Australian Government
Australian Fisheries Management Authority

Northern Prawn Fishery Resource Assessment Group (NPRAG) Meeting

Teleconference Minutes

Date: 06 August 2020
Time: 09.00 am – 12.45 pm (AEDT)

Attendees

Name	Member type i.e. industry member
Ian Knuckey	Chair
Tom Kompas	Economic Member
Rik Buckworth	Scientific Member
David Brewer	Scientific Member
Phil Robson	Industry Member
David Power	AFMA Member
Stephen Eves	Executive Officer - AFMA
Annie Jarrett	Invited Participant - NPFI
Adrianne Laird	Observer - NPFI
Trevor Hutton	Observer – CSIRO
Roy Deng	Observer – CSIRO
Rob Kenyon	Observer – CSIRO
Eva Plaganyi	Observer – CSIRO
Laura Blamey	Observer – CSIRO
Sean Pascoe	Observer – CSIRO
Tonya Van Der Velde	Observer – CSIRO
Gary Fry	Observer – CSIRO
Shijie Zhou	Observer – CSIRO
Judy Upston	Observer – CSIRO
Robert Curtotti	Observer – ABARES

1 Preliminaries

1.1 Welcome and apologies

The Northern Prawn Fishery Resource Assessment Group (NPRAG) Chair, Ian Knuckey, opened the teleconference at 09.00 am (AEDT) on 06 August 2020 with an Acknowledgement of Country. The Chair noted apologies from Industry member Ian Boot.

1.2 Adoption of agenda

The Chair requested that the NPRAG consider the draft agenda (Attachment 1), identify any required amendments, and adopt the draft agenda for the meeting. The agenda was adopted without any changes.

1.3 Declaration of interests

The Chair requested that NPRAG members consider the standing table of declared interests (**Attachment 2**) and individually declare whether the stated interests are accurate, and if not, provide an update on those.

Scientific member Rik Buckworth advised he is now the Chair of the Northern Territory Aquarium Fishery Management Advisory Committee and has also been appointed as a CSIRO Fellow. The Chair, Ian Knuckey, advised that he is a participant in a Victorian agri-business forum and also has a son working on a NPF vessel during the 2020 tiger prawn season.

All participants involved in NPF-related research, either currently or with the potential to in the future, were asked to leave the meeting while the remaining members considered their potential conflicts. It was agreed that it was valuable to include all participants in the research discussion but those participants involved with research would be asked to leave the meeting when recommending the final priorities for the NPF Annual Research Statement.

Industry participants were then asked to leave the meeting while their potential conflicts with the agenda were considered. It was noted that there was a potential conflict with any Marine Stewardship Certification (MSC) related research and that Industry participants were involved in some research projects as co-contributors. It was agreed that Industry were key contributors to the research discussion and there was no obvious need for Industry participants to leave the meeting during the research priority setting process.

No other apparent conflicts of interest with the agenda items were identified that would prevent individuals participating in discussions. It was stated that if a particular conflict arose for any participant regarding an agenda item, that the RAG would note this and the relevant party would be asked to leave the teleconference whilst a decision was made about the appropriate course of action.

1.4 Minutes from previous meetings

It was noted that the minutes from the 20-21 May 2020 meeting were accepted out-of-session via email as a true and accurate record of the meeting.

2 Annual Research Statement

The development of the NPF Annual Research Statement for 2021-2022 was discussed. It was noted the annual research priorities reflect the longer-term priorities set out in the NPF five year Research Plan and in developing research priorities and assessing research proposals the ‘Framework for delivering cost effective fisheries research for AFMA’ was considered.

Identified research projects to improve the NPF stock assessments

The RAG noted that during its November 2015 meeting, a range of potential research projects were identified to improve the NPF stock assessments. Each project was prioritised according to its immediate need and benefit to the fishery (to achieving fishery objectives). It was agreed to regularly review the potential research options with regard to changing conditions in the NPF and a commitment was made to continually update, reprioritise and review potential funding options when possible.

The list of identified research projects to improve the NPF stock assessments was noted and CSIRO provided an updated project scope on two of the identified research needs:

1. Banana prawn MEY trigger – the research need relates to optimising effort in the banana prawn fishery, consequently increasing profitability. The current MEY trigger maximises profits from the banana prawn fishery given ‘normal’ fishing practices. It is possible that the ‘normal’ fishing practices aren’t the most profitable and high fishing effort too early in the season may result in lower profits than an alternative effort trajectory. A research paper on a similar fishery in the Gulf of Mexico was distributed as an example of changing effort

patterns to maximise profits. The economic member suggested that there is merit in exploring optimum effort dynamics further and a research paper on neural networks (applied to the banana prawn fishery) also predicted an increase in profitability of the same order of magnitude as suggested in this project proposal. It was further suggested that it would be useful to explore the price elasticity of banana prawns as larger catch may not always result in higher profits.

2. Banana/tiger economics – the research need relates to the current bio-economic model tending to overestimate effort on Brown Tiger Prawns. The reason may be due to banana prawns not being included in the tiger prawn bio-economic model which results in a TAE being set for the tiger prawn component of the fishery that does not optimise total profit across the fishery as a whole. The benefits of this project are optimal effort for tiger prawns being predicted and the total profit for the fishery being more accurately estimated. An additional benefit may be that any impact of reduced banana prawn abundance on the tiger prawn fishery could possibly be estimated. The tiger prawn model was optimised when the fishery had two distinct seasons. Now that the seasons overlap and there is interaction between the banana prawn and tiger prawn fisheries, profitability depends on including banana prawn catches and effort in the tiger prawn bio-economic model and thus estimating the MEY for the NPF fishery as a whole and not only just for the tiger prawn component.

Annual Research Statement priorities

The draft Annual Research Statement and each of the new identified research needs were discussed. Projects one to four, which are the core NPF stock assessment projects, were endorsed as essential research, noting the results of the species split project will be incorporated in the tiger prawn stock assessment model during the next three-year term.

The Red Endeavour Prawn assessment project generated extensive discussion. It was advised that further work needs to be done on both Blue and Red Endeavour Prawns. Currently, Red Endeavour Prawns aren't included in the prawn base case tiger prawn assessment bio-economic model used to recommend the TAEs for the tiger prawn stocks. Discussions also highlighted that the assessment for Blue Endeavour Prawns (base case – Bayesian production model) could be potentially underestimating relative stock abundance since it doesn't fully account for historical changes in the availability and catchability of endeavour prawns. It depends on the species, but endeavour prawn catchability is much lower now than during earlier periods in the fishery due to changes in fishing practices and temporal and seasonal closures. For Red Endeavour Prawns, the biological data on the species, in particular growth data, is limited. In addition, Red Endeavour Prawns have a patchy distribution and are highly variable, resulting in patchy abundance data. There isn't enough data to reliably include Red Endeavour Prawns in the delay-difference model.

It was suggested that some of the problems with both Blue and Red Endeavour Prawns could relate to fishing power. In the tiger prawn fishery, the focus is on relative fishing power from year to year, which captures changes in efficiency and catchability over time. The fishing power analysis for tiger prawns also encompasses Blue Endeavour Prawns (via the so-called 'economic catch of the tiger prawn fishery', used in the fishing power model), which has limitations. However, there is an alternative method that could be applied to endeavour prawns which is to estimate relative changes in fishing power based on estimating an annual catchability. This may be an option except for the fishery's early years when the season was all year round. There is uncertainty as to whether the catchability for Blue and Red Endeavour Prawns is similar, so it is uncertain whether Red Endeavour Prawns can be assessed using a similar method. As the data on Red Endeavour Prawns is poor, a data limited assessment approach may be an option to assess this species.

It was also suggested that the uncertainty with the historic catchability and availability of endeavour prawns may not relate directly to the fishing power analysis, but more in how the fishing power is included in the bio-economic model. A useful approach before committing to a specific project may be to identify what options are available to assess endeavour prawns and the feasibility of each option. For example, estimating a change in the catchability series for endeavour prawns was evaluated and highlighted the uncertainty and limitations that need to be further considered, thus the need for a further investigation of options.

The RAG agreed that further work on assessing Blue and Red Endeavour Prawns is a high priority, but the exact nature of the work can't be specified at this stage as it will be informed by research currently underway. It was suggested to include an endeavour prawn assessment project for both Blue and Red Endeavour Prawns in the research plan, noting that the details of a specific project will be provided towards the end of 2020 when more information on an exact project scope is available. It was questioned why further work was needed for Blue Endeavour Prawns when they are already included in the current stock assessment. The reason provided is that the current model for Blue Endeavour Prawns as applied in the base case bio-economic assessment does not necessarily fully account for historical changes in availability and catchability (as an annual production model was chosen because of concerns over the growth data and other life history parameters). A point was raised that meeting the MSC criteria (each stock having to fluctuate around MEY) may result in tiger prawn effort being restricted because of the status of Blue Endeavour Prawns. The current management arrangements maintain Blue Endeavour Prawns at a sustainable level. To assess Red Endeavour Prawns, more biological information could be collected, but it would be an expensive project. An alternative, more cost-effective option may be to use a data-poor assessment approach using data currently available. It was further suggested that the current species split project may provide some additional biological information for endeavour prawns.

The other research needs identified included: 1) 'Evaluating a spatial assessment for NPF tiger prawns'; 2) 'Research to support assessment of byproduct species'; and, 3) 'Sawfish close-kin genetics' and the priority of each project was discussed. It was suggested the spatial assessment of tiger prawns is not currently a high priority and it would be useful to wait for the results from projects currently underway such as the species split project, which will provide additional data for the spatial assessment. It was noted the assessment of byproduct species was a high priority, but the specific scope of the work was reliant on outcomes from the Ecological Risk Assessment (ERA) and assessment of current byproduct harvest control rules. It was further noted there is currently a project underway to continue to collect sawfish samples in the NPF to be used in a close-kin genetics project. The proposed close-kin genetics project is a large-scale project that should involve collaboration between a number of jurisdictions and fisheries and has potential to be coordinated through the National Environmental Science Program (NESP). The level of participation from the state fishery agencies was questioned and it was advised that both Queensland and the Northern Territory are looking to enhance their monitoring programs. Fishing operators in the Northern Territory Fish Trawl Fishery have also shown interest in contributing to sawfish research with some operators already collecting tissue samples. It was further added that the Northern Territory Offshore Net and Line Fishery is meeting in a couple of weeks to discuss the results of its ERA and a large part of the discussion will focus on sawfish.

RAG recommendation

Participants involved in research were asked to leave the meeting while the remaining members prioritised the research to include in the 2021-2022 Annual Research Statement.

It was agreed the regular data collection and stock assessment projects were essential and ranked as high priority. The Red Endeavour Prawn assessment was considered a high priority, noting that further work may also be needed for Blue Endeavour Prawns and the exact scope of the project was contingent on the results of research currently underway. The RAG agreed to review the project scope when the various assessment options had been explored.

The project to assess the spatial dynamics of the tiger prawn fishery was rated as a low priority for the time being and it was agreed to wait for the results from current projects, such as species split, before attempting any spatial analyses work.

Research to support assessment of byproduct species was rated as a high priority.

The two proposed projects for FRDC funding, 'Improve understanding of sawfish post-release survival' and 'Sawfish close-kin genetics work' were both considered high priority.

The RAG noted the list of identified research projects to improve the NPF stock assessments and, considering the discussion on each of the projects, prioritised the research as follows:

Title	Status
Fishing power revision	Funded – project has commenced
Species split	Funded – project has commenced (may need additional funding to extend the project as sampling in 2020 was limited due to the impacts of COVID-19)
Revised Redleg Banana Prawn assessment	Funded – project commencing 2nd half of 2020
Red Endeavour Prawn assessment – further potential improvements	High - Not currently funded
Banana MEY trigger	Medium - Not currently funded
Banana/tiger economics	Low - Not currently funded
Evaluating a Spatial Assessment for the NPF tiger prawns	Low - Not currently funded
Data Weighting in the Tiger Prawn Assessment	Funded through the three-year NPF assessment project
Including Scientific Observer Data in NPF assessments	Partly covered by the species split project – proportions (see below) Length-frequency still to be analysed (data quality / coverage), (funding?)

3 NESP Gulf river project update

The RAG noted a presentation from Michele Burford on 'How important are freshwater flows for Gulf estuaries? A study of the effect on prawn fisheries'. Key points from the presentation include:

- A model was developed by Broadley et al. that used climate variables to improve the prediction of the effect of river flow on fishery catch.
- The model was used to predict how different flow scenarios across the three studied rivers (Gilbert, Flinders and Mitchell), coupled with different water development scenarios would affect catch.
- Years of low flow in all three rivers, under various water development scenarios, lead to greatest impact on catch (up to 53% reduction of a likely already-low catch).
- The research highlights the importance of multiple rivers to support the fishery.
- No one river is more important than another, but their relative importance varies from year to year.
- The productivity of each estuary is relatively similar and in the long-term nutrients and sediment from floods are critical to fuel estuarine and coastal primary productivity, particularly in years of low to medium flow levels.
- Water extraction will reduce nutrient and sediment loads and effect estuarine and coastal productivity in the long term.
- Multiple years of low flow, particularly in southern Gulf rivers, is a scenario not unusual due to high inter-annual variability in river flows. Water extraction following years of low flow will have major impacts on fishery species, nutrient delivery and coastal productivity.

4 Next meeting

The Chair advised the next meeting is scheduled for 17 – 18 November 2020 and brought the meeting to a close at 12.45 pm.

Signed (Chairperson):

Date: 23/09/2020

Attachments

1) NPRAG 06 August 2020 Final Agenda
2) NPRAG 06 August 2020 Declared conflicts of Interest

Attachment 1

Final Agenda

Northern Prawn Fishery Resource Assessment Group (NPRAG) teleconference

06 August 2020 09.00 am – 12.45 pm (AEDT)

Item	Responsibility	Paper
1. Introduction / Meeting Management • Welcome • Adoption of agenda • Declaration of interests • Minutes from previous meetings	Chair	Yes
2. Annual Research Statement • Prioritise NPF research needs • Prepare NPF Annual Research Statement *Outcomes: NPRAG to identify research priorities and prepare the 2021-2022 Annual Research Statement*	AFMA	Yes
3. NESP Gulf river project update • Presentation on the latest results from the NESP Gulf rive project *Outcomes: NPRAG to note the latest results of the NESP gulf river project.*	Michele Burford / Jim Smart	No

Attachment 2

NPRAG Declared Conflicts of Interest

Participant	Membership	Interest Declared
Ian Knuckey	Chair	Director - Fishwell Consulting Pty Ltd Director - Olrac Australia – a company associated with electronic logbooks. Scientific member – NORMAC Member – North Marine Parks Advisory Committee Chair - Tropical Rock Lobster RAG Chair - Victorian Rock Lobster RAG Scientific member - SESSF shark RAG Scientific member – GABRAG Works with Indigenous communities in capacity building activities Chair - South Australia's Gulf of St Vincent prawn fishery's research committee Scientific member - South Australia's Gulf of St Vincent prawn fishery's management advisory committee Current consultancy with NT Fisheries designing a snapper species survey Has a son working on a vessel in the fishery Various research interests in other Commonwealth and State fisheries.
Rik Buckworth	Scientific Member	Scientific Member - Torres Strait Finfish RAG Director - Aquatic Remote Biopsy Pty Ltd Director - Sea Sense Australia Pty Ltd University Professional Fellow – Charles Darwin University Appointed as a CSIRO Fellow in 2020 Current consultancy contract with NPFI to review Red Endeavour Prawns Chair of the NT Aquarium Fishery Management Advisory Committee Various consultancy work with NT Fisheries Current consultancy contract with AFMA and QDAF for a project in the Torres Strait 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	Director – Upwelling P/L (David Brewer Consulting) Honorary Fellow – CSIRO Scientific member – NPRAG Scientific member – Torres Strait Fin Fish Working Group Chair - Torres Strait Fin Fish RAG Current consultancy work with AFMA and the Quandamooka Yoolooburrabee Aboriginal Corporation.
Tom Kompas	Economic Member – University of Melbourne	Research provider. Has in the past and may in future seek and receive funding for research 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.
David Power	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.
Adrianne Laird	Observer - NPFI	Employed as a contractor by NPFI. Some research items are of relevance to NPFI.
Gary Fry	Observer - CSIRO	Research provider involved particularly in the NPF bycatch monitoring program. Has in the past and may in future seek and receive funding for research in the fishery.
Rob Kenyon	Observer - CSIRO	Research provider. Has in the past and may in future seek and receive funding for research in the fishery.
Trevor Hutton	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.
Eva Plaganyi	Observer - CSIRO	Research provider involved particularly in stock assessment research in NPF. Has in the past and may in future seek and receive funding for research in the fishery.
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.

Judy Upston	Observer - CSIRO	Research provider. 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.
Laura Blamey	Observer - CSIRO	Research provider. Has in the past and may in future seek and receive funding for research in the fishery.
Sean Pascoe	Observer - CSIRO	Research provider 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.
Tonya Van Der Velde	Observer - CSIRO	Research provider. Has in the past and may in future seek and receive funding for research in the fishery.
Shijie Zhou	Observer - CSIRO	Research provider. Has in the past and may in future seek and receive funding for research in the fishery.