



Small Pelagic Fishery Scientific Panel

Meeting No. 1

Minutes

Date: 14 December 2015

Venue: Stawell Room
Park Royal Hotel, Melbourne Airport

Time: 10:10 am – 5.30 pm

Attendance

Name	Membership
Mr. Max Kitchell	Chair
Professor Caleb Gardner	Invited expert
Dr Jeremy Lyle	Scientific Member
Dr Sean Pascoe	Economic Member (by telephone)
Mr. Andrew Penney	Scientific Member
Associate Professor Tim Ward	Scientific Member
Ms. Sally Weekes	AFMA Member
Ms. Danait Ghebregabhier	Executive Officer
Mr. George Day	Observer (AFMA)

1. Preliminaries

The Chair welcomed members and observers to the meeting. The Executive Officer advised Panel members that the meeting would be recorded for the purposes of preparing the minutes but not retained after the minutes had been agreed.

The Panel members declared the following interests relevant to the Small Pelagic Fishery (SPF) at the outset and during general discussions in the meeting.

Participant & Membership	Interest declared
Mr 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	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	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.
Mr Andrew Penney	Director of Pisces Australis (Pty) Ltd. No interest, pecuniary or otherwise, in the SPF.
Dr Sean Pascoe	No interest, pecuniary or otherwise, in the SPF. Employee of CSIRO which undertakes research in relation to the SPF from time to time.
Professor Caleb Gardner, Invited expert	Employee of Institute for Marine and Antarctic Studies (IMAS), no interest, pecuniary or otherwise, in the SPF. However, IMAS conducts research on a range of fisheries issues including at times the SPF.
George Day AFMA	Employee of AFMA, no interest, pecuniary or otherwise, in the SPF.
Sally Weekes AFMA member	Employee of AFMA, no interest, pecuniary or otherwise, in the SPF.
Danait Ghebregabhier Executive Officer	Employee of AFMA, no interest, pecuniary or otherwise, in the SPF.

The Panel members adopted the draft agenda with minor amendments.

2. SPF management update

Ms Weekes provided a brief overview of the Small Pelagic Fishery (SPF) and update of recent developments. In relation to the public availability of data, the Panel was advised that AFMA's information disclosure policy was being reviewed in 2016. This review would be relevant for the SPF given the low number of vessels currently operating and the current limitations on making information about the fishery public.

The Panel considered that in the context of providing its advice, it would be useful to receive regular updates of recent fishing activity and observer data.

Action Item: AFMA to provide updated, summarised fishery information from logbooks and observer data as a standing item on the Scientific Panel agenda. Information to include: observer coverage levels; catch by target species; bycatch composition; fishing effort; protected species interactions; areas fished and the number of biological samples collected.

Ms Weekes advised the Panel of closures currently applying to mid-water trawling in the SPF, the requirement to hold concessions in the Southern and Eastern Scalefish and Shark Fishery (SESSF) in order to participate in the SPF, and voluntary measures adopted by the operators of the Geelong Star with respect to reducing interaction with recreational fishers. The Panel was advised that AFMA was considering the appropriateness of applying some of the SESSF

closures to mid-water trawling given that the original intent of the closures (such as protection of orange roughy or gulper sharks) may not be relevant to mid-water trawling in the SPF.

3. Review of the SPF Harvest Strategy

Ms Weekes gave an overview of the *Small Pelagic Fishery Harvest Strategy 2008 (last revised in April 2015)* (Harvest Strategy) and identified the following key issues for discussion.

Whether the SPF Harvest Strategy adequately responds to changes in productivity

The Panel noted:

- that a Daily Egg Production Method (DEPM) estimate of stock size was a requirement for stocks to be assessed at Tier 1 and Tier 2
- the harvest strategy had been MSE tested (Smith *et al.* 2015) and was found to maintain stocks near target levels using the revised harvest levels and available DEPM biomass estimates.
- the MSE testing demonstrated that the revised harvest strategy takes appropriate account of the differing biological productivity of different pelagic species, including likely changes over time.

Consequently, the Panel advised that the SPF harvest Strategy does adequately responds to changes in productivity.

Tier 3 and Tier 2b Atlantis

The Panel noted that Tier 3 and Tier 2b Atlantis-SPF were both trying to deal with stocks that either had a DEPM survey done in the past but the maximum time spent at Tier 2 had been exceeded, or never had a DEPM survey done. In both cases information on these stocks was limited, uncertainty was high, and thus conservative catch limits were required to address increased risk arising from high uncertainty. Key points the Panel discussed in relation to Tier 3 were that:

- the 500 tonnes Recommended Biological Catch (RBC) at Tier 3 is a fixed value which does not take into account the different biological productivity of each species. Being fixed, it was not able to be tested in the recent MSE.
- in the absence of better information the 500 tonnes RBC was adopted, based on expert judgment, being considered to be a low risk harvest level for all SPF species,.

Key points discussed about Tier 2b – Atlantis:

- the Atlantis ecosystem model is not a formal stock assessment, such as those usually applied to assessment of commercial stocks. Ecosystem usually models generate an equilibrium balance model of what one would expect to find in an ecosystem, given certain dietary requirements and some estimates of population sizes. These equilibrium balance estimates are useful in setting targets and understanding ecosystem effects of alternative exploitation rates, but actual stock sizes may differ substantially from ecosystem model estimates, either as a result of environmental changes or flexibility in dietary requirements.
- the range presented in the Atlantis results appear to be unrealistically narrow when compared to confidence bounds for stock assessments.

- the Panel had concerns about applying Atlantis biomass estimates in a Tier 2 context, i.e. using the Tier 2 harvest rates, and advised that Tier 2 RBCs should be based on actual abundance indices, such as DEPM estimates.
- where there are no DEPM or other indices of abundance available, Atlantis may provide estimates of plausible population sizes for application at a Tier 3 level. The application of lower (Tier 3) exploitation rates will address the risks resulting from uncertainty in Atlantis estimates,
- The Panel considered that, if Atlantis estimates were to be used it may be more appropriate to use the best estimate (usually the mean) of biomass, rather than the lower confidence bound.

The recent MSE testing of the SPF harvest strategy resulted in clear recommendations that the time that a stock can remain at Tier 2 without conducting a new DEPM survey should be limited to a maximum of 5 seasons (Australian sardine or blue mackerel) or 10 seasons (jack mackerels and redbait) (Smith *et al.* 2015). That review work recommended maintaining the halving of harvest rates when moving from Tier 1 to Tier 2. The review suggested that a similar approach, such as halving harvest rates again, could be taken when moving from Tier 2 to Tier 3. The Panel considered this to be an appropriate approach, given that the Tier 2 assessment would have originally been based on a DEPM survey. However, where no DEPM assessment was available it was decided to apply biomass estimates derived from the Atlantis model as the basis for informing on the Tier 3 assessment. However, the Panel advised that additional precaution should be applied, and recommended reducing harvest rates to less than 50% of the relevant Tier 2 harvest rates.

In light of these discussions the Panel recommended:

- Tier 2b-Atlantis be removed from the Harvest Strategy
- Tier 3 be revised as per the following:
 - remove the absolute 500 tonnes RBC
 - Tier 3 to apply to stocks that were no longer eligible to remain at Tier 2 because the maximum time at Tier 2 had been exceeded or because a DEPM (or other measure of spawning biomass) survey had never been undertaken for the stock
 - harvest rates for Tier 3 species be set as follows, taking into account the relative uncertainties of DEPM estimates and Atlantis estimates:
 - a maximum exploitation rate of 0.5 of the relevant Tier 2 exploitation rate be applied to the most recent DEPM estimate of biomass for species where a DEPM had been undertaken
 - an exploitation rate of 0.25 of the Tier 2 exploitation rate be applied to the most recent Atlantis-SPF mean estimate of biomass for species where a DEPM has not been undertaken
- Given that no additional information is expected to be obtained with which to revise biomass estimates for stocks at Tier 3, unless a DEPM survey or other abundance index is provided, the length of time a stock can remain in Tier 3 should be unrestricted. The low catch levels that result from the proposed Tier 3 harvest rates are considered to be highly conservative.

Exploratory fishing and research catch provisions in the Harvest Strategy

The Panel noted that AFMA's policies for research catch allowance, exploratory fishing and scientific permits would cover most of the circumstances currently outlined in this section of the Harvest Strategy. However, considering the SPF is currently a developing fishery, the specific provisions under this section may be appropriate in some situations. For example, low recommended catches for stocks at Tier 3 as a result of lack of information will make it

difficult to generate the additional information required to develop the biomass estimates needed for a stock to be managed at Tiers 1 or 2. Some additional catch, associated with increased monitoring or research requirements, may be needed.

The Panel therefore recommended retaining these provisions in the Harvest Strategy but suggested removing the details about what specific information that should be collected. These should be determined based on a research proposal provided to the Scientific Panel and Management Advisory Committee.

Harvest Strategy target and limit reference levels

The Panel recommended being explicit about the performance standards the target (0.5 B_0) and limit (0.2 B_0) reference points were tested against in the MSE testing by Smith *et al.* (2015), that is 'a less than 10% probability over 50 years of stocks going below the limit reference point' and achieving the target reference point 'on average'.

The Panel noted that the references to Resource Assessment Group throughout the Harvest Strategy need to be replaced by 'the Scientific Panel'.

Action item: AFMA to prepare a draft of the Harvest Strategy for circulation to the Panel members at the same time as the draft meeting minutes.

Mr Day advised the Panel that the proposed revisions to the SPF Harvest Strategy will need to be approved by the Commission, prior to the Commission considering RBC advice. Notwithstanding this, the Panel should provide their RBC recommendations for consideration by the Commission based on the proposed revised strategy.

4. Annual assessments and RBC advice

Assoc. Prof Ward presented the Annual Fishery Assessment update for the SPF incorporating catch and length-frequency data from the 2014-15 season. The Panel's comments and RBC advice in the context of the proposed revisions to the Harvest Strategy (as outlined above), are summarised in the Table below.

In response to a question regarding whether fine-scale spatial data could be used to advise on aspects relating to localised risks of fishing and regional management arrangements, the Panel noted that this could be considered in future but not until at least a year of fishery data was available from the current midwater trawl operations.



Species	Assessment results	Panel comments	Recommendation for 2016-17
Jack mackerel east	<p>Annual Fishery Assessment.</p> <p>New DEPM survey for Jack Mackerel conducted in 2014.</p> <p>Results published in March 2015 with a best estimate of biomass of 157 805 tonnes.</p>	<p>The Panel were given an overview of updated catch data for this stock</p> <p>The Panel were given a summarised overview of the results of the recent DEPM survey and sensitivity analysis (Ward <i>et al.</i> 2015a) which had previously been reviewed by the Small Pelagic Fishery Resource Assessment Group (SPFRAG). The DEPM and associated adult sampling provided robust estimates of key parameters. The Panel noted that most of the spawning area appeared to have been covered by the survey, although some spawning may have extended into the unsurveyed Bass Strait. The Panel considered that the biomass estimate is not likely to be biased upward (which would overestimate the stock).</p> <p>On the basis of the overview presentation on the DEPM survey report, the Panel agreed to again use the DEPM survey results for setting jack mackerel RBCs under the Harvest Strategy for the 2016-17 season.</p>	<p>Second season at Tier 1</p> <p>RBC = 157 805 x 12% = 18 937 tonnes</p>
Jack mackerel west	<p>Annual Fishery Assessment.</p> <p>No DEPM survey has been conducted. Some catch history data.</p> <p>Atlantis-SPF estimated mean biomass 62 000 tonnes</p>	<p>The Panel were provided with an overview presentation for Jack Mackerel west. The Panel noted that few data were available given the lack of fishing. Under the proposed revised harvest strategy, Tier 3 using Atlantis would therefore apply.</p> <p>The Tier 3 exploitation for this stock with no DEPM is 0.25 x 6 % (Tier 2 rate) = 1.5 %</p>	<p>Tier 3</p> <p>RBC = 62 000 x 1.5% = 930 tonnes</p>
Blue mackerel east	<p>Annual Fishery Assessment.</p> <p>New DEPM survey</p>	<p>The Panel were given an overview presentation for Blue Mackerel east including state catches. There was some apparent increase in the proportion of small fish in purse seine data in recent years. However it is unclear whether this relates to recruitment, changes in fishery operational behaviour or sampling bias.</p>	<p>First season at Tier 1</p> <p>RBC</p>

	<p>considered by the Scientific Panel.</p> <p>Estimated biomass 83 300 tonnes</p>	<p>The Panel then considered the results of the DEPM survey conducted in 2014 (Ward <i>et al.</i> 2015b) noting that good coverage of the spawning area had been achieved. However, the Panel noted difficulties in sampling of adult blue mackerel during the survey and the spawning fraction adopted was consequently based on South Australian samples. Sensitivities based on literature values for this and closely related species had also been considered. The Panel had no reason to conclude that spawning fraction based on data for this species collected in South Australian during the early 2000s would differ substantially from the spawning fraction off NSW. However, the uncertainty associated with the adult parameters was identified as a weakness in the assessment and the Panel recommended that concerted efforts be made to obtain samples of adult blue mackerel to provide regional estimates for key parameters.</p> <p>In this regard the Panel noted that the revised Tier 1 exploitation rate for blue mackerel adopted by the AFMA Commission in the 2015 Harvest Strategy had been chosen to be precautionary. Advice provided by the SPFRAG scientists noted that ‘the sensitivity analyses undertaken by Smith <i>et al.</i> (2015) do not fully account for uncertainties in age, growth and productivity of Blue Mackerel (due to limitations of the sampling programs from which input data were obtained)’ and recommended a more precautionary exploitation rate. As such, the Commission adopted a Tier 1 exploitation rate of 15% in the Harvest Strategy and not the 23% initially recommended following MSE testing (Smith <i>et al.</i> 2015).</p> <p>The Panel agreed to use the DEPM survey biomass estimate 83 300 tonnes as the basis for providing RBC advice, using the exploitation rate of 15%, considering that this exploitation rate is sufficiently precautionary to account for the uncertainties in the assessment, as shown by the MSE testing (Smith <i>et al.</i> 2015).</p> <p>The Panel recommended that sampling adult blue mackerel be prioritised in 2016 to better inform future estimates of key adult biological parameters for use in future DEPM biomass estimates.</p>	<p>= 83 300 x 15% = 12 495 tonnes</p>
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Blue mackerel west	<p>Annual Fishery Assessment.</p> <p>Estimated biomass 86 500 tonnes</p>	<p>The Panel noted very low recent catches of this species.</p> <p>The Panel noted that the most recent DEPM survey for this stock had been undertaken in February and March 2005. The Panel noted that the SPFRAG had adopted the results of that survey, providing biomass estimate for blue mackerel of 86 500 tonne based on the results of the two surveys that covered most of the western spawning area.</p> <p>This stock moved from Tier 2 to Tier 3 this season due to the maximum time (5 seasons) at Tier 2 having been reached. The proposed Tier 3 exploitation for a blue mackerel stock that has had a DEPM is $0.5 \times 7.5 \%$ (Tier 2 rate) = 3.75 %</p>	<p>Tier 3</p> <p>RBC = $86\,500 \times 3.75\%$ = 3 244 tonnes</p>
Australian sardines east	<p>New DEPM survey considered by the Scientific Panel.</p> <p>Estimated biomass 49 575 tonnes</p>	<p>The Panel was provided with an overview of catch and effort for Australian sardine, noting the low catches and resulting small amount of length and age data currently available. The Panel emphasised the importance of collecting length and age data, for potential use in providing fishery indicators, or for use in future integrated assessments.</p> <p>The Panel considered two DEPM survey results. A southern area survey was undertaken at the same time as the recent jack mackerel survey (Ward <i>et al.</i> 2015a) and a northern area survey was conducted at the same time as the blue mackerel east survey (Ward <i>et al.</i> 2015b).</p> <p>The Panel considered that there were indications of stock structuring between north and south. However, in the absence of clearer scientific evidence, the Panel recommended that the stock should be considered to be a single stock. The Panel agreed to use the northern area DEPM estimate of biomass of 49 575 tonnes and the Harvest Strategy Tier 1 Australian sardine harvest rate as the basis for RBC advice.</p>	<p>First year of Tier 1</p> <p>RBC = $49\,575 \times 20\%$ = 9 915 tonnes</p>
Redbait east	<p>DEPMs conducted in 2005 and 2006</p> <p>Estimated biomass 68 886 tonnes</p>	<p>The Panel noted the availability of relatively good historic age and length data for this stock.</p> <p>The Panel noted the most recent biomass estimates from DEPMs in October 2005 and October 2006 of 86 990 tonnes and 50 782 tonnes respectively. The Panel agreed to continue to apply the approach used by SPFRAG of adopting the average</p>	<p>5th season at Tier 2</p> <p>RBC = $68\,886 \times 5\%$ = 3 444 tonnes</p>

		of these DEPM estimates (68 886t), and the Harvest Strategy Tier 2 harvest rate for redbait as the basis for RBC advice.	
Rebait west	<p>Annual Fishery Assessment.</p> <p>No DEPM survey conducted. Some catch history data.</p> <p>Atlantis-SPF estimated mean biomass 66 000 t</p>	<p>The Panel noted that limited fishing for this stock has occurred over the last five years. The Panel noted the availability of historical length frequency data which had primarily been obtained off south western Tasmania.</p> <p>There has been no DEPM survey for this stock and so, under the proposed revised Harvest Strategy, this would be a Tier 3 stock using the biomass estimate of 66 000 t from Atlantis. The proposed Tier 3 exploitation for this stock with no DEPM is 0.25 x 5 % (Tier 2 rate) = 1.25 %</p>	<p>Tier 3</p> <p>RBC</p> <p>= 66 000 x 1.25%</p> <p>= 825 tonnes</p>



5. Research priorities

Panel members Prof. Gardner, Dr Lyle and Assoc. Prof Ward declared they had potential conflicts of interest in relation to this agenda item, relating to their and/or their respective organisations' participation in research or potential research in the SPF. Those members left the room while the remaining members discussed whether each of those members should participate in the discussions and recommendations in relation to this item. Dr Pascoe also left the meeting at this point due to other commitments.

The remaining Panel members discussed the potential conflicts. They noted that any future calls for research would be made publicly and that any applications would be reviewed by the AFMA Research Committee before a decision to proceed with the provider. On that basis and recognising the value of having members present for discussions, it was agreed that all Panel members would be able to participate in discussions on the agenda item, but those who had left the room should not participate in the prioritisation of the research.

The Panel revisited the Small Pelagic Fishery Strategic Research Plan 2012/13-2016/17. The Panel recommended the wording regarding prioritisation of DEPMs be amended to be generally applicable to this as a category of research, rather than referring to specific species. Species to be the focus of DEPM research could then be identified and prioritised in annual research plans. The Panel noted that the Strategic Research Plan was to be reviewed in 2016 and deferred a more detailed review until then.

Mr. Penney noted the use of acoustic survey indices of abundance in most international pelagic fisheries raised some concerns with using DEPMs as an absolute index of abundance, rather than as relative indices in an integrated assessment. He advised that efforts should be made to move towards using integrated stock assessments incorporating the DEPM estimates, but also using additional indexes such as acoustic surveys and trawl CPUE, where these could be obtained. This would require improvement in the coverage of length and age data. The Panel noted this would be useful for longer term consideration when the Strategic Research Plan was reviewed.

The Panel members who had not disclosed a conflict of interest prioritised immediate research in the SPF as:

- DEPMs for jack mackerel west and redbait west; stocks for which no DEPM surveys have ever been conducted.
- biological sampling of adult blue mackerel to provide regional estimates of biological parameters used in DEPM assessment, noting this could be achieved through catch sampling assuming that mid-water trawl operations are undertaken off the east coast during the known spawning season.

Panel members noted that stock structure work was lower priority given that SPF species were mobile and that many international pelagic stocks were known to occupy and migrate across very large areas.

The Panel noted that the Fisheries Research and Development Corporation's *Technical workshop to explore options for mitigating marine mammal interactions in the Small Pelagic Fishery* held on 25-26 June 2015 had recommended the establishment of a Marine Mammal Working Group (MMWG) to coordinate further work on mitigation of marine mammal interactions in the SPF and encouraged AFMA to expedite this process. The Panel also

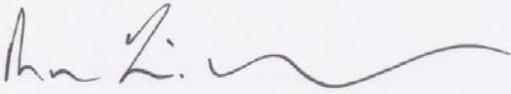
supported the Workshop recommendation to develop a rigorous and transparent process for collecting, reporting and analysing information about interactions with marine mammals and requested that AFMA provide updates to the Panel on progress being made on this item through the MMWG.

6. References

Smith, A.D.M., Ward, T.M., Hurtado, F., Klaer, N., Fulton, E., and Punt, A.E. (2015). Review and update of harvest strategy settings for the Commonwealth Small Pelagic Fishery. Single species and ecosystem considerations. Final Report to FRDC. Project No 2013/028. (CSIRO Oceans and Atmosphere: Hobart, Tasmania.)

Ward, T. M., Grammer, G.L., Ivey, A., Carroll, J., Keane, J., Stewart, J. and Litherland, L. (2015b). Egg distribution, reproductive parameters and spawning biomass of Blue Mackerel, Australian Sardine and Tailor off the east coast during late winter and early spring. Final report to FRDC. Project 2014/033. (South Australian Research and Development Institute (Aquatic Sciences), South Australia.

Ward, T. M., Burnell, O., Ivey, A., Carroll, J., Keane, J., Lyle, J., and Sexton, S. (2015a). Spawning summer patterns and preliminary Daily Egg Production Method survey of Jack Mackerel and Australian Sardine off the east coast. Final report to FRDC. Project 2013/053. (South Australian Research and Development Institute (Aquatic Sciences), South Australia.

Signed (Chairperson): 
Date: 7.1.16

List of Attachments

1. Small Pelagic Fishery Scientific Panel Meeting No. 1 Agenda

ATTACHMENT 1



Australian Government
Australian Fisheries Management Authority

SMALL PELAGIC FISHERY
SCIENTIFIC PANEL

Small Pelagic Fishery Scientific Panel Meeting No. 1

Agenda

Date: 14 December 2015
Venue: Stawell Room
Park Royal Hotel, Melbourne Airport
Time: 9.30 am – 5.30 pm

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|----------------------|---|------------------------|
| Agenda Item 1 | Preliminaries (9am – 9.45am) | |
| | 1.1 Welcome and apologies | |
| | 1.2 Declarations of interest | |
| | 1.3 Adoption of agenda | |
| Agenda Item 2 | Management update (9.45 – 10.15am) | For information |
| | <i>Morning tea 10.15-10.30</i> | |
| Agenda Item 3 | Review of SPF Harvest Strategy (10.30am – 12.30pm) | For advice |
| | <i>Lunch 12.30-1pm</i> | |
| Agenda Item 4 | Annual assessments and RBC advice (1-4pm) | For advice |
| | 4.1 Final results of the Daily Egg Production Survey for Blue Mackerel east and Sardine | |
| | 4.2 Annual assessment of SPF stocks | |
| | 4.3 RBCs for each SPF stock for 2016-17 season | |
| | <i>Afternoon tea 4-4.15pm</i> | |
| Agenda Item 5 | Research priorities (4.15-5pm) | For advice |
| Agenda Item 6 | Other business (5-5.15pm) | |