



Australian Government

Australian Fisheries Management Authority

Small Pelagic Fishery Resource Assessment Group (SPFRAG) 20

Minutes

Date: 12 February 2015
Venue: AFMA Canberra Office

Attendance

Name	Representation
Mr Sandy Morison	Interim Chair
A/Prof Tim Ward	Scientific Member
Dr Jeremy Lyle	Scientific Member
Mr Andy Moore	Scientific Member
Mr Gerry Geen	Industry Member
Mr Terry Romaro	Industry Member
Mr Denis Brown	Industry Member
Mr Jon Bryan	Environment/Conservation Member
Mr Graham Pike	Recreational/Charter Fishing Member
Mr Grant Pullen	Tasmanian Permanent Observer
Dr John Stewart	NSW Permanent Observer
Mr Steve Shanks	AFMA Member
Mr Matt Piasente	Executive Officer
Ms Lisa Stevenson	Observer (AFMA)
Dr Beth Fulton	Observer (CSIRO) via telephone (for agenda item 4)



Summary of Actions Arising and Recommendations

No.	Action items
1	Dr Fulton agreed to contact Dr Andre Punt to determine availability and timelines to provide RAG members with graphical stock trajectory model outputs of the base scenarios of the MSE.
2	The RAG to contact Dr Andre Punt to assess the possibilities of running further stock trajectories.
3	Mr Geen to lead the development of a proposal assessing options to reduce harvest rates if biomass approaches the limit reference point for RAG consideration.
4	<ul style="list-style-type: none"> a) A/Prof Ward to develop a research proposal to identify the need for synthesizing knowledge of the distribution of central place foraging species and their foraging ranges to provide a basis for considering spatial management to deal with trophic interactions (or identify if the information has already been collated) b) A/Prof Ward to contact Dr Fulton to assess her capacity to assist with any future work in this area given Dr Fulton's expertise in ecosystem modeling and recent work in the fishery.
5	Members requested that for future meetings WiFi be made available to members.
6	Mr Pike to recirculate links to RAG members regarding the IGFA papers on small pelagics.



Note that the draft annotated agenda for this meeting can be found at **Attachment 1**.

1. Introduction Apologies

The meeting opened at 8:00am on 12 February 2015 in the Aquarium room at AFMA, Level 6, 73 Northbourne Avenue, Canberra.

The interim Chair Mr Sandy Morison welcomed members to the meeting, and noted that the main aim of the meeting was to consider the recently released report *Review and update of the harvest strategy settings for the Commonwealth Small Pelagic Fishery*, including the exploitation rates.

No apologies were received for the meeting.

2. Adoption of Agenda

In discussing the agenda, the RAG members noted that an update on the status of the previous meetings action items would be discussed once all agenda items were addressed. Mr John Bryan raised issues with the process of finalising minutes for the previous meeting. Mr Bryan stated minutes from the previous meeting were not an accurate record and were grossly misleading; Mr Graham Pike shared Mr Bryan's views that the final minutes were not an accurate record. Specifically Mr Bryan felt that the minutes provided a misleading record of meeting discussions and outcomes. Some RAG members raised the point that they did consider the views raised by Mr Bryan were accurately reflected in the meeting record.

The AFMA member asked that this issue be discussed as separate agenda item at the end of the meeting.

The RAG noted that AFMA Fisheries Management Paper No. 12 outlines how minutes are finalised and an audio recording of the meeting is taken to verify and check comments from members on draft meeting records. The AFMA member indicated that to assist with providing an accurate record for this meeting key RAG agreements will be listed on the screen, including differences in opinions which would also be captured within the minutes.

The RAG agreed to add the following additional items to the agenda:

1. Update of the MSC process as part of agenda item 5
2. A further discussion of the minutes of the previous meeting and the process of finalising minutes as a new agenda item.

The agenda was adopted with the above amendments incorporated (Attachment 1).

The RAG noted that an audio recording of the meeting was being taken to assist AFMA in finalising the minutes of the meeting. The Chair noted that the recording was in accord with AFMA's Fisheries Administration Paper No. 12 which states that RAG members are taken to consent to the recording of their participation in each RAG meeting for that purpose.

Mr Pike requested an update from the sectors, and the RAG agreed that everyone would have an opportunity to comment under agenda item 5.

3. Conflict of interest procedures

The RAG was reminded that the process to deal with conflicts of interests is outlined in AFMA's Fisheries Administrative Management Paper No. 12. Each RAG member reviewed their listed register of declared conflicts and updates were noted. The updated register of conflicts of interests is at Attachment 2.

The Chair proposed that members declare any conflicts of interests upfront for the whole agenda. The industry members noted generic conflicts of interests with all agenda items and



that any decisions relating to the fishery will apply to all operators rather than be of benefit or otherwise to individual RAG members. Members agreed that members with generic conflicts will not be required to leave during the discussions of the agenda items during the meeting.

Members expressed concern that as the meeting progresses through each agenda item, at some point possible decisions on advice may raise a conflict. The Chair outlined that it is the responsibility of each member to raise particular conflicts, that the RAG requires members to be honest, and that the onus is on individuals to raise any conflicts. He also noted that if a member identifies an additional conflict of interest during the meeting, or members considered that the discussion was being unduly influenced by declared conflicts of interest, this should be raised with the Chair who would address issues raised as required.

Members noted that a research scientist presenting the results of research is not a conflict of interest, but that if the RAG was considering priorities for future work scientific members may then have a conflict of interest.

4. The review of the harvest strategy

A/Prof Tim Ward presented a summary of the CSIRO-led report *Review and update of the harvest strategy settings for the Commonwealth Small Pelagic Fishery*. The RAG agreed for Dr Beth Fulton to join the discussion (via telephone) on the Harvest Strategy report as a co-author. The RAG acknowledged that the fishery is fortunate for this type of work to be available, particularly the Management Strategy Evaluation (MSE) and the ecosystem modelling.

A scientific member noted that this is the third or fourth MSE for the fishery however this new work is largely focused on the Harvest Strategy settings (exploitation rates) and how the current Harvest Strategy can be modified to ensure that the exploitation rates applied for species take into account the most recent information on stocks.

The RAG noted the report's rationale regarding the suggested exploitation rates, particularly the requirement for a Daily Egg Production Method (DEPM) survey to provide a biomass estimate every 5 years to remain at Tier 1. It was also noted that the report included estimates of exploitation rates that have a 10% probability of depletion below the limit reference point, and a target and limit reference point as required by the Harvest Strategy Policy (HSP). In general there are differences in the exploitation rates that meet the requirements of the HSP depending on the longevity of a species, with higher rates for the shorter lived species such as Blue Mackerel and Australian Sardine. Concerns were noted that the Sardine parameters from the western stock were used for the eastern stock and that there is therefore some uncertainty regarding the model outputs for the eastern stock.

The RAG noted the structure of the existing Harvest Strategy particularly the use of gradual reductions in exploitation rates over time. The RAG noted that the alternative of using a constant exploitation rate set at the average exploitation rate for a given time period had been assessed in a previous MSE and found to produce biologically similar results.

The RAG noted the sensitivities and errors associated with estimating the abundance of the stock and acknowledged the need for regular surveys (preferably, more than once every five years), which is a challenge in that there is a need for increased research capacity and funding to complete the work as well as improved planning. It was highlighted that to keep each species in Tier 1 the fishery will require surveys every year for more than one stock. It was suggested by some members that there needs to be added incentive for industry to fund regular DEPM surveys, and that adopting a limited term at Tier 2 would provide such incentive.

Mr Denis Brown expressed concern with the model outcomes and understanding with the level of risk. Mr Brown requested additional graphical outputs of the trajectories of the



simulations as well as the final results in order for him to be more comfortable with the model outcomes. Dr Fulton agreed to contact Dr Andre Punt to check what assistance can be provided in the short term.

The RAG discussed the ecosystem modeling findings from the CSIRO report which showed that the food web is not highly dependent on SPF target species and that depleting the target species had only minor impacts on the ecosystem. Dr Fulton outlined that the model showed that predators were more sensitive to the availability of anchovies than variability in abundances of the small pelagic species targeted in the SPF, but this is only a concern if anchovies were harvested. Dr Fulton noted that the predators were adapted to exploiting variable food sources and that significant effects were only predicted when all potential prey species were depleted.

Members questioned the need for a special allowance for predators as per the existing Harvest Strategy. Members noted that the report findings indicate that a special allowance for predators is not required based on the outcomes of the CSIRO report. Mr Bryan outlined support for the need for ongoing DEPM surveys and that the model is very reassuring regarding predator impacts at the population level. He emphasised, however, that it is the concept of localised depletion that some members have struggled with, and that unacceptable local impacts are inconsistent with a sustainable fishery. Dr Fulton noted that the model outcomes are based on assessments at the scale of the Atlantis boxes (which vary in size) and cannot describe processes that may occur at finer spatial scales (e.g. <math><30\text{km}^2</math>).

Members discussed how the key report findings could be integrated into the existing Harvest Strategy. Mr Bryan suggested starting from the ground up using the existing Harvest Strategy framework, and that the Harvest Strategy should be structured as a total strategy considering all issues, particularly local impacts. It was suggested that the report does not deal with local impacts and that this concern needs to be addressed through other management measures.

Dr Fulton noted that the model has some uncertainties (e.g. old diet information for predators) and that changes in dietary preferences may have occurred. Dr Fulton acknowledged that possible local level impacts cannot be ruled out when there is a reduced availability of the SPF species biomass but that the small pelagic species targeted by the fishery represent a small proportion of the total biomass available within the modelled ecosystem (mesopelagics represent a key component, the biomass of which is significantly greater than the small pelagics). Uncertainty also exists whereby predators switch to other prey species as it is unclear whether alternative prey has the same nutritional value, and these complexities are not addressed within the model. A/Prof Ward stated that the use of empirical data in a recent ecosystem study from SA that examined the diets of a range of predator species and, consistent with the CSIRO models, did not indicate a high degree of dependence on small pelagics by these species.

The RAG noted that the blocks used in the ecosystem modelling work were tailored to large regional areas. Mr Bryan stated that it is impacts at fine spatial scales that are the main concerns of stakeholders, and that these may occur even when there are insignificant impacts at population levels.

Members acknowledged that the report suggests how to improve the current Harvest Strategy and how ongoing biomass estimates and more information will place the fishery in a better position. Members agreed that, based on the results of the report, the B_{50} target reference point to maximize economic yield in line with the CHSP is acceptable. Mr Bryan stated, however, that if the local impacts and other outstanding issues relating to the fishery are not addressed then the Harvest Strategy becomes irrelevant. Dr Jeremy Lyle noted that there is a hierarchy of management measures and that establishing target levels and harvest rates is a high order management need, and the other issues including localised depletion, interactions with protected species, etc need to be addressed as lower order matters when operationalising the Harvest Strategy.



Mr Bryan stated that he would agree to progress with the refinement of exploitation rates under the Harvest Strategy on the expectation that acceptable measures to mitigate localised depletion are also established. Mr Bryan expressed the view that localised depletion was a more challenging issue for the fishery and reiterated his reluctance to deal with other aspects of the fishery if the localised depletion concern was not addressed. Mr Pike also expressed a reluctance to progress or agree to Harvest Strategy targets and settings without addressing other issues, and without first addressing the Expert Panel report.

The Chair advised that the RAG was currently discussing the Harvest Strategy and that combining discussions to deal with a number of other management matters would not be an effective use of time. A scientific member noted that fisheries scientists have outlined that localised depletion is a low risk for the fishery, and that like other fisheries it needs to start harvesting the resource and address the issues and risks as required. Industry members expressed concern with the suggestion that the RAG had not considered localised depletion and regarded this comment as inaccurate as this matter was considered at length and a strategy was proposed (though not supported by all RAG members) at the last meeting.

Mr Bryan stated that the move-on rules developed at the previous meeting had no value as they did not represent a real world solution to address localised depletion concerns. Members noted that if the RAG spent time addressing all opinions on perceived risks for the fishery it would make very little progress. The Chair reiterated the focus of the meeting should be to discuss the higher order level Harvest Strategy targets and settings. Mr Bryan and Mr Pike outlined that their agreement or advice on changes to the Harvest Strategy would be conditional depending on how localised depletion and other issues important to stakeholders are addressed. They suggested that the Harvest Strategy should be treated as a package and unless all the major outstanding issues were resolved then the operation of the fishery at a higher level would be unacceptable to stakeholders. The Chair summarised this position as nothing is agreed until everything is agreed. However, the meeting needs to be structured to identify the parts of the Harvest Strategy that can be considered and agreed.

The RAG noted that the B_{50} target has additional precaution built in and that the biomass estimates from DEPM surveys are also precautionary in their outputs (i.e. the majority of DEPMs are underestimates spawning biomass since as they rarely cover the whole spawning area, which introduces a negative bias). A scientific member of the RAG stated the survey outcomes result in biomass estimates that have inherent uncertainty which may or may not reflect reality, however it is up to the RAG's expertise to determine how to interpret and best use survey results.

Members noted that the MSE assesses harvest rates and tracks down the biomass at maximum extraction, whereas in reality there would be management responses to any observed declines in biomass. Industry members expressed concerns that the report has not modeled the actual catches taken from the fishery and the possible implications when only a small proportion of the TAC is harvested rather than the whole TAC.

The Chair thanked Dr Fulton for her attendance. Dr Fulton noted that she would be happy to assist with any further questions and departed the meeting at 9:40am.

Mr Steve Shanks outlined a process to incorporate the key findings of the report in terms of updating the current Harvest Strategy. He noted the main questions were how to adopt and apply the new harvest rates for both Tier 1 and Tier 2 levels. Mr Shanks advised the SPFRAG that the purpose of the meeting was to provide advice on revisions to the SPF Harvest Strategy. However, if the RAG was unable to provide clear advice the AFMA Commission would have to proceed in making decisions based on the available information.

Mr Bryan outlined that the RAG needs to resolve other issues (e.g. localised depletion), and that discussing the Harvest Strategy in isolation is not helpful. Mr Bryan suggested the RAG



should revisit the Harvest Strategy at a later stage and reminded the RAG that at last year's TAC setting meeting he outlined that the Recommended Biological Catches (RBC's) should reduce to the Tier 3 level unless a number of fundamental issues were addressed.

Members were reminded that reviewing the Harvest Strategy is one of the fundamental tasks for the RAG which needs to be completed and that the point of the meeting was to consider the CSIRO report and how it may improve the fishery's Harvest Strategy. Members noted that the report needs to be taken seriously as the report findings are based on ecosystem modelling and are not just opinions. It was suggested that the RAG should focus on getting the high order matters right as a first step, then the RAG can address other management issues.

Mr Bryan stated that his agreement on individual components of the Harvest Strategy is not possible unless management overcomes particular stumbling blocks (e.g. lack of transparency regarding fishing operations) and addresses stakeholder issues as a whole package. Mr Pike expressed concerns regarding the definition of high order and lower order matters and expressed similar views that other elements in Harvest Strategy need to be considered.

Mr Shanks reminded members that the role of the RAG was to provide advice to AFMA on the most up-to-date science to address key matters in the fishery. The RAG was advised that possible changes to the Harvest Strategy are higher order matters as it relates to the harvesting of the resource. Mr Pike said that the Expert Panel's report is the 'latest science' and that it needs to be addressed. The RAG noted that the next agenda item is dedicated to the Expert Panel report which does not deal directly with matters relating to harvest rates whereas the CSIRO report directly addresses the SPF Harvest Strategy and the RAG has been tasked with identifying opportunities based on this report to further improve the Harvest Strategy.

Mr Brown highlighted that the Harvest Strategy's Metarule is designed to deal with concerns regarding the application of the Harvest Strategy and suggested that anyone with a problem with the Harvest Strategy should put evidence on the table to support their claim.

The RAG discussed the exploitation rates for each target species outlined in the Executive Summary of the CSIRO report. A summary of the key points raised for each species, agreements and positions are outlined below.

Sardines

Members highlighted that the exploitation rate suggested in the report is more than double that currently outlined in the Harvest Strategy (at 33%). A/Prof Ward noted that the upper limit in the South Australian Sardine Fishery is 25% and that the fishery has been operating for the past 15 years. The SA fishery applies a risk based tiered system with biennial assessments (i.e. more research provides the opportunity to increase catches). Dr John Stewart noted that there is a limited understanding of growth rates for the Eastern Sardine stock (off NSW) and suggested the need to urge caution at this stage until further information on particular biological parameters (i.e. productivity) are clarified.

Members noted that based on the CSIRO report, 33% is technically a sustainable harvest rate. It was suggested that as the fishery is still in a developmental stage a more precautionary approach be adopted. Members noted that the base case analysis is based on applying constant harvest rates over 5 years. As a starting point it was suggested by some members that the harvest rate could be set at 20% over 5 years at Tier 1. It was suggested that 20% comes down a long way from the report's suggested sustainable rate of 33%. A/Prof Ward noted that he would not be comfortable with more than 20% at this stage and suggested that 20% for 5 years and then half that level for the next 5 years in the absence of any new information would be more precautionary and in line with the SA fishery.



Mr Gerry Geen and other RAG members noted that the RAG has had limited time to review the report since its release and did not get to review a draft report. Mr Geen outlined that the report contains very useful information to develop the fishery however he stated that more time to fully digest the report's findings and possible further work looking at stock trajectories overtime. Mr Geen expressed concern that if the report's base case findings are not adopted that the RAG will be reduced to 'cherry-picking' harvest rates. Mr Geen outlined that harvest rates and stock impacts need to be looked at as a package and reviewed, and suggested the RAG to reconsider the report and further work at a later stage.

Mr Shanks outlined that AFMA does not have a fixed view on what new harvest rates should be adopted, and expressed comfort with the rates within the report. It was expressed that the RAG should apply precaution where possible and be more comfortable when reducing exploitation rates and be more conservative when increasing them. Concerns were noted that the Harvest Strategy should be considered as a package, and the implications of not being seen to be in-line with best practice if the results of the CSIRO report were not taken into consideration.

Mr Geen highlighted that the Lenfest report outlines world best practice harvest rates for small pelagic fisheries, and that with the exception of Sardine, both current exploitation rates and suggested exploitation rates in the CSIRO report were within the levels suggested in the Lenfest report. Mr Geen suggested that the harvest rate for sardine should not be increased above the 25% Lenfest guideline. Mr Geen reiterated concerns that the RAG is required to respond in a short time frame and suggested that more time is required to consider how best to utilise the species specific information. Mr Brown outlined that he did not have a high level of confidence in the report and requested more information to better understand the risks. Mr Brown outlined his reluctance to move away from the current Harvest Strategy without this information and supported a further review of the Harvest Strategy.

Industry members expressed concern about setting a harvest rate for sardine which is outside international guidelines. Industry Members recommended adopting a 25% harvest rate that is consistent with the Lenfest guidelines and with what is applied in SA. It was again highlighted that the productivity in SA might be different to the eastern stock and that this is the reason to justify a lower rate. Industry noted that the sensitivity analyses in the report included simulations of a wide range of productivities and that these analyses demonstrated low risk to the stock at a 33% harvest rate.

Members noted that increasing the rate increases the risks even though the risks are still regarded as low. Members suggested adopting a harvest rate for sardine of 20-25% given the fishery was still in a developmental stage and was in agreement that the RAG should review the Harvest Strategy before considering the RBCs for the 2016/17 fishing season.

Industry members pointed out that the CSIRO report represented the best available science and risk analyses of the management of the fishery, and that there needed to be a clear rationale for the RAG to recommend different harvest rates to the ones proposed as being safe for the fishery.

While expressing concern regarding the arguments for going below 33%, industry members agreed with other RAG members that:

- A 33% rate would be a significant increase over the current rate in the Harvest strategy
- It would be higher than the rate applied in the SA fishery
- The SA fishery had been developed in a step by step process
- It is not consistent with the Lenfest report and international best practice
- There is a need to consider possible differences in parameters (productivity) between stocks.



The RAG was unable to reach a consensus on a specific harvest rate for sardine but there was general support for a harvest rate between 20-25%.

Mr Pike outlined his support for a harvest rate of 20% in-line with the scientific member (A/Prof Ward) and noted that he did not support a range. Mr Pike and Mr Bryan noted that their support for a 20% harvest rate was conditional with the Harvest Strategy developed as a management package which resolves other issues that need to be addressed. As provided in a statement by Mr Bryan, and supported by Mr Pike it was noted that they considered that there are major issues that need to be resolved before they could support a Harvest Strategy, this statement was: *That when considering / recommending harvest rates this was conditional on also considering localised depletion, lack of transparency of fishing operations, lack of ongoing commitment to DEPM stock assessments (particularly at Tier 2), animal welfare of seals and dolphins, and impacts of populations of seals and dolphins, and impacts on recreational fisheries to the satisfaction of stakeholders including conservation groups and recreational fishing groups. If these issues are not addressed Mr Pike and Mr Bryan said that RBCs should be set at Tier 3 levels.*

Members questioned how to consider decaying the harvest rate in relation to the age of the DEPM. The RAG agreed to consider the species' rates in the first instance and then other aspects of the Harvest Strategy can be addressed.

Blue Mackerel

The RAG discussed the Blue Mackerel harvest rates and noted that the 23% exploitation rate produced by base case assessment in the MSE analysis, is robust to the range of scenarios and sensitivities examined. Concerns were expressed that there is still limited information on age structures and reproductive biology for the stocks, and that parameters from the western stock were again used for the eastern stock. It was suggested that it is probable that the stock is not as productive as the report would suggest. A/Prof Ward stated that Blue Mackerel has not been harvested in a significant way and suggested that the rate should remain unchanged in the current Harvest Strategy.

Mr Geen again expressed concerns that the RAG was 'cherry-picking' rates based on opinions and that the report represented the best available science. Mr Geen stated that the report results state that the 23% harvest rate is low risk even under a wide range of sensitivity analyses that, amongst other things, simulate substantially lower productivity of the stock. Mr Geen questioned why the RAG was even discussing alternative rates when the scenarios show that the rates are conservative. Some members noted some discomfort with the model parameters and expressed more comfort with a stepped up approach to increasing exploitation rates. Based on the parameters used it was suggested that the modelling still has some risk, which would be heightened if significant jumps in the exploitation rates were applied. Industry members noted that there were layers of precaution already built into the DEPM estimates and the Harvest Strategy. The RAG noted that members need to consider the status of the fishery in that there will be only one Tier 1 species for the next fishing season and if a fishery were to start next year it would take some time before there would be sufficient DEPM surveys to move all the species to a Tier 1 level.

Mr Pike supported the scientific member's (A/Prof Ward) advice of a 15% harvest rate, subject to resolving other issues stated earlier in the fishery. Mr Bryan also recommended a 15% harvest rate subject to his previous conditional statement with the support of Mr Pike. This statement was: *That when considering / recommending harvest rates this was conditional on also considering localised depletion, lack of transparency of fishing operations, lack of ongoing commitment to DEPM stock assessments (particularly at Tier 2), animal welfare of seals and dolphins, and impacts of populations of seals and dolphins, and impacts on recreational fisheries to the satisfaction of stakeholders including conservation groups and recreational fishing groups. If these issues are not addressed Mr Pike and Mr Bryan said that RBCs should be set at Tier 3 levels.*



Industry members recommended adopting the findings of the report (i.e. a 23% harvest rate). Industry members noted the recommendation is based on an MSE tested harvest rate that is shown to be robust. It is also in-line with international standards and there is no reason to depart, notwithstanding the views expressed.

Mr Bryan reiterated that even if new harvest rates were agreed, he does not want to see the implementation of the Harvest Strategy unless all the issues he previously raised in his statement are addressed. Some Members expressed concerns that there was no evidence for the issues raised by Mr Bryan and Mr Pike and were of the view that the issues they had raised had previously been addressed.

Jack Mackerel

The RAG discussed Jack Mackerel harvest rates and noted a base case of 12% is more conservative than the current rate and adopting these rates (for both east and west stocks) reduces the risks in the fishery. Mr Geen stated that as per previous recommendations the best available information is from the CSIRO report and that he would accept the report's outcomes. The RAG Members agreed to the 12% harvest rate suggested in the report. Mr Bryan again referenced his previous conditional statement with the support of Mr Pike. This statement was: *That when considering / recommending harvest rates this was conditional on also considering localised depletion, lack of transparency of fishing operations, lack of ongoing commitment to DEPM stock assessments (particularly at Tier 2), animal welfare of seals and dolphins, and impacts of populations of seals and dolphins, and impacts on recreational fisheries to the satisfaction of stakeholders including conservation groups and recreational fishing groups. If these issues are not addressed Mr Pike and Mr Bryan said that RBCs should be set at Tier 3 levels.*

Redbait

The RAG discussed Redbait and noted that the difference in harvest rates for eastern and western stocks is due to a slight difference in some biological parameters (i.e. difference in size at maturity). It was noted that there is more data on the eastern stock, and that getting updated population data is difficult. Members noted that the rate in the report would drop down from the current 15% to 10% should it be adopted. The RAG agreed to recommend a 10% Tier 1 harvest rate. Mr Bryan referenced his previous conditional statement with the support of Mr Pike. This statement was: *That when considering / recommending harvest rates this was conditional on also considering localised depletion, lack of transparency of fishing operations, lack of ongoing commitment to DEPM stock assessments (particularly at Tier 2), animal welfare of seals and dolphins, and impacts of populations of seals and dolphins, and impacts on recreational fisheries to the satisfaction of stakeholders including conservation groups and recreational fishing groups. If these issues are not addressed Mr Pike and Mr Bryan said that RBCs should be set at Tier 3 levels.*

Tier 2 discussion

The RAG discussed options for modifying the Tier 2 harvest rule and implications of the recommended harvest rates in the report. It was noted that the MSE analysis indicated that for short lived species (Sardine and Blue Mackerel) maintaining a Tier 2 exploitation rate at half of the Tier 1 rate is not sufficiently precautionary when extended for an additional 5 year period. For the longer lived species (Redbait and Jack Mackerel), however, a Tier 2 harvest rate half of Tier 1 is considered a suitable rate for an additional 5 years. Once a DEPM survey has been completed members noted the difficulty in obtaining an intermediate estimate of biomass (with completing another survey) and that Tier 2 was originally intended to describe a harvest management regime that does not require a DEPM survey.

Industry members expressed concern that the programmed model scenario for Tier 2 assumed a DEPM at Year 1 and that a Tier 1 Harvest rate of 20% was extracted in the first 5 years of the run and then reduced to Tier 2 Harvest rate of 7.5%. This did not reflect actual Tier 2 activity for most species to date resulting in discomfort with recommendations based on



the model output as it unrealistically created maximised 'fish down' at the start of the model run (expected to result in increased risk). It was suggested that the Tier 2 default rate needs to be based on different levels of knowledge of species noting the increased uncertainty of defaulting to rates with set periods. In comparison knowledge obtained from harvesting can assist with decisions to increase (ramp-up) harvest rates overtime with a greater understanding of the level of risks.

The RAG noted the report is modeled based on undertaking DEPM surveys, and using the results of a single DEPM indefinitely is dangerous particularly for short lived species. Concerns were also raised about any proposal to increase exploitation rates without a DEPM survey.

Mr Geen raised a new scenario which has been raised during the MSC discussions whereby assessors have outlined an aspect of the Harvest Strategy that is not consistent with the requirements of the MSC Fishery Standard. In particular it does not prescribe the need to lower the rate of harvest as the estimated size of the spawning biomass approaches the limit reference point. For example, if a series of DEPMs indicates that the spawning biomass is being reduced and is approaching the limit reference point, it would be more precautionary if the harvest strategy in that situation required a lower harvest rate in order to rebuild the stock toward the target reference point.

Mr Bryan suggested that there was a need to revisit the Harvest Strategy at a more fundamental level. Specifically, he considered that a key problem with the current Tier 2 rule is that there is not a requirement for a DEPM. Members considered that periodic stock assessments for species at Tier 2 will help and that there needs to be an end point for its application beyond which a DEPM is required. Members noted that you can use other information to assess stocks, however other information that can be used to set harvest rates in relation to target reference points does not exist. Members suggested considering a fishing mortality based strategy to help apply conservative rates and adjust the rates as the limit reference point is approached. Key points noted for Tier 2 included:

- The need for a 'use-by date' for applying a constant maximum Tier 2 harvest rate
- The desirability of a Harvest Strategy that accommodated a developing fishery.

It was noted that 5 years at Tier 2 is probably long enough and it was suggested that for short lived species (Blue Mackerel and Sardine) half of Tier 1 harvest rate was probably too high. It was suggested that when looking at Tier 2 rates, the RAG would also need to look at what was actually caught. For example, if there was limited catch in 5 years at Tier 1 this should be factored into determining suitable harvest rates to be applied when at Tier 2. Tier 2 harvest rates should also take into account other data (i.e. catch, size, age etc.) that might inform on trends in stock status.

Mr Geen highlighted the fundamental difference of having a DEPM survey but not fishing then entering Tier 2 compared to having a DEPM survey and fishing at the maximum Tier 1 levels and then entering Tier 2. However, once industry starts harvesting this will provide opportunities to develop an integrated model to assess how the stock is tracking and assess the stock/s at different risk profiles.

Industry members expressed disappointment on how Tier 2 was modeled in the MSE analysis and requested further simulations be undertaken to enable further analysis of Tier 2 exploitation rates. It was noted that the logic behind setting the harvest rate at half Tier 1 is based on the need to be precautionary. The depreciation rates in the existing Harvest Strategy were discussed and it was noted that the aim of the depreciation is to reduce risks of the stock falling below sustainable levels. Members suggested developing a proposal outlining different harvest rates in Tier 2 depending on the species and the extent of catches in the previous 5 years.



Members supported the need to try and get some agreement on how to develop and apply Tier 2, specifically an agreement on Tier 2 levels and how long these levels should be applied in the absence of new DEPMs. It was suggested that Tier 2 harvest rates for Jack Mackerel and Redbait need to be half the Tier 1 levels, which represents a precautionary approach while also providing incentive to do DEPM surveyed. Mr Brown recommended that Tier 2 levels should be set at an appropriate risk based depreciation. Mr Bryan noted in considering the impacts of climate change on fisheries that there is a need to do more frequent DEPM surveys.

Industry members questioned the need to lock in new Tier 2 rates when considering that rates around the current levels are sustainable in the report. Members noted the need for a clear step down from Tier 1 to Tier 2 which will encourage a DEPM survey.

Mr Geen outlined that he is not in a position to deal with the complexities of entering into Tier 2 noting that the report suggests a 50% cut is more conservative than necessary. It was suggested that if it could not be dealt with today then an approach could be to default to current Tier 2 levels.

Mr Brown outlined his need to fully understand the risks of long and short term exploitation. Mr Brown expressed reservations about rushing the development of Tier 2, and requested more time to allow Tier 2 levels to be considered as currently there is no new evidence that reflects any risk of applying existing Tier 2 levels for the 2015-16 season.

It was noted that the MSE was projected over a long period (50 years) and the RAG considered leaving the harvest rate unchecked for 50 years was not appropriate. Industry members requested further trajectories and scenarios needed to be considered prior to providing advice. It was suggested by Dr. Fulton that Dr Andre Punt would have the information and that running further stock trajectories may assist assessing the impacts of different catches overtime.

The RAG agreed on the need to maintain the logical framework of the Harvest Strategy and to keep the fundamental design. Industry members outlined no objection regarding applying the recommended Tier 1 levels, however they expressed reservation that the RAG is considering harvest control rules for a developed fishery, rather than one that is attempting to develop. Industry members recommended maintaining current Tier 2 rates at 7.5% as there are no stock concerns at this harvest level. Industry members stated that the recommended changes to the Harvest Strategy (Tier 1) should be conditional for 12 months to allow the RAG to revisit the Harvest Strategy.

Dr Lyle acknowledged the challenges of getting agreement on a revised Harvest Strategy in a one day meeting. In considering that the risk to stock by applying the current 7.5% rate for one year, Dr Lyle supported applying the current Tier 2 rates but would support adopting half of Tier 1 in the long term.

Following further considerations the following RAG members' positions regarding Tier 2 rates were:

- A/Prof Tim Ward - 50% of Tier 1
- Dr Jeremy Lyle - maintain current Harvest Strategy Tier 2 rates for 12 mth
- Industry members - maintain current Harvest Strategy Tier 2 rates for 12 mth
- Mr Bryan and Mr Pike - 50% of Tier 1 with caveat.

Mr Bryan and Mr Pike's caveat was that when considering / recommending harvest rates this was conditional on also considering localised depletion, lack of transparency of fishing operations, lack of ongoing commitment to DEPM stock assessments (particularly at Tier 2), animal welfare of seals and dolphins, and impacts of populations of seals and dolphins, and



impacts on recreational fisheries to the satisfaction of stakeholders including conservation groups and recreational fishing groups. If these issues are not addressed Mr Pike and Mr Bryan considered that RBCs should be set at Tier 3 levels.

Members questioned the need to consider ramping options whereby harvest rates are progressively reduced over time in the absence of robust assessments (including DEPM). Members agreed to allow for 12 month to assess ramping options (age vs risk) noting that at this stage the recommended updated harvest rate is the average rate over 5 years for Tier 1. Members agreed to suspend further discussion about ramping for this year, and to revisit the matter in 12 months before the RBC setting process in 2016.

Members supported the suggestion to look at reducing harvest rates when the limit reference point is approached and agreed for Mr Geen to lead the development of a proposal for RAG consideration.

The RAG agreed that the following species specific harvest rates be considered by the AFMA Commission for the 2015/16 fishing season. Noting that there was no consensus on whether Tier 2 should be half Tier 1 or the current Tier 2 exploitation rate (7.5%).

Table 1. Proposed exploitation rates for species in the Small Pelagic Fishery

Species	Tier 1	Tier 2
Redbait	10%	5% or 7.5%
Jack mackerel	12%	6% or 7.5%
Blue mackerel	(15%-23%)	(7.5%-11.5%) or 7.5%
Sardine	(20%-25%)	(10%-12.5%) or 7.5%

NB: For 12 months only (revisited before the RBC setting for the 2016/17 season).

Mr Geen advised the RAG that a stakeholder meeting was held to discuss the MSC process and they are considering holding another meeting to be held back to back with the AFMA SPF stakeholder meeting on 24 March in Hobart.

Action - Dr Fulton agreed to contact Dr Andre Punt to determine availability and timelines to provide RAG members with graphical stock trajectory model outputs of the base scenarios of the MSE.

Action - Mr Geen to lead the development of a proposal on options to reduce harvest rates when the limit reference point is approached for RAG consideration.

Mr Anthony Moore (Scientific Member) left the meeting at 2:10pm.

5. Report of the Expert Panel

The RAG discussed the final report of the expert panel on the declared fishing activity in the SPF. A/Prof Ward noted that the report is a useful source document which should be utilized on further deliberations relating to the fishery.

Mr Pike tabled a document which included what he considered to be the key items from the report which would be of interest to the RAG. Mr Pike outlined issues requiring discussion, including stock structure and localised depletion. The RAG noted that there is currently little evidence of stock structure and that sardine egg samples have been collected in Bass Strait to assess stock structure. Members agreed that the report highlights research issues that can be addressed and these should be considered when the RAG revisits research priorities.



Mr Bryan noted that the report highlights gaps in knowledge which need to be taken onboard in the next iteration of the Harvest Strategy, including the role of area closures, and the need to make fishing operations more transparent. Mr Bryan questioned when does the size of the vessel make the report irrelevant (where the cut off is regarding the size of the vessel in terms of impacts on the environment). The AFMA member noted that the report was in response to the declared fishing activity and no response to the report has been released by the government (i.e. the Department of Environment). The RAG noted one of the key concerns regarding the size of the vessel is that it relates to how long it can stay in the one location. For example, large vessels can remain at-sea for longer periods. Dr Lyle noted that some issues raised in the report, including localized depletion and interactions with protected species are not related to the size of vessels and will need to be addressed by management and industry as the fishery develops.

Mr Pike reported that the recreational fishing sector had reacted with derision to the Fisheries' Minister's announcement on Christmas Eve last (when no media would pick up his announcement), that the Federal Government was banning all super trawlers more than 130 metres long. Mr Pike reported it was then that the recreational fishing sector knew that another super trawler would be coming to Australia but that the next super trawler, or trawlers, would be less than 130 metres long but would still be large factory/freezer trawler vessel/s. Mr Pike indicated that the concern of the recreational fishing sector relates to the capacity of fishing vessels and not the size of vessels.

Mr Bryan requested the documentation provided by Mr Pike to be included as an attachment to the meeting record. Mr Pike's extraction from the report is provided as Attachment 3. In response, Mr Brown requested the Executive Summary of the report to be also included as an attachment to the meeting record. The Executive Summary is provided as Attachment 4.

The RAG discussed using the Expert Panel report to consider possible area closures and help guide future work to understand the foraging ranges of important predator species. Members agreed for Dr Ward to develop a research proposal to define the ranges of central place foragers looking at the whole of southern Australia. It was noted that this work would help address the issue regarding possible impacts of harvesting the resource on central place foragers and help with decisions regarding future fishing activities and possible closures to reduce impacts on the environment. Members suggested A/Prof Ward contact Dr Fulton to assess her capacity to assist with any future work in this area given Dr Fulton's expertise in ecosystem modeling and recent work in the fishery.

Action - A/Prof Ward develop a proposal for consideration – To identify the need for synthesizing knowledge of distribution of central place foraging species and their foraging ranges to provide a basis for considering spatial management to deal with trophic interactions (or identify if the information has already been collated)

Action - A/Prof Ward to contact Dr Fulton to assess her capacity to assist with any future work in this area.

6. Update on process for providing advice on the Recommended Biological Catches for the 2015-16 season

Mr Shanks provided an update on the process of setting TACs for the next fishing season. The next RAG meeting will be scheduled in March to consider the results of the Jack Mackerel survey and biomass estimates for the species. The RAG will be required to provide advice on RBCs to SEMAC. As per the Harvest Strategy, state catches will be deducted from the RBC to establish the TACs for SEMAC to consider. SEMAC will then provide advice on the recommended TACs to the AFMA Commission.

In response to the Jack Mackerel survey (the results of which are expected in early March) industry members raised concerns in regard to policy or direction on how to address stock management issues, such as variations in spawning (spatial and temporal) within a stock and



an understanding of the proportion of fish outside the spawning areas surveyed. Other issues also noted included a limited understanding of the extent fish (sardines) move up and down the coast and that SPF species spawn in different areas at different times. The RAG acknowledged these are all important questions that need to be considered in future surveys. Industry members agreed to work with researchers on future surveys to help improve the survey design (to locate and capture spawning events).

The RAG discussed the attendance and roles of the SPF stakeholder meeting held in late 2014. Mr Bryan noted that the short notice prior to the meeting made it difficult for some stakeholders to attend. Mr Bryan stated that the format was not inclusive and as a result regarded the meeting as a disappointing consultative process. The RAG noted that the aim of the stakeholder meeting was to provide information on the fishery and meeting presentations were recorded and uploaded onto AFMA's website for stakeholders unable to attend. The RAG noted that a second forum is scheduled for late March 2015 to update stakeholders on the new research in the fishery.

The RAG noted the perceived difficulties associated with understanding the technicalities of stock assessments for particular stakeholders and that there is a need to develop an agreed process to take stakeholder views onboard.

7. Other Business

Update on Action Items

Mr Shanks updated the RAG on the status of the previous meetings action items, key points for particular action items are noted below.

Item 1 - Members requested that for future meetings WiFi be made available to members.

Item 3 - Mr Pike advised areas in the fishery are major game fishing areas and his previous statement still stands i.e. that fishing areas change all the time and that specific information is not forthcoming from recreational stakeholders as explained in the previous meeting record. The RAG agreed to remove this as an action item.

Item 5 - The RAG noted that this item (SPFRAG Chair to write to the Government of Victoria inviting observer representation at SPFRAG meetings) still needs to be progressed. It was requested for AFMA to reconsider who is the most appropriate state member noting that State invited participants are required to cover their costs to attend and participate in RAG meetings.

Item 6 - The RAG noted the advice from AFMA regarding RAG members not disclosing conflicts of interest at meetings. Members noted that the RAG is an advisory body and that although its internal processes and discussions can be described as a decision making process the RAG's role is to provide advice.

Item 7 - Mr Pike advised that the links were sent out after previous meetings. Members requested that the links to be recirculated.

Item 8 - The RAG noted that the proceedings from the Small Pelagics Technical Workshop will be circulated soon.

Action - Members requested that for future meetings WiFi be made available to members.

Action - Mr Pike to recirculate links to RAG members regarding the IGFA papers on small pelagics



Previous meeting record

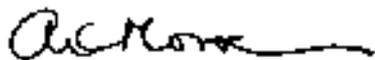
Mr Bryan reiterated concerns regarding the record of the previous meeting and the events taken to finalise the minutes. In particular, Mr Bryan stated that the last face-to-face meeting misreported his views and position on the move-on rules which resulted in a long e-mail discussion to try and amend the records of the meeting and out of session discussion. Mr Bryan stated that he did not endorse the move-on package and that he provided subsequent text to the meeting to attach as an addendum and outlined that this should have come through in the final minutes. Mr Bryan noted that gaps in the science remain regarding the move-on rules and suggested that these rules will not satisfy stakeholders. The RAG noted that the majority of members including the scientific members considered that the move-on rules developed at the last meeting were a useful management measure to progress concerns regarding localised depletion. It was agreed that the key points of the meeting should be expressed in the meeting record and that verbatim reporting is not practical.

At this stage Dr Lyle had to leave the meeting and, as there was only one scientific member remaining, a quorum was no longer present.

The Chair closed the meeting and thanked members for their participation.

Meeting ended at 3.50pm

Signed (Chairperson):



Date:

18th March 2015

List of Attachments

- 1) SPFRAG 20 Agenda
- 2) SPFRAG 20 Record of Conflicts of Interest
- 3) Mr Pike extraction of issues from the Expert Panel's report
- 4) Executive Summary of the Expert Panel's report





Australian Government

Australian Fisheries Management Authority

Draft Annotated Agenda for Small Pelagic Resource Assessment Group (SPFRAG) meeting

**Thursday 12 February 2015 at 08:00am (Eastern Standard Time)
AFMA Canberra Office, Level 6, 73 Northbourne Avenue, Canberra, ACT**

1. Apologies

2. Adoption of Agenda

3. Conflict of interest procedures

4. The review of the harvest strategy

The RAG to consider and provide advice on the harvest strategy review report from CSIRO undertaken by Dr Tony Smith. Should the RAG consider it appropriate advice could be provided in relation to modifying the current exploitation rates in the harvest strategy based on the findings of the CSIRO report. Any advice provided should detail any recommended modifications to the text of the harvest strategy for the fishery. The potential advice on the modifications to the harvest strategy will be sent to SEMAC and advice from both SEMAC and the SPFRAG will go to the AFMA Commission.

5. Report of the Expert Panel

The Report of the Expert Panel on a Declared Commercial Fishing Activity: Final (Small Pelagic Fishery) Declaration was released on [19 November 2014](#). The RAG has requested that the Expert Panel report be included in the agenda for discussion. A person from the Department of Environment will be in attendance at the meeting to answer any questions SPFRAG members may have regarding the Expert Panel report.

RAG members should note that the report is advice or information prepared by an independent group (Expert Panel) that was commissioned by the previous government .

6. Update on process for providing advice on the Recommended Biological Catches for the 2015-16 season

Should the RAG provide advice to SEMAC and the AFMA Commission on exploitation rates for SPF quota species in the Harvest Strategy this advice will go to the AFMA Commission for approval. Should advice go to the AFMA Commission the intent is for any modifications to the Harvest Strategy to be approved quickly so the RAG is able to use any new exploitation rates to provide advice on the RBCs in the fishery in late March. Potentially after the second stakeholder forum so any advice from the forum can be considered when providing advice on the RBCs.



7. Update on second stakeholder forum

The second SPF conservation and recreational fisher forum will be held in Hobart on 24 March. The reason for delaying the forum until late March is to coincide with the release of the results from the jack mackerel and Australian sardine surveys on the east coast undertaken in 2014. The forum will provide the opportunity for conservation and recreational fishing stakeholders to provide input into recent research and management in the fishery, including the setting of the TACs for the 2015-16 season.



Register of Declared Conflicts of Interest

Participant & Membership	Interest declared
Sandy Morison Acting Chair	No direct or indirect financial interest in the SPF. Contracted by a range of organisations for research and advisory purposes, including work for MSC certification (SCS Global). Chair of the Slope Resource Assessment Group and a scientific member of both the Southern and Eastern Scalefish and Shark Fishery Resource Assessment Group (SESSFRAG) and South East Management Advisory Committee (SEMAC).
Tim Ward Scientific	Leader of the finfish fisheries group in SARDI. 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.
Jeremy Lyle Scientific	Senior Research Scientist, Institute for Marine and Antarctic Studies. Has led several research projects relevant to the SPF and is involved in the assessment of Tasmania's scalefish fishery. No pecuniary interest.
Andy Moore Scientific	Employed by ABARES which has done, and may do in future, research under contract on small pelagic fish species. No pecuniary interest
Graham Pike Recreational	No direct or indirect financial interest in the SPF. Concerned with the conservation and health of the natural resources on which recreational fishers and their recreational and charter fishing industries depend, particularly in the context of the RAG's advice and considerations in relation to the management of the SPF and of related marine ecosystems.
Jon Bryan Environment	No direct or indirect pecuniary interest. Member of TARFish which has an interest in the super-trawler debate. Involved in the 'Stop the Trawler' campaign and expects to be part of this until issues surrounding localised depletion, ongoing SPF stock assessments and other related issues are resolved. Member of the Tasmanian Recreational Fisheries Advisory Committee and all other fisheries advisory committees in Tasmania. Does part time work for the Tasmanian Conservation Trust.
Denis Brown Industry	Holder of SPF SFRs for Blue Mackerel, and Australian Sardine in the Eastern Zone. Director of corporate entities with holdings of SPF SFRs for Redbait, Blue Mackerel and Jack Mackerel in the Eastern and Western Zones, and Australian Sardine in the Eastern Zone; and Pelagic Fish Processors plant at Eden. Holds concessions in the NSW state purse seine fishery and ocean haul fishery. Peripheral involvement with research on small pelagic fisheries. Member of NSW Research Advisory Working Group and the NSW Ocean Haul Management Advisory Committee. Peripheral interest of financial benefits of activities in the SPF through quota holdings.
Gerry Geen Industry	Director of Seafish Tasmania Pty Ltd that holds SPF SFRs for Jack Mackerel, Redbait and Blue Mackerel in the Eastern and Western Zones. Holds four Tasmanian purse-seine Jack Mackerel Permits; and four Zone A purse seine permits. Director of Seafish Tasmania Pelagic Pty Ltd. Holds a South East Trawl SFR. Director of the Commonwealth Fisheries Association. Executive Committee member of the Small Pelagic Fishing Industry Association. Industry member of SEMAC.
Terry Romaro Industry	Director of a corporate entity with holdings of SPF SFRs for Redbait, Blue Mackerel and Jack Mackerel in the Eastern and Western Zone. Permit holder in the Western Australian Purse Seine Pilchard Fishery and the Coral Sea Trawl Fishery. Member of TTMAC and participant in SBTMAC.
Steve Shanks AFMA	Works for AFMA, no financial interest
Matthew Piasente Executive Officer	Works for AFMA, no financial interest
Lisa Stevenson Assistant Executive Officer	Works for AFMA, no financial interest



**SOME IMPLICATIONS FOR THE SMALL PELAGIC FISHERY
RESOURCE ASSESSMENT GROUP OF THE EXPERT PANEL REPORT
ON LARGE SCALE MID-WATER TRAWLING IN THE SPF**

The panel considered that localised depletion caused by the DCFA (large scale mid-water trawling in the SPF) has the potential to have adverse impacts on CPF species and that under the current monitoring regime it is unlikely that such impacts would be detected. (p. 8)

It is inevitable that the DCFA would have direct interactions with protected species of pinnipeds, cetaceans and seabirds and some interactions will result in mortalities regardless of the adoption of the best available mitigation and management measures; however, there remains uncertainty about the extent of those interactions. (p. 8)

The form of direct interactions with the DCFA, and the species most likely to be affected by both direct interactions and localised depletion, have been identified and the panel has provided specific advice on measures that could be taken to avoid, reduce and mitigate these impacts. However, even with these measures in place, the panel considers that direct interactions with protected species and localised depletion, as defined by the panel, will occur under the DCFA. The panel's assessment has confirmed that there are considerable uncertainties relating to the extent of those impacts and the level of impact that would create adverse environmental outcomes. (p.11)

...it is important that the assessment of the DCFA be considered in the context of the role of SPF target species in the southern Australian marine ecosystem, the management regime and of the cumulative impacts of fishing in the area of the SPF on protected species affected by the DCFA. (p.11)

More recently, Ovenden (unpublished) suggested that overlapping but genetically distinct populations of jack mackerel and sardines probably occur. Knowledge about genetically distinct spawner groups is essential for the sustainable management of the SPF fishery. However, the panel noted that there is some inertia to using genetics as a tool to identify stocks (Dichmont *et al.* 2012). (p. 214)

Zoning - the potential for separate stocks in the Western Zone related largely to blue mackerel (Bulman *et al.* 2008).

There is currently no additional information that might better inform a review of stock structure and potential sub-structuring of stocks, therefore, it is uncertain how to detect, manage or mitigate for adverse impacts of localised depletion within genetically distinct populations. (p. 214)

Localised Depletion

Localised depletion remains undefined in the SPF Harvest Strategy. The need for a definition and for the management objectives around localised depletion to be clarified in the Harvest Strategy were identified by Knuckey *et al.* (2008). Small Pelagic Fishery Resource Assessment Group (SPFRAG) has developed a draft working definition (see Section 2.2.4).(p. 215)

- *The provisions of the Harvest Strategy do not provide a mechanism to detect or manage the risk of localised depletion having adverse environmental impacts on CPF species. Rather, these provisions outline responses to localised depletion once it has been detected.*
- *There are no measures in place in the SPF or proposed for large-scale mid-water trawl operations, that would detect the spatial and temporal extent of localised depletion or*



adverse environmental effects that arise from it.

- *There are no spatial and temporal closures in place, or proposed, for large-scale mid-water trawl operations that address potential trophic impacts to CPF species in the SPF.*
- *The measures proposed to apply to the DCFA did not include any that would be effective in minimising the risk of adverse environmental impacts on CPF species that might arise from localised depletion caused by the DCFA. (p. 216)*

Spatial allocation of TAC

... unless the management units are relatively small in scale, spatial allocation may not prevent most of the allocated catch within a management unit being taken in a small geographic space over a short time period, and as a result this may be a less effective management tool to mitigate the potential impacts of localised depletion on CPF predators. (p. 216)

Move-on Rules

The panel agrees that, should a move-on rule be adopted for the purposes of spreading catch (as distinct from avoiding interactions with protected species), then there would need to be greater transparency about the spatial distribution of catch and effort.

In the panel's view there is less information available to inform the setting of a meaningful level of catch over space and time required by a move-on rule than is the case for broader, spatial/temporal closures. (p. 217)

Spatial Closures

The panel noted that the use of spatial/temporal closures has been discussed by SPFRAG (2014a) and that there was some support in the group for such an approach if sufficient information is available to establish meaningful closures. (p. 217)

Globally, spatial closures are the most common form of precautionary management of the potential adverse impacts of localised depletion on CPF predators. Examples of these are detailed in section 6.7.2. Critically, for none of these examples has the effectiveness of spatial closures in preventing adverse environmental impacts to CPF predators been clearly demonstrated. (p. 217)

A key challenge for the introduction of spatial management into the SPF for the purposes of managing the potential adverse impacts of localised depletion on CPF predators, would be to determine the scale of spatial closures that would be appropriately precautionary for particular species at particular locations and at particular times. (p. 217)

However, elsewhere throughout the SPF, CPF populations are generally poorly monitored and there is limited information on species' diet, abundance and at-sea distributions. There may be challenges in extrapolating the at-sea distribution models developed for those regions where there are sufficient data, to those where there are not (Patterson *et al.* unpublished). However, precautionary spatial closures could be implemented based on the best available data until more relevant data can be obtained. (p. 217)

The panel concluded that should a significant increase in the level of fishing effort in the SPF be envisaged, through the operation of a DCFA, consideration should be given to finer scale management of catch in order to minimise risks associated with adverse environmental impacts of localised depletion on CPF species. As discussed in Section 6.6.5, the identification of smaller-scale management units for which TACs take into account the consumption needs of CPF species may be an option, however, unless these are quite small in scale they may not prevent concentration of the catch in space and time in areas of key ecological importance. (p. 217)

In the longer term, the adoption of finer scale management of stock, i.e. subdivision of the current Eastern and/or Western Zones by species, may also have a role to play in minimising



the risk of localised depletion occurring. The panel noted that there is currently no basis on which to make an informed decision on such subdivision. Finer scale management that potentially better reflects population structure will provide additional protection for target stocks and of the role of those stocks in the overall ecosystem. In the panel's view, it will not necessarily preclude adverse environmental impacts on protected species of CPF species. This is because such an approach may not provide the level of protection required by these species, either spatially or temporally. (p. 218)

Panel advice: actions that could be taken to manage the risks to CPF species arising from localised depletion caused by the DCFA

- *There are three main precautionary management approaches that could be implemented to mitigate the potential adverse impacts of localised depletion caused by fishing on CPF predators: spatial allocation of catch, move-on rules, and spatial closures.*
- *Spatial closures are the most common form of precautionary management used to mitigate the potential adverse impacts of localised depletion on CPF predators; however, the effectiveness of spatial closures for this purpose has not been clearly demonstrated. Their effectiveness depends heavily on the ability to determine the scale of spatial closures that would be appropriately precautionary for particular species at particular locations and at particular times.*
- *The panel considered that the risks to protected species of CPFs from localised depletion caused by the DCFA should be managed through the adoption of a proactive approach that separates the fishing activity from the key foraging areas and times used by CPF species rather than through move-on rules. This does not discount the potential value of move-on rules in the context of direct interactions with protected species.*
- *It is likely that these spatial closures will need to be modified adaptively to reflect additional information as it becomes available, either through fishing or targeted research.*
- *Global studies on CPF predators demonstrate that they are responsive to changes in the availability of prey within their foraging range, but they do not distinguish between changes caused by localised and overall stock depletion. Careful consideration of how management of the entire stock, and especially the reduction in available biomass through fishing, impacts on CPF predators at a local scale and at critical times, is required. (p. 218)*

Monitoring and Research

The panel found no conclusive evidence of historical localised depletion that caused adverse environmental impacts in the SPF. The high level of dependence by some predators, particularly CPF species, highlights the need to manage for the risk of such impacts. It also points to the potential to use populations of these species to monitor the health of the SPF resources. (p. 218)

Thus many of the uncertainties will remain and management must, therefore, be precautionary and adaptive. (p. 218)

. In order to minimise the risk that fishing is concentrated on sub-populations of redbait, blue mackerel and jack mackerel, further investigation into the population structure of these species may be warranted. In particular, given that more fishing is likely to occur in the Western Zone of the SPF under a DCFA than under the current fleet configuration, further investigation of the possibility of separate stocks of blue mackerel in the Western Zone may be warranted.

Ovenden (unpublished) identified several projects that could improve the understanding of stock structure in the SPF species and hence allow better and more appropriate spatial management for all stocks. More robust spatial management of the stocks should reduce the likelihood and risks associated with localised depletion of those species. The projects



identified ranged between a very cost-effective re-analysis of existing jack mackerel and sardine data, if available, using the latest statistical methods, to more targeted studies, at increasing costs, on all SPF species, including blue mackerel, yellowtail scad *Trachurus novaezelandiae* and redbait for which there is very poor information. Some of the latter studies could easily be added into the fishery-independent surveys currently being conducted or planned in the SPF. Ovenden (unpublished) also advocated that a combination of genetics and single-generation markers such as otolith chemistry, parasite, abundance, tagging and tracking, is needed to define stocks and better understand 'crinkles in connectivity between populations' but the panel noted that the SPF has limited resources to support such a range of research programs. The panel supports further well-designed and targeted research in this area to clarify the extent of sub-structuring within the Eastern and Western Zones specifically, and the SPF more broadly. (p. 219)

Panel advice: research and monitoring to reduce uncertainty associated with the risk of localised depletion

- *Well-designed and targeted research to clarify the extent of sub-structuring of SPF target species within the Eastern and Western Zones specifically, and the SPF more broadly.*
- *Dietary studies to determine which key CPF predators or other commercially or ecologically important predators are most reliant on SPF species.*
- *Studies to better understand the critical foraging areas, habitats and times for key CPF species.*
- *Examination of the biological response of CPF predators to changes in prey availability.*
- *Ongoing monitoring of the length frequency of catch taken by any DCFA at a statistically appropriate sampling intensity.*
- *Development and implementation of potential ecological performance indicators for the fishery. (p. 220)*



Report of the Expert Panel on a Declared Commercial Fishing Activity:

Final (Small Pelagic Fishery) Declaration 2012, October 2014

Executive summary

Background

The *Final (Small Pelagic Fishery) Declaration 2012* (the Declaration), prohibited large-scale mid-water trawl operations in the Small Pelagic Fishery (SPF) for up to two years while an expert panel (the panel) undertook an assessment of the potential for the Declared Commercial Fishing Activity (DCFA) to cause adverse environmental impacts.

The panel has assessed the direct impacts of the DCFA on species protected under the *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth) (EPBC Act), particularly seals and dolphins, and the adverse impacts of any localised depletion of SPF target species, caused by the DCFA, on the Commonwealth marine environment, including on the target species' predators protected under the EPBC Act. Based on that assessment, advice has been provided on actions that could be taken to avoid, reduce and mitigate any adverse environmental impacts, and scientific research and monitoring that could reduce uncertainties about those impacts. A synthesis of the panel's assessment and advice is presented in Chapter 7 and an overview of the key outcomes is provided below.

The DCFA

The DCFA is a commercial fishing activity which:

- a. is in the area of the Small Pelagic Fishery
- b. uses the mid-water trawl method
- c. uses a vessel which is greater than 130 metres (m) in length, has an on-board fish processing facility and has storage capacity for fish or fish products in excess of 2000 tonnes.

A primary consideration in the panel's assessment was the likely pattern of fishing of the DCFA. The species targeted, the area and times of year fished and the intensity of that fishing will all have a large bearing on the nature and extent of interactions with protected species and those species that might be adversely affected by localised depletion arising from the DCFA.

A key characteristic of the DCFA is the ability to stay at sea for an extended period and, therefore, the potential to fish more extensively, spatially and temporally, in the SPF area than previous mid-water trawl operations in the fishery. The fishing plan of the DCFA in terms of species composition, the spatial/temporal pattern of fishing and the intensity of fishing, will be dictated by prevailing environmental and economic conditions. It was not possible for the panel to predict this fishing plan in detail but the panel considered that the DCFA would most likely focus its fishing effort on the shelf and slope areas of the SPF where the target species are predominantly distributed. The panel considered it likely that the DCFA would fish these areas more extensively and might fish in slightly deeper water off the shelf than previous mid-water trawl operations in the SPF.

As a result, the panel considered that historical data on direct interactions with protected species or the absence of data that showed any adverse impacts on these species from localised depletion by historical fishing, did not necessarily inform the likely nature and extent of potential direct or indirect impacts of the DCFA on protected species or the Commonwealth marine environment.



Assessment of direct interactions with protected species

There are 241 species protected under the EPBC Act that occur in the SPF area including pinnipeds (seals), cetaceans, dugong (possible but unlikely), seabirds, turtles, seasnakes, sharks and rays, syngnathids and other teleost fishes. The panel focussed its assessment on species considered at increased risk of interactions from mid-water trawling which included three species of pinnipeds (Australian fur seal *Arctocephalus pusillus doriferus*, New Zealand fur seal *A. forsteri* and Australian sea lion *Neophoca cinerea*), 21 cetacean species, and seabirds as a group. Some common themes with respect to the likely nature and extent of direct interactions by the DCFA with these species are apparent across the taxa:

- It is inevitable that the DCFA would have direct interactions with protected species of pinnipeds, cetaceans and seabirds and some interactions will result in mortalities regardless of the adoption of the best available mitigation and management measures; however, there remains uncertainty about the extent of those interactions.
- It is possible to identify the likely nature of the interactions and the species that are more likely to interact or are more vulnerable to interactions.
- There remains considerable uncertainty about the level of direct interactions that would result in an adverse environmental impact on pinnipeds, cetaceans and seabirds, but there are opportunities for research and monitoring that could reduce the uncertainties associated with the DCFA's interaction with protected species.
- Some progress has been made, domestically and internationally, on measures to manage the risks of direct interactions between fishing operations and seals and dolphins, but mitigation measures for marine mammals need further development and testing before they could be applied with confidence.
- Substantial progress has been made on measures to manage the risks associated with direct interactions of fishing operations with seabirds.
- Management and mitigation measures, individually and as a package, require testing and refinement to ensure their operation is optimised in the context of the fishery, the protected species, the vessel, its gear and the fishing plan.
- One hundred per cent observer coverage of all fishing operations and bycatch mitigation devices is paramount.

Assessment and advice on localised depletion

The panel interpreted localised depletion as a spatial and temporal reduction in the abundance of a targeted fish species that results from fishing. The central issue for the panel's assessment was whether the fishing activity of the DCFA could be concentrated enough, both spatially and temporally, to cause a localised depletion of SPF target species sufficient to cause adverse environmental impacts to the Commonwealth marine environment including the target species' predators. The panel assessed the potential impact of localised depletion on the target species and on protected species of central place foragers (CPF) that prey on SPF target species. The key points arising from the assessment are:

- The target species of the SPF are susceptible to capture but also have characteristics that are likely to reduce the temporal and spatial extent of localised depletion.
- The available evidence does not suggest that past extensive fishing activity for jack mackerel *Trachurus declivis* in the area of the SPF has significantly affected reproductive capacity or caused impacts on genetic diversity in that stock; nor does available evidence suggest an impact on age or size structure of the other SPF target species.
- The dependency on near-colony prey resources at certain locations and times increases the vulnerability of protected species of CPFs to localised depletion of SPF target species, and the nature and extent of the impact will depend on the spatial and temporal scale of the depletion.



- Very few studies anywhere in the world have linked reduced foraging and reproductive performance of CPFs to the impacts of fishing, and even fewer to localised depletion. Active management of the potential impacts of localised depletion on CPF species is rare.
- The available data suggest that the CPF species at greatest risk from localised depletion in the SPF are the Australian fur seal, New Zealand fur seal, Australasian gannet *Morus serrator*, short-tailed shearwater *Ardenna tenuirostris*, little penguin *Eudyptula minor*, crested tern *Thalasseus bergii* and shy albatross *Thalassarche cauta* and that key foraging areas for these species within the SPF are Bass Strait, Tasmania and South Australia.
- There remains uncertainty about the importance of SPF target species to other CPF predators, because diet information is poor or unavailable.
- The ecosystem modelling studies available indicate that the SPF target species are not as influential in the southern Australian ecosystem compared to small pelagic species in other more productive global upwelling systems that support much larger biomasses of similar species.

The panel concluded that in the context of the management regime in place in the SPF, any localised depletion of SPF target species that might arise from the DCFA was unlikely to affect the overall status of the target stocks in the SPF. However, the panel considered that this did not preclude the possibility of localised adverse environmental impacts on some protected species, particularly CPFs.

The panel considered that localised depletion caused by the DCFA has the potential to have adverse impacts on CPF species and that under the current monitoring regime it is unlikely that such impacts would be detected. It is possible to provide an indication of the CPF species most at risk from localised depletion but dietary data are lacking for many other CPF species. It is not possible, based on currently available data, to determine the degree of localised depletion that would result in adverse environmental impacts to protected CPFs.

Key advice

The panel has identified many possible management and operational responses and opportunities for research and monitoring to address the risks associated with the impacts of the DCFA on the Commonwealth marine environment, particularly for protected species of seals and dolphins. Of those, the panel considers that the following actions and associated research are central to addressing those risks.

- Spatial closures
 - Mitigate bycatch mortality of the threatened Australian sea lion in the SPF area by implementing spatial closures that encompass foraging areas around all colonies, including those in waters off Western Australia.
 - Mitigate bycatch mortality of fur seals by implementing spatial closures especially adjacent to breeding colonies.
 - Mitigate against the potential adverse impacts of localised depletion on protected CPF species by implementing closures that preclude the DCFA from critical habitats at important times.
- Excluder devices
 - Develop and optimise an excluder device or devices for seal and dolphin bycatch mitigation.
 - Once the excluder device is operationalised, use underwater video to monitor the behaviour of marine mammals within the trawl net and in the vicinity of the excluder device to assess its efficacy and quantify levels of cryptic mortality.
- Trigger limits



- Reduce the daily and per-shot trigger limits for fur seals under which the DCFA was proposed to operate.
- Introduce a bycatch rate trigger limit for the fishery or fishing area, or a total mortality trigger for a fishing season and/or fishing areas, for fur seal and dolphin species.
- Ensure that move-on rules associated with trigger limits are evidence-based or implemented on a precautionary basis where necessary.
- Ensure that move-on rules associated with trigger limits can be implemented effectively by requiring 100 per cent observer coverage of all fishing operations and ensuring that underwater interactions and mortalities are detected quickly enough to allow move-on rules to be effected in a timely manner.
- Research
 - Identify critical habitats for protected species including key foraging areas for central placed foragers (seabirds and pinnipeds) and important habitats used by cetaceans that are at increased risk of interaction with the DCFA.
 - Determine the cumulative fishery-related mortality of protected species in the SPF area that interact with the DCFA, to ensure that this does not compromise the sustainability of their populations.
 - Confirm the integrity of the current management of SPF target stocks by clarifying the extent of sub-structuring of SPF target species in the Eastern and Western zones.

Concluding comments

The panel's assessment is based on a specific DCFA fishing scenario and some associated assumptions. These had a significant bearing on the outcome of its assessment and any changes to those would necessarily affect the validity of the panel's assessment and advice.

The panel has been able to identify the likely nature of the interactions of the DCFA with protected species in the SPF. The form of direct interactions, and the species most likely to be affected by both direct interactions and localised depletion, have been identified and the panel has provided specific advice on measures that could be taken to avoid, reduce and mitigate these impacts. However, even with these measures in place, the panel considers that direct interactions with protected species and localised depletion, as defined by the panel, will occur under the DCFA. The panel's assessment has confirmed that there are considerable uncertainties relating to the extent of those impacts and the level of impact that would create adverse environmental outcomes.

As in other fisheries facing similar uncertainties, a precautionary and adaptive, risk-based approach to management of the potential impacts of the DCFA is required. Further, it is important that the assessment of the DCFA be considered in the context of the role of SPF target species in the southern Australian marine ecosystem, the management regime and of the cumulative impacts of fishing in the area of the SPF on protected species affected by the DCFA.

