Australian Government
Australian Fisheries Management Authority

Northern Prawn Fishery Resource Assessment Group (NPRAG) Meeting

Minutes

Date: 12-13 November 2015

Attendance

Name	Membership (type i.e. chair etc.)
Ian Knuckey	Chair
Rik Buckworth	Scientific Member - CSIRO
David Brewer	Scientific Member - CSIRO
Ian Boot	Industry Member
Michael O'Brien	Industry Member
Phil Robson	Industry Member
Shane Fava	AFMA Member
Tom Kompas	Economic Member - ANU
Don Bromhead	Executive Officer - AFMA
Annie Jarrett	Observer - NPFI
Trevor Hutton	Observer - CSIRO
Roy Deng	Observer - CSIRO
Eva Plaganyi-Lloyd	Observer - CSIRO
Shane Griffiths	Observer - CSIRO
Sean Pascoe	Observer - CSIRO
Rob Curtotti	Observer - ABARES
Roland Pitcher	Observer – CSIRO
Rob Kenyon	Observer – CSIRO
Nick Ellis	Observer – CSIRO
Michele Burford	Observer – Griffith University
Stephen Faggotter	Observer – Griffith University

Minutes

Agenda Item 1 - Preliminaries

1.1 Welcome and apologies

The Northern Prawn Fishery Resource Assessment Group (NPRAG) Chair, Ian Knuckey, opened the meeting at 9.00am and welcomed participants.

1.2 Adoption of Agenda

The Chair requested that the agenda be slightly re-ordered so as to accommodate the availability of a number of invited observers and presenters. Specifically, the NPRAG agreed to move agenda item 12 to precede agenda item 3, and agenda items 13 and 8 to precede agenda item 6. The NPRAG then adopted the revised draft agenda for the meeting (**Attachment 1**).

1.3 Declarations of interest

The Chair asked that any members or observers present notify the NPRAG of any changes in declared interests to those identified in **Attachment 2**. Three changes were noted:

- Ian Knuckey noted that his consulting company has applied to run the AFMA observer programme and has been shortlisted for consideration.
- Annie Jarrett noted that all items on the agenda are of relevance to NPFI.
- Ian Boot – participates in aquaculture brood stock collection charters

The Chair then asked if there were any *conflicts of interest*. Conflicts of interest were noted for the CSIRO members and observers who participate in or apply for funding in research areas to be discussed at this meeting (in particularly under agenda items 5 and 7) and for industry members and observers, whose industry pays levies to fund such research. Both of the above groups were required to leave the meeting room to allow the RAG time to discuss the stated conflicts and how it would be dealt with before coming back in.

In each case, the NPRAG agreed that the participants should be allowed to participate in the meeting discussions due to their relevant expertise and capacity to contribute to discussions, providing the conflicts of interest are clearly noted in the minutes. It was noted that while research was a key discussion in the meeting, and the RAG would look to develop a ranked standing list of research that would benefit the NPF assessments, there were no formal recommendations being formed by NPRAG in relation to research to be funded in the immediate future and as such, all members and observers could participate in those discussions.

1.4 Adoption of minutes from previous meetings

The June 2015 and September 2015 teleconference minutes had previously been accepted by NPRAG out of session and are available on the AFMA website.

Agenda Item 2 – Actions arising from previous NPRAG meetings

The RAG discussed the action items listed in **Attachment 3** and updated progress. There was particular discussion around action item #34(2). NPRAG noted that scientific observers were apparently no longer collecting estimates of the total cod-end catch. A scientific member suggested that there was perhaps a disconnect between some of AFMA/NPFI's objectives (e.g. relating to bycatch reductions) and the data being collected by observers, and asked why observers are still doing bucket samples of species composition (i.e. how will such data be used)? The Chair suggested that if an important goal is to monitor total bycatch reductions then species composition sampling by itself is of limited use. It was suggested that this issue might need to be looked at further by AFMA and NPFI.

Action item 1 – AFMA, NPFI and CSIRO to hold further discussion on observer data collection to meet various management objectives

Agenda item 12 - Update Reports

12.1 Industry update

NPRAG noted an update from Mr Mike O'Brien, Mr Ian Boot and Mr Phil Robson on the 2015 season. They noted two contrasting issues. Firstly, an extremely poor season in the JBG fishery, with only 5-7 boats fishing for a relatively brief period and catches unlikely to exceed 60 mt in total, with most of this taken in the first period and very little (5mt) in the second. The low catches were thought to be due to a combination of few prawns on the fishing grounds but also a lack of effort as a result of better catches in other areas (e.g. on Tiger Prawns).

In contrast, the Tiger Prawn season was described as exceptionally good, due to a combination of high availability of prawns on the grounds, good fuel prices and a favourable exchange rate. Much

of the product has been exported, although sales into China have slowed. Some concern was expressed regarding the unusually high level of catches of U6 and U8 Tiger Prawns much earlier in the season, with an industry member questioning whether this would have allowed enough escapement to support sufficient recruitment the next season. Industry members and observers predicted a total season catch of Tiger Prawns exceeding 4000mt. Industry members felt that the high catch rates occurring throughout the fishery indicate that broader environmental factors are driving good recruitment and availability. A scientific observer suggested that high temperatures in the GoC may have accelerated growth rates, resulting in the larger prawns that were observed earlier in the season.

12.2 AFMA update

NPRAG noted an update from Mr Shane Fava (AFMA member) and Dr Don Bromhead (NPRAG EO) on key management and policy processes relevant to the NPF. Issue covered included:

- **Observer Program Market Testing -** AFMA continues its testing of the market regarding opportunities that may exist to outsource the current AFMA Observer Program and will now engage the shortlisted RFT respondents to provide a tender for the observer program.

- **ERA-ERM Update -** Recent reviews of the Ecological Risk Assessment (ERA) and Ecological Risk Management (ERM) Framework and fisheries policies have identified where both the policies, associated guidelines and the ERM Framework can be updated and improved, and importantly, and how the three might interact in future. AFMA is now drafting a Guide to ERA-ERM, which is due for completion by the end of 2015 and will be released to RAGs and MACs for consultation in early 2016.

- **Harvest Strategy and Bycatch Policies Update** - The Department of Agriculture is currently consulting with the Department of the Environment on the draft Commonwealth Fisheries Policy, Commonwealth Policy on Fisheries Bycatch and the Commonwealth Fisheries Harvest Strategy Policy and Guidelines. The timing for consultation on these is uncertain. FRDC has funded technical work to develop Guidelines for the revised Commonwealth Bycatch Policy.

- **Science Quality Assurance Standard/Guidelines project -** The first draft of the project report, including draft quality assurance Guidelines, was recently completed and is now under review. AFMA will seek RAG comment on the draft report in early 2016, followed by a second project workshop. Implementation is planned for the second half of 2016.

- **Brood stock permits** – AFMA is looking to develop a clear and transparent policy on the process for allocating broodstock permits (e.g. when, how, who). This is particularly important given the pending Seadragon prawn aquaculture development. A recent meeting with Sea Dragon was attended by 17 different government agencies/departments. The company is still looking for investment/funds. The AFMA member clarified that at this stage they are looking to acquire 75 pairs of broodstock, four times a year.

Action item 2 – AFMA to update NPRAG on progress towards the Sea Dragon prawn aquaculture development at future meetings

Agenda Item 3 – MEY trigger review for White Banana Prawns

The RAG noted the presentation by Dr Don Bromhead (NPRAG EO) outlining a number of issues that the NPRAG might wish to review to test the suitability and performance of the MEY trigger for White Banana Prawn. NPRAG was asked to discuss any potential improvements that might be made to the

current method, and develop advice for NORMAC as to whether the MEY trigger methodology should be adopted in its current form to estimate future trigger levels, or requires modification/improvement.

The following minutes are not strictly chronological but attempt to group the NPRAG's discussions of this agenda item into sub-topics, for clarity of understanding, noting that NPRAG's discussions moved back and forth between different sub-topics.

General comments on MEY trigger and review

During the discussion, industry members stated on a number of occasions that the MEY trigger was working well and questioned the need for it to be reviewed. In response, the Chair noted that the trigger was developed to provide an economic reference point for the fishery, while the lower limit buffer was to ensure sufficient escapement. He reminded NPRAG of the Commission's requirement for review, MSC requirements and the importance of the MEY trigger for managing the fishery in the absence of a conventional stock assessment process. NPRAG needs to be able to demonstrate to broader stakeholders a proper review process.

Price and cost inputs

NPRAG considered the impact of prawn prices and fuel prices on MEY trigger variability, noting that fuel prices were actually what was paid on any given day and this would vary if the operator was unloading in port or to a supply barge). It was identified that for the current year the average prawn price was $12.75 and the average fuel price was $0.7675 (fuel price is the price on any given day averaged across the directors of NPFI). Looking back on the season, Industry Members agreed the estimate of prawn prices was quite accurate and that fuel prices provided the greatest area for variability (depending on the operations of individuals). They stated that the current dynamic trigger is more appropriate than the previous static 500kg/boatday trigger and the 15% buffer around this figure is an important industry driven safety net for the fishery (given that the MEY trigger can be significantly lower than 500kg/boatday). NPRAG noted that economics is not the only driver in the development of the trigger and that there still needed to be provisions for escapement of banana prawns.

Differences in the end of season CPUE v trigger CPUE

The discussion paper posed the question as to why the fleet has in the past stopped fishing at CPUE levels significantly exceeding the current (and past season) trigger limits (e.g. exceeding 425kg which itself significantly exceeds the estimated MEY CPUE)? Is the MEY trigger estimate an accurate reflection of actual MEY or is there another explanation for the apparent disconnect?

Industry members and observers noted that it is not the whole fleet, but rather the activity of individual vessels and some have fished well early and have "had enough" and/or have started targeting tiger prawns. They further noted that numerous localised effects (such as rainfall) cause annual variations to fishing activity patterns. The size of boats operating and what their respective characteristics and business models also provide scope for variation. CSIRO noted that a CSIRO student will soon commence analyses of the operation of MEY at a boat level to assist in gaining a better understanding MEY at the fishery level.

The question was posed whether some boats still fish when they are not making money? In some instances fleets out of Darwin finish early because fishing in the particular ground they work may not have been that profitable. Alternatively fleets fishing out of good areas stay out longer (decisions can be greatly impacted by the JBG).

Industry members questioned why, if the fleet is staying above the trigger points the issue needs further consideration. The Chair responded in saying that AFMA and NPRAG need an explanation as to the variation. The best justification may be that we are dealing with a fleet trigger and that if it were based on the activities of individual operators the differences might be much less.

The Chair noted that there are many individual boats and operating scenarios, meaning there will always be a high degree of variability. NPRAG clarified that while some vessels leave the fishery earlier than others, it's not the entire fishery ceasing operation prior to season end date (many are still fishing). NPRAG noted industry comments that some boats hang around at the end of the season not catching much, and particularly some small boats will never achieve the trigger limit, yet can still make a profit.

Does the trigger setting approach require further testing and review?

AFMA asked if the trigger and buffer approach allow for enough escapements in bad years, and how it might be possible to test this. NPRAG noted that the MEY trigger has been tested from an economic perspective and it is working well, this was done through the application of extensive simulation testing by CSIRO (Buckworth et al. 2013)[1]. But it has not been tested from a sustainability perspective due to the lack of a defined stock recruitment relationship. The Chair noted that the fishery has recovered from very low levels very quickly under much higher fishing pressure without the protection of any trigger limit to ensure escapement. Nevertheless, the Chair indicated that we might need an answer that is more defendable than simply that the fishery has not collapsed the stock yet when fishing at CPUEs above 500kg/boat/day. This discussion was re-opened on Day 2 (see summary and conclusions below).

Does the MEY trigger give consideration to effort creep/increases in fishing power.

NPRAG considered the question of whether the underlying relationship between biomass and CPUE has changed through time, and the implications of that for ensuring that the lower buffer limit (425 kg) remains sufficiently precautionary from a sustainability (escapement) perspective.

Dr Bromhead and the Chair explained that increasing fishing power changes the relationship between CPUE and stock biomass. This is important because the lower CPUE buffer limit has been set based on the idea that it is associated with a stock biomass level, below which escapement *might* be too low to support the future stock. However, if fishing efficiency increases over the years, the catch rate (CPUE) associated with that same biomass level will increase. Subsequently, if the stock were to decline to that same biomass level in future, the CPUE will be higher (due to higher fishing efficiency) than the original buffer limit, and it will not be triggered. The lower buffer limit would only be triggered if the fishery drove the biomass well below the level originally considered to represent a potential risk to escapement. It was noted that increasing fishing power in the banana prawn fishery was identified through Shijie Zhou's research.

An NPFI member asked why there is concern about the impact of the banana prawn fishery now when there was not previously concern when the fishery was much larger (more boats). The Chair clarified that 500kg/boat day was previously agreed to be an indicator of a level of remaining biomass that would ensure a good level of escapement. Increasing fishing power means increasing catch rates relative to biomass, so over time the trigger might not afford the intended protection.

The economic member mentioned that there is no evidence that catch levels impact on White Banana Prawn abundance. This is about the lower biological limit that we want to put in place to be precautionary.

NPRAG then focused on the fishing power analysis of Dr Zhou and asked that CSIRO determine if there has been a fishing power increase or change since 2008 as this is the recent period most

[1] Buckworth, R. C., Ellis, N., Zhou, S., Pascoe, S., Deng, R.A., Hill, F.G., and O'Brien, M.. (2013). Comparison of TAC and current management for the White Banana Prawn fishery of the Northern Prawn Fishery. Final Report for Project RR2012/0812 to the Australian Fisheries Management Authority, June 2013. 46p. ISBN: 978-1-4863-0107-2

relevant to consideration of the current issue. CSIRO brought relevant information to the NPRAGs attention in relation to this matter later in the meeting.

Action item 3 – CSIRO to distribute Dr Zhou's fishing power report.

Is there a consistent bias in boats for the fishery at a particular time.

NPRAG noted industry statements that vessel decisions to leave the fishery are not biased to less or more efficient vessels or the same vessels each year but rather it is more dependent on the boat and its fishing success that season as to who leaves first and who is there at the end of the season.

Action item 4 – NPRAG to examine this question further upon completion of Dr Sean Pascoe's student's research into boat level MEY factors

Is the 15% buffer valid.

NPRAG noted that the lower buffer limit of 425kg/boat/day was derived by substracting 15% from the original 500 kg/boat/day trigger and is intended to ensure sufficient escapement from the stock. However, this was based purely on the observation that such levels had not previously resulted in stock collapse and there was no stock-recruitment basis or other biological basis for the number chosen. Currently there is no other more appropriate method upon which to determine what the lower limit should be.

Boat level profitability plays a big role in the uptake of the trigger. An industry member suggested that as a general rule small boats do leave the fishery earlier to go off and target tigers, noting in a good year they will all stay on bananas. The owners of private boats have a different model of what it means to be making a lot of money.

Repair and refit costs

NPRAG felt the current incorporation of repair and refit costs in the MEY trigger estimation was appropriate.

Scaling factor

NPRAG did not feel that there was a need to introduce a scaling factor into the MEY trigger estimation process until the process and inputs to the MEY trigger estimation were substantially more precise than they currently are.

Retrospective check of price and cost data

Noting that the prawn price and fuel cost data used to estimate the MEY trigger are based on season start figures provided by industry, the AFMA member asked if it would be useful to undertake a retrospective check after each season to determine how close the MEY inputs were to what the season prices and costs ended up being (which would have flow on impacts for the MEY trigger estimate). Industry members questioned why such validation was needed and AFMA indicated it would help to determine how close the trigger estimate was to the actual end MEY value. It was suggested this validation might be done via the end of season NPF survey data.

ACTION 5 – Fuel and cost data inputted to MEY trigger estimates to be validated via end of season NPF surveys

Summary and conclusions

On Friday 13th November the Chair re-opened the discussion on this item to seek some clarity around the group's conclusions, and to ensure the RAG could provide a clear response to NORMAC and ultimately the Commission in relation to this matter.

Noting that the fishery has generally ended with CPUEs significantly higher than the MEY trigger limit, the Chair suggested that a more comprehensive review of the trigger should occur if the

fishery CPUE drops below the 500kg/boat/day mark in the last two weeks of the season, three years in a row.

He noted that Dr Buckworth had investigated the fishing power analysis included in Zhou et al. (2014)[2] which had indicated an increase in catchability in the banana prawn fishery since 1987. The majority of the increasing trend occurred prior to 2007, and in the later years (2007-2011) the data were noisy with no clear trend in those years. He recommended that it would be useful to undertake a fishing power analysis within the next 2-3 years, and potentially this could be done by expanding the tiger prawn fishing power proposal to include the banana prawn fishery.

Industry expressed a number of concerns with the proposal, including a perception that increasing fishing power meant that the acceptable limit CPUE triggers would only increase through time as a result. The economic member noted that there is no evidence for a stock recruitment relationship. The key question is, how precautionary is the 425kg/boat-day limit? He agreed with the AFMA member's suggestion that perhaps a short review document outlining the basis and justification for the current trigger needed to be developed to further inform discussion of this issue.

ACTION 6 – AFMA to develop a short review document outlining the basis and justification for the current trigger.

In concluding discussions on this item, NPRAG members recommended that the current MEY trigger arrangements continue with the following two conditions: 1) conduct a banana prawn fishery fishing power analysis (as part of an expanded tiger prawn fishing power analyses); and 2) review the trigger's potential impact on sustainability if the CPUE during the last fortnight of the fishery is below 500kg for three consecutive years.

Agenda Item 4 – Tiger prawn assessment

There was no tiger prawn assessment conducted in 2015. The NPRAG noted the presentation (and paper) by Dr Rik Buckworth which provided an overview of the intended data inputs, assessment process, base case settings and key assumptions in the Tiger Prawn assessment to be conducted in 2016. He noted that a range of sensitivity tests are conducted in addition to the base-case model to test uncertainties around some of the key parameters, including testing low and high fishing power scenarios. He noted that none of the sensitivity tests conducted to date have identified any factors having a very large influence on the end "management relevant" outputs. However, in response to a question from AFMA, he indicated that further thought would need to be given as to whether some of the key assumptions listed in the paper need to be tested via sensitivity analyses.

ACTION 7– CSIRO to consider the need for further sensitivity tests on key model assumptions for the Tiger Prawn assessment.

Agenda Item 5 – Northern waters impacts update

Northern Australia White Paper

Mr Shane Fava (AFMA member) provided an overview of the "*Australian Government White Paper on Developing Northern Australia'* and highlighted references made in the document to developing Northern water resources and the potential for impacts on the fishery ecosystem. He noted that based on this information, and the outcomes from Bayliss et al. 2014, that there exists a significant potential threat to the viability of the NPF associated with the development of Northern water resources. This has led NORMAC and the NPFRAG to recently emphasising to the ComFRAB and the

[2] Zhou, S., Buckworth, R.C., Ellis, N., Deng, R.A., and Pascoe, S. (2014). Getting all information out of logbooks: estimating banana prawn fishable biomass, catchability and fishing power increase, with a focus on natural mortality. *ICES Journal of Marine Science.* **72**,54-61.

ARC the priority need for research into the impacts resulting from the development of Northern water resources. Avenues for funding from other bodies such as GrowNorth and NESP will also be investigated.

Grow North

Mr Fava also provided an update on the *GrowNorth CRC Programme* which is being proposed to deliver high impact research that will lower investment barriers and enable significant capital to flow to development in the north. Among the key objectives of the GrowNorth CRC Programme is the commitment to socially, environmentally and economically sustainable development. GrowNorth has been established to offer a long term collaborative commitment enabling many of the seemingly intractable issues about northern development to be addressed.

NESP

Professor Michele Burford (Griffith University) provided an update on the National Environmental Science Programme (NESP) which is a long-term commitment to environment and climate research with funding of $25.5 million per year during the life of the programme. The $142.5 million programme is being delivered through six research hubs. For the NESP Northern Hub, key areas of focus are the Gulf and Western Cape York (including Flinders, Gilbert and Mitchell).

A project on environmental water requirement for the Gulf fisheries will determine the contribution of rivers to the fishery, including a) Habitat available in southern Gulf rivers; b) Postlarval recruitment & juvenile densities in rivers; c) Environmental tracers linking prawns in fishery to prawns in estuaries and d) Hydrology of rivers. It will also model contributions to identify risks associated with the development of water resources. The outputs of the project will be a model to evaluate the trade-offs associated with water resource development. Activities will focus around developing a framework to test development scenarios that integrates improved models, including firstly, flow contributions to fisheries and secondly, fisheries and agricultural production;

The RAG discussion focussed on the following three areas:

Project focus: Industry members were concerned that the project would mainly generate a crude comparison of the value of agriculture versus fisheries without taking into account other factors, but Dr Burford indicated it would be a more refined examination and would provide the Queensland State government (a project participant) an understanding of all the key issues and considerations. Industry noted concerns that the State government had already handed out water rights and some land clearing has already started. Professor Burford noted that despite this they still required information on impacts to feed into future decision processes. The Chair suggested the Government should be looking at “minimal environmental flows”.

Project scope: A scientific member asked why it was necessary to repeat post larval recruitment surveys that had been conducted in the past. Professor Burford indicated that they wished to ensure that information used in the models was more recent and reflected the current system state.

Collaboration: NPRAG noted that there are a number of different related proposals being developed or already developed relating to potential fishery impacts and stressed the importance of different research groups communicating, collaborating and leveraging off each other, possibly via a formalised steering group. A scientific observer noted that CSIRO is involved via the Land and Water programme (not Oceans and Atmosphere) but that NESP could fill important gaps and complement the models to be developed by Eva Plaganyi and Shane Griffiths. The RAG Chair requested that the various project collaborators and Professor Burford provide regular updates to the RAG regarding progress in this important research area

ACTION 8 – CSIRO and Griffith University to provide updates to RAG on northern waters impacts research

Agenda Item 8 – Habitat ERAs research update

Dr Roland Pitcher provided an overview of *FRDC Project No 2014/204: Implications of current spatial management measures on AFMA ERAs for habitats*. He noted that AFMA has a need to extend the ERAs covering habitats and communities, taking into account the new information, methods and management. In particular, AFMA specified a requirement for a gap analysis to determine the extent to which individual fishery ERAs, and hence ecological risk management (ERM), need to address habitats, considering there are now other fishery management measures in place — including effort reductions & closures — and following the finalization of the CMRS network.

The project identified 22 habitat assemblages in the NPF. About 19.6% of the NPF area (0–150 m) is closed in CMRs, ~0.2% in MPAs and ~0.7% under fishery regulation — the total closed is 20.5%. The annual footprint of the NPF trawl fishery is 1.6% overall, and the multi-year footprint is ~2%, with most trawling around the perimeter of the Gulf of Carpentaria in assemblages '9' & '2'. These assemblages have footprints of 13% & 5.7%, trawled annually about 1.9 & 1.4 times on average. Total swept area ratios are 24.7% & 7.9% respectively. Other assemblages with notable trawling include assemblage '14' across Arnhem Land, and parts of assemblage '10' in the western gulf. These footprints are indicative of the relative potential for habitat risk and priority for future AFMA habitat ERAs.

In response to NPRAG questions, Dr Pitcher noted:

a. Observer data were not included due to a lack of time to do so, but might be in future.
b. The project tested a broad range of cluster options and while there was some sensitivity to how many clusters the fishery was divided into, the risk scores were relatively stable across different cluster configurations.
c. There are relatively few key fishery areas lacking survey or other data. The southwest area was probably the most sparse in terms of underlying data. He indicated he would check the risk scores in area 9 after the RAG noted some inconsistencies in the tables presented.

The Chair asked how the results of the project would now be used and Dr Pitcher indicated that they would be used to determine which fisheries and which areas needed to be examined more closely to better understand risks posed by the fisheries to those habitats.

Agenda item 13 – MSC update

Ms Annie Jarrett from NPFI provided an update on MSC requirements as relate to the NPF, noting that the NPF is due for recertification by MSC by November 2017. The 4th surveillance audit and the re-assessment will commence in 2016. The RAG noted that a number have changes gave been made to MSC Standards since the original assessment in 2012, particularly in relation to how bycatch is assessed. Key points which need to be addressed to facilitate re-certification are:

- The need to to determine each byproduct species and each bycatch species, as a % of the total catch
- TEP species are treated separately, with catch data required for all TEP species
  the need to identify and assess vulnerable marine eco-systems
- Sawfish as a key risk to ongoing assessment

The Chair noted that MSC pursues continual improvement of its processes and has identified that changes are needed in relation to its bycatch requirements.

Ms Jarrett explained the need to determine each byproduct species and each bycatch species as a % of the total catch to allow the CB to run a risk based assessment against main or vulnerable species. The need for proper protocols for observers to estimate total bycatch are now even more critical. She explained that MSC will in future classify main species as any individual species comprising > 5% of the total catch. Vulnerable species would be any individual species comprising greater than 2%. The CB will assess vulnerability by comparing these with the ERAEF medium and high risk species. Ms Jarrett indicated that any species comprising < 2% of the total catch and with medium/high risk can be excluded from this assessment.

Ms Jarret indicated that all catch data needs to be provided for TEP species which are treated separately. It was noted that a recommendation arising from the 3rd surveillance audit was that CSIRO re-evaluate the status of all EPBC Act listed species caught in the NPF and that NPFI work together with appropriate experts to determine a strategy to reduce interactions on any vulnerable species identified, especially those at highest risk. She noted that the audit report also recommended that, in response to the new initiative to examine habitat impact in the Commonwealth fisheries, the NPRAG should determine and justify which habitats are commonly encountered, vulnerable marine ecosystems (VMEs), and minor (i.e., all other habitats) before the reassessment commences.

NPRAG noted that a key risk identified by MSC is NPF interactions with sawfish (particularly *Pristis pristis*) and there is a need to undertake an updated SAFE analysis on these species. It was noted that the 2008 SAFE analysis undertaken by Zhou and Griffiths concluded that potentially the most vulnerable sawfish species to current commercial trawling in the NPF was *Pristis pristis* (freshwater sawfish). This species had an estimated fishing mortality close to its estimated minimum unsustainable fishing mortality and was one of several sawfish species which had also recently been listed under the EPBC Act as a 'migratory' species.

The RAG noted that NPFI is working with senior shark ecologist Dr Charlie Huveneers (Flinders University) to investigative innovative mitigation measures including the use of electric fields to deter sawfish from entering the trawl net. The work will be undertaken in consultation with Dr Peter Kyne, Charles Darwin University and research leader for the NESP Marine Biodiversity Hub project 'Supporting Management of Listed and Rare Species'.

The AFMA member presented some maps to demonstrate that interactions with sawfish (as a species group) occur throughout the NPF (averaging around 5/month over 10 years) but further investigation is needed to determine interactions with the species of interest. Species level identification by crews and observers will be critical in meeting CITES requirements.

NPRAG identified that there is a need to put together a comprehensive background information and data summary document so that the NPRAG can better understand the nature and extent of interactions prior to any additional research being undertaken.

ACTION 9 – AFMA/NPFI to compile summary information and data on sawfish interactions with the NPF

NPRAG discussed MSC requirements in relation to Vulnerable Marine Ecosystems (VMEs) and noted the potential for using Roland Pitcher's work to potentially address some of the MSC assessment criteria. Dr Pitcher indicated that CSIRO might be able to incorporate some aspects toward these requirements with its current project.

ACTION 10 – CSIRO to address MSC VME requirements for NPF as part of its current ERA habitats project. This would be as comments on the occurrence of any sensitive habitat components within the more exposed NPF assemblages, with qualitative remarks about the potential risk to them. The comments could be expressed with reference to the VME vocabulary so the outputs could contribute more easily towards the MSC requirement re VMEs.

Industry members and observers expressed their sincere appreciation for the work undertaken by Dr Shijie Zhou and colleagues at CSIRO to help meet MSC requirements in the JBG.

The AFMA member noted that a number of other fisheries at AFMA have been through the MSC certification process and it might be beneficial to communicate with those fisheries to gain insights into the process.

ACTION 11 – AFMA/NPFI to contact managers and industry in other Commonwealth fisheries to discuss their experience with MSC requirements and processes

In concluding the discussion the Chair noted that it would seem very difficult for low data fisheries to pass the current MSC criteria but work is ongoing in this area.

Agenda item 6 - Research Cycles

The AFMA member, Mr Shane Fava, presented a paper summarizing the annual ARF and FRDC research cycles and drawing attention to the status of these processes in the current cycle. He noted that the the recent COMFRAB meeting which was considering the northern waters impacts EOIs submitted by CSIRO, no recommendation was made while he was present. He noted that part of the previous lack of buy-on for such work was due to the Department of Agriculture not having been previously informed and briefed of the NPF's concerns and he stressed the need to engage the Department and make clear linkages with the Northern White paper. NPRAG requested that AFMA contact FRDC to seek clarification on why unsuccessful research providers were not contacted soon after their proposals had not been supported.

ACTION 12 – AFMA to seek clarification from FRDC regarding the timing of notifications regarding success/failure of EOIs and the reasons for delays in notifications.

Mr Fava noted that AFMA, NPFI and CSIRO would need to work out a process for progressing once they have heard back from FRDC. NPRAG also noted that if the EOIs were supported, the full proposals would be due by late January or early February, leaving not a lot of time for development.

Agenda item 7 – Research project priorities

The NPRAG Chair, Dr Ian Knuckey, opened the agenda item by noting that this presented an opportunity for the NPRAG to collectively assess a wide range of potential research projects that had been identified in recent years for improving the NPF stock assessments (primarily) and identify those priority projects that could then be funded in the long term as part of a continual improvement process for those assessments. The NPRAG considered a range of short overview proposals presented by Dr Rik Buckworth from CSIRO, in the following order (with meeting paper attachment letters listed):

- E – Revision of the assessment model for the Red-legged Banana Prawn in the Joseph Bonaparte Gulf Fishery
- C – Revision of NPF fishing power input data series and model
- A - Alternative catchability and natural mortality estimation for Tiger prawns in NPF
- D – Protocols for evaluating the NPF "species split" model
- B – Assessing the effectiveness of the trigger reference point in the banana prawn fishery.
- F – Strategic proposal: Including the economics of the banana prawn fishery in the NPF tiger prawn assessment

- G – A Management Strategy Evaluation Comparing the Value of Annual to Biennial Spawner Surveys in the Northern Prawn Fishery
- H - Tracking indicators of ecological health and stability in the Gulf of Carpentaria

In considering these potential proposals, the Chair asked NPRAG members to provide general comments after each presentation, but that the NPRAG would consider and prioritize across projects at the end of the overviews.

***7.1** Revision of the assessment model for the Red-legged Banana Prawn in the Joseph Bonaparte Gulf Fishery (Attachment E to meeting paper)*

The proposed project aimed to re-develop the red-legs assessment model to improve a number of assessment processes, including those relating to harvest strategy requirements, outputs for recommended TAEs, reference point values, catchability and availability, uncertainty associated with the TAE model output, variability in recruitment estimates, and data inputs for assessing recruitment.

Dr Buckworth noted that the proposal costing does not include CSIRO in-kind contribution. An industry member suggested the model might consider tidal influences (on recruitment or availability) based on industry observations that this has recently influenced vessel catches and broodstock availability quite significantly. Industry also clarified that the season was likely to tally around 100mt from JBG (not the 5mt stated earlier which raised some concern among scientific participants). There was no further substantive discussion on this item.

ACTION 13 – CSIRO to investigate potential linkages between tides and prawn availability in the revision of the red-legged banana prawn assessment model (if funded)

***7.2** Revision of NPF fishing power input data series and model (Attachment C to meeting paper)*

The primary objectives of this proposal were to:

1. Review the historical fleet and gear data since 2010 and update the historical fleet tables with newly acquired information on vessels' gear and technology, obtained from the current gear survey or other sources;
2. Complete a qualitative assessment of the information supplied in the gear surveys since 2010, in particular assess the accuracy and adequacy of the information for fishing power purposes;
3. Check data quality for trawls hours reported in the logbooks since 2010 and review the method for imputing missing trawl hours;
4. Summarise new gear and technologies that are reported in the gear surveys since 2010, or as part of survey follow-up and in this context, consider what future work is required on the fishing power model, or associated input datasets.

Dr Buckworth noted that the project effectively constitutes a comprehensive update rather than a complete rebuild and that the primary investigator (Judy Upston) believed it was long overdue. The AFMA member noted that this project builds upon a requirement discussed at the NORMAC July meeting to look at fishing efficiency changes. Industry members indicated that they did not feel a lot had changed (methods/gear) in the Tiger Prawn fishery in recent years apart from the increase in quad gear and questioned the need for this project. Dr Buckworth clarified that the management of the fishery is dependent on fishing effort so it is important to know if fishing power is changing. This has been an issue focused on by the Commission. A scientific member suggested that it should be reviewed every 5 years or so while the Chair suggested you might review only when large jumps in fishing power occur, to investigate what might be driving those changes.

***7.3** Alternative Catchability and Natural Mortality Estimation for Tiger Prawns in NPF (Attachment A to meeting paper)*

The primary objectives of this proposal were to:

1. Apply an alternative method to provide a new estimate of M; and,
2. Provide catchability estimates for both species of Tiger Prawn, thereby providing a valuable cross-validation to the fishing power analysis, which describes the annual change in q for the fishery.

NPRAG noted that this proposal relates somewhat to the previous proposal (7.2). The Chair noted that there has been significant discussion about the need for and merits of this project in the past including at the CSIRO Stock Assessment workshop. Dr Buckworth indicated that the proposal originated from similar work done on banana prawns. Merits of the current method are that it is well established and well understood, incorporates swept area analyses and is independent of the fishery. The proposed work was intended to add to the existing approach. The economic member supported the proposal, stating that it seemed to be a better way of estimating catchability. However, AFMA queried what the response would be if the two methods delivered different results and Dr Buckworth suggested that might lead to a larger project investigating why the results differ and which method was more appropriate. An observer asked if there are sensitivity tests that have been run on the estimation of natural mortality (M) and Dr Buckworth indicated that this had been undertaken, but not every year. A scientific observer stated that there is a risk that the proposed approach loses some critical information as it ignores additional independent information that is currently used to explain fishing power, and instead estimates several factors in a combined manner, so that the drivers of fishing power change are not so apparent. The method is also critically dependent on the assumption that there is no recruitment during the fishing period, which is unlikely to be true for tiger prawns.

***7.4** Protocols for evaluating the NPF "species split" model (Attachment D to meeting paper)*

The primary objectives of this proposal were to:

1. Identify trends in deviations in species composition from model predictions (with and without an update to training data) and provide recommendations on potential actions.
2. Develop methods by which the performance of the species split model can be regularly evaluated against data from surveys; and,
3. Evaluate whether the Scientific Observer program provides suitable data;

Dr Buckworth noted that the project arose out of concern over the potential for time trends in species split data, and thus the need to develop some diagnostics and testing to ensure that there is no annual trend away from that currently assumed. He noted that ascertaining whether the species split has changed is data dependent and that potentially environmental factors could drive such changes. The economic member noted that the project has the potential to inform the economic model and change the definition of revenue.

***7.5** Assessing the effectiveness of the trigger reference point in the banana prawn fishery. (Attachment B to meeting paper)*

This proposal was presented by Dr Sean Pascoe. The primary objectives of this proposal were:

1. Improving the estimate of the trigger taking into account the change in average efficiency over the season. This is partly being looked at by QUT PhD student, but will require a bit more supervisory input to bring it up to something useful for the fishery
2. Determine whether the MEY trigger reference point actually maximises net economic returns? Describe a perfect situation that can be used as a benchmark.

Dr Pascoe noted that the first part of the project is already underway, hence the main focus is on the second objective outlined above, which essentially asks how well is the trigger working relative to

the best outcome? What is the optimal effort allocation (through time and areas) to achieve optimal economic outcome? The Chair suggested that this project would be extremely difficult to undertake because of the highly variable decision making processes and factors impacting fisher behaviour. He also felt that the testing of optimal effort allocation had already been examined (to the degree possible) in the past. The economic member supported the first component as very important but not the second, for similar reasons, and noted that completion of the first part of the project would inform the need for the second part, and that sequencing of effort in fisheries like the NPF would be difficult to achieve. A scientific member asked what sorts of variables might be impacting the fishery to effect achievement of maximum economic yields. However, Dr Buckworth clarified that the project is more about benchmarking than trying to change how the fishery operates. He noted that the US prawn fishery (described in the paper) opens much earlier to allow access to smaller prawns but the NPF already opens later to deliberately ensure larger prawns.

***7.6** Strategic proposal: Including the economics of the banana prawn fishery in the NPF tiger prawn assessment (Attachment F to meeting paper)*

Dr Sean Pascoe provided an overview of the proposal, noting that currently the estimation of the MEY in the tiger prawn fishery assessment uses a running mean approach to estimate the apportionment of fixed costs between the tiger and banana prawn fisheries. This is particularly unsuitable in extreme years – i.e. those where banana prawn catches are unusually good, or poor.

He described two potential approaches:

- **Quick fix method -** Use the banana prawn effort production model (Pascoe et al. 2015) to estimate how much effort might be applied in the banana prawn fishery that year given available information. Reduce the available effort in the first season for the tiger prawn fishery in the tiger prawn model and estimate the optimal effort level given this restriction.
- **Longer term approach -** Develop a random-utility based model to estimate the probability of a given vessel participating in the banana prawn fishery, grooved tiger, brown tiger or not fishing each week based on individual vessel characteristics (e.g. average efficiency, size, engine power) as well as fishery level characteristics (e.g. size of prawns each week, average price, fuel costs, stock estimates).

Dr Pascoe explained that because the tiger prawn model has no links (other than fishing effort pattern) to the banana fishery (despite being sequential fisheries) it tends to predict high early season effort but this doesn't actually happen. Instead we impose an effort distribution on the model from the last two years. However, effort patterns change from year to year so this creates a problem. The focus of the above project is to find a better solution to this and determine a better and more accurate effort allocation.

NPRAG noted that this will also affect the allocation of fixed costs across the two fisheries and will ultimately impact on MEY estimates (provide better estimates that reflect what is happening in the fishery more accurately). The economic member strongly supported the project. An industry observer noted that by May they already have an idea of how the effort pattern will play out and was unsure why that information could not be used instead of undertaking the proposed project. The Chair suggested this had been tried unsuccessfully but the industry members suggested that was because the prediction was made too early in the season.

A scientific member and observers suggested putting the proposal forward as a strategic project. The Chair asked for clarification around whether it was sufficient to simply pursue the "quick fix" option first, to inform the need for the second longer term option and while this was confirmed as possible, Dr Buckworth noted that it will need to be a separate project due to higher resourcing requirements (10% time in first year).

Industry member support was mixed, with one member questioning the need for the research when the fishery was in such a good state while another suggested that it was worth considering issues that hadn't been previously considered.

***7.7** A Management Strategy Evaluation Comparing the Value of Annual to Biennial Spawner Surveys in the Northern Prawn Fishery (Attachment G to meeting paper)*

The primary objectives of this proposal included to evaluate the relative risks to stock sustainability and economic performance associated with annual and biennial spawner surveys and the consequences in terms of TAE change, and to examine any trade-off between reduced costs and increased risks to sustainability and economic performance for target species. The Chair noted that while it was being proposed as a national project, the SESSF fisheries were already pursuing this question with a current consultancy, potentially reducing it back to an NPF-specific project. He noted that NPRAG is already very familiar with the project for the purposes of prioritizing it against other work, and hence did not encourage further discussion.

***7.8** Tracking indicators of ecological health and stability in the Gulf of Carpentaria (Attachment H to meeting paper)*

The primary objectives of this proposal were to:

1. Provide relevant targeted monitoring of key indicators of the status and linkages of the ecological processes that underpin the NPF's prawn species.
2. Understand the links between freshwater flow, floodplain inundation and estuarine habitats that support coastal fisheries production,
3. Assess the impact of inshore water temperature and diverse flows, and other drivers on juvenile prawn habitats in several estuaries in the south east GoC,
4. Develop and implement monitoring programs, and other indicators of ecological community health and stability and responses to development in the Gulf of Carpentaria

Dr Buckworth noted that this is a large strategic project that is separate from the assessment-focused projects discussed so far. There was broad support for the project across NPRAG members with the Chair noting it is already ranked high priority alongside other northern waters development impacts research proposals. One industry member stressed that with the assessments well developed and stable and the fishery in a good state, it's the ecological knowledge that is lacking and requiring research funding.

7.9 Prioritisation

Following on from the presentation of project proposals the RAG then undertook a ranking process by which each of the assessment related proposals was scored according to its immediate need (1= lowest, 3 = highest) and the benefit to the fishery (to achieving fishery objectives). A summary of the final scores and overall rankings is provided below.

Project	Title	Immediate Need	Benefit	Total Score	Priority Rank
A	Alternate catchability method	1	2	2	5
B	Banana MEY trigger	1	1	1	5
C	Fishing Power revision	2	2	4	**3**
D	Species split	3	2	6	**1**
E	Revised Red leg assessment	2	1	2	5
F	Banana/tiger economics	2	3	6	**2**
G	Spawner survey MSE	2	2	4	**4**

"Immediate need" effectively considered the potential risk (biological or economic) to the fishery if the work was not undertaken in the relatively near term. "Benefit" considered the longer term advantages would occur through having the work undertaken. Priority and justifications and NPRAG comments on each proposal are as follows, in order of priority rank:

1. **D – Species split:** NPRAG ranked this as high immediate need and medium benefit.
2. **F – Banana/tiger prawn fishery economics:** NPRAG agreed that this project had at very least a medium immediate need (it is more of a longer term need) and would have a high benefit for the fishery. NPRAG suggested that the "quick fix" option be looked at first, before deciding whether the longer term fix was needed.
3. **C – Fishing Power revision:** NPRAG ranked this as medium immediate need and medium benefit.
4. **G – Spawner survey MSE:** NPRAG noted that this project was needed to provide longer term assurance that the harvest strategy (and assessment) will protect the sustainability of the tiger prawn fishery as well as maximal economic value if the fishery were to maintain biennial rather than annual spawner surveys. Due to the currently healthy state of the fishery, immediate need was seen to be medium, but longer term benefit seen to be at least medium (but with AFMA suggesting it could in fact be high).

Lower Priority

A – Alternate catchability: Dr Buckworth noted that the method would yield an additional estimate of M, which is currently highly uncertain. However, past sensitivity tests had indicated that varying estimates of natural mortality (M) had not had a significant impact on the end management relevant outputs, and as such the project was seen to have a low immediate need.

B – Banana MEY trigger: NPRAG noted that the first part of the proposal is already underway and supported by NPRAG. The second component is not supported and given very low priority

E – Revised red leg assessment: NPRAG ranked this as medium immediate need and low benefit. It was noted that the recent low catches may be a concern if driven by low adult stock and Dr Buckworth noted that the issues proposed to be revised could ultimately impact the reference points (e.g. recommended effort levels and biomass reference points etc). Industry observer questioned why there was any need to look at reference points when the fishery has been progressing well and noted the fishery was from an economic and catch perspective only a small part of the NPF. Dr Buckworth noted the work was unlikely to result in significant changes in the TAE but would significantly increase confidence in the assessment which might benefit MSC accreditation processes. NPRAG noted this project was more about continual improvement but the immediate need was not high. Dr Buckworth stressed the need to also think about long-term needs, not just short term.

After the completion of scoring and priority ranking of these assessment related projects, the Chair noted that these rankings were independent of the broader research priority rankings identified through the annual and 5 year research plans (as they all pertain to the assessment, which is a priority). NPRAG noted industry member comments that in the broader scheme, the project

described under 7.8 *Tracking indicators of ecological health and stability in the Gulf of Carpentaria (Attachment H to meeting paper)* is considered of greater immediate priority than the assessment improvements listed above. The current assessment proposal rankings could be taken to NPFI, NORMAC and AFMA for consideration against broader research priorities. The rankings would be used in helping NPRAG identify future priority improvements to the assessment.

Agenda item 9 - Review of CMO and Scientific observer data

The AFMA member, Mr Shane Fava, presented an update on the recent review of CMO and scientific observer data, undertaken by AFMA in liaison with staff from NPFI and CSIRO. From this review a number of decisions and actions were generated including:

- AFMA in consultation with NPFI/CSIRO to update the AFMA observer manual (including the list of at-risk species).
- AFMA scientific observers (SO) to take individual photos of seasnakes and syngnathids.
- AFMA to further discuss with NPFI the best approach for sharing info between CMOs and SOs. E.g. SO to present at CMO Workshop.
- CSIRO to request copies of all SO photos from the AFMA observer team, potentially using an external hard drive to send at the end of each season?
- CSIRO to send the FAO extract for at-risk fish species to AFMA SO.
- NPFI to keep AFMA SOs informed of gear trials being undertaken.
- NPFI to send the guidelines for trials to AFMA SO so they are aware of the protocols if onboard during trials.
- Holding an annual observer catch-up between NPFI, CSIRO and AFMA in May/June to discuss and any issues prior to the start of tigers.

Ms Annie Jarrett (NPFI) reminded the NPRAG of related recommendations arising from the recent 3rd MSC surveillance audit as follows:

- That the NPF Resource Assessment Group focus on identifying main and minor vulnerable impact species by providing data for the re-recertification which shows the catch quantity of each species, including retained (byproduct) species, as a percentage of overall catch in each of the three sub fisheries – tiger, banana and red legged banana.
- That CSIRO reevaluate the status of all EPBC Act listed species caught in the NPF and that NPFI work together with appropriate experts to determine a strategy to reduce interactions on any vulnerable species identified, especially those at highest risk.
- That, in response to the new initiative to examine habitat impact in the Commonwealth fisheries, the NPF RAG determine and justify which habitats are commonly encountered, vulnerable marine ecosystems (VMEs), and minor (i.e., all other habitats).

She noted that the above recommendations should be taken into account when reviewing data collection needs.

Mr Fava noted that the observer data collection criteria were a work in progress and that AFMA would discuss with observers what changes to data collection are required and the potential to build in flexibility to observer data collection processes to respond to short term urgent data needs.
An industry member cautioned not to overload the CMOs with data collection work as this will impact on their core fishing duties and potentially result in loss of skipper support for the CMO program.

The Chair again raised concern over the lack of cod end catch estimates which will prevent the multiplying up of subsamples of bycatch to get total weight, meaning that it may not be possible to meet requirements of MSC in future. Mr Fava indicated that such data had been collected in the past but had been discontinued. A scientific member noted that it would be critical to also get some validated estimates of such data. He noted that species composition data is typically at family level not species level because of the difficulties in identifying species. NPRAG noted a suggestion that scientific observers might, under a dedicated project, send back frozen boxes of any samples they were unable to identify to CSIRO labs for identification to species level. Mr Fava recognized that the MSC requirement has potentially changed what data the observers might need to collect and would follow up on this.

ACTION 14
- NPFI to provide AFMA with MSC requirements email
- AFMA to initiate further discussion with observer team, NPFI and CSIRO (Gary Fry and David Brewer) around observer data requirements, and determine if current data collection meets all the priority requirements
- AFMA to provide recommendations on observer data collection to NPRAG for comment

Agenda item 10 - Bycatch reduction update

Ms Annie Jarrett (NPFI) provided an overview of the paper "Bycatch reduction update" and asked NPRAG to note: a) the current status of industry bycatch reduction trials, b) that an industry trials guide has been developed and distributed to industry and that c) the bycatch strategy document is undergoing final review. She noted that industry had hoped to run trials during the Tiger Prawn season but due to it being such an intense and successful season there had been no time to do so. She hoped that some vessels might fish for Tiger Prawns late in the 2016 banana prawn season, providing an opportunity for further trials.

Dr David Brewer stressed the need for more information on the effect of different device positions on the gear and noted that results from trials conducted in the Gulf of Papua fishery, which had achieved reductions in bycatch with zero loss of target prawns, suggested that BRD position is critical. The results from the trial would be directly relevant to the NPF. NPRAG discussed various options for stopping species like sawfish entering the net. The idea of using solid material at the front piece was rejected by industry members who indicated it would act like a kite and affect performance of the gear. Ms Jarrett noted recent electronic device trialled in Belgium reduced bycatch by 35%

Agenda item 11 - Autonomous adjustment update

The AFMA member, Mr Shane Fava, noted that in response to recommendations from a NORMAC workshop on structural adjustment (in July 2015), the AFMA Commission agreed to the following amendments to improve structural adjustment in the fishery:

- Amending the NPF Management Plan by removing the 100 gear statutory fishing rights (SFRs) minimum holding for a Class B (boat) SFR;
- Amending the NPF Management Plan to include a provision to initiate a compulsory surrender of Gear SFRs in equal proportion (%) across all holders if the combined trigger (to be described in the NPF Harvest Strategy) is reached in three consecutive years; and
- Amending the NPF Harvest Strategy to include compulsory surrender trigger points.

In making its decision the AFMA Commission agreed that the current ITE system of management controls along with the proposed changes will be effective at facilitating structural adjustment in the NPF. He noted the NPF Industry Pty. Ltd. proposal, *A 'Rules Based Individual Transferable Effort Quota' Alternative for Managing the NPF*, outlined the following mechanism for triggering a compulsory self-funded adjustment:

- *A combined minimum head rope length (6cm-quad gear and 6.6cm-twin gear) and minimum season lengths (44 day bananas and 92 days tigers) trigger point is a benchmark calculated in 2012 against which any future compulsory surrender would be calibrated.*

This equated to the lowest level of fishing effort that the fishery could economically sustain (at that time) before needing to remove fishing capacity and thus return the fishery towards maximising economic yield through a smaller fleet. Following the presentation the Chair asked NPRAG if it had any concerns with Table B in the discussion paper, which the NPRAG had none. Mr Fava asked if it was possible to validate the minimum head rope length and season length numbers (above in italics) so as to justify these and whether there has been any change since 2012, noting he was unclear of the origin of and criteria used to calculate those numbers. Industry members and an observer clarified that the numbers were not science or MEY based but based on discussion and agreement within industry, on where industry had been in past and what they felt was the minimal level of gear and fishing time required for industry to operate efficiently. Industry members and observers indicated that it would not be necessary to take these numbers back to broader industry to review.

Agenda item 14 – Other business

Size sampling summary for bugs - The AFMA member noted that this data had yet to be summarized and would be provided to the NPRAG out of session.

ACTION 15 – AFMA to provide bugs size summary to NPRAG out of session

Teleconference COI process- NPRAG noted the improved teleconference process for handling conflicts of interest (COIs).

Blue and red endeavour prawn ID material - NPRAG noted the Blue and red endeavour prawn ID material presented by Dr Rik Buckworth and thanked CSIRO for the development of those materials.

NORMAC meeting dates - AFMA and NPFI will discuss preferred timing of the next NORMAC meeting out of session but it is likely to be in mid-February.

Trawl snapper fishery- NPRAG noted a correction to the paper, that the fishery under discussion was the trawl snapper fishery and not the offshore net and line fishery. Mr Fava noted the intended expansion of the fishery into the JBG, but suggested that the likely overlap with NPF fishing grounds will be very minimal.

JBG fishery "opening" process - NPRAG noted the additional clarification provided by AFMA in the agenda item paper regarding the process for opening the JBG fishery each year.

Next meeting

It was agreed that the next meeting would be determined out of session but roughly scheduled for the second week of March 2016. The Chair closed the meeting at 1pm on Friday 13th November 2015.

List of Attachments

1) NPRAG 12-13 November 2015 - Annotated Agenda
2) NPRAG 12-13 November - Declared conflicts of Interest
3) NPRAG 12-13 November – updated action items

Attachment 1 - Agenda

Brisbane Riverview Hotel
12-13 November 2015 (09:00am start)

Item	Responsibility	Paper
1. Introduction/ Meeting Management • Welcome • Adoption of agenda • Declaration of interests • Minutes from previous meetings	Chair	Yes
2. Action items ***Outcomes:*** RAG to note progress on action items and provide updates where appropriate	AFMA	Yes
3. Banana Prawn MEY trigger limit review • Overview of current trigger method (Nick E.) • Criteria for review • Key issues/questions • Conclusions ***Outcomes:*** *RAG to review the MEY trigger methodology and performance during 2014 and 2015 and provide advice as to whether the current MEY trigger methodology meets requirements of the harvest strategy. Provide advice on whether any modification is required prior to its continued implementation.*	AFMA/CSIRO	Yes
4. 2016 Tiger Prawn Assessment • Inputs • Base case recommendations • Assumptions ***Outcomes:*** *RAG to provide advice on and if appropriate, endorsement of proposed inputs and base case for the 2016 tiger prawn assessment*	CSIRO	Yes
5. Northern waters impacts update • White paper • Grow North CRC • NESP ***Outcomes:*** *RAG to note updates and provide further advice if possible, on further options for sourcing funding for research into the impacts of Northern Waters developments*	AFMA	Yes

Item	Responsibility	Paper
6. Research cycles and planning 2015/2016 • Research cycle schematic overview • ARF Update • FRDC Update • Other? ***Outcomes:*** RAG to note research cycles and key dates and processes over the next 12 months, including its role in those processes	AFMA	Yes
7. Research project priorities • Non-assessment research projects • Priority assessment improvements ***Outcomes:*** *RAG to review the research project outlines presented and recommend, for both items:* • *Projects to be added/removed* • *Improvements/changes required* • *Order of priority* • *Alignment with existing 5 and 1 yr research statements?*	CSIRO/AFMA	Yes
8. Habitat ERA research overview ***Outcomes:*** RAG to note	CSIRO	Yes
9. Review of CMO and Scientific observer data • Review findings (including overlaps?) • Changes recommended • Discussion: Making better use of observer data ***Outcomes:*** *RAG to provide advice on any further efficiencies or improvements*	AFMA/NPFI	No
10. Bycatch reduction update • Scientific BRD trial update • Industry BRD trials update • Guidelines for industry trials • Bycatch strategy update ***Outcomes:*** *RAG to note updates and provide further advice if possible, on further options for BRDs and initiatives for reducing bycatch by 30%*	NPFI	Yes
11. Autonomous adjustment update • Changes to management plan • Changes to the harvest strategy ***Outcomes:*** *RAG note the potential changes to the management plan and associated time frames*	AFMA	Yes

12. Update Reports • Industry • AFMA - Observer program market testing - ERA/ERM update - HSP and Bycatch policies update - Science standards overview/update - Broodstock update – Sea Dragon • Science providers ***Outcomes:*** *RAG to note updates*	AFMA/NPFI/ CSIRO	Yes (for AFMA, otherwise, no)
13. Review of MSC Requirements ***Outcomes:*** *NPRAG to note update*	NPFI	No
14. Other business • Size sampling summary for bugs • Teleconference COI process • Blue and red endeavor prawn ID material • NORMAC meeting dates • NT offshore net and line fishery • JBG fishery "opening" process ***Outcomes:*** *NPRAG to note updates*	AFMA/CSIRO	Yes

Attachment 2 - NPRAG Declared Interests

**(amended according to item 1.3)*

Name	Membership	Interest Declared
Ian Knuckey	Chair	Fishwell Consulting has applied (via EOI) to run the AFMA observer programme and has been shortlisted for consideration. Company is associated with electronic logbooks. Will review role as Chair should research applications be successful.
Rik Buckworth	Scientific Member - CSIRO	Research provider involved particularly in stock assessment research in NPF. Has in the past and may in future seek and receive funding for research in the fishery.
David Brewer	Scientific Member - CSIRO	Research provider. Has in the past and may in future seek and receive funding for research in the fishery.
Malcolm Haddon	Scientific Member - CSIRO	Research provider. Doesn't partake directly in research in the NPF however.
Michael O'Brien	Industry Member	Employee of a company that owns statutory fishing rights (SFRs) in the NPF.
Ian Boot	Industry Member	Managing Director of Austfish, a company which operates 4 NPF vessels. Has a commercial interest in the fishery.
Phil Robson	Industry Member	Employee of A Raptis and Sons, responsible for managing 12 NPF vessels. Has provided charter for scientific surveys in NPF in the past and may in future.
Shane Fava	AFMA Member	No pecuniary interest in the fishery
Don Bromhead	Executive Officer a/g AFMA member	No pecuniary interest in the fishery
Annie Jarrett	Observer - NPFI	CEO NPFI and a member of the MSC Stakeholder Council. All research items are of relevance to NPFI.
Trevor Hutton	Observer - CSIRO	Research provider. Has in the past and may in future seek and receive funding for research in the fishery.
Eva Plaganyi	Observer - CSIRO	Research provider involved particularly in stock assessment research in NPF. Has in the past and may in future seek and receive funding for research in the fishery.
Tom Kompas	Economic Member -ANU	Research provider. Has in the past and may in future seek and receive funding for research in the fishery.

Name	Membership	Interest Declared
Roy Deng	Observer - CSIRO	Research provider involved particularly in stock assessment research in NPF. Has in the past and may in future seek and receive funding for research in the fishery.
Robert Curtotti	Observer - ABARES	Economics research provider. No current pecuniary interest in fishery. Potential to seek and receive funding for research in the fishery in future.
Shane Griffiths	Observer - CSIRO	Research provider. Has in the past and may in future seek and receive funding for research in the fishery.
Sean Pascoe	Observer - CSIRO	Research provider. Has in the past and may in future seek and receive funding for research in the fishery.
Rob Kenyon	Observer - CSIRO	Research provider particularly involved in monitoring and assessments in NPF. Has in the past and may in future seek and receive funding for research in the fishery.
Nick Ellis	Observer - CSIRO	Research provider particularly involved in monitoring and assessments in NPF. Has in the past and may in future seek and receive funding for research in the fishery.
Roland Pitcher	Observer - CSIRO	Research provider particularly involved in monitoring and assessments in NPF. Has in the past and may in future seek and receive funding for research in the fishery.
Michele Burford	Observer – Griffith University	Research provider. Has in the past and may in future seek and receive funding for research in the fishery.

Attachment 3 – updated action items

Item	Person responsible	Description of ACTION item	Progress
	13-14 September 2012 Meeting		
1	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** – AFMA has redeveloped its website and now hosts all RAG minutes (last 2 years) and research plans, RAG assessments, SAFE reports, and other research. Still work to be done on historical research reports and these may be contained in the AFMA "current research" and "Research reports" web pages as they are developed. Some webpage problems to overcome
	30 April 2013 Meeting		
2	AFMA	AFMA to provide a written annual summary of observer monitoring from 2011-12 that provides methods, results and spatial distribution.	**Ongoing** – summary to be provided each April.
3	AFMA	AFMA to enquire if shape files for all the closures in the NPF are able to be forwarded on to RAG members.	**In progress** – AFMA have trialled this in the SETFIA and AFMA compliance indicated it will be easy to implement in NPF. Process is that Compliance get the shape files into correct format and then host them on AFMA website and fishers can directly download into their plotter. AFMA will need a list of plotting programmes and info on compatability preferences (e.g. formats of the file downloads). AFMA to liaise with NPFI.
4	CSIRO and NPFI	Rik and Matt to investigate the large difference in the tiger prawn logbook data and landed data.	**Complete.** NPRAG discussion at this meeting (12-13 Nov 2015) identified that this was related to over packing of boxes and that this issue will now be detected and corrected for via the annual data reconciliation process.
5	AFMA	AFMA to report back to the RAG on the implications of ERA/ERM framework capturing habitat and communities for existing closures.	**Ongoing:** AFMA reported on this item under Agenda Item 12. Habitats and communities are not a focus of the current ERA/ERM update, they will be dealt with once species aspects are dealt with. Limited resources. AFMA to update NPRAG on ERA/ERM progress at each meeting.

6	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 .	**Ongoing (watching brief):** Partially addressed during 2014 assessment (conclusion: related to run of years with favourable environmental conditions) but CSIRO to monitor this on an ongoing basis.
7	Tom Kompas and NPFI	Tom Kompas and NPFI to investigate the increase in byproduct recorded in the Tiger Prawn assessment and whether this is a once off event, noting the scampi is isolated and squid can be accounted for.	**Complete:** The RAG noted industry observations that squid catches tend to spike at irregular intervals (over many years) and this represented such an event. It was noted by Dr Kompas that ideally all byproduct will be included in the revenue function.
	10 February 2014 Meeting		
9	CSIRO	CSIRO to prepare a proposal to assess the impacts of removing the spawner survey in 2016.	**Complete**: EOI was developed and not supported by ComFRAB after further feedback from the RAG. This proposal might be added to the list of potential future projects.
	2 October 2014 Teleconference		
10	Chair	Chair to write letters of acknowledgement and thanks to each of the outgoing NPRAG members (Ron Earle, Norm Hall, Rodrigo Bustamante).	**Complete**
11	AFMA	AFMA to draft and circulate a brief summary of AFMA research planning process.	**Ongoing** (updates to be provided at each RAG) – See papers with agenda item 4.
13	CSIRO	CSIRO to draft proposal for recruitment survey continuation from 2016 onwards	**Complete**: Proposal submitted to ARC and subsequently funded
14	CSIRO	CSIRO to develop an EOI for the project "Development of testing procedures for the Species Split model" for consideration by the RAG and NPFI.	**Ongoing**: Given the priority of the assessment, monitoring survey, and spawner survey MSEs this was deferred from submission in the latest AFMA round. This project will be provided as one of the one-page briefs requested by the RAG. The RAG can make input as to whether it should be addressed by future AFMA funding or put to FRDC, and relative priority. This can be considered under item 7 "*research project priorities*".

15	CSIRO/NPFI/AFMA	Working group of CSIRO, NPFI and AFMA to work out of session to identify the priorities within this R&D area (effectively, environmental drivers and their impacts on prawn stocks/fisheries, with the potential for reduced river flows to impact the fishery) and develop an EOI for presentation to the RAG and then NORMAC	**Complete**: CSIRO submitted two EOIs for ComFRAB consideration.
	3-4 March 2015 Meeting		
16	AFMA/EO	EO to determine the ongoing need for a Chair's Summary of RAG meetings to be provided to the Commission or NORMAC.	**Ongoing**: There is no requirement (according to AFMA Policy section and author of FAP 12) for RAG development of a Chairs summary to NORMAC or the Commission. The Commission has requested minutes only. However, the NPRAG agreed that the Chair and EO should provide a Chairs Summary to NORMAC after each meeting comprising of issues, actions and advice. The summary should not exceed 2 pages.
17	EO/Chair	EO/Chair to set future "pre-season" NPRAG meetings in second week of March (7-14 March) to allow completion of red leg assessment and survey results reporting.	**Complete:** this will be standard practice from now on.
18	AFMA/NPFI/CSIRO	VMS data to be processed (by AFMA, NPFI, CSIRO) in two lots, the first comprising VMS data from the White Banana Prawn season to be processed in August/September, and the second following the Tiger Prawn season. AFMA to determine feasibility of VMS data provision in December each year (rather than in February).	**Complete**: All data has been obtained and CSIRO is now completing final checks.
19	CSIRO	CSIRO to provide NPF industry with photos to assist in correct identification and reporting of Red and Blue Endeavour Prawns.	**In progress:** CSIRO have produced some draft identification material to be reviewed by the RAG at the Nov 2015 meeting (under other business)
20	CSIRO	Sean Pascoe to explore the potential to run the MEY calculation without including fixed costs.	**In progress**: CSIRO progressing, awaiting inputs from Cathy Dichmont.

21	CSIRO	CSIRO to develop a ½ page to 1 page summary paper outlining the need for accurate species split data in the assessments, the potential need for revising/updating the current models and input data, potential sources of new data, and preliminary estimates of cost for any potential further research/analyses to address this issue.	**Complete.** To be presented under Agenda item #7
22	CSIRO	CSIRO to provide RAG with a list of assessment areas which would benefit from further research/analyses, which the RAG could comment on and NPFI then develop as a standing list of future projects list to ensure continual improvement of the assessments over time.	**Ongoing**. To be presented under Agenda item #7. CSIRO has suggested that this be a standing annual item for review and updating. NPRAG agreed
23	AFMA/NPFI	AFMA/NPFI to assess current overlaps between data types collected by the scientific and crew member observer programs and report back to the RAG.	**Complete**: Review undertaken and changes to data collection made. See update under Agenda Item 9 (this meeting).
24	AFMA/NPFI	AFMA and NPFI to assess the potential for removing season start location restrictions in the directions and to provide industry with electronic versions of the closures.	**Complete**: After discussion between AFMA and NPFI, season start location restrictions were maintained. See item #3 from 30 April for update on provision of electronic versions of closures (in progress).
25	AFMA/ANU/NPFI	AFMA/ANU/NPFI to look into potential funding options to allow attendance of international experts to a June workshop assessing future management options in the NPF (including the potential for autonomous adjustment).	**Complete:** Workshop held. No international experts available. See update under Agenda Item #11.
26	AFMA	AFMA to circulate the ACIG review of the ERA/ERM framework to NPF RAG after first checking that it is now in the public domain	**In progress:** AFMA developing a progress summary against report finding and to circulate both to RAGs at same time.
27	AFMA	AFMA to provide budget acquittal for 2013 to NPFI	**Remove** – no longer relevant

28	AFMA	AFMA to determine if the ABARES bycatch proposal is available for distribution to the RAG	**Complete:** Proposal distributed on 05/11/2015
29	AFMA	AFMA to determine if NPFRAG comments on EOIs are to be provided directly to the ARC or are submitted via NORMAC	**Complete** - They are submitted directly to the ARC
30	AFMA/CSIRO	MSE Spawner survey proposal: AFMA/CSIRO committed to following this up and determining if such analyses had been run and whether the result would be relevant to the current project's objectives	**Complete** – background paper provided to RAG 3 June meeting
31	CSIRO	CSIRO to develop a list of projects aimed at improving target prawn stock assessments and reducing uncertainty associated with these, to be presented to the NPF RAG and then to industry via a joint research workshop later in 2015	**Complete**: This item duplicates that under items #21 and #22 and will be dealt with under Agenda Item #7 at this meeting. This duplicate item to be removed and a standing item (#22) kept in minutes.
32	CSIRO	Rik Buckworth to provide the RAG with a short proposal including costing and funding options relating to a short review of information on potential impacts of the Northern developments upon the NPF	**Complete**: EOIs submitted to ComFRAB
33	AFMA/NPFI	AFMA/NPFI to inform observers of revised at risk species list to help focus their data collection	**Complete:** List provided to Stephen Hall for distribution to observers in September 2015
34	AFMA	AFMA to determine; 1) why the requirement to collect length-frequency information on bugs has not been formally adopted by the observer program, and 2) if scientific observers are collecting estimates of the codend catch (for total bycatch).	**Complete** – observer section indicate that they have adopted this. They are not collecting estimates of total codend catch
	20 March 2015 Teleconference		
35	CSIRO	CSIRO (Dr Buckworth) to develop a brief summary paper of review required for the red leg assessment. CSIRO/NPFI to put the project on the future projects list.	**Complete:** Paper developed under agenda item #7 for this meeting

36	AFMA/NPFI	AFMA/NPFI to develop an NPF version of the ARC/FRDC research cycles paper indicating the timing of processes by which research strategy is used to prioritise and develop required research	**Complete**: This is covered by item # 11 from 3 Oct 2014. AFMA to provide update on research processes each meeting. Providing a standing calendar is difficult noting that research funder timelines keep changing. NPRAG agreed to drop this and keep #11 as a standing item.
37	AFMA/EO	EO to clarify the formal process by which the decision to open the JBG fishery is made	**Complete**: See explanation provided in paper under Agenda Item 14
	4 June Teleconference		
38	AFMA	EO/AFMA to provide NPRAG a written summary of the proper process for dealing with conflicts of interest during teleconferences so that the process runs more smoothly in future meetings.	**Complete:** please see paper presented under Agenda Item 14 (Other business)
39	AFMA	EO/AFMA to determine if the AFMA teleconference provider is able to record participants names, so that the meeting is automatically notified each time a participant calls in or hangs up.	**Complete** – this functionality is now set up. See paper under Agenda Item 14
	4 September Teleconference		
40	AFMA	AFMA to revise the text of the research priority scope and distribute to NPRAG and NORMAC for comment prior to finalisation and submission to ComFRAB.	**Complete**
41	AFMA	**Action item 2 –** NPRAG Chair to work with AFMA and the NORMAC chair to put together an initial draft support/justification letter that would focus on responding to ComFRABs previous recommendation.	**Complete**
42	AFMA	**Action item 3 –** CSIRO to develop EOIs to support the revised research priority to be submitted to ComFRAB	**Complete**

43	AFMA	Action item 4 – AFMA to coordinate the compilation of a submission to ComFRAB comprising revised research priority, support letter from the NPRAG and NORMAC chairs, and example EOIs, as described in previous action items	**Complete**