



Australian Government

Australian Fisheries Management Authority

**Small Pelagic Fishery
Scientific Panel (the Panel)
Meeting 4**

Meeting Minutes

Date: 5 October 2016

Venue: Parkroyal, Melbourne

Time: 8:30am - ~2:30pm (AEST)

Attendees

Name	Membership
Max Kitchell	Chair
Dr Jeremy Lyle	Scientific member
Andrew Penney	Scientific member
Associate Professor Tim Ward	Scientific member
Dr Sean Pascoe	Economic member
Sally Weekes	AFMA member
Dr Rich Hillary	Invited participant, Commonwealth Scientific and Industrial Research Organisation (CSIRO)
Dr Michael Lowry	Invited participant, New South Wales Department of Primary Industries
Nic Marton	Invited participant, Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES)
Cadie Artuso	A/g Executive Officer
Apologies	
Professor Caleb Gardner	Invited expert

Agenda Item 1.1 Welcome and apologies

The Chair opened the meeting at 8:30 am, welcomed participants and recorded an apology from Professor Gardner. Members were advised the meeting was being recorded to assist with the preparation of the minutes, there were no objections.

Agenda Item 1.2 Declaration of interests

The Panel reviewed the table of members' and invited participants' standing declarations in accordance with *Fisheries Administration Paper 12*. The Chair asked participants to declare any conflicts of interest with items on the agenda or to declare conflicts of interest that were not recorded in the provided table. The research interests of members were noted, however no specific conflicts of interest were identified.

Participant & Membership	Interest declared
Max Kitchell, Chair	No interest, pecuniary or otherwise, in the SPF. Chair of the Southern Bluefin Tuna Management Advisory Committee and AFMA's Ecological Risk Management Technical Working Group.
Associate Professor Tim Ward, scientific member	Leader of the finfish fisheries group in SARDI which undertakes research in the relation to the SPF including Daily Egg Production Method surveys. Conducts research for State fisheries and other jurisdictions. Member of South Australia Sardine Fishery Industry research/management committee. Advisor to Northern Territory on small pelagic fish and squid.
Dr Jeremy Lyle, scientific member	Senior Research Scientist, Institute for Marine and Antarctic Studies which undertakes research in relation to the SPF from time to time. Has led several research projects relevant to the SPF and is involved in the assessment of Tasmania's scalefish fishery.
Andrew Penney, scientific member	No interest, pecuniary or otherwise, in the SPF. Director of Pisces Australis (Pty) Ltd.

Dr Sean Pascoe, economic member	No interest, pecuniary or otherwise, in the SPF. Employee of CSIRO which undertakes research in relation to the SPF from time to time.
Associate Professor Caleb Gardner, invited expert	No interest, pecuniary or otherwise, in the SPF. Employee of Institute for Marine and Antarctic Studies (IMAS), which conducts research on a range of fisheries issues including at times the SPF.
Sally Weekes, AFMA member	Employee of AFMA, no interest, pecuniary or otherwise, in the SPF.
Cadie Artuso A/g Executive Officer	Employee of AFMA, no interest, pecuniary or otherwise, in the SPF.
Invited observer	Interest declared
Dr Rich Hillary	Undertakes research in the relation to the SPF including the review of the SPF Harvest Strategy and management strategy evaluation. Employee of CSIRO which undertakes research in relation to the SPF from time to time.
Dr Michael Lowry	Senior Research Scientist, NSW Department of Industry.
Nic Marton	Scientist, ABARES.

Agenda Item 1.3 Adoption of agenda

The agenda was adopted with the addition of an update on the east Australian sardine stock structure project from Associate Professor Ward, added under '*other business*'.

The Panel formally adopted the meeting minutes from the third meeting of the Panel held on 5-6 April 2016. The Panel agreed that in the future, all meeting minutes should be briefer and written as a non-attributable summary unless otherwise specified.

Agenda Item 1.4 Actions arising from previous meetings

The Panel noted the below actions arising from the third Panel meeting have been completed.

1. AFMA circulated the report Critical knowledge gaps: estimating potential maximum cumulative anthropogenic mortality limits of key marine mammal species to inform management to the Panel.
2. AFMA circulated the Marine Mammal Working Group's (MMWG) terms of reference to the Panel. The Panel noted members of the MMWG have been appointed and the group are expected to meet for the first time in November 2016. The Panel recommended that state governments be engaged through the MMWG on cross-jurisdictional marine mammal issues.
3. AFMA investigated the Panel Chair discussing with the MMWG Chair ways in which the two committees can assist each other in relation to marine mammal interactions in the SPF.
4. AFMA provided commentary for the basis of the significant undercatch of the TAC for the 2015-16 fishing season.
5. AFMA revised the content and structure for future updates on catch, effort and protected species interactions for review by the Panel (Agenda Item 2).
6. AFMA circulated the minutes of the SEMAC 24 meeting on 16-17 February 2016 to the Panel.
7. The Panel members received clarification on whether the Atlantis model and the MSE analyses include data from the 2014 daily egg production method (DEPM). It was not

used to initialise or parameterise the Atlantis model, but it was checked that the model projections (biomass ranges) were consistent with it.

9. AFMA provided species-specific spatial and temporal catch and effort data as part of the new reporting framework recommended by the Panel (Agenda Item 2).
10. ABARES does not include SPF operators in their fisheries economic surveys. The Panel noted AFMA is developing a standard set of economic indicators that can be collected across all Commonwealth fisheries (e.g. quota trading prices) that can be used to better inform management decisions. Support for the AFMA-wide approach is being considered by the Commission at their October meeting.
11. AFMA re-drafted the strategic research plan based on the Panel's discussions from the last meeting and circulated to the Panel.

Action item 8 is in progress: Dr Pascoe to revisit the model used in the study Estimating Proxy Economic Target Reference Points in Data-Poor Single-Species Fisheries to determine its applicability to the SPF.

Agenda Item 2 Managers update

A brief update on the following topics was provided.

- SPF Harvest Strategy – finalising this work is AFMA's priority for this fishery over the next six months.
- The outcomes of Commonwealth Ombudsman's investigation into AFMA's administration of SPFRAG during 2012-2015 were released in August 2016.
- The Senate Inquiry into the environmental, social and economic impacts of large capacity fishing vessels was reconstituted in the 45th Parliament.
- The review of the Geelong Star's Vessel Management Plan, including regional catch limits. In terms of regional catch limits, the Panel's advice at the April 2016 meeting was that to improve the probability of achieving a greater spread of fishing effort across the fishery, the 2000 tonne grid limit should be reduced to 1000 tonnes per 30 days, noting that the practical and economic implications of halving the catch limits are unclear.

AFMA advised that the regional catch limits had not been reduced at this point but that they would be re-examined once the data needs and research priorities for the fishery have been reviewed. The Panel highlighted that spreading the effort in the fishery does not necessarily provide more information about the stock, this will be looked at further in the data and monitoring plan for the fishery.

The Panel noted that spreading the effort in the midwater trawl fishery given there is only one boat may provide useful information about commercial catches but not about the broader stock (i.e. data collection from one boat will not provide 'representative data' about the broader stocks).

- Catch, effort and protected species interactions for 2015-16 and to-date for the current 2016-17 fishing season. The Panel supported the format and content of the report, noting that it would be beneficial if:
 - future reports included catch per tow rates and discard data

- observer trip reports could be circulated as they provide useful information on the catch, samples and interactions that occur that is not possible to get from the raw data
- for protected species interactions, observer data would also be useful for a comparison.

Agenda Item 3 Jack mackerel stock assessment

CSIRO presented the draft results for the eastern jack mackerel stock assessment. Two assessment methods were trialled:

- 1) Stochastic Stock Reduction Model (SSRM), which involves projecting a stock from its unexploited equilibrium level, given known information.
- 2) Statistical Catch-At-Age model (SCAA) which extends the SSRM by estimating recruitment residuals fitting to data on catch-at-age composition and by treating the catches by purse seine and mid-water trawl vessels separately.

The Panel noted that:

- The results of this work will determine which of the two models should form the basis for setting the values of parameters used in Management Strategy Evaluation (MSE) testing and are to be used in the economic work looking at alternate reference points. Both the MSE and economic work will inform the review of the SPF Harvest Strategy. This work was recommended by the Panel at their meeting in April 2016.
- Eastern jack mackerel was used initially as it has the most data available.
- Each model has positives and negatives (Table 1).

Table 1: Summary of pros and cons for the SSRM and SCAA assessment methods in the eastern jack mackerel stock assessment:

Method	Pro	Con
Stochastic Stock Reduction Model (SSRM)	<ul style="list-style-type: none"> • Simple, fast and with same structure as MSE testing. • Able to include DEPM data and stochasticity (if you have this data it's an easy model, to apply). • This method could be applied to all of the species/ stocks in the SPF with DEPM estimates of abundance and data on biological parameters. 	<ul style="list-style-type: none"> • Fixed selectivity assumed for both/either fleets. • Ignores catch-at-age data and signals therein. • Doesn't estimate recruitment (integrates over it).
Statistical Catch-at-age model (SCAA)	<ul style="list-style-type: none"> • Solid statistical estimation framework. • Allow inclusion of Catch-at-age data (and/or length data too). • Estimated recruitment and selectivity. 	<ul style="list-style-type: none"> • Data requirements are higher than SSRM. • Catch-at-age/selectivity interpretation & recruitment are the main point of discussion. • Probably not "out of the box" applicable to all SPF species.

Key points discussed:

- The SCAA model is preferred, despite the issue relating to the representativeness of the catch data given that the catch was taken from a very small area compared to the size of the area across which they spawn.
- Using a series of biomass estimates from the DEPMs (rather than just one) in the model could potentially go some way to addressing the issue of representative data (or lack thereof) - there is a trade-off between what the catch-at-age data says versus the biomass estimate.
- Autocorrelation needs to be included in the model as the results indicate that recruitment variability is not random. This will have an impact on the risk profiles used in the MSE testing.
- The results suggest that recruitment variability is greater than what was used in the Smith et al. (2015) MSE and consequently, recruitment variability should be updated in the MSE.
- The output of this work will give a Maximum Sustainable Yield (MSY) value for eastern jack mackerel and test some assumptions about the relationship between Catch Per Unit Effort and biomass. This is important for the Maximum Economic Yield (MEY) work because if there is a strong relationship, MEY will be higher than MSY but if there is no relationship then MEY will be equivalent to MSY.

Recommendation: The SCAA modelling framework should be used with the inclusion of autocorrelation, noting that the catch at age data is unlikely to be representative of the whole stock. The results from this analysis (such as depletion estimate and higher recruitment variability) will be used to update the MSE, including the proposed exploitation rate for Tier 3 of the SPF Harvest Strategy.

The Panel agreed to the following timeline:

Date	Meeting	Agenda
November 2016	SPF Scientific Panel	<ul style="list-style-type: none"> • Revised jack mackerel stock assessment • MSE results, including December 2015 proposed Tier 3 • Results of the MEY analysis • Draft Harvest Strategy recommendations • Revised ERA
December 2016	Stakeholder forum	<ul style="list-style-type: none"> • Draft recommendations on Harvest Strategy • Revised ERA
January 2017	SPF Scientific Panel	<ul style="list-style-type: none"> • Final Recommendations on Harvest Strategy • Recommended Biological Catches for 2017-18
January 2017	SEMAC	<ul style="list-style-type: none"> • Harvest Strategy • Recommended Biological Catches for 2017-18

Agenda Item 4 Ecological Risk Management (ERM) Guide

The SPF manager provided an update AFMA's Ecological Risk Management (ERM) Guide (the Guide). The Panel noted that:

- The Guide was circulated to the Panel out of session for comment.
- The Guide has been developed primarily for fisheries managers but has a broader interest. It aims to improve the efficiency and effectiveness of fishery management by ensuring how AFMA manages risk is properly documented. The Guide outlines how all the elements of fisheries management including planning, implementation, monitoring and reporting and evaluation and improvements should be done.
- An output of the Guide is the development of Fisheries Management Strategies for each fishery which essentially pulls together a fisheries Harvest Strategy, Bycatch Strategy, protected species measures, data and monitoring plan, research priorities and a reporting framework.
- At the same time as the Guide has been developed, the Ecological Risk Assessment (ERA) methodology has been updated and is now being trialled in the SPF and the Eastern Tuna and Billfish Fishery. Once these trials have been completed, all Commonwealth fisheries will be re-assessed and Fisheries Management Strategies will be in place by 2019-21.
- the revised ERA methodology and draft results for the SPF will be considered at the next meeting.

Agenda Item 5 Data needs in the SPF

The SPF Manager presented the draft data and monitoring plan 2017-22 (the Plan) for the SPF. The Plan is intended to make the data requirements to support the Harvest Strategy, bycatch strategies and protected species management, clear. The Panel were asked to provide recommendations on:

- a) what the data needs are to support fisheries management decisions in the SPF
- b) the general structure of the Plan.

Key points discussed:

- The focus for the current meeting is establishing the data needs for commercial species, noting that those for bycatch, including protected species will be developed at a later stage.
- The Plan will form part of the Fishery Management Strategy (FMS) for the SPF which is scheduled to be developed during 2016-17
- In light of the increase in fishing catch and effort, several additional pieces of work were identified (including the sample size required to be analysed and performance indicators) that are required in order to inform the future content of the Plan (discussed at Agenda Item 7).

Recommendation:

1. The Panel endorsed the structure of the Plan, noting the data required for bycatch/ protected species will be examined in the long-term.
2. The current data type and quantity being collected through logbooks, observers and DEPM surveys is adequate for the near future.
3. The additional pieces of work identified at Agenda Item 7 should be undertaken and will inform the amount of data that needs to be collected and analysed.

Action Item 1	Dr Pascoe
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Dr Pascoe to provide words on the economic section for the data and monitoring plan 2017-22 (Section 2.3 of the Plan). This will be split into what would be ideal to have and what is likely to
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Agenda Item 6 Research Priorities

Since the Panel developed the Annual Research Statement for 2017-18 and the five-year Strategic Research Plan for 2017-18 to 2021- 22, several additional research-related items have come up for which the Panel's advice was sought.

1. The structure and content of the annual fishery assessment report.
2. The scope of the project to determine the sample sizes for age and length information that need to be analysed for the annual fishery assessment report, noting that a large number of samples were now being collected given the increase in fishing effort.
3. The development of formal indicators that can be used to monitor how stocks are going in the intervening years between DEPM surveys for each stock. Indicators could also be developed to evaluate if there is any evidence of localised depletion over time.

Recommendation: The Panel recommended that the following projects be added to the Annual Research Statement for the SPF and noted that once completed, they would inform the content and structure of the Annual Fishery Assessment report:

- **Data standards and performance indicators for the SPF Annual Fishery Assessment. Fishing.**
Effort has increased in the SPF and currently a lot of information is collected for the SPF Annual Fishery Assessment, which is costly to collect and analyse. This project will:
 - describe the statistical precision for different sample strategies (e.g. number of catches sampled, number of fish per sample) for estimating biological parameters of SPF quota species (e.g. age composition of the catch)
 - identify potential performance indicators and reference points for SPF quota species that can be used to monitor the stocks in the years between formal surveys are conducted noting that these may be refined over time.
- **Analysis of the spatial impacts of fishing in the SPF.**
This project will evaluate if there is evidence of localised depletion of SPF quota species due to fishing. This project will:
 - develop performance indicators (e.g. catch rate analysis) that can be monitored and reported against over the long term to evaluate if there is

evidence of localised depletion of SPF quota species (noting that over time, these may be refined as more data becomes available)

- undertake analysis of those performance indicators for localised depletion of SPF quota species using data up to the end of the 2015-16 fishing season (30 April 2016)
- undertake comparative analysis of spatial patterns of key environmental drivers, to indicate whether changes in distribution patterns and localised availability appear to be environmentally driven.

Agenda Item 7 Other Business

Associate Professor Ward provided an update on the east Australian sardine stock structure project. The Panel noted:

- Preliminary results support the hypothesis that there are separate stocks off the east coast.
- Results also suggest separate spawning groups, including a separate winter (north) and summer (south) spawning stock. However further work is required to confirm if they are in fact separate stocks. This follow-on work as already been identified as a research priority.

Dr Lowry from NSW queried how State catch was accounted for in the TAC setting process and was advised that where state catches are available, they are taken of the RBC to arrive at the Commonwealth TAC. One of the issues is that state catch data is often limited, particularly for the recreational sector. Dr Lowry indicated that data is improving and that NSW could present an update on State catches, including the spatial distribution of catches at the next

Action item 2	Dr Lowry
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Dr Lowry to present available recreational data at the next Panel meeting to better understand where the recreational catches are occurring in relation to the commercial fishery.
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meeting.

Next meeting

The next meeting will be held in December 2016. With no other times of business raised, the Chair thanked participants and closed the meeting at approximately 2:30 pm.

Signed (Chairperson):

Date: