



Australian Government

Australian Fisheries Management Authority

Northern Prawn Fishery Resource Assessment Group (NPRAG)

Minutes 30 April 2013
NPRAG Meeting 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
Tom Kompas, Australian National University (ANU)
Norm Hall, Murdoch University
Karen Dalli, Executive Officer NPRAG

Observers

James Woodhams, Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES)
Annie Jarrett, Northern Prawn Fishery Industry (NPF)
Matt Barwick, NPF
Trevor Hutton, CSIRO
Roy Deng, CSIRO
Sean Pascoe, CSIRO

Apology

Rodrigo Bustamante, CSIRO
Ron Earle, Industry

Agenda Item 1 - Preliminaries

1.1 Welcome and apologies

The Northern Prawn Fishery Resource Assessment Group (NPRAG) Chair, Ian Knuckey, opened the meeting at 9:00 am, welcoming all members and observers. The chairman advised that the main purpose of the meeting was to discuss the risk assessment for the Northern Prawn Fishery (NPF) future management arrangements and stock assessment outcomes for the three key prawn species.

Apologies were received from Ron Earle (Industry) and Rodrigo Bustamante (CSIRO).

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 and any conflicts would not bias discussions of the agenda items.
Malcolm Haddon	CSIRO employee. Not involved in any NPF research projects. .
Ian Boot	Industry representative. NPF shareholder. No pecuniary interest.
Michael O'Brien	Industry representative. Employee of a company that owns statutory fishing rights (SFRs) in the NPF. Interested in results of the assessments from a commercial view point. Michael O'Brien excused himself while the remaining members discussed his participation and it was agreed that industry participation was vital to ensure transfer of information and the conflict will not in any way undermine any items discussed.
Tom Kompas	ANU employee. Assists with Maximum Economic Yield (MEY) estimates and forecasts in the bio-economic project for the NPF. Tom Kompas excused himself while the remaining RAG members discussed his participation in the meeting and it was agreed that Tom's input is valuable and the MEY work is critical to the meetings discussions and any conflicts would not bias discussions of the agenda items.
Norm Hall	Murdoch university and Western Australia Department of Fisheries employee. No pecuniary interest.
Karen Dalli	AFMA employee and NPRAG EO. No pecuniary interest.
Observers	
James Woodhams	ABARES employee. No pecuniary interest.
Annie Jarrett	EO of NORMAC and CEO for NPF Industry Pty Ltd (NPFIL). No pecuniary interest in relation to holding NPF SFRs. Represents shareholders who have an interest in Agenda items 3, 4, 5 and 6. Annie Jarrett excused herself while the remaining members discussed her participation in agenda items 3, 4, 5 and 6. It was agreed that industry input is critical and Annie's expertise and experience is valuable to the meeting and any



	conflicts would not bias discussions of the agenda items.
Matt Barwick	Contractor to NPFI. No pecuniary interest.
Trevor Hutton	CSIRO employee. Participate in projects related to the NPF that currently receive funding and will seek to receive funding in the future. Trevor Hutton 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 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. Roy Deng 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 and any conflicts would not bias discussions of the agenda items.
Sean Pascoe	CSIRO employee, no pecuniary interest.

1.3 Adoption of the agenda

The RAG adopted the agenda with an additional item in other business to discuss the paper *A Retrospective Evaluation of Sustainable Yields for Australia's Northern Prawn Fishery: An alternative view*.

1.4 Acceptance of the minutes from NPRAG 12 March 2013 teleconference

The RAG supported, with minor editorial amendments, the minutes of NPRAG 12 March 2013 teleconference as a true and accurate record of the meeting.

1.5 Actions arising from previous NPRAG meetings

The RAG went through the action items listed in Table 2 and updated progress. Members suggested that in future the actions should be written with greater context to ensure they can be read as stand-alone items.

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.	In progress
13-14 September 2012 Meeting		
AFMA	Catch data provided in management update to be split between first and second season and include at least two years of historical data.	Complete
AFMA	AFMA to advise through EM fisheries of the need for industry to play a greater role in the review of the harvest strategy.	Complete
AFMA	Scientific observers to collect size-frequency distribution data for bugs.	Complete
CSIRO	Sean Pascoe to provide the RAG with an update on the response to the Wang paper.	This meeting
ABARES	ABARES to provide price and quantity data to Tom Kompas to assist in the calculation of a TAC using an MEY target. AFMA to assist in obtaining this data.	Complete



Person responsible	Description of ACTION item	Progress
All	Members to provide comments on the NPF proposal to the RAG EO by COB Thursday 20 September. RAG EO to collate for discussion at subsequent teleconference.	Complete
Chair	Chair to draft correspondence to the AFMA Commission outlining concerns relating to the completion of the Banana Prawn prediction and MSE projects.	Complete
CSIRO	CSIRO to explore the influence of moon phases on the Tiger Prawn assessment model.	Ongoing
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.
AFMA	Need to inform the RAG of the scope of the ERA/ERM project being undertaken by AFMA.	Complete
AFMA	RAG EO to work with NPF and industry members to finalise the research priorities.	Complete.
NPFI	NPFI to work with NORMAC research strategy group to develop a five year research plan for the NPF.	In progress, waiting on Matt Barwick to provide a draft for RAG consideration.
AFMA	RAG EO to update the workplan and distribute for consideration OOS, noting the need for an additional RAG meeting in 2013.	Complete
AFMA/CSIRO	RAG EO to work with Rik Buckworth & FRDC to maintain a collection of stock assessment documents on the AFMA website.	Incomplete
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 OOS.
14 February 2013 Teleconference		
CSIRO	CSIRO to distribute a formalised 2013 NPRAG effort pattern to RAG members.	Complete
CSIRO	CSIRO to run model using existing approach for face-to-face meeting, and if possible provide a comparison between the new approach and the existing approach.	Complete
CSIRO	CSIRO to prepare a summary of whether the outcome using the new method for weighting and characterising length frequency samples which adopts a different statistical technique is either more or less certain than the existing method for RAG consideration.	Pending
CSIRO	CSIRO to use same base case as the 2012 assessment but with the revised RAG effort pattern.	Complete



Person responsible	Description of ACTION item	Progress
CSIRO	Rik Buckworth to provide a summary of the MEY-trigger approach at the face-to-face meeting when presenting outputs of analysis.	Complete
CSIRO	CSIRO to provide a list of what will be included in base case for future meetings so a review of what is included and what is not can be undertaken by the RAG.	Complete
12 March 2013 Teleconference		
AFMA	Item on Red-legged Banana Prawn limit reference point re: 390 kg/boat/day versus 0.5 B _{MSY} to be added to the April NPRAG agenda.	Complete.
AFMA	Item on Red-legged Banana Prawn Limit Reference Point (LRP) and its interpretation re: combined Banana Prawns or single species to be added to the April NPRAG agenda.	Complete.
CSIRO	CSIRO to update NPRAG 2013 specified fishing effort pattern figure to ensure Brown Tiger Prawn effort is vertical at the start of the season and update y-axis title to 'proportion of the annual fishing effort per week'.	Complete.

Action 1 - CSIRO

CSIRO to examine whether a decrease of roughly 10 per cent in prawn length frequencies collected by AFMA scientific observers would be detrimental to assessments. The reallocation of effort is to collect length-frequency (LF) distribution data for bugs.

Action 2 - AFMA

AFMA to organise scientific observers to collect LF data for bugs to monitor the impact of the reduced size limit introduced for the 2011 season.

Action 3 - AFMA

AFMA to provide a written annual summary of observer monitoring for the 2011 and 2012 fishing years, that details methods, results and spatial distribution.

Action 4 – AFMA/CSIRO

Fiona Hill and Rik Buckworth to ensure that raw observer data is provided to CSIRO.

Action 5 - AFMA

Fiona Hill to investigate if shape files for all NPF closures can be forwarded on to RAG members.

Agenda Item 2 - Reports

2.1 Industry report

Michael O'Brien and Ian Boot provided the RAG with an update on the current NPF season.

Catches

They advised that the season started well, with catches dropping off in the second and third weeks. The industry members estimated the average vessel catch to be approximately 40 tonnes, with some boats performing better than others. They estimated overall fleet catch is approximately 2000 tonnes to date for the season.

RAG members heard that the quality of prawns is a little lower than last year; however some areas are still producing bigger prawns.



Some of the boats with dual licences have left the NPF as the Queensland east coast is having a great year, with good Banana and King Prawn catches being reported.

Industry representatives advised the RAG that overall catches have been down by two thirds from the 2012 season, which is disappointing but expected. Industry members are positive about the Tiger Prawn season with the indication from the skippers that there is a good distribution of Tiger Prawns.

Prices

RAG members heard that prices have increased by around a third. Industry members believe that this is related to reduced imports of aquaculture prawns because of diseases coming out of the farm sector overseas where the hatchery juveniles are dying young.

RAG members also heard that there have been challenges with retaining experienced crew, with some crew looking at the value of Australian dollar and the amount of rainfall, and not returning to work in the NPF.

2.2 AFMA management report

Fiona Hill provided the RAG with an updated AFMA management report.

1. Fiona Hill advised that the pre-Banana Prawn survey was undertaken in February 2013 and that CSIRO staff were positive about the observed high catch rates, which are a good indication for the coming Tiger Prawn season.

2. The summary of catches for the 2011 and 2012 fishing years was presented. The RAG noted the increase in bug, scallop and squid catches for 2012 and industry commented that there were good catches of bugs off Northern Territory in 2012. There was a decrease in Tiger Prawns caught from 2011-12. There were some questions around the reliability of these figures as they were not based on Season Landing Returns (SLRs), with a discrepancy in total Banana Prawn catch for 2012 than previously advised.

Action 6 - AFMA

Karen Dalli to distribute AFMA's information disclosure paper to the RAG to inform members on the policy and procedures for disclosing information that is provided to the RAG.

Action 7 – CSIRO and NPF

Rik Buckworth and Matt Barwick to investigate the large difference in the Tiger Prawn logbook data and landed data.

3. The DAFF reviews of the Bycatch Policy and Harvest Strategy Policy has placed a greater emphasis on the Environmental Risk Assessment and Environmental Risk Management framework. AFMA is currently undertaking an internal review of its processes around ERA/ERM and aims to consult with MACs and RAGs later in 2013.

Action 8 - AFMA

Fiona Hill to report back to the RAG on the implications of ERA/ERM framework capturing habitat and communities for existing closures.

4. DAFF are considering public submissions and developing recommendations for the Bycatch Policy and Harvest Strategy Policy reviews. They anticipate submitting a report to Minister Ludwig in April.

The Chair informed the RAG that he made a personal submission, outlining that in a multi-species fishery like the Southern and Eastern Scalefish and Shark Fishery, incorporating all target species and byproduct into the Harvest Strategy will require significant revision of the current HSP and development of assessment methods and could be an expensive process.

Meeting adjourned for morning tea at 10:30 am and returned at 11:00 am.



Agenda Item 3 – Future Management Arrangements in the NPF

3.1 Presentation

Fiona Hill explained the work done to date on the future management arrangements in the NPF and explained that the Commission has requested that the risks associated with the two preferred management options (TAC with in-season update and modified TAE) need to be investigated.

The *Draft Project Plan for undertaking a Risk Assessment in the Northern Prawn Fishery of Two Management Options* was read through with the RAG.

The RAG was informed that the Australian Centre of Excellence for Risk Analysis (ACERA) may be able to provide advice to AFMA on the project plan and other issues associated with the risk assessment, but would not be able to undertake the risk assessment themselves.

AFMA is seeking nominations for a member from NPRAG, NPFI and NORMAC to sit on a selection panel to recommend a suitable consultant to undertake this risk assessment. Once a consultant has been found, AFMA will establish a broader working group to provide technical advice to the consultant. It is anticipated that the selection panel will meet very soon to discuss potential candidates.

3.2 NPRAG Input

Tom Kompas was nominated as the NPRAG representative for the selection panel. RAG members noted that Ian Knuckey will represent NORMAC and David Carter will represent NPFI. It was agreed that the membership of the Joint MAC/RAG working group will be arranged at a later date, with some members requesting advice on remuneration.

Industry members expressed concern about the need to quantify the impacts of an in-season update for White Banana Prawns under the quota option on quota trading. RAG members felt that this was a key piece of work needed for a thorough risk assessment to be undertaken. Fiona Hill explained that at this stage there are no plans to undertake additional work, unless it is identified as a requirement when developing the risk assessment framework. The Joint MAC/RAG working group will be heavily involved, including reviewing documents provided to risk assessors to ensure that comprehensive information on the two options is provided.

The RAG discussed the project objectives and recommended the following criteria to be provided to the risk assessors and included in the project plan.

In order of priority:

1. Is there a difference in the level and variability in profit/losses that may be delivered over time?

Including, but not limited to:

- Impacts of quota trading
- Impacts of MEY trigger
- Costs of management system
- Impacts of conservative TACs to address uncertainty with models

2. Is the management system feasible – does it operationalise MEY?

Including, but not limited to:

- Data availability
- Model reliability through time
- Can you do it now/can you do it properly?
- Is there flexibility in the management system year to year to respond to change?

The RAG members discussed the need for a broader range of consultants to be approached to conduct the risk assessment.



Action 9 - Tom Kompas

Tom Kompas agreed to provide AFMA with some further names of potential consultants for the risk assessment.

3. Does the management system provide for the fishery to autonomously adjust?

RAG members provided additional feedback on the project plan which was incorporated and it was suggested that any further comments and suggestions be forwarded to AFMA out of session.

Action 10 - AFMA

Fiona Hill to incorporate comments collated from the RAG meeting on the Project Plan for undertaking a Risk Assessment in the Northern Prawn Fishery of two Management Options paper. The revised paper will be sent out to RAG members for comment with a one week turn around.

Industry members advised RAG members of their concern around moving to quota management, advising that MSC have indicated that given the uncertainty around TAC setting, more conservative TACs would have to be set to ensure MSC certification is not affected.

The meeting adjourned at 1:00 pm for lunch and returned at 1:35 pm

Agenda Item 4 – Banana Prawn

Rik Buckworth provided the RAG with a presentation on the Banana Prawn potential catch prediction and MEY trigger for the White Banana Prawn fishery.

Catch prediction

The three banana catch prediction models give divergent results this year:

- **Single:** 2807 tonnes (this model uses just one set of rainfall weights, least preferred as it doesn't make best use of the information).
- **Separate:** 3125 tonnes (The original version, a set of separate models by each region, the predicted catches are summed).
- **Variable:** 6139 tonnes (The different rainfall weights for each catchment within a single model). Note: this model predicts the most catch from one area.

Previously the rainfall models have been in close agreement whereas the above results show large differences, highlighting the uncertainty of the complex model. It was noted that the Variable model was responding to the heavy January rainfall from TC Oswald, especially in the Vanderlins area.

There was some discussion around which model should be used, and if RAG advice should be included in determining which model would be applied in the coming fishing year. There was concern from RAG members that having the results available from the different models could bias which assessment method should be used, and that we should proceed with the previously agreed RAG approach, which was the Variable model. Most members agreed that the 6,139 tonne prediction was an over-prediction for 2013; however the variability was consistent with what has been observed in the previous four years.

MEY-trigger

Rik Buckworth advised the RAG that they operationalised the MEY trigger to end the season at the point at which revenue from catch balances the operating costs (daily), as the below formula demonstrates: Profit = Catch X (Price - per kg costs including crew %) - Effort (cost per boat day).

It was noted that the trigger was dependent on the price per kilogram received at a certain harvest level. Industry RAG members raised concern with the ability to predict prices on which



the model would be run when required. Rik Buckworth advised that the price per kilogram could either be predicted or based on expert opinion. Rik Buckworth explained that the catch trigger was not overly sensitive to the price information.

The RAG noted that the Australian dollar has been a large influence on product price and that the biggest changes have been observed in the last 6 to 8 years. Fluctuating prices alter the results of E_{MEY} , profit, TAC and trigger.

RAG members raised concern with the fact that there were no measures of precision around estimates, and this would be useful information to have at hand when considering the outputs of this model in 2014.

Risks

- Model is fragile to extremes in data inputs
- Rainfall data format and delivery is problematic
- Requirement to use most recent data results in a TAC being set close to the season start, and then updated

The RAG was informed that there were issues with obtaining the rainfall data this year and when this occurs RAG advice is essential. The rainfall data is vital to the assessment and this year it was received at the end of March. The rainfall data up to the end of February is required by CSIRO as soon as possible every year and it is regularly received in different formats, this year there were many errors with the data which poses a risk to the assessments being undertaken on time.

Agenda Item 5 – Red-legged Banana Prawn

Rik Buckworth presented the 2013 assessment (based on data to the end of 2012) and preliminary TAC estimate for 2013 for the Red-legged Banana Prawn Fishery.

The model:

- works on a quarterly time set and assumes the number of prawns each quarter by, the number of prawns that survived natural processors from the previous quarter, minus those that were caught, plus any new recruits;
- takes into account the changes in selectivity as management of the fishery has changed over the years;
- uses growth information and estimated natural mortality rate; and,
- is a numbers driven model that uses CPUE from the fishery on a quarterly basis to constrain the model.

Fishing power estimates for boats in the Joseph Bonaparte Gulf declined by around two per cent in 2012, reflecting the change in fleet composition and the reduction in the number of boats towing quad gear. The catches were small last year with 214 tonnes of Red-legged Banana Prawns caught.

The usual pattern was apparent, where significant fishing occurred in the third quarter of the year in the second season. The model assumes the prawns are available to the fishery in the second quarter, but whether they will be fished is uncertain.

The model fits CPUE relatively well, the quarterly time scale works better and uses more data than if it was an annual model and it picks up a lot more information including the depletion of prawns throughout the year. The CPUE adjustment for fishing power is a realistic fit to the proportion of prawns available to the fishery.

Action 11 – CSIRO

The last 5 years of CPUE for Red-legged Banana Prawns tends to be high, RAG recommends CSIRO explore this when running the model for 2014.



The fishery appears as though it was overfished in the mid 90's, however the fishery has recovered particularly well in the last five years and recruitment is high. The spawning biomass increased correspondingly and has also increased as a result of reduced catches.

Last year the fishery was above B_{MEY} , currently the fishery is underperforming economically as not enough effort has been applied to Red-legged Banana Prawns. As such, it is considered under-fished from an economic perspective.

The TAC predicted base case estimate produced for 2013 and 2014 was 542 and 514 tonnes respectively; this would bring the target fishing mortality rate to about 0.16 on average. The fishery is sustainable and is in a reasonable condition for next year.

Refinement of harvest strategy

The RAG discussed the limit reference points of 390 kg/boat/day and $0.5 B_{MSY}$ for the purpose of the harvest strategy. It caused some confusion when applying it for the first time in 2013, given 390 kg/boat/day estimates $0.5 B_{MSY}$ in 2012; however $0.5 B_{MSY}$ may change from year to year. As such, it was agreed that the RAG needs to recommend which one to use as the basis for the limit reference point (LRP).

It was agreed that this decision would better be left until after the Commission has made a decision on the future management arrangements for the NPF. The RAG will then further discuss the LRP for red-legs, and more broadly review the Harvest Strategy and timetable for assessments for each species.

The RAG agreed to postpone the refinement of the harvest strategy until future management arrangements have been decided.

The meeting adjourned at 3:00 pm and returned at 3:30 pm.

Agenda Item 6 – Tiger Prawn

Rik Buckworth presented the Tiger Prawn and Blue Endeavour Prawn stock assessment for 2012, and the TAE and TAC recommendations for 2013. Those involved in the assessment were acknowledged for their contributions.

Action 12 – 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.

The assessment was altered slightly this year but used the same weekly size-structured model, a Bayesian hierarchical biomass production model and a bio-economic model. The inputs included; updated length frequency information from the surveys, abundance indices [surveys and catch and effort] and applied fishing power. It applied the forward predictions from the 2013 assumed fishing pattern and effort that was agreed by the RAG in February 2013.

The 2012 predicted catch and effort, 2012 actual catch and effort, and the 2013 base case assessment for predicted catch and effort that were presented to the RAG are outlined in Table 3. The difference in predicted and actual catches for Brown Tiger Prawns was due to a number of issues and exploration of the model is continuing in an effort to understand this. The assessment indicates that Brown Tiger Prawns were under fished in 2012.

The base case assessment results are outlined in

Table 4 and indicate that the fishery is not considered to be over fished. Grooved and Brown Tiger Prawns and Blue Endeavour Prawns were close to or above S_{MSY} (the spawning stock size at maximum sustainable yield), and grooved and Brown Tiger Prawns were well below E_{MSY} (effort at maximum sustainable yield). Relative to MEY, Grooved Tiger Prawns were



fished to about the right level and Brown Tiger Prawns were substantially under fished according to the model.

Table 3. 2012 predicted and actual catch and effort and 2013 predicted catch and effort for grooved and Brown Tiger Prawns.

	Grooved	Brown	Total Tigers
2012			
Predicted Catch (t)	742	927	2085
Actual catch (t)	826	379	1205
Predicted Effort (boat days)	n/a	n/a	6449
Actual Effort (boat days)	4072	1324	5369
2013			
Predicted Catch (t)	1292	1781	3073
Predicted Effort (boat days)	3781	2880	6661

Table 4. 2012 base case assessment results for grooved and Brown Tiger Prawns, and Endeavour Prawns.

	Grooved	Brown	Endeavour
Catch ₂₀₁₃ (TAC: grooved+brown)	1292	1781	439
Observed C ₂₀₁₂	826	379	283
S _{MEY} /S _{MSY}	1.574	1.386	1.436
S ₂₀₁₂ /S _{MSY} (%)	108.6	104.1	88.5
S ₂₀₁₂ /S _{MEY} (%)	69.0	75.1	61.6
5-year mav(S ₂₀₀₈₋₂₀₁₂ /S _{MSY}) (%)	116	116	91
S ₂₀₁₉ /S _{MEY} (%)	100.8	109.2	84.2
Observed nominal E ₂₀₁₂	4072	1324	
Estimated nominal E ₂₀₁₃	3781	2880	
E _{MEY} /E _{MSY} (%)	36.9	60.5	
E ₂₀₁₂ /E _{MSY} (%)	38.8	28.8	
E ₂₀₁₂ /E _{MEY} (%)	105.3	47.7	
Standardised E ₂₀₁₂ /E _{MSY} (%)	38.8	28.8	
Standardised E ₂₀₁₂ /E _{MEY} (%)	105.2	47.6	

There was a small decrease in relative fishing power. Quad gear stayed the same and its deployment remained steady at 77 per cent of the fishing fleet for Tiger Prawns.

The prediction this year is for good recruitment for both brown and Grooved Tiger Prawns.

Although the fishery has been over fished in the past it is now clearly rebuilding. Effort levels are below those that will achieve E_{MEY}, due to the reduction in effort and fleet size.

The ratio of the different sizes of Tiger Prawns, along with estimated prices, was presented to the RAG and it was identified that the information needed updating.

Action 13 – CSIRO

Rik Buckworth to update the ratio of different sizes and estimated price at particular sizes for Tiger Prawns to use in the assessment.

The prawn prices and fuel costs index predicted that the fuel prices were not going to increase excessively in the near future and the prawn prices reflect this. The increase in the



prawn prices is a result of a fall in the exchange rate. It was noted that the domestic market is not fully incorporated into price forecasting.

The base case projections indicate that the effort over time for Brown Tiger Prawns will increase and the catches should be substantially greater than last year. The predicted ratio of projected stock size is very good based on the survey results with a good recruitment for Brown Tiger Prawns and a slight increase in grooved Tiger Prawns.

The byproduct revenue in the profit function was added to the sensitivities in this assessment as a trial to see what the outcome would be and if it should be included in future. This sensitivity had not been discussed or approved by the RAG, so members were uncomfortable with this data being presented until there had been full consideration of the assumptions and calculation methods. It was agreed that this sensitivity should be removed from the final assessment report.

Action 14 – CSIRO

The RAG agreed that the paper presented to the RAG should have the byproduct revenue in the profit function removed from the sensitivities.

Action 15 – Tom Kompas and NPF

Tom Kompas and Matt Barwick to investigate the increase in byproduct that was identified in the Tiger Prawn assessment.

Agenda Item 7 – Other business

7.1 NPRAG Workplan 2012-15

Members were asked to provide comments out of session.

7.2 Draft Bycatch and Discard 12 month report

This report was provided to the RAG for information.

7.3 Paper on the Evaluation of Sustainable Yields in the NPF

The original paper *A Retrospective Evaluation of Sustainable Yields for Australia's Northern Prawn Fishery: An alternative view* was submitted in December 2012, receiving comments and recommendations from the two reviewers. The paper presented to the RAG incorporated the feedback from the reviewers.

Chair thanked everyone and the meeting closed at 4:50 pm.

Dr Ian Knuckey
NPRAG Chair
20 July 2013

