Sub-Antarctic Resource Assessment Group (SARAG)

FINAL MINUTES
TELECONFERENCE
14 JUNE 2017

SUB-ANTARCTIC Resource Assessment Group (SARAG)
CHAIR: Professor John Buckeridge
Date: 14 June 2017
Venue: Teleconference

Attendance

Members

Professor John Buckeridge
Dr Rich Hillary
Dr Malcolm Haddon
Dr Jemery Day
Mr Malcolm McNeill
Mr Martin Exel
Dr Dirk Welsford
Dr Philippe Ziegler
Ms Jo Fisher
Ms Sarah Kirkcaldie (Executive Officer)

Observers

Mr Rhys Arangio
Mr Trent Timmiss
Dr Tony Smith

Introduction

A Sub-Antarctic Resource Assessment Group (SARAG) teleconference was held on 14 June 2017.

The primary objective of the meeting was to discuss the draft Independent review of the Heard Island and McDonald islands Fishery (HIMI) Toothfish Stock Assessment conducted by Dr Tony Smith.

Agenda item 1 - Preliminaries

The meeting was opened at 10.30am on 14 June 2017 by the Chair, Professor John Buckeridge.

1.1 Declaration of interests

Professor Buckeridge advised that he is a Professor of Natural Resources Engineering at RMIT University and has no pecuniary interest in the sub-Antarctic fisheries.

Dr Hillary advised that he is employed by CSIRO and is the Principal Investigator of the MITF stock assessment project. He also advised that he is a member of AFMA's Tropical Tuna RAG. Dr Hillary advised that he has no pecuniary interests in the sub-Antarctic fisheries.

Dr Haddon advised he is employed by CSIRO and is not undertaking specific research projects in relation to Sub-Antarctic fisheries, although he does provide advice to other researchers in relation to stock assessments, particularly for the Macquarie Island Toothfish Fishery (MITF). Dr Haddon is also a member on the Northern Prawn Fishery Resource Assessment Group, the

2

Great Australian Bight Resource Assessment Group (GABRAG) and the scientific member on Sub-Antarctic Management Advisory Committee (SouthMAC). Dr Haddon advised that he has no pecuniary interests in the sub-Antarctic fisheries.

Dr Day advised he is an observer to SARAG and a CSIRO employee and was undertaking work on the MITF stock assessment. Dr Day advised that he has no pecuniary interests in the sub-Antarctic fisheries.

Dr Welsford advised that he is employed by the Australian Antarctic Division (AAD) and his salary is not connected to research grants. Dr Welsford advised that AAD get core funding but also seek grants from Fisheries Research and Development Corporation (FRDC) and AFMA. However, members noted that Dr Welsford salary was not connected to the FRDC grants. Dr Welsford further advised he is the Scientific Committee representative to CCAMLR, Chair of the Working Group for Fish Stock Assessments (WG-FSA) and a member on the Torres Strait Scientific Advisory Committee.

Dr Ziegler advised that he is employed by AAD and is involved in the HIMI stock assessment. Dr Ziegler has no pecuniary interest in the sub-Antarctic and his salary is not connected to any research grants.

Ms Fisher advised she is employed by the Australian Fisheries Management Authority (AFMA) as the Manager for sub-Antarctic fisheries. Ms Fisher advised she has no pecuniary interests in the sub-Antarctic fisheries.

Ms Kirkcaldie advised that she is employed by AFMA and is the Executive Officer for SouthMAC and the SBTMAC. Ms Kirkcaldie advised that she has no pecuniary interests in the sub-Antarctic fisheries.

Mr McNeill advised he is the Managing Director of Australian Longline P/L which holds various fishing rights in, and operates vessels in the sub-Antarctic fisheries and New and Exploratory fisheries within the CCAMLR region. Mr McNeill further advised he is a member on SouthMAC, Board member of the Coalition of Legal Toothfish Operators (COLTO) and member of the Executive Committee of Tasmanian Polar Network. Mr McNeill was not aware of any investigation or prosecution action by AFMA against his Company or of any legal action taken by his Company against AFMA.

Mr Exel advised that he is the General Manager, Environment and Policy, Austral Fisheries Pty Ltd. Austral Fisheries P/L owns Statutory Fishing Rights (SFRs) in the Australian sub-Antarctic fisheries and waters under the jurisdiction of Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR). Mr Exel also declared that he is Director of the Institute of Marine and Antarctic Studies (IMAS), Member and public officer of the Commonwealth Fisheries Association (CFA), member of the South East Trawl Fishing Industry Association (SETFIA), Deputy Chair of the Great Australian Bight Industry Association, Member of Coral Sea Fishers Association and Board member of COLTO. Mr Exel further advised that he is a member of the "National Benefit Assessment Panel" for the Marine National Facility (the RV Investigator). He was not aware of any investigation or prosecution action by AFMA against his Company or of any legal action taken by his Company against AFMA.

Mr Arangio advised that he is an observer to SARAG and is employed by Austral Fisheries P/L that owns SFRs in the Australian sub-Antarctic fisheries and waters in the CCAMLR Convention Area. Mr Arangio further advised he is the secretary of COLTO. He was not aware of any investigation or prosecution action by AFMA against his Company or of any legal action taken by his Company against AFMA.

Mr Timmiss advised he is employed by AFMA as the Senior Manager of the Tuna and Antarctic fisheries and advised that he is a member on SBTMAC and Tropical Tuna MAC. Mr Timmiss advised that he has no pecuniary interests in the sub-Antarctic fisheries.

1.2   Apologies

Apologies were received from Dr Heather Patterson.

1.3   Adoption of agenda

SARAG adopted the agenda without change (Attachment A).

Heard Island and McDonald Islands Fishery

Agenda item 2 –Independent review of HIMI Toothfish Stock Assessment

SARAG noted that the terms of reference for the review were to:

1. Review the most recent quantitative stock assessment for the HIMI Patagonian Toothfish Fishery, specifically:
    a. identify areas of improvement to better ensure the objectives of the harvest strategy for the fishery will be met.
    b. examine the key assumptions and data inputs into the stock assessment and recommend whether any modification should be made to those assumptions or inputs.
    c. review the current weighting of RSTS : tagging data in the assessment.
2. Consider how any climate change effects on the fishery could be incorporated into the assessment.
3. Provide a measure of priority and urgency for any recommended changes to the stock assessment.

Dr Smith provided a brief introduction to his review of the 2017 HIMI Toothfish Stock Assessment noting that the new assessment approach provides a generally sound basis for assessing stock status, recommending catch levels, and thus meeting the objectives of the harvest strategy for the fishery. Dr Smith's draft report has eight recommendations plus a number of specific comments.

Prior to the teleconference, Mr Exel provided a table summarising the recommendations and specific comments and SARAG discussed this document and the outcomes of these discussion are incorporated below. SARAG noted that recommendations 1 to 5 do not impact on the assessment itself, but attempt to improve the clarity of the assessment report.

Report recommendation	Agreed Action	Agreed responsibility and timeframe
The reviewer concurs with the authors that the spatial analysis in Appendix B of their report is not yet ready for adoption as a primary assessment method for the fishery. • Page 4: The spatial analysis in Appendix B seems worth pursuing further for future assessments, but it is agreed that it does not yet form a	Remove prior to submission to WG-SAM and/or WG-FSA Incorporate in SARAG five years research plan, with priority and identified resourcing requirements.	AAD by September 2017 SARAG September 2017

4

Report recommendation	Agreed Action	Agreed responsibility and timeframe
sound basis for informing catch levels.		
Model 7 is a suitable basis for catch level recommendations.	Use Model 7 as refined	AAD by September 2017
Terms of Reference 1 a	*Improvements for HSP*	
Recommendation 1. Consolidate and improve the description and explanation of the different data weightings, stating clearly how they apply to each of the main data sets.	SARAG agreed Recommendation 1 should be incorporated into the 2017 stock assessment.	AAD by September 2017
Recommendation 2. Provide more explanation for the changes in results between models in the bridging analysis, and enhance that analysis by including sub-steps within step 1 that explore the impacts of including each element of the new data considered in the 2017 assessment.	SARAG agreed Recommendation 2 should be incorporated into the 2017 stock assessment.	AAD by September 2017
Recommendation 3. Explore further and clarify the reasons for the 2001 YCS estimate in Model 7, showing the basis in the age composition data for the result.	SARAG agreed that the YCS need clarification and AAD agreed to evaluate what drives the pattern including the 2001 peak	AAD by September 2017
Recommendation 4. Improve the labelling system for data sets used in figures and tables, as discussed at point 2 in the attachment.	SARAG agreed Recommendation 4 should be incorporated into the 2017 stock assessment.	AAD by September 2017
Recommendation 5. Provide a clearer justification for only considering tagging data since 2012 in the base case assessment.	SARAG agreed Recommendation 5 should be incorporated into the 2017 stock assessment.	AAD by September 2017
Terms of Reference 1 b	*Key assumptions and data*	

Report recommendation	Agreed Action	Agreed responsibility and timeframe
Recommendation 6. Establish whether there may be a downward trend in YCS for Model 7. Consider the implications of this for the stock projections. Point 7 in the Attachment suggests checking whether the selectivity at length assumed in the growth analysis, which lies outside the assessment model, is consistent with the selectivities derived for the preferred Model 7.	The possible trend referred to needs to be established (it is fairly clear for Model 6, but less so for Model 7). Any consequences flowing from the analysis will depend on the outcomes. The analysis of possible longer-term trends in recruitment should be investigated, but not as an immediate priority for the 2017 assessment. Include as part of SARAG five years plan, with priority and identified resource requirements. Note if the YCS is actually lower than average predicted it can cause? a significant difference in outcomes. Evaluate need to incorporate changed approach	AAD and SARAG (see below) SARAG September 2017 following advice from AAD
Recommendation 7. Check the consistency of the selectivity at length in the growth analysis with the selectivity at length for Model 7.	Evaluate and report back to SARAG September 2017	AAD by September 2017 If significant discrepancy, AAD to follow up by September 2017.
Terms of Reference 1 c.	*Data weighting*	
Recommendation 8. Estimate the tag dispersion parameter by year of release for tag data. Check sensitivity of the assessment to this approach.	SARAG agreed that AAD should determine that either: - this is not an issue and report back to SARAG during July 2017 or,	AAD by July 2017

6

Report recommendation	Agreed Action	Agreed responsibility and timeframe
	- if assessment is sensitive, evaluate option for resolving by September 2017, or - provide recommendation for inclusion in 5 Year Strategic Research Plan, with priority and resourcing requirements	If significant sensitivity, AAD to report to SARAG September 2017 for resolution or inclusion in 5 Year Strategic Research Plan
Terms of Reference 2	**Climate Change**	
The possible effects of changing environmental conditions, including from climate change, could be monitored by looking for changes in growth and maturity at age over time. Tagging may also show changes in movement.	Incorporate in to 5 Year Strategic Research Plan	SARAG, September 2017
Terms of Reference 3	**Priority recommendations**	
Recommendations 1-8		All covered above
Specific comments on draft		
There was interest expressed at SARAG 55 about trends in commercial (longline) CPUE. It would be interesting to compare trends in CPUE with trends in biomass from the assessment, though the assessment model should continue not to use commercial CPUE as an estimate of relative abundance.	Identify comparison process and timeframe as well as resource requirements to undertake.	AAD by February 2018
Information on abundance in the assessment relies principally on the RSTS and the tagging data. Both show considerable fluctuations from year to year (Figure 8, Figure 12). This suggests that both trawl surveys and tagging should continue as	Continue annual RSTS and tagging with industry funding. Ensure RSTS and tagging are incorporated into 5 Year Strategic Research Plan	Industry, AAD, AFMA, ongoing SARAG, September 2017 SARAG to consider as part of Fishery Assessment Plan, February 2018, on advice from AAD

7

Report recommendation	Agreed Action	Agreed responsibility and timeframe
parts of the overall monitoring program for the time being.	Retain high levels of tagging, or reduce to previous? Evaluate value in random stratified longline survey (RSLS) including inside and outside MPAs.	SARAG to consider in February 2018 on advice from AAD and consideration of costs. If conducting an RSLS it will need to be planned so it will not be possible to do it in 2018
1. Pages 6, 7, 11 and 13. **ESS and process error**. On page 6, it is stated that no process error is calculated for survey abundance at length and age. This presumably applies (later) to models 0 to 5 and to the proportions at age in model 6. It is <u>not clear</u> how or whether process error for survey biomass is taken into account for models 6 and 7. The description of ESS on page 7 presumably applies to models 1 to 6. Process error and ESS are again referred to on page 11, section 3.2.7, and again on page 13 in relation to Step 7, which uses the Francis method. This scattering of information and separate discussion about how it applies to surveys and to age and length data is <u>confusing</u>. It would be helpful to have a clear discussion about this issue, preferably in the methods section, and make very clear to which log likelihoods and data	Incorporate recommendation in text	AAD by September 2017

Report recommendation	Agreed Action	Agreed responsibility and timeframe
sets various forms of iterative reweighting calculations apply, and for which models. What is the effective weighting on the survey biomass in model 7?	Answer question and include in document	AAD by September 2017
2. Pages 7, 20, 23, 28. There is a confusing variation in the labels applied to various sets of data across Figures 2, 12, and 18 and Table 8. For example, trawl 1 age data are referred to as Catch_Trawl1A in Table 8, and as Trawl AF (not distinguishing Trawl 1 and trawl 2) in Figure 12a, and as TrawlA in Figure 12b. In Figure 12b, what is the difference between "Survey" and Surv1? Is Surv1 the age data from the survey (and if so why not call it SurvA)? Some overall consistency in labelling would help.	Implement consistency of labels	AAD by September 2017
3. Page 8, section 3.2.4. Presumably the decision to use tagging data only from releases since 2012 was made in a previous assessment cycle. A reminder of the justification for this choice would be helpful here.	Insert outline on reasoning	AAD by September 2017
4. Page 8. Why are equations 2 and 4 different?	Answer query	AAD June 2017

Report recommendation	Agreed Action	Agreed responsibility and timeframe
5. Page 9, Table 3. The increase in the number of tag releases in 2015 is striking. Is this a "once off" or likely to continue?	Answer query and include in paper	AAD by September 2017
6. Page 9, section 3.2.5. The first paragraph describes a change to the data selection process for the current assessment, but it is not quite clear what data filtering took place previously. If this is a substantial change to data selection for 2017, how many (numbers and proportion of) records were excluded compared to the previous assessment, and how much difference does this change alone make (later) to the estimation of growth?	Is it a substantial change? If so, answer queries.	AAD by June 2017
7. Page 10. Figure 3a shows the length selectivity assumed for calculating growth. Is this generally consistent with the length selectivity of the overall catch obtained for Model 7? Since the change in growth alone has a significant effect on the assessment, it would be worth checking for this consistency, and, if inconsistent, checking on the sensitivity of the growth estimates to the form of the	Answer query on consistency of length selectivity of the overall catch obtained for model 7. If inconsistent, review sensitivity of growth estimates to the form of the selectivity assumed.	AAD June 2017 AAD by September 2017

Report recommendation	Agreed Action	Agreed responsibility and timeframe
selectivity assumed (or substituting a more appropriate selectivity function). Note that in some assessments, growth is estimated within the assessment model, which can account properly for the selectivity effects. It is unclear if Casal allows this feature, and how important this aspect of the analysis may be. The estimates of growth have changed significantly in this assessment (Table 4) and this has ramifying effects through the analysis (Table 7) and presumably also changes overall productivity which would also affect the stock projections and TAC calculations (Table 11).		
8. Page 12. **Bridging analysis**. This method of comparing the current assessment to the previous one is very helpful in understanding what is driving any changes. Given the large change just from model 0 (previous assessment) to model 1 (just updating the data), it would be useful to also present a stepped analysis for the various elements in the additional data added. I note that such	Incorporate stepped analysis of new data	AAD by September 2017

Report recommendation	Agreed Action	Agreed responsibility and timeframe
an analysis was undertaken for the 2015 assessment.		
9. Page 12. The descriptions in the text of steps 3, 4 and 5 in the bridging analysis are not in the same order as in Table 5.	Format	AAD by September 2017
10. Pages 17 and 18. **Bridging analysis**. The results in Table 7 are very interesting, and show relatively high sensitivities to step 1 (updating the data), step 2 (updating growth), step 6 (changing to survey biomass and proportions), and step 7 (Francis method for iterative data weighting). I have already suggested teasing out the elements driving the changes at step 1 (see comment for page 12 above) and the difference due to change in growth is not unexpected. It would be useful for the authors to comment on why they think that step 6 had such a large effect, tending to increase the estimates of biomass and SSB status. Some discussion of the effect of step 7 would also be useful – presumably related to the (relative) down-weighting of the age	Comments on step 6 and step 7 required	AAD by September 2017

12

Report recommendation	Agreed Action	Agreed responsibility and timeframe
and size proportions relative to other data.		
11. Page 19, Figure 7. The authors note the changes to the YCS time series, particularly for models 6 and 7, relative to models 0 to 5. Another feature, not noted, is that there now appears to be an overall downward trend over time in YCS for models 6 (in particular) and 7. Does this reflect a longer-term trend in recruitment (productivity) and if so, should it be reflected in the stock projections? The spike in YCS for 2001 is discussed at a later comment.	Consideration of implications	AAD July 2017 or, if not an issue, by September 2017
12. Page 20. The report states that model 7 is considered to be the most appropriate. What is the basis for this statement?	Provide explanation	AAD by September 2017
13. Page 20. Typo – tag dispersion is given in Table A.4.	Format	AAD by September 2017
14. Page 21, Figure 8. Model 7 fits the overall downward trend in the biomass estimates from the RSTS, but the figure raises the issue about the (relative) weighting on these data, discussed earlier	Discussed above	AAD by September 2017
15. Page 24. The peak in estimated YCS for 2001 needs further exploration and	Explore 2001 YCS further; answer query about	AAD by July 2017

13

Report recommendation	Agreed Action	Agreed responsibility and timeframe
explanation. Not only is it a very large peak, which does not show up in any of the other models, but the confidence bounds are very tight. Such a strong YCS should show up clearly in the age composition data. Can this be demonstrated?	whether it shows up in age composition data. If it does not, then consider change to assessment	AAD by September 2017
16. Page 24, Table 9. Are the reported values means or medians? It is important to note not only the reductions in these values, but also the considerably tighter confidence bounds, which could have an impact on the TAC calculations.	Answer query and incorporate in text	AAD by September 2017
17. Page 26, Figure 17. Note that the large increase in SSB for the retrospective analysis up to 2013 is explained by the result in Figure 12 where the 2012 tagging data "wants" a large B_0. Clarify that the retrospective analysis uses Model 7 only.	Clarify in text	AAD by September 2017
18. Page 27, Table 10. The largest sensitivity is to the reduction in M to 0.13. This implies (not unexpectedly) a larger but less productive stock. It might be worth showing that this makes little difference to the catch limit calculation (if	Undertake sensitivity test on M, and provide explanation in explanation at SARAG meeting. Does not need to be included in CCAMLR paper. Update in five year research plan timing for	AAD by September 2017 SARAG by September 2017

14

Report recommendation	Agreed Action	Agreed responsibility and timeframe
that is indeed the case).	answers and resource implications	
19. Page 28, Table 11. What is the impact, if any, of the tighter confidence bounds for the 2017 assessment on the small difference in catch limit (compared to the change in productivity)? See also discussion on page 29.	Provide explanation of reasoning – it would matter if chance of breaching limit was an issue, but if never triggered then the issue of confidence bounds doesn't matter.	AAD by September 2017
20. Page 29, Figure 19. Clarify in the legend that the constant catches in the projections are 3305 t.	Format	AAD by September 2017
21. Page 37, Table A.4. Note the increase in the dispersion estimate (implying a lower weight on the tagging data) for models 6 and 7.	Format	AAD by September 2017

SARAG thanked Dr Smith for the review and participating in the teleconference. SARAG also thanked Drs Welsford and Ziegler for assisting Dr Smith. SARAG acknowledged the value of doing an independent review.

Dr Smith agreed to amend the document as discussed and then send a final report. Members noted that the final reported will be provided to SARAG and the AFMA Commission, before becoming publicly available.

Other

Agenda item 3 – Other Business

No other business was discussed by SARAG.

Agenda item 4 – Next meeting

SARAG noted that the next face-to-face meeting will be held on Wednesday 6 September 2017 in Hobart.

The AFMA member thanked members for participating in this teleconference and closed the meeting at 11.30 am.

15

Sub-Antarctic Resource Assessment Group (SARAG) – Teleconference June 2017

Agenda

Wednesday 14 June 2017

10.30 am – 11.30 am

Toll free number: 1800 153 721
Participant PIN code: 184210

Introduction

1.	Preliminaries		
	1.1 Declaration of interests	Chair	For Information
	1.2 Apologies	AFMA	For Information
	1.3 Adoption of Agenda	Chair	For Decision

Heard Island and McDonald islands Fishery

2.	Independent review of HIMI toothfish stock assessment	ALL	For Discussion

Other

3.	Other Business	Chair	For Discussion
4.	Next Meeting	Chair	For Decision