Northern Prawn Fishery Resource Assessment Group (NPRAG) Meeting

Meeting Minutes

Date: 17-18 November 2016
Location: Brisbane
Brisbane Riverview Hotel

Attendance

Thursday 17 November 2016	
Name	**Membership (type i.e. chair etc.)**
Ian Knuckey	Chair
Michael O'Brien	Industry Member
Ian Boot	Industry Member
Malcolm Haddon	Scientific Member - CSIRO
Tom Kompas	Economic Member - ANU
Rik Buckworth	Scientific Member
David Brewer	Scientific Member
Shane Fava	AFMA Member
Stephen Eves	Executive Officer - AFMA
Paul Ryan	Observer - AFMA
Renata Brooks	Observer - AFMA Commissioner
Annie Jarrett	Observer - NPFI
Adrianne Laird	Observer - NPFI
Trevor Hutton	Observer - CSIRO
Roy Deng	Observer - CSIRO
Sean Pascoe	Observer - CSIRO
Rob Kenyon	Observer - CSIRO
Robert Curtotti	Observer - ABARES
Arthur Raptis	Observer - (filling in for Phil Robson)
Friday 18 November 2016	
Ian Knuckey	Chair
Michael O'Brien	Industry Member
Ian Boot	Industry Member
Malcolm Haddon	Scientific Member - CSIRO
Tom Kompas	Economic Member - ANU
Rik Buckworth	Scientific Member
David Brewer	Scientific Member
Shane Fava	AFMA Member
Stephen Eves	Executive Officer - AFMA
Annie Jarrett	Observer - NPFI
Adrianne Laird	Observer - NPFI

Trevor Hutton	Observer - CSIRO
Roy Deng	Observer - CSIRO
Eva Plaganyi-Lloyd	Observer - CSIRO

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 9.00 am and welcomed participants.

Apologies were received from Phil Robson who was represented at the meeting by Arthur Raptis (industry member).

1.3   Declaration of interests

The RAG followed the conflict of interest declarations as outlined in the revised Fisheries Administration Paper 12 (FAP12).

A list of the full conflict of interest declarations made by NPRAG members and observers for the meeting is provided in **Attachment 1**.

1.4   Minutes from previous meeting

NPRAG noted that the minutes from the 18 May 2016 meeting had been circulated via email and endorsed out of session.

Agenda Item 2 – Action Items

The RAG discussed the action items listed in **Attachment 2** and noted progress. There was particular discussion around action items 7 and 11:

Action item 7 – AFMA/CSIRO to upload research reports relevant to the NPF to the GovDex site. The RAG noted that the most recent relevant research papers have been uploaded to GovDex and discussed what other papers would be useful to access. The RAG discussed whether to include all papers relevant to the NPF on GovDex or only a few of the most recent papers. There was interest in having one central location that contains all documents relevant to the NPF. An NPFI member advised that they have a bibliography of all the relevant papers and it was suggested that the NPRAG review this bibliography out of session and identify the papers they would find useful to upload to GovDex.

Action item 11 – NPRAG to review the NPF Harvest Strategy before the 2017 season to advise on inputs and decision rules ahead of making recommendations for the 2017 tiger prawn fishery season. The RAG discussed the review of the NPF Harvest Strategy and deliberated over how to increase effort in the fishery to reach MEY. AFMA are interested in revisiting the decision rules and wanted to gauge industry ideas on the potential for effort increase. The NPF Manager advised that a paper will be prepared for the next NPRAG meeting. The RAG discussed a number of options that can be considered to increase effort.

Actions:

- *NPFI to circulate the bibliography of all relevant NPF research papers to NPRAG.*
- *NPRAG to identify the research papers in the bibliography that would be useful to upload onto GovDex.*
- *AFMA to upload the research papers identified by the NPRAG to GovDex.*
- *NPFI to report on industry's appetite to move toward MEY and some available options at the next NPRAG meeting.*

1.2   Adoption of Agenda

The Chair updated the agenda based on discussions during the action items and suggested that the agenda may be slightly re-ordered so as to accommodate the availability of a number of invited observers and presenters. The NPF Manager requested that agenda item 8 be removed due to the need for preliminary discussions to be had during this meeting. It was proposed that a paper to be drafted to explore the review of the current season dates to achieve MEY. The NPRAG then adopted the revised draft agenda for the meeting (**Attachment 3**).

Action:

- *AFMA to draft a paper outlining the review of the current season dates.*

Agenda Item 3 – Update Reports

Industry Update

NPRAG noted an update from Ian Boot, Mike O'Brien and Arthur Raptis on the 2016 season. Catches were lower than 2015 and the brown tiger catch was less than predicted from the pre-season survey. Industry advised that they predicted lower catches due to the lack of rainfall in the Gulf of Carpentaria and surrounding areas. Despite lower catches, the NPF still experienced a highly profitable year, attributed to increased prices for prawns, low fuel prices and a favourable exchange rate.

The RAG noted that as predicted in the assessment, brown tiger prawns were more abundant than grooved tiger prawns in 2016. As a result there were greater percentages of smaller prawns. It was also noted that there was a slight change in fishing behaviour due to some operators targeting squid. The occurrence of a squid run was the first run in ten years and over 250 tonnes was caught.

The tiger prawn catch rate limit was triggered leading to the fishery being closed early for the first time in five years. The market for prawns was slower in Cairns this year, resulting in an increase in exported product. It was also reported that crew members were stable on most boats with a lot of previous crew returning.

The RAG noted industry concerns with the recent takeover of the TOLL freight company by Sea Swift. Industry has raised concerns previously of the repercussions from Sea Swift gaining a monopoly of the market and the effect this may have on fuel/freight prices. Industry reported that there has already been an increase in prices in some areas which is a worrying sign.

The RAG noted the competitive financial performance of the fishery in 2016 despite lower catches. Industry reported that the price of prawns is managed to provide some stability to operators each year. In a year when catches are lower the prawns are marketed for a higher price. Conversely, when

catches are higher the price of prawns is lowered to provide industry a consistent economic return. The difference in the size of prawns each year presents some marketing issues. Ultimately, however, industry advised that higher catches always attracts the highest return. The economic member commented that the current assessment model used in the NPF does not capture price elasticity very well and should be reviewed.

Action:

- *CSIRO to review/update the assessment model inputs to consider the influence of price elasticity.*

Industry – BRD Trial Update

NPRAG noted an update from Adrianne Laird (NPFI Observer) on the BRD trial. The new BRD (Kons Covered Fish eye) was initially scientifically trialled over nine nights (June 2016). CSIRO modelled the data collected which showed an average reduction in small bycatch of 40 per cent with minimal (less than two per cent) prawn loss.

After the initial trial, some fishers in the NPF requested to test the operational feasibility of the new gear. AFMA provided a permit to an NPF operator and initial results showed a similar, if not better, bycatch reduction compared to the scientific trials. It was noted that the industry's main concern is the variability in the number of prawns escaping from the gear, however the operational testing showed great improvement in prawn retention. The initial results are positive but the operational testing needs to be expanded into other regions to test the robustness of the new gear. An NPFI Observer reported that the skipper of the vessel that undertook the operational testing provided positive feedback. The continued operational testing involves three Raptis boats, each testing slightly modified versions of the BRD to identify the most efficient design. The RAG noted the extensive amount of effort invested by the crew testing of the gear, as every net from every shot is weighed. The Chair acknowledged the effort of these crew and suggested that the RAG provide some formal recognition.

Action:

- The Chair to send a letter to the crews involved in the operational testing of the BRD gear to acknowledge their efforts and contribution to the NPF.

Industry – MSC Update

NPFI gave NPRAG an update on the MSC recertification process. The NPF is due for its fourth annual audit and will be reassessed under section 1.3 of the MSC accreditation in 2017. The MSC recertification will be discussed with the industry at the next round of port meetings scheduled for February 2017. CSIRO are currently monitoring the data from the BRD trial as this data will contribute to the NPF being reaccredited under section 1.3.

AFMA Update

NPRAG noted an update from Shane Fava (AFMA member) on key management and policy processes relevant to the NPF (paper provided). Issues covered included:

- **Observer Program Market Testing -** A decision on whether or not an applicant has been successful or that the program will remain in-house with AFMA is expected by the end of 2016-17 financial year.

- **NT Demersal Fishery -** The initial proposal to amend the boundaries of the Northern Territory Demersal Fishery have been put on hold pending the finalisation of the Oceanic Shoals Commonwealth Marine Reserve. The area first proposed for expansion in the fishery is likely to fall within the proposed boundaries of the new marine reserve. Thus, the NT Demersal Fishery will likely expand in other areas once the Oceanic Shoals Commonwealth Marine Reserve boundaries have been finalised.

- **HSP and Bycatch policies -** No further decisions regarding the *Commonwealth Policy on Fisheries Bycatch* and the *Commonwealth Fisheries Harvest Strategy Policy and Guidelines* will be made until the Fisheries Policy has been finalised.

- **Science standards -** Pending endorsement by the FRDC and the AFMA Commission, AFMA will look to implement the National Fisheries Science Guidelines.

- **Bycatch mistreatment -** Fisheries officers will be provided with a guide on what is and isn't acceptable behaviour of fishers when it comes to the treatment and handling of bycatch species. An industry member raised concern that if a condition regarding the mistreatment of bycatch was placed on licences it would be the holder of that licence that would incur the penalty, not the skipper or crew responsible for the mistreatment.

- **US TED inspections -** AFMA discussed the US endorsed changes to the TED regulations with Queensland Fisheries and the Torres Strait Prawn Fishery. It has been advised that both fisheries will adopt similar TED specifications to the NPF to meet the US requirements.

The RAG noted the presentation by Paul Ryan (AFMA observer) on the status of the ERA/ERM project and discussed the draft guide that was distributed in August/September 2016. The Guide ensures that AFMA has consistent and transparent ERM practices in place for AFMA fisheries. It is currently being applied to two fisheries to test its efficacy and to allow AFMA, in conjunction with the ERA Technical Working Group (TWG), to make any revisions identified during this process. Finalisation of the ERM Guide will occur once feedback has been received from RAGs, MACs and the ERA TWG with any appropriate revisions incorporated into the ERM Guide with the goal to have it finalised and implemented by mid-2017.

A scientific observer questioned how fisheries that don't have data available will be considered under the ERA/ERM framework. AFMA highlighted that this is something that needs to be carefully considered as generally there is a lack of full information in every fishery. The ERA/ERM framework is essentially precautionary as lack of information increased the assessed risk. Essentially, the response for those fisheries lacking data but wishing to reduce assessed risk will be to collect more data. One of the key aspects of the ERA/ERM project is that decisions will be based on real information, not guesswork.

Concern was raised with the schematic diagram in the draft ERA/ERM guide as it does not currently show the difference between when the bSAFE or PSA method is to be employed. It was advised that PSA is the preferred method when data is not available as this is a less costly exercise. bSAFE is a more comprehensive method and hence incurs a greater cost to complete but is the preferred method when data is available. bSAFE can currently only be carried out for teleosts and chondrichthyans.

The Chair commented that the proposed time and effort of the RAG's involvement in updating the ERA for the NPF would be inefficient. It was suggested that a technical working group would be a more efficient use of resources. The RAG discussed what was involved in updating the ERA and noted the scope of the reassessment approach that was proposed. The Chair advised that the discussion could be considered a formal response from the NPRAG.

Actions:

- Industry to provide an out of session response to AFMA regarding the US TED wording that was distributed during the NPRAG.

- AFMA to update the draft ERM Guide to clearly distinguish between the bSAFE and PSA assessment methods.

Agenda Item 4 – Tiger Prawn Assessment

Timeline of data provision and assessment

The NPRAG noted the presentation by Trevor Hutton which provided an overview of the timeline of the tiger prawn data provision and assessment. Although 2016 is not an assessment year, he highlighted that currently all the assessment work is stacked at the start of each year. This creates time pressures and presents challenges to the researchers to complete the necessary work in such a tight timeframe. The RAG noted the challenges posed by the current assessment approach.

Update on tiger prawn assessment/improvements

The NPRAG noted the presentation by Trevor Hutton (CSIRO observer) which provided an overview of proposed improvements and assumptions made in the assessment model. He suggested a minor alteration to the assessment table of outputs showing yearly effort to include nominal effort for the following year as well as the year of assessment (product of fishing power and fishing time) and sought the RAG's approval. The RAG noted the inclusion of nominal effort in the assessment table of outputs showing yearly effort was sensible and supported the proposed alteration. An Industry member questioned whether the formula for natural mortality had changed and asked if a change in the formula influences the ratio of males to females. The RAG noted the graphs from the 2015 tiger prawn assessment on mean catch-per-unit effort index from standardised effort based on low and mid-high fishing power series. The graphs should be read with caution as the data points display data for spawner survey in recent years for every second year. This has the effect of making the trends appear more stable than they may be if data points were included for every year due to the year-to-year fluctuations.

The Chair commented that the collection, processing and distribution of data needs to be as efficient as possible due to the costs involved. There is significant cost in analysing data every year and there is room for improvement in the way data is collected, processed and distributed. He also noted that part of the benefits in setting a two year TAE may be lost if the data is analysed every year at a considerable cost.

Agenda Item 5 – Commission Outcome on Autonomous Adjustment

Shane Fava (AFMA member) provided a brief history on the development of autonomous adjustment in the NPF and an overview of the AFMA Commission outcomes (paper provided).

Autonomous adjustment by the NPF fleet is a critical aspect of whether the Individual Transferable Effort system is an efficient and effective management approach for the fishery in the long term. To

recognise excess fleet capacity in the fishery, the use of indicators (economic, biological, environmental and technical) was identified as an appropriate way to routinely monitor and provide early detection of conditions that may warrant fleet adjustment at low stock levels. It is desirable for industry and AFMA to be well informed about trends in fishery conditions and consequently gain early warning of a need for fleet adjustment.

The Chair mentioned a number of benefits that indicators can provide and invited the RAG to discuss potential options that would add value to the current assessment. Key points discussed by the RAG included:

- most indicators are at a fleet level and therefore, individual operators don't have indicators that they can use individually;
- most indicators only work for a homogenised fleet; and,
- the fishery varies from year to year – in a banana year larger gear is used – thus, it is difficult to develop indicators that account for such variability.

An Industry member questioned whether it is essential for indicators to be developed at a vessel level and whether indicators could be developed at a fleet level, e.g. head rope length. A large amount of data is already collected in the fishery that could be used to develop a suite of indicators but this data is scattered over multiple documents in many locations. It was suggested that it would be useful to compile all of this data in the one location as this data may reveal some trends that could be used to develop useful indicators. Analysing data from the last period when adjustments were made in the NPF might reveal any trends that could lead to the development of potential indicators. The use of profitability was suggested as the best indicator which can be developed from data already collected through ABARES.

The RAG noted that the development of a suite of indicators would be useful and agreed to the development of a list of potential indicators to be presented to NORMAC for their consideration. Potential indicators discussed included:

- active vessels;
- latent effort;
- capacity utilisation – if excess capacity exists, it may be a signal that adjustment is needed. Potentially a simple metric can be developed to measure capacity utilisation. It can be at a vessel level, fleet level or both. The data needed would include catch, effort, days fished, boat size – essentially nothing on top of what is already collected. Capacity utilisation is a fairly crude measure, i.e. it tells you if the capacity is underutilised but doesn't tell you why. Further analysis would be needed to determine reason.
- measure to recognise a low catch:high price or high catch:low price.

The Chair asked if the 6 cm per unit limit was still important. It is inefficient to fish below the 6 cm limit and operators would slowly be making a loss. It was suggested that an indicator, therefore, needs to be connected to this limit. The economic member advised that it would be more productive to concentrate on getting profitability right first.

The RAG noted that an efficiency study showed that during the last buyout the fishery was clearly split into two groups – the efficient fishers and the inefficient fishers. Currently there is only one group of relatively efficient fishers, and not much difference between fishers in terms of efficiency. Thus, this pattern is a fairly good indicator of when to begin considering if autonomous adjustment is needed.

The RAG discussed the process of developing indicators and the response that is required by industry. Indicators should be developed by the Industry as they know when to withdraw boats as it's no longer profitable and therefore, the fleet is automatically adjusted. The Chair advised that the purpose of

indicators is to provide operators with an early indication of how the fishery is tracking, i.e. they show when the fishery is trending downwards and adjustment may be needed. However, it's up to Industry to decide how to respond to the indicators. Indicators provide stakeholder reassurance that operators are aware of how the fishery is tracking and will respond accordingly.

The cost of developing indicators was discussed as it was questioned why a fishery that's operating successfully would fork out money every year to run an analysis that indicates that the fishery is tracking favourably. The Chair advised that a full analysis would not need to be run every year. A trigger, or a combination of a few simple triggers, in the first instance, would indicate if further analysis is required. Thus, in most years only a simple analysis would be needed. However, the cost of developing each indicator is something that first needs be determined.

The Chair summarised the discussion and confirmed the next steps in the development of indicators are for:

- AFMA to draft a paper on the need for autonomous adjustment and the approach to take based on the conversation of this RAG;
- a list of all the potential indicators that would be useful is to be compiled, i.e. a wish list of potential indicators;
- NPFI to confirm which indicators on the list would be useful to them;
- confirm the cost of developing each indicator; and
- prioritise indicators – low cost do annually, high cost do when triggered.

The list of indicators compiled through the RAG's discussion included:

- Current stock level vs MEY and MSY levels
- Current effort level vs MEY and MSY levels
- Fishing power (efficiency)
- NPFI member acknowledgement of profitability issue
- Unit level relative to 6.0 cm limit
- Measure of profitability? (single year and 3 year avg)
    - Clear measures of profits (fixed vs variable costs)
    - Price elasticity (really needs to be a focus)
    - Capital investment in fishery
    - Will require a robustness check on MEY trigger (banana & tiger)
- Capacity utilisation and technical efficiency estimates (banana and tiger data needs: catches and measures of effort and economic data - we currently collect it all)
    - Level of excess capacity and technical inefficiency
    - Determined at vessel level and then applied to fleet. (bimodal has gone to uni-model)
- What indicators suggest whether autonomous adjustment is occurring?
    - Number of active boats
    - Latent effort units (gear and days)
    - Value of asset entitlements
    - Trading (but not transparent)
- Further requirements are threshold for review and trigger

Actions:

- AFMA to provide NPFI with a draft autonomous adjustment discussion paper based on the RAG's discussion.

- NPFI to confirm which indicators would be useful to industry.

- Confirm the cost of developing each indicator.

- Prioritise indicators based on cost and importance.

Agenda Item 7 – Northern Waters Impacts Update

CSIRO update on current research project

The NPRAG noted the presentation by Rob Kenyon (CSIRO observer) which provided an update on the proposed northern Australia water developments pertinent to the NPF. Key points from his presentation included:

- The main focus of his research was to look at water resource use in northern Australia and the potential impacts on fisheries in Western Australia, Northern Territory and Queensland.
- Each jurisdiction generally has three tiers of legislation including a Water Act, Water Resource Plans, and Resource Operations Plans.
- Each piece of legislation contains statements of environmental flows regarding the flow regime of major rivers.
- Under the proposed developments it is envisaged the maximum flows will remain similar but the small and medium flows will be greatly reduced.
- Modelling undertaken as part of the Flinders and Gilbert Agricultural Resource Assessment (FGARA) project used projected change in flows in the Gilbert River under various water resource development scenarios and the relationship between historical flows and catches of banana prawns adjacent to the river mouth. The model predicted there would be a ten per cent impact on offshore prawn recruitment if flow disruption, such as a large dam placed on the river, impacted natural flows. Similar modelling will be undertaken to relate flows in the Mitchell River to possible impacts on banana prawn recruitment as part of the Northern Australian Water Resource Assessment project.

A scientific observer asked if there was any relationship between emigration of juvenile prawns and flow magnitude. The RAG noted that there were series' of data from at least two river estuaries where emigrants had been sampled fortnightly over the wet season for several years. However, the data has never been modelled against magnitude of simultaneous river flows similar to the flow/commercial catch relationship (as per FGARA modelling). Such an analysis would be worthwhile to undertake if a project was in place to support it (subsequent investigation showed that for data from the Embley and Mission Rivers (north east Gulf of Carpentaria), the magnitude of emigration events and the catchment rainfall in the two weeks prior to the emigration pulse were investigated and shown to be positively correlated).

As part of the research it was agreed that CSIRO would create an online portal with shapefiles of the proposed developments to be made available. CSIRO requested that this action be reconsidered as the data to construct the shapefiles isn't included in the research papers that have been reviewed as was expected. The RAG accepted that the shapefiles could not be developed and agreed to have this action removed from the research scope.

Action:

- Rob Kenyon to circulate a copy of his powerpoint presentation to the RAG.

The RAG noted an update on the mangrove dieback situation in northern Australia. Rob Kenyon advised that he didn't see any bleached mangroves along the river estuaries during the field work for his latest research project. Queensland are undertaking some monitoring and have collected soil samples that can be used for future analysis if the dieback is associated with the soil. The Northern Territory has invested $200k into researching the dieback and the Minister for the Environment and Energy, the Hon. Josh Frydenburg MP, has requested that the NESP undertake some research into the

issue for which the Townsville University are putting together a research proposal. A scientific observer commented that at a recent expert meeting not all members were in agreement as to the cause of the mangrove dieback. Some of the expert members attributed the dieback to the heat, others suggested it may be related to salinity, while other members considered 'blackwater' a possibility. Mr Kenyon noted that he inspected a tract of dead mangroves nearby Karumba during his recent fieldwork. He described that the dead mangroves had existed adjacent to a coastal beach on mud substrates relatively high in the intertidal zone that may not have been submerged on neap tides. He noted a beach-rock and sand beach grading up to dry coastal vegetated sands behind the mangroves and hypothesised that the cause of the dieback may be due to a combination of the mangroves not receiving enough groundwater from the land and lack of tidal inundation under recent hot and dry climate conditions. The western-most 50 m of the mangrove tract had not died and the portion of the substrate under the live mangroves seemed lower in elevation than within the main mangrove tract and perhaps was inundated on the neap tides. Mangroves were re-shooting on the seaward edge of the forest only.

Agenda Item 6 – Banana Prawn Fishery Update

Retrospective partial check on this year's in-season trigger given the current economic situation

The RAG discussed the need to review the in-season banana prawn trigger. The Chair questioned the value of reviewing the economic inputs now as real data has not yet been collected and the review would be reliant on estimates. The RAG noted that the NPFI usually do the review in February or March each year when the economic data was collected. It was agreed that the review would be conducted in February/March 2017 when the actual economic data was available.

Banana prawn fishery efficiency analysis (boat level MEY analysis)

The NPRAG noted the presentation by Sean Pascoe (CSIRO observer) on the results of the boat level MEY analysis. A key part of the project was to establish a boat level trigger that indicates when to stop fishing before the point of efficiency is surpassed. Dr Pascoe reported that there is an efficiency drop at the end of the season due to increasing costs by the twelfth week. Although productivity can be high, ultimately the efficiency is low. From the analysis, it would be more efficient to keep the small boats in the fishery at the end of the season. An industry member commented that the analysis may not have picked up all the complexities involved in the fishery. For example, boats may trawl a smaller area and therefore, use less fuel when there are large quantities of prawns in the water, but this can be offset by the increased ancillary power, and hence more fuel, needed to refrigerate the larger catch. The Chair questioned whether the last two weeks of the season provided reliable data, due to the changing dynamics of the fleet during this period, and whether they should be left out of the analysis. It was also suggested that as only 15 boats are left in the fishery at the end of the season, does a 50 per cent drop off in efficiency at the end of the season really matter.

The RAG noted the draft analysis and agreed that the draft paper needs to be revisited again at the next NPRAG meeting before the model is finalised. The Chair sought agreement from the RAG that this is an ongoing action item and should be completed within 12 months. The RAG noted concerns raised by an industry member regarding the initial analysis. It was questioned whether the proposed trigger achieves the maximum economic yield.

Action:

- *AFMA to circulate the draft CSIRO boat level MEY analysis paper to the NPRAG.*

Agenda Item 10 – JBG Red Leg Banana Prawn

Discussion of harvest strategy requirements

The RAG welcomed Eva Plaganyi-Lloyd to the meeting. NPRAG noted an update from Shane Fava (AFMA member) regarding the low effort levels in the JBG red leg banana prawn fishery and the potential for increased data collection. The RAG discussed potential reasons for the low catch/effort in 2016. Key suggestions raised included:

- there may be a potential difference in recruitment patterns;
- there is evidence of changing currents in the region;
- prawns may have moved into different areas ;
- limited rainfall;
- fishers don't steam to the JBG due to good catches in other areas.

An industry member advised that it is a long distance to steam to the JBG. Therefore, boats don't travel the distance if there are productive areas closer to port. It was questioned why the boats that do commit to travelling to the JBG don't stay longer than three days. There are other reasons besides catch to go to (and leave) the JBG – particularly catches in other regions of the fishery.

A scientific observer questioned why there was such a variation in the amount of prawns caught by each boat. The coordinates of productive fishing grounds may have been leaked to more boats. While the initial boats to the productive areas experience large catches, later boats only catch what's left, which is minimal.

The RAG considered the decision rules contained within the NPF Harvest Strategy and noted that in 2015 there was insufficient data available to reliably fit the red-legged banana prawn fishery model and consequently no recommendation was made on a 2016 total allowable effort (TAE). The 2016 preliminary data is once again inadequate to reliably fit the fishery model and a decision is to be made in early 2017 as to whether the JBG fishery should be opened. The AFMA member asked the RAG to consider whether the harvest strategy and triggers need to be reviewed and updated. The Chair commented that for a stock that is low the management response is to lower fishing effort.

Dr Plaganyi-Lloyd highlighted that from an outsider's perspective (e.g. the Marine Stewardship Council) there are some worrying signs in the fishery. A recent paper published by CSIRO (Plaganyi et al. 2016; provided as attachment) highlights some of these concerns including: a lack of data to reliably inform the stock assessment model; too few data to distinguish between alternative plausible reasons for the relatively poor red legged banana prawn fishing season, and; no fishery-independent survey data available. There is a need for good data to narrow down what the cause of the recent low catch/effort could be. The lack of data currently presents a high risk to the fishery. Due to the lack of data, the question of whether the low catch is due to a problem with the stock or natural variation is unable to be answered. An industry member commented that the season was comparatively stable, referring to the disastrous season experienced by other fisheries, e.g. the Kimberley Prawn Managed Fishery. As less boats are fishing, the changes in the fishery are more pronounced.

The Chair suggested that historical data may be able to be used to assess the risk to the stock from fishing and the probability the stock will remain sustainable. Research could be undertaken to test 'rules' that assess if the stock will remain sustainable in low catch/effort years. The need for such rules was questioned when operators pull their nets from the water and move on if catches are low. If this is the action operators take and is considered a sensible management approach, why is there a need to develop triggers? The management response is appropriate but there is a need to communicate this response to external stakeholders, e.g. the MSC will look for this type of response written into the Harvest Strategy. The Chair added that the MSC will assess whether the official arrangements are robust and if the Harvest Strategy is scientifically sound. An industry member questioned the logic

behind the collection of data for the purpose of developing decision rules – if operators go to the JBG to fish but decide to pull the nets and leave because they don't like the catch, isn't this a more desirable outcome than 'flogging' the fishing ground just to collect data? It was reiterated that the industry's approach needs to be recorded in writing to be considered a defensible strategy. The concern is not that the industry isn't doing the right thing, it's that there is no defensible strategy captured in writing anywhere.

The RAG discussed the development of a defensible strategy and noted that a staged approach was necessary. It was suggested that Dr Plaganyi-Lloyd may be able to do further analysis on the data that is currently available. The current decision rules in the Harvest Strategy can be further strengthened by adding more criteria, e.g. if rainfall is less than a certain amount it may indicate there is a high chance the stock will be reduced. The AFMA member commented that a pathway forward needs to be established, i.e. what needs to occur in the second year, third year and fourth year. The RAG agreed that the scope of the research undertaken by Dr Plaganyi-Lloyd needs to change from the collection of new data to focussing on the integration of current data. The data collected through a Crew Member Observer (CMO) is not worthwhile when the catch is so low. It was suggested that length frequency data could easily be collected through a sample of a tri-shot trawl and if bagged individually would provide a rigorous sample size. Alternatively, a cost effective method of collecting length frequency data would be to buy a couple of boxes of prawns to analyse. The length frequency data could be used to compile a time series. Ultimately, it isn't possible to guess what the data will reveal – the data needs to be analysed first before any trends can be identified. A scientific member considered the reliability of using historical data and questioned whether the accuracy of this data would have changed over the years. The Chair recommended that a sound approach would be to wait for the results of Dr Plaganyi-Lloyd's assessment before making any changes to the harvest strategy.

An industry member commented that they had observed a change in how the prawns were graded. The Chair questioned why this would be the case as he was under the impression that the grading sizes had previously been discussed with the NPRAG and an agreement was reached to standardise the grading. Standardised grading was agreed during the discussions to transfer to a quota system. However, as it was eventually decided not to go to a quota system, the standardised grading motion was not finalised.

The RAG noted the preference reported by the AFMA member of a staged approach to the review of the red leg banana prawn Harvest Strategy and the need for data collection/further research.

***Action*:**

- Eva Plaganyi-Lloyd to analyse historical data and present her finding to the NPRAG in March 2017.

Agenda Item 9 – Research Project Priorities

ARC/ComRAC update

The NPRAG noted an update by Shane Fava (AFMA member) on the NPF Annual Research Statement as considered by the AFMA Research Committee (ARC) at its 22 September 2016 meeting. The discussion at the ARC meeting was limited as most of the research is ongoing with the only new proposal being a project coordinated by Adrianne Laird (NPFI observer) on sawfish bycatch. There are issues with the timing of the ARC meetings and the ComRAC meetings and if new proposals are timed right, they might not need to go through ComRAC. The ARC also discussed how research is classified, i.e. if the research is ongoing it should preferably be called important, but priority should be reserved for urgent research.

The NPRAG noted an update by Adrianne Laird (NPFI observer) on the outcomes from the ComRAC meeting (11 November 2016) regarding the NPF sawfish bycatch proposal. Overall, the ComRAC were positive toward the project proposal but suggested that as there are flow-on effects for other northern

fisheries, the proposal should be discussed with the relevant jurisdictions. There is uncertainty whether the ComRAC will support the project if the states are unsupportive. The Chair commented that from his experience the states would unlikely be supportive of the project due to resourcing, and the project is unlikely to be one of their priorities.

A scientific member suggested that there is great potential in investing in shark deterrent research due to a recent rise in shark interactions with the public around Australia. Although not entirely relevant to the NPF, it was an area of research that would provide numerous benefits to a number of fisheries, including the NPF. Of direct relevance to the NPF is the consideration of installing simple, inexpensive devices to deter bycatch including sawfish. This would send a positive signal to the MSC of the actions that are being taken in the NPF to reduce bycatch.

NPF assessment related projects – prioritisation

The NPRAG noted an update by Trevor Hutton (scientific observer) on the NPF assessment related research project scopes and when each of the projects were last completed:

Project	Last completed
Alternate catchability method	Not previously completed
Banana MEY trigger	Current project - half completed by Sean Pascoe
Fishing power revision	Last complete update in 2010
Species split	2004
Revised red-legged assessment	2010
Banana/tiger economics	1994 (S. Pascoe's bio-economic model)
Spawner survey MSE	?

The Chair commented that the two-page summaries provided on each project were really useful documents and encouraged CSIRO to continue to provide these summaries in the future.

The Chair suggested that it was not necessary to consider every project at the moment. Instead, it would be more useful to identify the top priorities. The AFMA member commented that it was necessary for the RAG to agree to some time commitments in which the projects are to be completed. Annie Jarrett (NPFI observer) advised that the NPFI supported the fishing power revision project as a top priority. The Chair confirmed that there was full RAG support for the fishing power revision project. The importance of the species split project was stated as it feeds into other assessments, including formulas used in the model. It was suggested that he commission's fixation on 'fishing power' is a good reason to move this project to top priority. The RAG discussed the importance of the species split data and noted the flow-on effects from having accurate species split information. The RAG agreed to move the power revision project to top priority.

The RAG discussed the risk to the NPF of not updating the species split data. Agreement was reached from the RAG that the survey data should be used to conduct an initial investigation into species split.

The Chair closed the meeting at 11.00 am on Friday 18 November 2016.

Actions:

- CSIRO to develop a full project proposal for the fishing power project by the end of January 2017.

- CSIRO to conduct an initial investigation into species split by analysing the survey data.

References

Plaganyi, E., Miller, M., Upston, J., Moeseneder, C., Weeks, S., Kenyon, R., Hutton, T., Deng, R., Dennis, D. and Buckworth, R. 2016. Summary of the 2015 Joseph Bonaparte Gulf Red-legged Banana Prawn (*Penaeus indicus*) Fishery performance. Commonwealth Scientific and Industrial Research Organisation. Brisbane, Australia.

List of Attachments

1) NPRAG 17-18 November 2016 – Declared Conflicts of Interest
2) NPRAG 17-18 November 2016 – updated action items
3) NPRAG 17-18 November 2016 – Annotated Agenda

NPRAG Declared Conflicts of Interest

Name	Membership	Interest Declared
Ian Knuckey	Chair	NORMAC Scientific member Fishwell Consulting Director Fishwell Consulting has applied (via EOI) to provide 8-10 observer days monitoring the tiger prawn fishery. Company is associated with electronic logbooks. Will review role as Chair should research applications be successful.
Rik Buckworth	Scientific Member	South East RAG Scientific Member NT Research Advisory Committee (FRDC), Chair Aquatic Remote Biopsy Pty Ltd, Director Researcher 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	Researcher. Has in the past and may in future seek and receive funding for research in the fishery.
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 NPF vessels. Has a commercial interest in the fishery.
Phil Robson	Industry Member	Employee of A Raptis and Sons, responsible for managing NPF vessels & an NT demersal fish trawler. Has provided charter for scientific surveys in NPF (none of which are in JBG) in the past and may in future.
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
Shane Fava	AFMA Member	AFMA employee, no pecuniary interest in the fishery
Malcolm Haddon	Scientific Member - CSIRO	Research provider. Doesn't partake directly in research in the NPF however.
Stephen Eves	Executive Officer (AFMA)	AFMA employee, no pecuniary interest in the fishery
Annie Jarrett	Observer - NPFI	CEO NPFI and a member of the MSC Stakeholder Council. Some research items are of relevance to NPFI
Adrianne Laird	Observer - NPFI	Employed as a contractor by NPFI. Some 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-Lloyd	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.
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.

Action Items

Item	Person responsible	Description of ACTION item	Progress
	3-4 March 2015 Meeting		
1	CSIRO	Sean Pascoe to explore the potential to run the MEY calculation without including fixed costs.	**Ongoing**
	12-13 November 2015 Meeting		
2	NPRAG	NPRAG to examine further the question of consistent bias in boats upon completion of Sean Pascoe's students research into boat level MEY factors	**Ongoing** – update provided by Sean Pascoe in agenda item 6.
	17 March 2016 Teleconference		
5	Industry/CSIRO	Industry members to provide boxes of red-legged banana prawns from the Joseph Bonaparte Gulf to CSIRO for catch composition and size analysis.	**Complete** – discussion regarding further red leg banana data analysis from the JGB had at agenda item 10.
	18 May 2016 Meeting		
6	NPRAG Chair	Write letter thanking Don Bromhead for his work as the NPRAG EO.	**Complete** – letter with Ian K. to sign.
7	AFMA/CSIRO	Upload research reports relevant to the NPF to the Govdex site.	**Ongoing** – RAG to decide what papers would be useful to upload.
8	AFMA	Provide a written annual summary of observer monitoring that provides methods, results and spatial distribution (use SESSF report as a template).	**Ongoing** – to be completed out of session before next NPRAG meeting.

Item	Person responsible	Description of ACTION item	Progress
9	AFMA	Notify NPRAG when NPF shapefiles are available online for downloading directly to vessels.	**Ongoing** – to be completed by 1 March 2017.
10	AFMA	Circulate main points from the ACIG review of the ERA/ERM framework to NPRAG.	**Complete**
11	NPRAG	Review the NPF Harvest Strategy before the 2017 season to advise on inputs and decision rules ahead of making recommendations for the 2017 tiger prawn fishery season.	**Ongoing** – Annie Jarrett to report back to RAG on industry's appetite to increase effort and some available options at the next NPRAG meeting.
12	CSIRO/Tom Kompas	Conduct a sensitivity analysis of the 2016 model predictions using actual economic prawn price and fuel cost data which is collected during November 2016, with new economic information provided in March.	**Ongoing** – occurs as part of the MEY within season trigger setting process.
13	CSIRO	Send final tiger prawn stock assessment, supporting PowerPoint, fishing power analysis reports and presentation on the pre-season survey results.	**Complete**
14	AFMA	Confirm if observers are estimating the total codend weight or using the boxed weight recorded on logsheets.	**Complete** – estimates are of codend weight.
15	AFMA	Update observer manual to include most up-to-date handling and data collection techniques and send updated list of items recorded to NPRAG.	**On –going** – to be completed before start of 2017 season.

Item	Person responsible	Description of ACTION item	Progress
16	AFMA	Clarify why species such as sea jellies and benthos are being collected and remove if not necessary.	**Complete**
17	CSIRO/Michelle Burford/NPRAG/ NPFI	Industry to co-fund the additional research component of the NESP project. NPFI, CSIRO and Michelle Burford to develop a project proposal for ComRAC consideration. CSIRO and Michelle Burford to meet with NAWRA project leader to discuss if knowledge gaps exist and whether data from the NAWRA project can be used in the NESP project. Report back to RAG. Depending on the above discussion outcomes: NPRAG/NPFI to write letter to NAWRA identifying the value of collecting this data to help inform future decisions.	**Complete**
18	NPFI/CSIRO/Tom Kompas	Complete retrospective analysis of banana prawn trigger in Feb/March 2017 and present to NPRAG.	**Ongoing** – waiting on data.
19	CSIRO	Estimate price for conducting a banana prawn fishery fishing power analysis and report back to NPRAG.	**Complete** – discussed at agenda item 9.
20	AFMA	Update the priority assessment research projects list to include when the topic areas were last completed.	**Complete**

Item	Person responsible	Description of ACTION item	Progress
21	NPRAG	Reassess the research priorities at the next face-to-face meeting to establish a schedule of improvements to be made to the stock assessment.	**Ongoing**
22	AFMA	Discuss the mangrove die-off with the Department of Agriculture and Water Resources and Premier and Cabinet. Confirm to whom it has been reported. Contact the Australian Mangrove and Saltmarsh Network of the James Cook University to see what results they got from the March/April 2016 testing they conducted and report back to NPRAG.	**Complete/Ongoing** – update provided at agenda item 7 – ongoing topic to be discussed at each meeting.
23	AFMA	Confirm how long e-monitoring footage kept for and able to be accessed through FOI.	**Complete** – Under the National Archives Act, AFMA is required to hold onto all information for at least 7 yrs and as part of the implementation an exemption was sought (and granted) for AFMA to destroy the video data after 6 months.
24	NPRAG Chair	Send link for shark handling guide video to NPRAG.	**Ongoing** – link will be sent before next meeting.
25	AFMA	Discuss with Queensland Fisheries and Torres Prawn about why they aren't implementing the US recommended changes to the TED regulations.	**Complete**
26	NPFI/AFMA	Write report including scientific analysis of results following trials of Kon's double fish eye.	**Complete** – full report will be available by mid-December.

Item	Person responsible	Description of ACTION item	Progress
27	CSIRO (David Brewer)/NPFI	Identify the top 3 bycatch reduction devices to be further tested for effectiveness. NPFI to lead this project and Austfish to test 1 or 2 of these devices. CSIRO to send results from the PNG bycatch trials when finalised.	**Ongoing**
28	NPRAG Chair/EO	Write Chairs summary for distribution to NORMAC.	**Complete** – Ian K. agreed to keep writing summary.

Attachment 3

Northern Prawn Fishery Resource Assessment Group

Agenda

Brisbane Riverview Hotel
(Corner Kingsford Smith Drive and Hunt Street, Hamilton
Queensland, Australia, 4007)

17-18 November 2016 (09:00 am 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 from previous meetings and provide feedback and comments where appropriate.*	AFMA	Yes

3. Update Reports
• Industry
    o BRD Trial Update
    o MSC Update
 	
• AFMA
    o Observer program market testing
    o NT offshore net and line fishery
    o ERA/ERM update
    o HSP and Bycatch policies update
    o Science standards update
    o Bycatch mistreatment update
    o US TED inspections
 	
Outcomes: The RAG notes the various update reports.
	NPFI/CSIRO/AFMA	Yes

4. Tiger prawn assessment • Update on assessment/improvements • Timeline of data provision and assessment *Outcomes: That the RAG notes that 2017 is a non-assessment year and considers the success of the 2016 season as the model run may need to be modified in response to lower than expected tiger prawn production for 2016 (based on industry feedback - effort pattern inputs).*	CSIRO	Yes

5. AFMA Commission outcome – Autonomous Adjustment - Review of AFMA Commission recommendation - Review of current NPF assessment inputs as potential indicators - Development of recommendation to NORMAC *Outcomes: That the RAG discusses the AFMA Commission recommendation regarding indicators, agrees on an appropriate form and application of indicator and develops a recommendation for consideration by NORMAC.*	AFMA	Yes
6. Banana Prawn fishery update • Banana prawn fishery efficiency analysis (boat level MEY analysis ; Action item – 2) • Retrospective partial check on this year's in-season trigger given current economic situation (e.g. price) *Outcomes: The RAG to note the results of the CSIRO boat level MEY analysis and consider its potential application in the management of the banana prawn fishery.* *The RAG reviews the economic inputs used for the 2016 in-season triggers.*	CSIRO	Yes
7. Northern waters impacts update • CSIRO update on current research project • NESP update on current research project *Outcomes: That the RAG notes the updates on the current northern waters research projects.*	CSIRO	Presentation (CSIRO)
8. Review of current season dates - Options to extend seasons based on assessment outputs and capacity of the fishery to achieve MEY *Outcomes: That the RAG discusses recent effort in the NPF (relative effort at MEY) and the potential need to review season lengths.*	AFMA	No
9. Research Project priorities • NPF assessment related research projects - (prioritisation) • ARC/ComRAC update *Outcomes: That the RAG discusses the assessment related research projects and their priority and are updated on the ARC/ComRAC process.*	CSIRO/AFMA	Yes

10. JBG Red leg banana prawn
    • Discussion of harvest strategy requirements
    • Recent fishing effort levels
    • Need for review/Collection of data
    • Requirements for the start of the 2017 season
 	
Outcomes: That the RAG discusses the current low effort levels in the JBG red leg banana prawn fishery and the potential for increased data collection.
	AFMA	Yes