by ABARES, no interest, pecuniary or otherwise
Dr Geoff Liggins	NSW DPI	Employed by NSW DPI, no interest, pecuniary or otherwise
Dr Ashley Fowler	NSW DPI	Employed by NSW DPI, no interest, pecuniary or otherwise
Dr Mark Grubert	AFMA	Employed by AFMA, no interest, pecuniary or otherwise
Dr Lara Ainley	AFMA	Employed by AFMA, no interest, pecuniary or otherwise
Ms Michelle Henriksen	AFMA	Employed by AFMA, no interest, pecuniary or otherwise
Dr Alice McDonald	AFMA	Employed by AFMA, no interest, pecuniary or otherwise
Ms Anna Willock	AFMA	Employed by AFMA, no interest, pecuniary or otherwise

Attachment B- Action Items

Complete/Redundant	Underway	Need SESSFRAG advice	Not yet started

No.	Ag. Itm / Mtg Date	Action Item	Agency / Person	Timeframe	Progress as of SESSFRAG Chair's meeting 2023
1	3 SESSFRAG Data 2022	CSIRO to provide a reference to requirements in the Harvest Strategy Policy regarding choice of target reference points and other key policy settings within the TAC setting guideline document.	CSIRO	SESSFRAG Chair's 2023	Advice from SESSFRAG Chair's meeting required on the necessity of this item. AFMA considers this information is already captured in other documents.
2	6 SESSFRAG Data 2022	CSIRO to present the outputs of the indicator species candidate harvest strategy (part of the MSHS project) at the 2023 SESSFRAG Chair's meeting to inform advice around key species for CKMR scoping.	CSIRO	SESSFRAG Chair's meeting 2023	Considered under the agenda item 7 of the Chair's meeting 2023.
3	6 (Data 2022	AFMA to provide the list of rebuilding species for SESSFRAG before the April 2023 Chairs meeting to support prioritization of species for CKMR.	AFMA	SESSFRAG Chair's meeting 2023	Considered under the agenda item 7 of the Chair's meeting 2023.
4	6 SESSFRAG Data 2022	SERAG to consider the outcomes of the jackass morwong CKMR scoping project and provide advice on future priorities for CKMR research.	CSIRO	SERAG#1 2023	Underway – will be considered by SERAG#1 2023. Will be considered by the SESSFRAG 2024 along with other species upon completion of the broader SESSF CKMR scoping project.
5	6 SESSFRAG Data 2022	SESSFRAG to provide advice on candidate species for a CKMR scoping project at the April Chair's meeting in 2023. This should take account of the outputs of the indicator species candidate harvest strategy.	CSIRO	SESSFRAG Chair's 2023	Considered under the agenda item 7 of the Chair's meeting 2023.
6	7 SESSFRAG Data 2022	AFMA to include an agenda item at assessment RAG meetings to consider environmental data and ecosystem indicators and trends to provide context	AFMA	As soon as possible	Completed – as added to RAG meetings in 2023 and will continue to be a standing agenda item.

		when considering stock assessments outputs.			
7	7 SESSFRAG Data 2022	AFMA to include a section for each species in the SESSF species summary document with information about sensitivity to climate change and expected trends.	AFMA	As soon as possible	Completed – was added to species summary report 2023.
8	8 SESSFRAG Data 2022	AFMA to trial an industry data collection program to supplement the ISMP program, with a focus on the western part of the fishery.	AFMA	As soon as possible	AFMA and SETFIA yet to develop the sampling program.
9	8 SESSFRAG Data 2022	AFMA to consider engaging NSW DPI to collect biological samples at the Sydney Fish Market to supplement the ISMP program.	AFMA	As soon as possible	AFMA has increased observer placement at the Sydney Fish Market in 2023 by opportunistically sampling at SFM when returning or embarking on voyages. AFMA will review this in mid-2023, and if there is a gap in biological data collected, they will revisit the option of engaging NSW fisheries.
10	8 SESSFRAG Data 2022	AFMA to seek advice from SharkRAG on adjusting biological sampling targets for gummy shark and school shark to better reflect recent fishing effort.	AFMA	SharkRAG 2022	Will be discussed at SharkRAG 2023
11	8 SESSFRAG Data 2022	AFMA to confirm length frequency targets for ribaldo in the SESSF data plan.	AFMA	As soon as possible	Completed
12	8 SESSFRAG Data 2022	AFMA to remove blue grenadier caught in the GABT from SESSF sampling plan.	FAS	As soon as possible	Completed
13	8 SESSFRAG Data 2022	FAS to check Bight redfish 2021/22 otolith sample numbers are correct, noting they are low compared to 2022/23.	FAS	As soon as possible	Completed
14	8 SESSFRAG Data 2022	FAS and AFMA to check whether school whiting length and age data were collected in port or on-board to understand the discrepancy in ages between 2020 and	FAS	As soon as possible	Underway

		2021.			
15	8 SESSFRAG Data 2022	FAS to check length frequency records for GAB orange roughy collected in 1992 (which were later identified as being from 1993) and clarify whether they are Total Length (TL) or Standard Length (SL).	FAS	As soon as possible	Completed
16	8 SESSFRAG Data 2022	AFMA to add the redfish tissue samples to the SESSF data plan to support future CKMR.	AFMA	As soon as possible	The data plan hasn't been updated. However, AFMA works with CSIRO to establish sampling protocols for redfish. Data plan will be updated prior to the SESSFRAG Data meeting 2023.
17	8 SESSFRAG Data 2022	AFMA to prioritise linking the SIDaC data to logbooks in the AFMA database as it is required for the 2023 gummy shark stock assessment.	AFMA	As soon as possible	Underway – to be complete by the end of March 2023.
18	9 SESSFRAG Data 2022	Dr Miriana Sporcic to provide Mr Simon Boag with a summary of the modifications to the flathead and school whiting CPUE standardisations to account for the impact of seismic surveys in Bass Strait in 2020.	CSIRO	As soon as possible	Completed
19	9 SESSFRAG Data 2022	CSIRO and AFMA to investigate the low estimates of trawl gummy shark discards in 2020.	CSIRO and AFMA	As soon as possible	Completed – SharkRAG rejected the 2020 trawl discard estimate.
20	9 SESSFRAG Data 2022	CSIRO/SharkRAG 2023 to review GHAT logbook data to see if there are any boat-level trends in reporting behaviour that would undermine the outcomes of the ABARES congruence analysis.	CSIRO	SharkRAG 2023	The SharkRAG chair advised this approach would mainly be used for monitoring changes in reporting behaviour and should be retained. The SESSFRAG agreed this item be removed from the SESSFRAG action list and considered as an agenda item at the next SharkRAG meeting.
21	9 SESSFRAG Data 2022	ABARES to consider weight as well as piece counts next time the logbook/EM congruence work is updated.	ABARES	SESSFRAG Chair's meeting 2023	AFMA has quested ABARES to include weight as well as piece counts in the next congruence analysis.
22	9 SESSFRAG	AFMA to investigate discrepancies in logbook and CDR data for Bight redfish, deep-water sharks, school shark and eastern school whiting in recent years and report	AFMA	As soon as possible	AFMA will investigate the discrepancies in logbook and CDR data as part of their work plan.

	Data 2022	back to the relevant RAGs in 2022			
23	10 SESSFRAG Data 2022	SERAG 2022 to consider the outcomes of the 2022 Cascade plateau acoustic survey and provide advice on future research priorities.	CSIRO	SERAG 2022	The acoustic survey hasn't been included in 2024/25 research plan due to the unpredictable nature of the aggregations. SEARAG 2023 will consider alternative monitoring and assessment options for the Orange roughy Cascade.
24	10 SESSFRAG Data 2022	AFMA and FAS to provide SERAG an overview of the fish-length/otolith-weight ratio for Cascade orange roughy with a view to determining if there are different stocks aggregating on the Cascade plateau each year.	AFMA & FAS	SERAG 2022	To support TAC setting for Cascade orange roughy until a new assessment is undertaken, the RAG recommended AFMA to liaise with FAS to review the Orange roughy age composition data in the first instance for stock structuring purposes to establish if old fish are present. Subject to what the age data look like, AFMA/FAS to provide an overview of the fish/length/otolith-weight ratio to determine if there are different stocks aggregating on the Cascade plateau each year.
25	7 SESSFRAG Data 2022	Beth Fulton to deliver a presentation to the SESSFRAG data meeting on the BETH index paper when it is available	Beth Fulton	August 2022 meeting	Completed.
26	10 SESSFRAG Data 2022	SESSFRAG to review school whiting indicator data as part of the MYTAC agenda item in August 2022 and provide advice on whether the 2023 stock assessment can be postponed.	AFMA	August 2022 meeting	Completed – SESSFRAG supported postponing the school whiting stock assessment.
27	11 SESSFRAG Data 2020	AFMA to evaluate the benefits of undertaking another analysis of discard reporting for fisheries that have EM to determine if there are continuing improvements in reporting (as per the review that ABARES undertook).	AFMA	As soon as practicable	SESSFRAG members agreed to revise the wording of this action to AFMA and CSIRO to review the recommendations from the ABARES congruence analysis of logbook and EM data and determine what additional work is required.
28	12 SESSFRAG	AFMA and CSIRO to liaise with the states regarding estimates of discards for SESSF quota species and consider establishing a discard and recreational fishing	AFMA / CSIRO	As soon as practicable	a-b: Underway AFMA will progress this work, subject to resource

	Data 2020	working group to consider a set of decision rules, in particular: a. whether to apply Commonwealth discard rates to state catches when Commonwealth and state gear types or management controls differ; b. how to estimate state discard rates and total catches where Commonwealth discard rates are not applied because of differences in gear type or management controls; and c. whether the approach used to determine recreational catch weights for shark species should be extended to other SESSF species as part of the 2021-22 Data Services Contract.			availability. c: Complete This was discussed at SERAG in November 2020, and it was decided not to extend the approach to other SESSF species at this stage – state catches are either low, or not provided to CSIRO. Dr Burch will continue to request recreational catch data from state agencies each year and include the figures in the Catch and Discards report.
29	9 SESSFRAG Chairs' 2021	AFMA to incorporate the process for periodic review of stock assessments in the document 'Total Allowable Catch (TAC) setting process – Guidelines for provision of data and stock assessment processes' for further consideration by SESSFRAG. Timeline is subject to other priorities.	AFMA	As soon as practicable	The SESSFRAG Chair agreed to draft the text to address this action item.
30	10 SESSFRAG Chairs' 2021	Dr Paul Burch (CSIRO) to liaise with Dr Ian Knuckey (Fishwell Consulting) and Fish Ageing Services, to determine the spatial and temporal data associated with Cascade Plateau orange roughy otolith samples.	Dr Paul Burch	August 2021 meeting	Redundant
31	16 SESSFRAG Chairs' 2021	AFMA to compare discard data reported in logbooks, to those recorded by the ISMP program, to determine the accuracy of operator reported discards.	AFMA	Include in future discard reviews to SESSFRAG	Underway AFMA is currently developing the reporting templates. This project has been put on hold due to resource constraints.
32	12 SESSFRAG Data 2021	Develop a consistent approach for constructing decision tables for consideration at the SESSFRAG Chairs' 2022 meeting.	CSIRO (Paul Burch)	SESSFRAG Chairs' 2022 meeting	Completed and is part of the updated TAC setting process document.
33	8	Establish a process for reviewing stock assessments	AFMA	As soon as	Added as a research priority for 2024/25.

	SESSFRAG Data 2021	using blue grenadier as a case study		practical	
34	7b SESSFRAG Data 2021	Establish a subcommittee to drive the process for updating catch history data for both Tier 1 and Tier 4 species. Report to be provided at SESSFRAG Chairs' 2022 meeting for consideration and adoption. Membership – Paul Burch (CSIRO - lead) Geoff Liggins (NSW DPI) and Dan Corrie (AFMA). A member to be included from Victorian Fisheries Authority if needed. Other agency members to be included if needed.	CSIRO / NSW DPI / AFMA	SESSFRAG Chairs' 2022 meeting	A review of catch history has been incorporated into the stock assessment contract.
35	7c SESSFRAG Data 2021	CSIRO to include colour-coding in the discard tables in future discard reports to highlight the criteria for which discard estimates fail validity tests to enable easier consideration of these by SESSFRAG.	CSIRO	SESSFRAG Data 2022 meeting	Completed.
36	9 SESSFRAG Data 2021	CSIRO team to seek feedback from MSC, ABARES and DAFF on the two methodologies identified for measuring risk under the discount factor project.	CSIRO	Chairs' meeting 2023	CSIRO to provide update
37	4 SESSFRAG Chairs' 2019	AFMA to obtain and include in its database historic blue warehou industry collected data	AFMA	As soon as practicable	Blue warehou data – Not yet started - AFMA to follow up.
38	8 SESSFRAG Data 2020	The RAG to discuss the implications of the MSHS project on the ageing plan and the inclusion of non-quota species, such as leatherjackets, at the Chairs' 2021 meeting.	SESSFRAG	Chairs' meeting 2021	Not yet started Until the MSHS project has progressed further, it is unclear which data/ages will be required to support ongoing assessments and management. Until then, the ageing plan will continue to be based on the current ISMP and Harvest Strategy Design.

Attachment C – Summary of Action Items and Recommendations arising from SESSFRAG Data meeting August 2022

Action Item	Agenda Item	Description	Responsibility	Timeframe
1	2	In relation to the SESSF History Document, AFMA to include the Upper-slope Dogfish Management Strategy in 2012. The implementation of this may have prompted improved reporting of species in the Deepwater shark's quota basket despite the strategy not applying to the quota basket species or any changes being made to the species included in the quota basket.	AFMA	As soon as possible
2	3	Dr Beth Fulton to draft a document on climate change and its potential implications that can be considered by SESSFRAG at its March 2024 meeting. The outcomes of this discussion may require further amendment to the Overview of TAC setting process document (or another document).	AFMA/CSIRO	SESSFRAG Chair's meeting 2024
3	4	AFMA to summarise the potential impacts of the structural adjustment on the economics of the SESSF and what this means in terms of research and data collection for the next Chair's meeting in 2024. Previous indicators produced by the Economic Working Group should also be considered.	AFMA	SESSFRAG Chair's meeting 2024
4	5	CSIRO to consult with Jason Cope (SS-DL developer) and prepare a paper for the August 2023 SESSFRAG Data Meeting that describes the age-based assessments that are implemented in SS-DL, particularly in relation to how it differs from the old Tier 3 (catch curve) assessments. The paper should include any simulation / MSE testing of these methods. If age-based assessments implemented in SS-DL are the equivalent of Catch Curve based assessments, then it would be likely that SESSFRAG would recommend this approach is not pursued as there is a high probability it would fail.	AFMA/NSW DPI/SERAG	As soon as possible
5	5	Dynamic Tier 4 assessments be undertaken for the Deepwater Shark basket and the slope stock of Blue-eye Trevalla, along with an update to the existing Tier 4 for Blue-eye Trevalla and 'roll-over' for deepwater sharks, for consideration by SERAG 2023. The RBCs from each assessment type will not	CSIRO	SESSFRAG Data meeting 2023

		be viewed until the RAG has decided on the assessment methodology to use for each stock for the 2023 TAC setting round.		
6	7	SESSFRAG Chair and AFMA to review the membership of the CKMR Steering Committee to ensure completeness.	AFMA and SESSFRAG Chair	As soon as possible
7	7	In relation to the number of sample sizes required to support a CKMR assessment for each species, Dr Robin Thomson to prepare two sets of plots per species for the CKMR study: a) proportion catch-at-age and CV plots against year as before although, smaller sample sizes may be needed; b) a plot of CV against sample size (in place of the table of sample sizes which means a CV does not need to be selected) but ensure that these plots cover the range of CVs from 0.12 to 0.25.	CSIRO	SESSFRAG Data meeting 2023
8	8	Dr Miriana Sporcic and AFMA to investigate the reasons for discrepancies in the catch figures from the closed areas presented in the preliminary CPUE work presented by Dr Sporcic at the SESSFRAG Chairs meeting in April 2023 and those provided in the letter from the AFMA Commission to industry regarding the implementation of the closures.	CSIRO/AFMA	SESSFRAG Chair's meeting 2024
9	12	Refer the research project "Development of alternative survey methodologies to collect biological and environmental data from the Great Australian Bight Trawl Sector to inform future assessments" for AFMA and GABIA to report to GABRAG for clarification on what is intended for this project in terms of both its title and objectives.	AFMA/GABIA	GABRAG 2024
10	12	To assist with a holistic view of the SESSF in terms of species caught and interacted with, AFMA to include an agenda item for the data meeting to include (a) catch composition data for non-quota species so that any large changes are identified, and appropriate management action can be progressed which may include, for example, a stock assessment, and (b) protected species interactions.	AFMA	As soon as possible
11	12	AFMA to provide the TEP interaction port/data that prepared annually for the Wildlife Trade Office (WTO) in the Department, for the SESSFRAG.	AFMA	As soon as possible
12	12	AFMA to liaise with Fish Ageing Services (FAS) to review Orange roughy otolith weight to fish length ratios to determine if there are multiple stocks in the Cascade and GAB.	AFMA/FAS	As soon as possible