



Australian Government
Australian Fisheries Management Authority



Southern and Eastern Scalefish and Shark Fishery

 Resource Assessment Group (SESSF RAG)

2016 Data Meeting

MINUTES

CHAIR: Dr Cathy Dichmont

18 & 19 August 2016

CSIRO

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Southern and Eastern Scalefish and Shark Fishery Resource Assessment Group (SESSFRAG)

Minutes

Chair: Dr Cathy Dichmont

DAY 1, Thursday 18 August

The Chair commenced the meeting at 8:30am.

Agenda Item 1 – Preliminaries

1.1. Welcome and introductions/apologies

1. Dr Cathy Dichmont (SESSFRAG Chair) welcomed members and observers to the meeting. The Chair noted apologies from Mr Sandy Morison and Dr Ian Knuckey.

Attendees

Name	Affiliation
SESSFRAG Chair	
Dr Cathy Dichmont	Dichmont Consulting
SESSFRAG Members	
Mr George Day	AFMA member
Mr Lance Lloyd	Scientific member
Dr Sarah Jennings	Economic member
Executive Officer	
Mr Daniel Corrie	AFMA
Invited participants	
Dr Malcolm Haddon	CISRO
Dr Geoff Tuck	CSIRO
Dr Karina Hall	NSW Fisheries
Dr Fay Helidoniotis	ABARES
Mr Simon Boag	SETFIA (industry)
Mr Brodie Macdonald	AFMA
Mr Chris Burns	AFMA
Dr Judy Upston	CSIRO
Dr Kyne Krusic-Golub	Fish Ageing Services
Dr Rich Little	CSIRO
Dr Brigid Kerrigan	AFMA
Mr David Stone	SSFIA (Industry)
Dr Jemery Day	CSIRO
Mr Andrew Penney	Pisces Australis
Dr Miriana Sporcic	CSIRO
Dr Robin Thomson	CSIRO

1.1. Declarations of interest

2. Members and invited participants provided declarations of pecuniary interest and conflicts as prescribed in Fisheries Administration Paper 12 (Appendix A, table A.1).
3. Participants were asked to declare any interest in specific agenda items and were asked to leave the room so that the SESSFRAG could discuss their participation.

Dr Malcolm Haddon (research interests) – Attendance supported

Dr Kyne Krusic-Golub (research interests) - Attendance supported

Dr Rich Little (research interests) - Attendance supported

Dr Jemery Day (research interests) - Attendance supported

Dr Geoff Tuck (research interests) - Attendance supported

Mr Andrew Penney (research interests) - Attendance supported

Dr Robin Thompson (research interests) - Attendance supported

Dr Miriana Sporic (research interests) - Attendance supported

1.3 Adoption of Agenda

4. Mr George Day proposed removing agenda item 4.1 – SESSF data plan, noting there had been few changes since it was presented to SESSFRAG in March 2016, and bringing agenda item ‘5.3 – electronic monitoring’ forward to replace it and seek recommendation from the RAG.
5. The RAG officially adopted the amended agenda (Appendix B). Agenda items appear in this document in order of agenda item number.

1.4 Actions arising from previous meetings

6. The status of the actions is detailed in Appendix A Table A.2. Items marked in green have been completed and are no longer outstanding. Those in yellow are underway and those marked in red require SESSFRAG input.
7. The SESSFRAG discussed the following outstanding action items which are reflected in Table A.2.

Action Item 7 - Noting that catches of non-quota species are not included in the CPUE series, and they can make up a significant proportion of total catch and fishery GVP, Dr Thomson to investigate the effect of including non-quota species in the CPUE series for inclusion in next year's data summary

SESSFRAG comments: The SESSF Monitoring and Assessment Review Project (SMARP) will provide advice on classification of commercial species in the SESSF, including whether they are subject to any form of assessment and the need for inclusion in the SESSF data summary. This action item will remain ongoing until SMARP advice is received.

Action Item 8 - Bight redfish. The RAG noted that the green CDR landings line in the data summary was below the line trawl catch (i.e. zero). Dr Thomson to check the data and rectify the TAC/landings chart.

SESSFRAG comments: When this data is presented in the future, note that 2005-2006 data only includes 6 months of Catch Disposal Records (CDR).

Action Item 16 - Offshore ocean perch. The RAG noted the offshore ocean perch discard and retained length frequency data for 1994-97 appear to be inconsistent with the rest of the data. Dr Thomson undertook to look at these data and inform the RAG of the outcome.

SESSFRAG comments: This is part of a more widespread problem with pre-1998 data that may have resulted from problems introduced when data were migrated from PIRVIC. Dr Thomson has been in contact with John Garvey (AFMA) about this, but tracking the problem would require more time than is currently budgeted for.

The SESSFRAG supported removing this specific action item in place of a more general action for Dr Thomson and Mr John Garvey (AFMA) to address out of session.

Action item 1 – Dr Thomson and Mr Garvey to address issues with pre-1998 length data stemming from migration of PIRVIC data. As soon as practicable.

Action item 19 - Dr Day to undertake preliminary work to ascertain if a pre-recruit survey is a viable option for school whiting and consequently if it is worth investing in.

SESSFRAG comments: The SESSFRAG supported removing this item from the list of action items as it is not funded by AFMA, and was not instigated by SESSFRAG. Results will be provided to SERAG & SESSFRAG when they become available.

Agenda Item 2 - Review of 2015 data for assessments

2.1 ISMP annual report

8. Mr Burns introduced the Integrated Scientific Monitoring Program annual report (Attachment A).
9. He noted it has been a busy and successful year for the ISMP program in achieving targets. Onboard observer coverage in the GHAT was removed due to the introduction of electronic monitoring (EM). The target for trawl days was achieved, and there was oversampling for eastern Tasmania orange roughy and Cascade orange roughy zones.
10. Oversampling is occurring when orange roughy trips are extended to fish for market fish while observers are on board.

Action Item 2 – Mr Burns to remove targets for blue-eye trevalla from the ISMP program because the data are not required for a Tier 4 assessment.

Gummy shark

- Mr Burns emphasised the difficulty in obtaining catch location, depth and gear type when undertaking port sampling. Mr Day said that AFMA may put observers on targeted trips to obtain the required data. This will be discussed in more detailed at agenda item 2.7.

Length frequency collection, GHAT

- Sawsharks and elephantfish are Tier 4 species and biologicals are not required
- There have been issues with anticipating unloads for port sampling and effectively sampling catch as it is unloaded from boats to trucks. This could be an issue in the future with the reduction of onboard observer coverage.

Otolith collection, Commonwealth Trawl Sector

- There are no planned assessments for inshore ocean perch so the targets for otolith collection can be removed. To be discussed as part of agenda item 2.7.
- Dr Rudy Kloser (CSIRO) is collecting orange roughy otoliths as part of the eastern orange roughy survey. The recent data (last two surveys) are not included in the ISMP report. That data can be added to the AFMA database but would need to be flagged as survey-collected otoliths and associated lengths.

Action item 3 – Dr Upston, Dr Krusic-Golub and Mr Garvey to speak with Dr Kloser about the addition of eastern orange roughy survey age data to the AFMA observer database and flagged as survey data.

- There is over sampling of orange roughy otoliths relative to the ISMP target. Dr Upston noted that approximately 10,000 otoliths are required to obtain full coverage, however that is resource intensive so a minimum requirement is set for the ISMP target. We may not age the excess otoliths, but they would be valuable in the future for information if the spawning structure changes in some way.
- SESSFRAG recommended limiting the collection of orange roughy otoliths to the target of 1000 samples, noting that some over sampling may occur.

2.2 Discard rate estimates

- Dr Upston introduced the draft SESSF ISMP discard report (Attachment B) focussing on the coverage statistics (Attachment B, Table 1).

Table 1 Excerpt of Table 1 of the draft ISMP discard report – coverage statistics

TRAWL	Re-design 2009		AFMA Targ ³	2013 ⁺		2014 [*]				2015					
	sea-day	shot		sea-day	sday ¹	shot	sday ¹	shot	vessel	months	sday ¹	flag ²	shot	vessel	months
South East Trawl (SET)															
VIT	3	11	0	0	0	0	0	0	0	0	0	-	0	0	0
BS_IN_TR	2	7	0	3	3	5	14	2	2	3	-	8	3	1	
ECDW_TR	1	2	0	49	181	1	0	1	1	0	-	0	0	0	
EDL_DS	50	229	32	21	103	18	81	5	5	14	-	65	7	8	
EDL_IN_TR	37	115	35	22	58	23	64	7	7	33	-	88	9	7	

Re-design 2009 refers to the Bergh targets as part of the 2009 re-design

flag “+” sea days in 2015 were more than double the target in the 2009 re-design. “-” <60 % of sea days achieved

AFMA Targ	AFMA estimated targets based on % of logbook shots in strata for the previous year, adjusted for operational/management requirements
sday	number of sea days achieved
shot	number of shots observed
vessel	number of vessels on which sea days were achieved

19. This discard report should be used to assess whether the sampling design (Bergh *et al*, 2009) is being achieved and reflects effort in the fishery. Dr Upston noted that the Bergh '09 targets were based on a five year average, and distribution of effort has remained similar since then.
20. AFMA ISMP targets are set based on the previous years' fishing effort, and we might be "chasing noise" by only considering a single years' data. The SESSFRAG recommended using a rolling five year average to set the AFMA ISMP targets. Any difference between the Bergh and AFMA targets could then reflect changes in effort that need to be addressed.

Action item 4 – Mr Burns to consider fishery effort at a 3-5 year average when setting the AFMA ISMP sea-day targets.

Action item 5 – Dr Upston to consider adding a column to Table 1 of the ISMP discard report to compare actual vs planned coverage statistics.

21. The SESSFRAG identified the 'unknown' category at the bottom of Table 1 as New South Wales ocean trawl data. This should not be included in the discard summary.

Action Item 6 - AFMA to ensure that NSW ocean trawl data is not included in the annual database provision to CSIRO.

22. Insufficient coverage in the main strata (<10 shots) meant discard estimates could not be calculated for a number of species; alfonsino, bight redfish, blue warehou east/west, deepwater flathead, deepwater shark east/west, jackass morwong, orange roughy (GAB), royal red prawn, saw shark, school shark and smooth oreo (Attachment B, Table 4).
23. Mr Stone questioned why discard estimates couldn't be calculated for saw shark, given 50 per cent of the catch comes from trawl. Dr Upston explained that discard rates are based on fishery-wide estimates. There was only one observation in the main catch strata - 'gillnet western Bass Strait' and an estimate could not be calculated. Discard estimates for shark gillnet and hook were not available this year, and estimates cannot be calculated using trawl data only. It might be possible to have a separate estimate for trawl-specific discards, but that would require a different sampling design.
24. Relative to previous years there has been an increase in estimated discard rates for blue grenadier (Tas west trawl), silver warehou and western gemfish. There has been a relative decrease for jackass morwong east, john dory, mirror dory east and blue grenadier (Tas spawn).
25. Mr Boag noted that Danish seine vessels are using a larger mesh size (1 7/8") which would only translate to fewer discards for school whiting.

Action Item 7 – AFMA to check that Danish seine mesh size and orientation is recorded in the logbook database and provide the information to CSIRO. This is required for the school whiting stock assessment.

2.3 Data summary, standardized CPUE & breakout analysis

26. The SESSFRAG considered the data summary (Attachment C) and standardised CPUE analysis for species with assessments scheduled for 2016.
27. CSIRO has been working closely with John Garvey (AFMA) over the past 12 months to rectify some of the data issues faced in the past. John's data warehouse has proved valuable in checking previous year's data.
28. Fishery Independent Survey (FIS) data are now included in the data summary:
 - Abundance indices are included in the geometric mean CPUE plot.
 - Onboard length frequencies included in length frequency plot.

Tiger Flathead (Data summary – p. 11)

29. The FIS seems to be measuring smaller fish than the onboard observers.

Action item 8 – Mr Boag to investigate why smaller fish are being sampled in the FIS vs commercial catch (ISMP).

30. Mr Boag noted that mesh size used in the FIS is 90 mm in the east and 102 mm in the west. Shots in the FIS are typically no longer than two hours long, so larger fish are not tiring and being caught. This could explain why we are seeing smaller fish in the data.
31. Standardised CPUE in zone 30 has decreased slightly but the sampler size is small with large error bars.
32. Danish seine catches have increased by 300 kg and the standardised CPUE has been stable for three years.

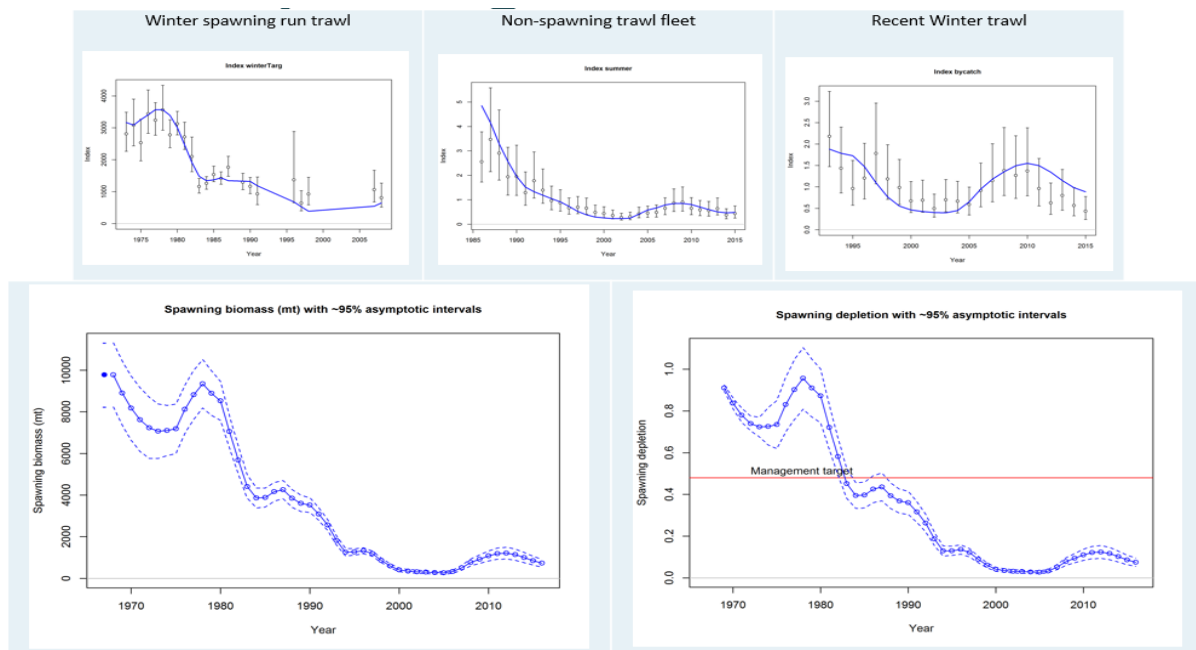
Action item 9 – Dr Krusic-Golub to check that any age estimates obtained from the FIS are flagged as survey data for inclusion in the database.

Eastern Gemfish (p. 98)

33. In preparation for this meeting, Dr Little was asked to review the available data for eastern gemfish and prepare a preliminary update of the eastern gemfish assessment, in order for the SESSFRAG to provide advice on whether an assessment is completed in 2016 or deferred to 2017. Dr Little noted that:
 - the last assessment was completed in 2008/09 using a spawning stock survey
 - there is anecdotal evidence of a recruitment event in 2015 as shown by the age data
 - there are four fleets considered in the assessment:
 - o winter targeted spawning run trawl fleet (survey)
 - o winter non-targeted spawning run trawl fleet
 - o summer trawl
 - o non-trawl (dropline).
34. SESSFRAG noted that:
 - discard rates remain high at between 40-60 per cent

- the non-targeted spawning standardised CPUE has decreased
- the CPUE considered here is a bycatch index and is unlikely to be representative of the stock
- there has been low recruitment since 2002 and biomass is tracking down since that 2002 cohort entered the fishery
- recruitment in recent years would be unlikely to be detected because the model assumes recruitment at 3 years.

Figure 1 CPUE and estimated spawning biomass for Winter spawning run trawl, non-trawl and Winter non-targetted trawl fleets



- Using available data, the analysis estimated that female spawning stock biomass at the start of 2015 based on this unbalanced update of the model is **8.3% of unexploited female spawning stock biomass**. The stock has declined since 2010 owing likely to a lack of recruitment in the fishery.
- If a full assessment were to be completed in the future it would need to address the following:
 - high convergence criteria in the estimation procedure
 - poor fits to discard rates
 - additional data that has been provided for assessments.
- The SESSFRAG recommended that an eastern gemfish assessment is postponed until 2017, noting that:
 - the data aren't definitive enough to warrant that anything has changed
 - the data should be assessed over the next 12 months to determine whether an updated assessment will produce a result, particularly to see whether there has been any additional recruitment (whether it's picked up in the data)
 - the discussion regarding non-recovering stocks may inform the process.

Action item 10 – Dr Little to advise AFMA whether the data exploration required to update the 2017 eastern gemfish assessment is in addition to what is required as part of a ‘typical’ stock assessment.

Western gemfish (p. 105)

38. SESSFRAG noted that:

- the Total Allowable Catch (TAC) has increased recently while catches across gear types have decreased
- there is one ‘usable’ FIS CPUE point from 2014
- non-standardised hook CPUE has increased while non-standardised trawl CPUE has decreased since 2014
- discard estimates are alternating high to low each year. There is no obvious explanation for this.

39. The SESSFRAG discussed the possibility of updating the Tier 1 assessment with the new data and incorporating the updated stock structure information, noting that:

- it may be worth taking a similar approach to eastern gemfish and do a detailed data exploration and update of the assessment, rather than a full Tier 1 assessment
- if the data exploration and updated assessment suggest the Tier 1 assessment is possible, then ABARES could run the assessment in 2017.

Action Item 11 – In preparation for a 2017 western gemfish Tier 1 stock assessment, Fay Helidoniotis (ABARES) to provide advice to GABRAG on the practicalities of a stepwise approach to doing a preliminary assessment. ABARES – in time for GABRAG November 3 2016

40. In the absence of a Tier 1 assessment in 2016, a Tier 4 assessment may need to be completed for the Commonwealth trawl sector, incorporating the standardised CPUE prepared by CSIRO.

Action Item 12 – AFMA to provide advice on who is responsible for completing the western gemfish Tier 4 assessment (CTS assessment).

Gummy Shark (p. 263)

41. SESSFRAG noted that:

- landings of gummy shark relative to the TAC remain high
- onboard length frequencies are hyper-stable because of the selectivity of gillnets, however trawl caught FIS length frequencies are sampling smaller size classes
- there are now four FIS CPUE data points for gummy shark
- there were not enough length measurements for hook caught gummy shark by South Australian State operators fishing in Commonwealth waters, particularly inside the 183 m line. To be discussed as agenda item 2.7.

42. The New Zealand National Institute for Water and Atmospheric Research (NIWA) reviewed the SESSF FIS and found that the CV estimates for gummy shark are reasonable. SMARP noted that while the majority of the fishery is located in Bass Strait and is not sampled as part of the

SESSF FIS, the data is useful as an index for trawl caught gummy shark in areas overlapping the stock in eastern Bass Strait.

Mirror dory (p. 126)

43. SESSFRAG noted that:

- catch increased in 2015 though TAC and landings are generally declining
- the majority of the catch is coming from zone 10
- the 2014 FIS shows a marked increase in CPUE, though with large error bars
- discard estimates have not been available for the past 5-6 years. The 2015 discard estimate for mirror dory shows a slight decrease relative to previous years
- there is no port sampling data showing up in the dataset for mirror dory west from November 2015. Chris Burns suggested there was sampling occurring in Portland.

Action item 13 – Mr Burns and Dr Thomson to investigate why there are no port samples showing up in the data summary for western gemfish and mirror dory west from November 2015.

Blue-eye trevalla (p. 70)

44. SESSFRAG noted that:

- total landed catches have been variable
- standardised CPUE remains quite flat, however there has been a increase in geometric mean CPUE because of a large catch of blue-eye trevalla by one boat on the east coast of Tasmania
- the current Tier 4 analysis uses line-caught CPUE so trawl caught blue-eye trevalla data is not particularly useful

45. Dr Haddon will provide an update for blue-eye trevalla at the October SERAG meeting, including an update of Dr Allan Williams’ stock structure work.

Breakout analysis

46. SESSFRAG considered the breakout analysis for Tier 1 species.

Blue grenadier (p. 77)

Breakout Rule	Triggered?	SESSFRAG comment
The most recent observed value for the standardised non-spawn CPUE falls outside of the 95% confidence interval predicted by the most recent Tier 1 stock assessment.	No	Standardised CPUE falls inside the 95% confidence interval predicted by the Tier 1 assessment.
The most recent observed value for the standardised non-spawn CPUE from the acoustic survey falls outside of the 95% confidence interval predicted from the acoustic survey (when survey values are available)	N/A	Survey data unavailable

Less than 70% of the of TAC is caught (SESSFRAG agreed that the rule should be applied to the agreed TAC)	Yes	TAC 19 % caught. This was expected as the Winter spawning run has not been fished. New Zealand quotas have been increasing so they have no capacity to send vessels to Australia.
The observed age composition is significantly different to that projected.	No	There is no variation in the predicted age composition

Pink Ling (p. 112)

47. The CPUE standardisation approach used in the agreed assessment by Dr Patrick Cordue was not available to assess pink ling against any breakout rules. AFMA is monitoring pink ling catches against constant catch scenarios in the east. SESSFRAG was unable to assess pink ling against breakout rules at the meeting.

Action item 14 – AFMA to request that Patrick Cordue’s model be made available for CSIRO to repeat the CPUE standardisation process.

Silver Warehou (p. 153)

Breakout Rule	Triggered?	SESSFRAG comment
The most recent observed value for the standardised non-spawn CPUE falls outside of the 95% confidence interval predicted by the most recent Tier 1 stock assessment.	Yes (east)	Western trawl CPUE has not broken out but is only slightly inside the 95% confidence interval. Eastern trawl CPUE has broken out low.
Discards exceed 20% of the TAC	Not assessed	Discard data won't be unavailable until October SERAG.
Age composition of the silver warehou stock is significantly different from that predicted by the model;	Not assessed	This breakout rule was not quantified. Recruitment issues with the assessment would undermine any age composition based breakouts.
The proportion of the TAC caught differs by more than 20% from the average over the last three years.	Yes	Three year average proportion is 19 %. The 2015/16 proportion is 11 %.

48. The CPUE projections in the model are based on average recruitment. The assessment may be overestimating recent recruitment. Dr Day suggested even if lower than average recruits were accounted for in the assessment there would be little effect on the projections.
49. Despite having broken out SESSFRAG did not recommend an assessment for this species in 2016, noting this species is currently on a step-down TAC and will be one of the species considered under the non-recovering stocks project.

Jackass morwong (p. 18)

Breakout Rule	Triggered?	SESSFRAG comment
Observed standardized CPUE falls outside the 95% confidence interval	Yes	Eastern CPUE has broken out low for Victoria & New South Wales and Tasmanian trawl. Western CPUE has not broken out though it is only just inside the 95 % confidence interval.
Catch exceeds the individual east and west RBCs	No	Total 2015/15 catch was 148 t. This is below the respective eastern and western RBCs.

50. SESSFRAG agreed the assessment and breakout analysis for jackass morwong has similar issues to silver warehou. There are issues with the recruitment index and SESSFRAG recommended this should be another of the species considered in the non-recovering stock project.

Note: Standardised CPUE information was not available for Tier 4 species. SESSFRAG supported AFMA completing the breakout analysis out of session.

Action item 15 – AFMA to complete the breakout analysis for Tier 4 species and present the results to SERAG in October 2016.

Data summary for Tier 3 & 4 species.

51. The Chair asked that SESSFRAG consider the data summary and CPUE information for Tier 3 and 4 species and only raise points by exception.

John Dory (p. 32)

52. There was no discussion in addition to what is presented in the data summary.

Alfonsino (p. 5)

53. SESSFRAG noted there has been no catch of Alfonsino in 2015. The major quota holder has not been fishing.
54. There was no further discussion in addition to what is presented in the data summary.

Royal red prawn (p. 46)

55. The SESSFRAG noted there is no length frequency information available for royal red prawn. The data was provided using centimetres, where it is typically measured in millimetres.
56. There was no further discussion in addition to what is presented in the data summary.

Action item 16 – AFMA (John Garvey) to ensure provision of royal red prawn length frequencies uses millimetres and not centimetres.

Silver Trevally (p. 59)

57. The SESSFRAG noted that standardised CPUE is relatively flat and discard rates have increased slightly.
58. There was no further discussion in addition to what is presented in the data summary.

Eastern deepwater shark basket (p. 225)

59. SESSFRAG noted that:

- long term standardised CPUE has been declining but was relatively flat for the last three years
- previous assessments have provided for an increased TAC but the SEMAC supported maintaining the TAC based on industry advice
- this species basket is being assessed in 2017.

Western deepwater shark basket (p. 230)

60. SESSFRAG noted that:

- there was a steep decline in CPUE between 2007 and 2012 but has been relatively stable since then
- a large portion of the eastern and western deepwater shark stock distribution is closed to fishing
- western deepwater shark are due for assessment in 2017.

Oreo, basket (p. 208)

61. There was no discussion in addition to what is presented in the data summary.

Ribaldo (p. 175)

62. SESSFRAG requested that the third breakout rule for ribaldo be clarified.

Action item 17 – AFMA to clarify the third breakout rule for ribaldo; In addition to breakout rules, monitor the proportion of the catch taken by trawl and hook method. N.B. This will be considered as part of a breakout rule review to be completed by AFMA.

63. There was no discussion in addition to what is presented in the data summary.

Smooth oreo, non-Cascade (p. 219)

64. SESSFRAG noted that:

- 21.3 t of the 23 t TAC has been caught
- the catch based breakout rule for smooth oreo (10 t) had been triggered due to the opening of the orange roughy fishery where smooth oreo are incidentally caught

65. SESSFRAG recommended that a new trigger should be set at 70 % the 90 t TAC resulting from the Tier 5 assessment.

Oreo, Cascade (p. 214)

66. SESSFRAG noted there has been zero catch of Cascade oreo.

67. There was no further discussion in addition to what is presented in the data summary.

Redfish (p. 39)

68. There are no official breakout rules for redfish, however the standardised CPUE is outside (below) the 95 per cent confidence interval predicted by the model.

69. There was no further discussion in addition to what is presented in the data summary.
70. This species will be considered as part of the non-recovering stocks project.

2.4 Fish Ageing Services - end of financial year report (inc. agenda item 2.5)

71. Dr Krusic-Golub introduced the Fish Ageing Services End of Financial Year Report.

Dr Krusic-Golub referred to the 2016/17 ageing workplan for assessments scheduled for the end of 2017 (Table 2) noting

Sector	Species	2017	Rational
Trawl			
	Alfonsino	600	Tier 3 proposed in 2017 - Age samples from 2016 (if collected)
	Blue Grenadier	1000	Tier 1 proposed in 2017 - Age samples from 2016
	Blue-Eye Trevalla		
	Blue warehou		
	Tiger Flathead		
	Gemfish - East		
	Gemfish West		
	Jackass Morwong		
	John Dory	600	Tier 3 proposed in 2017 - Age samples from 2015
	Mirror Dory		
	Ocean Perch		
	Orange Roughy	1000	Eastern Stock Assessment - Which samples??
	Pink Ujng		
	Redfish		
	Ribaldo		
	School Whiting	4400	Age 2016 samples and various historical otoliths that were originally aged from whole otoliths
	Silver Trevally		
	Silver Warehou		
GHAT			
	Pink Ling		
	Blue-eye Trevalla		
	Ribaldo		
	Hapuka		
	Gummy Shark	3500	Tier 1 in 2016 - Complete ageing by early
	School Shark		
GAB			
	Deepwater Flathead	560	Complete annual ageing target 2016/17
	Bight Redfish	570	Complete annual ageing target 2016/17
	Gemfish GAB		
	Jackass morwong		
	Blue Grenadier		
	TOTAL	12230	

that gummy shark, eastern orange roughy and the re-ageing of eastern school whiting accounts for around 75 per cent of the ageing budget. The remaining priority species noted for assessment were discussed in terms of ageing requirements. It was noted that committing to ageing large amounts of a single species (ie Gummy shark and School whiting) during the one year will potentially come at a cos of one or more other species. The RAG noted that only 2 other tier 3 species were scheduled for assessment during 2017 and that one of those was Alfonsino. **Table 2 Ageing requirements for 2017 assessments**

72. Alfonsino are a Tier 3 species proposed for assessment in 2017, and there has been zero catch. The RAG recommended that the assessment be postponed and that ageing is not required.
73. The orange roughy assessment is scheduled for 2017 and the ageing is required.

Action item 18 – Dr Krusic-Golub, Dr Upston and Dr Kloser to discuss ageing requirements for the 2017 orange roughy assessment out of session and report back at the October SERAG meeting.

74. The SESSFRAG noted there are no targets for redfish in ageing workplan, and that the ageing budget was exhausted on orange roughy, gummy shark, blue grenadier and school whiting.
75. Scheduling of other Tier 1 assessments and ageing requirements will be discussed at agenda item 3.1 – SESSF 2017-18 research plan.

2.6 Ageing requirements for school whiting

76. Dr Hall advised that New South Wales fisheries had received Fish Ageing Services ageing protocols for school whiting and are now using the same methodology. She advised that New South Wales have approximately 400 school whiting samples spread over two years. Both Dr Hall and Dr Krusic-Golub also agreed that it was necessary to do a small inter-laboratory exchange of otoliths before the NSW age data was made available for the assessment.
77. The school whiting assessment has only incorporated one year of ageing using the updated methodology which is based on sectioned otoliths. Dr Day suggested the change in methodology is unlikely to greatly change the outcome of assessment.
78. Dr Day noted that there may be a need to restructure the school whiting assessment, which will inform which zones and months the historical otoliths need to be sampled from. . There is an ongoing action item for Dr Day to have that discussion with Dr Ian Knuckey.

Action item 19 – Dr Krusic-Golub and Dr Day to discuss the sub-sampling of school whiting otoliths to be aged in preparation for the 2017 assessment. If the final number required differs from the proposed 4400 in the workplan this will be discussed with SESSFRAG out of session.

Action item 20 – Dr Day to discuss the structure of the school whiting assessment at the October SERAG meeting.

2.7 Recommended changes to ISMP

79. SESSFRAG discussed changes to the ISMP plan based on the discussions and recommendations in previous agenda items:

South east trawl – length frequency collection

80. SESSF noted that:
 - there will be no collection of blue-eye trevalla lengths in the future as it is a Tier 4 species
 - the target for inshore ocean perch was reduced from 1000 to 0 as there is no assessment
 - the target for trawl caught hapuka was reduced from 1000 to 0 as there is no assessment
 - the target for ocean jacket was maintained at 1000. The SMARP project identified ocean jacket as a secondary commercial species. There is currently no assessment, however data should be collected for possible future assessments where possible.

Gillnet, hook and trap – length frequency collection

81. When port sampling, it is important to differentiate between demersal longline and gillnet length frequencies for gummy shark.
82. Only onboard length frequencies have been used in the gummy shark assessment because port-based lengths could not be differentiated by gear type.

Action item 21 – Mr Burns to investigate the capacity to separate gillnet from longline caught gummy shark when port sampling.

83. Samples also need to be differentiated area, namely Victoria and South Australia. The proposed split is detailed in Table 15 of the SESSF data plan as proposed by SharkRAG. This needs to be incorporated into the ISMP target document. Mr Burns presented the breakdown of the 2700 required length measurements by time and location (Table 3).

Table 3 Proposed gummy shark yearly port sampling schedule for length and vertebrae data collection. (SA = South Australia; EBS = Eastern Bass Strait; WBS = Western Bass Strait; TAS = Tasmania; BS = Bass Strait).

Time of year (Quarter)	Zone (stocks)	Port	Length samples	Vertebrae samples	# trips to target
Jul - Sep	SA	Adelaide/Robe	100 gillnet 100 longline	50	1 gillnet trip 1 longline trip
	Bass Strait	Lakes/San Remo	250 gillnet 0 longline	75	2 gillnet trips
	TAS	Triabunna/Hobart	125 gillnet 100 longline	50	1 gillnet trip 1 longline trip
Oct - Dec	SA	Adelaide/Robe	100 gillnet 100 longline	50	1 gillnet trip 1 longline trip
	Bass Strait	Lakes/San Remo	250 gillnet 0 longline	75	2 gillnet trips
	TAS	Triabunna/Hobart	125 gillnet 100 longline	50	1 gillnet trip 1 longline trip
Jan - Mar	SA	Adelaide/Robe	100 gillnet 100 longline	50	1 gillnet trip 1 longline trip
	Bass Strait	Lakes/San Remo	250 gillnet 0 longline	75	2 gillnet trips
	TAS	Triabunna/Hobart	125 gillnet 100 longline	50	1 gillnet trip 1 longline trip
Apr - Jun	SA	Adelaide/Robe	100 gillnet 100 longline	50	1 gillnet trip 1 longline trip
	Bass Strait	Lakes/San Remo	250 gillnet 0 longline	75	2 gillnet trips
	TAS	Triabunna/Hobart	125 gillnet 100 longline	50	1 gillnet trip 1 longline trip

84. SESSFRAG supported the sampling plan for gummy shark detailed in Table 3.

85. Mr Stone noted that there are no samples coming from west of Adelaide. The assessment has a South Australian component, however there are no plans to collect samples from that area. Mr Day noted that this is a compromise and the cost of getting samples west of Adelaide is high. The Chair suggested investigating whether SARDI and PIRSA could provide the port sampling services.

86. The SESSFRAG noted similar issues for collection of school shark data.

Action item 22 – AFMA to liaise with SARDI and PIRSA regarding port sampling services to collect gummy shark length.

Action item 23 – Dr Thomson and Mr Burns, through SharkRAG, to investigate whether port sampling can provide sufficient data to support future gummy shark assessments.

Pink Ling

87. Dr Thomson noted that for length frequencies to be representative of the catch we need to know what the graded weights are. We cannot get that information from port sampling. Lakes Entrance is the only port we have that information for.
88. ShelfRAG had previously noted that sampling of pink ling in the east was insufficient and there was a proposal for operators in the east to collect onboard pink ling length frequencies.

Action item 24 – AFMA to work with Mr Boag to establish industry collection of pink ling length samples in the auto-line sector in the east. Dr Patrick Cordue will need to be consulted to establish data requirements.

89. Mr Stone recommended a similar approach to collecting length frequency information for gummy sharks, which was supported by the SESSFRAG.

Action item 25 – AFMA to liaise with Mr Stone to establish a protocol for industry-based collection of gummy shark lengths.

Blue warehou – industry collected samples

90. Dr Thomson presented the industry collected blue warehou samples and noted that the bimodal length distribution seen in the data summary is not reflected in the crew-collected data. This is possibly an artefact of a large number of measurements taken over a small number of shots.

Action item 26 – Dr Thomson to remove pre-1997 graphs from the data summary document as the page is becoming crowded.

Agenda Item 3 - Research

3.1 SESSF 2017-18 annual research plan

91. Mr Day introduced the SESSF 2017-18 Annual Research Plan noting that the SESSF Five Year Strategic Research Plan sets the framework for research in the fishery. AFMA is also developing an AFMA-wide five year strategic research plan.
92. The SESSFRAG agreed that the first three items are essential:
 - i. Commonwealth Trawl Sector – Fishery Independent Survey
 - ii. SESSF – Integrated Scientific Monitorign Program
 - iii. SESSF – Fish ageing services.
93. Mr Day drew the SESSRAGs attention to the proposed Stage 2 for the SESSF Strategic Monitoring and Research Project (SMARP) which involves quantitatively assessing the different approaches to setting multi-year TACs by:

- quantitatively evaluating increases in risk that may result from implementing multi-year TACs and propose ways to reduce the risk including critical evaluation of precautionary reduction in MYTACs and the large change limiting rule
 - evaluating the need for, and possible form of, breakout rules associated with multi-year TACs
 - undertaking Management Strategy Evaluation of breakout rules.
94. Attachment A of the SESSF 2017-18 Annual Research Plan outlines the assessment schedule for SESSF quota species. Outcomes of the SMARP will inform future scheduling of assessments in the SESSF. The following changes were made to the assessment schedule:
- alfonsino Tier 3 moved from 2017 to 2018 because of low catches
 - bight redfish assessment added to 2019
 - blue grenadier Tier 1 moved from 2017 to 2018 as it is under caught and well above target biomass
 - elephant fish and saw shark Tier 4 moved from 2018 to 2017 to be included with other Tier 4 assessments
 - Tier 4 assessment added to 2016 for blue warehou
 - 'latest assessment' column updated to recognise 2015 assessments.
95. Moving the blue grenadier assessment to 2018 has freed up resources in the ageing workplan. Redfish ageing can now be completed for the 2017 assessment.
96. AFMA had removed the 'non-recovering stocks' project from the research plan because it had been funded. The SESSFRAG suggesting putting it back on the list as it is yet to be completed.
97. Dr Thomson noted the proposed work to review how CPUE is calculated as part of the SESSF FIS. This work will inform how the catch data is analysed to calculate CPUE and the resultant CV's by revisiting the model-based design using historical data.

Action item 27 – CSIRO to detail the cost and logistics required to revisit the SESSF FIS model-based design using historical data and provide an overview to AFMA for inclusion in the 2017-18 annual research plan. Prior to September 2016 ARC meeting.

98. Mr Day added an item 'analysis of FIS data' to the research plan noting that CSIRO will provide text for the proposed project.
99. The Chair closed day one of the meeting.

DAY 2, Friday 19 August

100. The Chair commenced day two of the meeting at 8:30am.
101. Mr Corrie proposed a review of the breakout rules for species on multi-year TACs and formalising the review process. Breakout rules are necessary under a risk, catch cost framework but should not be heavily resource dependant. A formalised process is required whereby a report is tabled at the SESSFRAG data meeting, rather than the time consuming process of reviewing the data for every species.

102. Breakout rules should be based on assumptions in the assessments and designed to raise an alarm when something unexpected is seen in the data for species which are not scheduled for assessment.
103. As part of the SMARP we have asked for forward projections for each species to evaluate risk under different MYTAC scenarios. SMARP phase 2, as detailed in the annual research plan, should consider formulating and/or assessing breakout rules. Until then AFMA will review the current breakout rules to make sure they are appropriate. If SMARP phase 2 does not go ahead, then a larger body of work for reviewing and formalising the breakout analysis process should be considered.

Action item 28 – AFMA to update and formalise the current breakout rules and review process for SESSF MYTAC species. For 2017 SESSF RAG data meeting.

Agenda Item 4 - Recommendations

4.2 Use of MCMCs in stock assessments

104. Through the SlopeRAG (now SERAG) AFMA requested that Mr Penney and Dr Neil Klaer to prepare a paper (Penney & Klaer 2016 - Use of Markov chain Monte Carlo analysis in fisheries stock assessments), coordinated by Mr Sandy Morison, advising when the use of Markov chain Monte Carlo analysis (MCMC) should be considered in SESSF stock assessments.
105. Mr Penney provided the SESSF RAG with a presentation on the key points in the paper:
 - Bayesian analysis and MCMCs (being a method for implementing Bayesian analysis) were a recommended component of the SESSF assessment framework that Professor Andre Punt developed approximately ten years ago. MCMCs have been conducted in the past for species such as blue grenadier and more recently for pink ling and orange roughy. These were generally conducted when there was a need for closer examination of uncertainties around point estimates, perhaps due to the stock being estimated to be close to the limit reference point.
 - The use of MCMCs was largely phased out after implementation of the SESSF Harvest Strategy Framework, with the understanding that the MSE testing had adequately evaluated uncertainty, and that the decision rules had been designed to keep stocks above levels where MCMC evaluation of probability distributions around biomass estimates might be recommended.
 - Most recently, in conducting the 2013 pink ling assessment, Dr Patrick Cordue presented results using two approaches; one using the SESSF harvest control rule (HCR), and another providing a risk table of alternative constant catches together with MCMC analysis of the probabilities of the stock declining below the limit, or rebuilding towards the target. The harvest control rule approach resulted in a low eastern RBC that was not considered feasible, given inevitable bycatches as a result of fishing effort in the east, even under catch triggers. The SlopeRAG provided advice based on both approaches. A TAC based on one of the constant catch scenarios was subsequently adopted.

- This prompted discussion about why and when MCMCs should be used in stock assessments.

At this point Prof Andre Punt joined the meeting.

106. Mr Penney described what an MCMC is used for:

There are two main sources of uncertainty in stock assessments:

- Model structural uncertainty resulting from the necessarily simplified assumptions in an assessment model relative to the complexity of the real-world fish population. This is explored using sensitivity tests using a number of differently specified models or model variants.
- Probability distributions around point estimates given by the final chosen model/s. This is explored using statistical analysis of confidence intervals around these point estimates, or using MCMC analysis of probability distributions around these point estimates.

107. MCMC analysis is an approximation method for implementing a Bayesian approach to generate a multi-dimensional joint posterior distribution from prior distributions of the input parameters. It can be thought of as a method, under Bayesian assessment, for characterising the uncertainty around point estimates generated by stock assessments, similar to the confidence intervals generated under a frequentist approach. There are frequentist alternatives to Bayesian MCMCs for estimating uncertainty, including the delta method and bootstrap re-sampling. While more time consuming than the rapid delta method, MCMCs are considered best practice for complex age-structured integrated stock assessments.

108. Mr Penney noted that there are issues relating to the scheduling of MCMC analyses:

- MCMCs take a long time to run, and could not typically be re-run during a final SESSF stock assessment review meeting. If conducted, they would need to be complete before the review meeting.
- This requires that sensitivity tests be agreed on at a previous meeting, and a final base case or set of chosen models agreed.
- Further delays can result if the MCMC analysis fails to stabilise or converge, or if model specifications are changed during the assessment review meeting, as occurred in the case of the pink ling assessment.

109. Based on this work, the following recommendations were offered:

You would not conduct MCMC analysis when:

- management advice and RBC recommendations are being generated using an MSE tested harvest control rule; and
- the stock dynamics appear to be within the ranges tested during MSE testing and development of the decision rule; and
- the current best estimate of B is above B_{Lim} , with a probability > 90 % (using delta method evaluation), or the best estimate of current B is above $[0.3] B_0$.

You would consider doing an MCMC when:

- it has been decided to move away from providing management advice using the harvest control rule, and to provide risk-based management advice in some alternative way; or
- the stock has a >10 % probability of being below Blim (using delta method evaluation), or is below $[0.3] B_0$, or
- the stock dynamics appear to have moved beyond ranges tested during MSE testing and development of the decision rule, such that biomass is not being maintained at levels indicated in projections under the harvest control rule.

110. Dr Punt made the following observations and suggestions:

- By default, the US Pacific West Coast Fishery management plan (FMP) use HCRs for providing advice. Integration of results and advice across multiple models is also not done except when conducting risk analysis and providing a table of risk-weighted advice. MCMCs may still be done, if feasible and there is time, to explore the effect of key inputs and model specifications on the probability distribution of outputs.
- However, the US Pacific West FMP formally provides for a move away from use of the HCR to using risk analysis and a risk-weighted table of advice if B is estimated to be below $0.25 B_0$. In this case, the HCR is abandoned and the process moves to risk analysis to inform development of rebuilding plans (Pacific FMC 2003). MCMCs would usually contribute to this process, as might integration across multiple models.
- If you step away from the HCR and move to using MCMCs to provide a risk-weighted table of advice, you are effectively abandoning the SESSF harvest strategy. It then needs to be clear how the risk analysis results are going to be used. This would be analogous to a move to a rebuilding plan under the US Pacific West Coast FMC.
- Any formalisation of a requirement to do MCMCs if the stock is estimated to be below some level (e.g. $0.3 B_0$ or $0.25 B_0$) effectively amounts to revision of the Harvest Strategy and should be properly MSE tested and formally specified in the Harvest Strategy.
- Nonetheless, if feasible and there is time, MCMCs can help understand the assessment model, provide useful information on the influence of input parameters, and compare the posterior distribution of key outputs compared to asymptotic estimates. Preliminary runs could indicate whether an MCMC will be feasible.
- If the distribution of the asymptotic estimates is symmetrical, then an MCMC is not required, and the asymptotic MPD and median MCMC estimates will be similar. For example, MCMCs were run for the current gummy shark assessment, but were not required as the asymptotic and MCMC estimates were similar. However, if the asymptotic estimates are bimodal or strongly skewed and the MPD and MCMC estimates differ substantially, then MCMC may be required.
- The comparative analysis of the delta-method vs. MCMCs (Magnusson et al. 2013) was specific to the assessment model 'Coleraine'. These results should be confirmed for 'Stock Synthesis' assessment software.

111. The SESSFrag provided the following feedback on the recommendations:

- AFMA considered that, while the recent pink ling advice had stepped away from the SESSF Harvest Strategy, it was consistent with the Commonwealth Harvest Strategy Policy. When stocks are at a low level (e.g. below 0.3 B0 or 0.25B0), AFMA may consider it useful to receive advice based on both the HCR and a table of risk-weighted advice.
- The SESSF HCR is designed to cope with stocks near the limit, and is designed to substantially reduce TACs to facilitate rapid rebuilding. The HCR should still function properly at these levels. The main issue may be rather when there are indications that the model is mis-specified, such as the assumption of future average recruitment for silver warehou when recent recruitment has been below average for several years. This can be addressed using an alternative model.
- It is not proposed that the SESSF Harvest Strategy should be reviewed and revised at this stage.
- The default approach should remain that the HCR is used, and MCMCs are not run. MCMCs could be considered or requested when a risk analysis is required, such as when stocks appear to be near the limit. In this case, the recommendations could serve as a guideline as to when MCMCs might be considered to be a useful addition to the process. However, this should not be a formalised requirement.

112. The SESSFRAG requested that the following be explicitly added to the recommendations:

- The use of the HCR is the default approach and MCMC analysis would usually not be conducted.
- If MCMCs are being considered, then it needs to be ascertained using preliminary analysis that this will be feasible.

Action item 29 – Mr Penney to update the recommendation slides for application of MCMCs in the SESSF and distribute to the SESSFRAG.

Action item 30 - Mr Penney and Dr Klaer to incorporate the requested changes to the recommendations, and AFMA to forward the revised paper to the SESSFRAGs.

Agenda Item 5 – Information items

5.1 Developing risk equivalent Tiered harvest strategies

113. Dr Dichmont (the Chair) provided a brief overview of the project ‘Developing risk-equivalent data-rich and data-limited harvest strategies’.
114. The SESSF Tier system was evaluated in an ecosystem context using Management Strategy Evaluation, specifically the Atlantis model. All current SESSF Tier 1, Tier 3 and Tier 4 species were assessed using a range of simulated harvest strategies over a 45 year period (2006-2050).
115. Two buffer systems were considered, the current SESSF system (discount factors) and the USA west coast groundfish fishery system, and variable application of meta-rules (large change limiting rule).

116. Results of the research are published in a peer reviewed journal.

5.2 Assigning SESSF logbook shots to “Day”, “Night” or “Mixed”

117. Dr Thomson introduced the item, noting that it would only be brief and for information only.

118. Management protocols for SESSF quota species require standardized time series of CPUE data from the commercial fishery including whether the shot was completed during the day or at night. New routines have now been developed using R software which has built in time-date functions that account for daylight savings times in all states of Australia and libraries that accurately calculate sunrise and sunset time throughout the years.

119. Where shots were previously allocated to day or night based on when the shot started, they can now be assigned as either day, night or mixed shots based on the location of the shot and when it started, and estimating the finish time based on average shot duration for that gear type.

120. Future work includes:

- exploration of those fisheries for which mean shot duration cannot be accounted for – it might be reasonable to ‘borrow’ mean shot duration from a similar fishery
- allowing mean shot duration to change with time (an estimated trend would probably be needed to overcome the problem of years for which few or no end times are recorded);
- calculating a “dayness” statistic that reflects how much of the shot occurred during the daytime, as opposed to assigning a time that occurs 1 second after sunset to “night” and one second before sunset to “day”.

5.3 Electronic monitoring – comparing cameras with logbooks

121. Mr Macdonald provided some background information on electronic monitoring (EM) in the gillnet, hook and trap sector:

- EM has been compulsory since 1 July 2015 and is used by 29 gillnet boats and 2 automatic longline boats.
- EM is used to validate catch and discard information recorded in logbooks.
- There are some limitations for collecting biological information such as otoliths and length frequencies.

122. Dr Helidoniotis presented her analysis comparing retained and discard catch records obtained via electronic monitoring and logbooks:

- There is no statistical difference between methods and vessels for retained catch.
- There are differences between reported discards in logbooks versus cameras however there is not enough data to make a reliable estimate.

123. Discard estimates obtained from cameras are recorded as individuals rather than weights. Discards are taken off the RBC as a weight so an average weight will need to be established if piece counts continue to be recorded. There is an assumption that the size/weight of discards

is static. For gillnet that is reasonable because of gear selectivity, but this may not be the case for hook-caught sharks.

124. If length estimates can be obtained using electronic monitoring, and weights can be established from that, EM weights can be compared against logbooks for accuracy.
125. Dr Upston recommended AFMA conduct more onboard observations to make comparisons between weights recorded in logbooks, weights estimated by electronic monitoring (currently there are only counts not weights) and weights estimated by AFMA observers (from which the discard series has been traditionally derived). The comparison of methods needs to occur over the same shots (time period), otherwise the comparison is not a direct one and it will be impossible to interpret the results.

Action item 31 – Dr Upston, Dr Helidoniotis and Dr Thomson to provide an overview of the work required to compare weights recorded in logbooks, weights estimated by electronic monitoring and weights estimated by AFMA observers, for inclusion in the SESSF 2017-18 research plan.

126. Mr Day added a line item to the SESSF 2017-18 annual research plan to compare weights recorded in logbooks, weights estimated by electronic monitoring and weights estimated by AFMA observers, noting that CSIRO/ABARES would provide some wording for the scope of the project.
127. The Chair recommended prioritising the projects in the 2017-18 SESSF Annual Research Plan.

Action item 32 – AFMA to prioritise the research projects in the SESSF 2017-18 Annual Research Plan prior to the ARC meeting September 2016.

5.4 SESSF Strategic Monitoring and Assessment Review Project

128. Mr Penney provided the SESSFRAG with an overview of the SMARP and the project group's progress to date.
129. The objective of the project was to critically evaluate the monitoring and assessment processes in the SESSF and whether there is a more efficient way under the risk, catch cost framework.
130. A workshop was held in July to provide stakeholders with an update on the outcomes of the meeting and address specific issues raised in the first workshop. One of the key pieces of work has been to develop a process for classifying species within a fishery (in this case the SESSF) based on catch and commercial value. A set of rules and principles have been developed in order to classify species into groups that fit within the classifications of the reviewed harvest strategy policy and bycatch policy; key commercial, secondary commercial, byproduct and bycatch.
131. The project team then made recommendations about what the default management reference points and assessments (Tiers) should be for those species. It then looked at alternative assessment scenarios and the frequency of assessments, monitoring and data collection, which resulted in various risk, catch and cost trade-offs.
132. The final report is expected to be finalised later in 2016.

5.5 Ecological Risk Assessment and Ecological Risk Management

133. AFMA is in the process of updating the Ecological Risk Management guide which will be provided to the SESSF RAGs for comment. The ERM guide will be provided to the AFMA Commission for approval later in the year.
134. There are two Ecological Risk Assessments (ERA) underway at AFMA for the Eastern Tuna and Billfish Fishery and the Small Pelagic Fishery to test the proposed changes to the ERA methodology.
135. Fisheries Management Strategies are being developed for each of those fisheries, and will consolidate information previously contained in fisheries harvest strategies and bycatch strategies.

The Chair formally closed the meeting

References

Pacific Fishery Management Council (2003) Amendment 16-1 to the Pacific Coast Groundfish Fishery Management Plan process and Standards for Rebuilding Plans including Environmental Assessment and Regulatory Analyses. Pacific Fishery Management Council, Portland, Oregon.

Table 4 Actions arising from SESSFRAG data meeting 2016.

No.	Action Item Description	Agency/Person	Timeframe
1	Dr Thomson and Mr Garvey to address issues with pre-1998 length data stemming from migration of PIRVIC data.	CSIRO Dr Thomson	As soon as practicable
2	Mr Burns to remove targets for blue-eye trevalla from the ISMP program because the data are not required for a Tier 4 assessment.	AFMA Mr burns	Immediately
3	Dr Upston, Dr Krusic-Golub and Mr Garvey to speak with Dr Kloser about the addition eastern orange roughy survey age data to the AFMA observer database and flagged as survey data.	CSIRO/FAS/AFMA Dr Upston Dr Krusic-Golub Mr Garvey	As soon as practicable
4	Mr Burns to consider fishery effort at a 3-5 year average when setting the AFMA ISMP sea-day targets.	AFMA Mr burns	In time for 2017-18 ISMP plan
5	Dr Upston to consider adding a column to Table 1 of the ISMP discard report to compare actual vs planned coverage statistics.	CSIRO Dr Upston	In time for 2016 Discard report
6	AFMA to ensure that NSW ocean trawl data is not included in the annual database provision to CSIRO.	AFMA Mr Corrie Mr Garvey	As soon as practicable
7	AFMA to check that Danish seine mesh size and orientation is recorded in the logbook database and provide the information to CSIRO. This is required for the school whiting stock assessment.	AFMA Mr Corrie Mr Garvey	As soon as practicable
8	Mr Boag to investigate why smaller fish are being sampled in the FIS vs commercial catch (ISMP).	SETFIA Mr Boag	As soon as practicable
9	Dr Krusic-Golub to check than any age estimates obtained from the FIS are flagged as survey data for inclusion in the database.	Fish Ageing Services Dr Krusic-Golub	As soon as practicable
10	Dr Little to advise AFMA whether the data exploration required to update the 2017 eastern gemfish assessment is in addition to what is required as part of a 'typical' stock assessment.	CSIRO Dr Little	As part of the assessment update process
11	In preparation for a 2017 western gemfish Tier 1 stock assessment, Fay Helidoniotis (ABARES) to provide advice to GABRAG on the practicalities of a stepwise approach to doing a preliminary assessment.	ABARES Dr Helidoniotis	GABRAG November

12	AFMA to provide advice on who is responsible for completing the western gemfish Tier 4 assessment (CTS assessment).	AFMA	As soon as practicable
13	Mr Burns and Dr Thomson to investigate why there are no port samples showing up in the data summary for western gemfish and mirror dory west from November 2015.	AFMA/CSIRO Mr Burns Dr Thomson	As soon as practicable
14	AFMA to request that Patrick Cordue's model be made available for CSIRO to repeat the CPUE standardisation process.	AFMA	As soon as practicable Required for the 2017 standardisation process
15	AFMA to complete the breakout analysis for Tier 4 species and present the results to SERAG in October 2016.	AFMA	SERAG October 2016
16	AFMA (John Garvey) to ensure provision of royal red prawn length frequencies uses millimetres and not centimetres.	AFMA Mr Garvey	As soon as practicable
17	AFMA to review the third breakout rule for ribaldo; <i>In addition to breakout rules, monitor the proportion of the catch taken by trawl and hook method.</i> N.B. This will be considered as part of a breakout rule review to be completed by AFMA.	AFMA	As part of breakout review
18	Dr Krusic-Golub, Dr Upston and Dr Kloser to discuss ageing requirements for the 2017 orange roughly assessment out of session and report back at the October SERAG meeting.	FAS/CSIRO Dr Krusic-Golub Dr Upston	SERAG October 2016
19	Dr Krusic-Golub and Dr Day to discuss the number of school whiting otoliths to be aged (subsampling) in preparation for the 2017 assessment. If the number differs from the proposed 4400 in the workplan, discuss with SESSFRAG out of session.	FAS/CSIRO Dr Krusic-Golub Dr Day	For 2017 school whiting assessment
20	Dr Day to discuss the structure of the school whiting assessment at the October SERAG meeting.	CSIRO Dr Day	SERAG October 2016
21	Mr Burns to investigate the capacity to separate gillnet from longline caught gummy shark when port sampling.	AFMA Mr Burns	As soon as practicable
22	AFMA to liaise with SARDI and PIRSA regarding port sampling services to collect gummy shark length.	AFMA	As soon as practicable
23	Dr Thomson and Mr Burns, through SharkRAG, to investigate whether port sampling can provide sufficient data to support future gummy shark assessments.	CSIRO/AFMA Dr Thomson Mr Burns	SharkRAG October 2016
24	AFMA to work with Mr Boag to establish industry collection of pink ling length samples in the auto-line sector in the east. Dr Patrick Cordue will need to be consulted to establish data requirements.	Mr Boag	As soon as practicable

25	AFMA to liaise with Mr Stone to establish a protocol for industry-based collection of gummy shark lengths.	AFMA Mr Stone	As soon as practicable
26	Dr Thomson to remove pre-1997 graphs from the data summary document as the page is becoming crowded.	CSIRO Dr Thomson	For 2016 data summary
27	CSIRO to detail the cost and logistics required to revisit the SESSF FIS model-based design using historical data and provide an overview to AFMA for inclusion in the 2017-18 annual research plan.	CSIRO Dr Thomson Dr Upston	Prior to September 2016 ARC meeting
28	AFMA to update and formalise the current breakout rules and review process for SESSF MYTAC species.	AFMA	2017 SESSF FRAG chairs' meeting (March)
29	Mr Penney to update the recommendation slides for application of MCMCs in the SESSF and distribute to the SESSF FRAG.	Mr Penney	After meeting
30	Mr Penney and Dr Klaer to incorporate the requested changes to the recommendations, and AFMA to forward the revised paper to the SESSF FRAGs.	Mr Penney Dr Klaer	After meeting
31	Dr Upston, Dr Helidoniotis and Dr Thomson to provide an overview of the work required to compare weights recorded in logbooks, weights estimated by electronic monitoring and weights estimated by AFMA observers, for inclusion in the SESSF 2017-18 research plan.	CSIRO/ABARES Dr Upston Dr Helidoniotis Dr Thomson	Prior to September 2016 ARC meeting
32	AFMA to prioritise the research projects in the SESSF 2017-18 Annual Research Plan prior to the ARC meeting September 2016.	AFMA	Prior to September 2016 ARC meeting

Appendix A

Table A.1 Member and observer declared interest

Member	Declared interest
Dr Cathy Dichmont	Proprietor of Cathy Dichmont Consultancy. Chair of TTRAG. Leads two FRDC funded cross cutting projects with some links to SESSF. 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 Demersal and Midwater Fisheries. No interest, pecuniary or otherwise.
Dr Sarah Jennings	Interest in research projects in the SESSF. Member of SERAG
Mr Lance Lloyd	Chair GAB RAG Member, GAB MAC Director, Lloyd Environmental Pty Ltd Research Fellow, Federation University Australia
Invited Participants	Declared Interest
Mr Kyne Krusic-Golub	Director – Fish Ageing Services. Principle Investigator for project 2014/0817: Provision of fish ageing and length frequency services for the SESSF. Interested in other research projects in the SESSF.
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 and marine closures project.
Mr David Stone	Executive Officer Sustainable Shark Fishing Incorporated No pecuniary or other interest in the SESSF.
Dr Robin Thomson	CSIRO, Assessment scientist. Acquiring funding for research purposes PI on Data Services Contract PI on close kin project for School Shark
Mr Andrew Penney	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. Scientific member on SERAG and the SPF scientific panel and the NTRAG. 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
Mr Simon Boag	CEO South East Trawl Fishing Industry Association CFA member Fishery consultant Sits on boards of Commonwealth Trawl Sector boat and quota SFR holding companies as a director.
Mr Chris Burns	Employed by AFMA. Management Officer AFMA observer program.

Dr Malcolm Haddon	CSIRO, Assessment scientist. Acquiring funding for research purposes Member of Sub-Antarctic RAG, GABRAG and NPRAG
Dr Jemery Day	CSIRO, Assessment scientist. Acquiring funding for research purposes
Dr Miriana Sporcic	CSIRO, Assessment scientist. Acquiring funding for research purposes
Dr Rich Little	CSIRO, Assessment scientist. Acquiring funding for research purposes. Member of the Harvest Strategy Policy Guideline team.
Dr Karina Hall	Scientist employed by New South Wales Fisheries
Dr Fay Helidoniotis	Employed as a graduate by ABARES.
Mr Daniel Corrie	Employed by AFMA. Management officer Demersal and Midwater Fisheries. Executive Officer for SESSFRAG. No interest, pecuniary or otherwise.
Mrs Brigid Kerrigan	Employed by AFMA. Manager, Trawl Fisheries. No interest, pecuniary or otherwise.
Mr Brodie Macdonald	Employed by AFMA. Manager Gillnet, Hook and Shark Sector. No interest, pecuniary or otherwise.

Table A.2 Status of previous action items. Updated at agenda item 1.4.

Prev No.	Action Item	Agency/Person	Timeframe	Comments
1	AFMA to distribute proposed protocols for collecting biologicals in the shark sector and scalefish auto-longline sector.	AFMA Brodie Macdonald	After meeting	Biological collection targets are incorporated in the ISMP and SESSF Data Plans.
2	Update the Data Summary for the SESSF: Logbook, Landings and Observer Data to 2012 to include coverage statistics differentiated by key gear types.	Dr Thomson CSIRO	Out of session	Performance against ISMP annual targets is reported in the Discard summary. The data summary reports on SESSF zones, not ISMP. Dr Thomson and Dr Upston don't believe it is appropriate to report performance in the data summary.
3	CSIRO to provide AFMA with advice about the technical and resourcing requirements associated with expanding the Data Summary to include statistically robust discard rate estimates from logbook data	Dr Thomson, CSIRO	Out of session	ABARES will provide an analysis of logbook reported discards compared to observed (camera) discards. Results will be provided to CSIRO for advice.
4	Incorporate the ISMP annual targets (coverage, measurements and samples) and performance against those targets.	Dr Thomson	Incorporate into 16/17 contract	Underway. Dr Thomson and Dr Upston are considering ways to show coverage by gear type, either through graphical representation or maps.
5	Update SlopeRAG on results of the onboard trial to compare on board observer identification data with identification data from electronic monitoring.	AFMA	SERAG September 2016	AAP have analysed the E-monitoring data from the single trip. AFMA observer data is yet to be reviewed. Results will be provided to SERAG in October.
6	Mr Burns to update the 2016 ISMP to take effort into account when allocating sampling days to each strata and circulate the revised ISMP program to the RAGs for comment.	Chris Burns	As soon as practicable	To be presented as part of agenda item 2.1

7	Noting that catches of non-quota species are not included in the CPUE series, and they can make up a significant proportion of total catch and fishery GVP, Dr Thomson to investigate the effect of including non-quota species in the CPUE series for inclusion in next year's data summary	Robin Thomson	2016 Data meeting	Not yet funded. This would require accurate logbook records for all species. At present, only the data for the quota species and leatherjackets is carefully checked. Adding many more species would increase checking time tremendously. Is this still seen as a priority for the SESSFRAG?
8	Bight redfish - the RAG noted that the green CDR landings line was below the trawl catch i.e. zero. Robin to check the data and rectify the TAC/landings chart.	Robin Thomson	2016 Data meeting	The CDR total is lower than the logbook total in 2005, which is actually July 2005-June2006. The CDR record begins with Jan 2006 so the "2005" CDR record has incomplete data. The issue has been identified. Does it need to be/can it be resolved?
9	Bight redfish –bight redfish are caught across a number of zones in the GAB however data is only reported for the GAB fishery as a whole. The RAG suggested that the GAB reporting in the Data Summary uses the ISMP zones.	Robin Thomson	2016 Data meeting	Not yet funded.
10	For all species in the CSIRO Data Summary, some data are removed in the filtering process due to being incorrect or imprecise. Robin to investigate reporting in the CSIRO Data Summary which data or records are discarded in this process.	Robin Thomson	2016 Data meeting	Complete. To be presented as a new report.
11	Jackass morwong, east – The RAG noted some 50cm+ fish in the onboard length frequencies (LF). These may be from the Gascoyne Seamount (outside the AFZ). Robin Thomson will impose an easterly boundary on the definitions for SEF zones 10 and 20 to prevent the inclusion of high seas catches in the dataset.	Robin Thomson	2016 Data meeting	Complete. The "Fishery" field in the database was used to eliminate records that do not come from the SESSF. This has eliminated records that were previously included in the data summary, for several species, not just morwong.
12	Jackass morwong, east - include yearly and monthly LF by zone to see if we are picking up any recruitment in the different zones.	Robin Thomson	2016 Data meeting	Complete. See Geoff Tuck's 2015 stock assessment report for jackass morwong.

13	Investigate reasons for the apparent increase in smaller gummy shark in the 2014 on board length frequencies.	Robin Thomson	2016 Data meeting	Complete. The smaller sharks were collected by the FIS. FIS data are now plotted separately.
14	Obtain the school shark age frequency data from Terry Walker.	Ian Knuckey	Before SharkRAG	Ian has attempted to contact Terry
15	School shark – review the school shark data plan taking note of industry reservations with the proposed sampling of catches from central South Australia,	Ryan Keightley	SharkRAG, October	SharkRAG reviewed the school shark data plan in 2015, which has been incorporated into the overall SESSF data plan. Due to a shift in effort in SA, SharkRAG will review this plan in 2016.
16	Offshore ocean perch – the RAG noted the offshore ocean perch discard and retained length frequency data for 1994-97 appear to be inconsistent with the rest of the data. Dr Thomson undertook to look at these data and inform the RAG the outcome.	Robin Thomson to liaise with AFMA	2016 Data meeting	<p>This is part of a more widespread problem with pre-1998 data that may have resulted from problems introduced when data were migrated from PIRVIC. Dr Thomson has been in contact with John Garvey about this, but tracking the problem would require more time than is currently budgeted for.</p> <p>AFMA advises that the migration of PIRVIC data was subject to multiple statistical checks comparing PIRVIC supplied data and what ended up in the AFMA observer database. The quality of the PIRVIC supplied data was unable to be checked.</p> <p>SESSFrag to provide advice about whether this needs to be accounted for in assessments.</p>
17	Blue warehou - provide crew collected blue warehou data to Robin Thomson.	AFMA	As soon as possible	Complete. Data has been provided, and clarification provided on some of the finer details.
18	Mr Day to circulate a draft of the HSF incorporating constant catch scenarios and Tier 5 approaches prior to the next Shark, Shelf and Slope RAG meetings.	George Day	As soon as possible	<p>Complete.</p> <p>At its March 2016 meeting, SESSFrag noted that the Harvest Strategy Policy Guidelines are being developed and there are outcomes likely to affect the review of the SESSFrag Harvest Strategy. The RAG recommended including general wording for</p>

				<p>data poor approaches in the SESSF HSF in the interim.</p> <p>To that end AFMA and Malcolm Haddon propose the following text:</p> <p>The RAG may make RBC recommendations based on alternative assessment methods where it considers the method:</p> <ul style="list-style-type: none"> • is more appropriate for a quota species than the assessment method outlined for Tier 1, Tier 3 or Tier 4 • meets the intent of the Commonwealth Fisheries Harvest Strategy Policy. <p>In such circumstances, the RAG should provide advice on any discount factor to be applied and the expected reliability of any associated harvest control rule.</p>
19	Dr Day to undertake preliminary work to ascertain if a pre-recruit survey is a viable option for school whiting and consequently if it is worth investing in.	Jemery Day	ShelfRAG	Underway. This work is not funded by AFMA, and was not instigated by SESSF. Results will be provided to SERAG & SESSF when they become available. This item will be removed from the list of SESSF action items.
20	E monitoring – send report done for the ETBF to SESSF members	Ryan Keightley	As soon as possible	Uploaded to GovDex 04/08/16
21	Each of the RAGs nominate a scientist to provide AFMA with advice on the project comparing observer and EM gummy shark length measurement data	Shark, Slope and Shelf RAG	As soon as practicable	This project has not been funded. To be discussed at agenda item 4.1
22	AFMA to form a sub committee comprised of experts to draft a paper for advice on use of MCMCs for	AFMA Ross Bromley	2016 Data Meeting	Agenda item 4.2

	assessment and present to SESSFRAG at the 2016 data meeting.			
23	Mr Day to work with Dr Haddon to provide general wording for data poor approaches in the SESSF Harvest Strategy Framework.	AFMA George Day	After meeting	Complete. See above.
24	Supply SESSFRAG with catch data for upper-slope dogfish.	AFMA Dan Corrie	After meeting	Available on the SESSFRAG GovDex site under 'research papers'. Issues identified with possible landing of these species. AFMA is investigating.
25	Identify whether there were additional tenders for the upper-slope dogfish research and report back to SESSFRAG.	AFMA George Day Dan Corrie	After meeting	An additional proposal submitted by Michael Bennett, University of Queensland was considered by ComFRAB at its July 2014 meeting, however ComFRAB did not support this proposal advising the proposed project appeared to duplicate previous research; "the sampling approach, as described in the EOI, does not guarantee a result; and the genetics method proposed may not be appropriate to the stock structure of the species." The AFMA has funded the CSIRO project with \$15,800 allocated for 2016-17 and \$100,000 in 2017-18.
26	Provide the SMARP draft options paper to SESSFRAG for comment prior to the SMARP reference group meeting.	Ian Knuckey Dan Corrie	Once completed	The reference group meeting coincided with the end of tenure for SESSFRAG members. SESSFRAG will be asked for comment on draft options paper prior to final submission.
27	Dr Krusic-Golub to liaise with Karina Hall at NSW Fisheries to ensure they are using the same methods to age school whiting.	Kyne Krusic-Golub	As soon as practicable	Dr Krusic-Golub has forwarded the methodology to Karina Hall to ensure the methodology is consistent. Karina is also attending the 2016 Data meeting.
28	AFMA to engage NSW to determine which data is available to support the 2017 school whiting stock assessment.	AFMA Ross Bromley	As soon as practicable	Karina Hall has provided a NSW Whiting data summary to AFMA and CSIRO.

29	AFMA/CSIRO/FISHWELL/SETFIA to discuss the data preparation required for a school whiting assessment in 2017.	AFMA CSIRO FISHWELL SETFIA	As soon as practicable	To be discussed as part of agenda item 2.6 Jemery will contact Ian Knuckey prior to the meeting, as Ian will not be attending.
30	Dr Haddon to consider the final RAG recommendations for the mirror dory Tier 4 and develop a table that describes the parameters of the assessment (target, gear type, discards etc.)	Malcolm Haddon	After meeting	Dr Haddon revised the Tier 4 methodology to include discards (weighted average over four years) in the eastern assessment. This approach was accepted by ShelfRAG and is detailed in the document "Tier 4 Analyses of Selected Species in the SESSF. Data from 1986 – 2014"
31	AFMA to contact NSW Fisheries to determine if Kevin Rowling's sampling regime has been continued for eastern gemfish.	AFMA Ross Bromley	After meeting	Kevin Rowling's sampling regime has not been continued. Commonwealth and State catches of eastern gemfish were previously sampled at Sydney Fish Markets on a regular basis. NSW now only collect NSW Dropline catch from Sydney Fish Market on an ad hoc basis.
32	AFMA to provide Dr Krusic-Golub with guidance on ageing requirements for orange roughy in time for the 2016 SESSFRAG data meeting.	AFMA Ross Bromley	2016 Data Meeting	Otoliths have been collected through the ISMP program, and more recently the FIS. Dr Krusic-Golub will seek advice from Dr Upston at the 2016 SESSF data meeting on regarding ageing requirements for Orange Roughy.