SESS Fishery Slope Resource Assessment Group (SlopeRAG) Meeting #1 September 2015

Meeting Minutes

Date: 23 – 25 September
Venue: Salamanca Inn, Hobart

Attendance

Name	Membership (type i.e. chair etc.)
Members	
Mr Sandy Morison	Chair
Ms Sally Weekes	AFMA member
Dr Geoff Tuck	Scientific member, CSIRO
Mr Andrew Penney	Scientific member
Dr Sarah Jennings	Scientific (economics) member
Mr Tom Bibby	Industry member
Mr Simon Boag	Industry member
Mr Ross Bromley	Executive Officer - AFMA
Invited participant	
Mr Patrick Cordue	Fisheries consultant, Integrated Solutions Ltd.
Mr Lee Georgeson	Invited participant, ABARES
Mr Malcolm McNeill	Invited participant, industry
Observers	
Dr Judy Upston	Assessment scientist, CSIRO
Dr Jemery Day	Assessment scientist, CSIRO
Dr Robin Thomson	Assessment scientist, CSIRO
Dr Malcolm Haddon	Assessment scientist, CSIRO
Dr Kevin Rowling	Observer
Mr Daniel Corrie	Observer, AFMA
Mr Ryan Keightley	Observer, AFMA
Apologies	
Mr John Jarvis	Industry member

Minutes

Wednesday 23 September 2015

1. Preliminary

1.1 Welcome and introduction and apologies

1. The Chair opened the meeting and welcomed members and other participants at 13:00, 23 September 2015.

2. The RAG noted an apology from Mr John Jarvis.

3. The RAG noted resignations from Dr Jeremy Prince and Mr Les Scott. The Chair thanked Mr Scott and Dr Prince for their long standing contributions to the various RAGs they had served on. Mr Bromley advised the RAG that AFMA was organizing a small token of appreciation for their long service to Australian fisheries management.

1.2 Declarations of interest

4. The RAG followed the conflict of interest declarations as outlined in the revised Fisheries Administration Paper 12 (FAP12). A list of the full conflicts of interest declarations made by SlopeRAG members and other participants for the meeting is provided in **Attachment 2**. Mr Bibby and Mr Boag left the room in turn while the RAG considered their declared conflict of interests. The RAG agreed that Mr Bibby's and Mr Boag's expertise in the fishery warranted them being allowed to participate in the meeting however they may be asked to leave the room when RBC's are being decided. The RAG noted that that any RAG member can bring any perceived conflict to the Chair's notice and that the issue can be dealt with at the time on a case by case basis.

1.3 Adoption of agenda

5. The RAG adopted the draft agenda with no amendments (Attachment 1).

1.4 Action items from SlopeRAG 2014 and SESSFRAG 2015

6. RAG members reported on outcomes arising from action items from the SlopeRAG 2014 and SESSFRAG 2015 meetings. A list of outcomes is provided in Attachment 5.

7. Noting the outcomes from the 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. Notably, whether it is best to use the RBC advice from the MPD (maximum likelihood estimate) or the RBC from the MCMC. SESSFRAG referred the issue back to the individual RAGs to provide advice on a case by case basis.

8. The RAG had a short discussion around the broader use of MCMC analysis and recommended that AFMA convene a small group to put a SESSFRAG paper together articulating when a MCMC analysis should be used to develop RBC advice. The paper should explore considerations of using an MCMC in the context of the Harvest Strategy Framework, time and cost.

Action item 1- AFMA – Dr Marcus Finn
AFMA will convene a small group to write a SESSFRAG paper articulating when a MCMC analysis should be used to develop RBC advice. The paper should explore considerations of using an MCMC in the context of the Harvest Strategy Framework, time and cost.

9. The RAG noted that the decision rules used to generate RBC estimates has been MSE tested based on MPD estimates from stock assessments. RBC estimates using the decision rule will have to continue to use MPD estimates until the decision rule has been MSE tested using MCMC estimates to determine whether it still performs as expected. Until this is done, alternative advice based on MCMC estimates could

be provided as probabilities of achieving chosen future biomass levels (targets) at various RBCs, as had been done for ling.

10. Mr Penney queried if there had been any data issues with the large change in CSIRO staff? Dr Thomson advised that there had been been a great deal of work involved in taking over from Dr Klaer, but that she had ensured that the data summary document differed from those presented by Dr Klaer in only some minor ways and that she had been documenting any differences. There is tremendous scope for improved efficiencies and A project to better facilitate the use of the AFMA database by end users is underway. A collaborative data group has been established between CSIRO, AFMA and ABARES to idenetify options to better facilitate the use of the AFMA database.

Action item 2 – AFMA/CSIRO – Ongoing
The RAG endorses the ongoing need to document changes to the AFMA database. In line with this endorsement, AFMA and CSIRO to develop a shared site to communicate and document historic changes to the database.

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11. Dr Tuck publicly thanked Drs Thomson and Sporcic for the amount of time and effort they spent ensuring the data was ready for this year's assessments and meetings.

2. General updates

2.1 Managers report

12. Ms Weekes presented the AFMA manager's report. The RAG noted the following:
   - Reviews of the Harvest Strategy Policy and Bycatch Policy are being led by the Department of Agriculture and Water Resources. They are consulting within Government (AFMA and Environment) and expecting to undertake public consultation over the next few months.
   - Seabirds. Although seabird interactions are still an issue for the trawl fishery significant progress has been made over recent years. "Pinkies" (bird scaring devices involving towed buoys), made mandatory from trawl boats in 2014, have been shown to reduce interactions by 75 percent. Industry is currently trialing two new alternatives to reduce this rate further.
   - The Petuna/Sealord and Sanford blue grenadier winter spawning freezer boat fishery was granted MSC.

2.2   AFMA Commission's comments on 2015-16 TACs

13. Ms Weekes passed on the AFMA Commission's comments regarding 2015-16 TACs
   a) Proposed changes to the SESSF HSF were supported:
      - The small change limiting rule was removed.
      - For multi-year TACs, the large change limiting rule may be applied for each year of the period until the RBC is achieved.
      - Ms Weekes explained that we would need a strong case to move away from these rules, and that would only occur by exception.
   b) Silver warehou –
      - SEMAC previously considered the TAC for Silver Warehou and had concerns about the stock because industry is reporting poor catches.

Given their concern on the status of the stock, SEMAC recommended continuing the 2014-15 TAC rather than applying the Harvest Strategy, which would have resulted in a slight increase in the TAC. However, the Commission decided to apply the Harvest Strategy, noting the practical impact is minimal because the TACs are under caught and a Tier 1 assessment is planned this year.

c) Orange roughy -
- The Commission supported most management recommendations – minimum quota, observer coverage etc. however they did not agree with the recommendation to make net sensors or net windows compulsory. Given the ability to catch Orange Roughy so quickly, the Commission was concerned about cryptic mortality when using net windows.

d) Blue eye trevalla –
- The Commission agreed to pause the step down TAC and maintain the current TAC, noting the additional work that Dr Haddon at CSIRO has been contracted to do on CPUE.

e) Pink ling
- The Commission set a global TAC for the 2015-16 fishing season. Noting the notional TAC in the eastern zone and catch over run in 2013/14 the Commission requested stronger management arrangements to constrain eastern zone catches early in the season.

2.3   ABARES Fishery Status Report 2014

14. The RAG queried the likely retention of the status of pink ling as "fishing mortality uncertain" in the final report. Mr Georgeson advised the RAG that this uncertainty was because it is unclear if total mortality for the eastern stock is within the constant catch scenario threshold, in addition to the last pink ling assessment estimating that there was a greater than 15 percent probability of the eastern stock being below the limit reference point.

15. Mr Georgeson gave a brief summary of the ABARES fishery status reports
- For solely and jointly managed fisheries overall, there is likely to be very little change from last year's reports. However, detailed information is confidential until the reports are released in late October 2015.
- Updated stock assessments for the SESSF (CTS and SHS), orange roughy eastern zone and redfish have implications for status determinations for these stocks.
- Based on the rebuilding of orange roughy eastern zone, an argument was made by reviewers about increasing uncertainty around the biomass status of southern and western zone orange roughy. Currently, there is little tangible evidence and so the biomass status is unlikely to change. ABARES would welcome a RAG discussion on this issue.
- Difficulties in assigning a status determination were encountered for redfish (fishing mortality), blue-eye trevalla, eastern gemfish and pink ling (eastern zone).
- Overall SESSF GVP very similar to last year. Of note is the reduction in NER in the SESSF; down to $0.2m based on preliminary 2013–14 estimates' (ABARES fishery economics reports). SESSF NER has subsequently been revised to $1.4m in 2013–14.
- On a general level, ABARES is facing some new and ongoing challenges with the status reports:

- Assessing fishing mortality for stocks below B_{LIM} remains difficult due to ongoing paucity of information leading to a lack of reliable indices
- The move to MYTACS for a number of tier 4 species presents challenges. Because ABARES reports status against the limit reference point (and discusses status in the context of target reference points), a lack of updated tier 4 assessments makes it more difficult to track CPUE in relation to the LRP and TRP from year to year.
- There is a general push to reduce assessment and management costs across the board, and it may be that in addition to the move toward MYTACS, the format of the annual status reports needs to be reconsidered.

2.4   Observer report

16. The RAG noted the tabled ISMP report circulated to members and highlighted the lack of data coming from the western zones. Mr Bromley advised the RAG that this had also been identified as an issue by SESSFRAG and that AFMA had planned for additional resources to address this shortfall.

2.5   ISMP Discard report

17. Dr Upston referred the RAG to the circulated draft ISMP discard estimation report. The RAG noted the following:
    - CVs of less than 20 percent are considered good , in which case the data can be considered to be representative
    - the blue grenadier discard rate is the third highest on record as a result of ongoing indications of high availability of small fish, indicating good recruitment
    - the blue eye trevalla discard rate has fallen by about 50 percent and is extremely low
    - the pink ling discard rate is the largest in history (since 1998) although this is partially explained by a decline in catch, so that discards become a higher percentage of the smaller catch.

Mr Malcolm McNeill arrived at the meeting at about 2:45 pm. He declared his interest in agenda items 3, 4, 5, 6, 8 and 9 and as per Attachment 2. He was asked to leave the room while the RAG considered his declaration. Noting Mr McNeill's expertise in the fishery and that he was an observer the RAG resolved that this warranted him being allowed to participate in the meeting. However he may be asked to leave the room when RBCs are being decided.

3. Report on the blue eye trevalla stock structure project

18. Alan Williams, Paul Hamer, Kyne Krusic-Golub and Jonathon Cool presented a report on their work investigating blue eye trevalla (BET) stock structure. The project is funded by AFMA and FRDC and is due to conclude next year.

19. The project has four objectives:

a) Define Blue-eye Trevalla subpopulation structure in SESSF & ECDF (NZ) using otolith elemental and stable isotopic chemistry.
b) Evaluate the potential of other biological data (age, size frequency and maturation stage) to substantiate subpopulation spatial patterns.
c) Infer patterns of dispersal and recruitment using otolith chemistry in conjunction with ocean circulation models.
d) Develop methods to develop management options that capture the spatially and temporally complex Blue-eye Trevalla fishery and which account for extensive recent fishery and marine reserve closures.

20. The RAG noted that:
- BET are a slope species found in a depth range between 200 – 700 m
- Their range is from north of Shark Bay in the west to north of Harvey Bay in the east
- otolith samples were used to estimate age and size at age
- LF were taken from the GAB to far eastern Victoria and the eastern seamounts. Fish off the seamounts are generally larger
- most BET caught are between 30 and 60 cm with larger fish being caught on the eastern seamounts.

21. Life history
- 19 spawning locations were identified
- eggs float to the top 50 metres of water in the four days after spawning, they then drift in the water column for up to 180 days, before "disappearing", they are recruited to the fishing grounds at about 2 years of age
- larval dispersal models assume passive drift
- there is some evidence for stock connectivity driven by the oceanography of the region
- Knowledge required:
  - Fishing grounds
  - Spawning grounds & times
  - Dispersal
  - Behaviour
  - Ocean currents
  - Linkages between fishing areas (population structure).

22. Simulating Dispersal of Marine Larvae
- Individual-based models were developed
- Use object oriented programming
- Assign properties (e.g. x,y,z position, time, condition) and behaviour (e.g. mortality, vertical movement, attraction) to individuals and let them interact in a virtual environment.
- Use oceanographic data to drive dispersal (advection and diffusion)
- Record time, position, source, distance travelled
- Generate a matrix of source-destination connections. There appears to be four basic "blocks" of connectivity: Se Lord Howe, eastern seamounts/NSW coast, eastern Tasmania/Bass Strait and the GAB
- Levels of connectivity through dispersal/migration among individual fishing grounds likely vary from very high to zero

- Population processes in one fishing area may be totally independent of others

23. Otolith microchemistry

- The ratio between O^{18} and O^{16} isotopes can give an indication of the temperature range at points in the life history of the fish. When two samples are compared the ratio tells us not where the fish were but whether they were in the same place. Similarities in the presence and concentration of trace elements can also inform the comparison. Core O18/O16 isotope data suggest similar temp and ranges for early life across all regions. This could indicate that BET spawn at different times at different latitudes.
- Barium/calcium ratios profiles of fish on the eastern seamounts were different from those on the shelf. This indicates that that there are some signs of stock retention on the seamounts consequently CPUE from the seamounts may not be an indicator of abundance of BET on the shelf.

- There are four lbroad stock occurrence zones supported by the otolith data:

  a) GAB
  b) Southern Victoria and Tasmania
  c) Eastern seamounts
  d) Lord Howe/Gascoyne

24. Otoliths from 13 different regions were aged and the resultant data amalgamated by region; northern seamounts, Lord Howe, Gascoyne, Bass Canyon east Flinders Island, western Tasmania/Bass Strait and west king Island/GAB. A comparison of the predicted von Bertalanffy growth curves for each of the grouped regions shows the growth curves differ from each region.

4. Blue eye Trevalla – report on CPUE standardization project

25. Dr Haddon gave a presentation on his work comparing catch per record with catch per hook as CPUE indicators for blue eye trevalla (BET). The presentation can be summarized as follows:
    - catch rates from zones 10, 20 and 30 and all catches are considered in the Tier 4 BET assessment. NB. excluding data from the eastern seamounts
    - total BET catches have been falling since 2009
    - by 2008, auto longline had mainly replaced dropline as the main method of capture. The RAG was asked to consider how to best to combine the auto line and dropline CPUE series
    - Dr Haddon found some errors in the data base that may have been impacting on the analysis results. Records of single line drops are probably from incorrect logbook entries and not a realistic record of activity in the fishery. Geometric mean CPUE flattens when single line drops are removed from the data.

- catch per record CPUE is a blunt performance measure which ignores changes in fishing behavior
- 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 that the log (catch per record) data indicating that catch per hook data are more representative of the true CPUE and abundance
- catch per hook data are less prone to distortion due to behavioral changes than catch per record data
- auto line CPUE remains highly uncertain
- using catch per hook data decreases the target and increases the observed CPUE
- Orca depredation in the auto line fishery are assumed to have now reached equilibrium, however they appear to have had negative effects on the CPUE from about the early 2000s
- qualitatively whale depredations and closures, if they have had an effect on CPUE, will make current estimates excluding these parameters more conservative and under-estimate abundance

26. Dr Haddon recommended that BET CPUE analyses use catch-per-hook in the future noting that there were issues with the database that required attention.

27. The RAG discussed Dr Haddon's paper and made the following comments:
    a) The RAG supported using catch per hook as the method to estimate CPUE in the BET fishery.
    b) Dr Haddon identified a number of errors in the database. The RAG acknowledged there is a need to document any changes that need to be done in the database and also a need to communicate suggested changes to the AFMA data manager
    c) The RAG agreed that estimates of auto line CPUE will be conservative as it does not account for Orca depredation.
    d) Because the auto line CPUE series is relatively recent and does not represent a level of fishing indicative of virgin stock levels it is difficult for the RAG to set a reference period using this series under a Tier 4 approach. The RAG agreed that that it was appropriate to "stitch" the drop line and auto line series together by normalising the two series to their averages over the data over the overlap period.

28. The RAG made the following recommendations:
    i. Noting that the changes Dr Haddon made to the data base Dr Haddon is to liaise with John Garvey (AFMA data manager) to confrm whether the changes (column switching and data substitution) Dr Haddon made to the data are appropriate.
    ii. The Orca depredation rate is difficult to quantify and estimates are at a lower level of confidence than log book catch rates. Once an agreed catch rate has been decided: including Orca depredation in the discard estimates and closure effects should be run as catch rate sensitivities.

29. The RAG **agreed** using catch per hook in the BET CPUE analysis.

> **Action item 3** – Dr Haddon – before the October SlopeRAG meeting
>
> Dr Haddon is to liaise with John Garvey (AFMA data manager) to confirm whether the changes (column switching and data substitution) Dr Haddon made to the data are appropriate.

> **Action item 4** - Dr Haddon– before the October SlopeRAG meeting
>
> The Orca depredation rate is difficult to quantify and estimates are at a lower level of confidence than log book catch rates. The effects of Orca depredation on discard estimates and closure effects should be run as sensitivities once an agreed catch rate has been decided.

5. Summary of SlopeRAG breakout species and resultant actions from SESSFRAG

This item was deferred until Friday morning.

The meeting was adjourned at 17:20

Thursday 24 September 2015

The Chair reconvened the meeting at 08:30.

6. Tier 1 assessment – pink ling

30. The Chair introduced Mr Patrick Cordue, a New Zealand stock assessment scientist who is contracted by AFMA to undertake the 2015 pink ling stock assessment.

31. Mr Cordue declared that he had no pecuniary interest in this fishery, refer to Attachment 2.

32. Messrs. Bibby, McNeill and Boag gave an industry perspective of the current state of pink ling in the SESSF:
    - The trawl and auto line ling fishery in the western zone has been going well and there has been no difficulty in catching fish over the last 18 months. The local market is not resilient to large landings and operators have been constraining catches to maximise their landed price.
    - Eastern zone operators are skeptical of the biomass estimates from the current assessment. Ling catches have been higher than projected and this has led to increased discarding. Industry supported running an updated assessment this year.
    - Managing catches to within the notional eastern zone TAC had been difficult for both AFMA and industry. Discarding due to the

management arrangements has been high and probably higher than reported in logbooks.

33. Dr Thomson gave a brief overview of the pink ling data.
    a) Eastern zone:
       - trawl geometric mean CPUE has been steadily rising since 2002, hook CPUE is noisy but flat
       - most of the catch is taken by trawl and management arrangements over the last two years have reduced hook catch in the eastern zone
       - the majority of catch is taken in eastern Bass Strait
       - the discard rate has increased, probably due to the trip allowance. Industry has advised that this may be a conservative estimate
       - there appears to be an alternating pattern of larger and smaller fish being retained since 2008. This pattern is not noticeable in the age frequency.
    b) Western zone:
       - hook geometric mean CPUE has risen sharply since 2001, trawl is relatively flat
       - most of the catch is taken off western Tasmania
       - this zone is under sampled with small to no samples of port LF.

Pink ling assessment – Patrick Cordue

34. The 2015 pink ling assessments are an update of the 2013 assessments using the same model structure. New data (2013 and 2014) were added to the existing models and the same methods were applied. A full Bayesian estimation will be completed with additional MPD runs for sensitivities and MCMC runs for RBC estimates using the final base case. The assessment recognizes that there are two stocks of ling; east and west. The main update to the model is dealing with the impacts of trips limits on CPUE and changes in discarding behavior.

Methods
Discards

35. Historically ling discards have been low. However discards have increased since 26 September 2013 due to trip limits for eastern ling. ISMP data were used to estimate multipliers that could be used to take discards into account and convert landings into catch (landings + discards). I.e. catch = landings x landing multiplier. Trips landing less than 50 kg of ling were ignored.

36. **Model catch histories**
    - East and west models each have a trawl and non-trawl fishery
    - 2012 and 2013 catch histories were revised and two additional years (2014 and 2015) were added to the new model. Trips less than 50 kg were ignored as the data relates to boats not interested in catching ling.
    - for the 2015 catch , scale the TAC to total catch using 2014 proportions (i.e., multiply 2015 TAC by 2014 catch over 2014 TAC)

- methods are the same as used in the 2013 assessment (following Punt 2013)
- discards and state catches were applied to Commonwealth catches
- total catches were split into stocks and fisheries using proportions from GenLog data
- for east, fishing method and trip-limit period specific landings multipliers were used to estimate discards (see 29).

37. Mr Cordue noted that the NSW catch series needs to be updated in the model but he doubted if it would change the results. He also commented that he could not use the trawl port sampling data because depth stratum was not included. This was not an issue with non-trawl data as depth was not used in the CPUE standardization. Pink ling ISMP trawl data were not used because the sampling was too patchy.

38. The RAG noted that some eastern strata are under sampled for on board LF at depth. These data are crucial for the ling assessment and port sampling is not a substitute.

Action item 5 – AFMA – immediately
Alert ISMP manager to the shortfall in pink ling LF and age data in the main strata and ensure adequate coverage in 2015.

Methods: trawl CPUE

39. Trawl CPUE was standardized following 2013 assessment methods, i.e.
- East: time-blocking with linking vessels. The time blocks used are 1986-1999, 2000-2006, 2007-2014
- West: no time blocking as it made very little difference in the 2013 assessment.

40. Mr Cordue estimated "period effects" to deal with the impact of the trip limits. The time periods used are:
   i. P1: 1 January 1986 to 25 September 2013 (no trip limit)
   ii. P2: 26 September 2013 to 30 April 2014 (50 kg)
   iii. P3: 1 May 2014 to 31 December 2014 (250 kg).
      Trip limit period effects are not confounded with year effects because P2 is partly in 2013 and partly in 2014.

Methods: model structure

41. The model structure is the same as that used in 2013:
- the same model is used for east and west stocks
- single-area, two-sex, age-structured
- von Bertalanffy growth, single M was used for both stocks
- fixed maturity and steepness (h=0.75)
- the estimate of SSB is female only, 2015 mid-year
- two fisheries: trawl and non-trawl
- time-blocked selectivities for trawl

- the model estimates a number of parameters including: unfished biomass, growth, recruitment strengths, M and selectivities.

Eastern assessment: data preparation

42. **Length frequencies** were stratified by depth and zone (trawl) and zone (non-trawl). Trawl port data were unable to be used as there was no depth information; however non-trawl port data were used.

43. **Age-length data**. Sexed data was stratified by zone for trawl but not stratified for non-trawl. Unsexed LF data from Zone 20 was converted to AF using age-length keys.

44. Data were weighted as recommended Francis (2011), except the age-length data which were not fully down weighted.

45. New composition data were included in the 2015 assessment:
    - non-trawl, onboard: LFs 2013 & 2014
    - non-trawl: age-length 2013
    - trawl: no data that passed the 2013 stock assessment criteria.

Western assessment: data preparation

46. **Length and age-length frequencies**: the 2013 data analysis suggested that stratification was not needed for western data.

47. Data were weighted as recommended by Francis (2011), except the age-length data which were not fully down weighted.

48. New composition data were included in the 2015 assessment:
    - non-trawl, onboard: LFs in 2013 & 2014
    - trawl, onboard: LFs in 2013 & 2014
    - Age-length: trawl & non-trawl for 2013 (and some extra data for 2012 trawl).

Methods: Bayesian estimation

49. Mr Cordue explained that a mode of joint posterior distribution (MPD) estimate is run initially to see if the model can explain/fit the data. He noted that the MPD was equal to the maximum likelihood estimate only if uniform priors are used. A Markov Chain Monte Carlo (MCMC) estimate is a method of obtaining best estimates by resampling the full posterior distribution and stochastic projections from the MCMC can be used to undertake a risk analysis.

50. The RAG noted that MPD and MCMC estimates from the 2013 assessment produced very similar biomass estimates. Mr Cordue explained that MPD and MCMC estimates can be very different. In NZ, the stock assessment and subsequent management advice are almost exclusively based on MCMC estimates because:
    - the MCMC has better estimation properties

- the MCMC is statistically more defensible
- the MPD shows the best fit (mode) which is just one explanation of the data, but not the best estimate of where the bulk of the probability lies
- the MCMC samples show where the weight of the evidence

Results
Eastern zone

51. The RAG reviewed the CPUE analysis from the eastern zone assessment and noted:
    - vessel effects made had the largest effect on the eastern CPUE (increasing it) due to changes in the fleet
    - time blocking raises the CPUE index, as seen in the 2013 assessment
    - an analysis of residuals shows that catches between October 2013 and April 2014 are lower than predicted. This is consistent with an increase in discards due to the imposition of a trip limit
    - depth and tow duration have a strong positive effect on CPUE.

Western zone

52. The RAG reviewed the western CPUE analysis and noted:
    - that the latitude, month and vessel effects were not as great in the west as in the east
    - the 2015 assessment CPUE closely follows the CPUE in the 2013 assessment.

Preliminary MPD estimates

53. Mr Cordue presented the eastern zone preliminary MPD estimates:
    - the 2015 data are consistent with the 2013 data
    - in the 2013 assessment natural mortality (M) was identified as the main sensitivity. 2015 model runs to date have focused on exploring M
    - consistent with the 2013 assessment, the western posterior estimate of M was used as a prior for the eastern zone M in the assessment model
    - the 2015 assessment CPUE is a very good fit to the observed CPUE
    - 2015 and 2013 estimates of eastern year class strengths (YCS) are very similar
    - 2013 MPD estimates and modelled M estimates of female spawning biomass are very similar
    - there is little change between the 2013 and 2015 MPD estimates of female spawning biomass.

54. Mr Cordue presented the western zone preliminary MPD estimates:
    - the 2015 assessment estimate of female spawning stock estimate is higher than the 2013 estimate
    - there is a big change in estimated 2008 YCS due to new data
    - good recruitment estimated for the 2008 and 2009 cohorts is supported by the composition data as well as the increasing CPUE indices

- the 2015 CPUE fit is very good and much improved from 2013. A CV of 15% allowed the data to better fit the observed CPUE, (Francis method)
- 2015 estimates of YCS are better than 2013 and indicate strong cohorts coming through.

Eastern zone MCMC summary

55. Mr Cordue has been running the MCMC and although the chains had not converged by the time of the meeting the stock status will be estimated higher than in the 2013 assessment.

56. In the 2013 assessment there was a possibility that stock status may have be below 20 percent of unfished biomass. The new data (especially the increasing CPUE) have removed that possibility.

Next steps, including sensitivity runs

57. The RAG considered whether to include the latest Fishery Independent Survey abundance indices in the 2015 assessment. Mr Cordue expressed concerns that vessel effect on the FIS data had not been investigated. The RAG agreed that this was an issue and that these data would be used as a sensitivity.

58. The RAG discussed and agreed to run eastern pink ling assessment sensitivities as per Table 1. The RAG agreed not to run sensitivities for the western assessment.

Table 1. RAG agreed sensitivity runs for the eastern pink ling assessment.

Eastern pink ling assessment - 2015 model sensitivity runs	
Model Run	**Sensitivity**
Base	
Fixed and lower M	MPD & MCMC
Fixed and higher M	MPD
Sex-specific selectivities	MPD
Maturity 1 year younger	MPD
Maturity 1 year older	MPD
Use FIS Data	MPD
Use CPUE without period effects	MPD
Double effective sample size of composition data	MPD
Higher and Lower Sigma-r	MPD

CPUE CV=0.1	MPD

Action item 6 - Patrick Cordue – October SlopeRAG meeting
Undertake the RAG agreed sensitivity runs for the eastern pink ling assessment as per Table 1 in the minutes.

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59. The RAG also requested Mr Cordue to compare MCMC fits to the CPUE series as an aid to diagnostics.

Action item 7 – Patrick Cordue – October SlopeRAG meeting
Mr Cordue to compare MCMC fits to the CPUE series as an aid to diagnostics.

RBC advice

60. The RAG considered whether there were any reasons to reject the draft assessment as the base case for providing RBC advice. The RAG noted that this model is the same as the previously accepted 2013 model and nothing had changed apart from updates of data, YCS and the CPUE analysis. The **RAG recommended** that results from this model be used for providing RBC advice.

7. Tier 1 assessment - silver warehou

61. Mr Bibby gave an industry overview of the silver warehou fishery:
   - there are reasonable amounts of small silver warehou being caught in the western area of the trawl fishery
   - the quota is under-caught and had been for quite a few years
   - the market is not resilient to large landings and the price drops quickly when large volumes are landed. The market, not the TAC, is constraining catch
   - he has noticed that the overall abundance of silver warehou is declining.

62. Dr Thomson gave a brief rundown of the data pointing out:
   - catches and geometric CPUE have been declining for over a decade
   - catches have never reached the TAC
   - the discard rate is about five percent, down from the previous two years
   - port sampling from western Tasmania has been very poor since the late 1990's.

Silver warehou assessment

63. Dr Thomson referred the RAG to the assessment previously circulated. Silver warehou have been on a three year TAC with breakout rules including "the most recent observed value for the standardized CPUE falls outside of the 95 per cent confidence interval of the value for the CPUE predicted by the most recent Tier 1 stock assessment". Silver warehou broke out low in 2012, 2013

and 2014. SlopeRAG at the time advised that these breakouts were not unexpected and that it indicates that the assessment is producing over-optimistic estimates of stock status. The RAG noted at the time that the breakout rule will continue to be triggered until the problem in the model is rectified.

64. Dr Thomson highlighted changes to the 2012 assessment drawing the RAG's attention to :
   - three additional years data have been added; 2012, 2013 and 2014
   - discarding is being estimated and discard LF data have been included in the assessment
   - five more years of recruitment has been estimated
   - LF data have been split into port and onboard collected components
   - the single trawl fleet has been split into east and west of Long 147°E, each with its own estimated selectivity pattern and discards
   - non – trawl length data have been excluded from the data set (this makes little difference)
   - a new tuning procedure was used the balance the weighting of each of the data sources that contribute to the overall likelihood function.

65. The RAG reviewed the model estimated depletion from the 2012 base case and the estimated depletion from the 2015 tuned preliminary base case. Mr Penney noted that in each case there appeared to be a retrospective pattern that kicks the estimate up at the end and the last two data points do not follow the model leading to the breakout rule being triggered. Dr Day pointed out that the magnitude of the "kick up" was less under this model than the previous model.

66. Length and age data appear to be in conflict which is unusual as they both come from the same data source. The RAG recommended:
   - investigating whether the growth estimates used in the model are plausible/correct
   - seeing if reweighting the age and length data will make any difference to the model fits
   - keeping discard estimates in the model
   - retaining the east/west split.

67. The RAG was of the view that the model was over optimistic when estimating recent recruitment and Dr Day noted that estimates of recruitment appear to decrease as time goes by, indicating that they had initially been over-estimated. Mr Penney noted that this would explain the optimistic projections, and why the breakout rules are continually triggered. He directed the RAG's attention to an action item arising out of the November 2012 SlopeRAG meeting and recommended that the reasons for over-estimatation by the model be further explored, and options considered for correcting or down-weighting recent recruitment estimates. Although the 2012 RAG was not concerned with silver warehou stock status the RAG thought there were issues with recruitment estimates in the model and agreed to provide low recruitment scenarios when running projections as part of the advice to show

the range of risk with MYTACs, and for determining the CPUE probability range to use when evaluating breakout rules.

68. Noting concerns with below average recruitment of silver warehou and the retrospective pattern in the model the RAG recommended doing a three year biomass projection using three recruitment scenarios:
    a) model estimated average recruitment (likely optimistic)
    b) 2007 – 2011 model estimate of recruitment (moderately low r)
    c) 2007 – 2009 model estimate of recruitment (lowest r in records).

Action item 8 – Dr Thomson – October SlopeRAG meeting
Noting concerns with below average recruitment of silver warehou and the retrospective pattern in the model the RAG recommended doing a three year biomass projection using three recruitment scenarios:
a)   model estimated average recruitment (likely optimistic)
b)   2007 – 2011, model estimate of recruitment (moderately low r)
c)   2007 – 2009, model estimate of recruitment (lowest r in records).

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69. Dr Upston noted that although the CVs for the silver warehou abundance index from the FIS were too high to be used in the assessment they should still be put in the assessment at a CV of 0.4. The model would disregard the index (because of the high CV) however the FIS index would be flagged as an input into the model that may be able to be used in the future.

70. Mr Bibby suggested that the recorded catches between 1998 and 2002 could be conservative due to mis-recording of silver and blue warehou during this period. The RAG recommended running a sensitivity exploring the effect of higher catches during this period.

8. Bycatch grouping

71. The Chair gave a summary of the paper previously circulated by AFMA and drew the RAG's attention to:
    - the proposed grouping of non-quota species discards
    - SESSFRAG's in-principle support for the project
    - the aim of grouping species is to streamline reporting for operators with the intent of improving voluntary compliance of reporting discard tonnages while species composition can be obtained through the ISMP. The RAG was concerned that there would be less ISMP data from less common species and that these may be the species of most concern
    - industry operators not supporting the project when it was presented to ShelfRAG.

72. AFMA has undertaken to review this project through the SESSF Monitoring Assessment Review Project (SMARP).

9. SESSF data plan for auto line species

73. Mr Keightley gave a brief presentation of the paper previously circulated to the RAG. Mr Keightley sought the RAG's comments on data requirements for the two main auto line species i.e. pink ling and blue eye Trevalla. The RAG made the following comments:

- extreme caution should be used when considering breaking a time series, however if this is inevitable data should be representative and collected as cost effectively as possible
- port samples are less expensive to collect but they are not fully representative of the catch
- when developing a data plan the ISMP auto line strata should be used to ensure continuity of data
- there needs to be an overlap study to compare data from the ISMP and those gathered from electronic monitoring
- scientists running the assessments should be asked what they consider to be the correct representative sample size
- **blue eye trevalla data requirements** (Tier 4):
  a) collect lengths as a minimum requirement
  b) because BET is a Tier 4 species collection of otoliths is not so critical but otoliths are good to have and should be archived for future use
  c) the RAG suggested a sampling target for landings of a maximum of 100 fish per landing
  d) otoliths do not need to be collected every year.
- **pink ling** (Tier 1):
  a) the minimum data requirements are; location, sex, length frequencies, depth and otoliths
  b) all data gathered should use the current ISMP strata
  c) estimates of the size and numbers of discards are required to calculate a discard rate.

74. Mr Boag and Mr McNeill suggested due to only two main operators in the fishery there may be some scope for on board crew sampling, Lengths can be sampled easily on board by crew however collection of otoliths needs to be done either by an observer or on land. It was suggested that AFMA talk to these operators about options for industry sampling of catches.

The meeting was adjourned at 16:50.

Friday 25 September 2015

5. Summary of Slope RAG breakout species and resultant actions from SESSFRAG

75. Ms Weekes referred the RAG to the previously circulated paper and noted that ribaldo had triggered the breakout rules. Ribaldo catch in 2014 was 133.9 tonnes which is less than 70 % of the TAC of 252 tonnes, one of the triggers.

Consequently SlopeRAG was asked to review the species breakout. The RAG noted the ribaldo TAC had increased by 84 tonnes, from 168 to 252 tonnes and the rise in TAC accounts for the rise in the percent of uncaught ribaldo TAC. The RAG advised there was no need to bring the ribaldo assessment forward. The RAG recommended that all the breakout rules be reviewed when the MYTACs fall due for assessment next year.

Action item 9 – SlopeRAG – 2016 meetings

Review the species breakout rules as the MYTAC's expire and the species are re-assessed.

RAG comments on ISMP and data requests

76. The RAG considered that apart from pink ling there were no other data requests. However the RAG did make the following comments:
    - It was recommended that AFMA request assessors to identify any data shortfalls and ISMP sampling deficiencies at the end of the assessment document and report on the effect a lack of data had on the assessment.
    - Revised ISMP sampling targets should be specified as the number of shots or number of fish rather than percentages.
    - A table of data needs/requirements should be included as an attachment to the minutes and kept as a live document to be reported on at each RAG meeting, i.e. similar to the recording and reporting of action items.
    - RAG advice on revisions or improvements to data collection and ISMP sampling needs to be communicated regularly to the Observer Program manager.
    -

Action item 10 – Executive Officer – immediately

A table of data needs and ISMP sampling requirements to be included as an attachment to the minutes and kept as a live document to be reported on at each RAG meeting.

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12. Giant crabs – for information

77. Mr James Parkinson (DPIPWE) and Dr Klaas Hartmann (IMAS) gave a presentation on their project "Resolving conflict between giant crab trap and benthic trawl fisheries":
    - there is a history of interactions between the giant crab trap fishery and the south east trawl fishery in waters off western Tasmania along the shelf break
    - issues of concerns expressed by the crab fishers are:
        a) loss of productivity due to changes in habitat caused by trawl gear
        b) trawl fishing mortality of crabs, landed and cryptic

       c) loss of traps caused by trawlers hitting the gear while trawling

- previous interaction between the two fisheries was somewhat mediated by communication between operators
- the giant crab stock is declining, showing no signs of recovery and these declines are not explained by the assessment model
- objectives of the project are:
    a) determine changes through time in benthic trawl interactions and overlap with crab habitat and the fishery
    b) determine trends in crabs retained by trawl gear in the context of removals from targeted fishing
    c) develop management options for resource sharing and minimization of interaction if required
    d) observer, logbook and effort data have been requested from AFMA to determine catches in the trawl fishery, cryptic mortality will be investigated later
    e) the crab assessment is reviewed internally but as the fishery is only 20 tonnes resources for external reviews are limited.

78. Mr Bibby commented that in his view interactions between trawl and trap gear are rare. Mr Boag commented that he had made an attempt to talk with affected crab fishermen however they did not attend the meeting. Mr Boag undertook to contact crab fishery representatives in his role as SETFIA CEO.

79. The RAG pointed out that not only were crabs not rebuilding as expected but there are a number of fish species not rebuilding as expected and this is not an uncommon event. It usually indicates that biological productivity is being optimistially input into, or estimated by, assessment models, and that stock status and recovery rates are lower than model estimates. The RAG asked AFMA to liaise with Tasmanian authorities and obtain a copy of the final report.

Action item 10 – AFMA – when the report is complete
AFMA to liaise with Tasmanian authorities and, once complete, obtain a copy of the final report.

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10 & 11 Options for assessing low information species – smooth oreodory

80. Dr Haddon gave a presentation titled "Tier 5 options for data poor fisheries in the SESSF". Fisheries managers need a metric to decide if management is meeting its targets of:
    a) avoiding overfishing
    b) optimizing yield or profits
    c) rebuilding depleted or overfished stocks.

81. A data poor fishery lacks adequate information to make a valid stock assessment or managers are unable to determine performance measures to

compare with reference points. If only empirical data (catch data) are available we can use a number of Tier 5 assessment options including;
- maximum constant yield (MCY), that makes an assumption that the catch over some period is representative of a sustainable catch
- model enhanced depletion based stock reduction analysis (DBSRA) that allows estimation of a safe level of catch based on past performance.

82. Three model assisted Tier 5 options have been tested:
- DB-SRA – depletion based – stock reduction analysis – Dick & MacCall, 2011)
- DCAC – depletion corrected average catch - MacCall, 2009
- DACS – depletion adjusted catch scalar

83. The above approaches require:
- a catch time series, preferably from the start of the fishery
- a simple method of modelling dynamics for the stock reduction analysis
- plausible values of:
  - i. the natural mortality rate (M)
  - ii. ratio of F_{MSY} to natural mortality, F_{MSY}/M
  - iii. most productive stock depletion level, B_{MSY}/B_0
  - iv. the age at maturity.

84. SESSFRAG, at its meeting in August 2015, recommended that SlopeRAG consider depletion based stock reduction analysis and average catch based methods for the 2015 smooth oreodory assessment.

85. Dr Haddon explained that Depletion-Based Stock Reduction Analysis was used to estimate a sustainable catch level. There is an array of assumptions and required parameters for this method but values for these parameters can be selected from distributions which are given wide bounds in an attempt to avoid constraining the outcomes by the inputs. A critical input is the final expected median depletion level. This makes sense in the USA where the search is for a fishing mortality rate that will eventually achieve the maximum yield. Here in Australia where catch limits are set selecting a median depletion level could easily bias the outcome. Nevertheless, using the method to search for the yields that should keep the spawning biomass above 20%B0 for more than 90% of time, should provide defensible yield values. Testing this approach with flathead and comparing it with the most recent assessment showed this can be a conservative approach, providing appropriate safety margins for a low information method.

86. With smooth oreodory (non-Cascade) using the DB-SRA in this manner led to an estimate of sustainable yield of 72 t. The wide bounds used in the DB-SRA method led to relatively high levels of uncertainty around the yield estimate. The 72 t was the median DB-SRA estimate, but the 95th percentile encompassed 237 t, so the estimates from the central tendency methods remain viable options. The results are 72 t (DB-SRA) or 175 – 190t (median catch estimates).

87. The RAG queried what would be the estimate of productivity if the final depletion was set at 48 percent. Dr Haddon undertook to run the DBSRA at 48 percent final depletion and present his results at the October RAG.

Action item 11 – Dr Haddon – October SlopeRAG
Dr Haddon to run the DBSRA to estimate smooth oreodory productivity when the final depletion is set at 48 percent.

88. The RAG considered:
    - the safest way to set an RBC is to assume that B_{LIM} is B_{20} and set the target as having probability of less than 10 percent of being below B_{LIM}
    - an RBC of 72 tonnes poses little risk to the fishery. This limit is especially conservative when compared to the historical large catches of smooth oreodory and taking into account most of the deepwater trawl grounds are now closed
    - the biology of smooth oreodory is such that the stock should have rebuilt since the period of high catches in the early 1990's. It is highly unlikely that the stock is depleted to near a level of concern and is likely to be above target
    - when last assessed in 2010, smooth oreodory CPUE was above the reference level. However the suitability of Tier 4 assessments is questionable for deepwater aggregating species
    - one of the difficulties in using an average catch approach is deciding on the historical period that is suitable to be used as a reference, representing a period of sustainable catches.

89. The RAG recommended using a depletion based stock reduction analysis and a weight of evidence approach to develop an RBC for smooth oreodory. The RAG intends to finalise its RBC recommendation at the October meeting.

Smooth oreodory – Cascade Plateau

90. The RAG noted minimal fishing effort has occurred on the Cascade Plateau over the last few years and consequently catches are low to zero. The RAG recommended maintaining the current TAC of 150 tonnes and revisiting this species when catches exceed 10 tonnes. The RAG noted that Tier 5 methods of assessment may be able to be applied to smooth oreodory (Cascade Plateau).

Species	Assessment	RBC (t)	TAC (t)	Discount factor	Under/over catch
Smooth oreodory – Cascade Plateau	N/A	NA	150	N/A	10%

Finish

The Chair thanked everyone for their attendance and closed the meeting at 11:55.

Signed (Chairperson):

Date:

List of Attachments

1) SlopeRAG September 2015 Agenda
2) SlopeRAG September 2015 Declared Conflicts of Interest
3) Action item from this meeting
4) Action items from previous meetings
5) Data notes identified by the RAG

Attachment 1. Agenda

Southern and Eastern Scalefish and Shark Fishery Slope Resource Assessment Group (Slope RAG) Agenda

Venue: Salamanca Inn Board Room, Hobart

Chair: Mr Sandy Morison

Day 1: Wednesday 23 September 2015

13:00 – 16:45

Time	Item	Presenter
13:00	**1. Preliminaries** 1.1 Welcome and introductions/apologies 1.2 Declarations of interest (noting the requirements of FAP12) 1.3 Adoption of agenda 1.4 Action items from October/December 2014 meetings	Sandy Morison
13:30	**2. General updates** 2.1 Manager's report on management issues 2.2 Commission's comments on 2014 SESSF TACs 2.3 ABARES Fishery Status Report 2014 2.4 Observer Report (Tabled) 2.5 ISMP Discard report	Sally Weekes Sally Weekes ABARES Judy Upston
14:30	*Afternoon tea*	
14:50	**3. Report on the blue eye trevalla stock structure project**	Alan Williams
15:30	**4. Blue eye trevalla – report on CPUE standardisation project** **Slope RAG is required to recommend a CPUE standard to be used in the blue eye trevalla Tier 4 assessment. The assessment will be presented at the October meeting.** 4.1 Non – trawl CPUE reports: a) revision of CPUE series for auto longline (ALL) and dropline (DL) expressing effort as the number of hooks not days b) new combined ALL/DL CPUE	Malcolm Haddon

<table>
<tr><td></td><td>series based on hook numbers
    c) review of the need for separate east and west analysis with new CPUE series
    d) examination of the CPUE series with and without GAB data
    e) review of the nature and timing of historic management changes and consider how to/need to account for these in the non-trawl CPUE series
4.2 Trawl CPUE report

    a) presentation of complete trawl series
4.3 Orca interactions

    a) report on development of Orca interaction scenarios for ALL and DL and the effect of the scenarios on the CPUE series
4.4 Closures

    a) report on effects of closures on CPUE.</td><td></td></tr>
<tr><td>16:15</td><td>**5. Summary of Slope RAG breakout species and resultant actions from SESSFRAG.**

Outcomes from SESSFRAG (for information).</td><td>Sally Weekes</td></tr>
<tr><td>*16:45*</td><td>*Adjourn meeting*</td><td></td></tr>
</table>

Day 2: Thursday 24 September 2015

8:30 – 17:00

Time	Item	Presenter
8:30	**6. Tier 1 assessment – pink ling** • overview of recent data • update on the fishery from an industry perspective • preliminary 2015 stock assessment – presentation of models • discussion.	Robin Thomson Simon Boag Patrick Cordue
10:15	*Morning tea*	
10:35	**- Pink ling continued.**	
12:30	*Lunch*	
13:15	**7. Tier 1 assessment - silver warehou** • overview of recent data	Robin Thomson

	• update on the fishery from an industry perspective • preliminary 2015 Stock assessment – presentation of models • discussion.	Simon Boag Jemery Day
15:10	*Afternoon tea*	
15:30	8. **Bycatch grouping -** RAG comments sought regarding reporting requirements for bycatch and discards in the trawl fishery.	Sally Weekes
16:00	9. **Presentation of the auto longline fishery data plan**. RAG advice sought on the efficacy of the plan, what biological data is required to be collected from the demersal longline fishery.	Ryan Keightley
17:00	*Adjourn meeting*	

Day 3: Friday 25 September 2015

9:00 – 12:00

Time		Presenter
9:00	10. **Options for assessing oreodory:** • including depletion based stock reduction analysis, maximum yield and average catch • review of assumptions, data needs and strengths and weaknesses of the assessments. 11. **Tier 4 species – RAG advice sought**: • Smooth oreodory – non Cascade Plateau, review of TAC • Smooth oreodory – Cascade Plateau, TAC recommendation.	Malcolm Haddon Sandy Morison
10:30	*Morning tea*	
10:55	12. **Giant king crabs – for SlopeRAG information Project report –** Resolving conflict between giant king crab trap and benthic trawl fishery fisheries.	Caleb Gardner
11:35	13. **Meeting review**	
12:00	*Meeting close*	

Attachment 2 Declarations of interest

Name	Interest Declared
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 Geoff Tuck	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 Tom Bibby	Commonwealth Trawl Sector boat and quota SFR holder. Chairman of SETFIA.
Mr Simon Boag	SETFIA CEO, CFA vice-Chair, runs a consultancy firm. Sits on boards of Commonwealth Trawl Sector boat and quota SFR holding companies as a non-beneficiary director.
Dr Sarah Jennings	Resource economist, Adjunct Senior Researcher, University of Tasmania. Interest in obtaining funding for future research. No pecuniary interest or otherwise.
Ms Sally Weekes	AFMA. Manager of Commonwealth and GAB Trawl Fisheries section. No conflicts of interest pecuniary or otherwise.
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. Principal Investigator on FRDC Project No 2014-009: Development of guidelines for quality assurance of Australian fisheries research and science information, and co-investigator on FRDC Project No 2014-203: SESSF Monitoring and Assessment – Strategic Review. Member of the AFMA ERA Technical Working Group. No shareholding and hold no positions relating to any other companies, including any fishing companies or industry associations
Dr Judy Upston	CSIRO, Assessment scientist. Acquiring funding for research purposes. No pecuniary interest or otherwise.
Dr Malcolm Haddon	CSIRO stock assessment scientist. Member of SESSFRAG, Northern Prawn RAG and sub-Antarctic RAG. No pecuniary interest or otherwise.
Mr Lee Georgeson	ABARES. Interest in obtaining funding for future research. No pecuniary interest.

Mr Ross Bromley	AFMA. Demersal and Midwater Trawl Fisheries section. No pecuniary interest or otherwise.
Mr Patrick Cordue	New Zealand stock assessment scientist, contracted by AFMA to undertake the 2015 pink ling stock assessment. He runs his own company, Integrated Solutions Ltd. No pecuniary interest or otherwise.
Dr Jemery Day	CSIRO, Assessment scientist. Acquiring funding for research purposes. No pecuniary interest or otherwise.
Dr Robin Thomson	CSIRO, Assessment scientist. Acquiring funding for research purposes. No pecuniary interest or otherwise.
Mr Ryan Keightley	AFMA. Gillnet, Hook and Trap Fisheries section. No pecuniary interest or otherwise.
Mr Daniel Corrie	AFMA. Demersal and Midwater Trawl Fisheries section. No pecuniary interest or otherwise.
Mr Malcolm McNeill	In my capacity as the CEO of Petuna Sealord Deepwater Fishing (PSDF), a company which holds fishing rights in and operates vessels in the Southern and Eastern Scalefish and Shark Fishery, have an interest in Agenda items 3, 4, 5, 6, 8 and 9 of the meeting. I am not aware of any investigation or prosecution action by AFMA against PSDF or any litigation entered into by PSDF with AFMA.

Attachment 3 Action items from this meeting

No.	Action item	Action person	Time frame
1	AFMA will convene a small group to write a SESSFRAG paper articulating when a MCMC analysis should be used to develop RBC advice. The paper should explore considerations of using an MCMC in the context of the Harvest Strategy Framework, time and cost.	AFMA, Dr Finn	For March meeting of SESSFRAG
2	The RAG endorses the ongoing need to document changes to the AFMA database. In line with this endorsement, AFMA and CSIRO to develop a shared site to communicate and document historic changes to the database.	AFMA and CSIRO	Ongoing, part of existing project
3	Noting that the changes Dr Haddon made to the data base Dr Haddon is to liaise with John Garvey (AFMA data base manager) to confirm whether the changes (column switching and data substitution) Dr Haddon made to the data are appropriate.	Dr Haddon	Before the October 2015 SlopeRAG meeting
4	The Orca depredation rate is difficult to quantify and estimates are at a lower level of confidence than log book catch rates. The effects of Orca depredation on discard estimates and closure effects should be run as catch rate sensitivities once an agreed catch rate has been decided.	Dr Haddon	Before the October 2015 SlopeRAG meeting
5	Alert ISMP manager to the shortfall in pink ling data in the main strata and ensure adequate coverage in 2015.	AFMA	Immediately
6	Undertake the RAG agreed sensitivity runs for the eastern pink ling assessment as per Table 1 in the minutes.	Patrick Cordue	October SlopeRAG meeting
7	Mr Cordue to compare MCMC fits to the CPUE series as an aid to diagnostics.	Patrick Cordue	October SlopeRAG meeting
8	Noting concerns with below average recruitment of silver warehou and the retrospective pattern in the model the RAG recommended doing a three year biomass projection using three recruitment scenarios: a) model estimated average recruitment (likely optimistic) b) 2007 – 2011, model estimate of recruitment (moderately low r)	Dr Thomson	October SlopeRAG meeting

	c) 2007 – 2009, model estimate of recruitment (lowest r in records).		
9	Review the species breakout rules as the MYTAC's expire and the species are re-assessed.	SlopeRAG	2016 meetings
10	A table of data needs and ISMP sampling requirements to be included as an attachment to the minutes and kept as a live document to be reported on at each RAG meeting.	Executive Officer	Immediately
11	AFMA to liaise with Tasmanian authorities and obtain a copy of the final report.	AFMA	When giant crab report is completed
12	Dr Haddon to run the DBSRA to estimate smooth oreodory productivity when the final depletion is set at 48 percent.	Dr Haddon	October SlopeRAG meeting

Attachment 4 – Outstanding action items

Outstanding action items from 2014 – 15 SlopeRAG meetings

No.	Action item	Action person	Time frame	Result
1	Action item – AFMA Noting the outcomes from the MCMC analysis undertaken in 2014 for the Eastern Zone Orange Roughy stock, SESSFRAG is asked to provide advice on how best to use the results from this analysis. Notably, whether it is best to use the RBC advice from the MPD (maximum likelihood estimate) or the RBC from the MCMC.	AFMA	Prior to first Slope RAG meeting in 2015	See Action item 1

Action items from SESSFRAG relevant to Slope RAG

No.	Action item	Action person	Time frame	Outcome from RAG
1	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	Covered in agenda item 9
2	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	Completed
3	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	Completed
4	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	Completed
5	Alfonsino – explore the reason why non east coast deepwater trawl catches are excluded from the data series.	Robin Thomson	SlopeRAG, September	Left out because Alfonsino is only a quota species in the ECDW fishery
6	Individual SESSF RAGs to provide any comments on the data plan template to AFMA.	RAGs	In the course of 2015 meetings	Covered in agenda item 9

7	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	Covered in agenda item 8
8	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	Covered in agenda item 10
9	Blue eye trevalla – SESSFRAG noted the trawl CPUE standardisation was split east and west. Miriana was requested to do a single BET trawl standardisation.	Miriana Sporcic	September SlopeRAG	Covered in agenda item 4
10	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	ComFRAB wanted to keep the project separate from the existing under caught TAC project. FRDC has expressed a desire that someone external to the fishery conduct the research.

Attachment 5 – Data notes identified by the RAG

Species	Details	Timeframe
All species	Increase sampling in western Bass Strait	As soon as possible
Pink ling	Trawl - there is a shortfall of LF and age data from the main strata	As soon as possible