



Australian Government

Australian Fisheries Management Authority

 **Northern Prawn Fishery
Resource Assessment Group
(NPRAG) Meeting**

Meeting Minutes

Date: 4-5 December 2017

Location: Brisbane

Brisbane Riverview Hotel

Attendance

Monday 4 December 2017	
Name	Membership (type i.e. chair etc.)
Ian Knuckey	Chair
Phil Robson	Industry Member
Ian Boot	Industry Member
Tom Kompas	Economic Member - ANU
Rik Buckworth	Scientific Member
David Brewer	Scientific Member
Ian Butler	A/g AFMA Member
Stephen Eves	Executive Officer - AFMA
Annie Jarrett	Observer - NPFI
Adrienne Laird	Observer - NPFI
Eva Plaganyi-Lloyd	Observer - CSIRO
Trevor Hutton	Observer - CSIRO
Roy Deng	Observer - CSIRO
Robert Curtotti	Observer - ABARES
Tuesday 5 December 2017	
Ian Knuckey	Chair
Phil Robson	Industry Member
Ian Boot	Industry Member
Rik Buckworth	Scientific Member
David Brewer	Scientific Member
Ian Butler	A/g AFMA Member
Stephen Eves	Executive Officer - AFMA
Annie Jarrett	Observer - NPFI
Adrienne Laird	Observer - NPFI
Eva Plaganyi-Lloyd	Observer - CSIRO
Trevor Hutton	Observer - CSIRO
Roy Deng	Observer - CSIRO
Robert Curtotti	Observer - ABARES
Rob Kenyon	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 10.00 am (EST) at the Riverview Hotel in Brisbane on 4 December 2017. The Chair noted an apology from the Scientific Member Malcolm Haddon and welcomed Ian Butler who is the acting AFMA member.

1.2 Adoption of Agenda

The agenda was adopted as presented (**Attachment 1**).

1.3 Declaration of interests

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

The Chair called for declarations of interest to be made by the group in relation to any pecuniary or other interests relevant to discussions outlined on the agenda (see **Attachment 2**). The Chair declared his interests and advised that he no longer has a potential conflict of interest regarding AFMA's Independent Scientific Monitoring Program as his company was not the successful tenderer for the program.

The Chair asked each person/group to leave the room while their continued involvement in the meeting was discussed. It was noted that CSIRO has a potential conflict regarding future research interests in the fishery and would have to leave the room if any recommendations were to be made. It was also noted that NPFI has potential conflicts regarding broodstock collection and MSC requirements. As NPFI now manage broodstock collection it was advised they may be asked to step out of the room during broodstock discussions if a conflict was identified. The Chair advised that a potential conflict exists with the ongoing MSC assessment and how some of the RAG decisions may influence that, particularly in regards to the fisheries research priorities. No other apparent conflicts of interest were identified that would prevent individuals participating in discussion but if a particular conflict arose for any agenda item, the relevant party would be asked to leave the meeting at the appropriate time.

1.4 Minutes from previous meeting

It was noted that the minutes from the May 2017 meeting were approved out-of-session and had been published on the AFMA website.

Agenda Item 2 – Action Items

The Chair addressed the action items listed in **Attachment 3** and updated the NPRAG on their progress.

Actions:

- Rik Buckworth/CSIRO to identify the top 50 papers that are fundamental to the RAG's work and upload to GovDex.



Agenda Item 3 – Update Reports

3.1 Industry Update

The RAG noted an update from Adrienne Laird on the progress of industry's bycatch reduction trials. In March 2017, the Kon's Covered Fisheye (KCF) was brought into the fishery as an approved Bycatch Reduction Device (BRD) for use in the tiger prawn season. A number of boats, including two WA Seafoods' boats, have been trialling modifications of the device to try and improve its performance further, with preliminary results looking positive. The Chair asked if NPFI could provide a brief overview of their plans to meet their bycatch reduction target within the next year. NPFI advised they will review all of the BRDs in 2018 with the intention to deregister the ones that don't meet the target. A scientific member, David Brewer, asked if there would be an exception for those BRDs that haven't been trialled by industry as a number of the devices have been scientifically tested and found to be ineffective at certain positions in the net but that doesn't mean they aren't effective devices in other positions. He suggested that if the devices are deregistered, then the industry will have limited choice. NPFI advised that any devices that don't meet the industry's bycatch reduction target will need to be removed but any devices not legislated could still be trialled using a scientific permit.

NPFI asked if the results from the Papua New Guinea bycatch trials were available that trialled the square mesh panel BRD at different distances from the cod end. David Brewer advised that the final paper has been completed but hasn't been publicly released yet. He agreed to provide the RAG with a summary of the key points from the study upon NPFI's request. The Chair acknowledged the significant progress industry has made toward bycatch reduction in the fishery and congratulated them on their success so far.

Actions:

- *Dave Brewer to provide a summary of the key points from the PNG bycatch reduction trials to the NPRAG out-of-session.*

Adrienne Laird provided an update on industry's progress toward mitigating sawfish interactions and improving sawfish identification in logbook reporting. In 2016, a project to reduce sawfish interactions using electric devices was submitted to the FRDC for funding but was unsuccessful in obtaining support. However, the FRDC have recently advised they will partially fund the project along with funding from the Australian Council of Prawn Fisheries (ACPF). Funding is also being sought from Qld and the NT. NPFI have been working with CSIRO to improve industry's identification and accuracy in the reporting of sawfish species. Adrienne Laird advised that she focussed on sawfish identification education at the pre-season briefings and CSIRO have supplied ten tough GPS cameras for crews to photograph any sawfish they catch during the season. The CSIRO supplied cameras are in addition to the photographs already taken through the Crew Member Observer (CMO) program. The camera SD cards will be sent to CSIRO at the end of the tiger prawn season to confirm species identification. The Chair asked if the 2017 logbook data would be analysed to determine if there had been any improvement in sawfish identification through the implementation of these measures. NPFI advised that the data will be analysed once all the data has been reconciled but preliminary results already indicate an improvement in species identification.

The RAG noted an update from Annie Jarrett on the MSC re-certification process. Annie Jarrett advised the fourth surveillance audit and re-certification process began in January 2017. On Tuesday 5 December 2017, the final draft report will be posted on the MSC website for a consultation period of 15 working days and, provided there are no objections, the fishery should be re-certified in early 2018. NPFI thanked Ian Knuckey and Trevor Hutton for the significant amount of work and effort they contributed during the re-certification process.

The RAG noted an update from Annie Jarrett on White Spot Disease. Annie Jarrett advised there have been no new outbreaks of the disease reported from any of the sampling sites on the east coast in the last six months. The Commonwealth Government is asking all state agencies to organise sampling across the country for the next two years as part of the proof of freedom that is required to re-obtain



Australia's white spot free status. The AFMA member thanked Austral and Austfish for providing prawn samples from the NPF to be tested. In addition, Annie Jarrett advised the final paper from the Senate inquiry into White Spot has been released and all the recommendations relate to actions the Department of Agriculture and Water Resources have now put in place.

The RAG noted that Tilapia have been found in the Walsh River in Qld. Annie Jarrett advised that Biosecurity Qld have officers conducting DNA testing and some electro-fishing to determine the extent of the problem. The species is very invasive and outcompete nearly all native species for resources including prawns. There was a small incursion in 2008 that Biosecurity Qld were able to control, but the extent of the problem this time appears much larger and is of considerable concern for the NPF.

Industry members provided an update on the 2017 tiger prawn season. The RAG noted that average net fuel price started around 65 cents per litre and increased by 9 to 10 cents toward the end of the season. It was a good season for red-legged banana prawns in the Joseph Bonaparte Gulf (JBG) but a fairly poor tiger prawn season everywhere else. The size of the prawns overall was quite small. The weather was extremely rough with quite a few boats experiencing gear problems. Prices were up by about two dollars a kilo with a five kilogram box of 10/20 bananas selling for \$17.50 a kilo.

3.2 AFMA Update

NPRAG noted an update provided by AFMA management including:

- NPRAG membership will be extended to March 2018 during which time the selection process will be finalised, including the replacement of the industry member position previously held by Mike O'Brien;
- The NPF wildlife trade operation (WTO) approval is due for renewal in January 2019 and there may be increased focus on sawfish interactions;
- compliance officers conducted in-port inspections during the tiger prawn pre-season and found nine vessels to be non-compliant with the new turtle excluder device (TED) requirements. The skippers were educated on the spot and the devices fixed with no further action taken. An industry member raised concern with how compliance officers measure the TEDs and the lack of consistency with the current method. Adrienne Laird advised she has been working with AFMA to update the current method and is in communication with NSW Fisheries who have regulations regarding the measurement of TEDs that the NPF could model off. The Chair advised that it is important that we finalise the new regulations before the start of the 2018 banana prawn season which means they will need to be ready before the February 2018 NORMAC meeting.

Actions:

- NPF/AFMA to finalise the new compliance method for measuring TEDs before the February 2018 NORMAC meeting and ensure the testing protocols are recorded for transparency.

Agenda Item 4 – JBG Red-legged Banana Prawn Harvest Strategy

The RAG noted the background for the need to revise the JBG red-legged banana prawn harvest strategy. In 2015 and 2016 there was less than 100 days effort in the red-legged banana prawn fishery and, consequently, there was not enough data to reliably run the red-legged banana prawn stock assessment. In 2016, the NPRAG discussed some plausible reasons for the low fishing effort and recommended that CSIRO analyse historical data to identify any potential causes. At the May 2017 NPRAG meeting, CSIRO presented the results from the historical data analysis which indicated some environmental variables may help to explain the low effort in the fishery in recent years. Using the findings, CSIRO developed a qualitative model that could be used to explain why in some years there is low effort in the fishery. The NPRAG supported the model and recommended that the red-legged banana prawn harvest control rules should be reviewed to account for years with less than 100 days fishing effort.



Eva Plaganyi-Lloyd advised that CSIRO had investigated a question that was raised in the May 2017 meeting regarding how reliable the 100 boat day limit was. They applied a coefficient of variation (CV) to daily catch data over the last few years to show how variable or how reliable the CPUE estimates are. The results were presented in a graph that suggests the 100 boat days is a reliable limit and with any fewer days the assessment model becomes increasingly unreliable.

In previous RAG meetings, industry have advised that the reason for low fishing effort in the JBG can be attributed to increased effort in other areas, that is, when it is an exceptionally good tiger prawn season the majority of the effort will be targeted toward catching tiger prawns in the Gulf of Carpentaria (GoC) instead of targeting red-legged banana prawns in the JBG. Trevor Hutton advised CSIRO has explored the possibility of adding an economic component to the JBG red-legged banana prawn model to account for the displacement of effort during exceptionally good tiger prawn years. In Sean Pascoe's absence, Trevor Hutton presented the results from the economic component of the proposed red-legged banana prawn model. Monthly data was analysed to determine the effort shared between the JBG and the GoC and how the economic drivers contributed to the effort in each area. The results indicate, as predicted, that when the revenue per unit of effort (RPUE) in the GoC is better than the JBG people will fish in the GoC. CSIRO members thanked industry for providing price information on red-legged banana prawns to enable them to do the analysis.

The RAG noted a presentation from Eva Plaganyi-Lloyd on the proposed harvest control rules for red-legged banana prawns which incorporate CSIRO's environmental/economic qualitative model. Eva Plaganyi-Lloyd led the RAG through the proposed control rules and the decision flow chart (Attachment 4) and invited the RAG to discuss the operation of the rules. Annie Jarrett questioned what happens after the fishery has been closed for a full year as there isn't a rule to reopen the fishery. The AFMA EO advised that after the fishery has been closed for a full year the default is to reopen the fishery the following year. Eva Plaganyi-Lloyd suggested that the reopening rules may need to be revised and provided an example of where the fishery is caught in a loop with no data for more than two years, the proposed rules would continue to only close the first season year after year without any further consideration which may not be precautionary enough. The Chair advised that in the Tropical Rock Lobster Fishery, it is proposed that a survey is done if the fishery is closed for two years. Eva Plaganyi-Lloyd pointed out that one problem with conducting a survey after a low (effort) data year is that there is no revenue from the fishery, which impacts on industry's ability to pay for a survey. Annie Jarrett added that one ad-hoc survey isn't going to be all that informative either. Conversely, CSIRO supported the use of surveys and advised that they are a valuable tool, even periodic ones to look at recruitment. The AFMA member agreed that it would certainly help with the resetting process, as it would help determine the stock status and inform whether the right management decision had been made.

The Chair reminded the RAG that the harvest control rules are being reviewed because there were two years with little fishing and therefore limited data and questioned what would happen if the fishery keeps going through bad data years. The appropriateness of various closure options were discussed with respect to a precautionary approach, but still maintaining sufficient levels of data. Eva Plaganyi-Lloyd suggested that closing the first season is quite a sensible precautionary measure if any action is to be taken as it gives the prawns a chance to grow and recover and data is still collected in the second season. Industry agreed that closing the first season was a sensible approach.

The RAG discussed the economic decision rule which classifies a 'bumper' tiger season as a season where the RPUE in the GoC compared to the RPUE in the JBG is greater than one. The economic member, Tom Kompas, suggested it was a fairly weak condition pointing out that the rule is a ratio of two revenues per unit of effort and as long as it's greater than one, even if just slightly greater than one, it is considered a 'bumper' tiger prawn season. Eva Plaganyi-Lloyd informed the RAG that the environmental conditions are stronger than the economic condition and suggested the economic condition is more like an escape clause. If there is a year with poor environmental conditions and the environmental conditions are again predicted to be poor the following year, then the first season is closed. But if there is a year with poor environmental conditions and the environmental conditions are predicted to be good the following year, then the RPUE helps explain the reason for the low effort



in the fishery and the fishery is kept open for both seasons the following year. The RAG agreed that the environmental condition should override the economic condition. Tom Kompas advised that as the environmental condition overrides the economic condition then price has a negligible effect in the model and only effort matters. The Chair asked if price should be removed from the RPUE ratio so that only effort is captured. Trevor Hutton confirmed that the RPUE ratio is mainly driven by effort but suggested that adding price into the ratio adds further confirmation that low effort in the JBG can be explained by exceptionally good financial returns fishing for tiger prawns in the GoC. NPFI added that although price doesn't dominate the RPUE ratio, there is a possibility that at some point red-legged banana prawns may double in price compared to all other banana prawns, and then price will start to dominate. The RAG agreed to leave price data in the RPUE model.

The RAG discussed the proposed red-legged banana prawn harvest control rules that lead to a full year closure (both seasons). Industry disagreed with closing the fishery for both seasons suggesting that closing the first season is precautionary enough and it would enable data to be collected in the second season to assess the fishery's status. Eva Plaganyi-Lloyd advised that the full year closure is not a new proposal as the current decision rules already close the fishery for the full year if the limit reference point (LRP) is exceeded. The Chair advised that there has to come a point where fishing is stopped if the stocks appear to be in trouble. Under the fisheries policies and regulations there can't be targeted fishing if the stock abundance is below the LRP. Industry member, Phil Robson, raised concern that under the worst possible climate scenarios predicted for the coming years the fishery could be closed with no prospect of getting in the fishery to check its status. Phil Robson asked if there was an option to open the fishery for a limited time, for example in August, to check the stock abundance or is there an option to implement an in-season trigger? The Chair advised that the trouble with an in-season trigger is a certain level of effort is needed to make the trigger reliable. All of the other NPF triggers are based on 90 per cent of the fleet reporting their catch rate data. A trigger wouldn't be reliable if only a couple of boats fish in the JBG in any particular year and, hence, only limited catch rate data is available. The option to keep the fishery closed but open it for a window of fishing in August would only be a viable option if industry committed to sending a certain number of boats to fish in the JBG for a certain period of time early in August every year. Industry advised they wouldn't be able to make that commitment.

The AFMA member, Ian Butler, questioned what would happen if the fishery was opened after a full year closure and then the LRP was triggered, as that would potentially be a very concerning situation. Industry agreed that the situation would raise concern and advised that a more precautionary approach could be to only open the fishery in the second season following a full year closure. The Chair agreed that a more precautionary approach would be to ease off fishing pressure for a longer period but reiterated that the fishery would still be in a potentially serious situation if the LRP was exceeded in the second season after a full year closure. Eva Plaganyi-Lloyd suggested that if the LRP is triggered after a full year closure a compromised rule could be to only open the second season the following year. She suggested that would be a slightly more precautionary approach than the current rules.

The Chair summarised the discussion advising that the RAG agreed to keep the RPUE ratio between the GoC and the JBG; the RAG are supportive of the SOI and rainfall model that defines a favourable or unfavourable environmental year; and, the RAG need to further consider the reopening rules for the fishery and what happens in multiple low data years. CSIRO added that in order to calculate the RPUE they will need to obtain red-legged banana prawn price data every year. The RAG agreed to review and revise the decision rule flow chart out-of-session in order to have it ready for NORMAC to consider at the February 2018 meeting.

Actions:

- AFMA/CSIRO to re-draft the red-legged banana prawn decision rule flow chart.
- NPRAG to review and revise the red-legged banana prawn decision rule flow chart ahead of the February 2018 NORMAC meeting.



Agenda Item 5 – Tiger Prawn Assessment – planning for 2018 assessment

Trevor Hutton presented on the proposed 2018 assessment. The RAG discussed the following key points:

- there was a suggestion to re-include red endeavours back into the assessment model as a sensitivity test. Re-including red endeavours in the assessment model might unravel the three species model that's working at the moment, but as a sensitivity test it can always be dropped if it doesn't work;
- another alternative is to have a separate assessment for red endeavours without including them in the current 3-species model;
- as the MSC assessment results have yet to be finalised, a decision about the above two options doesn't have to be made yet, but the RAG expressed a preference to include red endeavours as a sensitivity test;
- there was uncertainty regarding why red endeavours were removed from the assessment model in the first place but it was suggested the cause was due to limited biological information for red endeavours;
- the range of sensitivity tests currently included in the assessment model were reviewed. The RAG discussed whether to drop the NPRAG specified fishing pattern and the mid-high fishing power sensitivity tests. It was noted that the sensitivity tests were discussed roughly two years ago and the minutes from the discussion should be reviewed to determine why some of the tests were kept in the assessment previously;

The RAG noted the results from the tiger prawn fishing power time series. Trevor Hutton advised that overall the relative fishing power increased by 2 to 4 per cent in 2016 relative to 2015 attributed to an increase in the average swept area performance. There was also a small increase in the average headline length and engine power between 2015 and 2016.

The RAG noted an update on the revision of the species-split model. Trevor Hutton advised that data collected by the AFMA scientific observers can be used to do a preliminary check to determine if the species-split model needs to be updated. There were inconsistencies in the initial analysis comparing the AFMA scientific data to the model predicted results. He advised they are looking into it to rectify the inconsistencies and will update the RAG when complete.

Trevor Hutton provided a summary of the CSIRO team workshop held in August 2017 where improvements to the tiger prawn assessment model were discussed. Some of the key points from the workshop included:

- Andre Punt suggested a new methodology for data weighting. If the new data weighting method delivers good results it will be brought to the RAG for consideration to include it as a potential sensitivity test in the 2018 or 2020 assessment;
- The commercial fishing selectivity curve in the model hasn't been updated because there hasn't been any commercial catch-at-length data collected in the fishery since 2003. It is possible to obtain the catch-at-length data from the AFMA scientific observer data to get a more accurate assessment of fishing selectivity. Before the fishing selectivity curve is updated, the AFMA scientific observer data will need to be quality checked, and then, if the data is reliable, the analysis can be undertaken;
- There was a suggestion to dis-aggregate the current assessment model into the main spatial areas. To improve the model, the spatial effects should be considered because there are differences in CPUE for each of the different regions. Tom Kompas advised that currently the CPUE is averaged across the whole fishery but the model could be made more precise by dis-aggregating the spatial data. Eva Plaganyi-Lloyd advised that responding to a spatial model could be challenging, for example, would the fishery reduce effort in one region if it had a lower stock abundance. Also, there are trade-offs with a spatial model, such as losing some power when the data is dis-aggregated. The Chair suggested that as CPUE standardisation is currently included in the model, a spatial parameter could be added to the CPUE



standardisation which then feeds into the current model, instead of creating a whole new spatial model. Eva Plaganyi-Lloyd advised that it would be possible as long as there is enough data from each region. The Chair asked CSIRO to provide a better outline of the spatial project including what's involved, what it would deliver and how much it would cost.

The Chair questioned whether there was merit in having a year dedicated to improving the assessment model. The current approach, making ad hoc improvements to the model every year, is a slow, expensive process and may not be the most efficient approach to improving the model. There is currently a list of about six projects that could improve the model but only one or two projects are completed each year. The RAG discussed whether it would be more cost-effective to complete multiple projects all at once than to do one every couple of years and risk having a model that increasingly falls behind best practice. Trevor Hutton advised that it would be more cost effective to include all of the model improvements in the one project than the cost of completing each model improvement individually.

The Chair summarised the RAG discussion and the agreed recommendations including that red endeavour prawns will be added to the assessment model as a sensitivity test; the new data weighting methodology, proposed by Andre Punt, will be included as a sensitivity test in the 2020 assessment; the analysis of species split is being reviewed and CSIRO will deliver the results to the RAG when the analysis is complete; and, within six months CSIRO will provide a better outline of the proposed spatial project including what's involved, what it would deliver, how much would it cost.

Actions:

- AFMA to review previous RAG minutes to determine why some of the sensitivity tests were kept in the assessment.
- CSIRO, within six months, to present a spatial project proposal to the RAG including outline and cost.

Agenda Item 6 – 2016 Bug Catch Review

In 2016, the 100 tonne catch trigger for bugs was exceeded, triggering a RAG review of the data under the Harvest Strategy. The RAG reviewed the data presented and discussed whether there was any concern with the level of fishing pressure on bug stocks. The Chair pointed out that the two years when the 100 tonne trigger was exceeded were also the two years with the highest catch rates which indicates bug catches were high because their abundance was high. The RAG considered that the data indicates that bugs aren't being targeted and are an incidental byproduct and there doesn't appear to be a downward trend in abundance. David Brewer suggested that the key ecological issue is whether bugs are being targeted and the data appears to indicate they're not, which takes a lot of pressure off the species. Unless bugs have an exact ecological overlap with prawns, which is highly unlikely, then there is no concern. David Brewer questioned whether the AFMA scientific observers collect a sub-sample from the catch before or after the catch is processed. Ian Butler advised AFMA will confirm the collection protocols and advise whether the whole catch is being sampled or just the retained catch.

The Chair summarised that the RAG was not concerned with the catch limit being exceeded but the current limit is worth retaining. The Chair added that it would also be good to analyse the sex specific length frequency distribution.

Action:

- AFMA to confirm if the scientific observers collect bug data before or after processing.
- AFMA to analyse the bug sex specific length frequency distribution.



Agenda Item 7 – Autonomous Adjustment

The RAG noted NPFI's report on indicators and discussed the effectiveness of the proposed indicators to monitor capacity utilisation in the NPF. NPFI advised that the harvest strategy will be the main driver for management and the purpose of the indicators is to provide something that is fairly comprehensive but basic enough that industry could use to monitor trends in the fishery. Annie Jarrett advised that the indicators are not meant to be another harvest strategy or another assessment model. The suggestion of profit versus profit at MEY as an indicator is a good suggestion but alone isn't enough. Industry need a suite of indicators it can use to monitor trends over time and make decisions based on those trends. The Chair suggested that the NPFI report contains some good graphs but further explanation around what the indicators actually mean and how they will work is needed. The ABARES observer, Robert Curtotti, advised that ABARES already produces an indicators report for the NPF that looks at trends in the fishery. It may be possible to use the report to create a smaller report for industry needs. Trevor Hutton suggested that a critical indicator relates to trade, that is, the sale and leasing of SFRs. For example, if stock productivity halved over a few years, it would be expected that SFR holders would trade headrope length to the extent that fewer boats would remain in the fishery. The Chair advised the problem is that previously this hasn't happened and industry has traded down below the 6 cm headrope length that is considered the point at which vessels become inefficient. There is currently no mechanism to reduce the number of boats in the fishery. Industry advised that previous fleet reductions were done by buying back boats and by buying back net. Reducing the size of the net was a big mistake and caused the fishery to overcapitalise. The most efficient way of reducing effort was by industry coordinating to buy back boats. Phil Robson suggested that the Commission want industry to come up with a way to submit a licence or two to AFMA if the fishery starts heading towards inefficiency. Trevor Hutton suggested that a licence shouldn't be surrendered in case industry decide they want it back again a year or two later when the fishery starts improving. The Chair advised that it may be useful to look at how mechanisms of shelving effort have operated in other fisheries. As an example, if the fishery got to a certain point where boats needed to be removed a reverse auction could be set up where SFR holders nominate how much they would accept to shelve their boat for a year and then industry pay the lowest bidder through the industry levy. Industry could organise a tender system where everyone puts in a blind tender and then however many boats are removed to meet the effort requirements. The Chair offered to do a literature review to provide information to NPFI on how mechanisms of shelving effort have operated in other fisheries.

The Chair suggested that it would be helpful for industry to explain which indicator would be the one that prompts them to start responding and at what point. Phil Robson advised that it's generally boat profit that the companies start responding to and Annie Jarrett advised that average boat profit is already an indicator included in the report. The Chair raised the question that on an average boat, what is the point at which industry would recognise that things aren't going well. Robert Curtotti added that a better indicator may be a 'rate of return' indicator which looks at the rate of return industry receive on the capital they invest. Annie Jarrett advised that the problem with a 'rate of return' indicator is that the capital across the fishery is too varied. The Chair suggested that the rate of return is a good idea as it would allow a comparison with the return received from investing in a bank. The point at which bank interest becomes higher than the return on capital in the fishery may be the point at which industry decide to start responding. Robert Curtotti added that the rate of return could be compared to all sorts of things including other industries or bank deposits.

The Chair summarised that the RAG identified the three main indicators as being profit versus profit at MEY, rate of return and boat level profit. CSIRO suggested that it would be sensible for the RAG to look at the indicators once a year to monitor the trends. Trevor Hutton asked that in light of the discussion and the suggestion of a boat level profit indicator, if profits should be put back in the assessment base case. The Chair confirmed that it would help to add profits back in the assessment model as base case.

The Chair summarised the next steps are for industry to re-draft the indicators report to include the profit versus profit at MEY indicator; add more information around what the indicators mean and how they are useful to industry; and, circulate the report to the RAG and the economic working group for comment before going to NORMAC in February 2018.



Action:

- NPRAG Chair to provide information to NPFI on how mechanisms of shelving effort have operated in other fisheries.
- CSIRO to add profits back into the assessment model as base case.
- NPFI to re-draft the Autonomous Adjustment report and circulate to the RAG and the economic working group before February 2018.

Agenda Item 8 – Broodstock Collection

The RAG noted that at the 11 and 24 May 2017 meetings, broodstock (*Penaeus monodon*) collection arrangements within the NPF were discussed. At these meetings, the RAG considered that an increase in broodstock collection to a total of 9000 individuals was unlikely to lead to any short-term stock concerns but expressed concerns that the data on discards was limited and interactions with TEPS needed to be further reviewed. The RAG agreed to a one-off increase subject to more data being provided at the next RAG meeting.

The RAG noted the additional information provided on broodstock collection and discussed the data in light of the recent recommendation to increase the annual number of individuals permitted to be collected to 9000 as a one off. NPFI advised that from 2016 all sawfish have been recorded to species level and the life status of all TEPS has been recorded. A Scientific Member suggested that the next thing to check is what the proportion of sawfish caught during broodstock collection is compared to the rest of the fishery. Rik Buckworth added that it would also be good to know what proportion of the sawfish caught were reported alive. Adrienne Laird advised that the initial results from the 2017 data indicate that all sawfish except for one were released alive.

The Chair advised that the RAG requested to see more data to make an informed decision about the collection of broodstock and what an acceptable limit was. He suggested that the data provided is far more comprehensive and is getting better with time. The amount of prawns discarded that are target species for the NPF is only a few hundred kilograms, so is probably not a concern. The only concern that the RAG has identified regards the level of TEPS interactions. The RAG recommended to review the 2017 data when it becomes available to monitor the TEPS interactions and agreed to have a standing agenda item each year to review broodstock collection.

The Chair summarised the discussion advising that having reviewed the data, the RAG is comfortable with the current arrangements and that there is a standing brief for the RAG to look at these arrangements on an annual basis. The RAG also wants to monitor TEPS interactions while the collection is maintained at 9000 individuals and would like to see 2017 TEPS data when it is available.

Action:

- NPFI/AFMA to analyse the broodstock collection data to determine the proportion of sawfish caught compared to the rest of the fishery.
- NPFI to provide an annual brief on broodstock collection for the RAG's review.
- NPFI to provide 2017 broodstock collection data on TEPS at the next RAG.

Agenda Item 9 – Research

The RAG noted a presentation from Rob Kenyon on the results of the Northern Waters Developments project. The project provided a summary of the legislated framework for water resource management in Western Australia, Northern Territory and Queensland. In addition, it developed a conceptual model of a suite of environmental drivers that effect all life history stages of banana prawns; enhancing our ability to understand the likely impacts on the banana prawn population of change to natural flows due to water resource development.



NPF Industry and Management should be active stakeholders in the revised management of catchment water resources which is the result of water resource development in landscapes adjacent to the NPF. They should seek to:

- influence constructed infrastructure to incorporate design features that allow the maintenance of seasonal flows to provide key ecosystem services to downstream species,
- rigorously define seasonal flow levels that are key drivers of downstream fishery productivity in Australia’s wet-dry tropics,
- define trigger levels of flow below which seasonal river flows should not be impounded or extracted,
- define flows that are defensible under scrutiny based on statistically robust modelling of historical hydrology, its impacts on catch series, and predicted impacts of change-in-flow due to water resource development,
- explore extraction or impoundment regimes that deliver water to other users while best-maintaining ecosystem services downstream .

The expertise of hydrological and ecological modellers will be required to fulfil these aims.

The RAG discussed the implications of Rob Kenyon’s project for the NPF. Key points from the discussion included:

- a lot of Rob Kenyon’s work contains anecdotal information. For industry to have a strong evidence-based approach, a more scientifically rigorous analytical process would be required together with peer review and publication;
- another option is to progress Rob Kenyon’s work into some kind of modelling which would give industry a strong tool to use and something that can’t be easily refuted;
- Eva Plaganyi-Lloyd advised that CSIRO submitted a research proposal to FRDC that progressed Rob Kenyon’s work into a predictive model but was advised to wait until the current project was completed and all the background information collated. With the completion of the current project, all the information has been synthesised and, importantly, the critical-flow data has been collected which can be used as inputs in any sort of modelling;
- Eva Plaganyi-Lloyd suggested that a good option was developing a ‘MICE’ model of intermediate complexity which is a proposal that has previously been put forward. The MICE model is a rigorous modelling approach that fits the data and can make reliable predictions. To strengthen the model even further it could be expanded to a whole ecosystem model.

Eva Plaganyi-Lloyd provided the RAG with a background on the MICE model and what could be potentially delivered to the NPF. She advised that through Rob Kenyon’s current project, the critical-flow information from the major rivers in the GoC catchment has been collected. This information can be used together with the hydrological definitions of what a low flow rate is, and thresholds which can be obtained from the history of the fishery, which can inform industry under what circumstances the fishery may collapse. A MICE model of intermediate complexity synthesises all of this data and is a rigorous modelling approach that can make reliable predictions. Another option, which is even more comprehensive, is expanding the model to a whole ecosystem model. This would allow the impacts to be predicted not only for the fishery but also the wider ecosystem. Having such a model would enable industry to put a strong case forward by showing what impact an altered flow regime would have on prawn stocks and other ecosystem components such as TEPS.

The Chair reminded the RAG that the MICE model proposal was previously identified as a priority and asked whether there was still significant RAG support for the project. NPF advised they would need to see the project proposal again to review what is involved as the previous proposal was very complex and expensive. Eva Plaganyi-Lloyd advised that the model could be tailored to the industry’s needs with different levels of costings. If the industry wanted a simpler version, the model could be scaled down to only include the key species as opposed to a whole ecosystem model containing all species. Another option is to do the project in phases where an initial project could be used to inform whether



the model meets industry's needs or whether another phase is needed to include some of the bigger and broader influences. One benefit of including key species other than prawns, such as barramundi, is the potential opportunity to include other stakeholders who may be willing to co-fund the project. David Brewer suggested that including TEPS in the model is a good idea. In certain circumstances the impact on TEPS may have more influence on decision making than the financial argument. Eva Plaganyi-Lloyd advised that the main advantage of the model is that once it has been fit to historical data and lines up well with the main trends, it can be used to forward predict the impact on prawns under different flow regimes. The impact on prawn stocks, and barramundi and TEPS if desired, could be quantified under particular water extraction scenarios and conveyed in economic terms.

The Chair asked CSIRO to step out of the room while the RAG discussed the proposed project. Industry expressed their appetite to have some form of security in case the northern waters developments have a significant impact on prawn stocks. The model would help industry seek compensation should their businesses be negatively impacted. The Chair advised that the model would enable industry to get on the front-foot and take a pro-active approach to influence decision making before the prawn stocks decline. He questioned whether NPFI has the capacity to be across all of the development work going on in the north and whether it was getting to the stage where industry needs to employ a representative to communicate industry's interests. NPFI agreed that the industry currently has limited capacity to engage in all the meetings and be across all of the proposed developments. It was suggested that NPFI could contribute to the proposed project as a co-investigator and build their capacity through employing someone to act in a liaison role. Industry conveyed their support for such an approach and advised that the suggestion was a step in the right direction. NPFI expressed their preference for scaling the project down and not committing to a whole ecosystem model.

The Chair invited CSIRO back into the meeting and advised that the RAG supported a project that included key species (both types of prawns and barramundi) and TEPS. The RAG is interested in seeing a couple of project proposals with costs and what's included, and the pros and cons of each option. In addition, as part of the project, the recommendation would be to include NPFI as a co-investigator and allocate some capacity building funds to assist NPFI to engage between the project and the northern water development processes. CSIRO were requested to develop the proposals in time for the February 2018 NORMAC meeting.

The RAG noted an update on the mangrove dieback. There has been significant recruitment of seedlings happening around Karumba. The old forest was mainly grey mangrove but two species, the grey mangrove and a round leafed species, appear to be sprouting among the dead forest. The old forest does not appear to be rejuvenating but there is recruitment from seedlings that may have moved in on the tides.

The RAG discussed the annual research statement and the need to include something about data weighting which was discussed earlier in the meeting. Trevor Hutton advised CSIRO would use the previous three-year assessment and make some minor modifications to include a statement about a different weighting method as part of the tiger prawn assessment and possibly a statement about including a fourth species (red endeavour prawn) in the assessment model. The Client Action Plan (CAP) advising how NPFI will respond to the MSC conditions was raised and Trevor Hutton questioned whether anything needed to be added to the annual research statement to account for red-legged banana prawns. The Chair suggested that in good data years we have a target and a limit that are both valid under the harvest strategy policy and are included in the NPF's harvest strategy. As 2017 was a good data year the model can be run and the RAG is working on amendments to cover the years when there is low data. The Chair asked if the FRDC mangrove dieback proposal was still a priority. The RAG agreed the next stage of the FRDC mangrove dieback project proposal was difficult to justify now that the mangrove community was reshooting and decided to remove it as one of the fishery's priorities.

The timing of the development of the annual research statement was discussed. The statement is submitted to the ARC each September and needs to be reviewed by the RAG and NORMAC beforehand. The RAG agreed to review the annual research statement at the May RAG meeting each year before being circulated to NORMAC for approval.



The RAG noted that the five-year strategic research plan is due for renewal in 2018. The AFMA member raised the idea of changing from a static plan that only gets updated once every five years to a rolling five-year plan that is reviewed and updated every year to continually reflect the highest priorities of the fishery. The Chair advised that the five-year strategic research plan was normally developed by holding an industry workshop and the purpose of the plan was a lot broader than just research and stock assessment. The plan is an opportunity for industry and others to get together and discuss what is important to industry and what research and development can support industry. The RAG agreed it would be useful to hold a workshop in 2018 to develop the next five-year plan.

Actions:

- CSIRO to develop the MICE model project proposal, including options and costings, by February 2018.

Agenda Item 10 – ERA/ERM Process

The RAG noted a presentation by Ian Butler on the new ERA/ERM process and the requirements for the fishery. The NPF will be undergoing the ERA/ERM process at the start of 2018. The RAG discussed the process of reviewing the ERA/ERM and suggested it would be more efficient for a small group of people to review the ERA/ERM and then provide the rest of the RAG with a summary of the things they need to focus on.

Agenda Item 11 – Scientific Observer Data Collection

The RAG noted the protocols for the data collected through the AFMA Scientific Observer Program and discussed if the current protocols reflect the needs of the NPF. David Brewer questioned how the total bycatch weight is estimated and whether it is validated. It is acceptable to estimate catches but at some point the estimate needs to be validated. If the catch is estimated without periodically validating then there is potentially going to be significant variability between boats and other issues. David Brewer also pointed out that the way the sub-sample is taken from the hopper is important to ensure a representative sample of the whole catch is achieved. Normally, the negatively buoyant stuff is collected first and the positively buoyant stuff last, so if the subsample is taken in the first five minutes the sample will only contain crustaceans and the heavy stuff. David Brewer further questioned the usefulness of taking a ten kilogram sub-sample and sorting to species level when the point of the sampling is predominantly to monitor high risk species. Because of the number of species and some of the complexity in identifying some species, it is quite time consuming for an observer to identify the ten kilogram sub-sample to species level on-board, especially if the data isn't being collected for any specific purpose. The Chair advised that in fisheries where there is an overarching bycatch management plan and policy to look at reductions, it is sensible for a trawl fishery to keep track of its bycatch composition. David Brewer agreed that there definitely is value in collecting bycatch composition information but the objectives for collecting the information aren't defined. In addition, there may also be more valuable information the observers could be collecting instead of the time it takes to sort the ten kilogram sub-sample. If there is a valid reason for collecting the data and the data is going to be used then the objectives need to be clearly stated. There are some species that are deemed to be high risk and one of the reasons is due to a lack of information. The way to get that information is to spend some time observing the conveyor belt looking for those species. It may be more valuable for the observers to spend time doing this then sorting a sub-sample for no specific reason.

The RAG discussed the species of interest list the AFMA scientific observers use to collect biological data and suggested it was out of date. As the ERA/ERM for the fishery is being renewed in 2018, the RAG agreed to wait until then to make sure the most up to date list is being used by the AFMA scientific observers. The Chair suggested it would also be useful to create some NPF guidelines for scientific observer data collection that clearly justifies and defines the data being collected.



Actions:

- AFMA to provide the updated species of interest list to the AFMA scientific observers after the ERA/ERM has been completed.
- AFMA to create some NPF guidelines for AFMA scientific observer data collection that clearly justifies and defines the data being collected.

Agenda Item 12 – Other Business / Next Meeting

No other business was raised and the RAG noted the next meeting will be held in May 2018.

The Chair closed the meeting at 2.00 pm (EST).

List of Attachments

- 1) NPRAG 4-5 December 2017 – Final Agenda
- 2) NPRAG 4-5 December 2017 – Declared Conflicts of Interest
- 3) NPRAG 4-5 December 2017 – Updated action items
- 4) Red-legged banana prawn draft decision flow chart



**Northern Prawn Fishery Resource Assessment Group
Agenda**

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

4-5 December 2017 (10:00 am start)

Item	Responsibility	Paper
1. Introduction/ Meeting Management <ul style="list-style-type: none"> • Welcome • Adoption of agenda • Declaration of interests • Minutes from previous meetings 	Chair	Yes
2. Action Items <i>Outcomes: RAG to note progress on action items from previous meetings and provide feedback and comments where appropriate.</i>	AFMA	Yes
3. Update Reports <ul style="list-style-type: none"> • Industry <ul style="list-style-type: none"> ○ NPF Tiger Prawn season update ○ MSC Update ○ KCF industry trials/industry bycatch plan ○ Sawfish research proposal ○ White spot update ○ Commonwealth HS/Bycatch policies workshop • AFMA <ul style="list-style-type: none"> ○ NPRAG membership ○ NESP Marine Hub – Northern fisheries bycatch workshop ○ Compliance report – TED's <i>Outcomes: The RAG notes the various update reports.</i>	NPFI/CSIRO/AFMA	Yes



<p>4. JBG Red-legged banana prawn Harvest Strategy rule</p> <ul style="list-style-type: none"> • CSIRO update on the red-legged banana prawn environmental model • Discuss the proposed change to the red-legged banana prawn harvest strategy rule, including whether the change will require an MSE to demonstrate its effectiveness • Consider the proposal in the context of the proposed MSC assessment conditions <p><i>Outcomes: That the RAG discuss the proposed change to the red-legged banana prawn harvest strategy rule and provide a recommendation.</i></p>	CSIRO/AFMA	Yes
<p>5. Tiger Prawn assessment – planning for 2018 assessment</p> <ul style="list-style-type: none"> • Update of fishing power • Proposed sensitivity tests for 2018 assessment • Additional ‘sensitivity test’ to include Red Endeavour prawns (discussion of need/constraints and options) • Feedback on outcomes of 2017 CSIRO stock assessment team meeting <p><i>Outcomes: That the RAG endorse the standard sensitivity tests normally run for each assessment and consider using the proposed test to include Red Endeavour prawns in the model.</i></p>	CSIRO/AFMA/NPFI/all	Yes
<p>6. 2016 Bug catch review</p> <ul style="list-style-type: none"> • AFMA/NPFI to present historical Bug catch data • Discuss the fishery exceeding the bug catch limit in 2016 and consider the need for a management response • Discuss whether the 100 t limit is an appropriate trigger limit <p><i>Outcomes: That the RAG discusses the effects of exceeding the 100 t bug trigger limit in 2016, whether the current limit is appropriate, and consider the need for a management response.</i></p>	AFMA/NPFI	Yes
<p>7. Autonomous Adjustment</p> <ul style="list-style-type: none"> • Update on the Commission response to AA • Discuss the overall choice of indicators, data collection and reporting approach <p><i>Outcomes: That the RAG discusses the indicators identified as most useful to industry and how these indicators may be better elucidated as per the Commissions’ request to NPFI.</i></p>	AFMA/NPFI	Yes



<p>8. Broodstock collection</p> <ul style="list-style-type: none"> • Data summary • Discuss the data with respect to any implications for the NPF • Discuss requirements for collection of SO data <p><i>Outcomes: That the RAG review the analysis of broodstock collection data and any implications for the NPF (e.g. bycatch, discards, stock assessments).</i></p>	AFMA/NPFI	Yes
<p>9. Research</p> <ul style="list-style-type: none"> • ARC update • Discuss the NPF annual research statement • Discuss research planning and timing, taking into account the timeliness required to respond to MSC assessment conditions • NPF assessment related research projects (prioritisation) including research required to address MSC assessment/certification conditions • CSIRO update on Northern waters developments <p><i>Outcomes: That the RAG review the projects included in the NPF annual research plan and discuss if any changes are needed ahead of a further three years of funding; that the RAG discuss the best approach in preparing the annual research plan and the five year research plan; that the RAG discusses the assessment related research projects and their priority.</i></p>	AFMA/CSIRO	Yes
<p>10. Presentation on ERA/ERM process</p> <ul style="list-style-type: none"> • Introduction to the new ERA/ERM framework • Outline the process and the next steps for the NPF <p><i>Outcomes: That the RAG notes the process for the new ERA/ERM framework and the requirements for the NPF.</i></p>	AFMA	Yes
<p>11. Scientific Observer data collection</p> <ul style="list-style-type: none"> • Discuss the data collected by scientific observers <p><i>Outcomes: That the RAG discusses the data collected by scientific observers and if it meets the fishery's needs</i></p>	AFMA	Yes
<p>12. Other business</p> <ul style="list-style-type: none"> • 	RAG	



NPRAG Declared Conflicts of Interest

Name	Membership	Interest Declared
Ian Knuckey	Chair	Director - Fishwell Consulting Pty Ltd Director - Olrac Australia – a company associated with electronic logbooks. Various research interests in other Commonwealth and State fisheries. NORMAC Scientific member Chair Tropical Rock Lobster RAG Chair Victorian Rock Lobster RAG
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.
Ian Boot	Industry Member	Managing Director of Austfish, a company which operates NPF vessels. Has a commercial interest in the fishery and in broodstock collection.
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 – Melbourne University	Research provider. Has in the past and may in future seek and receive funding for research in the fishery.
Ian Butler	AFMA Member	AFMA employee, no pecuniary interest in the fishery
Stephen Eves	Executive Officer (AFMA)	AFMA employee, no pecuniary interest in the fishery
Annie Jarrett	Observer - NPFI	CEO- NPFI Member of the MSC Stakeholder Council Chair - Australian Council of Prawn Fisheries (ACPF). Some research items are of relevance to NPFI.
Adrienne 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.



Name	Membership	Interest Declared
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.
Rob Kenyon	Observer - CSIRO	CSIRO employee. Participates in projects related to the NPF that currently receives funding and will seek to receive funding in the future.
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.	Complete – Trevor Hutton to present the results in next year's assessment.
18 May 2016 Meeting			
2	Rik Buckworth/CSIRO	Upload research reports relevant to the NPF to the Govdex site.	Ongoing – Rik Buckworth/CSIRO to identify the top 50 papers that are fundamental to the RAG's work and upload to GovDex.
3	AFMA	Provide a written annual summary of observer monitoring that provides methods, results and spatial distribution (use SESSF report as a template).	Complete
4	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.	Complete – Reported on during May 2017 RAG meeting.
5	AFMA	Update observer manual to include most up-to-date handling and data collection techniques and send updated list of items recorded to NPRAG.	Ongoing – AFMA to provide the updated species of interest list to the AFMA scientific observers after the ERA/ERM has been completed. AFMA to create some NPF guidelines for AFMA scientific observer data collection that clearly justifies and defines the data being collected.



Item	Person responsible	Description of ACTION item	Progress
6	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 – to be discussed at May RAG each year.
7	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.	Ongoing – to be discussed at each meeting.
8	NPRAG Chair	Send link for shark handling guide video to NPRAG.	Complete
9	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.	Complete – the final report will be distributed when publicly available. <i>Dave Brewer to provide a summary of the key points from the PNG bycatch reduction trials to the NPRAG out-of-session.</i>
17-18 November 2016 Meeting			
10	CSIRO	Review/update the assessment inputs to consider the influence of price elasticity.	Ongoing – Tom Kompas to follow up and investigate whether this can be done and coordinate with the AFMA working group to ensure resources looking into price elasticity are no being doubled up.



Item	Person responsible	Description of ACTION item	Progress
11	NPRAG Chair	Send a thank you letter to the crews involved in the operational testing of the BRD.	Ongoing – letters with Chair for signing, to be kept on file until mid-2018.
12	AFMA	Circulate the draft CSIRO boat level MEY analysis paper to the NPRAG.	Ongoing – CSIRO to circulate paper as soon as it's published.
13	CSIRO	Develop a full project proposal for the fishing power project by the end of January 2017.	Complete
14	CSIRO	Conduct an initial investigation into species split by analysing the survey data.	Ongoing – problem with the initial analysis, CSIRO to present to RAG when problem rectified.
11 May 2017 Meeting			
15	Ian Boot	Provide price data on redlegged banana prawns to Eva.	Complete
16	Sean Pascoe	Analyse and include monthly data in economic component of the red legged model.	Complete
17	NPRAG	Review the red-legged banana prawn decision rules in the NPF Harvest Strategy to reflect Eva's model	Complete
18	AFMA	AFMA to provide draft Harvest Strategy for red-legged banana prawns at next RAG.	Complete
19	AFMA	Fill out the SICA survey to include distribution data	Complete
20	CSIRO	Present economic spreadsheet with the inputs into the MEY trigger at annual May RAG meeting.	Ongoing



Item	Person responsible	Description of ACTION item	Progress
21	CSIRO/Tom Kompas	Present data on how the industry price estimates compare with the survey results at the May NPRAG meeting each year	Ongoing
22	CSIRO	Present the potential sensitivity tests at the November 2017 NPRAG meeting	Complete
23	AFMA/CSIRO/NPFI	Present spatial/effort information on bugs at next RAG.	Complete
24	NPFI	Add a section in the annual gear survey to collect data on refrigeration capacity.	Complete
25	CSIRO	Present fishing power project proposal at next RAG.	Complete
26	AFMA	Circulate copies of the draft Commonwealth Harvest Strategy and Bycatch Strategy to RAG and NORMAC.	Complete
27	AFMA	Organise teleconference at the end of May with MAC and RAG to discuss the draft Commonwealth Harvest Strategy and Bycatch Strategy.	Complete
24 May Teleconference 2017 Meeting			
28	AFMA	Present data on broodstock bycatch/byproduct at next RAG.	Complete
4-5 December 2017 Meeting			
29	NPFI/AFMA	NPFI/AFMA to finalise the new compliance method for measuring TEDs before the February 2018 NORMAC meeting and ensure the testing protocols are recorded for transparency.	



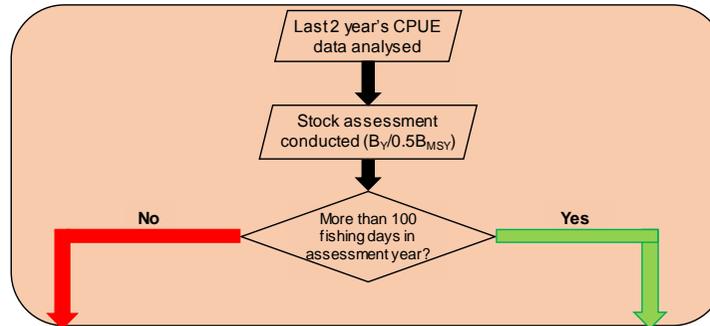
Item	Person responsible	Description of ACTION item	Progress
30	AFMA/CSIRO	AFMA/CSIRO to re-draft the red-legged banana prawn decision rule flow chart.	
31	All	NPRAG to review and revise the red-legged banana prawn decision rule flow chart ahead of the February 2018 NORMAC meeting.	
32	AFMA	AFMA to review previous RAG minutes to determine why some of the sensitivity tests were kept in the assessment.	
33	CSIRO	CSIRO, within six months, to present a spatial project proposal to the RAG including outline and cost.	
34	AFMA	AFMA to confirm if the scientific observers collect bug data before or after processing.	
35	AFMA	AFMA to analyse the bug sex specific length frequency distribution.	
36	NPRAG Chair	NPRAG Chair to provide information to NPFI on how mechanisms of shelving effort have operated in other fisheries.	
37	CSIRO	CSIRO to add profits back into the assessment model as base case.	
38	NPFI	NPFI to re-draft the Autonomous Adjustment report and circulate to the RAG and the economic working group before February 2018.	



Item	Person responsible	Description of ACTION item	Progress
39	NPFI/AFMA	NPFI/AFMA to analyse the broodstock collection data to determine the proportion of sawfish caught compared to the rest of the fishery	
40	NPFI	NPFI to provide an annual brief on broodstock collection for the RAG's review.	
41	NPFI	NPFI to provide 2017 broodstock collection data on TEPS at the next RAG.	
42	CSIRO	CSIRO to develop the MICE model project proposal, including options and costings, by February 2018.	
43	AFMA	AFMA to provide the updated species of interest list to the AFMA scientific observers after the ERA/ERM has been completed.	
44	AFMA	AFMA to create some NPF guidelines for AFMA scientific observer data collection that clearly justifies and defines the data being collected.	



Red-legged Banana Prawn – Proposed Decision Rules

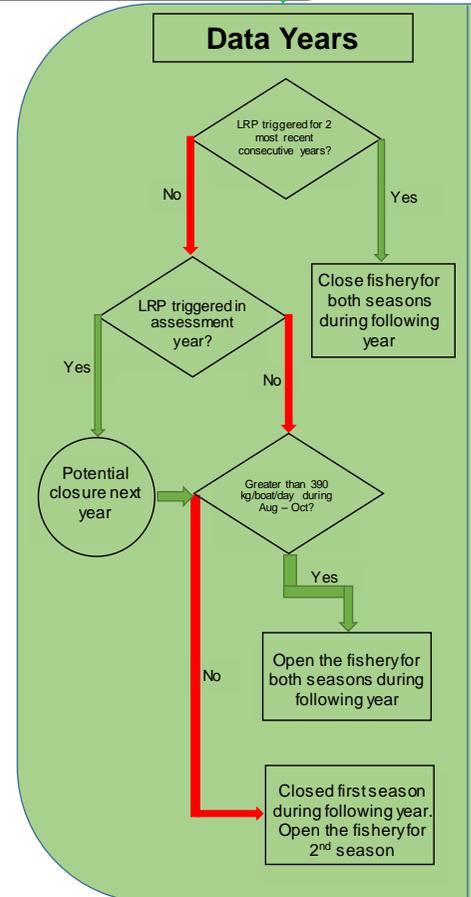
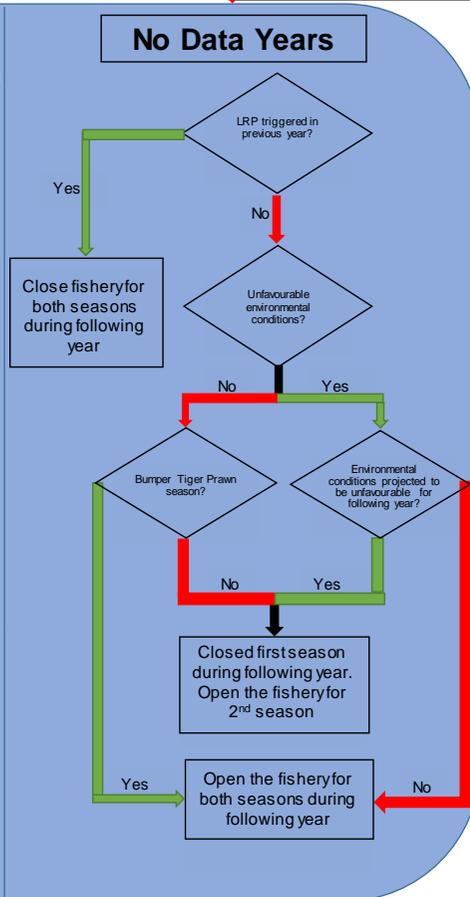


If the minimum of 100 fishing days has not been achieved then there is not enough data to reliably run the model. If the red-legged prawn stock fell below the limit reference point in the previous year, followed by a year with less than 100 fishing days, this may indicate a problem with the stock and raises concern. The fishery will be closed for both seasons during the following year as a precautionary management response.

The SOI for January and the median rainfall during January and February will be used to indicate if the low effort may be related to environmental conditions.

If the low effort can be attributed to environmental conditions, the January SOI and the median rainfall during January and February for the following year will be analysed before the start of the banana season. If the environmental conditions indicate the abundance of red-legged banana prawns are likely to be low, the fishery will be closed during the first season and opened during the second season.

If the low effort cannot be attributed to environmental conditions then the tiger prawn catch will be assessed using a proxy of 'Revenue Per Unit of Effort'. A bumper tiger season means when the Revenue Per Unit of Effort in the GoC divided by the Revenue Per Unit of Effort in the JBG is greater than 1. This may indicate the majority of the effort was concentrated in the GoC fishing for tiger prawns as opposed to fishing in the JBG for red-legged banana prawns. The fishery would be opened for both seasons the following year. However, if the Revenue Per Unit of Effort in the GoC divided by the Revenue Per Unit of Effort in the JBG is less than 1, then the low effort cannot be attributed to increased effort in the GoC and the fishery will be closed during the first season and opened during the second season as a precautionary measure.



If the minimum of 100 fishing days has been achieved then catch data from August, September and October will be analysed.

If the red-legged banana prawn stock size falls below the LRP for the two most recent consecutive years, then the fishery will be closed for both seasons the following year. Note that, if the LRP is triggered based on one year of data, then if there are indications of low stock abundance the following year and insufficient data to assess the status of the stock (i.e. < 100 fishing days), then there will be a closure the next year.

If the red-legged banana stock size does not fall below the LRP for the two most consecutive years then the average catch per boat per fishing day in August, September and October will be assessed.

If the average catch per boat per fishing day in August, September and October is 390 kg or more then the fishery will be opened for both seasons during the following year.

If the average catch per boat per fishing day in August, September and October is less than 390 kg then the fishery will be closed during the first season and opened during the second season the following year.