



Australian Government
Australian Fisheries Management Authority



Southern and Eastern Scalefish and Shark Fishery

 Resource Assessment Group (SESSF RAG)

2015 Data Meeting

MINUTES

CHAIR: Professor John Buckeridge

4 & 5 August 2015

CSIRO

Hobart

TAS

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

Minutes

Chair: Professor John Buckeridge

DAY 1, Tuesday 4 August

The meeting commenced at 8:30 am.

1. Agenda Item 1 – Preliminaries

1.1. Welcome and introductions/apologies

1. Professor John Buckeridge (SESSFRAG Chair) welcomed members and observers to the meeting. The Chair noted that no apologies had been received.

1.2. Declarations of interest

2. Members and observers provided declarations of pecuniary interest and conflicts as prescribed in FAP 12 and incorporated updates from the previous meeting if required (Table 1).

1.3 Adoption of Agenda

2. The RAG agreed to add the following items to the draft agenda:
 - Report on the Fishery Independent Survey, Dr Knuckey
 - The need for development of a research project to investigate if likely causes can be found that may explain falling CPUE and slow to no rebuilding of overfished species in the SESSF.

1.4. Actions arising from previous meetings

3. The status of the actions is detailed in Table 2. Items marked in green means the action item is no longer outstanding. Those in yellow means the action item is underway and those marked in red require SESSFRAG input. SESSFRAG recommendations from this meeting are included in Table.

2. Review of 2014 data for assessments

2.1 SESSF Integrated Scientific Monitor Program – Annual report

4. Mr Chris Burns presented the ISMP report previously distributed to members
5. The RAG noted:

- it was difficult to see from the tables in the report if the level of spatial coverage of port sampling of gummy shark in the GHaT was sufficient. The report compares the number of sample collections to the yearly target (set as a percentage coverage of days). The RAG suggested that the number of days sampled may be better reported as a percentage of the yearly effort. The RAG however noted that this information is reported in the discard estimates paper as per the ISMP re-design (Bergh et al, 2009)
 - due to no large freezer vessels operating in the blue grenadier winter spawn fishery, targets for collection of lengths and otoliths from this fishery were not met
 - low numbers of port samples from western Victoria. This has now been addressed and a port sampler has been employed to undertake this work.
6. The RAG agreed the GAB ISMP otolith targets were adequate to monitor the major commercial species in the fishery. The RAG noted that a FIS was conducted this year and recommended that otoliths collected on the survey are sent to Fish Ageing Services (FAS) for ageing and inclusion in the assessments.

Action item 1- Fishwell Consulting

Fishwell Consulting to forward otoliths collected on the 2015 GAB FIS to Fish Ageing Services by the end of September.

7. Dr Knuckey queried Mr Power on how discards would be reported when electronic monitoring was implemented. Dr Knuckey expressed concerns that a record of discard catch composition will be lost or compromised because there are no onboard observers.
8. Mr Power explained that:
- operators are still required to fill in logbooks and catch disposal records and discard data for individual shots recorded in the logbooks. This is compared to the discards observed by the e-monitoring analyst.
 - With e-monitoring, logbook reports of discards will be used for assessment purposes. E-monitoring verification reports will provide a measure of how accurate the logbooks reports are and feedback provided to the boat will support improvements in reporting.
 - a six month trial is currently being undertaken on an auto longline boat to compare on board observer identification data with identification from electronic monitoring. Analysis of the comparison is underway and should be available for SlopeRAG in September.

Action item 2 – AFMA

Once the trial is completed, AFMA to update SlopeRAG on results of the onboard trial to compare on board observer identification data with identification data from electronic monitoring.

2.2 Integrated Scientific Monitoring Program for the Southern and Eastern Scalefish and Shark Fishery – Discard estimation 2014

9. Dr Upston presented the 2014 Integrated Scientific Monitoring Program for the Southern and Eastern Scalefish and Shark Fishery – Discard estimation 2014 draft paper and referred members to the paper previously circulated.

10. Dr Upston summarised the methodology used to design the ISMP sampling regime (Bergh et al 2009) and how discards were calculated. The RAG noted that discard proportions were sampled across 32 strata within the fishery and sample coverage was reported against Bergh.
11. Dr Knuckey thought the discard proportion for Eden Lakes Danish seine seemed high. Dr Upston explained that estimates are the overall discard rate (across strata) for each species, so the estimate should not be interpreted at the level of a single stratum. Dr Upston undertook to look at this stratum estimate to follow up on Dr Knuckey's comment.

Action item 3 – Judy Upston – before finalisation of the draft paper

Dr Upston undertook to look at the Eden Lakes Danish seine stratum estimate to follow up on Dr Knuckey's comment regarding high discard proportion estimates.

12. Dr Upston informed the RAG that preliminary estimates of overall discard rates suggested that the discard rates of blue grenadier, John dory, mirror dory & silver trevally increased in 2014 compared to 2013. The preliminary estimates suggest that discard rates for blue-eye trevala, gemfish west and ocean perch offshore decreased in 2014 compared to 2013. Dr Upston emphasised that these are "preliminary" estimates and the final estimates for overall discard rate will be presented at the September or October RAGs.
13. Dr Upston pointed out that the decision rule specifying a minimum of 10 shots in the stratum where the fishery most occurs was not met for; alfonsino, blue warehouse east and west, deepwater shark east and west, orange roughy, oreos basket and smooth oreos. Consequently discard estimates were not calculated for these species.
14. After reviewing the paper the RAG made the following comments:
 - recognising that the Bergh targets reflect proportion of catch (retained & discarded) in each ISMP stratum in the fishery, the RAG recommended that the Bergh targets and ISMP strata be updated to better reflect any changes in fishing patterns and intensity. Any changes to the ISMP are to be reviewed by SESSFRAG each year
 - the RAG thought the readability of the tables could be improved by grouping the methods together. This could be done by changing the prefix of the ISMP strata e.g. amend Eden Lakes inshore trawl (EDL IN TR) to trawl Eden Lakes inshore (TR EDL IN) or alternatively, keeping the same label but ordering them by method (as in Table 1).
15. Mr Burns undertook to update the 2016 ISMP targets to take recent effort into account when allocating sampling days to each strata. Mr Burns will circulate the revised ISMP program to the RAGs for comment.

Action item 4 – Chris Burns

Mr Burns to update the 2016 ISMP targets to take recent effort into account when allocating sampling days to each strata and circulate the revised ISMP program to the RAGs for comment.

2.3 Data summary, CPUE analysis and trigger review

16. Mr Day requested that the RAG focus on the species that were listed for Tier 1 assessments this year and that there would be time to look at other species later during the meeting. The RAG agreed with this approach.
17. Drs Thomson and Sporcic presented the “Data summary for the Southern and Eastern Scalefish and Shark Fishery: logbook, Landings and Observer Data to 2014 (Draft)”.
18. It was pointed out that the fishing operation effort by method, zone and depth were relatively consistent with previous years and basically flat since 2007.
19. Dr Thomson explained that the unstandardized quota species CPUE in the report was calculated by dividing catch by the number of operations. The CPUE for all quota species is declining for hook and trawl but reasonably stable for Danish seine and gillnet. Mr Boag pointed out that a large freezer boat did not fish in the winter spawning blue grenadier fishery in 2014 and not having its catches in the data would be reflected in a decline of the trawl fishery CPUE. Mr Stone added that net length had increased in the GHaT fishery and this may be affecting the gill net CPUE. 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, the RAG suggested that Dr Sporcic investigate the effect of including non-quota species in the CPUE series for inclusion in next year’s data summary.

Action item 5 – Dr Robin Thomson

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

Bight redfish

20. The RAG noted that the green CDR landings line was below the trawl catch i.e. zero. Dr Thomson undertook to check the data and rectify the TAC/landings chart.

Action item 6 – Dr Robin Thomson – As soon as possible

Check bight redfish CDR data and if required rectify the error in the chart.

21. Bight redfish are caught across a number of zones in the GAB however the data are aggregated and reported from the GAB fishery in its entirety. The RAG thought it would be useful to be able to see the catch and sampling across each of the GAB ISMP zones.

Action item 7 – Dr Robin Thomson – As soon as practicable

Report bight redfish catch and monitoring across all ISMP GAB zones

22. Mr Burns identified that there may be some onboard length data missing from early 2014. Dr Thomson explained that some data are removed in the filtering process due to being incorrect or imprecise, e.g. lack of zone, length conversion factors. Dr Thomson undertook to investigate a method of flagging data/records in the data summary that have been filtered out in this process.

23. Mr Burns also informed the RAG that the bight redfish port length data are data collected by the crews while fishing and not data that is collected by observers in port.

Action item 8 – Dr Robin Thomson – 2016 Data meeting

Dr Thomson to investigate reporting in the CSIRO Data Summary which data or records are discarded in the filtering process.

Bight redfish catch standardisation

24. Dr Sporic advised the RAG that the bight redfish standardised CPUE appears to be declining since about 2008. Dr Knuckey said this is consistent with information he has received from industry in the GAB.

Jackass morwong - east

25. Dr Thomson summarised the jackass morwong – east data:

- trawl is the predominant method of capture and catches are declining
- geometric CPUE for all methods has been relatively flat since about 2004
- the discard rate in 2013 was about 15%
- there are some large (50 + cm) fish in the onboard length frequency data. Mr Burns suggested that these may have come from the Gascoyne Seamount area (outside the AFZ). Dr Thomson undertook to investigate these data and exclude them from this data set.

Action item 9 – Dr Robin Thomson - As soon as practicable

Robin Thomson will impose an easterly boundary on the definitions for SEF zones 10 and 20 to prevent the inclusion of Gascoyne catches in the dataset.

26. The RAG requested Dr Thomson include monthly and yearly length frequency data by zone to identify if any recruitment is occurring in the zones.

Action item 10 – Dr Robin Thomson - As soon as practicable

Include yearly and monthly LF by zone to see if we are picking up any recruitment in the different zones.

Jackass morwong – west

27. Dr Thomson summarised the jackass morwong – west data:

- geometric CPUE is declining
- catch at depth is more spread out than the eastern catch
- sample numbers are low from the west.

Jackass morwong catch standardisation

28. Jackass morwong catch standardisation:

- catches of jackass morwong have been declining since 2007 and this is most noticeable in the east
- most catch has been taken from zones 20 and 30
- combined standardised CPUE is declining
- east and west CPUE is declining
- zone 30 CPUE is reasonably flat since about 2002.

Silver warehou

29. Silver warehou are due for assessment by SlopeRAG this year. Dr Thomson presented the data summary for this species and Dr Sporcic presented the CPUE standardisations.
- there is good onboard length data by zone
 - total fishery catch is declining
 - silver warehou geometric CPUE (all zones) has been declining since 1994. When geometric CPUEs were split into east and west the RAG noted that there is a difference between the two CPUE series; the eastern CPUE declined between 1994 and 2001 but has been relatively stable since then. Whereas the western CPUE has been declining since 2004.
30. Noting the difference in CPUEs, and a need to capture stock differences between the east and west, SESSFRAG **recommended** two separate fleets (east and west) be considered in the upcoming assessment and that two models be presented to SlopeRAG for consideration i.e. combined fleet and east and west fleet. Recognising that silver warehou is managed under a single TAC SESSFRAG also **recommended** that SlopeRAG provide a single RBC.

Action item 11 – CSIRO – September 2015 SlopeRAG

Two silver warehou assessment models to be presented to SlopeRAG for consideration, i.e. combined fleet and east and west fleet. Noting a single RBC is recommended.

31. Dr Tuck stated that the 2012 and 2013 standardised CPUE for silver warehou broke out below the assessment model 95% confidence interval. Dr Tuck explained that the model assumes average recruitment and if recruitment is different from what is assumed the model may not be able to accurately predict biomass. He warned that a new assessment model may still not be capable of predicting below average recruitment and breakouts may continue.

2.3 SESSF Tier 1 CPUE forecasts for multi-year TAC review triggers

32. Dr Thomson presented the Tier 1 CPUEs for multi-year TAC review triggers and data summaries for these species.

Tiger Flathead

33. The RAG noted that the name for flathead in the data summary had been changed from “tiger flathead” to “mixed flathead”. Considering over 95 percent of the flathead catch consisted of tiger flathead and only tiger flathead were assessed, the RAG resolved not use mixed flathead as the descriptor and to retain the name tiger flathead. Dr Thomson undertook to amend the data summary document.

Action item 12 – Dr Robin Thomson - As soon as practicable

Delete ‘mixed flathead’ from the data summary and return to using ‘tiger flathead’ as the species descriptor.

34. Flathead catches and CPUE showed increases for both the Danish seine and trawl fleets over the previous year. However Mr Boag passed on comments from the Lakes Entrance Danish seine fleet that they are finding flathead fishing “tough” at the moment.
35. 2014 flathead trawl CPUE rose from straddling the lower 95 percent CI line to being within the CI bounds. Danish seine CPUE, although remaining below the 95 percent CI, also rose.
36. The RAG discussed whether to go ahead with a Tier 1 tiger flathead assessment this year and considered:
 - a) trawl and Danish seine tiger flathead CPUE is increasing
 - b) both CPUEs were outside the lower CI last year and the RAG decided that they had enough confidence in the assessment not to update the assessment. This year the CPUEs are higher than last year and it would be inconsistent to recommend an assessment be undertaken that a flathead assessment was a lower priority than a ling assessment .
37. Subsequently the RAG **recommended** that the Tier 1 tiger flathead assessment is deferred until 2016.

Redfish

34. The RAG viewed the redfish CPUE forecast and noted:
 - a) an assessment was undertaken last year and redfish biomass was assessed being below the limit reference point
 - b) the recent observed CPUE straddled the lower 95 percent CI but was trending up in line with model predictions
 - c) a rebuilding strategy is being developed and the current RBC is zero
 - d) there is little new data and a new assessment would not provide any additional management information.
35. The RAG **recommended** that a redfish assessment is not undertaken.

School whiting

36. School whiting:
 - School whiting are a short lived species with variable recruitment which tends to effect the assessment
 - CPUE is relatively flat for the last four years and is inside the 95 percent CI
 - Dr Day advised that the last model based assessment was undertaken in 2009 using data up to 2008
 - The species is on a conservative long term fixed catch RBC
 - Mr Boag reported that catches by the Lakes Entrance Danish seine fleet had been good
 - The RAG advised that they considered there were no signs for concern.

37. The RAG noted that a discussion about a school whiting assessment was scheduled for tomorrow.

Blue grenadier

38. The observed blue grenadier CPUE is matching the estimated trend and is inside the 95 percent CI.
39. Mr Boag reported operators who fished the winter spawning fishery this year expressed concerns with the lack of fish they were seeing and this has been reflected in landings. Dr Tuck explained that this may be because the large recruitment about five years ago may not yet be showing up in the fish aggregating to spawn off the west coast of Tasmania.
40. The RAG concluded that there was no cause for concern for blue grenadier stock status.

Gemfish

41. Recognising that eastern gemfish CPUEs vary between summer and winter, two figures were presented to the RAG; summer and winter trawl. The RAG noted that both the summer and winter CPUEs were below the 95 percent CI bounds.
42. The RAG recognised that avoidance of gemfish by fishers and poor recording of discards may reduce the usefulness of CPUE as an index of abundance. The last assessment was undertaken in 2010 using data up to 2009. The RAG was concerned that, like other models, this model predicts average recruitment and this does not appear to be occurring.
43. After reviewing the available data the RAG decided that there was not enough data to do an assessment in 2015 and that an assessment should be planned for 2016. Although there had previously been low levels of sampling, AFMA implemented actions to improve port sampling and otolith collection during 2015.
44. The RAG noted the NSW Fisheries Scientific Committee is reviewing the status of gemfish in NSW state waters. The Committee is waiting on the outcomes of the next gemfish assessment before making their final decision.

Pink ling

45. The RAG acknowledged that the ling CPUE forecasts were run using SS3 software and not CASAL that was used in the accepted base case. The RAG thought that because the outcomes of each model were very similar there would be little difference in the CPUE forecasts.
46. The RAG discussed the pink ling forecasts and management issues including:
- pink ling is due for assessment in 2016
 - the current RBC cannot be changed without undertaking a new assessment
 - pink ling east observed CPUE is very close to the predicted CPUE
 - pink ling west observed CPUE is above the 95 percent CI of the predicted CPUE

- Mr Boag informed the RAG that the actual eastern CPUE may be higher than reported due to industry high grading and under reporting discards. The RAG expressed concerns that the observed estimate of discards may be an underestimation and not representative of discards across the fishery. Mr Boag enquired if data from select boats with a good history of reporting could be used in estimating discards
- Dr Haddon raised concerns that the time series for pink ling CPUE may have been broken in the mid 2000's following the structural adjustment when 27 boats left the fishery. He also was also concerned that fisher's behaviour and style of fishing may have changed during this period and current methods may find it difficult to track CPUE under these circumstances
- Dr Knuckey said that analysis of data from the 2015 winter Fishery Independent Survey indicated that the relative abundance of pink ling, as a whole, had generally increased over the last eight years
- Mr Boag advised that industry supported doing a new pink ling assessment this year.

47. The RAG recommended a Tier 1 pink ling assessment be undertaken this year if Patrick Cordue (2013 assessor) is available.

Action item 13 – Patrick Cordue, AFMA, CSIRO – SlopeRAG September 2015

Patrick Cordue to undertake a Tier 1 pink ling assessment this year and to present first draft of the assessment at the September SlopeRAG meeting

Action item 14 – Patrick Cordue, AFMA, CSIRO – prior to undertaking the pink ling assessment

Patrick Cordue, AFMA and CSIRO representatives to have out of session discussions to arrange for provision of data for the ling assessment.

Action item 15 – Simon Boag - As soon as practicable

Mr Boag to emphasise to operators, the difficulty of correctly modelling fish populations and status without correct logbook records of retained and discarded catch.

48. Mr Boag thanked all CSIRO staff involved in the ling assessments for their professional attitude and hard work.

Alfonsino

49. The RAG noted the following:

- an assessment is scheduled for 2017
- there was no alfonsino catch in 2014 and therefore no data.

50. Dr Thomson queried why non-East Coast Deepwater Trawl (ECDW) catches were excluded from the data series.

Action item 16 – Robin Thomson- As soon as practicable

Dr Thomson undertook to explore the reason why non east coast deepwater trawl catches are excluded from the data series.

John dory

51. The RAG noted that:

- John dory is a by-product species and generally not targeted
- catches of John dory are below the TAC and have been declining over the last few years
- most catches come from zone 10 and 20
- geometric mean CPUE has been steady since late 1990's, however standardised CPUE has been slowly declining over this period.

Gummy shark

52. The RAG reviewed the gummy shark data and standardisations:

- gummy shark catch and geometric CPUE have been relatively stable since about 2002
- on board sampling across zones is good
- hook catches have risen in 2013 and 2014 to about 250 t
- the length frequency data show that gillnets are efficient at selecting a narrow age band/size of gummy shark
- port length frequencies have been very consistent over the last five years
- Dr Knuckey pointed out that there seemed to be a lot more small gummy sharks retained in 2014 and questioned if the partial lengths had been converted to full lengths. Dr Thomson said she would check the data. Mr Power thought it may be because of a higher proportion of catch from longline boats.

Action item 17 – Robin Thomson - As soon as practicable

Investigate reasons for the apparent increase in smaller gummy shark in the 2014 on board length frequencies.

53. Mr Stone representative questioned whether the proposed 2016 gummy shark assessment could be delayed until 2017 citing the financial impost on operators. Assessment scientists and the Shark RAG Chair did not support delaying the assessment noting that there were sufficient data to undertake an assessment next year.

School shark

54. The RAG noted:

- standardised CPUE data is still to be done, however the geometric mean CPUE is relatively flat
- hook catch is increasing
- catch from South Australia is declining, most probably due to gillnet fishery closures
- ISMP estimates of discards have increased over the last few years

- on-board length frequency distribution has broadened. This may be because hook methods are catching smaller sharks
- Terry Walker has some old school and gummy shark data that needs to be obtained. Dr Knuckey volunteered to follow this up with Terry.

Action item 18 – Ian Knuckey – Prior to 2015 October SharkRAG

Obtain the school shark age frequency data from Terry Walker.

- that western Bass Strait and central South Australia were under sampled.

55. Mr Power briefly touched on the data plan for school shark sampling from waters west of Adelaide explaining that this topic would be dealt with in more detail later in the meeting. Mr Power said that at this stage the plan is to ensure that vertebrae and length samples collected are representative of areas fished and meet the data needs of the assessment. Mr Stone expressed some concerns about a potential under sampling from areas in western South Australia and Western Bass Strait. Significant catch of school shark in this area and the overall school shark data may be compromised by not including this area in the data plan. Mr Power undertook to take Mr Stone's comments into consideration and review the school shark data plan.

Action item 19 – David Power – to report to SharkRAG, October 2015

Review the school shark data plan to ensure that vertebrae and length data is collected from across the fishery and is representative of areas fished.

Ocean perch – inshore (0 – 200 m)

56. The RAG reviewed the inshore ocean perch data summary and noted:
- CDR landings in the summary are combined inshore and offshore ocean perch
 - the 166 t TAC (combined with offshore ocean perch) is fully caught
 - the trawl geometric mean CPUE is slowly increasing
 - discards of inshore ocean perch have been high for many years and the last few years have been above 80 percent
 - that most of the catch comes from eastern Bass Strait. Onboard sampling from this area appears to be under representative of effort and catch
 - that the age zone data give good coverage except for the NSW zone.

Ocean perch – offshore (> 200 m)

57. The RAG reviewed the offshore ocean perch data summary and noted:
- the geometric mean CPUE for trawl is stable but the hook sector CPUE is declining
 - the catches mainly come from eastern Bass Strait and NSW. Onboard length frequencies from eastern Bass Strait look under represented as do NSW port lengths
 - the discard and retained length frequency data for 1984 - 87 were inconsistent with the rest of the data. Dr Thomson undertook to review these data.

Action item 20 - Robin Thomson - As soon as practicable

The offshore ocean perch discard and retained length frequency data for 1984 - 87 appear to be inconsistent with the rest of the data. Dr Thomson undertook to look at these data and inform the RAG the outcome.

58. The ocean perch TAC has been fully caught since about 2012 and most of the landings are offshore ocean perch. The RAG weighed up if offshore ocean perch was a suitable candidate for a tier 1 assessment and considered the following comments from the RAG and industry:
- there is good length frequency data
 - noting that ocean perch are a long lived species (up to 50 years) more ageing data would be required for a successful assessment. Mr Krusic-Golub informed the RAG that otoliths were collected in 2014 but had not yet been aged
 - as there are high discard rates it may be difficult to model total fishing mortality
 - Mr Boag advised that a Tier 1 ocean perch assessment is a low priority for SETFIA.
59. The RAG **recommended** that due to insufficient ageing data and an assessment being a low priority for industry it would be unwise to pursue an assessment at this time. The RAG also recommended increasing sampling to get 1000 offshore ocean perch otoliths.

Blue warehou – east and west

60. Mr Boag advised that SETFIA has cancelled its blue warehou crew collected data program and asked that the existing data be sent to Dr Thomson.

Action item 21 – AFMA - As soon as possible

Provide the crew collected blue warehou data to Robin Thomson.

61. The RAG reviewed the blue warehou (east and west) data summary and noted:
- only small fish appear in the samples (Danish seine) and there are no clear age cohorts in the data
 - blue warehou are spatially and temporally variable and there may be large fish in the population but they may not have been caught on observer trips.
62. The Blue Warehou Stock Rebuilding Strategy was revised in 2014. As part of the Strategy ShelfRAG is required to annually review the status of blue warehou stocks and performance against the objectives of the Strategy using the template at Appendix A in the Strategy. This review will be included in the 2015 ShelfRAG agenda.

Orange Roughy

63. Ms Weekes gave a short rundown on orange roughy catches this year:
- one boat went to the Cascade Plateau early in the season and caught about 2 t of orange roughy. The boat's owner thought the vessel was too early to see any spawning aggregations of roughy on the Plateau
 - about 23 t of orange roughy was caught in the Pedra Branca Orange Roughy Management Area at the beginning of the orange roughy season

- orange roughy appear to have started to aggregate on the St Helen's Hill in mid June
- season to date, about 220 t has been caught on the eastern hills (St Helen's Hill and St Patrick's Head area). Fishing can continue in these areas until a 372 t trigger is hit at which time these areas will be closed until 1 September
- this year's management arrangements were developed in conjunction with industry and have been successful in encouraging responsible fishing, avoiding large discards and promoting economic usage of the resource.

Saw shark

64. The RAG reviewed the saw shark data summary and noted the following:

- trawl and net catches are similar
- CPUE standardisations are still being done
- about 50 percent of the catch is from eastern Bass Strait
- discard rate is about 25 percent
- there are no age data
- most port samples are from Lakes Entrance and this may be an issue
- on board sampling was well spread across the fishery.

65. The RAG supported assessments of this species remaining at Tier 4 due to saw shark not being a major economic driver of the fishery and proposed that the ISMP targets are amended to cease collecting lengths as they are not used in the Tier 4 assessment.

Action item 22 – AFMA - As soon as possible

AFMA to amend the ISMP targets to cease collecting saw shark lengths as they are not used in the Tier 4 assessment.

Elephantfish

66. The RAG reviewed the elephantfish data summary and noted:

- the elephantfish TAC has been under caught since 2010
- net geometric mean CPUE is relatively flat and trawl and Danish seine CPUEs are slowly increasing
- very high discard rates.

Mr Burns left the meeting at 4:00 PM.

2.3 continued Data summary, CPUE analysis and trigger review

Comparative plots of catch standardisation

67. Dr Sporic presented a summary of optimum CPUE standardisations for 23 species, and 43 different stocks or methods. See pages 5 - 7 of her paper. Dr Sporic then compared the gradients of a linear regression over the last ten and eight years. The RAG noted that all the gradients that changed from positive to flat or from flat to negative were from stocks in the east. This indicates declining CPUEs in many of the main commercial species caught in the east.

2.4 Recommended changes to ISMP targets for observers and port sampling and any data issues with the ISMP

68. After consideration of the data summary and ISMP report the RAG recommended the following:

- the level of sampling in each strata be updated to reflect recent fishing effort in the strata
- at sea sampling in the GHaT be discontinued for sectors that have electronic monitoring
- amend the GHaT length sampling targets to reflect assessment requirements, i.e. saw shark and elephantfish use Tier 4 assessments that do not use lengths in the assessment
- for sectors with e-monitoring, the measure of discards used for assessments will be logbook reported discards. Discard rates will not be calculated from e-monitoring analysis as e-monitor is used to verify fisher reporting and change fisher behaviour to ensure that discards are reported accurately in logbooks.
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69. AFMA undertook to notify the RAG of the amended ISMP targets.

Action item 23 – AFMA – once the targets are amended

AFMA undertook to notify the RAG of the amended ISMP targets.

3. Recommendations

3.1 SESSF Data Plan

70. Mr Power presented a draft of the Data and Assessment Plan 2015 – 20 for the SESSF. The RAG was asked for support to develop a strategic data plan for the fishery and RAG advice was sought on objectives and key information to include in the data plan.

71. The RAG agreed with the objectives as laid out in the Mr Power's SESSFRAG paper and made the following comments:

- there is a need to develop a data forecast for each species that could be then be used for planning the ISMP
- when planning data collection AFMA should use the Bergh strata to ensure the data are consistent with those already gathered (for ISMP fisheries)
- any new plan must ensure that catch composition data, discards and biological data is collected to meet the documented assessment needs
- should data collection be broadened to include information other than biological metrics e.g. economic data, and will these data assist AFMA in meeting its objectives
- the Strategic Monitoring and Assessment Review Project (SMARP) will also drive and guide this project.

72. SESSFRAG was asked to provide comment on the data summary templates in Mr Power’s paper. SESSFRAG **recommended** referring this to the individual RAGs, noting that the templates required some knowledge of the data requirements for each of the species involved.

Action item 24 – RAGs – during 2015 RAG consultations

Individual SESSF RAGs to provide any comments on the data plan template to AFMA.

3.2 Reporting requirements for bycatch and discards in trawl fisheries

73. Ms Weekes outlined some of the difficulties associated with getting accurate reports of discards from industry. The complexity of catches in the SESSF (especially trawl) adds to the difficulty in accurately reporting all discards as required by legislation. The proposal is to place some bycatch species in species groups to simplify reporting for fishers and thereby increase voluntary compliance for reporting discards as a whole. Data from the ISMP would be used to get species composition and extrapolate discard composition and rates across the fishery.

74. The RAG **supported** the approach outlined in Ms Weekes paper and made the following comments:

- the RAG endorses the trade off of fine scale reporting for better broader reporting
- the reporting species groups should take the 20 year catch record data into account when developing the species groups
- the RAG supported using the hierarchical approach to decide on species groups.

Action item 25 – Sally Weekes, Ian Knuckey and Simon Boag - September RAGs

A sub-committee of Sally Weekes, Simon Boag and Ian Knuckey to use catch data and observer data to investigate “grouping” of by product catch and discards. The results are to be presented to Shelf and Slope RAGs at the September meeting.

The Chair adjourned the meeting at 5:00 PM.

DAY 2, Wednesday 5 August

The meeting re-commenced at 8:30 am.

Fishery Independent Survey

75. Dr Knuckey gave a brief overview of the 2015 winter Fishery Independent Survey (FIS) that can be summarised as follows:
- a FIS had been conducted in 2008, 2010, 2012, 2014
 - a FIS costs around \$600 – 650K per year, the bulk of the cost being for boat charters
 - the FIS is split into three zones; east, west and NSW
 - about 195 two-hour tows are done during the winter FIS

- the survey is based on a general linear model which informs where to do the survey tows
- the FIS was designed to get CVs below 30 percent for the key species in the fishery. The FIS achieves this for 85 percent of the species by value and works well for flathead and ling. The FIS does not work well for species that are spatially patchy or fast moving, e.g. silver warehou
- FIS data with large CVs are unsuitable to be used in abundance estimates
- the abundance index for some species changes markedly between years e.g. silver warehou and therefore, despite reasonable CVs within years, the index may not be a reliable estimate of abundance
- the FIS supplements logbook data. The challenge with logbook data is that it gives a view only of the areas fished and it can be difficult to distinguish between abundance and availability whereas the FIS gives us a snap shot of the entire fishery.
- Dr Knuckey pointed out that the FIS can pick up inter-annual variation but the model is not capable of identifying what may be responsible for the variation e.g fishing or climate change
- Dr Knuckey noted that the pink ling data had good CVs and suggested that it could be included in the new assessment as another index of abundance
- a review of FIS methodology will be undertaken as part of the SMARP.

76. The RAG **recommended** that a FIS be conducted in winter 2016.

3.3 Tier 5 assessment methodology – assessing and managing data poor fisheries

77. Dr Haddon gave a Powerpoint presentation on “Assessing and managing data poor fisheries in Australia”.

78. Fisheries managers have a need for a metric of stock status over time to determine if management is meeting its objectives.

79. Objectives under the current Commonwealth Fisheries Harvest Strategy are a challenge because the target (B_{48}) and the limit reference point (B_{20}) both relate to measures of unfished and current biomass and these can be difficult to estimate in data poor fisheries.

80. In practice fishing mortality and spawning biomass can be measured in many ways but the key questions remain:

- a) What fishing mortality (F) constitutes overfishing?
- b) At what biomass level (B) is overfished?
- c) At what B is recruitment compromised?
- d) What is the optimum yield or profit?
- e) Are F and B based reference points sufficient?

81. In order to measure these elements we require a model that can give us stock projections and a risk assessment to evaluate the risk. These are difficult to achieve in data poor fisheries.

82. Dr Haddon presented a hypothetical assessment tier system and the RAG focused on developing a suite of assessment options for data poor Tier 5 species. Tier 5 assessments seek

to assess stocks where catch information is available but catch rates, length and age data are not. Dr Haddon noted that for data poor fisheries we can't aim for a target (even though we should) and therefore the focus needs to be on managing the species to above a limit.

83. If we only have empirical data (catch data) we can use a number of Tier 5 assessment options including;
- a) maximum constant yield (MCY), that makes an assumption that the catch is representative of a sustainable catch
 - b) depletion based stock reduction analysis that allows estimation of a safe level of catch.
84. Dr Haddon noted that model enhanced methods are being developed that show some promise but in the short term average catch based methods or depletion based stock reduction analysis could be used. Dr Haddon demonstrated some preliminary work that indicates that RBC's for smooth and mixed oreos can be derived by using these assessment methods.
85. SESSFRAG supported consideration of depletion based stock reduction analysis and average catch as methods for assessing data poor fisheries. Where there are significant closures constant yield method may be considered.
86. SESSFRAG **recommended** that SlopeRAG consider depletion based stock reduction analysis and average catch based methods for the 2015 smooth oreo assessment.
87. Mr Day noted that the harvest strategy needs to be updated to reflect the Tier 5 assessment use in the fishery.

Action item 26 – Malcolm Haddon – September SlopeRAG 2015

Oreodory, non-Cascade - SlopeRAG to consider a depletion based stock assessment, average catch and maximum constant yield when deciding on how best to set an RBC for smooth oreodory (non-Cascade). Malcolm Haddon to present a paper investigating these options at September SlopeRAG.

3.4 Potential changes to the SESSF Harvest Strategy Framework

88. Mr Day presented agenda item paper 3.4 and sought SESSFRAG advice regarding any potential changes to the SESSF Harvest Strategy Framework (HSF) for the 2016 -17 fishing year. Mr Day specifically directed the RAG to the impact of incidental and non-targeted catches on rebuilding stocks. The RAG said that any advice provided on any potential impacts presumes an understanding of and the ability to estimate the stock trajectory and this is not always possible.
89. Mr Day asked the RAG to consider whether the large change limiting rule should apply to every year of a multi-year TAC. The RAG briefly discussed this topic however following Dr Fulton's risk, cost, catch analysis agreed to retain the large change limiting rule,
90. The RAG suggested including the constant catch scenario used to develop the school whiting RBC into the HSP.

91. The RAG did not suggest any additional changes to the HSF and AFMA undertook to circulate a draft prior to the next Shark, Shelf and Slope RAG meetings.

Action item 27 – George Day - prior to the next Shark, Shelf and Slope RAG meetings.

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.

3.5 Using results from the MCMC analysis on Orange Roughy

92. Noting the outcomes from the Markov chain Monte Carlo (MCMC) analysis undertaken in 2014 for the Eastern Zone Orange Roughy stock, SESSFRAG was asked to provide advice on how best to use the results from this analysis, i.e. whether it is best to use the RBC advice from the MPD (maximum posterior density estimate) or the RBC from the MCMC (median estimate).
93. Dr Tuck noted that normally an MCMC would not be run when doing an assessment but in the case of orange roughy it was run in response to the AFMA Commission asking how certain the RAG was of the biomass estimates. While a MCMC does a good job of describing the uncertainty in the base case, sensitivity runs give a larger explanation.
94. Dr Upston noted that it was a resolution from the May 2014 Orange Roughy Workshop that uncertainty in the base-case spawning biomass estimates be explored by doing MCMC, in addition to exploring uncertainty associated with the model assumptions using sensitivity tests (identified by the Workshop and SlopeRAG).
95. Dr Upston explained that the MCMC explores the uncertainty in the model biomass estimates, whilst the MPD estimate will have an assumed error distribution. Theoretically the MCMC median and MPD estimate should eventually converge at the same estimate, although not always. An MCMC can be used to discover if there are any differences between the MCMC median and the MPD estimates.
96. Dr Upston added that there will be different views as to whether to do a “full assessment” including MCMCs (Bayesian median) depending on the country and policy settings. In terms of consistency, if stock status is quoted using the MPD then the RBC should be based on that and the same would be true for the Bayesian median.
97. The RAG noted that the MPD estimates had been MEY tested and were consistent with the harvest control rules.
98. SESSFRAG **recommended** that each of the RAGs decide on a case by case basis whether an MCMC analysis is run and if the MCMC is used to provide an RBC.

3.6 School whiting assessment

99. Ms Weekes presented the paper and SESSFRAG was asked to provide advice on the best way to proceed towards a new school whiting assessment given the issues with the short lived nature of the species, concern about the data informing the assessment only coming from a small part of the fishery and the interest from industry to improve it (the assessment). Ms Weekes advised the RAG that AFMA was not looking at doing an assessment next year but was looking for guidance on what needs to be done in the interim to support a new assessment in the future.
100. Mr Boag pointed out that most of the school whiting catch was taken by the Danish seine fleet working from Lakes Entrance and the fishery data was mostly from this fleet. However the assessment was supposed to be representative of the whole fishery, including NSW fishery state catches. Mr Boag and Dr Knuckey both queried if there was a mechanism to assess an “area of interest” and set a more localised TAC that was focused on the area where school whiting were mostly caught, i.e. eastern Bass Strait.
101. Dr Day responded by saying that he explored including only catch, age and length data from the Commonwealth fishery, which is largely based off Lakes Entrance, to examine the impact of the state data on this assessment. Excluding these data gives a very pessimistic picture for the spawning stock biomass. (Day, J. 2011).
102. Dr Stewart informed the RAG that NSW Fisheries was keen to see a new school whiting assessment. He further advised the RAG that NSW Fisheries are concerned with the stock status of school whiting as they had seen a decline in state catches of school whiting from 1000 t to 400 t over the last three years. As a consequence NSW has implemented a monitoring and data gathering program.
103. Mr Boag noted that there was a discrepancy between the NSW catches as stated by Dr Stewart and those presented in the ISMP discard paper which are deducted from the RBC to get the TAC. Mr Bromley will get details of the catches from NSW Fisheries and Dr Upston will review the state catch as reported in the SESSF ISMP and discard paper.

Action item 28 – Judy Upston and Ross Bromley- by July 2016
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School whiting – noting reports of falling school whiting catches reported from NSW Ross to get catch data from NSW and Judy to clarify the catches as reported in the SESSF ISMP Discard paper.
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104. Mr Krusic–Golub advised that that the growth and ageing parameters in the model may have to be changed as a result of moving from ageing whole otoliths to ageing sectioned otoliths.
105. Dr Day advised the RAG that he had been doing some work looking at undertaking a pre-recruitment survey of school whiting and whether it is possible that the survey results may inform the assessment.

Action item 29 – Jemery Day – report to ShelfRAG 2015

Dr Day to undertake preliminary work to ascertain if a pre-recruit survey is a viable option for this species and consequently if it is worth investing in and report to ShelfRAG.

106. The RAG noted concerns raised by Mr Boag that there may be more than one school whiting stock in the fishery and the assessment assumes one stock. The RAG thought the existing evidence for this hypothesis was weak but decided that this issue was best dealt with by ShelfRAG.

4. Information items

4.1 Blue eye trevalla CPUE analysis

107. Dr Haddon gave a Powerpoint presentation on his work comparing catch per record with catch per hook as CPUE indicators for blue eye trevalla (BET) (Attached). The presentation can be summarised as follows:

- total BET catches have been falling since 2009
- by 2008 auto longline had mainly replaced dropline as the main method of capture
- catch per record CPUE is a blunt performance measure but it is less sensitive to changes in fishing behaviour
- catch per hook CPUE is more sensitive to changes but getting total hook numbers can be difficult
- the log(catch per hook) data are more normally distributed than the log (catch per record) data implying that catch per hook data are more representative of the CPUE
- Dr Haddon has concerns if we should, or can, stitch the dropline and auto longline data together
- using catch per hook data decreases the target and increases the observed CPUE
- Orca depredation data is uncertain and therefore difficult to use; these standardisations assume there are no effects on catch rates from Orca interactions.

108. The RAG thanked Dr Haddon for his work and agreed to **recommend** that catch per hook is the most appropriate indicator of BET CPUE and that Dr Haddon finalise his work, including whether Orca effects could be taken into account, for presentation to SlopeRAG in September.

109. Dr Sporic presented the standardised BET catch rate data for trawl, auto longline and dropline blue eye trevalla. The RAG noted that the trawl standardisation was split into east and west and requested that Dr Sporic do a trawl standardisation that was not split.

Action item 30 – Miriana Sporic - September SlopeRAG

Blue eye trevalla – SESSFRAG noted the trawl CPUE standardisation was split east and west. Miriana was requested to do a single BET trawl standardisation.

4.2 End of financial year report – Fish Ageing Services

110. Mr Krusic-Golub referred the RAG to the Fish Ageing Services (FAS) report previously distributed to members.
111. Mr Krusic-Golub explained that:
- FAS has the budget to age between 11 000 and 12 000 samples a year. This means that not all species can be done each year
 - commitments to age ling, bight redfish and gummy shark ageing will take up about half the ageing budget
 - Tier 1 assessments flagged for next year include deepwater flathead, flathead, eastern and western gemfish, gummy shark and school whiting. It is unlikely there will be a budget to complete all this work.
112. The RAG **recommended** that ling, bight redfish and gummy shark be treated as a priority for ageing and that requirements for the other assessments be reassessed in January 2016.

4.3 Risk, cost, catch project update

- Dr Fulton gave a Powerpoint presentation of her work using the Atlantis ecosystem model to test tiered harvest control rules (Attached). The Atlantis model was used to model six assessment tier levels, Tiers 1 ,3 and 4 currently being used in the SESSF:
- Tier 1, full age structured assessment (e.g. SS3)
- T2, simple or less well defined stock assessment (not used in the SESSF)
- T3 catch curves with selectivity (& length composition data used)
- T4, CPUE based
- T5, (A) Average length based; (B) Risk assessment – SAFE
- T6, catch triggers (vs historical catch levels)
- T7, by groups of species: species composition, catch triggers; spatial extent of fishery

Results of the modelling for T1,3 and 4 assessments can be summarised as follows:

- the median risk of dropping below BLIM using meta rules was low (<10 %)for all Tiers, the T4 risk was lower than T3
 - the median risk is higher without the large change meta rule
 - the response time to identify a need to take management action increases as the amount of data available for the assessment declines, e.g. T1 response time is two years, T4 three years and other tiers are longer
 - some assessment tiers perform better than others, depending on the species
 - data poor tiers represent a significant step up in risk and foregone catch
 - US style discount factors are generally higher than those in the HSP and appear to achieve risk equalisation
113. Over the course of the meeting the RAG had voiced concerns over falling CPUEs across the fishery over the last decade. Dr Fulton explained that the Atlantis model can explore reasons for these declines. The RAG also queried if an investigation into these

declines could be integrated into the proposed project examining reasons for under caught TACs. Mr Day said he would see if this was possible.

Action item 31 – AFMA - As soon as possible

AFMA will investigate integrating examining reasons for falling CPUEs and lack of species rebuilding into the existing research project.

114. Following Dr Fulton’s preliminary exploration of the effect of metarules on risk the RAG recommended deferring any decision on removing metarules until Dr Fulton has published her paper.

4.4 Effectiveness of observer and EM reporting beyond TEP interactions

115. Mr Power gave a presentation on the progress of electronic monitoring (EM) in the gillnet sector of the fishery. The monitoring system includes sensors, data loggers and video cameras. Video cameras are triggered when sensors detect fishing activity and onboard GPS records position and speed.

116. The EM system provides data for verifying onboard logbook records. Data that can be verified with EM includes:

- catch (all species, weights and carcass numbers)
- effort
- discards (piece counts and species ID)
- life status (dead, alive, uncertain)
- biological data
- TEP identification and interaction rates. A project to compare observer TEP species identification to EM species identification on board auto longline boats is underway. A report on the analysis of these data will be presented to SlopeRAG,

A trial to investigate the accuracy of gummy shark length measurements collected by EM is planned. The trial will compare EM and observed gummy shark length data from a minimum of 20 shots using similar methodology to that used in the east coast tuna fishery in 2011. Mr Power suggested that each of the RAGs nominate a scientist to provide AFMA with advice on the project.

Action item 32 – David Power – As soon as possible

E monitoring – send report done for the ETBF to SESSFRAG members.

AFMA to forward the e-monitoring comparison report from longline and gillnet boats. This includes comparison reports between species ID from the on-board observer, logbook and e-monitoring analyst.

Action item 33 – David Power - As soon as practicable

Mr Power suggested that each of the RAGs nominate a scientist to provide AFMA with advice on the project comparing observer and EM gummy shark length measurement data.

5. Research

117. Dr Knuckey sought the RAG's permission to include a discussion on falling fishery CPUEs and undercaught TACs in the agenda. The RAG agreed to this request.
118. Dr Knuckey expressed his concerns with falling catch rates across the fishery, especially those from the east coast trawl fishery. He noted that despite a decade of reduced fishing effort in the SESSF since the 2005 buyout, catch rates and catches for many of the quota species (with few exceptions) have continued to decline and are now at a historical low. This was supported by the time series of standardised CPUE graphs in the catch standardisation report presented by Dr Sporic. He stressed that these fishery indicators appear to be inconsistent with the opportunity the stocks have had to recover from historically heavy fishing and suggest factors other than stock abundance may be affecting these indicators and that we, as a Resource Assessment Group were "missing something" fundamental that is occurring in the fishery.
119. Dr Knuckey also raised the slow (if any) rebuilding of overfished stocks despite large reductions in effort/catch and them being managed under rebuilding strategies for a number of years. He suggested a moratorium on doing the small annual analysis in order to concentrate research effort on trying to identify what underlies these negative trends in the fishery.
120. Dr Tuck was of the view that a broader holistic approach is required to look at these issues. He thought that the issue should be looked at from a structural point of view, to decide what is being observed and then to agree what data is needed to investigate the drivers of these trends.
121. The RAG **recommended** that a project to investigate/explore possible drivers of declining CPUE trends in the fishery is included in the ARC annual research call for interest in November.
122. The RAG thought that because the Atlantis model incorporates information on the fishery, fleet, economics and oceanography it could be used to undertake preliminary exploration of possible reasons for these declining trends in the fishery.
123. Mr Day briefly explained the existing project investigating causes for under caught TACs in the fishery. The RAG thought that a project investigating falling CPUEs and poor stock recovery dovetails nicely with the current project and **recommended** that the two projects are undertaken together.

5.1 Five year strategic research plan

124. Mr Day referred the RAG to the “five year strategic research plan” paper previously distributed to all members and noted that the research plan identifies the research priorities for the fishery for the next five years.
125. Dr Knuckey asked that his role as co-investigator of the FIS be noted as a potential conflict of interest.
126. In light of the previous discussions held regarding a proposal to develop a project to investigate falling fishery catch rates and slow stock rebuilding the RAG discussed amending the research priorities to highlight the importance of this proposal. During the course of this discussion Mr Morison advised that he thought that continuation of the FIS should be a high priority. He stated that there was low risk to the fishery if an assessment was delayed but the loss of a FIS data point could never be recovered and this loss may compromise future assessments.
127. The RAG **recommended** the three five year research priorities are as follows:
1. the continuation of the SESSF Fishery Independent Survey
 2. a project to investigate drivers of falling catch rates and poor stock rebuilding in the SESSF
 3. conduct stock assessments as per the assessment schedule.

5.2 SESSF strategic monitoring and assessment review project and SESSF FIS review

128. Dr Knuckey gave an overview of the SESSF strategic monitoring and assessment review project (SMARP) and referred the RAG to the progress update circulated to all members prior to the meeting.
129. Dr Knuckey informed the RAG that the FIS review was going to be a separate component of the SMARP and AFMA has initiated a call for expression of interest to review the SESSF FIS.
130. Included in topics the SMARP will investigate are; how data are collected, can collection be done more efficiently, timing of data collection, bird counts and exploring how the data can be better integrated into assessments.
131. The project is due for completion in June 2016. AFMA will circulate reports to the RAG once they are complete.

6. Other business

132. Mr Day informed the RAG that AFMA was considering holding the next SESSFRAG meeting at this time next year unless more pressing issues arose.
133. Drs Chick and Stewart thanked AFMA and SESSFRAG for the invitation to attend the meeting and the opportunity to have input into the meeting. The SESSFRAG Chair thanked them for their participation.

The Chair closed the meeting at 2:30 PM.

Table 1 SESSF RAG Register of interests

Member Declared interest	Member declared interest
Professor John Buckeridge	SESSF RAG Chair. SARAG Chair. RMIT.
Mr George Day	AFMA, Senior Manager Demersal and Midwater Fisheries.
Dr Malcolm Haddon	CSIRO stock assessment scientist. Member of SESSFRAG, Northern Prawn RAG and sub-Antarctic RAG.
Dr Brendan Kelaher	SharkRAG Chair
Mr Lance Lloyd	Chair GAB RAG Member, GAB MAC Member, SESSF RAG Director, Lloyd Environmental Pty Ltd Research Fellow, Federation University Australia
Mr Sandy Morison	SlopeRAG and ShelfRAG Chair Member of SEMAC and SESSFRAG. Consultant with an interest in funding for research purposes. Conducts fisheries related work consultancies for industry, companies and other Government departments. Had been recently engaged by an environment non-government organization to review an MSC pre-assessment of Orange Roughy in New Zealand.
Dr Sarah Jennings	Resource economist holding an adjunct position at the University of Tasmania. Interest in obtaining funding for future research. No pecuniary interest.
Invited participants	
Mr Kyne Krusik-Golub	Director – Fish Ageing Services
Dr Geoff Tuck	Employed by CSIRO.

	<p>Involved in Stock Assessments. Interest in obtaining funding for future research. Principle investigator on the SESSF stock assessment project and marine closures project.</p> <p>Involved in MSC assessments of AFMA managed fisheries</p>
Mr David Stone	Executive officer Sustainable Shark Fishing Incorporated
Dr Robin Thomson	<p>CSIRO, Assessment scientist. Acquiring funding for research purposes</p> <p>PI on Data Services Contract</p> <p>PI on close kin project for School Shark</p>
Dr Rich Little	CSIRO, Assessment scientist. Acquiring funding for research purposes
Dr Miriana Sporic	CSIRO, Assessment scientist. Acquiring funding for research purposes
Dr Judy Upston	CSIRO, Assessment scientist. Acquiring funding for research purposes
Dr Jemery Day	CSIRO, Assessment scientist. Acquiring funding for research purposes
Dr Ian Knuckey	<p>Director Fishwell Consulting Pty Ltd</p> <p>Involved in –Fishery Independent Survey (FIS) SESSF and GAB</p> <p>Range of research interests in relation to South East fisheries including the GABTF, SESSF and auto-longline sector.</p> <p>Agent for Olfish Electronic Logbooks</p> <p>NPF RAG Chair, Scientific member on NORMAC</p> <p>Member on ScallopMAC and SquidMAC</p> <p>Provides research advice to various industry associations: SETFIA, GABIA and SSIA</p> <p>Fishwell Consulting has been short listed for the AFMA observer program</p>
Mr Simon Boag	<p>CEO South East Trawl Fishing Industry Association, SETFIA</p> <p>CFA vice-Chair,</p> <p>Fishery consultant</p> <p>Sits on boards of Commonwealth Trawl Sector boat and quota SFR holding companies as a non-beneficiary director</p>
Dr Rowan Chick	Fisheries scientist, DPI Fisheries, NSW Department of Industry
Dr John Stewart	Fisheries scientist, DPI Fisheries, NSW Department of Industry

AFMA Participants	
Mr Chris Burns	AFMA, Manager, Observer section
Ms Sally Weekes	AFMA, Manager, South east and GAB trawl fishery
Mr David Power	AFMA, Manager, Gillnet, hook and trap fishery
Mr Ross Bromley	A/g Executive Officer SESSFRAG. AFMA. Senior Management Officer, Southern Trawl Fisheries.

Table 2. Action items from SESSF RAG Chair’s Meeting held on 4 and 5 March 2015 and actions pending from previous meetings.

Item Number	Action Item	Agency Person	Timeframe	Comments	SESSF RAG meeting comments
1	Consider the outcomes of the ABARES Stock Structure report, and consider the options with regards to managing Western Gemfish stocks.	AFMA CSIRO	Out of session	AFMA awaiting report from ABARES. Added to agenda for GABRAG November meeting.	
2	AFMA to consider redefining reporting requirements for bycatch discards (noting it is difficult to report to species level)	AFMA	Out of session	Duplicate of action item 17. A bycatch discard reporting project is underway. To be discussed at Agenda item 3.2	
3	AFMA to hold an out of session discussion with SharkRAG to discuss the merits of doing a Tier 4 in 2015 and to formalise advice on moving Elephant Fish and Sawshark to a MYTAC.	AFMA SharkRAG EO	After meeting	Complete. Agreement to proceed with tier 4s for sawshark and elephantfish in 2015.	
4	Executive Officer to summarise and distribute RAG comments on EOs for ARC consideration.	Executive Officer	After meeting	Completed.	
5	AFMA to work with NSW fisheries to get port sampling at Sydney Fish market for eastern gemfish (particularly during the spawning run for the winter bycatch spawning data.	AFMA Chris Burns	Prior to June/July spawning run	Underway. NSW has offered to help get samples if needed. The observer program is currently utilising AFMA observers to sample NSW Gemfish. Sampling is progressing well both on-board and in port (Bermagui and Wollongong). AFMA has implemented mandatory pre-reporting when landing Gemfish to obtain otoliths.	
6	AFMA to check the 2014 winter spawning run age and length data for eastern gemfish before	AFMA Sally Weekes	After meeting	Complete. There was insufficient data for the 2014 winter spawning run. Mandatory pre-reporting when landing eastern gemfish has been implemented to obtain age and	

	proceeding with Tier 1.			length data.	
7	Provide feedback to SESSRAG on comments provided on the Risk, Catch, Cost project presentation. A clear description of exactly what the project is trying to achieve, what the assumptions are and how we might use it in the future.	CSIRO Richard Little	After meeting	Beth Fulton will present an updated overview of Risk, Catch Cost Project at agenda item 4.3	
8	AFMA to let Mr Krusic-Golub know whether 2014 Pink Ling samples need to be aged.	AFMA Sally Weekes	After meeting	Pending final decision about whether an assessment takes place.	To be discussed during this meeting
9	AFMA to add a discussion to SharkRAG agenda to consider ageing Gummy Shark vertebrae in 15/16 financial year for assessment in 2016.	AFMA SharkRAG EO	SharkRAG 2015	Complete. This is on the agenda for the next SharkRAG meeting and CSIRO are providing advice.	
10	AFMA to prepare a summary comparing effectiveness of observer and EM reporting beyond TEP interactions. A verbal update in July and written report thereafter.	AFMA David Power	SESSFRAG Data meeting August 2015	Dave Power has prepared material and will present at agenda item 4.4.	
11a	AFMA to distribute a) program overview document for governing e-monitoring, b) proposed protocols for collecting biologicals in the shark sector and scalefish auto-longline sector.	AFMA David Power	After meeting	a) Complete b) Port sampling protocols are being finalised with CSIRO and the relevant RAGs and will be circulated once received.	
11b					
12	AFMA to distribute the report which looked at EM trials in the Tuna pelagic longline fishery.	AFMA David Power	After meeting	Complete. Distributed on 7 July 2015.	
13	Provide EO with the milestone report due at the end of March on	CSIRO Dr Tuck	After meeting	Complete. Distributed on 24 April 2015.	

	spatial closure work.				
14	AFMA data manager to work on linking port based sampling to trip ID as per CDR and observer reports	AFMA John Garvey	Out of session	Incorporated into action item 16.	Items 14 and 16 require changes to the database interface
15	AFMA to provide CSIRO with a detailed update of all changes that have been made to AFMA database	AFMA John Garvey	Out of session	Incorporated into action item 16. John Garvey and Dan Corrie will meet with CSIRO as part of action item 16 to provide updates on the AFMA database and further work required.	
16	AFMA to develop a business case for including port based sampling and FIS data into the AFMA database. <i>This work has expanded to include action items 14 & 15.</i>	AFMA Dan Corrie	Out of session	Underway. Dan Corrie is working with John Garvey to further this work and will incorporate action item 14 and 15. A body of work is required to: <ul style="list-style-type: none"> - Link port based sampling and CDRs to trip ID - Incorporate port-based, crew-collected and FIS data into AFMA's database. - Detailed update of all changes that have been made to AFMA database 	Ongoing discussions between AFMA and CSIRO to review database design
17	AFMA to progress work on grouping bycatch species in trawl fisheries to make discard reporting easier.	AFMA Dan Corrie	Out of session	Underway. To be discussed at agenda item 3.2	
18	AFMA to work on getting port-based sampling in western zones (consult with Dr Knuckey)	AFMA Chris Burns	Out of session	Underway. Likely to commence early in the new financial year.	Chris Burns confirmed that Fishwell Consulting has employed a person to take samples in the western zones
19	AFMA to implement mandatory pre-reporting when operators are landing Eastern Gemfish on the south coast during the spawning run.	AFMA Sally Weekes	After meeting	Complete. Mandatory pre-reporting between June 1 and August 31. A good number of samples have been collected so far.	
20	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 (previously Dr Klaer) CSIRO	In Final <i>Data Summary</i>	Underway. Dr Thomson and Dr Upston are working together to include summary maps for onboard discard weight data in the discard summary. Progress will be presented at agenda item 2.2.	

21	Check for outstanding length frequency information from previous surveys of the Cascade Plateau.	Dr Thomson (previously Dr Klaer) CSIRO	Out of session	To be addressed as part of the FIS and crew collected data business case (Item 16). When the data have been entered into a database in a consistent format, its inclusion in the data summary can be considered.	
22	Present/distribute analysis of the structural adjustment at SESSFRAG in March 2014 or at Shelf and Slope at end of year, whichever is appropriate.	Dr Haddon CSIRO	Shelf and/or Slope RAG	Underway. Dr Haddon has completed the analysis on effects of structural adjustment in the SESSF and update the RAG at agenda item 4.1	See minutes
23	CSIRO to check for gaps in the catch data for Ocean Jackets (particularly in relation to the zone field) with regard to a possible influence on catch rates.	Dr Thomson (previously Dr Klaer) CSIRO	Out of session	Complete. Dr Klaer seems to have addressed this issue. The 2014 & 2015 data summaries do not have the spike at 0 depth.	
24	Provide advice to the RAG with regards to CV thresholds for accepting or rejecting discard estimates.	Dr Upston CSIRO	Next SESSRAG meeting	Dr Upston will provide advice as part of the discard summary report.	Dr Upston provided the following explanation: the lower the value of the CV the more precise the estimate. Noting this CVs over 40% are considered poor and over 60% very poor and would not be reported. Below that point the RAGs would review its usefulness. The RAG agreed to treat each species discard estimate on a case by case basis and maintain transparency for the sake of recording a history of the decisions. The agreed that TAC conversion from RBC should continue to use a four year weighted average of discards.
25	CSIRO to provide AFMA with advice about the technical and resourcing requirements associated with expanding the Data Summary to	CSIRO	Out of session	Ongoing. To be reviewed in light of electronic monitoring implementation.	A project to improve discard reporting/recording in the trawl fishery is underway. This includes batching of species and the introduction of elogs into the trawl

	include statistically robust discard rate estimates from logbook data				fishery. Trials of EM are underway in the GHaT.
26	Incorporate the ISMP annual targets (coverage, measurements and samples) and performance against those targets.	Dr Thomson	Out of session	To discuss at agenda item 2.2	
27	Conduct a preliminary assessment on the effect of closures and Orca depredation on BET CPUE.	Dr Haddon CSIRO	Present to SlopeRAG.	Underway. Dr Haddon will update the RAG at agenda item 4.1	See minutes
28	AFMA to review the appropriateness of keeping the 50% change limiting rule for MYTAC species.	AFMA	November 2014	Complete. SEMAC considered the removal of the large change rule for multi-year TACs. The updated SESSF Harvest Strategy states that for multi-year TACs, the large change limiting rule may be applied for each year of the period until the RBC is achieved. Unless SESSF has a strong view that it should be changed it will remain as is.	
29	Investigate how to include School Shark vertebrae data in the ageing data, noting that it is a coding issue.	Dr Thomson (previously Dr Klaer)	Out of session	Complete. School shark age frequency data is included in 2015 data summary.	
30	Provide the Executive Officer a summary of progress on marine closure MSE testing to be circulated to the RAG.	Dr Tuck CSIRO	After the meeting	Complete. Distributed on 24 April 2015.	
31	CSIRO to provide specific proposals on how to put error estimates around CPUEs	Dr Thomson CSIRO		Need final advice from SESSF Error bars would clutter the geometric mean CPUE plot, which can have up to 4 lines on it already. Instead of adding error bars, years for which insufficient CPUE data are available, are now excluded from the plot. Calculation of the appropriate errors for CPUE would be best dealt with as part of the CPUE standardisations, given that the Data summaries only provide a crude summary of raw data. However, the RAG might prefer to limit data based on	Recognising that error bars clutter the CPUE plot Dr Thomson presented an example of a plot using different styles of plot line (e.g dotted line) to indicate CPUE points based on low numbers of records. The RAG agreed that this was good approach to identify large error estimates around CPUEs.

				standard error, rather than, or in addition to, sample size.	
32	AFMA to speak to Kyri at Fish Factory to resolve the issue of the missing shark length data.	Mr Burns		Ongoing. Kyri suggested he had found the data on a USB stick but has not sent it to AFMA. AFMA is still trying to get in touch.	No result.
33	Mr Burns to advise EO on the progress of coding for gear failure (loss of catch) then report to RAG.	Mr Burns Executive officer	After meeting	Some application development to the observer database is necessary. This is currently unbudgeted. Dan Corrie will pursue this as part of the discard reporting project.	

Table 3. Action items from SESSFRAG Data Meeting August 2015

No.	Action item	Agency/person	Timeframe
1.	GAB FIS otoliths are to be sent to FAS for ageing and inclusion in the assessments.	Fishwell Consulting	End of September
2.	Update SlopeRAG on results of the onboard trial to compare on board observer identification data with identification data from electronic monitoring.	AFMA	Slope RAG September 2015
3.	Dr Upston undertook to look at the Eden Lakes Danish seine stratum estimate to follow up on Dr Knuckey's comment regarding high discard proportion estimates.	Dr Upston	Before finalisation of the draft ISMP discard estimates paper
4.	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
5.	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 Sporcic to investigate the effect of including non-quota species in the CPUE series for inclusion in next year's data summary	Miriana Sporcic	For inclusion in 2016 data summary
6.	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	As soon as possible
7.	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	Robin Thomson	As soon as practicable

	the ISMP zones.		
8.	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	By 2016 data meeting
9.	Jackass morwong, east – The RAG noted some 50 +cm 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	As soon as practicable
10.	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	As soon as practicable
11.	Silver warehou – the CPUE series for the east and west are different. The RAG requested that two models be presented to SlopeRAG, i.e. combined fleet and east and west fleet. Noting SESSFRAG recommended a single RBC.	Geoff Tuck	SlopeRAG, September
12.	The RAG resolved that seeing as over 95 percent of the flathead catch consisted of tiger flathead and that only tiger flathead were considered in the assessment not use 'mixed flathead' as the descriptor and to retain the name 'tiger flathead'. Dr Thomson undertook to amend the data summary document.	Robin Thomson	As soon as practicable

13.	Patrick Cordue to undertake a Tier 1 pink ling assessment this year.	Patrick Cordue	Present first draft of the assessment at the September SlopeRAG meeting
14.	Patrick Cordue, AFMA and CSIRO representatives to have out of session discussions to arrange for provision of data for the ling assessment.	Patrick Cordue, AFMA and CSIRO (Dr Tuck)	As soon as possible
15.	Mr Boag to emphasise to operators the difficulty of correctly modelling fish populations and status without proper boat supplied data.	Simon Boag	As soon as practicable
16.	Alfonsino – explore the reason why non east coast deepwater trawl catches are excluded from the data series.	Robin Thomson	SlopeRAG, September
17.	Investigate reasons for the apparent increase in smaller gummy shark in the 2014 on board length frequencies.	Robin Thomson	As soon as practicable
18.	Obtain the school shark age frequency data from Terry Walker.	Ian Knuckey	Before SharkRAG
19.	School shark – review the school shark data plan taking note of industry reservations with the proposed sampling of catches from central South Australia,	David Power	SharkRAG, October
20.	Offshore ocean perch – the RAG noted the offshore ocean perch discard and retained length frequency data for 1984 - 87 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	As soon as practicable
21.	Blue warehou - provide crew collected blue warehou data to Robin Thomson.	AFMA	As soon as possible
22.	AFMA to amend the ISMP targets to cease collecting saw shark lengths as they are not	AFMA	As soon as possible

	used in the Tier 4 assessment.		
23.	AFMA to notify the RAG of the amended ISMP targets.	AFMA	As soon as possible
24.	Individual SESSF RAGs to provide any comments on the data plan template to AFMA.	RAGs	In the course of 2015 meetings
25.	A sub - committee of Sally Weekes, Simon Boag and Ian Knuckey to use catch data to investigate “grouping” of by product catch and discards	Sally Weekes, Simon Boag and Ian Knuckey	September RAGs
26.	Oreodory, non-Cascade - SlopeRAG to consider a depletion based stock assessment, average catch and maximum constant yield when deciding on how best to set an RBC for smooth oreodory (non-cascade)	Malcolm Haddon to present a paper investigating these options	September SlopeRAG
27.	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
28.	School whiting – noting reports of falling school whiting catches reported from NSW Judy to clarify the catches as reported in the SESSF ISMP Discard paper	Judy Upston Ross Bromley to get NSW data	By July 2016 (or prior to an assessment for school whiting if it gets pushed back until 2017)
29.	Dr Day to undertake preliminary work to ascertain if a pre-recruit survey is a viable option for this species and consequently if it is worth investing in.	Jemery day	ShelfRAG
30.	Blue eye trevalla – SESSF RAG noted the trawl CPUE standardisation was split east and west. Miriana was requested to do a single BET trawl standardisation	Miriana Sporicic	September SlopeRAG

31.	Research – AFMA will investigate integrating examining reasons for falling CPUEs and lack of species rebuilding into the existing research project	George Day	As soon as possible
32.	E monitoring – send report done for the ETBF to SESSFRAG members	Dave Power	As soon as possible
33.	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