



Australian Government

Australian Fisheries Management Authority

Northern Prawn Fishery Resource Assessment Group (NPRAG)

Minutes 10 February 2014
Riverview Hotel, Brisbane

Attendees

Members

Ian Knuckey, Chair
Fiona Hill, Australian Fisheries Management Authority (AFMA)
Rik Buckworth, Commonwealth Scientific and Industrial Research Organisation (CSIRO)
Malcolm Haddon, CSIRO
Ian Boot, Industry
Michael O'Brien, Industry
Norm Hall, Murdoch University
Rodrigo Bustamante, CSIRO
Ron Earle, Industry
Brodie Macdonald, Executive Officer

Observers

Robert Curtotti, Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES)
Annie Jarrett, Northern Prawn Fishery Industry (NPFI)
Matt Barwick, NPFI
Trevor Hutton, CSIRO
Roy Deng, CSIRO
Nick Ellis, CSIRO
Diarmid Mather, AFMA

Apology

Tom Kompas, Australian National University (ANU)

Agenda Item 1 - Preliminaries

1.1 Welcome and apologies

The Northern Prawn Fishery Resource Assessment Group (NPRAG) Chair, Ian Knuckey, opened the meeting at 9:05 am, welcoming all members and observers. The Chair advised that the main purpose of the meeting was to discuss the development of the Maximum Economic Yield (MEY) trigger for white banana prawns.

An apology was received from Tom Kompas.

1.2 Declarations of interest

The chairman asked members to announce any declarations of interests in regards to the agenda items. Members declared their interests and these are outlined in Table 1.

Table 1. NPRAG declarations of interest

Member	Declared Interest
Ian Knuckey	Independent Chair of the NPRAG and scientific member on the NPF management advisory committee (NORMAC). No pecuniary interest.
Fiona Hill	AFMA employee and NPF manager. No pecuniary interest.
Rik Buckworth	CSIRO employee. Participates in projects related to the NPF that currently receive funding and will seek to receive funding in the future. Rik Buckworth excused himself while the remaining RAG members discussed his participation in the meeting and it was agreed that CSIRO staff involvement in the discussion was necessary but there was a need to consider the conflict when discussing research items.
Rodrigo Bustamante	CSIRO employee. Not currently involved in any NPF research projects. The RAG agreed that CSIRO staff involvement in the discussion was necessary but there was a need to consider the conflict when discussing research items.
Malcolm Haddon	CSIRO employee. Not involved in any NPF research projects. .
Ian Boot	Managing Director of Austfish, a company which operates 4 NPF vessels. The RAG agreed that all industry have lots to contribute to discussions and there was no need to exclude them from discussions.
Ron Earle	Owner of 3 NPF vessels. The RAG agreed that all industry have lots to contribute to discussions and there was no need to exclude them from discussions.
Michael O'Brien	Industry representative. Employee of a company that owns statutory fishing rights (SFRs) in the NPF. The RAG agreed that all industry have lots to contribute to discussions and there was no need to exclude them from discussions.
Norm Hall	Murdoch University and Western Australia Department of Fisheries employee. No pecuniary interest.
Brodie Macdonald	AFMA employee and NPRAG EO. No pecuniary interest.
Observers	
Robert Curtotti	ABARES employee who undertakes government funded research on the NPF. The RAG agreed that ABARES undertake valuable work on the NPF and that there are no specific conflicts in terms of the agenda items.
Annie Jarrett	EO of NORMAC and CEO for NPF Industry Pty Ltd (NPF). No pecuniary interest in relation to holding NPF SFRs. It was agreed that NPF makes an important contribution to meetings and an important role in research.
Matt Barwick	Contractor to NPF. No pecuniary interest. It was agreed that NPF makes



	an important contribution to meetings and an important role in research.
Trevor Hutton	CSIRO employee. Participate in projects related to the NPF that currently receives funding and will seek to receive funding in the future. It was agreed that CSIRO staff involvement in the discussion was necessary and any conflicts would not bias discussions of the agenda items.
Roy Deng	CSIRO employee. Participate in projects related to the NPF that currently receives funding and will seek to receive funding in the future. It was agreed that CSIRO staff involvement in the discussion was necessary and any conflicts would not bias discussions of the agenda items.
Nick Ellis	CSIRO employee. Participate in projects related to the NPF that currently receives funding and will seek to receive funding in the future. It was agreed that CSIRO staff involvement in the discussion was necessary and any conflicts would not bias discussions of the agenda items.
Diarmid Mather	AFMA Economist. No pecuniary interest.

Mr Earle questioned the ongoing need for this process given that time that it consumed within meetings and how AFMA was progressing with its review of the process. Ms Hill explained that it is a legal requirement that affects all MAC and RAG meetings. Ms Hill advised that AFMA has sought revision of it through the fisheries legislation review that was conducted in 2013.

Action Item 1: Fiona Hill to provide update to next RAG meeting on the progress of the review to the conflicts of interest process.

1.3 Adoption of the agenda

The RAG adopted the agenda with an additional item in other business to discuss northern Australian agricultural development.

1.4 Actions arising from previous NPRAG meetings

The RAG went through the action items listed in Table 2 and updated progress.

Table 2. Actions arising from previous meetings.

Person responsible	Description of ACTION item	Progress
17-18 May 2011 Meeting		
Tom Kompas	To investigate the use of an inter-annual variability factor for the value of the Australian dollar as it affects industry and a value that might be appropriate.	Complete. Included as part of assessment.
13-14 September 2012 Meeting		
CSIRO	CSIRO to explore the influence of moon phases on the tiger prawn assessment model.	Not yet progressed. The need for this was overtaken by the review of the tiger prawn assessment discussed at Item 5.



AFMA	RAG EO to request that Viki O'Brien liaise with Rodrigo Bustamante to discuss the spatial analysis tools that are available in the NPF. <i>"The Chair informed the RAG of the correspondence from AFMA regarding the revitalisation of the ERA/ERM process. Dr Bustamante suggested that this would be a useful opportunity to incorporate the range of assessment tools used in the NPF."</i> Excerpt from minutes.	The ERA/ERM revitalisation project is currently on hold pending the outcomes of the Environmental Risk Assessment Project; therefore this action item is on hold pending project finalisation.
NPFI	NPFI to work with NORMAC research strategy group to develop a five year research plan for the NPF.	In progress. Being developed in consultation with fishery plan.
AFMA/CSIRO	RAG EO to work with Rik Buckworth & FRDC to maintain a collection of stock assessment and RAG documents on the AFMA website.	Ongoing. Rik to provide assessment documents to AFMA.
AFMA	AFMA to provide shapefiles of closures for inclusion in the digital marine atlas.	Incomplete, AFMA to discuss with data management team and will update NPRAG out-of-session..
14 February 2013 Teleconference		
CSIRO	CSIRO to prepare a summary of whether the outcome using the new length-frequency analysis method is either more or less certain than the existing method for RAG consideration.	Complete. Addressed by Agenda Item No.5
30 April 2013 Meeting		
CSIRO	CSIRO to examine whether a decrease of roughly 10% prawn length frequencies would be detrimental to assessments. The reallocation of effort is to collect size-frequency distribution data for bugs.	Observer data has not formally been included in the assessments. However, preliminary discussions suggest that that a reduction in the number of length frequencies would not be detrimental if observers endeavour to collect data from a variety of shots and locations.
AFMA	AFMA to organise scientific observers to collect size-frequency distribution data for bugs.	Complete.
AFMA	AFMA to provide a written annual summary of observer monitoring from 2011-12 that provides methods, results and spatial distribution.	Ongoing. Delayed due to observer manager on extended leave. Request submitted.
AFMA and CSIRO	Fiona and Rik to ensure that observer data is provided to CSIRO.	Complete. Observer Manager advised that all AFMA observer data is provided to a single point of contact in Hobart.
AFMA	Fiona to inquire if shape files for all the closures in the NPF are able to be forwarded on to RAG members.	Delayed, pending updated management plan to change datum.
AFMA	Fiona to distribute disclosure policy to the RAG.	Complete
CSIRO and NPFI	Rik and Matt to investigate the large difference in the tiger prawn logbook data and landed data.	Ongoing.
AFMA	Fiona Hill to report back to the RAG on the implications of ERA/ERM framework capturing habitat and communities for existing closures.	Delayed pending the AFMA review of the ERA/ERM framework.



AFMA/Tom Kompas	Tom Kompas agreed to provide AFMA with some further names of potential consultants for the risk assessment.	Complete.
AFMA	Fiona to incorporate comments collated from the RAG meeting on the <i>Project Plan for undertaking a Risk Assessment in the Northern Prawn Fishery of two Management Options</i> paper. The reviewed paper will be sent out to RAG members for comment with a one week turnaround.	Complete.
CSIRO	Rik to review the last 5 years of CPUE data for red-legged banana prawn as there may be an issue to explore regarding recent departure from a generally good time series fit of data .	To be addressed through the 2014 red-legged banana prawn assessment.
Chair	Ian Knuckey to write to Janet Bishop on behalf of the RAG thanking her for input into the Tiger Prawn assessment over many years.	Not yet completed.
CSIRO	Rik Buckworth to update the ratio of different sizes and estimated price at particular sizes for Tiger Prawns to use in the assessment.	Ongoing.
CSIRO	Rik to remove 'Bycatch/Byproduct revenue in profit function' from the sensitivities in the <i>Status of the Northern Prawn Fishery Tiger Prawn Fishery at the end of 2012 with estimated TAE and TAC for 2013</i> paper	Complete.
Tom Kompas and NPFI	Tom and Matt to investigate the increase in byproduct recorded and whether this is a once off event, noting the scampi is isolated and squid can be accounted for.	Comparison to be undertaken using information from 2013 fishing season.
22 November 2013 Teleconference		
CSIRO	Dr Buckworth to prepare a discussion paper on methods for estimating an MEY trigger for WBP and distribute to NPRAG by no later than 16 December.	Complete
CSIRO	CSIRO to prepare a TRF application to fund additional research and data collection to assist in setting an MEY trigger for white banana prawns.	Proposal to be submitted in June TRF round. Proposal to look at how individual boats affect the overall MEY value.

Agenda Item 2 – Management Report

2.1 AFMA management report

NPRAG noted the update on management from Fiona Hill. Miss Hill advised that the pre-season surveys had just been completed. CSIRO staff were positive about the observed high catch rates for Tiger prawns even though the indicators were not as positive as 2013. The bubble plots will be distributed to the RAG and industry as soon as they are available to AFMA.

2.2 Summary of catches

Miss Hill presented the summary of catches obtained from logbook for data between 2012 and 2013. The RAG noted that there were two different king prawn and endeavour prawn species reported in logbooks. The industry members suggested that historically some operators have differentiated between species for marketing purposes. It was agreed that in future reports, AFMA should combine the data for the two species of king and endeavour prawns. However, it was agreed that industry should continue to report to as fine a scale as possible. Industry members also agreed to discuss this issue at the NPFI meeting on the



following day. The RAG also discussed the increase in bug landings which can be attributed to the change in the minimum size limits for bugs.

2.3 RAG Remuneration

NPRAG noted that all RAG members are now entitled to claim sitting fees for meetings. Rates will be paid per meeting sitting day/hour only. The payment includes preparation time, following up actions items and reviewing minutes.

NPRAG also noted that the hourly rate should be used for meetings of five hours or less and the daily rate for meetings longer than five hours. Industry members expressed a preference for all members to be paid the same (excluding the Chair) in order to recognise the contribution and expertise that all members make to the RAG.

2.4 ERA/ERM Revitalisation

NPRAG noted the update that AFMA is considering the consultant's report prepared on behalf of AFMA to review its ERA/ERM process.

2.5 Bycatch Policy and Harvest Strategy Policy Reviews

NPRAG noted that update that the reviews of the bycatch and harvest strategy reviews were conducted under the previous government and that AFMA is not yet aware of how this will be progressed by the new government.

2.6 Industry Report

NPRAG noted an update from Mike O'Brien and Ian Boot on the 2013 tiger prawn season. NPRAG noted information provided on prawns prices, fuel costs and the impacts of the Marine Stewardship Council certification of the fishery.

NPFI Update

Matt Barwick provided an update from the NPF Crew Member Observer (CMO) program which last year observed 300 shots which was well above targets. Photo records from the season were up significantly from 2012. NPRAG noted that there has been an increase in the gear and economic survey data provided by industry data available, with coverage of 79 percent and 71 percent of the fleet respectively.

NPRAG discussed if there were any gaps in the CMO data collection program. NPRAG noted that due to the intensity of fishing within the Joseph Bonaparte Gulf (JBG) it is hard to get data from the JBG. Ms Hill did note however that there was AFMA scientific observer coverage within the JBG in 2013.

Agenda Item 3 – Banana prawn MEY catch trigger

3.1 Presentation

The RAG noted a presentation from Rik Buckworth on the development of the proposed MEY trigger for white banana prawns.

Dr Buckworth explained that the "Banana Prawn Management Comparison" report found that a MEY-based catch rate trigger produced higher profits for the fishery than the current fixed trigger approach, or TAC-based approaches.



Based on the results of the management comparison project the AFMA Commission agreed to implement a highly modified individual transferrable effort management system in the NPF. A key component of the modified management system is the introduction of an annual MEY-based catch trigger for white banana prawns. The intent of the trigger is to stop targeted fishing for banana prawns in order to maximise the economic return from the stocks.

Dr Buckworth explained that the MEY trigger rate is the point where the daily revenues from fishing are equivalent to the daily costs, i.e. the point profit falls to zero and thus where you want the fishery to stop. A scaling factor is then used to estimate the mean catch rate in a reference period when fishing information is collected. For example, if the catch rate corresponding to MEY catch levels is 750 kg/boat/day, the catch rate trigger would need be greater, say 1000 kg/boat/day, to take into account the time elapsed between the data being collected and the implementation of the closure (one week).

The RAG noted that to set an MEY trigger, a range of input data was required. CSIRO sought advice from RAG members on potential sources for the following inputs:

- 1) Probable catch in a year
- 2) Likely price range
- 3) Fishing costs
- 4) Point within the season that the trigger is calculated
- 5) Scaling factor that is used to predict trigger catch rate
- 6) How often the trigger rate should be calculated.

The process proposed by CSIRO recommended running the model to set an MEY trigger prior to the start of the fishing season. Industry members were concerned about the ability to accurately predict catch, price and costs ahead of the fishing season. There was also concern that the value for these inputs can vary across the NPF fleet.

The RAG discussed using more representative data, and that real time information would provide much more confidence in the MEY trigger and that it may be best if the trigger is calculated within season. Industry members advised the RAG that it would be easier to provide prices for fuel and prawns, and potential catch at the end of weeks 4 and 5. Mr Boot suggested that some figures such as crew, fuel and packaging could be set figures. Mr Curtotti also advised that ABARES has developed a model for forecasting prices and that this could be used to predict prices using catches from weeks 4 and 5.

Industry expressed a preference to remove repair/refit costs completely (as these are fixed costs regardless of season length). CSIRO advised that it may not be appropriate to remove them completely.

Dr Buckworth also discussed the scaling method used to calculate the target catch rate within the reference period. Dr Buckworth presented a graph which showed the relationship between catch rates over a two week period and the average catch rate a week later (based on catch data from 2008 to 2011). The RAG noted that the catch rate within the reference period is approximately 1.5 times greater than the MEY trigger level (the point at which the fishery should close). The RAG agreed that data from 2012 and 2013 should be included in this assessment to ensure 1.5 remains appropriate, and that this information should be presented at the March NPRAG meeting.

In response to ongoing concern from industry RAG members, the Chair raised the option of introducing bounds on effort changes year to year (as is done in quota-managed fisheries where there are limits on TAC changes). For example in the SESSF there is no change in any year greater than 50 percent. The RAG agreed that initially the maximum change in the trigger level (from the current fixed trigger) be restricted to a 25 percent increase or decrease.



Industry members expressed concern about the use of an average trigger, as some boats may currently leave earlier than the 500kg trigger due to different break even points. In particular industry explained that some boats are inefficient as banana boats but efficient as tiger boats. Industry suggested that an MEY trigger penalises the smaller, more efficient boats. Ms Hill suggested that this is same case with the current fixed trigger. Ms Hill emphasised that the performance of the trigger should be reviewed after 12 months and the RAG can look at whether or not individuals are being unfairly disadvantaged by the trigger.

Industry also expressed a concern about the potential sustainability effects of reducing the trigger below 500kg. The Chair explained that the fixed trigger is based on profitability rather than sustainability criteria and it is unknown if a 500kg trigger is any better than a 375kg in terms of its impacts on sustainability of the stock.

In conclusion, NPRAG agreed that the following information should be used to calculate the MEY trigger, with figures to be in the same form as the economic survey (e.g. price back to the boat).

- *Effort related costs:*
 - repairs (CSIRO preference to remove 80% of repair costs; industry preference to remove all repair costs);
 - fuel – base case use survey from previous year; update end of week 5 based on industry survey).
- *Average price* – default price based on survey from previous year; update at end of week 5 with industry advice (gross price)
- *Crew costs* – labour, figure based on survey (currently 23%) noting this relates to catch;
- *Other costs* – packaging and freight to the cold store, use info from previous year survey results.

It was agreed that NPFI would discuss the above parameters at its meeting on 11 February and provide advice back to NPRAG in March.

NPRAG agreed that the prediction method and information used will be adopted in the first year as an interim strategy.

Action 2 – CSIRO to inform NPRAG on the fuel consumption rate used in the MEY trigger calculation.

Action 3 – CSIRO to confirm what refit costs are included in the MEY trigger calculation.

Action 4 – ABARES to distribute price forecasting model to NPRAG.

Action 5 – CSIRO to conduct:

1. Retrospective analysis for 2012 and 2013 using survey data.
2. Test sensitivities of outputs to price and costs.
3. Test scaling factor using 2012 and 2013 data to validate figure of 1.5.
4. Use 2013 economic survey data to make preliminary estimate for 2014

Action 6 – NPFI/CSIRO to make a template for collecting information required to calculate trigger, ensuring that the form of the data is consistent with that collected in the annual economic surveys.



Agenda Item 4 – Timing and frequency of pre-season surveys

Dr Buckworth emphasised that the idea of removing the annual spawner survey from the NPF integrated monitoring program would best be explored by conducting a management strategy evaluation.

Annie Jarrett explained that it had already been agreed that the NPF would move to undertaking the winter survey every second year. However this was put on hold when the Commission made the initial decision to move to quota so as not to interrupt the data set moving into the new management arrangements.

Dr Hall questioned if the times series improves the fit of the tiger prawn model. Dr Buckworth explained that the recruitment survey and the predicted effort pattern has the biggest impact on the model.

Miss Hill noted that AFMA is keen to review costs and that the research budget is one of the NPF's biggest budget items. In turn she explained that the RAG should consider the risk-catch-cost framework when reviewing the survey needs for the NPF, including the frequency of the spawner survey.

Dr Deng said that the previous MSE for tiger prawns found that a biennial spawner survey is acceptable. However this MSE was reviewing the delay difference model.

Action 7 – CSIRO to prepare a proposal to assess the impacts of removing the spawner survey in 2016.

Agenda Item 5 – Research proposals

NPRAG noted the need to provide comments to the AFMA Research Committee at their meeting on 26 February 2014 to inform their consideration of the applications.

NPRAG considered the amended project proposal for the integrated monitoring program project. NPRAG noted that the existing research proposal and budget has been approved for this project. The proposal has been revised to cover the data analysis and collection with the 2015 recruitment survey which was previously excluded. \$270,965 has been quoted to cover this extra work (2014/15: \$161,450 and 2015/16: \$109,515).

NPRAG supported the amended project but provided the following comments.

- NPRAG supports the project overall but requested greater detail to justify the changes to the project budget.
- Proposal needs to provide more justification for the public good component as this is not evident from the application.
- Need to describe impacts on Threatened, Endangered and Protected (TEP) species
- The RAG questioned the role of the project steering committee (SC) and if it was appropriate for the PI to be the Chair? The RAG suggested it may be useful to broaden the membership of the SC.
- The proposal should be updated to refer to the most recent strategic assessment.
- Questioned the budget for annually reviewing calliper electronics. It reads as though both AFMA and CSIRO fund this, which seems very expensive given that it is budgeted for every year.



NPRAG noted the indicative budgets for the winter 2014 and summer 2015 vessel charter component of the pre-season surveys. NPRAG did not provide further comment as under the co-management arrangements the final costs of these projects are subject to an NPF run tender process. Industry members on the RAG did note that they are happy with the way that the tender process is being handled.

The RAG requested that AFMA provide a comparison of vessel charter costs over the last five years.

Action 8 – AFMA to prepare a comparison of vessel charter costs over the last five years of the integrated monitoring program.

NPRAG also noted an update from Matt Barwick on the trial of the witch's hat BRD enhancer that was conducted in the 2013 tiger prawn fishing season. The RAG noted that the NPF has recently finalised the project report and is seeking support to fund the trial in 2015. The RAG also noted that NPF will be seeking RAG endorsement for a tactical research proposal aimed at reducing fuel costs and bycatch.

NPRAG also noted that CSIRO will be preparing two TRF proposals:

- 1) Boat level banana prawn MEY
- 2) Assessment of banana prawn stocks

NPRAG noted that the assessment of banana prawns is proposed to assess the performance of the fishery retrospectively, particularly to assess whether recruitment is affected by the number of prawns left in a given year. The RAG also noted that CSIRO is preparing a plan to make use of the NPF observer data in the annual assessment process.

Agenda Item 6 – Improving the Predictive Performance of the NPF Tiger Prawn Assessment Model

NPRAG noted a presentation from Dr Rik Buckworth on the CSIRO review of NPF tiger prawn assessment model. This review was conducted in response to concern in recent years about the predictive performance of the model, where assessments have consistently over-predicted the potential catch compared to what has actually been caught. Dr Buckworth stressed that the assessment component of the model is performing well, and that the review only looked at the predictive capability of the model.

CSIRO examined several proposed causes for the poor performance of the predictive base-case approach when compared to actual catches observed in season. The results of these investigations were used to develop a set of recommendations that, if supported, could be included in a new base case for the model, or could be examined in sensitivity analysis.

Dr Buckworth outlined that the review found that the inability to estimate both recruitment and predict effort (amount and patterns) is a major driver of the errors associated with catch prediction. Dr Buckworth said that although it is not feasible to accurately predict future recruitment and effort, it is possible to better use the data gathered and put into the model.

The review found that it is possible to improve the performance of the model by:

- 1) changing the minimum effort level in the model and the way the predicted tiger prawn effort pattern is set (Thres+Pattern model); and



- 2) changing the way that the model uses the results of the recruitment survey ('combined' model).

NPRAG discussed the risks associated with amending the base case assessment, with a general preference to review the changes in sensitivity analysis before changing the base case. The Chair challenged the RAG on this approach and suggested that the changes should be adopted in a new base case, particularly given there have been complaints about the performance of the model in recent years and these were low risk improvements to the model.

NPRAG recommended that CSIRO use the 'combined' model and retain the RAG recommended effort pattern as a new base case assessment. NPRAG agreed that the 2012 (old) base case should be kept as sensitivity to the new base case assessment model.

The 'combined' model included changes to the way the model treats selectivity of the recruitment survey data, using a revised data set for length-frequency and removing the length-frequency data collected in the most recent recruitment survey (i.e. the 2014 model would use the length-frequency data collected in the recruitment survey up until 2013, 2015 model up until 2014 and so on).

Dr Buckworth noted that this sort of retrospective analysis be conducted every 3 to 5 years. NPRAG thanked Dr Deng for his extensive input on the project to improve the performance of the model.

ACTION 9 - CSIRO to distribute full journal paper to the RAG.

ACTION 10 - CSIRO to amend base case to include 'combined' model, and to include the 2012 base case as a sensitivity in the 2014 assessment.

The Chair closed the meeting at 5:00pm.

