Australian Government
Australian Fisheries Management Authority

Southern and Eastern Scalefish and Shark Fishery Resource Assessment Group

(SESSFRAG)

Data Meeting

Meeting minutes

Date: 20 – 22 August 2019

Venue: Institute for Marine and Antarctic Studies

Hobart

Attendees

Members	
Dr Cathy Dichmont	SESSFRAG Chair
Mr George Day	AFMA Member
Dr Sarah Jennings	Economics Member
Mr Lance Lloyd	GABRAG Chair
Mr Sandy Morison	SharkRAG Chair
Dr Michael Steer	SERAG Chair
Executive officer	
Ms Cate Coddington	AFMA
Invited Participants	
Mr Simon Boag (days 1&2)	Executive Officer, South East Trawl Fishing Industry Association (SETFIA) and Southern Shark Industry Alliance (SSIA)
Dr Paul Burch	CSIRO
Dr Jemery Day (days 1&2)	CSIRO
Dr Ian Knuckey	Fishwell Consulting
Dr Kyne Krusic-Golub	Fish Ageing Services
Mr Neil MacDonald	Executive Officer, Great Australian Bight Industry Association (GABIA)
Mr Andrew Penney	Pisces Australis
Dr Miriana Sporcic	CSIRO
Mr David Stone	Executive Officer, Sustainable Shark Fishing Association (SSFA)
Dr Robin Thomson	CSIRO
Dr Geoff Tuck	CSIRO
Presenters	
Mr Daniel Corrie	South East Trawl and Great Australian Bight Trawl Manager, AFMA
Mr Brodie Macdonald	Gillnet Hook and Trap Fishery Manager, AFMA
Mr Tamre Sarhan	AFMA observer coordinator
Dr Roy Deng (dial in AgI 13)	CSIRO
Dr Shijie Zhou (dial in AgI 18)	CSIRO
Observers	
Dr Josh Barrow	Fish Ageing Services
Dr Mark Bravington (day 1 AgI19)	CSIRO
Ms Florence Briton	CSIRO
Dr Geoff Liggins	NSW Department of Primary Industries
Dr Veronica Silberschneider	NSW Department of Primary Industries
Dr David Smith	AFMA Commission
Ms Anna Willock	Executive Manager, Fisheries Management Branch, AFMA

Preliminaries

1. Welcome & apologies

1. The meeting commenced at 10.50am.
2. Dr Cathy Dichmont (SESSFRAG Chair) welcomed members and invited participants to the meeting. The Chair stated that no apologies had been received. Each of the participants introduced themselves to the rest of the group.

2. Declarations of interest

3. Members, invited participants and observers provided declarations of conflicts of interest (**Attachment 1**) as prescribed in *Fisheries Administration Paper 12.*
4. Participants noted conflicts of interest with specific agenda items as outlined in **Table 1**.
5. Participants with specific conflicts of interest left the room so that the RAG could discuss their participation under specific agenda items. The outcomes of the deliberations are outlined in **Table 1**.

Table 1 Participation in items where there are declared conflicts of interest

Agenda Item	Potential conflicts of interest	Participation in the discussion	Participation in the recommendation
7. Review updated ERA results	Industry	Present	Present
12. SiDAC update	Industry	Present	Present
13. Discard rate estimates update – SESSF ISMP discard report	Industry	Present	Present
15. MYTAC analysis and data summary	Industry CSIRO	Present	Present – if status quo Absent – if not status quo
16. Recommended changes to ISMP and SESSF data plans	CSIRO (assessment team) Kyne Krusic-Golub Simon Boag	Present	Absent
17. Monitoring and data collection options	All participants aside from the SESSFRAG Chair and scientific and economic members	Present	Absent (aside from the executive officer for record taking purposes only)
19. Research Priorities	CSIRO Simon Boag Sarah Jennings Andrew Penney Kyne Krusic-Golub Ian Knuckey	Present	Absent

3. Adoption of Agenda

6. The RAG adopted the agenda (**Attachment 2**) with the amendments to the order of the items (as per the attached).

4. Action items status

7. The RAG reviewed and commented on the status of the action items from previous meetings as detailed in **Attachment 3**.

8. A list of new Action Items established at this meeting are listed in **Attachment 4**.

Action Item #10 (AgI 9 Chairs' meeting 2019) Include the Fishery Management Strategy (FMS) as an agenda item

9. Drafting of the FMS has commenced and the FMS will be included on the agenda for the next SESSFRAG meeting once drafting has progressed further.

Action Item #13 (AgI 10 Chairs' meeting 2019) Learnings from the FIS optimisation work

10. Learnings can be applied from the FIS optimisation work. The new methodology - produced lower coefficient of variations (CVs) for the four most important species to the fishery. It would be possible to extend the work further.

Action Item 1: AFMA

AFMA to provide a copy of Malcolm Haddon's CPUE standardisation report (FRDC 2012/201: '*Improve catch rate standardizations to account for changing in targeting*') to SESSFRAG.

Action Item 2: AFMA

Include an agenda item on CPUE standardisation at the Chairs' meeting 2020, include a presentation from Malcolm Haddon, noting that much of his work has already been implemented. Presentation to focus on clear guidelines on what can be implemented rather than instigate further CPUE analysis.

Action Item #27 (15 Chairs' meeting 2019) addressing natural mortality in Tier 1 assessments

11. There is an international workshop on how to deal with natural mortality in stock assessments being held in March 2020.The RAG agreed to remove the action item, as there is little value in discussing this until after the workshop. Outcomes can be incorporated into the orange roughy assessment to be undertaken in late 2020.

5. SESSF history document update

12. The RAG noted the updates made to the history document and recommended that the following items be included:
    - Increasing mesh size in the Commonwealth Danish seine fleet (70cm to 75cm) from the start of the 2019/20 season.
    - A trawl vessel sank in productive royal red prawn fishing grounds, which blocks access to trawl operations, approximately 18 months ago.

6. Update from the RAGs, Economic Working Group and Marine Mammal Working Group

Shark Resource Assessment Group (SharkRAG)

13. The SharkRAG Chair advised that there had been no meeting of the SharkRAG since the last SESSFRAG meeting.
14. The Southern Shark Industry Alliance (SSIA) are funding a review of the school shark stock assessment by Patrick Cordue.

Action Item 3: Simon Boag / AFMA

Simon Boag to provide the Terms of Reference (ToR) for the review of the school shark stock assessment to AFMA (Cate Coddington) who will circulate them to SESSFRAG. Chairs to determine if the ToR should be circulated to their members.

Great Australian Bight Resource Assessment Group (GABRAG)

15. The GABRAG Chair advised that there had been no meeting of GABRAG since the last SESSFRAG meeting.

South East Resource Assessment Group (SERAG)

16. The RAG noted that the next meeting is scheduled for the second last week of October 2019. The RAG will discuss how CPUE standardisations, which are currently based on fishing season, can be adjusted to line up with the timing of stock assessments. Ideally, recent data should be considered where available. This year, in the Great Australian Bight Trawl (GABT) for example, CPUE from January to June 2019 will be included as a sensitivity in the Bight redfish and deepwater flathead assessments, rather than in the base case. Any available FIS data should also be included where possible.

Economic Working Group (EWG)

17. The EWG met in April 2019. Items the EWG consider are generated from questions referred to them by AFMA and RAGs and MACs. Most of the items considered in April related to the Northern Prawn Fishery (NPF) and Bass Strait Central Zone Scallop Fishery. A number of discussions and outcomes also related to the SESSF:
    - A recommended set of economic key performance indicators (KPIs) for AFMA management to report to the Commission for each fishery
    - Using dollars per unit effort ($CPUE) as a performance indicator (which arose in the SESSF undercaught TAC project) to account for fisher behaviour and underlying market drivers.
    - Generate a report template of standard economic data (including $CPUE) that can be provided to RAGs/MACs.
18. The RAG discussed issues with obtaining and utilising economic data:
    - Economics affect catch rates in the fishery, but the effect is difficult to incorporate and would not be reliable for anything other than a qualitative indicator.
    - Fish prices are difficult to obtain and there is temporal variation in market prices.

- Average annual quota price is likely to represent a better KPI. This has not been considered by the EWG yet – they will have a chance to look at it at the next meeting.

19. Members on the EWG include economic members from RAGs, those with experience in the commercial and recreational sectors, invited participants from industry, as well as younger economists for mentoring. The membership will change to reflect new RAG memberships.
20. July 2019 was the two-year anniversary since quota-price data collection began. The EWG gave advice on how to clean and filter these data and endorsed the FRDC project—*network analysis on undercaught TACs*. An Expression of Interest call for the project will be undertaken as part of the standard process.

Action Item 4: AFMA/Sarah Jennings

AFMA to seek advice from the EWG about which KPIs are being adopted and what data are to be collected and presented. Following this, add an information item to the 2020 SESSFRAG Chairs' meeting agenda regarding economic KPIs.

Marine Mammal Working Group (MMWG)

21. The AFMA Member advised that there had been no meeting of the MMWG since the last SESSFRAG meeting.

Review updated ERA results

7. Review updated ERA results

[This item was presented at the beginning of day 3]

22. Dan Corrie and Miriana Sporcic provided background information about recent updates to the Ecological Risk Assessments (ERA) for the:
    - otter board trawl of the Commonwealth Trawl Sector
    - Danish seine of the Commonwealth Trawl Sector
    - otter board trawl of the Great Australian Bight Trawl Sector, and
    - shark gillnet of the Gillnet, Hook and Trap Sector.
23. The ERAs had been updated twice since the RAG last considered the high risk species in August 2018:
    - April 2019 following the identification of a spatial input error in the previous analysis
    - August 2019, in the week prior to this SESSFRAG meeting, effort was calculated differently to account for heterogeneous fishing effort (i.e. accounting for fishing intensity and therefore the gear-affected area).
24. Generally, the updates have resulted in a decrease in the number of high-risk species under the bSAFE2 methodology. Changes in the number of species identified as either high or extreme risk are outlined in **Table 2**.

Table 2 Changes in number of high-risk species, by species group, between the 2018 and 2019 ERAs. Note: values corresponding to rows "August 2019" do not include a Residual Risk analysis and are therefore subject to change (e.g. CTS otter board trawl).

Number of species assessed as high risk						
	Teleost	Chond	Invert	Mammal	Seabird	Total
CTS otter board trawl						
August 2018	3	29	2	1	1	36
April 2019	6	35	4	0	0	45
August 2019	*0*	*8*	*4*	*0*	*0*	*12*
CTS Danish seine						
August 2018	0	1	4	0	0	5
April 2019	0	0	5	0	0	5
August 2019	0	0	5	0	0	5
GAB otter board trawl						
August 2018	2	10	1	0	0	13
April 2019	2	12	1	0	0	15
August 2019	*0*	*0*	*1*	*0*	*0*	*1*
GHaT shark gillnet						
August 2018	0	5	1	2	5	13
April 2019 –	0	1	0	2	5	8
August 2019	*0*	*1*	*0*	*2*	*5*	*8*

25. The RAG discussed the updated results and methodology.
    - The number of species identified as high or extreme risk under the SAFE method has decreased, mostly for otter board trawl, while the number under the PSA method remains the same (this method has not been changed).
    - The new methodology (bSAFE2) takes into account the swept area and intensity of trawl effort; it is a fundamental change to the way effort is accounted for and is in principle an improved approach.
    - Did not change the number of species identified for the gillnet method; effort is evenly spread across the area, whereas trawl is more concentrated.
    - Spatial risk analysis will not need to be considered as part of the residual risk analysis in the future.
26. The RAG discussed potential issues with how swept area is calculated for otter board trawl nets, noting this has not changed under the new methodology.
    - To determine the swept area of an otter board trawl net, a headline length of 23 metres is used.
    - This does not take into account the herding effect created by the trawl wings and sweeps. For species susceptible to herding, this could be as much as 80m wide for the Commonwealth South East Trawl (SET) or 100m for Great Australian Bight Trawl (GABT).

- Not all species are susceptible to herding.
- Some work has been undertaken on herding behaviour of species in prawn fisheries, however further work would be required to properly account for this in the otter trawl fisheries.
- The ERA methodology is generally precautionary. Applying a swept area equal to the distance between trawl boards to account for herding would significantly overestimate the risk, particularly for species not susceptible to herding.
- The RAG agreed to use the current methodology for calculating swept area, but suggested further work was required before undertaking the next round of ERA assessments.

27. The RAG supported the new methodology to account for different fishing intensity and recommended Dr Sporcic apply a residual risk assessment to the updated results prior to being finalised by the individual RAGs at the end of the year. Additionally, the RAG recommended SERAG consider the whitefin swellshark, which was downgraded to low-risk under the new method, as it was recently listed as a critically endangered species on the IUCN list.

Action Item 5: SERAG / SharkRAG / GABRAG

The bSAFE2 results and updated methodology to be taken to the individual SESSF resource assessment groups for consideration

Action Item 6: SERAG

SERAG to review the downgrading of risk scores for whitefin swellshark from high risk (bSAFE) to low risk (bSAFE2) noting it was recently added to the IUCN red list as a critically endangered species

Action Item 7: AFMA

Consider a review, possibly desktop study, to be included in the SESSF research plan to determine which species, or species classes, are subject to herding behaviour and how this could be incorporated into the next ERA assessments to account for trawl sweeps and boards

8. Identification of SESSF ERA Triggers

[This item was presented at the beginning of day 3]

28. Andrew Penney presented his work undertaken to identify ERA triggers that may indicate an increased fishery-imposed risk and the need to update an ERA for a fishery:
    - potential triggers were tabulated into a pro-forma checklist (**Table 3**)
    - CSIRO is undertaking work to automate ERA analysis and reports. As such, it may be possible to automate trigger analysis. In the meantime, triggers will need to be monitored manually.
29. The RAG recommended:
    - implementing an annual review of the checklist, as required in the AFMA ERM guide
    - reviewing the guiding questions so they are not overly restrictive and help inform discussion

- undertaking a more in-depth reassessment review mid-way through ERA cycle
- ensuring that habitat impacts are also considered in the annual review process—a heat map of effort could enable the illustration of large changes in fishing effort.

Table 3: Annual checklist of risk related triggers as a starting point for development.

Indicators	Guiding questions	Responses
New information on the fishery	*Has new information been obtained indicating a significant change in the productivity characteristics of the fishery?*	
Susceptibility		**Yes / No**
Primary Indicator Overlap: Annual fishing effort	Has annual or seasonal fishing effort (number of operations) increased or decreased outside the 90% confidence intervals around effort over 2012 - 2016?	
Primary Indicator Overlap: Annual fished area	Has fished area (number of 0.1° fished blocks) increased or decreased outside the 90% confidence intervals around effort over 2012 - 2016?	
Secondary Indicator Encounterability: Fished depth range	Has there been a substantial change in the depth range fished, outside depths fished over 2012 - 2016?	
Secondary Indicator Selectivity: Gear changes	Has a new gear type been introduced, or have there been significant changes to aspect of gear configuration that substantially increase or decrease the selectivity of gear for important bycatch species?	
Post capture mortality	Has new information been obtained indicating estimates of post capture mortality used in the previous ERAs were different?	
Mitigation measures	Have new or improved mitigation measures been implemented that either reduce the capture or post capture mortality of important bycatch species?	
Mitigation implementation	Has there been an improvement or a worsening in implementation of mitigation measures, resulting in a decrease or an increase in captures and post capture mortality of important bycatch species?	
Productivity		**Yes / No**
Secondary Indicator New information on species biology	Has new information been obtained that may indicate a significant change in productivity characteristics of important bycatch species?	
Other Indicators		**Yes / No**
Other indicators of change in risk	Have there been changes in any other risk indicator that may indicate the need to consider updating the ERA?	
	If so, what indicators:	
Conclusions		**Yes / No**
Overall ERA update required	Do changes in the above indicators warrant consideration of updating the ERA for the entire fishery?	
Individual species risk score update required	Do changes in the above indicators warrant consideration of updating of ERA risk scores for individual species?	
	If 'Yes', list for which species:	

Action Item 8: AFMA

AFMA to further develop the questions in the annual ERA trigger checklist to ensure they are not overly restrictive and inform discussion about the need to undertake a reassessment of the ERA. The updated checklist to be provided to the 2020 SESSFRAG Chairs' meeting

Review of assessment process

9. a. Review of the 2019-20 TAC setting process including blue warehou and redfish

30. The RAG noted the AFMA Commission's TAC determinations for the 2019-20 fishing year.
31. The RAG discussed the TAC determinations that differed from the RAG's advice; for blue warehou, redfish, and school shark the Commission were more conservative.
32. The RAG agreed that it would be useful for the sub-RAGs to develop an understanding why the Commission's decisions differed from their advice.
33. It was also noted that several questions relating to these species would be put to SERAG and SharkRAG later this year.

Action Item 9: SERAG / GABRAG / SharkRAG

A standing item to be included on individual SESSF RAG agendas to consider the reason for any differences between RAG recommendations and Commission TAC determinations.

9. b. Review of progress on SESSF implementation plan

34. The RAG noted:
    - the update provided by George Day regarding the implementation of the SESSF Declining Indicators project (2016-146) and the SESSF Monitoring and Assessment Review Project (FRDC 2014-203)
    - that a comprehensive implementation plan is expected to be finalised by mid-October 2019. Regular reporting against the implementation plan will be provided to the AFMA Commission, SESSF RAGs and SEMAC.

Data for stock assessments

10. Integrated Scientific Monitoring Program report for quarters 1 & 2, 2019

35. Tamre Sarhan, AFMA observer program coordinator, provided an overview of data collection for the first and second quarters of 2019. The RAG noted ISMP targets are being met for 2019 except where external circumstances such as inclement weather and changed fishing plans are preventing collections.
36. The RAG commended the observer program in meeting the targets under the plan and encouraged this achievement to continue.

11. Fish ageing services end of financial year report

37. The RAG noted and discussed the update provided by Mr Krusic-Golub from Fish Ageing Services (FAS), in particular:
    - 15,874 samples have been registered, with about 7,500 aged across seven species
    - FAS registers all otolith samples received, but only ages enough to meet targets
    - Redfish – the number of otoliths collected in 2018 is low. This should improve with more samples obtained for 2019 and age estimates should be available for the next assessment
    - Orange roughy east – otoliths are not collected during Dr Rudi Kloser's acoustic optical survey (AOS)
    - Bight redfish – sampling in 2018 was low. FAS recently received some 2019 samples. If time permits, these will be analysed for the 2019 assessment. Any samples collected during the FIS need to be treated differently as a non-standard net was used
    - Eastern gemfish – there were bigger fish this year from the ISMP.
    - Tiger flathead – there was possibly a significant recruitment event in 2018 which needs to be flagged as part of the 2019 assessment.

Action Item 10: Kyne Krusic-Golub and Geoff Tuck

Kyne Krusic-Golub and Geoff Tuck to check how the FIS length/age data was incorporated into the last bight redfish assessment by Malcolm Haddon.

Action Item 11: Kyne Krusic-Golub and Robin Thomson

Kyne Krusic-Golub and Robin Thomson to develop an ageing plan for 2019-20, particularly with respect to tier 1 species, including pink ling and gummy shark, recognising time and budgeting constraints.

12. Shark Industry Data Collection (SiDAC) update

38. Simon Boag of the Southern Shark Industry Alliance (SSIA) provided an update on the SiDAC program, in particular:
    - The program is generally meeting targets overall, however there are issues meeting targets in some strata. It is anticipated that collection will continue to improve next quarter, as there are an increasing number of boats collecting data per strata.
    - Fishers using e-logs are unable to identify the e-log shot number to link with the SiDAC sample number – inevitable errors and inefficiency could be eliminated if the if e-log system provided a unique identification number that was visible to the skipper at the time that the fishing shot occurs.
    - There are issues getting:
        - SA gillnet data, as access to vessels is limited
        - longline data, however likely to meet the target for the third quarter; it is also necessary to sample from the autoline vessels (this is not part of the current design)

- data to meet targets for school shark in Bass Strait, given the low levels of catch.

39. As a shark gets older and longer, the head-to-body size ratio likely changes. As such, the current partial length to total length conversion factors may not be appropriate for sharks. Large sharks are being sampled as part of the SiDAC program.
40. The ISMP collected partial and total length measurements in 2013-14 but only for school and gummy sharks whose partial length measurement was under approximately 100cm.
41. To enable the development of updated conversion factors of dressed to total length for larger school and gummy shark whose partial lengths are over 100cm (i.e. total lengths over 150-160cm) dual measurements of total (prior to dressing) and partial lengths should be taken of school and gummy shark).

Action Item 12: AFMA

AFMA to work with the e-log providers to enable the skipper to identify the e-log shot number and provide it to the SiDAC port-sampler.

Action Item 13: AFMA / SSIA

Seek advice from SERAG/SharkRAG to update the SiDAC data collection plan to include:

- the collection of total and partial lengths of school and gummy shark particularly any school sharks larger than 160cm total length (100cm partial length). Collection of gummy shark measurements over 160 TL and 100cm PAR is also desirable (SharkRAG)
- tissue samples of blue eye trevalla for CSIRO close-kin work along with otoliths for ageing by FAS (SERAG)
- collection of gummy and school shark samples from automatic longline vessels (SharkRAG).

13. Discard rate estimates update – SESSF ISMP discard report

[This item was presented at the beginning of day 2]

42. The RAG discussed the SESSF catch and discard reports provided by CSIRO.
    - *Integrated Scientific Monitoring Program for the Southern and Eastern Scalefish and Shark Fishery—discards for 2018* (Deng et al, 2019).
        - Observer coverage during 2018 was not adequate to provide enough data to enable high confidence in many discard rates.
        - The CV on estimates of discarded catch are very high, these have not been used when evaluating whether or not to use a discard estimate and should be included in the future.
        - Discard distribution maps were found to be useful to help interpret data by the meeting participants. Minor amendments were requested on the presentation of distribution maps.
    - *Southern and Eastern Scalefish and Shark Fishery catches and discards for TAC purposes using data until 2018* (Burch et al, 2019).

- Frostfish and king dory were added to the data summary report and will be included in future catch and discard reports. Further species could also be included.
- To enable the dynamics of the fishery to be considered, it would be beneficial to provide a separate report on species catch composition information.

Deepwater sharks

- Industry suggested the discard estimate of 49 to 63 per cent for deepwater sharks was too high. However, Tamre Sarhan indicated that they were realistic. It was noted by the RAG that the CV is always very high. The RAG have previously noted that investigation is needed to ascertain whether depth zones should be used when estimating deepwater shark discard rates to determine whether discard rates differ by depth. This is in addition to the minimum depth limit used when identifying deepwater shark for estimation purposes.
- The low catches limit sampling opportunities in the east and west.

Blue grenadier

- Discard rates were extrapolated and applied across the fishery; this also included the freezer trawler that entered the fishery in 2019. Discarding practices are not the same on factory vessels as on wet boats, this should be taken into account in the future.

Action Item 14: CSIRO

Paul Burch and Roy Deng to consider including “zeros” into the histograms of observed discards for each species in the discard report.

Action Item 15: CSIRO

Include squid, latchet and ocean jacket, as well as frostfish and king dory, in future SESSF catch and discard for TAC purposes reports.

Action Item 16: AFMA / CSIRO

Dan Corrie and CSIRO to consider the need for including species catch composition information in future catch and discard reports, or as a separate report, noting potential requirements under the MSHS approach.

Action Item 17: CSIRO

To ensure logbook data used to estimate deepwater shark discard rates are appropriate:

- Paul Burch and Roy Deng to double check the deepwater shark discard rate estimates and CVs.
- Shijie Zhou to ensure the deepwater shark strata definitions are correct.

Action Item 18: Robin Thomson, Ian Knuckey, George Day, Mike Steer, Paul Burch and Roy Deng

Establish a discard estimate working group to consider improvements to the current discard calculation method —an agenda item to be included on the SERAG (October) and then SESSFRAG (March). The working group to:

- consider the use of more stringent criteria, including CVs, for determining when a discard rate is accepted/rejected. Consider rejecting estimates when three or less shots are observed in a stratum
- resolve whether a model-based approach should be used to estimate discard rates into the future given the lower observer coverage across the fishery.

Action Item 19: CSIRO
CSIRO to include total tonnage of discards in the discard distribution maps in future discard reports.

14. Estimation of shark discard using electronic monitoring

43. The RAG noted the results of the Fishwell project *Analysis of Electronic Monitoring Data to Measure Length and Estimate Discard Weights in the Shark Gillnet Sector of the Southern and Eastern Scalefish Fishery*.
44. The RAG endorsed:
    - the use of gummy and sawshark discards estimates (for gillnets) using e-monitoring data for 2016/17 and for 2017/18
    - the use of the approach established in the project to estimate discards for 2018-19 and 2019-20
    - from 2020-21, the ongoing use of e-monitoring piece counts for estimating gillnet discards of gummy and sawsharks subject to structured sampling of discard length data to verify size composition of discarded fish
    - the use of e-monitoring piece counts to estimate discards for line caught sharks, subject to adequate monitoring using electronic monitoring and camera placements
    - a cost comparison between the use of e-monitoring and crew-based sampling to collect length frequency data to support estimates of discards.

Action Item 20: AFMA

AFMA to confer with Ian Knuckey and Robin Thomson to determine the sampling regime for discard lengths to support future discard estimates and, if further advice is needed, seek SharkRAG advice.

Action Item 21: Simon Boag / AFMA

Evaluate options for collecting on-board length data for retained and discarded sharks, noting the preference for non-lethal sampling techniques.

-----Day 1 closed – 5.45pm-----

-----Day 2 opened – 8.30am-----

15. MYTAC analysis and data summary

45. The RAG reviewed and discussed the outcomes of the Multi Year TAC analysis, which requires a review of data as an input to stock assessments for species being assessed in 2019, as well as relevant fishery indicator data for species that have been identified using the MYTAC decision tree support tool.
46. There were 21 species flagged for discussion, seven of which are scheduled for assessments in 2019. For the purpose of these minutes, the discussion is separated into two categories; species scheduled for assessment in 2019, and species flagged as part of the decision tree support tool.
47. A summary table of the decision tree support tool outcomes is provided at Attachment 5.

Species scheduled for assessment in 2019

Bight redfish

48. The RAG noted the following:
    - The stock assessment was brought forward from 2020 to 2019 due to issues identified in the 2018 GABT Fishery Independent Survey (FIS) with declining catch rates and large fish missing from the length/age composition.
    - While the long-term trend is relatively flat, CPUE has been increasing since 2013, with only the 2018 estimate showing a slight decrease.
    - There are three boats operating in the fishery. One of these boats was not operational for six months, and has only been fishing again since the end of July 2019 with poor catch rates.
    - Two vessels have changed their fishing plan to target only Bight redfish for the last three days of each trip, this might be captured in the CPUE standardisation e.g. through depth.
    - 80 per cent of the catch is taken between February and April.
    - There is no overlap of data between the ISMP (end of year) and the FIS (beginning of year). Both sets of data will be included in the stock assessment and sensitivities can be run to exclude each.
    - Given the uncertainty around this species, the RAG appreciated that the assessment has been brought forward a year.

Deepwater flathead

49. The RAG noted the following:
    - There are logbook records of deepwater flathead in the CTS east of 147° E however there has only ever been one observer record in that region. Therefore, catches east of longitude 147° E are likely reporting errors.
    - One of the main boats was not operational for six months, and has only been fishing again since the end of July 2019.
    - Smaller male fish (<140mm) occur in shallower waters while larger females occur in deep water. They typically come together to spawn in

November however this has occurred several months later over the last two years which has impacted catch rates.

- There are no industry-collected lengths from the Danish seine vessel therefore selectivity from the board trawl vessels will need to be applied in the assessment. It is not clear what impact this will have.

50. The RAG recommended the following:
    - Any records of 'deepwater flathead' east of 147° E should be converted to 'flathead species', added to the tiger flathead assessment, and not used in the deepwater flathead assessment.

Action Item 22: CSIRO

Paul Burch to confirm that the deepwater flathead assessment uses data from zone 80 only. Geoff Tuck to perform a sensitivity in the assessment to adding the catches from zone 50.

Action Item 23: CSIRO / GABRAG

Ensure that length and age information from the GAB Danish vessel is collected (ISMP and crew collected) to ensure that Danish seine can be treated as a separate fleet in future deepwater flathead stock assessments (noting this method accounts for about 10 per cent of the catch and has been increasing).

Mirror dory

51. The RAG noted the following:
    - The CV for the discard rate of mirror dory is very high in the east, apparently driven by a single shot.
    - There had been a drop in the catch and the CPUE in the west and the discard rate CV is reasonable.
52. The RAG recommended the following:
    - Run the Tier 4 assessment with and without the discard rate in the east.

Action Item 24: Discard estimate working group

As part of the work required under action item 18, consider whether the 2017 discard rate for mirror dory east (2% and CV of 52%) should be used instead of the 2018 estimate (12% and CV of 188%).

Elephant fish

53. The RAG noted the following:
    - Due to difficulties in undertaking a Tier 4 assessment because of high discard rates, SESSFRAG recommended elephant fish be assessed using a Sustainability Assessment of Fishing Effects (SAFE).
    - This species was recently assessed as low risk in the draft SAFE (2019), and the current fishing pressure (F) is less than would be required to drive the stock below a point akin to Maximum Sustainable Yield (MSY).
    - The TAC is undercaught because of low economic value and discards are high (70 per cent).
54. The RAG recommended the following:

- SharkRAG to set an RBC for 2020-21 season using outputs from the ERA in a weight of evidence approach.

Flathead

55. The RAG noted the following:
    - CSIRO gave the RAG clarification on which CAAB codes are used in the tiger flathead Tier 1 assessment, noting that it includes species other than tiger flathead but only when those are reported from Commonwealth waters. When those species (e.g. sand flathead and blue-spot flathead) are caught by State licensed vessels and recreational fishers, they are not included in the Commonwealth flathead assessment.
    - Tiger flathead strongly dominate the Commonwealth catch.
    - There is a small amount of tiger flathead recorded in the west, including as far west the GABT. It is unlikely that all of the reported GABT catches are tiger flathead, however catches west of Tasmania are probably more accurate. Observer records show tiger flathead from both the GABT and west of Tasmania. The number of clearly erroneous logbook records for deepwater flathead east of 147° E suggests that some of the tiger flathead records in the west must be errors. However, because both species do occur west of 147° E, correction cannot be done (unless proportional catches from observer data were used to adjust the overall catch, but this in unlikely to be worthwhile).
    - Before e-logs, caches were reported as ‘flatheads’ and the AFMA data entry team entered those using the ‘tiger flathead’ CAAB code. In contrast, e-logs use the ‘mixed flatheads’ CAAB code so that there has been a large shift in catch assigned to that code and away from the ‘tiger flathead’ code. ISMP data show that the assumption of tiger flathead dominating catch is correct.
    - State and recreational catch is predominately sand and blue spotted flathead, as such anything caught in these sectors is unlikely to be tiger flathead.
    - If the NSW southern fish trawl fishery transitions to the Commonwealth then the blue spotted and sand flathead landed by that fleet will increase the proportion of non-tiger flathead species in the Commonwealth landings.
    - The proportion of the Commonwealth TAC caught is less than previous years. It is unlikely due to misreporting because quota is cheap and readily available.
    - Catches from Bass Strait are the lowest ever; it appears the stock is moving south to eastern Tasmania where operators are maintaining good catch rates.
    - Length frequency distributions indicate there has been good recruitment over the last few years.

- An increase in Danish seine codend mesh to 75cm will need to be taken into account for future assessments and CPUE standardisations.

Action Item 25: CSIRO

For the 2019 flathead assessment, CSIRO to undertake a sensitivity test to include/exclude tiger flathead catches in the western zones. CPUE standardisation and current base case to remain the same.

Gemfish west

56. The RAG noted the following:
    - Catches are low and CPUE is unlikely to be representative of stock status.
57. The RAG recommended the following:
    - When undertaking the assessment SERAG need to consider the recent genetic study that indicates zone 50 is a mixing of western gemfish from the GABT and eastern gemfish from zone 40.

Oreo Smooth (other)

58. The RAG noted the following:
    - A key underlying assumption of the Tier 5 method, that catch is an indicator of abundance, is undermined because the closure of, and then reopening of, orange roughy grounds has affected catch rates.
59. The RAG recommended the following:
    - Smooth oreo (other) should not be assessed using a Tier 5 assessment.
    - SERAG to set an RBC for 2020-21 season using outputs from the ERA in a weight of evidence approach.

Species identified through the MYTAC decision support tool

Alfonsino

60. Flagged because the TAC is one per cent caught and is in the 5th year of a 3-year MYTAC.
61. The RAG noted the following:
    - There has been very little effort in the east coast deepwater trawl sector and CPUE is uninformative.
    - There is no scheduled assessment (catch dependent).
    - Alfonsino was last assessed in 2013, which indicated the stock had not been greatly impacted by fishing.
    - 12 t was caught in 2018. There was some trawl effort in 2019 but they were not able to locate fish.
    - There have been no biologicals collected since 2013.
    - There are large catches of this fish on the high seas.
62. The RAG recommended the following:
    - Continue the MYTAC until catches increase.

Blue eye Trevalla

63. Flagged because standardised CPUE is between the target and limit reference points.
64. The RAG noted the following:
    - The last assessment was in 2018, and the next scheduled for 2021.
    - Length frequency distributions are skewed to larger fish; however, most samples were collected from four vessels, and all in January 2018.
    - Recent CPUE is closer to the target reference point than the limit reference point.
    - CPUE in 2018 has decreased after two years of increase; however, it would only be an issue if CPUE continues to decline.
65. The RAG recommended the following:
    - Continue the MYTAC and review CPUE in 2019 to determine if CPUE has continued to decline.

Blue Grenadier

66. Flagged because TAC is 19 per cent caught.
67. The RAG noted the following:
    - The TAC is undercaught because of a lack of vessel capacity.
    - A factory freezer trawler has fished the winter spawning aggregation in 2019 and the more of the TAC will be caught.
68. The RAG recommended the following:
    - Continue the MYTAC for this species.

Deepwater shark east

69. Flagged because standardised CPUE is between the target and limit reference points.
70. The RAG noted the following:
    - A large part of the stock's distribution is protected by closures and CPUE may not be indexing abundance.
    - This species will be assessed in 2021 as a tier 5. SERAG should consider that a low TAC has restricted catch.
    - For the purpose of catch determination and CPUE standardisations, CSIRO have depth restrictions from 600 to 1500 m. AFMA do not use the same restrictions when deducting TAC, only what is recorded in catch disposal records.
    - CSIRO asked whether they should modify the deepwater shark strata (remove the depth restriction) to be consistent with how quota is deducted.
        - This will be resolved at SERAG in October.
    - The depth restriction is used to ensure misreporting (species ID issues for example) does not affect the analyses.
    - There are CDR records of deepwater shark that correspond with catches in waters less than 150 m.

- There is a species identification issue; however, this has improved over time.
- 90 per cent of deepwater sharks catches are *Denia sp., which* are part of the quota basket.
- Observer estimates are used to calculate the discard rates and are likely accurate. It becomes an issue when catches are scaled to CDRs, which sometime include catches in waters less than 600 m.

71. The RAG recommended the following:
    - Do not use catches in waters less than 600 m for the purpose of discard estimation.
    - The 600 m depth restriction is sensible; it should be used when calculating CPUE and discard estimates.
    - Continue the current MYTAC.

Deepwater shark – west

72. Flagged because standardised CPUE is between the target and limit reference points and the TAC is 28 per cent caught.
73. The RAG noted the following:
    - It was not clear whether the TAC is undercaught due to operational reasons.
    - The next assessment is scheduled for 2021.
    - It would be useful to know whether the undercaught TAC is because of a lack of effort; this could be determined by plotting effort over 5 years (target and non-targeted fishing) and comparing it with a plot of CPUE.
    - The comparison above may alleviate any concerns the Commission might have with the undercaught TAC, and would be worth doing for other Tier 5 species.
74. The RAG recommended the following:
    - Continue the current MYTAC.

Action Item 26: CSIRO

For tier 5 species – including deepwater shark west – an annual effort over time plot to be included in the report to enable fishing trends to be considered. The effort plot is to be compared with a plot of CPUE in the CPUE standardisation report.

Gummy shark

75. Flagged because it is in the 3rd year of a 3-year MYTAC and is not scheduled for an assessment in 2019.
76. The RAG noted the following:
    - The next assessment is scheduled for 2020 following a revision of CPUE standardisations (using catch per metre instead of catch per shot) and the addition of crew-collected biological samples.
    - CPUE has decreased in 2018 for all fleets except trawl.
77. The RAG recommended the following:
    - Continue the current MYTAC and update the assessment in 2020.

Jackass morwong

78. Flagged because the TAC was 34 per cent caught and eastern biomass is between the limit and target reference point.

The RAG noted the following:

- Questions have been raised about the quality of the CPUE data in the west.
- The FIS indices have decreased over the last five surveys.
- 2019 targets are likely to be met as biological sampling has improved.
- Little has changed for this species since the 2018 stock assessment.

79. The RAG recommended the following:
    - Continue the current MYTAC and continue to monitor catches in fishery indicators.

John dory

80. Flagged because the TAC was 22 per cent caught.
81. The RAG noted the following:
    - The next assessment is scheduled for 2020 as a Tier 4 species.
    - This species is not targeted and the undercaught TAC is not a concern.
    - There has been a shift in length frequency distribution to larger fish.
    - Catches have decreased by 20 per cent but CPUE is relatively flat.
82. The RAG recommended the following:
    - Continue the current MYTAC.

Action Item 27: AFMA

Tamre Sarhan to check observer data relating to anomalously large overall size for John dory in 2018.

Orange roughy east

83. Flagged because the biomass is between the limit and target reference point.
84. The RAG noted the following:
    - Little has changed since the 2017 stock assessment.
    - An acoustic survey was undertaken in 2019 and preliminary results were positive.
85. The RAG recommended the following:
    - Continue the current MYTAC and update the stock assessment in 2020.

Orange roughy cascade

86. Flagged because the TAC was 0 per cent caught.
87. The RAG noted the following:
    - The TAC was not caught, as there was no effort on the Cascade Plateau.
    - There has been some effort in 2019.
88. The RAG recommended the following:

- Continue the current MYTAC.

Smooth Oreo – Cascade

89. Flagged because the TAC was 0 per cent caught.
90. The RAG noted the following:
    - The TAC was not caught, as there was no effort on the Cascade Plateau.
    - There has been some effort in 2019.
    - When last assessed, CPUE was extremely variable and the fluctuations were considered not to be indicative of changes in stock status.
91. The RAG recommended the following:
    - Continue the current MYTAC.

Oreo Basket

92. Flagged because recent standardised CPUE is between the limit and target reference point and the TAC is 41 per cent caught.
93. The RAG noted the following:
    - When last assessed, recent CPUE was very close to the target reference point.
    - 40 per cent of the fishery is protected by deepwater closures.
94. The RAG recommended the following:
    - Continue the current MYTAC and update the assessment in 2020.

Pink Ling

95. Flagged because eastern biomass is between the limit and target reference point.
96. The RAG noted the following:
    - Eastern CPUE has increased over the past three years.
    - Little has changed since the 2018 assessment and none of the fishery indicators gives rise to concern.
97. The RAG recommended the following:
    - Continue the current MYTAC.

Ribaldo

98. Flagged because the TAC was 23 per cent caught.
99. The RAG noted the following:
    - The undercaught TAC is likely due to operational reasons.
100. The RAG recommended the following:
    - Continue the current MYTAC.

Royal red prawn

101. Flagged because the TAC was 35 per cent caught.
102. The RAG noted the following:
    - Processing capacity is limited in Wollongong and the undercaught TAC is due to operational reasons.

- CPUE is increasing, though may not be accurately indexing abundance.
- Operators are also avoiding a productive area where a vessel approximately 18 months ago.

103. The RAG recommended the following:
    - Continue the current MYTAC.

Action Item 28: Simon Boag / AFMA

Simon Boag to provide Cate Coddington with the details of the sunken vessel that sank in the royal red prawn fishing grounds approximately 18 months ago for incorporation into the SESSF history document.

Sawshark

104. Flagged because the TAC was 38 per cent caught.
105. The RAG noted the following:
    - Sawshark is not an economically valuable species and the TAC is undercaught for operational reasons.
    - The CPUE has been fairly stable over the last decade.
    - The RAG were comfortable with the fishery indicators.
106. The RAG recommended the following:
    - Continue the current MYTAC.

School whiting

107. Flagged because biomass is between the limit and target reference point.
108. The RAG noted the following:
    - The increase in NSW catches over the last two years is concerning and could affect the Commonwealth Danish fleet if TACs are reduced to account for State catches.
    - When last assessed, the biomass was estimated to be at 47 per cent of the virgin stock biomass, slightly less than the target of 48 per cent.
    - The RBC has been exceeded over the last two seasons and an updated assessment is critical to assess the impact on the stock.
    - A stock structure project proposal is likely to be approved by FRDC, with results likely to be at least 3 years away.
    - NSW have allocated quota for school whiting north of Barrenjoey Head; however, the TAC was set at the highest historical catches, and catches remain unrestricted in the Southern Fish Trawl sector.
109. The RAG recommended the following:
    - The SESSFRAG Chair should send a letter to the AFMA Commission; highlighting the issue of increasing NSW catches, and to encourage both catch and cost sharing arrangements.
    - Continue the MYTAC and update the assessment in 2020.

Action Item 29: Cathy Dichmont (Chair)

Cathy Dichmont, as Chair on behalf of the RAG, to send a strong letter to the AFMA Commission highlighting the issue of increasing catch of school whiting by NSW.

Noting that the issue is relevant for other shared stocks, the letter should focus on catch and cost sharing arrangements, the impact on Commonwealth SFR holders, and the potential impact on the stock of exceeding the RBC.

George Day and Dan Corrie to provide a draft for the Chair to consider (members to be provided with a copy).

Silver trevally

110. Flagged because biomass is between the limit and target reference point and TAC was two per cent caught.
111. The RAG noted the following:
    - CPUE has declined over the last two years, and the long-term trend is also declining.
    - Silver trevally are not generally targeted in Commonwealth waters and limited catch data would affect the reliability of the Tier 4 assessment.
    - This species is assessed by NSW as 'transitional depleting'.
112. The RAG recommended the following:
    - Continue to the current MYTAC and consider including NSW catch data in the 2020 assessment.

Action Item 30: AFMA

AFMA to write to Natalie Moltschaniwskyj at NSW DPI regarding involvement in the Tier 4 stock assessment for silver trevally. It is likely that Ash Fowler (NSW DPI) will be interested in being heavily involved.

Silver warehou

113. Flagged because biomass is between the limit and target reference point.
114. The RAG noted the following:
    - Eastern and western CPUE has increased over the last two years.
    - Age and length frequency data indicated there might have been recruitment in the last two years.
    - Collection of biological samples has improved in 2019 with 582 samples collected in the west and 324 in the east.
115. The RAG recommended the following:
    - Continue the current MYTAC.

Species under a rebuilding strategy

Eastern gemfish

116. The RAG noted the following:
    - SERAG are responsible for reviewing the rebuilding strategy later this year.
    - While some biological data were available to support an assessment, a reliable index of abundance was not available because operators were avoiding the spawning run.

117. The RAG recommended the following:
    - Consider including a non-extractive (e.g. open trawl net with underwater camera) survey in the 2021-22 SESSF research statement to establish an index of abundance for eastern gemfish.
    - Continue to manage under the current bycatch TAC.

Action Item 31: SERAG

SERAG to consider including a non-extractive (e.g. open trawl net with underwater camera) survey in the 2021-22 SESSF research statement to establish an index of abundance for eastern gemfish.

Action Item 32: SERAG

SERAG to discuss options for undertaking a stock assessment of eastern gemfish in 2021 using outcomes from potential survey results.

118. SESSFRAG agreed that the data for the remaining rebuilding species should be reviewed at the SERAG and SharkRAG meetings later in the year.

Action Item 33: SERAG / SharkRAG

SERAG and SharkRAG to consider the data for the remaining rebuilding species that were not discussed during the SESSFRAG data meeting.

Species identified for other reasons

Ocean perch

119. The RAG noted the following:
    - There has been a spike in reported inshore catches; however, this may be a result of incorrect reporting of fishing depth.

Action Item 34: AFMA

Dan Corrie to check that vessels with suspicious minimum and maximum depth records are accurately recording depth and not using default records in e-log software.

16. Recommended changes to ISMP and SESSF data plans

120. The RAG considered the outcomes of the MYTAC analysis and data review; and provided advice that no substantive changes are needed to either the SESSF data plan or the ISMP sampling program, which had not been addressed in earlier agenda items or action items.

121. The RAG discussed the ageing plan and made recommendations for the following species:

Alfonsino

- This is a Tier 4 species and ageing is not required. Assessment dependent on increased catches.

Blue grenadier

- Age estimates are required in preparation for the 2021Tier 1 assessment.

Eastern gemfish

- Do not age as this species is not scheduled for an assessment and the otolith samples are unlikely to be representative.
- Samples would be best collected from the spawning aggregation.

Pink ling, jackass morwong and blue warehou

- Age estimates are required in preparation for the 2021 Tier 1 assessment.
- Whilst these species are not scheduled for assessments until 2021, it would be useful to have up-to-date ages as they are proposed for regionalisation.

Orange roughy east

- Undertake ageing in 2019/20 in preparation for the 2020 Tier 1 assessment.
- Samples from the 2019 AOS need to be aged. If less than 1000 otoliths sampled during the AOS, ISMP samples could be aged to make up the total number to 1000. Need to ensure that any ISMP collected otoliths were sampled from the spawning aggregation.

Action Item 35: FAS

Kyne Krusic-Golub to:

- contact Rudy Kloser/CSIRO to determine the number of orange roughy otoliths collected during the AOS survey and
- provide the SESSFRAG details on ISMP collected orange roughy samples.

Redfish

- Undertake ageing in 2019/20 in preparation for the 2020 Tier 1 assessment.
- Otoliths were under-sampled in 2018; however, collection is close to target for 2019.

Gummy shark

- Undertake ageing in 2019/20 in preparation for the 2020 Tier 1 assessment. Approximately 1500-2000 vertebrae to be aged from vertebrae collected between 2015 and 2019.

School shark

- Ageing likely will be in line with the school shark close kin project (likely 2020/21).

Action Item 36: CSIRO

Robin Thomson to finalise the cost of her school shark close kin update, accounting for the 500 aged samples per annum that is already funded by AFMA.

School whiting

- Undertake ageing in 2019/20 in preparation for the 2020 Tier 1 assessment.

Silver warehou

- Age estimates will be required for the 2021 assessment. Undertake ageing if resources permit, this is a higher priority than tiger flathead.

Tiger Flathead

- Age estimates will be required for the 2022 assessment. Undertake ageing if resources permit. Note this is a lower priority than silver warehou.

122. Because there are insufficient funds to age all the species required each year the species identified for ageing were ranked by the RAG as follows:

    - High priority (ageing must be completed during 2019/20):
        - Gummy Shark
        - Orange Roughy
        - School Whiting
        - Redfish.
    - Medium priority (ageing as many as the budget allows):
        - Pink ling
        - Jackass morwong
        - Blue warehou
        - Blue Grenadier
        - Silver warehou.
    - Low priority (age only if all other priorities have been met) and ranked in order:
        - Tiger Flathead.

123. SiDAC samples need to be archived — there is a record of the samples collected with about 3000 samples to archive. Whist there are sufficient samples for ageing, vertebrae collected early in the program may not contain enough flesh to enable the extraction of genetic material for close kin work.

124. All FIS samples have been provided to fish ageing services.

    - All GAB samples have been properly registered.
    - SET samples are being registered.
    - FAS will continue to register the FIS samples if there is capacity, however not at the expense of aging samples from the species identified as high and medium priority.

125. The RAG discussed the recommendations from the report *Investigation of the influence of month, depth, and zone on body lengths of quota species in the SESSF* and noted the following:

    - The relationship between depth and body size is important for most species.
    - The exception to this is blue grenadier, Danish seine caught flathead and hook caught pink ling.

- It is important that samples are representative; that all grades are sampled and weighed.
- Port sampling may become redundant for some species, as samples are not linked to depth.
- More investigation is needed to see if the size-depth relationship holds for all areas, seasons, gears and combinations of those and to uncover whether port sampling can be used for some combinations of these factors, and some species.

Action Item 37: SERAG

SERAG to consider including *whether species size-depth relationship applies to all areas, seasons, gears and/or combinations of those* in the 2020-21-22 research plan, and if port sampling can be used for any of those factors.

Rationalising data, research and monitoring

17. Monitoring and data collection options

126. A SESSFRAG working group met in July 2019 to discuss monitoring and data collection options in the SESSF. The working group proposed six scenarios. Each scenario, including comments from SESSFRAG, are provided at Attachment 6.

127. SESSFRAG discussed the monitoring and data collection options. Key points include:

- Each of the scenarios should be considered in the context of the objectives of the FRDC multi-species harvest strategy project.
- AFMA may consider a staged approach to some of the scenarios.
- In the short to medium term, it may be possible to alternate data collection programs (FIS, ISMP, and EM) to cost effectively retain a level of information from each, while a longer term plan is established.
- It is important to consider the data requirements for each species category—bycatch, TEPs (flagship and other species), target species—with a particular focus on potential impacts of climate change.
- Scenarios that require substantial changes to the current approach would need to be Management Strategy Evaluation (MSE) tested.
- On average, only minor savings will be achieved by any of the scenarios.
- The SESSF is likely to introduce electronic monitoring (EM) in the future, which is not part of the 'current' scenario. The RAG noted the following:
    - Currently, EM will not meet all of the requirements for data collection and monitoring, and a level of observer coverage will still be required.
    - The 'observer effect' is unlikely to be an issue using EM.

    - EM is likely to become cheaper over time and, if EM becomes suitable, the ISMP may be phased out for some of the data that observers currently collect.
    - Existing data collection programs should be maintained until EM is proven.
- The data collection costs used to estimate costs of each scenario were as accurate as possible and include only cost-recovered costs. Co-investment by CSIRO for research (currently 20 per cent) was not included.
- The frequency of the FIS could be revised in the light of outcomes of the multi-species harvest strategy project.
- Industry are keen to reduce costs as much as possible to lessen the economic hardship being felt by operators.

128. Participants with a conflict of interest left the room, aside from the EO who remained solely for minute taking purposes. The remaining members noted the following with regards to the scenarios:

- Scenarios that require alternating data collection programs (6) and have two years of no assessment activities (7) are problematic as:
    - automation of data analysis is not yet possible
    - scheduling has public perception and governance issues even if logbook data improves
    - it is unlikely that conservation groups will be comfortable if fishery data is not collected or analysed for two years without breakout rules or standardised CPUE
    - while overall costs may be reduced, significant capacity issues within agencies is likely to be created
    - MSE testing would be needed.
- Whilst there are cost implications for the different scenarios, the total costs are comparable. Future scenarios are unlikely to get cheaper as there are increasing data requirements of the fishery; it is likely that costs will increase in the short term.
- Cost savings may be achieved by:
    - extending scheduling of assessments of certain SESSF species from 3 year intervals to 5 year; for example, orange roughy (are long lived) or grenadier (have stable catch rates). Noting that assessments can be brought forward if needed
    - sharing costs of assessments with other jurisdictions
    - lessening cost recovery for some activities
    - some scheduling of observers.
- Any scenario recommendation needs to recognise AFMA's legislative obligations and needs clear objectives for the outcomes of the process. Originally, the purpose of the process was to enable the FIS to be undertaken.
- FIS and EM cannot be a trade-off against the other as they provide for different purposes.

- It is important that the FIS is undertaken; it is independent of commercial fishing operations. It is better for it to be conducted with a three-year interval rather than being ceased altogether.
- The fishery currently has both export approval and approval to interact with protected species.
- TEPs have elevated in importance. TEP issues can shut a fishery and need to be addressed
- An understanding needs to be developed about what the threshold of acceptability will be under the new bycatch policy.

129. SESSFRAG and participants acknowledged the significant achievements industry have made and the pressure that industry is under, particularly as the Commonwealth South East Trawl Fishery are likely to have smaller operations (per unit) compared to other fisheries.

130. The RAG agreed, after those who had a conflict of interest left the room, the most appropriate approach would be to compare the strengths and weaknesses of each monitoring and data collection method, rather than comment on each of the scenarios. These were discussed and tabulated (see **Table 4**).

- The table could be further refined to capture the collective benefits across different methods, which could be greater due to compounding effects, and include a matrix of supplementary and complementary factors.

Table 4: Relative advantages and disadvantages of monitoring and data collection methods.

Method	Advantages	Disadvantages	General Comments
EM	Promotes improved collection of some data in logbooks on large TEPs and discards and could provide some data itself on TEPs and discards. Future potential for improved data collection. Could cut costs in long term.	Unproven in trawl fishery Does not provide all of the data that observer collect, including biologicals and species identification. Not enough information will be collected on discards.	EM is not mature enough to operate in isolation and adds cost without adding significant value. 10% coverage is insufficient to estimate TEP interactions. EM has shown there are TEP issues because of better reporting by industry.
Observers	Provides good species composition data for discards and for byproduct / bycatch species for ERAs. Has high credibility and data quality.	Costly.	Observers are still needed in the medium term.
FIS	Provides an independent index of abundance for some species that is robust to a number of weaknesses with fishery dependent CPUE. High value as a	Is costly and doesn't provide useful data for all target species. Has to occur as a semi-regular program.	Benefits would be gained in the long term. Essential for providing an independent index of abundance.

Method	Advantages	Disadvantages	General Comments
	long-term data set and is highly credible. Not affected by changes in fishing practices.		Will be important for climate change impacts. FIS works well for important species in the fishery without needing a re-design.
Logbooks	Good coverage.	Does not provide reliable discards or spp composition of byproduct/bycatch spp. Biased and increasingly compromised as a source of index of abundance. Lower credibility for bycatch and TEPs.	Species information tends to be clumped and does not provide adequate coverage.
Crew collected	Should improve coverage of some size composition data and biologicals.	Difficult to turn on and off.	

Action Item 38: AFMA / SESSFRAG

AFMA to undertake out-of-session work on the monitoring and data collection scenario options and provide to SEMAC, ensuring;

- consultation with SESSFRAG prior to providing to the SEMAC
- consideration of the relative advantages and disadvantages of monitoring and data collection methods
- refinement of the *relative advantages and disadvantages of monitoring and data collection methods* table to capture the collective benefits across methods and a matrix of supplementary and complementary factors.
- potential creation of a Venn diagram to illustrate the connections between the methods.

Action Item 39: AFMA

AFMA to investigate the potential of achieving cost saving from different activities, including: extending the scheduling of certain assessments, sharing costs of assessments with other jurisdictions, implementing the CSIRO tables within the data warehouse, lessening cost recovery from industry and changing the scheduling of observers.

-----Day 2 closed – 6.30pm-----

-----Day 3 opened – 8.30am-----

131. The Chair summarised for the benefit of those that left the room the discussion between the members of the SESSFRAG under the agenda item—monitoring and data collection options:

    - The FIS has value as it is free of fishing power and decadal changes, and should be undertaken in 2020 and then every three years.

- The focus on reporting TEP interactions is increasing and there are likely to be cost implications in the short term.
- There are potential cost savings in scheduling data collection/monitoring activities but this is only marginal.
- Significant changes to scheduling of data, monitoring and assessment schedules come with risks, including agency capacity and impacts on public perception, and would require MSE testing.
- Finding a solution that does not increase the costs in the short term is difficult; however, costs are likely to be attenuated in the long term.

Fishery Management

18. Presentation: Incorporating the effects of marine spatial closures in risk assessments and fisheries stock assessments

132. Geoff Tuck and Shijie Zhou presented the outcomes of the research project *incorporating the effect of marine spatial closure in risk assessments and fisheries stock assessments* (FRDC 2011/032).

133. The project was complex and examined many aspects of the potential impacts of closures on assessments including Productivity and Susceptibility Analysis (PSA), Sustainability Assessment for Fishing Effect (SAFE), Catch per Unit Effort (CPUE) standardisation, and Management Strategy Evaluation (MSE) testing of assessment methods in the SESSF.

134. Key findings of the project included:

- Closures reduce the data available for assessments.
- Operators adapt to spatial closures.
- A SAFE assessment of seven SESSF species concluded that recent spatial closures had less of an impact on reducing risk than reduced fishing effort.
- MSE testing of assessment methods – a fully spatial structure method is best; however, results that meet harvest objectives (target biomass) can be achieved from methods that are not spatially structured.
- Using data from both open and closed areas provides better performance than using data from just open areas. Sampling from closed areas did not add significant value to the assessment as bias from model mis-specification is likely to overwhelm any benefit from within closure sampling. Larger closures can increase stock risk, as less data are available. Stock-wide biomass status (say 48% of initial biomass, B_0) and catches can be maintained by reducing the target in the open area (below 48%B_0).
- CPUE standardisations – three alternatives for data use were analysed (ignore closure, data from outside closure, and data that includes data from inside closure). Regardless of the information used, there was little impact on the trend in relative biomass from the CPUE standardisation.

- Further information is needed on the mixing rates for many species.

Action Item 40: SESSFRAG / Miriana Sporcic

SESSFRAG to discuss chapters from *incorporating the effect of marine spatial closure in risk assessments and fisheries stock assessments* not covered by the presentation at SESSFRAG Data meeting 2019, including Miriana Sporcic to present the chapter about the *simulation study on the effect of CPUE resource standardisation with and without marine closures*.

19. Research Priorities

[This item was presented on day 1]

135. Dan Corrie provided an overview of input to the 2020-21 SESSF Research Statement to date:

    - SESSFRAG provided input to the current draft in February 2019
    - A number of research priorities have been identified since.

136. The RAG supported putting forward the following projects for ARC funding consideration for 2020/21:

    - *Desktop SESSF species stock structure review*
        - Commence the study with pink ling, the study could be broadened to anything that could have an east/west split including; blue warehou, jackass morwong, ocean perch and mirror dory.
    - *Continued Close Kin Mark Recapture sampling and analysis for school shark*
        - CSIRO are contributing 40 per cent of the funding
        - Adequate school shark samples need to be collected from the entire fishery, including the deepwater.
        - There are several potential sources of samples, including SiDAC. It will be a priority to collect samples from deeper waters and further west.
        - Some of the costs of the project can be offset from the school shark assessment.

137. The RAG supported putting forward the following projects for FRDC funding consideration for 2020/21:

    - *School shark and gummy shark post release survival project*
        - Increased in priority if SharkRAG agree that there is value in investing in the project.

138. The RAG suggested that the project 'developing a close-kin harvest strategy', which was proposed to be linked to the FRDC Multi-species Harvest Strategy (MSHS) Project, should be included in the future research project list.

    - The MSHS project will consider close kin only as an input to a MSHS, rather than a stand-alone harvest strategy and will provide only a very small amount of funding to develop that limited idea.

- However, close kin could be used a stand-alone harvest strategy but in that case more development work is required than is provided for by the MSHS project
- This development work would be applicable not only to the SESSF, but also to other fisheries in Australia (an internationally).

139. The RAG discussed the inclusion of a costs column in the SESSF stock assessments schedule table at the back of the annual research statements.

- This would be more useful for planning purposes but should not be included in the published version of the research statement.

140. The revised annual research statement is at Attachment 7.

Action Item 41: SharkRAG

SharkRAG to consider the value of undertaking the school shark survivability project.

Action Item 42: AFMA

AFMA to update the logbooks to include 'live' status of released school sharks

20. TAC Setting Process – Revised Paper including flowcharts for 'review of data adequacy' and 'assessment review and TAC setting

[This item was presented on day 1]

141. The RAG discussed proposed edits to the Total Allowable Catch (TAC) setting process guidelines. The updated guidelines are at Attachment 8. Aside from minor edits, the RAG noted the following for each section:

Section 1.4 'Publication of final assessments'

142. The defensibility of assessments is important, particularly that data and control files remain available. There are some sensitivities concerning intellectual property rights, however this can be addressed by AFMA when drafting contracts.

143. The RAG agreed that AFMA should receive and archive data and control files in perpetuity for future review of stock assessments.

Section 1.5 'Process for considering new assessment approaches',

144. The RAG agreed that the words "new assessments" should be changed to "untested assessments".

145. The RAG recommended removing the flow diagrams ('Review of data adequacy' and 'Assessment review and TAC setting') from the guidelines and incorporating the agreed approaches into the SESSF Harvest Strategy Framework. Specifically, where:

- species have high discards
- CPUE is not indexing biomass
- tier 1 assessments are rejected, and TACs are rolled over subject to sustainability concerns
- regime shift/productivity change should be considered for some species.

146. The RAG noted there was not a clear basis for reducing TACs to account for uncertainty due to inadequate or conflicting data for assessments. For this reason, the RAG did not recommend including this guidance in the current harvest strategy.

Action Item 43: AFMA

AFMA to redraft Section 1.4 '*Publication of final assessments'* in relation to access to data and control files held by assessment providers and provide the updated section to SESSFRAG to consider.

Action Item 44: AFMA

George Day and Cathy Dichmont to discuss the content of the flow diagrams in the draft TAC setting guidelines. The information contained in the flow diagrams to be included in the Harvest Strategy Framework, and taken back to SESSFRAG for consideration.

Next meeting and other business

21. Dates for the Chairs' 2020 meeting

147. The RAG decided to set the meeting date for both the Chairs' and Data 2020 meetings in out-of-session as soon as possible.

22. Other business

148. The RAG noted that the data summary report does not meet the Web Content Accessibility Guidelines 2.0 and that it the requirements would be difficult to meet.

149. The RAG agreed that the degree that the report needs to meet the requirements should be discussed offline.

-----Day 3 closed –11.50am-----

Attachments

1) Declared conflicts of interest
2) Final adopted agenda
3) Status of previous Action Items
4) Action Items arising from the meeting
5) MYTAC species and species being assessed
6) Data options scenarios
7) Revised annual research statement
8) Revised TAC Setting Process guidelines

Attachment 1

Declared Conflicts of Interest

Participant	Declared interest
Members	
Dr Cathy Dichmont (Chair)	Director of Cathy Dichmont Consulting. Contracted by various State and Commonwealth agencies to undertake various reviews and consultancies not related to SESSF. No pecuniary interest in the SESSF.
Mr George Day	Employed by AFMA, Senior Manager of Demersal and Midwater Fisheries. No interest, pecuniary or otherwise.
Dr Sarah Jennings	Economics coordinator, FRDC Human Dimensions Research Subprogram Adjunct Senior Researcher, TSBE and casual employee IMAS University of Tasmania. Economics member of SERAG Economic member of SEMAC Member of AFMA EWG Independent economics consultant with occasional interest in projects of relevance to AFMA and/or Commonwealth fisheries (currently FRDC 2017-210 National fisheries and aquaculture industry social and economic contributions study: Phase 1) No pecuniary or other interest in the SESSF.
Mr Lance Lloyd	GABRAG Chair. Member of GABMAC and SESSFRAG. Board Member, AwF – Aquaculture without Frontiers (Australia) Director; Lloyd Environmental Pty Ltd. Research Fellow; Federation University Australia No pecuniary interest.
Mr Sandy Morison	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 Michael Steer	Principal Scientist at SARDI Aquatic Sciences (Finfish Fisheries) Chair of SERAG Member of SEMAC Member of Commercial Marine Scalefish Fishery Reform Advisory Committee (SA) Member of Marine Scalefish Fishery Management Advisory Group (SA) Member of Charter Boat Management Plan Advisory Group (SA) No pecuniary interest in the SESSF.
Executive Officer	
Ms Cate Coddington	Employed by AFMA, Executive Officer of SESSFRAG. No interest, pecuniary or otherwise.
Invited Participants	
Mr Simon Boag	Executive Officer South East Trawl Fishing Industry Association (SETFIA) Non-beneficiary Director of two fishing companies in the SESSF one of which is a

Participant	Declared interest
	significant quota owner. Industry member on both SERAG and SEMAC. SSIA is engaged by AFMA to collect shark industry biological data PI on the fishery independent survey SETFIA is the PI on the orange roughy east AOS EO on SSIA EO on SPFIA
Dr Paul Burch	Employed by CSIRO, assessment scientist. Acquiring funding for research purposes. PI on data services contract.
Dr Jemery Day	CSIRO, assessment scientist. Acquiring funding for research purposes Scientific member of the Sub-Antarctic Resource Assessment Group (SARAG) Interests in promoting good science.
Dr Ian Knuckey	**Positions:** Director – Fishwell Consulting Pty Ltd Director – Olrac Australia (Electronic logbooks) Deputy Chair – Victorian Marine and Coastal Council Chair / Director – Australian Seafood Co-products & ASCo Fertilisers (seafood waste) Chair – Tropical Rock Lobster Resource Assessment Group Chair – Victorian Rock Lobster and Giant Crab Assessment Group Scientific Member – Gulf of St Vincent Prawn Fishery Management Advisory Committee **Current projects:** AFMA 2018/08 Bass Strait Scallop Fishery Survey – 2018 and 2019 FRDC 2017/069 Indigenous Capacity Building FRDC 2016/116 5-year RD&E Plan for NT fisheries and aquaculture AFMA 2017/0807 Great Australian Bight Trawl Survey – 2018 Traffic Project Shark Product Traceability FRDC 2018/021 Development and evaluation of SESSF multi-species harvest strategies
Mr Kyne Krusic-Golub	Director at Fish Ageing Services Fish Ageing Services is contracted to undertake fish ageing for the SESSF. Kyne Krusic-Golub has no pecuniary interest within the fishery other than the potential for obtaining future funding for research or service provision.
Mr Neil MacDonald	Executive officer of the Great Australian Bight Industry Association Executive officer of Surveyed Charter Boat Owners and Operators Association South Australia Executive officer of Southern Fishermen's Association Executive officer of Saint Vincent Gulf Prawn Boat Owner's Association Executive officer of South Australian Blue Crab Pot Fishers Association Executive officer of Marine Scale Net Fishers Association Committee support South Australian Rock Lobster Advisory Council Director NMAC(SA) P/L Chair CGG SAC Gippsland MSS
Dr Andrew Penney	Director of Pisces Australis Pty Ltd, an Australian registered marine and coastal research and management consultancy based in Canberra. As such, I have an interest in any opportunities in this regard. Principal Investigator on FRDC Project No 2017-180: Design and

Participant	Declared interest
	implementation of an Australian National Bycatch Report: Phase 1 - Scoping Scientific Member of AFMA Tropical Rock Lobster RAG and Small Pelagic Fishery Scientific Panel Member of the AFMA ERA Technical Working Group. No shareholding and hold no positions relating to any other companies, including any fishing companies or industry associations
Dr Miriana Sporcic	Employed by CSIRO, Assessment scientist. Acquiring funding for research purposes
Mr David Stone	Executive Officer for Sustainable Shark Fishing Industry Inc. Declared interests in representing hook and gillnet industry member interests. Declared interest in RBCs
Dr Robin Thomson	Employed by CSIRO, Assessment scientist. Acquiring funding for research purposes PI on close kin project for school shark.
Dr Geoff Tuck	Employed by CSIRO. Involved in Stock assessments. Interest in obtaining funding for future research. Principle investigator on the SESSF stock assessment project.
Presenters	
Mr Dan Corrie	Employed by AFMA, South East Trawl Manager, Coral Sea Fishery Manager. No interests, pecuniary or otherwise.
Dr Roy Deng	Employed by CSIRO, Assessment scientist. Acquiring funding for research purposes
Mr Brodie Macdonald	Employed by AFMA, Gillnet, Hook and Trap, High Seas and Norfolk Is Manager. No interest, pecuniary or otherwise.
Mr Tamre Sarhan	Employed by AFMA. No interest, pecuniary or otherwise.
Dr Shijie Zhou	Employed by CSIRO, Assessment scientist. Acquiring funding for research purposes
Observers	
Dr Mark Bravington	Research interests in the fishery, no pecuniary interests
Ms Florence Briton	PhD student, CSIRO. No interests, pecuniary or otherwise
Dr Geoff Liggins	Cross-jurisdictional research and management interests for DPI NSW, no pecuniary interests.
Dr Veronica Silberschneider	Cross-jurisdictional research and management interests for DPI NSW, no pecuniary interests.
Dr David Smith	**Positions:** AFMA Commissioner Member – National Marine Science Committee Member – Commonwealth Research Advisory Committee Adjunct Professor – Centre for Marine Socio-ecology, IMAS UTas Member, leadership group – FRDC RD&E Strategy 2020-25 Member – Chief Scientist's Expert Group, independent audit of NOPSEMA's consideration of exploration in the Great Australian Bight Member, Steering Committee – FRDC project – SESSF Multi-species Harvest Strategy **Current Projects:** FRDC – *What could Australia's sustainable fisheries production be?*

Participant	Declared interest
Ms Anna Willock	Executive General Manager of Fisheries Management AFMA. No interest, pecuniary or otherwise.
Dr Josh Barrow	Science Officer with Fish Ageing Services responsible for collation, archiving and migration of the yearly otolith age reading and sample registration data as part of AFMA project 2018/0802. No pecuniary interest into the fishery, operational or funding wise.

Attachment 2

Final adopted agenda (items in order of discussion)

Agenda item	*Purpose*
Day one	
Preliminaries	
1. Welcome and apologies	For information
2. Declarations of interest	For action
3. Adoption of Agenda	For action
4. Action Items status	For information
5. SESSF History Document update	For information
6. Update from the RAGs, EWG and MMWG (verbal update)	For information
Fishery Management (part 1).	
19. Research Priorities a. School shark, review the priorities b. Stock structural work c. Close kin broad project	For recommendation
20. TAC Setting Process – Revised Paper including flowcharts for 'review of data adequacy' and 'assessment review and TAC setting'	For recommendation
Review of assessment process	
9. Review of: a. 2019-20 TAC setting process including blue warehou and redfish b. progress on SESSF implementation plan	For information
Data for stock assessments	
10. ISMP reports for quarters 1&2 2019	For information
11. Fish aging services end of financial year report	For information
12. SiDAC update	For information
14. Estimation of shark discard using electronic monitoring	For recommendation

Agenda item	*Purpose*
Day two	
13. Discard rate estimates update – SESSF ISMP discard report	For information
15. MYTAC analysis and data summary	For recommendation
16. Recommended changes to ISMP and SESSF data plans	For recommendation
Rationalising data, research and monitoring	
17. Monitoring and data collection options	For advice
Day three	
SESSF ERA	
7. Review updated ERA results for: a. Otter trawl (CTS) b. Danish seine (CTS) c. Otter trawl (GABT) d. Shark Gillnet (GHAT)	For advice
8. Identification of SESSF ERA triggers	For advice
Fishery Management (part 2)	
18. Presentation: Incorporating the effects of marine spatial closures in risk assessments and fisheries stock assessments	For information
Next meeting and other business	
21. Dates for the Chairs' 2020 meeting	For decision
22. Other business	

Status of Previous Action Items

Complete/Redundant	Underway	Need SESSF RAG advice	Not yet started

Prev No.	Agenda Item / Meeting Date	Action Item	Agency / Person	Timeframe	Progress as of SESSF RAG Meeting August 2019
1	4 SESSFRAG Chairs' 2019	AFMA to consider adding data from NSW, Dr Haddon and Victoria and provide a revised blue-eye trevalla history report to SESSFRAG in August 2019.	AFMA	SESSFRAG Data meeting 2019	Pending – AFMA has considered this and information will be incorporated into the report.
4	4 SESSFRAG Chairs' 2019	AFMA to obtain and include in its database the following data sets: • Great Australian Bight (GAB) and South East Trawl Fishery Independent Surveys • crew collected data (incl. GABT and the GHAT) • historic blue warehou industry collected data	AFMA	As soon as practicable	Underway: FIS collected data – AFMA has all the FIS data and is in the process of adding it to the database. Crew collected data – all data up to June has been received and entered into spreadsheets. Data up to April has been provided to CSIRO, with May/June to follow. AFMA to follow up blue warehou data
7	9 SESSFRAG Chairs' 2019	AFMA and CSIRO to update the document *TAC setting process: Guidelines for provision of data and stock assessment processes*: • Section 1.3 (Presentation of base case and final assessments) and • Include the summary flowcharts 'SESSFRAG review of data adequacy' and 'assessment review and TAC setting' prior to SESSFRAG consideration at the Data meeting in August 2019. Real-life examples to be included for the	AFMA/CSIRO	SESSF RAG data meeting 2019	Complete – revised TAC setting process document at attachment 8 of the SESSFRAG Data meeting 2019 minutes

Prev No.	Agenda Item / Meeting Date	Action Item	Agency / Person	Timeframe	Progress as of SESSF RAG Meeting August 2019
		meeting, possibly gummy shark, to explain the flowcharts to enable participants to work through the process.			
10	9 SESSFRAG Chairs' 2019	Include the Fishery Management Strategy as an agenda item at the next SESSFRAG meeting	AFMA	SESSFRAG data meeting 2019	Underway – Drafting is underway but still in the early stages. AFMA to provide an update when this has progressed further.
11	10 SESSFRAG Chairs' 2019	NSW DPI to provide their Multi-criteria Decision Matrix for prioritising research and monitoring needs to AFMA. AFMA and NSW DPI to discuss further and provide an update to the SESSFRAG 2020 Chairs' Meeting.	Dr Hall – NSW DPI / Mr Day - AFMA	SESSFRAG Chairs' meeting 2020	Underway - NSW DPI have provided the draft
12	10 SESSFRAG Chairs' 2019	SESSFRAG to discuss at the SESSFRAG 2019 Data meeting whether a redesign of the FIS is worthwhile undertaking.	SESSFRAG	SESSFRAG data meeting 2019	Redundant - this was not discussed – the discussion was focussed on whether to undertake a FIS or not.
13	10 SESSFRAG Chairs' 2019	Dr Sporcic to consider whether any learnings from the FIS optimisation work can be applied to improve CPUE standardisation and provide an update to the SESSFRAG 2019 Data Meeting.	CSIRO	SESSFRAG data meeting 2019	Complete – Learnings can be applied
14	10 SESSFRAG Chairs' 2019	AFMA to consider how the outcomes of the discard weight estimate project may be implemented and report to the SESSFRAG 2019 Data Meeting.	AFMA	SESSFRAG data meeting 2019	Complete - AFMA to work with the EM providers to determine how to obtain the discard estimates
17	11 SESSFRAG Chairs' 2019	The Economic Working Group to assess the potential value of the dollars per unit of effort metric as an index. If there is potential, ensure it is considered as part of the FRDC *considering metrics for measuring economic efficiency and productivity in fisheries* project.	Economic Working Group / AFMA management	Economic working group meeting 15-16 April 2019	Underway – the EWG discussed and agreed there could be benefits there is a potential benefit. Action from that meeting that AFMA management work with ABARES and RAGs/MACs
19	14 SESSFRAG Chairs' 2019	Circulate the marine spatial closures in risk assessments presentation to SESSFRAG and present at either SESSFRAG 2019 Data meeting or SERAG in September.	Dr Tuck CSIRO	SESSFRAG data meeting 2019 or SERAG September meeting	Complete
21	15 SESSFRAG Chairs'	AFMA and CSIRO to develop a detailed project proposal for a comparison of GHAT EM and observer data for submission to the ARC / ABARES.	AFMA and CSIRO	September 2019	SESSFRAG to discuss the need for development of this project, recognising that the EM dataset is now independently being used to estimate discards and

Prev No.	Agenda Item / Meeting Date	Action Item	Agency / Person	Timeframe	Progress as of SESSF RAG Meeting August 2019
	2019				a process will be developed to estimate discard lengths in future (see action Item 21 from the SESSRAG Data 2019 meeting).
24	15 SESSFRAG Chairs' 2019	Review, and include, the costs of the stock assessments in the SESSF Research Plan, to allow for an estimate of annual cost in the scheduling table.	AFMA and CSIRO	Data working group meeting	Complete - SESSFRAG decided that it wasn't appropriate to include the costs in the scheduling table of the research plan, however the costs will be provided to SESSFRAG to enable consideration of this aspect
25	15 SESSFRAG Chairs' 2019	Mr Morison to provide AFMA with the 2004 South East Fishery: Fishery Assessment Report for conversion into a datasheet.	Mr Morison	As soon as practicable	Partially complete – Mr Morison provided this and it was sent to SESSFRAG on 3/5/19. Relates to the project '*Review SESSF catch history'.* Suggest waiting for ARC to consider whether this project goes ahead before converting to datasheet.
26	15 SESSFRAG Chairs' 2019	Data exclusion to investigate the effect of biennial sampling to be undertaken during the next gummy shark assessment to determine the impact of biennial data collection by removing every second year of length and age data.	CSIRO – Dr Thomson	During the gummy shark assessment in 2020	Pending – awaiting assessment
27	15 SESSFRAG Chairs' 2019	SESSFRAG to discuss how estimates of natural mortality should be addressed across all Tier 1 assessments at its 2019 Data meeting.	SESSF RAG	SESSFRAG data meeting 2019	Redundant – An international workshop is planned for 2020 to discuss natural mortality. This issue arose because of questions around M in the 2017 orange roughy stock assessment. Orange roughy is scheduled for assessment in 2020 and AFMA is seeking SESSFRAG advice about whether any further work is required on orange roughy M prior to the assessment.

Action Items for SEMAC consideration

No.	Agenda Item / Meeting Date	Action Item	Agency / Person	Timeframe	Progress as of SESSF RAG Meeting August 2019
8	SEMAC 37 AgI 3.6	School shark survivability research project priority rating be reassessed and ranked as a high priority by SESSFRAG	AFMA	SESSFRAG Data Meeting 2019	SharkRAG to consider the priority of the school shark survivability project

Action Items for SERAG consideration

No.	Agenda Item / Meeting Date	Action Item	Agency / Person	Timeframe	Progress as of SESSF RAG Meeting August 2019
11	SERAG Nov 2018 AgI 11	Incorporate data collection for Blue-eye trevalla (seamounts) into the Data Plan	AFMA (Brodie)	Prior to SESSFRAG data meeting 2019	Underway – to go to the SERAG October meeting 2019

Action Items arising from the meeting

No.	Agenda Item / Meeting Date	Action Item	Agency / Person	Timeframe
1	4 SESSFRAG Data 2019	AFMA to provide a copy of Malcolm Haddon's CPUE standardisation report (FRDC 2012/201: '*Improve catch rate standardizations to account for changing in targeting*') to SESSFRAG.	AFMA	As soon as practicable
2	4 SESSFRAG Data 2019	Include an agenda item on CPUE standardisation at the Chairs' meeting 2020, include a presentation from Malcolm Haddon, noting that much of his work has already been implemented. Presentation to focus on clear guidelines on what can be implemented rather than instigate further CPUE analysis.	AFMA	SESSFRAG Chairs' meeting 2020
3	6 SESSFRAG Data 2019	Simon Boag to provide the Terms of Reference (ToR) for the review of the school shark stock assessment to AFMA (Cate Coddington) who will circulate them to SESSFRAG. Chairs to determine if the ToRs should be circulated to their members.	Simon Boag / AFMA	As soon as practicable
4	6 SESSFRAG Data 2019	AFMA to seek advice from the EWG about which KPIs are being adopted and what data are to be collected and presented. Following this, add an information item to the 2020 SESSFRAG Chairs' meeting agenda regarding economic KPIs.	AFMA/Sarah Jennings	SESSFRAG Chairs' meeting 2020
5	7 SESSFRAG Data 2019	The bSAFE2 results and updated methodology to be taken to the individual SESSF resource assessment groups for consideration	SERAG / SharkRAG / GABRAG	October 2019 SERAG meeting / November 2019 SharkRAG meeting / November 2019 GABRAG meeting
6	7 SESSFRAG Data 2019	SERAG to review the downgrading of risk scores for whitefin swellshark from high risk (bSAFE) to low risk (bSAFE2) noting it was recently added to the IUCN red list as a critically endangered species	SERAG	October 2019 SERAG meeting
7	7 SESSFRAG Data 2019	Consider a review, possibly desktop study, to be included in the SESSF research plan to determine which species, or species classes, are	AFMA	As soon as practicable

No.	Agenda Item / Meeting Date	Action Item	Agency / Person	Timeframe
		subject to herding behaviour and how this could be incorporated into the next ERA assessments to account for trawl sweeps and boards		
8	8 SESSFRAG Data 2019	AFMA to further develop the questions in the annual ERA trigger checklist to ensure they are not overly restrictive and inform discussion about the need to undertake a reassessment of the ERA. The updated checklist to be provided to the 2020 SESSFRAG Chairs' meeting	AFMA	SESSFRAG Chairs' meeting 2020
9	9a SESSFRAG Data 2019	A standing item to be included on individual SESSF RAG agendas to consider the reason for any differences between RAG recommendations and Commission TAC determinations.	SERAG / GABRAG / SharkRAG	SERAG / GABRAG / SharkRAG meetings that follow the March Commission meetings (i.e. that determine SESSF TACs)
10	11 SESSFRAG Data 2019	Kyne Krusic-Golub and Geoff Tuck to check how the FIS length/age data was incorporated into the last bight redfish assessment by Malcolm Haddon.	Kyne Krusic-Golub and Geoff Tuck	As soon as practicable
11	11 SESSFRAG Data 2019	Kyne Krusic-Golub and Robin Thomson to develop an ageing plan for 2019-20, particularly with respect to tier 1 species, including pink ling and gummy shark, recognising time and budgeting constraints.	Kyne Krusic-Golub and Robin Thomson	As soon as practicable
12	12 SESSFRAG Data 2019	AFMA to work with the e-log providers to enable the skipper to identify the e-log shot number and provide it to the SiDAC port-sampler.	AFMA	As soon as practicable
13	12 SESSFRAG Data 2019	Seek advice from SERAG/SharkRAG to update the SiDAC data collection plan to include: • the collection of total and partial lengths of school and gummy shark particularly any school sharks larger than 160cm total length (100cm partial length). Gummy shark over 160 TL and 100cm PAR are also important (SharkRAG) • tissue samples of blue eye trevalla for CSIRO close-kin work along with otoliths for ageing by FAS (SERAG). • collection of gummy and school shark samples from automatic longline vessels (SharkRAG).	AFMA / SSIA	October 2019 SERAG meeting / November 2019 SharkRAG meeting

No.	Agenda Item / Meeting Date	Action Item	Agency / Person	Timeframe
14	13 SESSFRAG Data 2019	Paul Burch and Roy Deng to consider including “zeros” into the histograms of observed discards for each species in the discard report.	CSIRO	As soon as practicable
15	13 SESSFRAG Data 2019	Include squid, latchet and ocean jacket, as well as frostfish and king dory, in future SESSF catch and discard for TAC purposes reports.	CSIRO	Before the next catch and discard report
16	13 SESSFRAG Data 2019	Dan Corrie and CSIRO to consider the need for including species catch composition information in future catch and discard reports or as a separate report, noting potential requirements under the MSHS approach.	AFMA / CSIRO	Prior the SESSFRAG Chairs’ meeting 2020
17	13 SESSFRAG Data 2019	To ensure logbook data used to estimate deepwater shark discard rates are appropriate: • Paul Burch and Roy Deng to double check the deepwater shark discard rate estimates and CVs. • Shijie Zhou to ensure the deepwater shark strata definitions are correct.	CSIRO	As soon as practicable / prior to the deepwater shark assessment
18	13 SESSFRAG Data 2019	Establish a discard estimate working group to consider improvements to the current discard calculation method —an agenda item to be included on the SERAG (October) and then SESSFRAG (March). The working group to: • consider more stringent criteria, including CVs, for determining when a discard rate is accepted/rejected. Consider rejecting estimates when three or less shots are observed in a stratum • resolve whether a model-based approach should be used to estimate discard rates into the future given the lower observer coverage across the fishery.	Robin Thomson, Ian Knuckey, George Day, Mike Steer, Paul Burch and Roy Deng	SERAG (October 2019) SESSFRAG (March 2020)
19	13 SESSFRAG Data 2019	CSIRO to include total tonnage of discards in the discard distribution maps in future discard reports.	CSIRO	Prior to the SESSFRAG Data meeting 2020

No.	Agenda Item / Meeting Date	Action Item	Agency / Person	Timeframe
20	14 SESSFRAG Data 2019	AFMA to confer with Ian Knuckey and Robin Thomson to determine the sampling regime for discard lengths to support future discard estimates and, if further advice is needed, seek SharkRAG advice.	AFMA	Prior to the November 2019 SharkRAG meeting
21	14 SESSFRAG Data 2019	Evaluate options for collecting on-board length data for retained and discarded sharks, noting the preference for non-lethal sampling techniques.	Simon Boag / AFMA	SESSFRAG Chairs' meeting 2020
22	15 SESSFRAG Data 2019	Paul Burch to confirm that the deepwater flathead assessment uses data from zone 80 only. Geoff Tuck to perform a sensitivity in the assessment to adding the catches from zone 50.	CSIRO	As soon as practicable / prior to the deepwater shark assessment
23	15 SESSFRAG Data 2019	Ensure that length and age information from the GAB Danish vessel is collected (ISMP and crew collected) to ensure that Danish seine can be treated as a separate fleet in future deepwater flathead stock assessments (noting this method accounts for about 10 per cent of the catch and has been increasing).	CSIRO/GABRAG	As soon as practicable
24	15 SESSFRAG Data 2019	As part of the work required under action item 18, consider whether the 2017 discard rate for mirror dory east (2% and CV of 52%) should be used instead of the 2018 estimate (12% and CV of 188%).	Discard estimate working group	October 2019
25	15 SESSFRAG Data 2019	For the 2019 flathead assessment, CSIRO to undertake a sensitivity test to include/exclude tiger flathead catches in the western zones. CPUE standardisation and current base case to remain the same.	CSIRO	SESSFRAG Chairs' meeting 2020
26	15 SESSFRAG Data 2019	For tier 5 species – including deepwater shark west –an annual effort over time plot to be included in the report enable the fishing trend to be considered. The effort plot is to be compared with a plot of CPUE in the CPUE standardisation report.	CSIRO	Prior to the Commission meeting 2019 that considers assessments
27	15 SESSFRAG Data 2019	Tamre Sarhan to check observer data relating to anomalously large overall size for John dory in 2018.	AFMA	As soon as practicable
28	15	Simon Boag to provide Cate Coddington with the details of the sunken vessel that sank in the royal red prawn fishing grounds approximately 18 months ago for incorporation into the SESSF history document.	Simon Boag / AFMA	November 2019

No.	Agenda Item / Meeting Date	Action Item	Agency / Person	Timeframe
	SESSFRAG Data 2019			
29	15 SESSFRAG Data 2019	Cathy Dichmont, as Chair on behalf of the RAG, to send a strong letter to the AFMA Commission highlighting the issue of increasing catch of school whiting by NSW. Noting that the issue is relevant for other shared stocks, the letter should focus on catch and cost sharing arrangements, the impact on Commonwealth SFR holders, and the potential impact on the stock of exceeding the RBC. George Day and Dan Corrie to provide a draft for the Chair to consider: members to be provided with a copy.	Cathy Dichmont (Chair)	November 2019 Commission meeting
30	15 SESSFRAG Data 2019	AFMA to write to Natalie Moltschaniwskyj at NSW DPI regarding involvement in the Tier 4 stock assessment for silver trevally. It is likely that Ash Fowler (NSW DPI) will be interested in being heavily involved.	AFMA	November 2019
31	15 SESSFRAG Data 2019	SERAG to consider including a non-extractive (e.g. open trawl net with underwater camera) survey in the 2021-22 SESSF research statement to establish an index of abundance for eastern gemfish.	SERAG	December 2019 SERAG meeting
32	15 SESSFRAG Data 2019	SERAG to discuss options for undertaking a stock assessment of eastern gemfish in 2021 using outcomes from potential survey results.	SERAG	December 2019 SERAG meeting
33	15 SESSFRAG Data 2019	SERAG and SharkRAG to consider the data for the remaining rebuilding species that were not discussed during the SESSFRAG data meeting.	SERAG / SharkRAG	October & December 2019 SERAG meetings / November 2019 SharkRAG meeting
34	15 SESSFRAG Data 2019	Dan Corrie to check that vessels with suspicious minimum and maximum depth records are accurately recording depth and not using default records in e-log software.	AFMA	As soon as practicable
35	16 SESSFRAG Data 2019	Kyne Krusic-Golub to: • contact Rudy Kloser/CSIRO to determine the number of orange roughy otoliths collected during the AOS survey and	Fish Ageing Services	As soon as practicable

No.	Agenda Item / Meeting Date	Action Item	Agency / Person	Timeframe
		• provide the SESSFRAG details on ISMP collected orange roughy samples.		
36	16 SESSFRAG Data 2019	Robin Thomson to finalise the cost of her school shark close kin update, accounting for the 500 aged samples per annum that is already funded by AFMA.	CSIRO	As soon as practicable
37	16 SESSFRAG Data 2019	SERAG to consider including whether species size-depth relationship applies to all areas, seasons, gears and/or combinations of those in the 2020-21-22 research plan, and if port sampling can be used for any of those factors.	SERAG	December 2019 SERAG meeting
38	17 SESSFRAG Data 2019	AFMA to undertake out-of-session work on the monitoring and data collection scenario options and provide to SEMAC, ensuring; • consultation with SESSFRAG prior to providing to the SEMAC • Consideration of the relative advantages and disadvantages of monitoring and data collection methods • Refinement of the *relative advantages and disadvantages of monitoring and data collection methods* table to capture the collective benefits across methods and a matrix of supplementary and complementary factors. • potential creation of a Venn diagram to illustrate the connections between the methods.	AFMA / SESSFRAG	February 2020 SEMAC meeting
39	17 SESSFRAG Data 2019	AFMA to investigate the potential of achieving cost saving from activities including: extending the scheduling of certain assessments, sharing costs of assessments with other jurisdictions, implementing the CSIRO tables within the Data warehouse, lessening cost recovery from industry and changing the scheduling of observers.	AFMA	SESSFRAG Chairs' meeting 2020
40	18 SESSFRAG Data 2019	SESSFRAG to discuss chapters from *incorporating the effect of marine spatial closure in risk assessments and fisheries stock assessments* not covered by the presentation at SESSFRAG Data meeting 2019, including Miriana Sporcic to present the chapter about the *simulation study on the effect of CPUE resource standardisation with and without marine closures*.	SESSFRAG / Miriana Sporcic	SESSFRAG Chairs' meeting 2020

No.	Agenda Item / Meeting Date	Action Item	Agency / Person	Timeframe
41	19 SESSFRAG Data 2019	SharkRAG to consider the value of undertaking the school shark survivability project.	SharkRAG	November 2019 SharkRAG meeting
42	19 SESSFRAG Data 2019	AFMA to update the logbooks to include 'live' status of released school sharks	AFMA	As soon as practicable
43	20 SESSFRAG Data 2019	AFMA to redraft Section 1.4 '*Publication of final assessments*' of the TAC setting process guidelines in relation to access to data and control files held by assessment providers and provide the updated section to SESSFRAG to consider.	AFMA	As soon as practicable
44	20 SESSFRAG Data 2019	George Day and Cathy Dichmont to discuss the content of the flow diagrams in the draft TAC setting guidelines. The information contained in the flow diagrams to be included in the Harvest Strategy Framework, and taken back to SESSFRAG for consideration.	AFMA	As soon as practicable

MYTAC species and species being assessed

Species	Stock assessment this year?	Rebuilding Strategy?	MYTAC Year	Stock biomass (or proxy) above TRP?	TAC < 50% caught?	TAC <50% caught for operational reasons only?	Review Fishery Indicators?	Comments
Alfonsino	No	No	5th of 3yr MYTAC	Yes (2013) $F_{cur} < F_{targ}$	1% 12 t	Unsure	Yes	Pg 9 No scheduled assessment (catch dependant) Last assessed in 2013: indicated stock had not been greatly impacted by fishing. Some effort by trawl in 2019 but could not find fish. Catch: 2018 – 12 t, 2019 – 0 t No biologicals since 2013
Bight Redfish	Yes	No	4th of 5yr MYTAC	No (2015) $63\%B_0$	25%	Unsure	Yes	Pg 242 Assessment for Bight redfish was moved forward due to a significant change in size distribution with fewer larger fish and a continuing decline in FIS catch rates. GABIA have provided information on operational issues associated with the fishery that may impact the stock assessment (**Attachment B**)
Blue eye trevalla	No	No	1st of 3yr MYTAC	No (2018) (Slope) $C_{targ} = 1.22$ $C_{lim} = 0.512$ **$C_{rec} = 0.999$**	75% 377 t	-	Yes	Pg 86 Next Assessment 2021 Length frequency distribution skewed to large fish, very few small fish. 10 samples

Species	Stock assessment this year?	Rebuilding Strategy?	MYTAC Year	Stock biomass (or proxy) above TRP?	TAC < 50% caught?	TAC <50% caught for operational reasons only?	Review Fishery Indicators?	Comments
				(Seamount) 33%B_0, highly uncertain.				from trawl, rest from hook: 4 vessels, all Jan 2018.
Blue grenadier	No	No	1st of 3yr MYTAC	Yes (2018) 122%B_0	19% 1,807 t	Yes Vessel capacity	No	Pg 93
Blue warehou	No	Yes	-	-	-	-	SERAG to review under the rebuilding strategy	Pg 100
Deepwater Flathead	Yes	No	3rd of 3yr MYTAC	No (2016) 45%B_0	43%	Unsure	Yes	Pg 249 GABIA have provided information on operational issues associated with the fishery that may impact the stock assessment (see Attachment B) CSIRO have identified issues with records of deepwater flathead in the east, and records of flathead (basket) in the west (Attachment C)
Deepwater shark - east	No	No	1st of 3yr MYTAC	No (2018) C_{targ} = 1.159 C_{lim} = 0.483 **C_{rec} = 0.533**	71% 19 t	-	Yes	Pg 230 Next assessment 2021. CSIRO have depth restrictions for deepwater shark (600-1500m) assessment purposes, but those are not used for quota deduction purposes. *Should CSIRO modify the deepwater shark strata to be consistent with the quota deduction in the fishery and not include*

Species	Stock assessment this year?	Rebuilding Strategy?	MYTAC Year	Stock biomass (or proxy) above TRP?	TAC < 50% caught?	TAC <50% caught for operational reasons only?	Review Fishery Indicators?	Comments
								depth for reporting and stock assessment purposes?
Deepwater shark -west	No	No	1st of 3yr MYTAC	Yes (2018) C_{targ} = 0.607 C_{lim} = 0.253 **C_{rec} = 0.729**	28% 79 t	Unsure	Yes	Pg 236 Next assessment 2021.
Elephant Fish	Yes	No	Single yr TAC	Yes (2018) C_{targ} = 0.844 C_{lim} = 0.422 **C_{rec} = 0.866**	40% 51 t	Yes Low value	Yes	Pg 276 Due to difficulties in undertaking a Tier 4 assessment because of high discard rates, SESSFRAG recommended elephant fish be assessed using a Sustainability Assessment of Fishing Effects (SAFE). SAFE (2019) $F_{CUR} < F_{MSM}$, **Low Risk** SharkRAG to set an RBC for 2020-21 season.
Flathead	Yes	No	3rd of 3yr MYTAC	No (2016) 42%B_0	74% 2,039 t	-	Yes	Pg 16 CSIRO identified issues with records of deepwater flathead in the east, and of flathead (basket) in the west (**Attachment C**) CSIRO have provided clarification on which CAAB codes are used in the tiger flathead Tier 1 assessment (**Attachment D**)
Gemfish – east	No	Yes	-	-	-	-	RAG must review under the rebuilding strategy	Pg 114

Species	Stock assessment this year?	Rebuilding Strategy?	MYTAC Year	Stock biomass (or proxy) above TRP?	TAC < 50% caught?	TAC <50% caught for operational reasons only?	Review Fishery Indicators?	Comments
Gemfish - west	Yes	No	3rd of 3yr MYTAC	No (2016) C_{targ} = 1.182 C_{lim} = 0.429 **C_{rec} = 0.938**	36% 79 t	Unsure	Yes	Pg 121 SERAG to undertake tier 4 assessment on CTS component of the stock (Zone 50).
Gummy shark	No	No	3rd of 3yr MYTAC Next assessment 2020	Yes (2016) All three stocks above B_{targ}	90% 1,682 t	-	Yes	Pg 263 Next assessment 2020. Assessment postponed due to lack of biological data.
Jackass morwong	No	No	1st of 3yr MYTAC	No* (2018) *East: 35%B_{1988} West: 68%B_0	34% 186 t	Unsure	Yes	Pg 23 Questions have been raised about the quality of the CPUE data in the West. FIS indices decreasing over last 5 surveys
John dory	No	No	2nd of 3yr MYTAC	Yes (2017) $F_{CUR} < F_{SPR}40$	22% 62 t	Unsure	Yes	Pg 37 John dory are not a target species in the fishery and substantially under-caught during the current MYTAC period
Mirror Dory	Yes	No	Single yr TAC	No (2018) C_{targ} = 1.141 C_{lim} = 0.475 **C_{rec} = 0.723**	43% 117 t	Unsure	Yes	Pg 142
Ocean perch	No	No	2nd of 3yr MYTAC	Yes C_{targ} = 0.928	77% 195 t	-	No	Pg 156 Ocean perch (inshore and offshore) are considered under a single TAC due to

Species	Stock assessment this year?	Rebuilding Strategy?	MYTAC Year	Stock biomass (or proxy) above TRP?	TAC < 50% caught?	TAC <50% caught for operational reasons only?	Review Fishery Indicators?	Comments
				C_{lim} = 0.464 **C_{rec} = 0.966**				separate TACs not being easy to administer, as the species are separated by depth rather than geographic distribution
Orange roughy – south	No	Yes	2nd of a 3 yr MYTAC (Pedra Branca)	N/A Based on Eastern Assessment	94% 79 t	-	RAG must review under the rebuilding strategy	Pg 193
Orange roughy – east	No	No	2nd of 3 yr MYTAC	No 33%B_0	89% 856 t	-	Yes	Pg 180
Orange roughy – west	No	Yes	-	-	-	-	RAG must review under the rebuilding strategy	Pg 187
Orange roughy – Cascade Plateau	No	No	Single year TAC	Yes (2009) 64%B_0	0%	Yes Not fished in 2018	No	Pg 200
Orange roughy – Albany and Esperance	No	Yes	-	-	-	-	RAG must review under the rebuilding strategy	Pg 206
Oreo smooth – Cascade	No	No	Long term TAC (catch dependent)	Yes (2009) C_{targ} = 0.499 C_{lim} = 0.199 **C_{rec} = 1.358**	0%	Yes Not fished in 2018	No	Pg 219 When last assessed, CPUE had been extremely variable and the fluctuations were considered to not be indicative of changes in stock status
Oreo smooth – other	Yes	No	4th of 3yr MYTAC	-	82% 81 t	-	Yes	Pg 224 SERAG to assess using Tier 5

Species	Stock assessment this year?	Rebuilding Strategy?	MYTAC Year	Stock biomass (or proxy) above TRP?	TAC < 50% caught?	TAC <50% caught for operational reasons only?	Review Fishery Indicators?	Comments
Oreo basket	No	No	2nd of 3yr MYTAC	No (2017) C_{targ} = 0.441 C_{lim} = 0.184 **C_{rec} = 0.4297**	41% 82 t	Unsure	Yes	Pg 213
Pink ling	No	No	1st of 3yr MYTAC	No* (2018) *East: 30%B_0. West: 84%B_0	79% 952 t	-	Yes	Pg 128
Redfish	No	Yes	-	-	-	-	RAG must review under the rebuilding strategy	Pg 44
Ribaldo	No	No	2nd of 3yr MYTAC	Yes (2017) C_{targ} = 0.359 C_{lim} = 0.179 **C_{rec} = 0.798**	23% 107 t	Yes Not targeted	No	Pg 173 Industry comments at declining indicators workshop suggested under catch may be because of closures over a large areas of the stock distribution
Royal red prawn	No	No	2nd of 3yr MYTAC	Yes (2017) C_{targ} = 1.069 C_{lim} = 0.445 **C_{rec} = 1.111**	35% 147 t	Yes Little targeting	No	Pg 51
Saw shark	No	No	2nd of 3yr MYTAC	Yes (2017) C_{targ} = 0.724 C_{lim} = 0.362 **C_{rec} = 0.944**	38% 179 t	Unsure	Yes	Pg 270 Low economic value

Species	Stock assessment this year?	Rebuilding Strategy?	MYTAC Year	Stock biomass (or proxy) above TRP?	TAC < 50% caught?	TAC <50% caught for operational reasons only?	Review Fishery Indicators?	Comments
School shark	No	Yes	-	-	-	-	RAG must review under the rebuilding strategy	Pg 256
School whiting	No	No	2nd of 3yr MYTAC	No (2017) 47%B_0	59% 537 t	-	Yes	Pg 57
Silver trevally	No	No	2nd of 3yr MYTAC	No (2017) C_{targ} = 0.903 C_{lim} = 0.376 **C_{rec} = 0.672**	2% 8 t	Unsure	Yes	Pg 64 Assessed by NSW as 'transitional depleting'
Silver warehou	No	No	1st of 3yr MYTAC	No (2018) 31%B_0	54% 352 t	-	Yes	Pg 166

Data option scenarios

Scenario	Description	Apparent gains and losses	SESSFRAG comments
Current	This approximates the current, data collection and assessment practices in the SESSF CTS, with 3.4% ISMP onboard and 2.6% ISMP port monitoring, assuming a FIS survey every 2 years, an orange roughy acoustic survey every 3 years, stock assessments conducted on average every 3 years, ERAs every 5 years, no EM and no industry sampling. These correspond closely with recommended practices by the SMARP project (Knuckey *et al*. 2017). Alternative scenarios were developed by varying selected components of the current data collection and assessment arrangements.	These current arrangements have been considered to date adequate to provide the information required for stock assessment of quota species and reporting purposes, provided that the limited ISMP observer coverage is adequately stratified to be representative of key spatio-temporal strata in the CTS. However, it is not clear that this provides adequate data to report non-commercial discards as required under the revised Commonwealth Bycatch Policy, nor is it adequate to get accurate estimates for protected species interactions.	This meets current needs for accreditation under the EPBC Act including export approval The fishery is likely to move towards electronic monitoring – its implementation will increase costs, particularly in the short term.
1	Scenarios 1 and 2 provide for a substantial increase in ISMP onboard observer coverage above current levels, to 10%. With this increased observer coverage providing most data components, neither scenario includes any ISMP port sampling; EM monitoring or industry sampling. Scenario 1 retains FIS surveys every 2 years.	Together with logbooks, this increase in coverage is expected to provide adequate data to meet all stock assessments for quota species and reporting requirements, and potentially for increased reporting requirements for non-commercial species under the revised Commonwealth Bycatch Policy. Retention of FIS surveys is expected to provide reliable indices of abundance for at least the top three or four species caught in the CTS. It is unclear whether	Has a high cost but coverage still not adequate to give precise estimates of rare species interactions, although would be better, Addition of EM would increase coverage and precision of estimates, provided the species can be seen on footage. To provide a high enough certainty there would need to be 50 per cent coverage by observers.

Scenario	Description	Apparent gains and losses	SESSFRAG comments
		an estimate of protected species would be adequate, particularly for those that are rare. These two components result in this being the most expensive of the annual scenarios explored, but with likely significant gains in information.	
2	Scenario 2 provides for a substantial increase in ISMP onboard observer coverage above current levels, to 10%. With this increased observer coverage providing most data components, neither scenario includes any ISMP port sampling; EM monitoring or industry sampling. No FIS survey. (Note: same specifications as Scenario 1, except no FIS survey).	This scenario provides the same increased observer data collection offered by Scenario 1, but does not provide fishery-independent indices of abundance derived from FIS surveys.	Has a high cost but coverage still not adequate to give precise estimates of rare species interactions, although would be better, Addition of EM would increase coverage and precision of estimates, provided the species can be seen on footage. To provide a high enough certainty there would need to be 50% coverage by observers.
3	Scenario 3 retains ISMP onboard and port monitoring at current levels, but add EM coverage at a 10% analysis rate to supplement information provided by observers. Retains FIS survey every two years.	EM coverage under this scenario is expected to improve logbook reports of large TEP species. Improved logbook reporting as a result of EM monitoring could provide information on discards (as has occurred in the GHaT), but this is yet to be demonstrated for the CTS. Retention of FIS surveys is expected to provide reliable indices of abundance for at least the top three or four species caught in the CTS.	Addition of EM coverage will increase the overall 'coverage' level, but only for species that can be observed on EM footage. EM is expected to result in improvement in logbook reporting. Some observer coverage is probably required to monitor species not able to be monitored by EM. EM scenarios untested and so could not be expected to replace observer programs in short term - until it has been proven - varies with data types - should work for big TEP species
4	Scenario 4 retains ISMP onboard and port monitoring at current levels, but add EM coverage at a 10% analysis rate to	This scenario will provide the same EM monitoring benefits as Scenario 3, but does not provide fishery-independent	Addition of EM coverage will increase overall 'coverage' level, but only for species that can be observed on EM footage. EM is expected to improve logbook reporting.

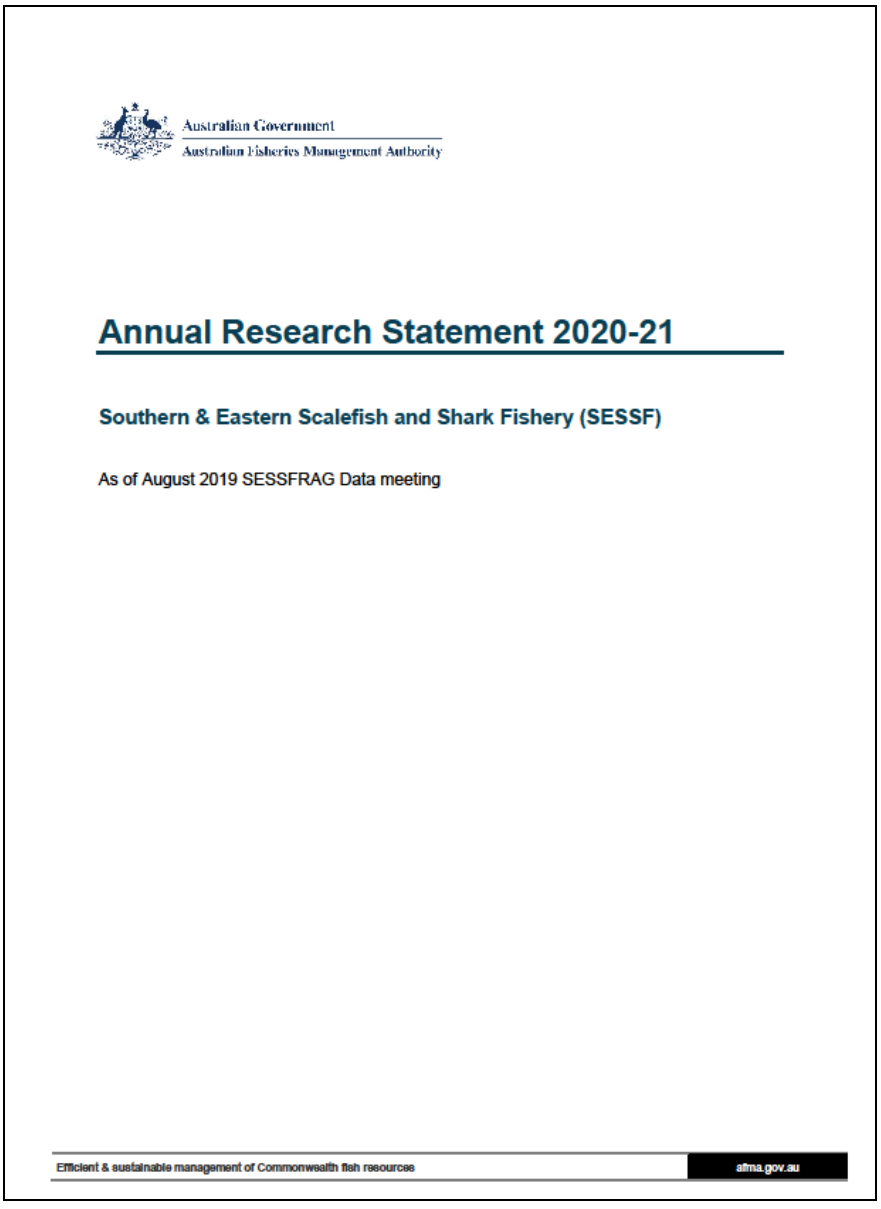
Scenario	Description	Apparent gains and losses	SESSFRAG comments
	supplement information provided by observers. No FIS survey. (Note: same specifications as Scenario 3, except no FIS survey).	indices of abundance derived from FIS surveys.	Some observer coverage is probably required to monitor species not able to be monitored by EM. EM scenarios untested and so could not replace observer programs in short term - until proven - varies with data types - should work for big TEP species
5a	Scenario 5 is a two-year cycle in which ISMP coverage and FIS surveys alternate every two years. Scenario 5a is identical to Scenario 4, and specifies year 1 of the 2 year cycle. ISMP onboard and port coverage are retained at current levels in year 1 and no FIS survey is conducted.	Scenario 5 retains the information derived from current ISMP monitoring in year 1 only, effectively halving the current observer coverage levels, but retaining FIS surveys every two years. This scenario provides reduced ISMP-related costs in alternate years, to allow FIS surveys to be funded. Reduced and biennial observer coverage will likely result in poorer estimation of discards and bycatch species composition in some spatio-temporal strata, while EM coverage is expected to improve logbook reports of large TEP species. Retention of FIS surveys is expected to provide reliable indices of abundance for at least the top three or four species caught in the CTS.	Should be MSE tested to evaluate effect of losing ISMP data every second year, but after multispecies HS project. Alternation of observer coverage between years will increase the difficulty in meeting biological data collection targets - would need to be supplemented by crew collected samples, again increasing costs. Alternation of observer coverage will result in similar manpower retention problems to conducting assessments only every few years. Observer coverage at low levels will provide imprecise estimates (depending on rate of interaction), but could be supplemented by EM to increase coverage. EM scenarios untested and so could not be expected to replace observer programs in short term - until it has been proven - varies with data types - should work for big TEP species
5b	Scenario 5b does not include any ISMP coverage, and implements a FIS survey in year 2.		
6a	Scenario 6 is a 3-year cycle with reduced observer coverage in years 1 and 2. Under Scenario 6a no ISMP coverage is implemented for the CTS Trawl sector in years 1 and 2, but onboard coverage is retained at about current levels for the Danish seine fleet. In addition to 10% EM analysis, Industry-run sampling programs are implemented to collect length and age	This scenario transfers reliance from ISMP observers to industry sampling for collection of biological samples. This requires labelling and storage of samples at sea for later processing on shore, limiting the degree to which industry sampling would be able to provide estimates of bycatch composition. It is expected that improved logbook	Would need MSE testing (after multi-species HS project). Alternation of observer coverage between years will increase the difficulty in meeting biological data collection targets - would need to be supplemented by crew collected samples, again increasing costs. Alternation of observer coverage will result in similar manpower retention problems to conducting assessments only every few years.

Scenario	Description	Apparent gains and losses	SESSFRAG comments
	samples for the main target species. Does not include FIS surveys.	reporting as a result of EM monitoring will improve reported interactions with large TEP species, but improved logbook recorded discards of quota species is yet to be demonstrated for the CTS. Does not provide fishery-independent indices of abundance derived from FIS surveys.	Observer coverage at low levels will provide imprecise estimates (depending on rate of interaction), but could be supplemented by EM to increase coverage. no observers will jeopardise species lists for ERAs EM scenarios untested and so could not be expected to replace observer programs in short term - until it has been proven - varies with data types - should work for big TEP species Crew collection of biological data is desirable but is more challenging in the CTS - many more species, ports and strata to sample, but would add cost
6b	Scenario 6b includes 5% ISMP onboard observer coverage in year 3 (Danish seine included), in addition to EM and industry sampling, to provide three-yearly snapshots of discards and bycatch species composition. Does not include FIS surveys.		
7a	Scenario 7 is a 3-year cycle, with all assessments and related data analysis activities restricted to year 3. Under Scenario 7a, no assessments are conducted in years 1 and 2, and there is also no methods development, CPUE standardisation or ageing analysis done. 10% EM analysis and industry sampling programs are implemented but there is no ISMP coverage and no FIS surveys are conducted.	Without ISMP coverage and FIS surveys, and particularly when no data analysis or assessments are done, Scenario 7 offers substantial cost savings in years 1 and 2 and an overall reduced cost. This scenario relies entirely on industry sampling, EM monitoring and logbook reporting for all data components. No data analysis will be available in years 1 and 2 to evaluate triggers and breakout rules.	Absence of observers jeopardises data for discards and ERAs. Will lose data analyses and indicators review (e.g. CPUE standardisations, discard estimates, sampling coverage analysis, MYTAC breakout analyses). Would need to be MSE tested, but after multi-species HS project. EM scenarios untested, could not replace observer programs until it has been proven - varies with data types - should work for big TEP species Doing assessments only every three years could jeopardise continuity of assessment methodology updates and data preparation and review Crew collection of biological data is desirable but is more challenging in the CTS - many more species, ports and strata to sample, but would add cost
7b	Under scenario 7b all stock assessments are conducted in year 3, together with all of the data analysis required to support these assessments. An orange roughy acoustic survey is run in one of the 3 years, assumed here to also be conducted in year 3.		

Attachment 7

Revised Annual research statement

Double-click icon to open



Australian Government
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Annual Research Statement 2020-21

Southern & Eastern Scalefish and Shark Fishery (SESSF)

As of August 2019 SESSFRAG Data meeting

Efficient & sustainable management of Commonwealth fish resources

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Annual Research Statement 2020-21

Southern & Eastern Scalefish and Shark Fishery (SESSF)

As of August 2019 SESSFRAG Data meeting

Southern and Eastern Scalefish and Shark Fishery Annual Research Statement for 2020-21

This Southern and Eastern Scalefish and Shark Fishery (SESSF) Annual Research Statement was developed by AFMA, in consultation with the SESSF Resource Assessment Group (SESSFRAG), South East Resource Assessment Group (SERAG) and the South East Management Advisory Committee (SEMAC). It identifies areas of high priority research for both AFMA and potential FRDC funding in 2020-21 and will be presented to the AFMA Research Committee (ARC) for consideration at their October 2019 meeting as part of the 2020-21 funding round.

AFMA funding in 2020-21 - AFMA Research Committee (ARC)

Title	Objectives and component tasks	Evaluation		
		Total cost ($) (approx. only)	Priority/ ranking	Feasibility
RESEARCH UNDERWAY OR COMPLETED				
Integrated Scientific Monitoring Program (ISMP)	AFMA observer program, logbooks	$600k (funded by the Fishery, not ARC)	Essential	High
Fish Ageing for SESSF quota species (project **170802**) - **3 year project ending 2019/20 (31 May 2020)**	Undertake fish ageing for the SESSF to support stock assessments	Total project cost $698,529 ($242,530 2017/18, $224,630 2018/19 and $231,369 2019/20) – Cwlth Trawl 65%; GHAT 25%; GAB 10%)	Essential	High
SESSF Stock Assessments 2018-2020 (project **170824**) – **2 year project ends in 2019/20 (31 May 2020)**	Provide quantitative and qualitative species assessments in support of the five SESSFRAG assessment groups, including RBC calculations within the SESSF harvest strategy framework	Two year project commencing in 2018/19 and finishing in 2019/20		
SESSF Stock Assessment 2019-20 to 2020-22	Provide quantitative and qualitative species assessments in support of the five SESSFRAG assessment groups, including	Three year project (Total cost $1.255m)		

Title	Objectives and component tasks	Evaluation		
		Total cost ($) (approx. only)	Priority/ ranking	Feasibility
(project **190800**) – **3 year project ending in 2021/22 (31 May 2022)**	RBC calculations within the SESSF harvest strategy framework	2019/20 $50k 2020/21 $503,575 2021/22 $701,667		
Analysis of Electronic Monitoring Data (project **170803**) -	A comparison of weights recorded by operators (logbook) and weights estimated by AFMA observers against piece counts recorded by electronic monitoring in order to establish discard weight estimates from piece counts using electronic monitoring. Investigating obtaining length data from electronic monitoring.	Two year project commencing 2017/18 (total cost $81,440) completed in 2018/19	High	High
GHAT CPUE calculation methodology (project 170826)	Currently CPUE for gillnet-caught species is calculated on a kilogram per shot basis. Given the change to net length restrictions, the RAG has identified a strong need to change gillnet CPUE calculations: from catch by shot to catch by metres of net set to better account for zero shots.	$60,715k 2018/19	Essential	High
NEW IDENTIFIED RESEARCH NEEDS FOR 2020-21				
SESS Fishery Independent Survey	To conduct a winter survey which will provide further points in the times-series of fishery independent survey (FIS) indices of abundance. The resulting FIS data series will be included in stock assessments of target species and time series analysis of major by-product and by-catch species. The FIS also provides time series information on the spatial and temporal distribution of a large number of non-commercial fish species and a platform from which biological information (length, sex, maturity, age etc) can be collected in a systematic way from these species.	Approx $650k (Did not proceed in 2018). FIS last occurred in 2016/17	Essential	High

Title	Objectives and component tasks	Evaluation		
		Total cost ($) (approx. only)	Priority/ ranking	Feasibility
Continued Close Kin Mark Recapture sampling and analysis for school shark	Continue close kin sampling and analysis for school shark as the primary indicator of abundance for this species.	Low/Medium	Essential	High
Fish ageing for SESSF quota species	Undertake fish ageing for the SESSF to support stock assessments for the period 2020/21 to 2022/23.	Total project cost around $700k over three years	Essential	High
Stock assessments for identified species in Table 1 below (subject to changes identified by the relevant resource assessment group and agreed by AFMA) in the SESSF in 2021 (using data to 2020) and 2022 (using data to 2021)	The annual assessment presents fishery statistics and catch at size/age data and synthesises existing stock assessment information for the key target species of the SESSF. This is a requirement of the SESSF Harvest Strategy.	$200k approx. (total project cost over three years - $900k approx.)	Essential	High
Review SESSF catch history	There is a need to finalise documentation of historical SESSF catch histories started by M Koopman and continued by N Klaer. *Initial Scope*	$5k	Medium	Medium

Title	Objectives and component tasks	Evaluation		
		Total cost ($) (approx. only)	Priority/ ranking	Feasibility
	The first step will be to establish the difference between catch data generated by Neil Klaer and those in the Fishery Assessment Reports (Smith & Wayte) to establish the extent of the issue with a focus on Tier 1 species with other species done in a serendipitous manner. Noting some species such as school whiting and redfish may have other databases that may be more relevant than the FAR. Following this, a proposal for further work would be prepared.			
Examination of data acquired through electronic monitoring, logbooks and on board observers (gillnet)	Since the introduction of electronic monitoring (EM) in the Gillnet, Hook and Trap Sector, and more recently as part of the trial of EM in the Commonwealth Trawl Sector there has been overlap of data collected by onboard observers, EM coverage and logbooks. At its 2018 Data Meeting, SESSFRAG prioritised the need to review and compare the data acquired through the various sources, with a particular focus on discard estimates and catch composition A comparison of effort (net length) might also be feasible by comparing logbook data to EM footage (using net rotations to estimate length)	Medium	High	High

Title	Objectives and component tasks	Evaluation		
		Total cost ($) (approx. only)	Priority/ ranking	Feasibility
Examination of data acquired through electronic monitoring, logbooks and on board observers (CTS)	Since the introduction of electronic monitoring (EM) in the Gillnet, Hook and Trap Sector, and more recently as part of the trial of EM in the Commonwealth Trawl Sector there has been overlap of data collected by onboard observers, EM coverage and logbooks. At its 2018 Data Meeting, SESSFRAG prioritised the need to review and compare the data acquired through the various sources, with a particular focus on discard estimates and catch composition.	Medium	Low Pending outcomes of CTS trial	High
Blue-eye Close-Kin	A scoping study to assess close-kin as a risk assessment approach for blue-eye trevalla. A scoping document, as provided to SESSFRAG Chair's meeting Feb 2019, is attached here.	Low ($48k)	High	High
SESSF species stock structure desktop review	To better reflect stock structure and assist reducing complex management arrangements particularly during the progression of the regionalisation of quota SFRs. Commence the study with pink ling, the study could be broadened to anything that could have an east/west split including; blue warehou, jackass morwong, ocean perch and mirror dory.	Low	High	High

Cost

- High: >$200,000
- Medium: $100,000 - $200,000
- Low: <$100,000

Management priority categories

- Essential
- High
- Medium
- Low

Feasibility categories

- High
- Medium
- Low

FRDC funding in 2020-21 - Commonwealth Research Advisory Committee (ComRAC)

Title	Objectives and component tasks	Evaluation		
		Total cost (approx. only)	Priority/rank	Feasibility
APPROVED RESEARCH UNDERWAY OR COMPLETED				
Understanding factors influencing under-caught TACs, declining catch rates and failure to recover for many quota species in the SESSF (**FRDC project number 2016-146**)	Determine why some TACs in the SESSF are under caught and propose options to resolve this where possible Investigate the decline or lack of recovery of low biomass stocks given periods of low catches and expected recovery (eg environmental shift, problems with assessment, loss of biomass signal in obtainable data, violation of assumption of stability in biological characteristics of stocks Project should consider incorporation of Atlantis modelling.	Funded 2016/17 ComRAC funding ($250k set aside) Project completed in 2018	High – Top priority	High
A re-examination of underlying model assumptions and resulting abundance indices of the Fishery Independent Survey (FIS) in Australia's SESSF **(FRDC project 2017-010)**	1. re-examine some of the underlying assumptions of the survey; 2. update data that conditions the model and find efficiencies in sampling design; and 3. use a data simulation exercise to examine the utility of the estimates given the process and sampling errors that have been observed.	$92,121 Draft final report achieved and final report was due late July 2019		
Empirical investigation of demand conditions and dynamics in the South East fishery (**FRDC project 2018-017**).	Improved policy, management and industry performance through better understanding of key market relationships, demand conditions and price formation. Estimated completion mid-2019.This project is funded by the Human Dimensions Research subprogram of the FRDC	$146,216 Commenced in July 2018 and is due to finish in 2019.	High?	High

Title	Objectives and component tasks	Evaluation		
		Total cost (approx. only)	Priority/rank	Feasibility
Implementation workshop for the effective adoption of the outcomes from the SESSF Declining Indicators project (**FRDC project 2018-077**)	1. Drawing together, evaluating and developing a prioritised list of actions from the SESSF from a number of interrelated projects that have, or are close to being, finalised. Primarily the Declining Indicators project (FRDC 2016-146) and SESSF Monitoring and Assessment Review Project (FRDC 2014/203) 2. Informing the project team of FRDC proposed project Development and evaluation of multi-species harvest strategies in the SESSF (FRDC 2018-021) about key priorities and preferred approaches relevant to the development of a revised harvest strategy. 3. Providing information that will inform a SESSF data needs workshop, to be organised and funded by AFMA, expected to be held in February and March 2019. 4. Effectively communicating agreed priorities for the fishery across industry and broader SESSF stakeholders to promote awareness, understanding and acceptance.	$34,000 Due to be completed in 2019	High	High
Development and evaluation of multispecies harvest strategies in the SESSF (**FRDC project 2018-021**)	1. To develop and evaluate multi-species harvest strategies, including reference points and decision rules. 2. To evaluate future monitoring and assessment options identified in the SESSF Monitoring and Assessment Research Project. 3. To develop a process and set of design principles for multi-species harvest strategies.	$464,973 Commenced October 2018 and is due to finish in October 2020	High	High

Title	Objectives and component tasks	Evaluation		
		Total cost (approx. only)	**Priority/rank**	**Feasibility**
An updated understanding of Eastern School Whiting stock structure and improved stock assessment for cross jurisdictional management **(FRDC project 2019-030)**	Determining the stock structure of eastern school whiting stock and better understanding the species composition mix between eastern school whiting and stout whiting. Recommendations for approaching assessment(s) based on the outcomes of stock structure work.	$420,285 3 year project commencing in Sept 2019 and ending in May 2022	High	High
Quantifying discards and bycatch reduction strategies GABTF and SET	Quantify the performance of discard and bycatch reduction strategies in the GABT Sector and SET Sector. Recommendations for reducing discards and increasing NER and boat level profits in the trawl fisheries.	TBC	High	High

RESEARCH APPROVED by FRDC				
Investigate options for use of dynamic reference points for SESSF species	Investigate options for assessments and status reporting against dynamic reference points for SESSF stocks that appear to demonstrate long term productivity changes, including implications for harvest strategies.	Low	High	High
NEW IDENTIFIED RESEARCH FOR 2020-21				
Application of Close-Kin assessments for key and rebuilding species in the SESSF	A feasibility study to determine whether close-kin assessments are an option for key commercial and rebuilding species in the SESSF, including what a sampling design would look like and how much it would cost. Include blue-eye trevalla pending ARC support for blue-eye trevalla close-kin project.	Medium/ High	High	High
Research to support the Upper Slope Dogfish Management Strategy	Undertake an initial baseline survey, which will underpin a long-term monitoring plan to measure the relative abundance and recovery of Harrisson's Dogfish and Southern Dogfish. The survey is to be conducted in accordance with 'Option 1A with DeepBRUVS 'identified in the report Research to support the upper slope dogfish management strategy: Options for monitoring the recovery of Southern Dogfish and Harrisson's Dogfish (Williams et al. 2018)	High $470,000	High	High/Medium
School shark and gummy shark post release survival	Investigation of the post-release survival rates of gummy shark (focus on tertiary stress response) and school shark (focus on immediate and post-release mortality), and the application of survivability to discard estimates for these species.	Medium	High	High

Research projects identified for inclusion in future research plans

Title	Objectives and component tasks	Evaluation		
		Total cost (approx. only)	Priority/rank	Feasibility
Developing a Close-Kin Harvest Strategy	Investigate development of a close-kin harvest strategy as part of the Multi-Species Harvest Strategy Project (MSHSP, FRDC2019/021). Determine which species it should be applied to and what the management costs would be. The MSHSP will investigate a broad range of proposals that include various aspects of a multi-species harvest strategy, however the development of a close-kin harvest strategy approach will require additional funding and resources.	TBC	High (subject to advice from MSHSP)	High
Updating knowledge of key species biology	Update species biology information for selected key SESSF species for use in assessments. See APPENDIX A for brief scoping document. **Note**: await outcomes of existing FRDC project to see if this item can be removed or updated: (http://www.frdc.com.au/Archived-Reports/FRDC%20Projects/2016-139-DLD.PDF)	Medium	High (not FRDC)	High
Obtaining fish lengths using electronic monitoring	Investigate implementation issues, cost and solutions to adopt electronic monitoring to collect length frequency information for key commercial species on hook and gillnet vessels to support Tier 1 assessments.	Low	Medium Subject to data plan and implementation of EM	High
Changes to CPUE standardisations	Develop general approaches for SESSF CPUE standardisations that deal with such issues as structural adjustment and targeting.	Low	Medium	High

Better understanding of protected species interactions and potential impacts	• Quantitative measure of TEP interactions in the SESSF • Assessment of population size for relevant species	High	Low	Med
Changes in fishing power	Literature review/meta-analysis of changes to fishing power over time. Relates to under-caught TAC project. Commence with desktop study looking at available information. Note work already done on mesh sizes on the Danish seine fleet.	Low	Low Being considered at implementation workshop	High
Maximising economic returns for the Australian community	• Identify factors which impact on the profitability of individual operators and the fishery. • Improve market dynamics. • Increase efficiency of vessels.	Medium	Medium Await outcomes of under-caught TACs and multi-species harvest strategy project. If gaps remain priority might be revised.	
Identification of school shark nursery areas in South Australia	Identify nursery areas for school shark in South Australia for potential future conservation areas. Current work: PhD student (Matt McMillan).	Low	Medium	High
Options for data poor assessments	Develop improved assessment methods for low catch and data poor species in the SESSF.	Low	Medium	High
Close kin sampling of school shark pupping grounds.	Including locations, connectivity to get better understanding of stock structure.	Medium	Low	Medium
Close Kin Mark Recapture (CKMR) for gummy shark	Noting the successful application of CKMR to school shark, consider whether the approach can be applied to gummy shark cost effectively, noting some concerns with CPUE as an index for gummy shark with ongoing avoidance of school shark.	High	Medium	High

Standardizing CPUE for skipper effect using logbook skipper ID and experience in the SESSF.	To improve CPUE standardizations in the SESSF.	Low	High	High

SESSF stock assessments schedule

Species	MYTAC in 2019-20 season	Last assessed	2018	2019	2020	2021	2022	2023	AFMA management comment
Alfonsino	5th year of 3-year MYTAC	2013							SESSFRAG advice to stop using Tier 3. Future assessment subject to periodic review
Bight redfish	4th year of 5-year MYTAC	2015		1	←				GABRAG recommended bringing forward to 2019 based on FIS outcomes
Blue eye trevalla	1st year of 3-year MYTAC	2018	4+5			4+5		4+5	Tier 4 for slope, Tier 5 for seamounts. Trigger to be implemented for the seamounts with no more than 54 t to be taken in any fishing year
Blue grenadier	1st year of 3-year MYTAC	2018	1			1			Under-caught and above target
Blue warehou	N/A (rebuilding species)	2013							Schedule subject to annual review of fishery indicators
Deepwater flathead	3rd year of 3-year MYTAC	2016		1			1		
Deepwater shark east	1st year of 3-year MYTAC	2018	4			5			SERAG recommended a MYTAC subject to SESSFRAG review of assessment approaches in Feb 2019. SESSFRAG recommended a revised C_{TARG} not including catch from inside the closures.
Deepwater shark west	1st year of 3-year MYTAC	2018	4			5			SERAG recommended a MYTAC subject to SESSFRAG review of assessment approaches in Feb 2019.SESSFRAG recommended a revised C_{TARG} not including catch from inside the closures
Elephant fish	Single year TAC	2017 (not accepted)	bSAFE					SAFE	Assessed using SAFE in 2018.
Flathead	3rd year of 3-year MYTAC	2016		1			1		
Gemfish - east	N/A (rebuilding species)	2009			1			1	Schedule subject to annual review of fishery indicators. SESSFRAG – Tier 1 level was retained, but wil be reviewed at the data meeting in August

Gemfish - west	3rd year of 3-year MYTAC	2016		4			SAFE		Advice from GABRAG is to move to a Tier 4 for the CTS component of the stock. Move assessment to SERAG
Gummy shark	3rd year of 3-year MYTAC	2016		1 →			1		SharkRAG recommended delaying the assessment by one year as to incorporate a full year of Industry data collection, the new CPUE standardisation work and revised discard estimates from electronic monitoring. Note comments from SharkRAG 2 2016 that are of relevance if the assessment is delayed: *The RAG agreed that the (proposed MYRBC scenario's presented) were acceptable from a biological perspective (in that all three sub-stocks were projected to remain above target levels through to 2019) provided that only a 3 year MYTAC was applied, and would be preferable to Industry from a stability perspective.* *The RAG emphasised that under these cases there would be short term stability for Industry, however a new assessment in 2019 would likely to result in a lower RBC following fishing down to the target reference point.* *SESSFRAG - delay until until the outcomes of the GHAT CPUE calculation methodology project can be incorporated and have the appropriate data for net length and biologicals*
Jackass morwong	1st year of 3-year MYTAC	2018	1			1			
John dory	2nd year of 3-year MYTAC	2017			4				
Mirror dory	Single year TAC	2018	4	4	4	4	4	4	Annual assessment given the cyclical nature of stock abundance
Ocean perch	2nd year of 3-year MYTAC	2017			4			4	
Orange roughy - south	N/A (rebuilding species)	2000							
Orange roughy - east	2nd year of a 3 year MYTAC	2017			1			1	
Orange roughy - west	N/A (rebuilding species)	2002							Limited effort, bycatch TAC
Orange roughy - cascade plateau	N/A (rebuilding species)	2009							Limited data
Orange roughy - albany & esp	N/A (rebuilding species)	N/A							Limited effort, bycatch TAC
Oreo smooth - cascade	Long term TAC (catch dependent)	2010							Limited data
Oreo smooth - other	3rd year of a 3 year MYTAC	2015		5					

Oreo basket	2nd year of a 3 year MYTAC	2017			4				
Pink ling	1st year of a 3 year MYTAC	2018	1			1			
Redfish	N/A (rebuilding species)	2017			1			1	
Ribaldo	2nd year of a 3 year MYTAC	2017			4			4	
Royal red prawn	2nd year of a 3 year MYTAC	2017			4			4	
Saw shark	2nd year of a 3 year MYTAC	2017			4			4	
School shark	N/A (rebuilding species)	2018	1				1		Apply close kin genetics index of abundance (Index of Abundance start 14/15)
School whiting	2nd year of a 3 year MYTAC	2017				1		1	Subject to NSW catches Stock structure work prior to 2020 assessment
Silver trevally	2nd year of a 3 year MYTAC	2017			4			4	
Silver warehou	1st year of 3 year MYTAC	2018	1			1			
			2018	2019	2020	2021	2022	2023	

APPENDIX A

Updating knowledge of key species biology

Many of the current SESSF stock assessments use species-specific biology information derived over twenty years ago. These underlying assumptions are critical inputs to assessments and are likely to have changed over time for some species.

At its November 2016 meeting, SERAG included a project in the SESSF research plan to update species biology information for selected key SESSF species which would be available for use in assessments.

A key consideration for the RAG is to identify which species are more likely to have undergone changes in biological parameters, e.g. short-lived shelf species.

Candidate species may include:

- Tier 1 species
- Key/secondary species without quantitative assessments. Under a revised SESSF Harvest Strategy there may be the need to assess these species.
- SESSF species currently nominated as ‘non-assessable’ being considered by the SESSF working group.
- High risk ERA species with missing productivity information. Depending on the outcomes of revised ERA assessments, there may be a need to collect biological information to revise risk scores.

Attachment 8

Revised TAC Setting Process guidelines

Double-click icon to open

Australian Government

Australian Fisheries Management Authority

Total Allowable Catch (TAC) setting process

Guidelines for provision of data and stock assessment processes

Box 7051, Canberra Business Centre, ACT 2610 / Ph (02) 6225 5555 / Fax (02) 6225 5500 / AFMA Direct 1300 723 621 afma.gov.au

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Total Allowable Catch setting process

The following process has been developed and approved by the Southern and Eastern Scalefish and Shark Fishery Resource Assessment Group (SESSF RAG) to provide direction to resource assessment groups (RAGs), to ensure that the TAC setting process is conducted in the most efficient and cost effective way each year.

1.1 Preparing for Resource Assessment Group meetings

To ensure that members have seats at the table and access to power etc. at RAG meetings, AFMA executive officers (EOs) are to send a list of potential observers to the Chair to approve before the meeting. EOs and Chairs to ensure that only approved observers are in the room.

Assessments are to be provided to the AFMA EO at least one week before the meeting for sending out. If the assessment cannot be provided in time, a decision should be made by AFMA and the RAG Chair to whether the assessment is presented at the first meeting, out of session or at a later date. There is a risk that changes may be identified after the assessment is submitted but it is important that RAG members have sufficient time to consider the documents before the meeting.

Unless there are exceptional circumstances, assessment scientists should be available to discuss the assessment at RAG meetings (either in person or by phone/video link).

1.2 Provision of data to research providers

AFMA to ensure catch and effort data, catch disposal record data, observer data and SSIA crew collected data is available to allow processing before the SESSF data meeting..

If data is not provded by the dates below, it need not be included in the assessment. :

AFMA data – 30 April

Age data – 30 June

State catch data – 30 June

Additional GABT logbook data – 31 Aug

GABT crew-collected data - 30 June[1]

GABFIS, SETFIS – 30 June[1]

AFMA and CSIRO will meet prior to the transfer of the above data, likely late March, to identify and rectify any issues before data is sent.

1.3 Presentation of base case and final assessments

For existing tier 1 assessments, exploration of potential base cases, which may include variations of fixed parameters (e.g. natural mortality, stock recruitment steepness), to be presented at the first meeting. The base case and a set of standard sensitivities to be

[1] From 2020 this data will be included in the AFMA database and provided by 30 April

agreed by the RAG at the first meeting before presentation of the final assessment at the second meeting. If there are any significant changes proposed to the base case, the stock assessment scientist should notify AFMA and the RAG Chair and a decision may be made to consider this change in an additional RAG telephone meeting prior to the final meeting.

If a base case is not agreed at the first RAG meeting a small number of candidate base cases (ideally no more than two) can be tuned and presented without RBCs at the second RAG meeting with an agreed set of full sensitivities to a single candidate base case, or a reduced set of sensitivities to both, nominated at the first meeting. Once a base case is accepted by the RAG at the second meeting the RBC will be provided, for that base case only.

1.4 Publication of final assessments

Data used in assessments and, where available, assessment control files[2], should be archived by the research provider and a copy also provided to AFMA for archiving. AFMA will hold the groomed dataset and control files and will review on a case by case basis whether the data should be released, in consultation with the original author where appropriate.

Final assessment reports should be approved by AFMA and made available online.

1.5 Process for considering untested assessment approaches

The RAG is open to considering untested (including new) assessment methodologies, not currently in the assessment toolbox. Unless there are exceptional circumstances, an untested methodology should not be introduced for consideration in the year of an assessment. The following provides a **general** guide for considering untested assessment methods.

- A set of standard data and a statement of required outputs should be made available by the RAG for the assessor to test an untested assessment methodology (e.g. one data set from a data rich species (e.g. deepwater flathead) and one data set from a data poor species).
- The test assessment should be documented and presented, along with any published scientific reviews, to the RAG.
    - The proposer should also document the benefits of the methodology.
- Based on these results, the RAG would provide advice whether this assessment should proceed to simulation testing by the proposer (if not already done). This should be based on technical advice as well as the cost of the assessment methodology.
- Following consideration of simulation testing, ideally the newly tested assessment (if recommended to continue) would be undertaken in parallel with the existing assessment methodology. This means that the full impact of the different assessments can be rigorously reviewed and the RAG would decide which assessment to adopt for the purposes of TAC recommendations.

[2] Control files may not be available for all assessments, e.g. close-kin

- The RAG would need to decide whether a base case version would be undertaken (i.e. pick an accepted assessment and scenario) or some other methods should be used (e.g. ensemble methods applying multiple model outputs). [Discount factors should also be considered during this process].