



Australian Government
Australian Fisheries Management Authority

Southern and Eastern Scalefish and Shark Fishery

South East Resource Assessment Group (SERAG)

2017 Assessment Meeting 1

MINUTES

CHAIR: Mr Sandy Morison

20 - 22 September 2017

CSIRO

Hobart

TAS

South East Resource Assessment Group (SERAG)

Minutes

Chair: Mr Sandy Morison

DAY 1, Wednesday 20 September

The Chair opened the meeting at 9:03am

Agenda Item 1 – Preliminaries

1.1. Welcome and Introductions

1. Mr Sandy Morison (Chair) welcomed members, invited participants and observers to the meeting. There were no apologies to note. Members, invited participants and observers introduced themselves.

Name	Membership
Members	
Mr Sandy Morison	Chair
Dr Rik Buckworth	Scientific Member
Mr Ross Winstantly	Recreational Member
Dr Sarah Jennings	Scientific (Economics) Member
Mr John Jarvis	Industry Member
Mr Simon Boag	Industry Member
Dr Simon Nicol	Scientific Member, ABARES
Dr Brigid Kerrigan	AFMA Member
Dr Geoff Tuck	Scientific Member, CSIRO
Mr Andrew Penney	Scientific Member, Pisces Australis
Mr Dan Corrie	Executive Officer, AFMA
Invited Participants	
Dr John Stewart	Assessment Scientist, NSW Fisheries
Dr Fay Helidoniotis	Assessment Scientist, ABARES
Dr Malcolm Haddon	Assessment Scientist, CSIRO
Mr George Day	Senior Manager, AFMA
Dr Robin Thomson	Assessment Scientist, CSIRO
Dr Jemery Day	Assessment Scientist, CSIRO
Dr Rudy Kloser ¹	Assessment Scientist, CSIRO
Observers	
Dr Claudio Castillo-Jordan	Assessment Scientist, CSIRO
Dr Miriana Sporcic	Assessment Scientist, CSIRO
Mrs Sandra Curin-Osorio	Assessment Scientist, CSIRO

¹ Joined the meeting on Thursday 21 September

1.2. Declarations of interest

2. The RAG followed the conflict of interest declarations as outlined in Fisheries Administration Paper 12 (FAP12). A list of the full conflicts of interest declarations made by SERAG members and other participants for the meeting is provided in Attachment A and has been updated from the previous meeting where required.
3. Mr Jarvis left the room in while the RAG considered his declared conflict of interest. The RAG agreed Mr Jarvis has expertise in the fishery that warranted him being allowed to participate in the meeting.

1.3. Adoption of agenda

4. Dr Haddon suggested that the Tier 4 assessments would not take as long as had been allocated. The RAG agreed that more time could be allocated to reviewing the Tier 1 assessments if time permitted.
5. Dr Jennings committed to provide an update on the outcomes of the AFMA Economics Working Group Meeting at the end of the meeting.

1.4. Action items

6. The RAG considered the outcomes of action items arising from previous meetings. A summary of outcomes is provided at Attachment B.
7. The RAG specifically noted the following action items:
 - **Action Item 4 - Dr Day to check and ensure that only winter FIS length frequency data are used in the tiger flathead Tier 1 assessment model.** The RAG agreed to consider which FIS length frequencies are used in the Tier 1 flathead assessment at eh 2018 SESSFRAG Data meeting.

Action item 1 – Dr Day to prepare a discussion paper regarding the inclusion of winter/summer FIS surveys in future tiger flathead surveys. SESSFRAG Data Meeting 2019 (raise at SESSFRAG Chairs meeting 2019)

- **Action Item 6 - Ensure that the redfish otolith collection target is met.** An update on redfish otolith collection was provided later at the meeting. 18 per cent of the targeted otolith collections have been achieved this year.
 - **Action Item 9 - AFMA to implement a geofence around the Cascade Plateau in the VMS system to monitor fishing activities, and arrange for port based sampling of orange roughy.** The geofence has been implemented, although port sampling has not been possible due to no fishing in the area. Onboard sampling has been recommended if the opportunity arises, and clarification about the number of male and female samples is required. This item will be carried forward.
8. A list of action items and recommendations, as they arise during this meeting, are provided at Attachment C.

Agenda Item 2 – General Updates

2.1. Manager's Report

9. Dr Kerrigan provided an overview of management issues to the RAG as detailed in Agenda Paper 2.1:
 - Eastern pink ling management is going well. Catch commitments are now being managed by the South East Trawl Fishing Association (SETFIA). The nominal eastern TAC was about 50 t under caught last season.
 - SETFIA wrote to the SERAG Chair in June 2017 highlighting the success of seabird mitigation in the South East Trawl Sector with the implementation of bafflers. A journal article is currently being drafted.
 - Currently, the mirror dory TAC is approximately 55 per cent caught due to large catches early in the season. Industry have told AFMA that quota is hard to obtain and discarding may become an issue later in the season.
10. Mr Jarvis said he is seeing changes on the water with warmer temperatures out of Eden and further south. He is having to travel further south than he normally would to catch flathead and fish seem to be spawning at different times.

2.2. 2.2 ABARES Fishery Status Report

11. ABARES is seeking advice on how best to estimate fishing mortality (F) to determine stock status with regards to overfishing for Tier 1 stocks in the ABARES Fishery Status Reports.
12. Dr Helidoniotis provided an overview of the issues identified with the 2017 ABARES Fishery Status Reports:
 - Retrospective analysis found that total catch for ocean perch and eastern redfish had been above a Spawning Potential Ratio (SPR) metric of fishing intensity (1-SPR) however the status with regards to overfishing was 'uncertain' for both species.
13. The RAG made the following comments:
 - The RAG supports an objective approach to establishing a more reliable estimate of F against a reference point. This may only be possible for Tier 1 assessments.
 - It is important to determine what reference point is used. New Zealand fisheries harvest strategies use F_{msy} .
 - The RAG agreed that there may be better ways than the current method of comparing catch + discards against the RBC.
 - Spawning Potential Ratio (SPR), a metric for measuring fishing intensity, is used by New Zealand.
 - The definition of 'overfished' in the status reports is clear, however the definition of 'overfishing' is not.
14. The RAG supported ABARES' proposal to form a working group with a broader membership to address these issues noting that they are relevant to all other AFMA managed fisheries.

Recommendation - SERAG supports ABARES forming a working group to establish a more reliable estimate of fishing mortality and appropriate reference points for determining stock status with regards to 'overfishing'. Critical to this is defining 'overfishing'.

2.3. Observer Report

15. The ISMP Report was considered in detail at the SESSFRAG data meeting in August 2017. The paper is tabled for information and the Chair directed people to the SESSFRAG meeting minutes for further detail.

Agenda Item 3 – ISMP Discard Report: Updates from SESSFRAG

16. Dr Thomson provided an update to the RAG:
 - CSIRO have re-written the software used to generate the discard estimate summaries and it is now automated. As part of that process, aspects of the old methods were identified for improvement.
 - After the SESSFRAG 2017 data meeting, a group was formed to discuss the criteria used to accept or reject a discard estimate for inclusion in the report. In the past it was based on whether the data adequately represented fishing, and was somewhat subjective.
 - The group recommended the following criteria:
 - o Any ISMP stratum that has 5 or more observed shots will be considered to have been 'adequately observed'.
 - o The total number of shots (reported in the logbook) from all 'adequately observed' ISMP strata for a given species must exceed 50 per cent of the total number of logbook shots, across all ISMP strata, with a non-zero catch of that species, OR
 - o The total reported landed catch (reported in the logbook) from all 'adequately observed' ISMP strata for a given species must exceed 50 per cent of the total reported landed catch for that species.
 - For future reports, even if an estimate is not deemed to be representative (i.e., it does not meet the above criteria) it will still be included in the discard report, but with a note to say that it has not met the criteria for being representative.
 - Because of the changes, a new time series of discard estimates will need to be calculated..
 - Discard estimates used in the Tier 1 stock assessments are calculated using a different piece of software which calculates discards by fleet, as opposed to fishery-wide estimate.
 - CSIRO are working on standardising the process for calculating discard estimates in the discard report and for use in Tier 1 assessments.

Mr Simon Boag joined the meeting at 11am and detailed his declared interests as detailed in Attachment 1. Mr Boag left the room while the RAG discussed his declared interests. The RAG agreed Mr Boag should be present for all discussions.

Agenda Item 4 – Tiger Flathead RBC

17. The Chair summarised the outcomes of the tiger flathead assessment, RBC advice and TAC setting process for 2017-18 fishing season (summarised in Agenda Paper 4):

- The Tier 1 stock assessment for tiger flathead was updated in 2016.
- At its November 2017 meeting, SERAG recommended a three year RBC of 2902 t.
- After deductions of State catches and discards, AFMA management recommended a TAC of 2535 t, approximately 350 t less than the TAC for the 2016-17 season.
- SEMAC agreed to a stepdown approach, as requested by industry, and set a 2017-18 TAC of 2712 t on the provision that a gear survey be undertaken to address industry’s concern that changes in Danish seine gear selectivity had not been accounted for in the stock assessment.
- At its August 2017 Data meeting, SESSFRAG considered the results of the Danish seine gear survey completed in July 2017 which showed there had been only a small increase in codend mesh size since 2007. SESSFRAG agreed that the small increase in mesh size for a limited number of boats would not affect the outcome of the assessment and recommended that the assessment not be updated in 2017.

18. Dr Day noted that the gear survey did not consider catch using different mesh sizes, rather is just a snapshot of mesh sizes used by different vessels. The assessment uses length frequencies to estimate selectivity, and over the years in question the fit to the model is very good. If there is a good reason to do so, the assessment can incorporate changes in gear, however the results of the survey suggest this is not the required.

19. Mr Jarvis said he still had concerns that the issues around mesh size and discarding of small fish is impacting the flathead stock and is not being captured in the assessment.

20. SERAG was asked to consider RBC advice for the remainder of the MYTAC period. The RAG considered RBC options and projections in Table 1, and noted the following:

Table 1 Projections comparing the RBCs and depletions for the base case with the fixed catches and resulting depletions from the two different options.

Year	Base Case			Option 1 – 50% 1 year			Option 2 – 50% 2 years		
	Depletion	Catch	RBC	Depletion	Catch	RBC	Depletion	Catch	RBC
2016-17	0.428	3259		0.428	3259		0.428	3259	
2017-18	0.421		2886	0.421	3089		0.421	3089	
2018-19	0.416		2865	0.412		2837	0.412	2868	
2019-20	0.412		2848	0.409		2826	0.408		2821

- The flathead assessment was completed in 2016, which under the three year MYTAC would require an assessment to be updated in 2019.
- There is very little difference between the single year RBCs for the next two years; 2837 and 2826.
- SERAG supported using the single year RBCs under Option 1 of 2837 t for 2018-19 and 2826 t for 2019-20.

21. The RAG agreed to update the tiger flathead assessment in 2019 for the 2020-21 TAC setting process.

Agenda Item 5 – Tier 3 John Dory

22. The John dory Tier 3 assessment had been completed but, due to the late provision of data, had not yet been reviewed internally by CSIRO. Until this review was completed CSIRO did not wish to table the results at this meeting and will be considered at the November SERAG meeting.

Agenda Item 6 – Tier 4 Assessments

23. Dr Haddon provided a brief overview of the SESSF CPUE Standardisations. Further detail would be provided during each of the Tier 4 assessment overviews.
24. Mr Day thanked Dr Haddon for the effort to produce the RBCs for the Tier 4 assessments in time for this meeting.

6.1. Deepwater Shark (east) – Tier 4 assessment

25. Mr Jarvis said there are limited grounds available to fish for deepwater shark in the east due to closures. Industry will be requesting that grounds are opened to allow for catch of deepwater sharks.
26. The RAG noted the list of CAAB codes provided in the Tier 4 document and questioned whether the species used in the CPUE standardisations includes species that are not part of the deepwater shark quota basket. There would be implications to the CPUE if non-quota species were included in the analysis.

Action item 2 – AFMA to summarise the catch composition of deepwater shark catches over time using observer and logbook records and report back to SERAG in November.

Action Item 3 – Dr Haddon to check that all species catch included in the CPUE standardisations for deepwater sharks (east and west) are for species in that quota basket.

27. Dr Haddon provided an overview of deepwater shark Tier 4 assessment. The RAG noted the following:
- The total catch for 2016 was 26 t.
 - Most of the catch is taken between 700 and 850 m.
 - Total catches declined up to 2007 and have remained low since.
 - Standardised CPUE has been relatively stable since 2010, with a slight decrease in 2016.
 - Dr Haddon presented the RBC calculations (Table 2)

Table 2 Eastern deepwater shark RBC calculations

Parameter	Value	Parameter	Value
Reference Years	1997-2006	Scaling	0.1259
CE_Target	1.0699	Last Year's TAC	
CE_Limit	0.4458	Ctarg	115.297

CE_Recent	0.5244	RBC	14.517
Wt_Discard		-	-

- There is a significant decrease in the RBC from 46 t under the 2013 assessment to 14.5 t under the 2017 assessment.
- Industry are currently landing in excess of the proposed RBC.
- The deepwater trawl closures may be affecting the CPUE standardisations and Tier 4 assessments in that the areas now closed had been fished during the reference period.
- CPUE in the open areas may well be decreasing, whereas the stock outside those areas is not being impacted.

28. The RAG agreed to defer the RBC recommendation until the November SERAG meeting, and went on to consider the western deepwater shark Tier 4 assessment before recommending revisions to the eastern deepwater shark Tier 4.

6.2. Deepwater Shark (west) Tier 4

29. Dr Haddon presented the deepwater shark west Tier 4 assessment. The RAG noted the following:

- The total catch for 2016 was 93 t.
- CPUE has increased over the past three years.
- Catch at depth distribution is similar to that in the east.
- There are more grounds available to fishing in the west compared to the east.
- There was an area off the west coast of Tasmania opened in 2013 to allow for deepwater shark catches. The catches in this area was relatively small.
- There may be similar issues regarding the impact of deepwater closures on CPUE for deepwater sharks in the west as in the east.

Action Item 4 – CSIRO to revise the Tier 4 assessment for deepwater shark east and west using only catch and effort data from areas currently open to fishing. Also complete a Tier 5 assessment for consideration at the November SERAG.

6.3. Ocean Perch (offshore)

30. Dr Haddon presented the Tier 4 assessment for offshore ocean perch. The RAG noted the following:

- The number of vessels and catch has been relatively stable in recent years.
- Standardised CPUE has remained relatively flat.
- The CPUE standardisations between 2016 and 2015 is markedly different.
- Approximately 15 per cent of the catch is coming from zones 30, 40 and with the remainder caught on the east coast.
- The Tier 4 and CPUE standardisations may need to be revised to include catches from zone 30, 40 and 50.

- Dr Kerrigan recalled a presentation to SERAG in 2016 regarding stock regionalisation and the RAGs decision was not to pursue regionalisation of ocean perch.

Action Item 5 – Dr Haddon to revise the ocean perch Tier 4 to include zones 30, 40 and 50 and present it at the SERAG November 2017 meeting.

6.4. Ocean Perch (inshore)

31. Dr Haddon presented the Tier 4 assessment for inshore ocean perch. The RAG noted the following:

- Catches have remained low and stable over time.
- There was a dramatic increase in the estimated discards in 2010 from 2009 (91.4 t to 235 t) which caused a large increase in the standardised CPUE. Dr Haddon questioned whether the discard estimates were biased.
- Catches have remained stable and discard rates have remained between 80-90 per cent however the estimates of total discards have change markedly.
- The RAG questioned the discrepancy between estimated total discards in the discard report (27.6 t) and those in the Tier 4 document (136 t).
- There was some confusion about how discards were calculated in each of the documents.
- The Tier 4 was not accepted in light of the uncertainty about how the discards were calculated given previous RAG decisions to include estimates of discards in the CPUE series.

Action item 6 – CSIRO to review discard calculations for inshore ocean perch, noting it may be a systematic error, in which case all discard estimated will need to be revised. November SERAG Meeting.

6.5. Oreo basket Tier 4

32. The RAG considered recent catches of oxeye oreodory:

- Since 2011 there has been 20-25 t of oxeye oreo landed annually which is a large proportion of the overall oreodory catch.
- Oxeyes are not part of the oreo basket and are not included in the assessment.
- There may be oreo basket species landed and recorded as oxeye.

Action item 7 – AFMA to investigate the catch composition of oreodories in the observer database. As soon as possible.

33. Dr Haddon presented the Tier 4 assessment for oreo basket. The RAG noted the following:

- Discards have increased markedly from 86 t in 2015 to 316 t in 2016.
- The figure for discards reported in the Tier 4 document (316 t) are different to that in the discard report (67 7). CSIRO will investigate as part of action item 5.
- Mr Jarvis noted there were large shots discarded during southern orange roughy trips.
- Dr Haddon concluded there had been an error when including discards in the Tier 4 assessments and would amend them over night.

34. The RAG agreed to review the data for the remaining Tier 4 species, however the assessments and RBCs would not be considered until the issue with discard calculations had been resolved.

6.7. Mirror Dory

35. The RAG considered the mirror dory data:
- When discards are included in the mirror dory east assessment, the large decrease in discards from 2012 (183 t) to 2013 (3.3 t) causes the CPUE to decrease. The RAG questioned whether the recent discards estimates were accurate, noting that they would be reviewed with all other discard estimates.
 - The two main grounds that hold juvenile fish have not been heavily fished recently, which would account for some of the decrease in discards, however a decrease from 183 t to 3 t does not seem reasonable.
 - There is a bimodal pattern in the catch at depth plots in recent years which reflects the spatial variation between seasons.

6.8. Blue-eye Trevalla

36. A workshop is planned for March 2018.
37. The Blue-eye Trevalla Tier 4 assessment would be prepared for the November SERAG Meeting.

6.9. Royal Red Prawn

38. The RAG considered the royal red prawn data:
- There are only a few boats targeting royal red prawns.
 - Standardised catch rates are stable.
 - Catches have been between 140 – 180 t over the last three years.
 - The discard rate estimate does not pass the criteria for inclusion in the discard report.
 - Discards have always been low and so they are not typically included in the CPUE, however they are included in the catch.

6.10. Silver Trevally

39. The RAG considered the silver trevally data:
- The Tier 4 assessment only uses catch rates outside marine park closures.
 - Catches are well below the TAC.
 - Estimated discards are low.
 - CPUE over past three years has been stable.
 - The higher CPUE points from 2010 - 2013 are no longer used to calculate recent CPUE and so the RBC decreases.
 - State catches in the last two years have been 80 - 90 t with State discards estimated around 20 per cent.

- It would not be appropriate to apply the Commonwealth discard estimates (1.9%) to State catches for silver trevally as part of the TAC setting process as we have in the past, because discard rates will always be higher for NSW fisheries due to the minimum size limit that applies to their catches.

40. The RAG agreed to postpone finalisation of the silver trevally Tier 4 until NSW catch and discard data is made available.

Agenda Item 7 – School whiting Tier 1 assessment

7.1. Update from industry

41. The RAG noted the following update from industry:

- Catches have been consistent for the past few years in NSW State waters.
- Some of the State fishermen out of Sydney are now freezing onboard and exporting school whiting.
- There have been reports of good catches in Lakes Entrance.
- 79 per cent of the TAC was caught for the 2016-17 season, and operators found it hard to obtain quota.
- Quota will be allocated to operators currently fishing in the NSW Southern Trawl Fishery as part of the merge with the Commonwealth South East Trawl Sector.
- Dr Stewart suggested prawn trawlers north of Sydney catch a significant amount of school whiting but there are few data on the quantities involved.

7.2. Overview of recent data

42. The RAG considered the available data for school whiting:

- Landings, mostly Danish seine, have generally increase in the past few seasons compared to State catches which have been decreasing, although Dr Stewart noted catches in 2017 have been higher at around 700 t.
- The majority of catch is coming from eastern Bass Strait.
- Discards have increased slightly in the past three years however are still below 10 per cent. There are larger fish being discarded in 2016, which is in contrast to previous years.
- ISMP sampling across the months was good in 2016, especially through the winter months where there have been issues in the past getting samples in those months.

43. The RAG noted an error with the traffic light display which provides a measure of ISMP coverage in the data summary and asked that Dr Day work with Dr Thomson to rectify it.

Action item 8 – Dr Thomson and Dr Day rectify the issue with the red, amber, green scoring of ISMP coverage in the 2017 data summary with particular reference to onboard discard weights for school whiting.

7.3. Preliminary 2017 stock assessment

44. Dr Day presented the 2017 Tier stock assessment for school whiting:

- The last assessment was in 2009 with an estimated 2010 spawning stock biomass of 50 per cent of virgin stock biomass.
- There is assumed to be a single stock across zones 10, 20, 30 and 60 and then north of Barrenjoey Point to Ballina.
- There are three fleets: historical NSW Danish seine (recently reactivated) in addition to the Commonwealth Danish seine and otter board trawl.
- Selectivity is estimated by the model for each fleet.
- Discard estimates are calculated for the Danish seine and trawl fleets.
- Natural mortality (M) is estimated within the model.
- Recruitment was estimated from 1981 to 2005.

45. Dr Day summarised the bridging analysis from the 2009 assessment:

Part 1 – update to software

- There were updates to the software and eight more years of new data included.
- The two previous versions of the software were similar, however due to revisions to the balancing protocols since 2009, the biomass under the ‘translated 3.30_4’ version is slightly higher.
- The fit to CPUE is much better using the new balancing protocols. The new balancing method is designed to provide a better fit to CPUE.
- Estimates of absolute recruitment have increased using the new balancing process and updated software.

Part 2 – inclusion of new data

- Catch data up to 2016 was added.
- CPUE data up to 2016 was added, , including a new standardised trawl CPUE series.
- Discard fraction estimates were updated to 2016.
- Updated length frequency data up to 2016 was added.
- Length frequencies for onboard fleets were added and all length frequencies were weighted by number of shots or trips, rather than number of fish.
- An updated age error matrix and new age-at-length data up to 2016 were added, with revisions to historical age-at-length data using sectioned otoliths.
- The final year for recruitment estimation changed from 2005 to 2013.
- The model was rebalanced using latest balancing protocols, including Francis weighting on lengths and ages.

46. The results of including the additional data are summarised in Figure 1, presented as absolute and relative biomass.

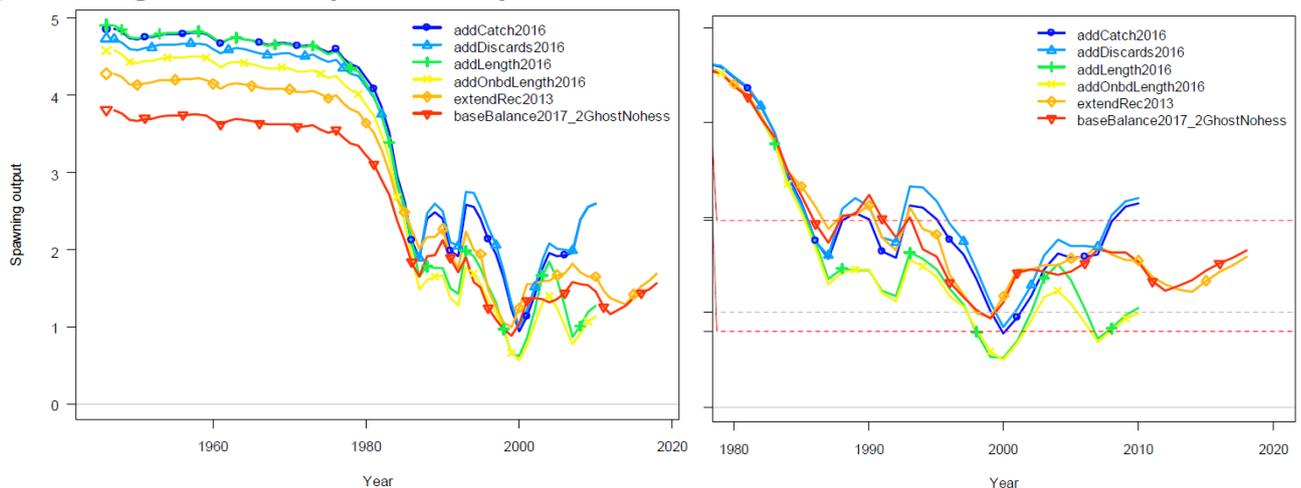


Figure 1 Results of bridging analysis from the 2009 assessment. Left – absolute biomass, Right – relative biomass

47. Dr Day noted some additional points:

- There was uncertainty in the 2009 assessment about the most recently estimated recruitment events. The new data allows estimation of recruitment in the period 2007-2009, and these estimated values are below the average recruitment values used in the 2009 assessment (recruitment was not estimated for these years in 2009).
- Recent recruitments are well estimated and seven of the last eight years recruitment estimates are below average.
- There is a lot more stability in the assessment now compared to the 2009.
- The estimated spawning biomass for school whiting at the start of 2018 is 42 per cent of virgin stock biomass.

48. The RAG discussed the outcomes of the updates assessment, noting the following:

- Appendix Fig A.2 of the stock assessment report shows the predicted combined discards by the Commonwealth trawl and Danish seine fleets are around 100 t. Industry questioned the estimates for the trawl fleet (80 t).
- Dr Day said the criteria for accepting discard estimates in the stock assessment was ten shots for each year for each fleet.
- The RAG agreed there should be as much consistency as possible between the two methods, noting that the discard report uses ISMP Strata whereas the stock assessments use discard rates by fleets.

Action item 9 – CSIRO to investigate standardising the criteria for accepting/using discard estimates between the ISMP discard report and those used in stock assessments. SESSFRAG Data meeting 2018.

- The RAG suggested running a sensitivity for discards including:
 - o applying NSW discard rates (estimated using the 18th months observer coverage) to NSW catches as opposed to Commonwealth discard rates
 - o halve and double the estimated discard rate.

The RAG accepted the model which had been presented as the base case, and recommended that sensitivities are run based on alternative values for discards and natural mortality.

DAY 2, Thursday 21 September

The Chair reconvened the meeting at 8:30am

Agenda Item 7 – School whiting Tier 1 assessment, continued

49. Dr Day revisited the SESSF data summary report, noting the following:

- There seems to have been an error in the traffic light system applied to the 2017 coverage statistics.
- Coverage for onboard discard weight data was poor for 2012-2013 which is reflected by the absence of point estimates in the assessment.
- Sampling coverage for onboard lengths is not as good as port-based lengths, which is unlikely to be representative of the total catch.
- Port-based length frequencies were smaller than onboard length-frequencies in the data summary, which is unusual.

50. The RAG considered the 2017 Discard Report for school whiting:

- The estimates are fishery-wide.
- The criteria for accepting/rejecting discard estimates were recently reviewed for the discard report.
- The RAG reiterated that the criteria for accepting discard estimates should be made consistent between the discard report and the stock assessments.

51. Dr Day continued with an overview of the school whiting Tier 1 assessment:

Fit to CPUE

- There were issues with the fit to CPUE in 2009 for Danish seine. The fit in the current assessment is much better due to the new tuning process. The tuning process has reduced the error around the estimates.
- In 2009 the ShelfRAG decided that the Danish seine index was more representative than trawl and agreed not to use the trawl index in the assessment. The trawl CPUE is indexing a small and geographically distinct part of the catch. It is a step towards removing the bias when we only consider the Danish seine index in Victoria. Trawl CPUE is included as an additional index to the updated assessment.
- The RAG suggested running a sensitivity analyses with and without the trawl index. If the assessment results without the trawl index were markedly different, the RAG would question the weighting of the index applied by the model.
- CSIRO only had catch data from NSW and were not able to obtain the length and age data. NSW have indicated that data would be available for future assessments.
- The RAG recorded their thanks to NSW, in particular Dr Karina Hall, for their efforts in preparing the NSW data, despite it not being approved for use in the assessment.

Recruitment

- 'Sigma r' is significantly reduced from the last assessment and so there is less freedom for the recruitment estimates to change from year to year.
- There is below average recruitment 2006-2012, with an above average recruitment estimated in 2013.
- The 2009 assessment overestimated recruitment, which has been revised down in the recent assessment, and is reflected in the downward shift in biomass.

Fits to length (Danish seine)

- The model fits to the port-based length data are much better than for onboard length data for both methods, which is reflected in the sampling coverage.
- The model fits to the port-based lengths are similar, if not slightly better, than the 2009 assessment.

Fits to discards

- The model fits to discards are not as good as the retained catch.
- There appears to be a lot of big fish discarded in 2016. Industry said this was unlikely. Dr Day noted that the model cannot make sense of the large discards in 2016 and does not fit it.

Age (implied fits to age distribution)

Danish seine

- The model fits to age are similar to those in the 2009 assessment.
- The age composition of the 2007 retained catch is unusual. There is a flat distribution across ages. It could be how the otoliths were selected for that year. It is not fitted by the model but if the data is inaccurate it needs to be checked.

Action item 10 – Dr Day to check the age composition data for retained school whiting for Danish seine in 2007 and report back at the November SERAG meeting as part of the school whiting assessment agenda.

Trawl

- The model fits to retained and discarded catch are good.

Action item 11 - Dr Day to generate an aggregated age over time plot for school whiting for the 2009 assessment to compare to the 2017 assessment and report back to SERAG in November as part of the school whiting assessment agenda item.

52. Dr Day noted some of the unresolved issues with the assessment:

SEF2 Vic/VIT catches in 1994-2002

- There is a discrepancy between the historical catch series and the AFMA database. John Garvey has been contacted to help resolve the issue.

NSW State data

- Recent State length, age and catch rate index data have not been made available to use in this assessment. It would be good to have access to this data for use in any future assessment.

- NSW data has been separated north and south of Barrenjoey Point. Dr Day proposed excluding catch north of Barrenjoey Point as a sensitivity to be presented at the November RAG meeting. It is a significant amount of catch, and if the assessment is sensitive to excluding that data, it would justify further investigation into stock structure.
- There are issues with splitting the stock at any point below Barrenjoey Point (Jervis Bay has been suggested as that location) because of the small number of boats fishing north of that line and therefore very limited data on which to base an assessment.
- SERAG supported running the sensitivity excluding data north of Barrenjoey Point.

53. Dr Day provided an overview of the 2017 preliminary base case

- The last assessment in 2009 estimated the 2010 spawning stock biomass to be 50 per cent of virgin stock biomass.
- The proposed 2017 base case estimates the 2018 spawning stock biomass to be 42 per cent of virgin stock biomass.
- The base case uses the same assumptions as 2009 assessment except:
 - o both onboard and port length frequencies are included
 - o length frequencies are weighted by shot/trip
 - o the tuning procedure has been updated (Francis weighting)
 - o recruitment is now estimated for 1981 to 2013 (was to 2005)
 - o new recruitment estimates (2006-2012) are all below average
 - o trawl CPUE series now included.

54. The Chair asked if it would be reasonable to do a retrospective analysis of RBCs, as has been done in the past, to establish long-term RBCs. Dr Day said he would attempt to do this before the November RAG meeting.

55. Dr Day revisited the natural mortality estimate discussion, and recalled that natural mortality is estimated by the model to be 0.53. Sensitivities would not normally be run on model estimated M, nor is it necessary to generate a likelihood profile.

The RAG agreed to request that Dr Day run the following sensitivities:

- Double and halve the discard rates and apply NSW discard rates (estimated using the 18th month's observer coverage) to NSW catches.
- Exclude State catch north of Barrenjoey Point.
- Exclude Commonwealth trawl index.
- Fixed natural mortality estimates.

56. Dr Day was also asked to complete the following for consideration at the November SERAG meeting:

- Run a retrospective analysis of RBCs to establish long-term RBCs.
- Generate single year, three year and longterm RBCs.

Agenda Item 8 – Redfish Tier 1 assessment

8.2. Industry update

57. Industry members provided an update for eastern redfish:

- There have been quite a few juveniles showing up in the catch.
- Recreational fishers out of Eden are catching big fish on the reefs.
- There are not as many fish present on the grounds where they used to be caught frequently.
- Commercial line fishermen north of Barrenjoey Point are reporting good catches.

8.3. Recent Data

58. Dr Tuck provided an overview of the recent data:

- There has been a steady decline in catches and TAC over last decade.
- The TAC has always been under-caught. The RAG noted previous discussions about the RBC generated by the Tier 4 being too high.
- Catch at depth data suggests fish are no longer being caught in deep water. There is an aggregated catch at 400 m which is unusual. CSIRO said they would will look into it.

Action Item 12 - CSIRO to investigate the catch of redfish at 400m which appears in the 2017 SESSF Data Summary. November 2017 SERAG Meeting.

- There was low sampling coverage in 2016 for port length frequencies.
- There is evidence of recruitment in 2014 and 2015.

59. Mr Jarvis suggested that sewage being pumped out of Sydney Harbour via deep sea outlets may have had an effect on redfish and gemfish stocks.

8.4. Preliminary 2017 stock assessment – presentation of models

60. Dr Tuck provided an overview of the Tier 1 redfish assessment:

- The last full assessment was in 2014.
- The 2017 assessment uses the current version of stock synthesis (SS-V3.30.06.02).
- The large recruitment episode in 2011 in the 2014 assessment has been reduced in the 2017 assessment.

Transition to the preliminary base case

- Updated data to 2016 were added sequentially to develop a preliminary base case for the 2017 assessment:
 - o Catch data has been included up to 2016.
 - o CPUE data has been added up to 2016.
 - o Discard fraction estimates were updated to 2016.

- Length frequency data, including both port and onboard length frequencies were added.
- An updated age error matrix and age-at-length data up to 2016 were added.
- The final year for which recruitments are estimated was updated from 2012 to 2015.
- The model was retuned using the latest tuning protocols.
- The bridging analysis and addition of the new data did not have as much of an impact as that seen in the school whiting assessment.
- Estimated biomass decreases when updated length data is included, largely due to the previous estimate of recruitment.

Preliminary base case model structure

- The base case model structure from the 2014 assessment was maintained except that length data are now separated into port and onboard, and updated tuning methods have been applied.

Results

Dr Tuck provided an overview of the redfish Tier 1 assessment results:

- There are good fits to the catch rate data, length data and conditional age-at-length data.
- Onboard and port-based selectivity functions are markedly different.
- There were issues with fitting the 2007 port-based trawl lengths in the model.
- Recruitment is estimated to be low in recent years, and the spike seen in 2014 is not seen in the 2017 assessment.
- The spawning stock biomass is estimated to be below the limit reference point at 8 per cent at the start of 2018.
- When a sensitivity is run with 2012 as the end point for estimating recruitment the stock status is estimated at 9 per cent.

Projections

- Projections will be run for the purpose of estimating rebuilding timeframes for inclusion in the rebuild strategy.
- Recent recruitment estimates are at about the average, however for the purposes of projections it would be worth using low recruitment estimates.

61. The RAG noted the following:

- There may have been a productivity shift for redfish.
- There has been a steady decline in catch and CPUE since the year 2000.
- The biomass was estimated to be at the limit reference point in 1995, and then declined further from 2000 onward.
- There was an extended period of low recruitment from 2000.

- There seems to have been an improvement in recruitment since 2010, albeit not nearly as high as pre-2000.
- One option for projections is to consider average recruitment since 1995 or to use the average of the most recent estimates. The other option is to regenerate the stock recruitment relationship and use that in the assessment.

The RAG supported using average recruitment over the past 10 years for the purposes of projections and to look at two scenarios: rebuild under average recruitment, and under recent recruitment.

Issues

- 1996 and 1997 port based lengths are skewed to the right i.e., actual measurements are larger than previous years.
- **The RAG recommended leaving the data in the base case and removing it as a sensitivity.**

Agenda Item 1.4 (revisited) – Western Orange Roughy Workshop Outcomes

62. Dr Kerrigan provided an overview of the western roughy workshop outcomes provided in Agenda Paper 1.4 Attachment A:

- The workshop was organised as an action item from SERAG to facilitate a workshop to investigate methods of assessing the biomass of the southern and western zone orange roughy stocks.
- Attendees at the workshop proposed a five-step plan of action:
 1. Undertake a data quality check
 2. Establish data requirements
 3. Submit a research plan to the AFMA Commission
 4. Exploratory sampling
 5. Update the Tier 1 assessment

63. Dr Haddon provided an overview of the western roughy data and CPUE standardisations:

- There has been very little catch since the introduction of the rebuilding strategy in 2007.
- Standardised CPUE has been increasing since about 1997, however it is highly uncertain.

64. Dr Krusic-Golub provided an overview of available age data:

- 997 otoliths were aged in 2004/05 for the years 1994, 1995, 1996 and 2004.
- There are 533 unaged samples at Central Ageing Facilities from the years 1996, 1997 and 2005.
- There are 585 unaged samples at Fish Ageing Services from the years 2009, 2011, 2013, 2014, 2015 and 2016.

65. A random subsample of 350 otoliths should be re-read to determine bias and precision and to develop an age error matrix.

66. It would be useful to review the data for the unaged samples (catch, length frequencies etc.) to determine if any of the unaged samples are useful.

Action item 13 – Dr Krusic-Golub to review the 2016 western orange roughy otolith information (catch, length frequencies etc.) to see if they would be useful as an input to an updated Tier 1 assessment.

The RAG agreed that stage two of the workplan should be pursued: *Establish the data requirements to run a new Tier 1 assessment (using the eastern roughy stock assessment as a basis but with modified parameters) taking into consideration that age and length frequency data for western orange roughy is 15 years old. This may include running scenarios looking at various projections. – (CSIRO to provide cost estimates)*

Agenda Item 9 – Eastern Orange Roughy Tier 1 Assessment

9.1. Results of 2016 Orange Roughy Acoustic Optical Survey (AOS)

67. Dr Kloser provided an overview of the 2016 eastern orange roughy acoustic survey:

- The biomass of spawning orange roughy St Patricks Hill and St Helens Hill at 38 kHz and 120 kHz ranges from 24 000 (CV 0.12) to 29 600 (CV 0.22) tonnes for observation or process error analysis respectively.
- There has been a 2 fold increase in estimated spawning biomass at St Helens Hill since 2013 which is consistent with a recovery of fish to the spawning sites.
- The combined biomass for the two grounds can be estimated in two ways assuming either observation error (relative abundance over time) or process error (AOS estimates).

9.2. Results of the Eastern Orange Roughy Tier 1 assessment

68. Dr Haddon provided an overview of the eastern orange roughy Tier 1 assessment:

- The assessment is carried out for Orange Roughy Zone 10.
- Data for this assessment is limited and so only a few parameters are estimated.

Catch data

- Catches have remained low since catch restrictions were put in place in the early 90s, with an increase since 2014 when the fishery was opened to commercial fishing.
- Dr Haddon received length frequency information from Dr Kloser, however it is a sub-sample from the surveys and not the fishery, so Dr Haddon will explore whether it can be used in the assessment. It may help to refine the selectivity of the survey.

Age composition data

- The fit to age-composition is reasonable for most years.
- The data is 'spikey' which is due to the number of age classes.

Acoustic survey abundance estimates

- There are three relative abundance estimates: Hull (19990-1992), towed (1991-2016) and daily egg production surveys (1992).

Bridging Analysis

69. Nine sequential changes were made to the 2014 assessment

- The assessment from 2014 was repeated using the original software version.
- The variances of the survey indices and the age composition data were rebalanced.
- The control and data files were converted to the newest version of stock synthesis.
- Landings and discards up to 2016 were added.
- The new 2016 acoustic survey index and revised 2013 index were added.
- Updated age composition data was added.
- A revised ageing error matrix was included.
- One more year of recruitment deviates were estimated.
- Variances were rebalanced, with emphasis placed on the survey indices.

70. Most of the changes to the scenarios led to an improvement to the estimated spawning biomass.

71. The final base case predicts the spawning biomass to be approximately 34.3 in 2017.

Model fits to the data

- Fits to acoustic survey data are generally good for the hull mounted transducer estimates.
- Dr Haddon intends to run a type of influence analysis to test how influential each of the data points are.
- Fits to age-composition data are reasonable except for 1992 and males in 2016.

Fishing Mortality

- An equilibrium analysis of the fishery dynamics suggests Maximum Sustainable Yield is approximately 1700 t when the stock is close to 20%B₀ and fishing mortality is set at 2 per cent.
- Dr Haddon presented a phase plot (Figure 14 in the report) which suggests that the stock is above the limit reference point and is not being overfished.

Likelihood Profiles of M

72. Natural mortality is assumed to be constant with age, and also constant through time. The natural mortality rate is fixed in the base-case analysis at 0.04 based on Stokes (2009).

73. Dr Haddon undertook a likelihood profile of natural mortality:

- The optimum M based on this analysis is 0.031.
- Using M of 0.031 results in a lower estimated spawning biomass of 25 per cent.

74. The RAG discussed the analysis, noting the following:

- The data is still highly uncertain, and a mathematical fit is not as good as a biological fit.
- There is no significant statistical difference between a natural mortality 0.04 and the model estimated value of 0.31 given the uncertainty around the latter estimate.
- Dr Haddon could use 0.031 as a tuned sensitivity and effectively have two base cases to choose from.
- There may be other aspects to the age and length fits that make it easier to decide which of the 2 base cases is more appropriate.

- Dr Haddon said he would attempt to estimate M in the model.

The RAG recommended that Dr Haddon runs the various sensitivities and provide an additional base case with M set at 0.031.

Agenda Item 10 - Preparation for pink ling assessment 2018

75. This agenda item has been tabled to discuss some of the issues in preparing for the 2018 pink ling stock assessment. This RAG is not being asked to recommend who undertakes the assessment.
76. The RAG briefly discussed aspects of the assessment:
- The last agreed stock assessment was undertaken by Dr Patrick Cordue in 2015.
 - Dr Cordue said it would not be difficult to replicate the assessment in Stock Synthesis 3 (SS3).
 - SS3 has capabilities that CASAL does not, and vice-versa.
 - If CSIRO were to undertake the assessment, the first step would be to mimic Dr Cordue's assessment and compare the results.
 - If Dr Cordue were to undertake the assessment, there would be additional costs for CSIRO to process the data.
 - There were spatial stock structure issues with Dr Cordue's assessment, largely to do with a lack of data across all of the strata required to run a spatially explicit model.
77. The RAG agreed there was nothing further to discuss, and noted that AFMA may put out a tender for the 2018 pink ling assessment.

Economic working group update

78. Dr Jennings provided an overview of the economic working group meeting held at AFMA in early September 2017:
- AFMA have formalised the group which will meet twice a year and provide advice to the AFMA Commission on various cross-fishery economic issues.
 - At its first meeting, the group provided advice on a cost-benefit analysis of individual accountability for discards in the ETBF and the GHAT as well as economic performance measures for AFMA.
79. Dr Jennings added that the Commonwealth Research Advisory Committee (COMRAC) has proposed a project (potentially for FRDC priority) that would focus on the SESSF taking the next step towards multi-species MEY targets. The project will look targets that maximises MEY for the fishery, rather than individual species. The RAG discussed the following:
- There are several projects which are either final, underway or planned with a degree of cross-over (SMARP, policy reviews, multi-species MEY) and it is important to make sure the outcome and objectives of each are considered alongside each other.
 - The proposed MEY targets would need to be Management Strategy Evaluation (MSE) tested as part of the Multi-year TACs and breakout rules proposed under phase two of the SMARP project.

- Mr Boag raised concerns with a fishery-wide MEY approach and how illegal, unregulated and unreported fishing could be accounted for. The Chair noted the conversation was moving beyond a general update, and these issues would need to be considered as part of the broader project.

80. Mr Day added that the AFMA Commission had approved the updated approach to breakout analysis for species on MYTACS.

Action item 14 – AFMA to circulate an update paper on the approach to breakout rule analysis as approved by the AFMA Commission.

81. The Chair provided a brief overview of the meeting and formally closed the meeting.

- Clear advice has been provided for tiger flathead, with an RBC agreed to for the next two years
- Tier 4 assessments will be finalised at the November 2017 SERAG Meeting
- Base cases have been agreed to school whiting, redfish and orange roughy

Table 1. Member and invited participants declarations of interest

Member	Declared Interest
Mr Sandy Morison	<p>Director of Morison Aquatic Sciences. Chair of SharkRAG, SERAG and the Tropical Rock Lobster Working Group. Scientific member on SEMAC. Contracted by government departments, non-government agencies and companies for a range of fishery related matters including research and (by SCS Global Services) for MSC assessments of AFMA managed and other Australian and international fisheries. No pecuniary or other interest in the SESSF.</p>
Dr Brigid Kerrigan	<p>AFMA. Manager of Commonwealth and GAB Trawl Fisheries section. No conflicts of interest pecuniary or otherwise.</p>
Dr Sarah Jennings	<p>Economics member on SERAG. Economics coordinator, FRDC Social Science and Economics Research Program. Member of AFMA Economics Working Group. Independent economics consultant. No pecuniary or other interest.</p>
Mr Daniel Corrie	<p>Employed by AFMA, Executive Officer of SERAG. No interest, pecuniary or otherwise.</p>
Dr Rik Buckworth	<p>Partner, Sea Sense and Director, Aquatic Remote Biopsy (independent fisheries research consultants). Scientific Member, NPRAG, SERAG, TSFRAG Chair, NT Research Advisory Committee, FRDC University Fellow, Charles Darwin University. No pecuniary or other interests in this fishery.</p>
Mr Andrew Penney	<p>Sole 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 2014-009: Development of guidelines for quality assurance of Australian fisheries research and science information, and co-investigator on FRDC Project No 2014-203: SESSF Monitoring and Assessment – Strategic Review. 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</p>
Mr Ross Winstanley	<p>No pecuniary interest in this fishery however declares he has a brother in law that holds a Victorian Inshore Trawl Licence</p>
Dr Simon Nicol	<p>ABARES. Interest in obtaining funding for future research. No pecuniary interest.</p>

Mr John Jarvis	Commonwealth Trawl Sector boat and quota SFR holder. Owns a seafood retail shop. Member of SETFIA.
Dr Geoff Tuck	CSIRO. Involved in Stock Assessments. Interest in obtaining funding for future research. Principle investigator on the SESSF stock assessment project.
Mr Simon Boag	Executive Officer South East Trawl Fishing Industry Association (SETFIA). Non-beneficiary Director of two fishing companies in the SESSF. Industry member on SERAG. SETFIA receives funding from various bodies to complete projects. Involved in the delivery of industry training courses through East Gippsland TAFE. Undertakes contracts as an independent consultant.
Invited Participant	Declared Interest
Dr Malcolm Haddon	CSIRO stock assessment scientist actively involved in the development of new methods and processes. Actively making research proposals for obtaining funding for research deemed of high priority by the RAGs and MACs. Member of GAB RAG, Northern Prawn RAG and sub-Antarctic RAG; also scientific member of the sub-Antarctic MAC.
Dr Rudy Kloser	CSIRO, Assessment scientist. Acquiring funding for research purposes.
Dr Robin Thomson	CSIRO, Assessment scientist. Acquiring funding for research purposes PI on data services contract and close kin project for school shark.
Dr Miriana Sporcic	CSIRO, Assessment scientist. Acquiring funding for research purposes
Dr Jemery Day	CSIRO, Assessment scientist. Acquiring funding for research purposes
Mr Kyne Krusic-golub	Director – Fish Ageing Services
Mr George Day	AFMA, Demeral and Midwater Fisheries Manager. No interest, pecuniary or otherwise.
Dr John Stewart	NSW Fisheries, Assessment scientist. Acquiring funding for research purposes. No pecuniary interest or otherwise
Dr Fay Helidoniotis	ABARES. No pecuniary interest.

Attachment B

Table 3 Outcomes of action items from previous SERAG meetings

		• Complete/Redundant	• Underway/Not yet complete	• Need SESSF RAG advice		
Meeting & agenda item reference	Action No.	Description	Responsibility	Timeframe	Status	
2015.09 1.4	2	The RAG endorses the ongoing need to document changes to the AFMA database. In line with this endorsement, AFMA and CSIRO to develop a shared site to communicate and document historic changes to the database.	AFMA and CSIRO	Ongoing	Document change libraries, and a shared site to access them, will be developed as part of AFMA ICT project.	
2016.10 12.0	11	AFMA to liaise with Tasmanian authorities and obtain a copy of the giant crab final report.	AFMA	When giant crab report is completed	The report is pending.	
2016.11 1.3	1	Distribute the final draft minutes of the October SERAG meeting for members clearance.	Ross Bromley, AFMA	By week ending 2 December	Complete.	
2016.11 2.0	2	Circulate Dr Alan Williams' blue eye trevalla presentation given at the October SERAG meeting.	Ross Bromley, AFMA	Immediately	Complete.	
2016.11 3.1	3	CSIRO to pass on data from the 2016 AOS survey for inclusion on the AFMA database in time for use in the 2017 orange roughy assessment.	Caroline Sutton	In time for inclusion in the 2017 assessment	Complete. At the time of drafting, Malcolm Haddon was waiting on advice from Rudy Kloser regarding calibration of AOS equipment and the effect on estimates.	

2016.11 4.1	4	Dr Day to check and ensure that only winter FIS length frequency data are used in the tiger flathead Tier 1 assessment model.	Dr Day	Immediately	<p>Complete. FIS length frequencies have been separated into summer and winter components. SERAG to advise whether winter and summer, just winter, or neither is used in future assessments.</p> <p>SERAG Sept `17: SERAG agreed to consider which FIS length frequencies are used in the Tier 1 flathead assessment at the 2018 SESSFRAG Data meeting.</p>
2016.11 4.1	5	Investigate if any changes have occurred in the Danish seine codend size. If any changes have occurred report the type of change and date of the change for inclusion in the next flathead assessment.	AFMA	Prior to March 2017 SESSFRAG meeting	Complete. Results to be discussed at this meeting.
2016.11 5.1	6	Ensure that the redfish otolith collection target is met.	AFMA	Immediately	<p>Observers have been deployed on NSW trips, however catch remains low. As of July `17, otolith collection is at 9%.</p> <p>Observer section is focusing on collecting otoliths and an update will be provided at the November meeting.</p> <p>SESSFRAG Aug `17 supported using the CTS FIS to supplement ISMP otolith collection.</p> <p>SERAG Sept `17: Collections as of July `17 are 18%</p>
2016.11 5.3	7	AFMA to incorporate reports from the recreational fishing and grab-all mesh net sectors in the	AFMA	November SERAG meeting	The most recent published survey was for the 2012/13 season. Aggregated catch can be considered as part of the rebuild strategy review.

			next SERAG blue warehou rebuilding strategy report.			AFMA has contacted Jeremy Lyle at IMAS and is waiting on a response regarding access to the data.
2016.11 5.4	8		Facilitate the formation of a small group to investigate methods of assessing the biomass of southern and western zone orange roughy stocks.	SETFIA & ILO	As soon as possible	Completed. The group met on 16 March 2017 and the minutes of the workshop, including a proposed way forward, are included at Attachment A. Proposed stages for a western orange roughy assessment are included in table 2 below for SERAG consideration.
2016.11 5.4	9		AFMA to implement a geofence around the Cascade Plateau in the VMS system to monitor fishing activities, and arrange for port based sampling of orange roughy.	AFMA	May 2017	Ongoing. Geofence has been implemented but there haven't been any sampling opportunities due to lack of fishing in the area (as has been the case for the last couple of years). Following preliminary discussions with Dr Judy Upston in relation to the data requirements, and if the opportunity arises, it is recommended that onboard, instead of port, sampling be prioritised and the number of male and female samples required is clarified (to assist with issues relating to the mixed sex assessment model). SERAG Sept `17: Clarrification is required about the number of male and female samples. Include in SESSF Data plan.
2016.11 5.4	10		SETFIA to liaise with operators fishing the Cascade Plateau to facilitate sampling of orange roughy catches	SETFIA	May 2017	Ongoing. SETFIA has asked operators to notify it or AFMA if they intend to fish the area so that either onboard or port sampling can be arranged.

Table 4 Actions arising from SERAG September 2017

Meeting & agenda item reference	Action No.	Description	Responsibility	Timeframe
2017.09 1.4	1	Dr Day to prepare a discussion paper regarding the inclusion of winter/summer FIS surveys in future tiger flathead surveys.	AFMA and CSIRO	SESSFRAG Data Meeting 2019 Raise at SESSFRAG Chairs meeting 2019
2017.09 6.1	2	AFMA to summarise the catch composition of deepwater shark catches over time using observer and logbook records and report back to SERAG in November.	AFMA	SERAG November 2017
2017.09 6.1	3	Dr Haddon to check that all species catch included in the CPUE standardisations for deepwater sharks (east and west) are for species in that quota basket.	Dr Haddon	SERAG November 2017
2017.09 6.2	4	Dr Haddon to revise the Tier 4 assessment for deepwater shark east and west using catch and effort data from areas currently open to fishing. Also complete a Tier 5 assessment for consideration at the November SERAG.	Dr Haddon	SERAG November 2017
2017.09 6.3	5	Dr Haddon to revise the ocean perch Tier 4 to include zones 30, 40 and 50 and present it at the SERAG November 2017 meeting.	Dr Haddon	SERAG November 2017
2017.09 6.3	6	CSIRO to review discard calculations for inshore ocean perch, noting it may be a systematic error, in which case all discard estimated will need to be revised.	Dr Haddon Dr Thomson	SERAG November 2017
2017.09 6.4	7	AFMA to investigate the catch composition of oreodories in the observer database, noting large numbers of oxeve dory are recorded in logbooks.	AFMA	As soon as possible
2017.09 7.2	8	Dr Thomson and Dr Day to rectify the issue with the red, amber, green scoring of ISMP coverage in the 2017 data summary with particular reference to onboard discard weights for school whiting.	Dr Thomson Dr Day	As soon as possible

2017.09 7.3	9	CSIRO to investigate standardising the criteria for accepting discard estimates between the ISMP discard report and those used in stock assessments.	Dr Thomson	SESSFRAG Data meeting 2018.
2017.09 7.3	10	Dr Day to check the age composition data for retained school whiting for Danish seine in 2007 and report back at the November SERAG meeting as part of the school whiting assessment agenda item.	Dr Day	SERAG November 2017
2017.09 7.3	11	Dr Day to generate an aggregated age over time plot for school whiting for the 2009 assessment to compare to the 2017 assessment and report back to SERAG in November as part of the school whiting assessment agenda item.	Dr Day	SERAG November 2017
2017.09 8.3	12	Dr Tuck to investigate the catch of redfish at 400m which appears in the 2017 SESSF Data Summary.	Dr Tuck	SERAG November 2017
2017.09 1.4	13	Dr Krusic-Golub to review the 2016 western orange roughly otolith information (catch, length frequencies etc.) to see if they would be useful as an input to an updated Tier 1 assessment.	Dr Krusic-Golub	As soon as possible
2017.09 Other items	14	AFMA to circulate an update paper on the approach to breakout rule analysis as approved by the AFMA Commission.	AFMA	As soon as possible

Table 5 Recommendation from SERAG September 2017

Meeting & agenda item reference	Recommendation
2017.09 2.2	SERAG supports ABARES forming a working group to establish a more reliable estimate of fishing mortality and appropriate reference points for determining stock status with regards to 'overfishing'. Critical to this is defining 'overfishing'.