Torres Strait Tropical Rock Lobster Resource Assessment Group Meeting 24

Meeting Record 18-19 October 2018 Northern Fisheries Centre, Cairns

Note all meeting papers and record available on the PZJA webpage: www.pzja.gov.au



Australian Government Australian Fisheries Management Authority

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Meeting participants

Members

Name	Position	Declaration of interest
Dr Ian Knuckey	Chair	Chair/Director of Fishwell Consulting Pty Ltd and Olrac Australia (electronic logbooks). Chair/member of other RAGs and MACs. Conducts various AFMA and FRDC funded research projects including FRDC Indigenous Capacity Building project. Nil interests in TRL Fishery and no research projects in the Torres Strait. Full declaration of interests provided at Attachment A .
Natalie Couchman	AFMA Executive Officer	Nil.
Selina Stoute	AFMA member	Nil.
Allison Runck	TSRA member	Nil. TSRA holds multiple TVH TRL fishing licences on behalf of Torres Strait Communities but does not benefit from them. They will not be leased in the 2018/19 fishing season.
Danielle Stewart	Queensland Department of Agriculture and Fisheries (QDAF) member	Nil. Harvest Fisheries Manager, QDAF.
Dr Andrew Penney	Scientific member	Research consultant (Pisces Australis), member of other AFMA RAGs (SPFRAG and SESSFRAG). Nil pecuniary or research interests in the Torres Strait.
Dr Éva Plagányi	Scientific member	Lead scientist for PZJA funded TRL research projects conducted by CSIRO.
Aaron Tom	Industry member	Traditional Inhabitant Gudumalulgal and TIB licence holder.
Les Pitt	Industry member	Traditional Inhabitant Kemer Kemer Meriam and TIB licence holder.
Phillip Ketchell	Industry member	Traditional Inhabitant Kaiwalagal, Traditional Owner and fisher.
Mark David	Industry member	Traditional Inhabitant Kulkalgal and TIB licence holder.
Daniel Takai⁺	Industry member	Pearl Island Seafoods, Tanala Seafoods, TIB licence holder and lessee of TSRA TVH

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Name	Position	Declaration of interest
		licence in 2017/18 fishing season.
Brett Arlidge	Industry member	General Manager MG Kailis Pty Ltd. MG Kailis Pty Ltd is a holder of 5 TVH licences.

Observers

Name	Position	Declaration of interest
John Kris	Representative for Malu Lamar (Torres Strait Islanders) Corporation Registered Native Title Body Corporate (RNTBC)	Trustee responsible for administering the native title rights over 44,000 km ² of seas on behalf of the Torres Strait Islander claimants represented in the Torres Strait Regional Sea Claim determination of 2010.
Joseph Posu*	PNG National Fisheries Authority (NFA)	Nil.
Dr Robert Campbell	CSIRO scientific observer	Nil pecuniary interests. Project staff for PZJA funded TRL research projects.
Dr Tim Skewes	Scientific observer	Hand Collectables Working Group member, involved in research in the Torres Strait since 1987. Project staff for PZJA funded TRL (surveys) and BDM research projects.
Jerry Stephen [~]	TSRA Deputy Chair, TSRA Member for Ugar and TSRA Portfolio Member for Fisheries	TIB licence holder and Native Title holder.
Trent Butcher#	Industry observer	TVH licence holder.
Patrick Mills	Chair of Torres Strait Fisher's Association (TSFA)	TIB licence holder and Traditional Owner.
Suzannah Salam	Industry observer	Torres Straits Seafood Pty Ltd, TIB licence holder and lessee of TSRA TVH licence in 2017/18 fishing season.
Tony Salam^	Industry observer	Torres Straits Seafood Pty Ltd, TIB licence holder and lessee of TSRA TVH licence in 2017/18 fishing season.

Notes:

+ Arrived at 9:10 am on 19 October 2018, partway through Agenda Item 8.

* Attended on 19 October 2018 only.

[~] Attended on 18 October 2018 only. Arrived at 8:30 am on 18 October 2018, partway through Agenda Item 1.4.

[#] Attended on 18 October 2018 only. Departed meeting at 4:00 pm partway through Agenda Item 6.

^ Arrived at 8:40 am on 18 October 2018, partway through Agenda Item 1.5.

1 Preliminaries

1.1 Apologies

- 1. The meeting was opened in prayer at 8:15 am on 18 October 2018.
- The Chair welcomed attendees to the 24th meeting of the Torres Strait Tropical Rock Lobster Resource Assessment Group (TRLRAG 24). The Chair acknowledged the Traditional Owners of the land on which the meeting was held and paid respect to Elders past and present.
- 3. Attendees at the RAG are detailed in the meeting participant tables at the start of this meeting record.
- 4. Apologies were received from Mr Terrence Whap (Industry Member and Traditional Inhabitant Maluialgal) and Dr Ray Moore (Industry Member). The RAG noted that Dr Moore provided written comments for consideration under Agenda Items 4-6.
- 5. The Chair noted that the low recommended biological catch (RBC) and changes to management arrangements during the 2017/18 fishing season had social and economic impacts on communities across the region. The purpose of the meeting is to critically review and discuss how to improve the data, survey and stock assessment that underpins the management of the Torres Strait Tropical Rock Lobster Fishery (the TRL Fishery).

1.2 Adoption of agenda

6. The draft agenda was adopted with the addition of a presentation from Dr Andrew Penney, which was presented prior to Agenda Item 4 (**Attachment B**).

1.3 Declaration of interests

7. The Chair stated that as outlined in Protected Zone Joint Authority (PZJA) Fisheries Management Paper No. 1 (FMP1), all members of the RAG must declare all real or potential conflicts of interest in the TRL Fishery at the commencement of the meeting. Declarations of interests were provided by each meeting participant. These are detailed in the meeting participant tables at the start of this meeting record.

1.4 Action items from previous meetings

- 8. The RAG noted the status of actions arising from previous TRLRAG, and where relevant, TRL Working Group (TRLWG) meetings (**Attachment C**).
- 9. The RAG adopted the final meeting records for TRLRAG 22 held on 27-28 March 2018 and TRLRAG 23 held on 15 May 2018 as true and accurate records of these meetings.

1.5 Out-of-session correspondence

10. The RAG noted out-of-session correspondence on RAG matters since the previous meeting.

2 Updates from members

2.1 Industry and scientific

- 11. The RAG noted updates provided by industry and scientific members and observers on the performance of the TRL Fishery in the 2017/18 fishing season and key issues:
 - a. A Traditional Inhabitant Boat (TIB) industry member noted that there were "hotspots" of TRL encountered during the season. Between Thursday Island and Badu, there were very few TRL. Mabuiag yielded good catch rates in the early part of the season. Catch rates were also good towards the east around Warrior Reef in the later part of the season. The member queried whether the survey is covering enough of the TRL grounds to give a good indication of abundance. The member also noted that it is known there are environmental factors which affect the abundance of the stock and if weather systems

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are changing, this needs to be taken into account with where the safeguards are set for the Fishery.

- b. Another TIB industry member advised that that there was a movement of TRL from the western to the eastern parts of the Fishery during the season. Catch rates were very low particularly around Erub and Mer, uncertain about Ugar. There were reports of good catches around Masig, but he did not experience them himself.
- c. An industry member and TRL buyer noted that the TRL taken at Masig were similar to those taken around Warraber and Poruma. These TRL were taken in shallow waters during the period when the use of hookah gear was prohibited. The catch rates in these areas were not higher than average. The member noted that the RAG is responsible for the advice put to the PZJA on the status of the TRL stock for the 2017/18 season. The member observed it was a poor season in some areas, and it was only the hotspots in certain areas that yielded normal catch rates. Given the variable nature of the TRL stock, in some years industry will need to make a sacrifice and the 2017/18 season was that sacrifice. The member looks forward to working with the RAG to improve the science behind the management of the Fishery.
- d. Another TIB industry member advised that the catches reported around Masig, Warraber and Poruma were actually taken around Warrior Reef and landed to fish receivers on these islands. The member noted that they did not see many 1+ TRL on the reef edges. The member also fished Dungeness and catch rates were low. The member questioned whether the TRL around Warrior Reef migrated from Kirkcaldie and Dungeness. There is a lot of sand movement in that area.
- e. A Transferable Vessel Holder (TVH) industry observer noted that they fished through the season from Mabuiag through to Warrior Reef using hookah gear. The member saw a lot of 0+ TRL around clumps of stones out in the paddocks (7-12 m). This was confirmed by another industry member. A further industry member advised they saw a lot of 0+ lobsters on the reef tops from February until when the mid-year survey was undertaken.
- f. Another TIB industry member queried why the far western area of the Fishery is not surveyed, noting this may be a source of TRL for the Fishery.
- g. A TVH industry observer advised that they did not have a problem catching TRL at all during the season. The member caught lots of 2+ and saw lots of 0+ TRL during the season. The member noted that a lot of the Torres Strait is too dirty to dive or too far from anchorage. Noting the area fished is small compared to the distribution of TRL, the member questioned whether the survey and stock assessment accurately estimated TRL stock abundance.
- h. Another TVH industry member and TRL buyer noted that the RAG previously expected the 2+ TRL would run out in the later part of the season and that there would not be many 1+ TRL coming through. However, when the member looks at the size distribution data from the TRL they bought, the data is consistent with previous seasons and overall catches in particular were similar to 2016, 2014 and 2013. The 2017/18 season was a better season than the 2016/17 season. In the member's view, the 2017/18 season was normal, not the poor season predicted by the survey and stock assessment. The member estimates that \$16M worth of TRL was left in the water, of this \$9-10M would have gone to TIB fishers. The member was of the view that the survey did not provide an accurate estimate of TRL stock abundance and suggested that the Fishery be managed through input controls until concerns with the survey and stock assessment can be resolved.
- i. The Chair noted that at the last RAG meeting, members discussed significant temporal and spatial problems with the catch per unit effort (CPUE) data obtained from fishers. Current CPUE data may also be confounded by a hyper-stability effect, seen when fishers remain on fishing hotspots or move from one hotspot to another thereby maintaining high catch rates that don't represent the population size of the entire stock. The Chair also advised that the draft Harvest Strategy for the Fishery is designed to leave 65% of the TRL stock in the water each season to provide for natural mortality, spawning, and traditional fishing. This means fishers should see TRL left in the water, as they should only be taking a small proportion of the overall stock.

j. The CSIRO scientific member commended the industry and government for ensuring catches remained within the RBC for the Fishery. The member cautioned the RAG to not throw out 50 years of really good science backing up this Fishery on the basis of one season's experience. The member noted that they will provide analyses of both survey and industry data at this meeting, but noted that members need to keep in mind that industry target certain sized TRL. CSIRO are able to look at industry data in more detail in the coming months if desired.

2.2 Government

- 12. The RAG noted an update provided by the AFMA member regarding management initiatives relevant to the TRL Fishery:
 - a. <u>2017/18 fishing season management summary</u> additional moon-tide hookah closures commenced on 13 April 2018 followed by a prohibition on the use of hookah gear for the remainder of the season commencing 30 April 2018. The intent of these management changes was to give effect to the TRLWG recommendations that catches should not exceed the RBC and to prolong the season. The decision to prohibit the use of hookah gear was successfully challenged by Malu Lamar through the Federal Court. The decision was quashed and arrangements reverted to the additional moon-tide hookah closures. Fishers caught the Australian catch share of the RBC, 254.15 tonnes, by 30 July 2018 and the Fishery was closed for the remainder of the season. Further details are provided in an attachment to the paper for this Agenda Item.
 - b. <u>Outcomes of the Federal Court case</u> on 27 June 2018, his Honour Justice Rares of the Federal Court of Australia quashed the decision of the CEO of AFMA, as delegate of the PZJA, to implement a prohibition on the use of hookah gear. His Honour found that the delegate was obliged to afford procedural fairness to Malu Lamar prior to making the decision to amend licence conditions, but had failed to do so on the basis that Malu Lamar's response to a native title notification had not been considered by the delegate prior to making the decision. His Honour's judgement did not consider the merits of the AFMA CEO's decision itself.
 - c. <u>Change of Commonwealth fisheries Minister</u> Senator the Hon. Richard Colbeck has replaced Senator the Hon. Anne Ruston as the Assistant Minister for Agriculture and Water Resources. In this position, Senator Colbeck will serve as the Chair of the PZJA.
 - d. <u>Australian National Audit Office (ANAO) audit</u> the ANAO is currently undertaking a performance audit of the coordination arrangements of Australian Government agencies operating in the Torres Strait. A report is due to be tabled in January 2019.
 - e. <u>Catch sharing arrangements with PNG</u> PNG has provided monthly catch data. The AFMA CEO has met with the Managing Director of the PNG NFA regarding the status of catch sharing arrangements, noting the PNG fishery remains open. A TVH industry member advised that the PNG NFA has written to operators to prohibit fishing in PNG waters inside the Torres Strait Protected Zone (TSPZ), but not the area outside. AFMA are also working with the PNG NFA to reach more timely agreement on catch sharing arrangements each season.
 - f. <u>Proposed TRL Management Plan</u> in August 2018, AFMA circulated a media release from Senator Ruston concerning the implementation of a Management Plan by 1 December 2018. Noting Senator Colbeck has since replaced Senator Ruston, Senator Colbeck and Mr Napau Pedro Stephen are meeting today to discuss the implementation of a Management Plan further, including a proposal to implement a sectoral split (based on that proposed under the Management Plan) for the 2018/19 fishing season. The PZJA is likely to meet again soon to give further direction. AFMA continues to operate under the previous direction to implement a Management Plan by 1 December 2018 while awaiting further advice.
- 13. Noting concerns from members that 1 December 2018 is only a few weeks away, the AFMA member explained that the quota management system will take time to implement following the determination of the Management Plan. Once the Management Plan is determined, there is an

allocation process that will need to be completed before quota units can be formally allocated and this process can take months to years, depending on appeals.

- 14. The RAG noted an update provided by the TSRA member regarding TSRA activities relevant to the management of the TRL Fishery:
 - a. <u>Fisheries Summit</u> a Fisheries Summit was held on Thursday Island in August 2018. One of the main items for discussion was the proposed TRL Management Plan. A resolution was passed by attendees at the Summit for the sectoral split proposed under the Management Plan to be implemented for the 2018/19 fishing season. TSRA has established a TSRA Standing Committee, which first met in September 2018, to oversee the TSRA's engagement in implementing the Management Plan including the establishment of an independent entity to manage the fisheries assets the TSRA holds in trust on behalf of TIB fishers. The TSRA will be conducting community visits in November 2018 to provide information on the Management Plan. New members on PZJA forums were nominated and their terms are to start on 1 January 2019.
 - b. Export and branding for Torres Strait seafood a project is underway to assess the economic feasibility, regulatory requirements and infrastructure needs to export seafood directly from the Torres Strait and the potential value derived from creating a brand for Torres Strait seafood. This project is expected to be finalised by the end of this year. One resource to come out of this project will be exporter handbooks detailing information on supply chains and how to access markets.
- 15. The RAG noted an update provided by the QDAF member regarding activities in Queensland relevant to the management of the TRL Fishery:
 - a. <u>Catches in the East Coast TRL Fishery</u> see below. Only 84% of the TAC was caught in the 2018 season. An industry member advised that catch rates were better in the Torres Strait TRL Fishery and so a number of fishers remained fishing in the Torres Strait until the Fishery closed. Further, fishers in the East Coast TRL Fishery did not see a walk-in of large numbers of TRL in July through August which is expected each year. Weed was prevalent which is not a preferred habitat for TRL. An industry observer noted that the experience of divers in the East Coast TRL Fishery was also low this season and the "no-cray-itis" effect probably played a part, whereby it was difficult to catch TRL resulting in divers losing motivation in the later part of the season. The QDAF member noted that the TAC isn't normally caught each year. The Fishery is closed between October to December every year.

Year	Catch (tonnes)	Catch (as a per cent of the 195 tonnes TAC)
2009	183	94
2010	129	66
2011	147	75
2012	157	81
2013	166	85
2014	176	90
2015	125	64
2016	194	100
2017	195	100
2018	160	82

b. <u>East Coast TRL Working Group</u> – the third meeting will take place in December 2018 and will look at a draft Harvest Strategy for the East Coast TRL Fishery. The Fishery is currently managed under a quota management system.

2.3 PNG NFA

16. As the PNG NFA representative was not in attendance on 18 October 2018, an update was provided during the following day and is presented later in the minutes.

2.4 Native Title

17. The Malu Lamar representative advised that they did not have any updates to provide.

3 Catch summary for the 2017/18 fishing season

18. The RAG noted the Australian and PNG catch data for the 2017/18 fishing season:

- a. <u>Australian Torres Strait TRL Fishery</u> as reported through the mandatory fish receiver system, implemented on 1 December 2017, the reported landed catch for the Fishery for the period 1 December 2017 to 30 July 2018 was 261,067 kg. This equates to 102.72 per cent of the 254.150 kg Australian share of the RBC.
- b. <u>PNG TRL Fishery</u> the reported catch for the Fishery taken from the TSPZ for the period 1 January 2018 to 21 September 2018 was 66,361 kg. The reported catch for the Fishery taken from outside of the TSPZ for the same period was 2,302 kg. The PNG share of the RBC for the 2017/18 fishing season was 44,850 kg.
- 19. The RAG expressed appreciation to the PNG NFA in providing the catch data. The RAG noted advice from the CSIRO scientific member that these catches will be factored into the stock assessment for the 2018/19 fishing season, but it would be unlikely to have a big effect as the catches in 2017/18 are of a different age class to that to be caught in the 2019/19 season.

Presentation from Dr Andrew Penney

- 20. The RAG considered a presentation provided by Dr Andrew Penney, independent scientific member, detailing Dr Penney's independent interpretation of the data pertaining to the perceived mismatch between TRL survey results and catch rates in the 2017/18 fishing season. These interpretations drew on the analyses conducted in a number of CSIRO papers¹. Main points discussed:
 - a. Some in industry have expressed concerns to AFMA and the RAG that the survey and stock assessment may be misaligned with actual abundance in the 2017/18 fishing season.
 - b. <u>2018 mid-year survey 2+ index</u> the standard reference sites produced a 2+ index below the value predicted by the stock assessment from the 2017 pre-season 1+ index. The index has been similarly low in a couple of previous years, in particular 1999-2001. Although additional random survey sites were conducted during the mid-year survey in areas generally around hotspot commercial fishing locations, the resulting estimated 2+ index was lower than if those extra sites had not been included. Possible explanations include either the survey sites were not exactly where the hotspots were or the hotspots were short lived aggregations and had disappeared by the time the survey was conducted.
 - c. <u>TVH and TIB catch by area</u> for the TVH sector, 49% of effort in the Northern area produced 47% of the TVH catch (~62t). Mabuiag contributed a further 15% of catch (~20t). The contribution by the Northern area has increased substantially in recent years. For the TIB sector, Mabuiag and Badu contributed more than in recent years but there is uncertainty in the data as to where catches are taken versus landed.

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¹ Plagányi E et al. 2018. Torres Strait TRL 2018 Midyear Survey Summary Report; Campbell R et al. 2018. Torres Strait Rock Lobster Fishery – Summary of the Catch and Effort Data pertaining to the 2018 Fishing Season (Dec-17 to Jul-18); and, Plagányi E et al. 2018. Final 2017 Integrated Stock Assessment and RBC (2018) for the Torres Strait rock lobster fishery

- d. <u>Nominal CPUE</u> does seem to indicate that catch rates in 2017/18 were reflective of an average season, but requires standardisation to take into account increases in fishing efficiency over time. If this is not accounted for in the CPUE standardisation, the CPUE index may overestimate biomass.
- e. <u>CPUE relationship with biomass</u> if the relationship is linear, when CPUE decreases it is assumed that biomass is also decreasing. However, the correlation varies depending on the stock. CPUE for some stocks will show some degree of 'hyper-stability', remaining high during initial stock decline, and then declining more rapidly as the stock declines further. This occurs in TRL given the aggregating nature of the stock, and the stock assessment model assumes a hyper-stable relationship for both sectors of the Fishery. This means that effects of fishing are difficult to detect, with CPUE remaining high despite a stock declining. This has been seen in stocks across the globe, including orange roughy, Californian sardine and Tasmanian abalone.
- f. <u>TRL Harvest Strategy (current and draft)</u> aims to achieve a biomass target (B_{TARG}) of 65% of B₁₉₇₃. The target fishing mortality rate (F_{TARG}) is 0.15. With an estimated natural mortality (M) of 0.69, this equates to an annual natural mortality of 50% and an annual exploitation (fishing) rate of 10%. After natural and fishing mortality is taken into account the Harvest Strategy aims to leave at least 40% of TRL in the water each season. A large proportion of the natural mortality, is not the lobsters dying, but instead lobsters migrating out of the Fishery.
- g. There is a high correlation between pre-season and mid-year surveys and different numbers of survey sites used.
- h. There is no evidence that the surveys have given biased results, they provide a reliable index of abundance for use in stock assessments. However, given the aggregating nature of TRL, there is a possibility that a survey will miss some aggregations and find others, potentially under or over estimating abundance in particular years.
- i. CPUE on such aggregations can be highly stable despite declining abundance. CPUE from large aggregations may not provide a reliable index of abundance. Where a survey has missed such an aggregation, but the industry has found it, there will be a mismatch between apparent abundance seen by the survey and by industry. This seems to be what happened in the 2017/18 fishing season. If such aggregations are made up of lobsters derived from the assessed stock, high CPUE on an aggregation does not indicate a problem with the survey. But if aggregations are made up of lobsters not assessed, this is an issue.
- j. There is a trade-off between cost and precision in conducting more surveys or including more sites in existing surveys.
- k. Improvements:
 - i. <u>CPUE</u> better data needed to understand efficiency increases and whether there is evidence of aggregation-induced hyper-stability.
 - ii. <u>Survey</u> are there areas being consistently fished that are not being surveyed (e.g. survey and fishing footprints are not aligned) or has the distribution of the stock changed that these areas are not being surveyed?
 - iii. <u>Harvest Strategy</u> should a harvest control rule (HCR) be adopted that provides greater TAC stability e.g. averaging over more years.
 - iv. <u>Stratum</u> TRL04 logbook/TDB02 catch disposal record (CDR) and survey stratum should be standardised.

4 Catch and CPUE analyses for the 2017/18 fishing season

21. The RAG considered presentations provided by Dr Robert Campbell, CSIRO scientific observer, detailing analyses of catch and effort data pertaining to the TRL Fishery for the 2017/18 season²:

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² Campbell R et al. 2018. Torres Strait Rock Lobster Fishery – Summary of the Catch and Effort Data pertaining to the 2018 Fishing Season (Dec-17 to Jul-18); Campbell R et al. 2018. Use of TVH Logbook Data

- a. Data informing the analysis was received in late September 2018. There are three sources of data drawn on for the analysis:
 - i. the TRL04 logbook mandatory for TVH licence holders only;
 - ii. TDB01 docket book voluntary for all licence holders, no longer in use; and
 - iii. TDB02 CDR mandatory for all licence holders, replaced the TDB01 docket book from 1 December 2018.
- b. <u>Catch by season (both sectors)</u> catch in the 2017/18 season was the lowest since 2009. The RAG noted a small difference between the TRL04 logbook and TDB02 CDR records for the TVH sector, likely due to the fact that TRL04 logbook weights are often estimated compared to more accurate weighing on land in a TDB02 CDR.
- c. <u>Catch by month (both sectors)</u> TVH catch was notably constrained by management controls introduced in May and June.
- d. TVH sector catch and effort data from February-July 2018:
 - i. <u>Catch by method and process</u> the TVH sector predominantly uses the hookah method, with a small amount of free-diving occurring in the 2017/18 season. The processing form has not changed significantly.
 - ii. <u>Location of fishing</u> the location of fishing in the 2017/18 season was further north than in 2016/17. The RAG noted that it is the location where the primary boat is anchored which is generally recorded, not the location where tenders are actually fishing (which can range as far as 20 nm from the primary boat). Historically, when catches are good, spatial coverage is high. However, spatial coverage in the 2017/18 season was one of lowest. Finer scale (e.g. at the tender level) location data is needed to inform future analysis.
 - iii. <u>Areas fished by month</u> the Northern and Mabuiag areas accounted for 32-62% of data records in 2018.
 - iv. <u>Effort (hours fished) by area fished</u> 47% of total effort has been in the Northern area, 18% in the Warrior area, 15% in the Mabuiag area, and 12% in the Warraber area in 2018.
 - v. <u>Catch by area fished</u> 47% of total catch has been in the Northern area and 18% in the Warrior area. There was increase in catch in the Northern area in the 2017/18 season, but this pattern has been seen in the past. Generally there is a spatial shift each year on where catch is taken. For example, in 2015, large sand incursions in the Northern area, meant not much catch was taken out of this area.
 - vi. <u>Catch by hours fished</u> compared to the previous two seasons, during the 2017/18 season a higher proportion of the catch was been taken on sets with effort of more than 6 hours. Industry members advised that the depth of water determines the hours that can be fished each day (e.g. at 7m depth a diver can fish as long as there is daylight, but the deeper the dives, the more constrained a diver is). The RAG also discussed the 'hours fished' measure used in the TRL04 logbook is being reported inconsistently across fishers (e.g. hours the tender spends away from the boat, hours divers are in the water).
 - vii. <u>Nominal CPUE by month and season</u> generally CPUE decreases after February. In the 2017/18 season CPUE was similar across March, April and June. The mean CPUE in March and April was 28.4% lower than in February (whereas the average decrease over the previous 6 years between 2012 and 2017 was 7.6%). Very little TVH fishing took place in May 2018.
 - viii. <u>Nominal CPUE by area and season</u> across all areas, the mean CPUE in 2018 of 13.1kg/hour is lower than the mean catch rates over the previous 6 years (15.4kg/hour), though slightly higher than in 2016/17 (10.7kg/hour).

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to construct an Annual Abundance Index for Torres Strait Rock Lobster – 2018 Update; Campbell R et al. 2018. Use of TIB Docket-Book Data to construct an Annual Abundance Index for Torres Strait Rock Lobster – 2018 Update

- ix. <u>Total effort (hours fished)</u> decrease in 2017/18 season compared to 2016/17 season.
- x. <u>Hours fished per tender day</u> increased markedly in 2017/18 season compared to 2016/17 season.
- xi. <u>Standardised CPUE</u> moon-phase was added to the model. CPUE is lowest during days near a full moon and also low around a new moon, while CPUE is highest mid-way between these two phases (i.e. around the first and last quarters). During these latter periods CPUE is around 30% higher than at the time of a full moon. Management controls have had an impact in the 2017/18 season. The standardised CPUE index indicates a below average season in 2017/18 but not much below and within normal range compared across previous seasons.
- e. TIB sector catch and effort data from December 2017-July 2018:
 - i. <u>Catch by method and process</u> the use of the hookah method in the 2017/18 season decreased corresponding with a decrease in whole (live) processed form.
 - ii. <u>Catch by area fished</u> an industry member noted that a dinghy registered to lama, but landing at Warraber, is likely to have taken the catch from around lama or Warrior Reef. With this in mind the RAG agreed that future analyses conducted by CSIRO should explore the use of boat marks to conduct verification of location fished data provided in the TDB02 CDR. Discrepancies between boat marks and the location fished could be followed up with the individual fishers concerned.

Action

With regards to future TIB catch and effort analyses, CSIRO to explore the use of boat marks to improve location fished data extracted from the TDB02 CDR.

- iii. <u>Catch by days fished</u> there was an increase in the proportion of the catch associated with trips of length of greater than 1 day in the 2017/18 season, compared with previous seasons.
- iv. <u>Total effort (days fished)</u> the total number of days fished also increased in the 2017/18 season.
- v. <u>Nominal CPUE by month</u> December 2017 and January 2018 are lower than previous seasons.
- vi. <u>Nominal CPUE by method</u> catch rates for hookah use increased, and decreased for free diving in the 2017/18 season
- vii. <u>Nominal CPUE by area</u> catch rates were higher than average in the Mabuiag, Badu and Warrior areas.
- viii. <u>Standardised CPUE</u> as with the TVH model, moon-phase was added to the model. As with the TVH sector, the standardised CPUE index indicates a below average season in 2017/18 but not much below and within normal range compared across previous seasons. When comparing TIB and TVH indexes, the TVH index shows more inter-annual variability, but both sectors tend to be close to each other.
- f. With regards to the standardisation of the CPUE:
 - i. It is assumed within each year that the pattern of fishing across each area remains relatively consistent over time. However, it is likely that with the introduction of new technologies (e.g. GPS) that, over time, fishers have been able to more precisely target their fishing effort.
 - ii. Continual increases in fishing power over time for individual vessels is not captured by the available data resulting in potential bias in the calculated indices of abundance.
 - iii. The area fished across the fishery has been decreasing over time, with the area fished reaching a minimum during the 2017/18 season. This suggests that the fishing effort was more aggregated during the 2017/18 season than in other

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seasons, but is uncertain because the location of fishing effort currently recorded in the logbook is the location of the primary vessel and not the associated tenders.

- 22. The RAG agreed improvements could be made in the collection of spatial (e.g. location, depth) and effort (e.g. hours in the water) data in both TVH and TIB logooks and CDRs. The RAG noted that should the TRL04 logbook or TDB02 CDR be changed, this will require analyses to deal with a break in the CPUE time-series across years. Some issues that need further investigation include:
 - a. increases in fishing power in the Fishery through time and how to account for this in the CPUE standardisation (e.g. is 'vessel-effect' a proxy for skill of divers? Increase in boat size - can larger boats search more? Have there been other changes in fishing gears leading to increased CPUE?);
 - b. what factors influence the spatial distribution of lobsters and hotspots, and what influences the spatial distribution of fishing effort;
 - c. how fishing aggregations influence CPUE, and what factors influence aggregation dynamics;
 - d. whether there is hyper-stability in the CPUE (based on factors above);
 - e. the influence of oceanographic conditions (e.g. water temperature, prevailing winds).

5 Results of the 2018 mid-year survey

- 23. The RAG considered a presentation provided by Dr Timothy Skewes, scientific observer, detailing the results of the 2018 mid-year survey:
 - a. The extent and number of surveys has changed over the years:
 - i. 1989 benchmark survey 542 sites, biomass estimate of 4,800 tonnes.
 - ii. 2002 benchmark survey 375 sites, biomass estimate of 1,100 tonnes.
 - iii. 2004 biological and physical sampling by Pitcher et al 2007 looking at distribution of biota in the Torres Strait. Correlated with areas where TRL are known to be. Promising grounds out towards Deliverance, but this has not been surveyed.
 - iv. 1990-2004 mid-year surveys conducted.
 - v. 2005-2008 mid-year and pre-season surveys conducted with increased number of sites during the pre-season surveys.
 - vi. 2009-2013 mid-year surveys conducted.
 - vii. 2014-2017 pre-season surveys conducted.
 - viii. 2018 pre-season and mid-year surveys conducted
 - b. <u>2018 mid-year survey</u> conducted between 28 June and 9 July. 73 sites from the preseason survey were surveyed mid-year plus an additional 5 sites corresponding to hotspot areas in the north. Of these, site N109 was not surveyed. The weather and underwater conditions for the survey were generally good. There were some strong winds (20-25 knots) for the first 7-8 days, dropping to 15-20 knots over the last 3 days. The visibility was good, averaging 2.5-3m. The lowest recorded visibility was 1.5m.
 - c. <u>2+ index of abundance</u> the 2+ abundance index from the 2018 mid-year survey is significantly lower than the previous eight mid-year survey indices and is the second lowest value on record. The 2018 index is 26% of the average survey indices over the period 1989-2004. The 2018 index falls within the confidence limits associated with the stock assessment model prediction, and is slightly lower than predicted.
 - d. <u>Additional 5 sites</u> the 2018 index for the Mabuiag stratum decreased slightly when adding the additional 5 sites. This could be partly because the lobsters were very spatially concentrated in this stratum and the survey has underestimated overall abundance because it is designed to provide a larger scale representative index. Alternatively, this suggests that the earlier hotspot concentrations of lobsters in this stratum have now been fished and the index is reflecting a lower abundance following the fishing pressure that has been exerted in this area. Industry members advised that the majority of hotspot sites had been harvested before being surveyed.

- e. <u>1+ index of abundance</u> the 1+ recruiting abundance index is slightly higher than the upper 95% limit associated with the model prediction, and is seen to be at approximately the average historical value, suggesting that the 2018/19 fishing season will be improved relative to the 2017/18 fishing season.
- f. <u>Age class</u> there was an observed anomaly in the age class data where a significant proportion of the sampled lobsters fell between the average 1+ and 2+ age class ranges (i.e. meaning they were either larger 1+ lobsters or smaller 2+ lobsters). The RAG discussed a range of known factors that affects the growth of lobsters, including density dependence, water temperature, habitat and food availability. On the basis that water temperatures have been higher in more recent years, food availability has been high in the areas surveyed (e.g. good shell beds) and densities of lobsters have been lower, the best hypothesis to fit to this information is these lobsters are faster growing 1+ lobsters.
- 24. The RAG discussed industry concerns that what happened during the 2017/18 season was anomalous, in that industry have never been able to over-catch the TAC even when RBCs have been low in the past. The RAG noted an explanation from the Chair that low abundance does not necessarily mean that you can't catch the lobsters, particularly as it is known that TRL aggregate. It was further noted that the stock assessment model currently assumes there is a hyper-stable relationship between CPUE and biomass in this Fishery whereby fishers remain on fishing hotspots or move from one hotspot to another thereby maintaining high catch rates that don't necessarily represent the population size of the entire stock.
- 25. The RAG discussed industry concerns over the decrease in the number of survey sites through time. The RAG noted that past analyses have shown that decreasing the number of sites will increase the standard error (decrease precision), however the trend of abundance remains the same.

6 Comparison of CPUE analyses against results for the 2017 pre-season and 2018 mid-year surveys

- 26. The RAG considered a presentation provided by Dr Éva Plagányi, CSIRO scientific member, comparing CPUE analyses against results for the 2017 pre-season and 2018 mid-year surveys:
 - a. <u>Estimating stock abundance using surveys versus CPUE</u> surveys do not target areas (i.e. they are randomly stratified) whereas fishers do target and they generally become more efficient over time in doing so. This can lead to a hyper-stability effect which occurs in stocks that aggregate and/or where there are increases in fishing power (effort creep) through time. This means industry can maintain high CPUE even when a stock is declining. If these factors are not taken into account in CPUE analyses, then the CPUE may not provide a reliable index of abundance. Surveys are specifically designed to give a more reliable index of abundance due to their randomly stratified nature and broader coverage of a Fishery area. Survey abundance indices will never exactly match industry CPUE trends: some years it will over-estimate and some years it will under-estimate, but on average there is a strong correlation between survey and CPUE data (i.e. the trend is similar).
 - b. <u>Relationship between CPUE and biomass in the Fishery</u> past modelling for the Fishery has shown that a non-linear regression line best fits the CPUE and mid-year 2+ data. This suggests that as stock abundance declines, CPUE is higher than what would be expected if there was a linear relationship or even accounting for hyper-stability. As a result of these past analyses, a hyper-stable relationship is assumed in the model (i.e. at low abundance, CPUE will be higher than true abundance). This assumption will be made clearer in future analyses. A further consideration is that if aggregation behaviour or fishing power changes from year-to-year, then the hyper-stable relationship will also change year-to-year, and may be able to explain some anomalous years. In summary, there is a hyper-stable relationship between CPUE and biomass in the Fishery, the stock in 2017/18 season was low and for various reasons outlined above, the CPUE data did not reflect this clearly. More accurate spatial and effort data would better inform CPUE analyses.

c. <u>Connectivity of stocks</u> – a study conducted by Dao et al 2015 looking at the dispersal of TRL found there is connectivity between the Torres Strait, PNG, Indonesia and the broader south-east Asian region. The study indicates that TRL could be recruiting to the Fishery from the west however, further work needs to be done to incorporate larval duration/settlement times into this study. A study conducted by Rothlisberg et al 1994 in the Gulf of Carpentaria did not find TRL in the Gulf itself but did sample a small number of TRL larvae to the north which could in theory recruit to the Torres Strait.

Action

Circulate copies of the Dao et al 2015 and Rothlisberg et al 1994 papers to the RAG for information.

- d. <u>Environmental influences</u> there are a range of environmental factors that influence recruitment and abundance of TRL including water temperature, habitat changes and trawling impacts. A marine heatwave in February to April 2016 has been shown to have had direct impacts on fisheries across northern Australia. A resilient stock is needed to cope with these changes. This is part of the reason why, for every lobster taken in the Fishery, two need to be left behind.
- e. <u>Larval advection modelling</u> in normal years there is strong advection of TRL larvae into the Torres Strait whereas in El Nino years there is advection away from the Torres Strait. When modelling November 2015 through to March 2016 (this being the period of spawning for the 2018 2+ lobsters fished in the 2017/18 fishing season) an El Nino pattern is evident.
- f. In summary, TRL is naturally variable, there were strong environmental influences in 2015/16, low stock abundance in 2017/18. CSIRO are sourcing funding to improve the environmental model for the Torres Strait to incorporate data on these environmental influences, including the complex tides in the region.

CPUE data

- 27. The RAG agreed that catch and effort data (and the indicators derived from these data e.g. CPUE) are fundamental to understanding the dynamics of the TRL stock and performance of the Fishery and agreed improvements that could be made to its collection and analysis, including:
 - a. <u>TRL04 logbook and TDB02 CDR</u> improving the accuracy of spatial data (e.g. point of capture as opposed to point of anchoring or landing), finer scale measure of effort (e.g. 'hours actively fishing/in the water' as opposed to 'days fished'), further details on effort (e.g. to include time spent travelling, searching and actively fishing), collection of depth data.
 - b. <u>Fishing power (efficiency)</u> developing a better understanding on changes in fishing behaviour and power over time (e.g. changes to the size of engines, use of GPS, gear, areas fished, time fished, experience of divers), to inform the standardisation of CPUE data.
 - c. <u>Use of data collection technology</u> assessing the use of electronic logbooks in the Fishery.
 - d. <u>Use of monitoring technology</u> assessing the use of a vessel monitoring system (VMS) on all boats in the Fishery.
 - e. <u>PNG catch and effort data</u> better understanding of PNG catch and effort inside and outside of the TSPZ including spatial and temporal data.
- 28. The RAG agreed a sub-group of the RAG be formed to progress these issues. Nominations to form the sub-group were received from the following members: Selina Stoute; Danielle Stewart; Dr Éva Plagányi; Dr Andrew Penney; Mark David; Les Scott; and Joseph Posu. Trent Butcher and Suzannah Salam also offered their nominations as observers at the meeting. Membership of the sub-group is to be finalised out-of-session. A draft terms of reference is also to be developed for consideration at the first meeting of the sub-group to be convened alongside the next meeting of the RAG.

Recommendation

The RAG recommended a sub-group of the RAG be established to examine and recommend improvements to be made to the collection and analysis of catch and effort data for the TRL Fishery, including:

- a. TRL04 logbook and TDB02 CDR improving the accuracy of spatial data (e.g. point of capture as opposed to point of anchoring or landing), finer scale measure of effort (e.g. 'hours actively fishing/in the water' as opposed to 'days fished'), further details on effort (e.g. to include time spent travelling, searching and actively fishing), collection of depth data.
- b. Fishing power (efficiency) developing a better understanding on changes in fishing behaviour and power over time (e.g. changes to the size of engines, use of GPS, gear, areas fished, time fished, experience of divers), to inform the standardisation of CPUE data.
- c. Use of data collection technology assessing the use of electronic logbooks in the Fishery.
- d. Use of monitoring technology assessing the use of VMS on all boats in the Fishery.

The RAG further recommended a draft terms of reference is to be developed for consideration at the first meeting of the sub-group to be convened alongside the next meeting of the RAG.

- 29. The RAG discussed that these improvements will enable further analyses to better understand the CPUE-biomass relationship for the Fishery and the environmental influences affecting recruitment and TRL stock abundance. These are issues that can be examined in further detail by the sub-group at a later time.
- 30. Noting improved catch sharing during the 2017/18 fishing season, the RAG agreed that AFMA should continue to work closely with PNG to improve data sharing arrangements between the two jurisdictions.

TRL Fishery Harvest Strategy

- 31. The RAG discussed the implications of the analyses presented at the meeting for the draft Harvest Strategy for the Fishery. The RAG discussed the empirical HCR (eHCR) that will be used to calculate the RBC, once the draft Harvest Strategy is adopted, uses the pre-season survey 1+ and 0+ indices, both standardised CPUE indices (TVH and TIB), applies the natural logarithms of the slopes of the five most recent years' data and includes an upper catch limit of 1,000 tonnes. The relative weightings of the eHCR indices are 70% pre-season survey 1+ index, 10% pre-season survey 0+ index, 10% TIB sector standardised CPUE and 10% TVH sector standardised CPUE. The five year index average was selected by the RAG to limit the variability of the RBC from year to year.
- 32. The RAG also discussed the decision rules contained in the draft Harvest Strategy that trigger a stock assessment and mid-year survey. The draft Harvest strategy details that if in any year the pre-season survey 1+ indices is 1.25 or lower (average number of 1+ age lobsters per survey transect) it triggers a stock assessment. If the eHCR limit reference point is triggered in the first year, a stock assessment update must be conducted in March. If after the first year the stock is assessed below the biomass limit reference point, it is optional to conduct a mid-year survey, the pre-season survey must continue annually. The RAG discussed that given the experience during the 2017/18 season, the mid-year survey trigger may not align with the current expectations of management or industry.
- 33. The RAG noted advice from the CSIRO scientific member, that these issues do not affect the management strategy evaluation (MSE) testing that has already been done in developing the draft Harvest Strategy, and this testing can be drawn on to further examine these two issues.
- 34. The RAG agreed that these two issues should be revisited at the next meeting of the RAG prior to finalising the Harvest Strategy.

Recommendation

In light of the 2017/18 season, the RAG recommended that the number of years in the eHCR index and decision rule triggers be revisited at the next meeting of the RAG prior to finalising the Harvest Strategy.

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TRL Fishery Surveys

- 35. The RAG discussed survey options to support future stock assessments and management of the TRL Fishery. CSIRO declared their conflicts of interest in discussions on this item:
 - a. <u>Benchmark survey</u> this option would cost \$486,000 (CSIRO contribution \$194,000, external contribution \$291,000). This would build on previous benchmark surveys conducted in 1989 and 2002. Although it would improve the precision of the pre-season survey indexes of abundance for the 2018/19 season and future seasons, past analyses have shown that while increasing the number of sites (e.g. from 73 to 146) will decrease the standard error (increase precision), the trend of abundance remains basically the same, although the likelihood of having an outlier is lower. The RAG noted the benchmark survey could be redesigned to examine specific issues, such as if the survey and fishing footprints don't align or if it is suspected that there has been a shift in the distribution of the TRL stock. However, this would require lead time and cannot be done before the 2018/19 season. An independent review would provide a good basis for assessing the merits of a benchmark survey.
 - b. <u>Additional sites surveyed in 2018 pre-season survey</u> the CSIRO scientific member noted that as a contract has already been signed with the charter company for the 2018 pre-season survey, CSIRO are constrained in what changes can be made to the survey design (e.g. number of additional sites). The RAG noted that the survey could accommodate an additional 6 sites if required. The RAG agreed that selecting additional sites to target hotspots would not be effective, as the spatial and temporal distribution of aggregations is not well understood and they are likely to vary/move from year to year in ways that cannot currently be predicted.
 - c. <u>Independent review of survey design</u> the AFMA member noted that peer review of scientific methods, both that done by RAGs and externally, is an essential element in the fisheries management process. RAGs should view external, independent peer review as an essential component of their business. The CSIRO scientific member welcomed an independent review of the survey design, noting it would require resources from CSIRO to draw together the documentation need to support the review. The member further noted that another university had recently reviewed the survey design and agreed to provide a copy of the report to the RAG for information. The RAG agreed that an independent review should be forward looking and provide an independent assessment of issues encountered in the 2017/18 season and improvements that can be made to the survey methodology.

Action

CSIRO to provide information on a recent review of the survey design to the RAG for information.

- 36. The RAG agreed that improvements to the catch and effort data would add value to CPUE as an index of TRL stock status and performance of the Fishery.
- 37. Taking into account budgeting and time constraints, the RAG agreed to a staged approach to addressing the issues raised above:
 - a. November 2018 pre-season survey to be conducted with the addition of the further 6 sites in the north (as per the mid-year survey);
 - b. independent review to be conducted of the survey design. A draft terms of reference is to be developed by the Chair for consideration at the first RAG meeting in 2019. Pending further input by the RAG, the review should examine the following:
 - i. pre-season survey methodology;
 - ii. merits of alternative survey approaches (e.g. benchmark and mid-year surveys);
 - iii. CPUE vs. survey mismatch and hyper-stability in CPUE;
 - iv. availability and merits of alternative data collection technologies.

Recommendation

The RAG recommended:

- a. the 2018 pre-season survey be conducted with the addition of a further 6 sites.
- b. an independent review to be conducted of the survey design. A draft terms of reference is to be developed by the Chair for consideration at the first RAG meeting in 2019.

7 Planning and design of future surveys and assessments

- 38. The RAG considered a presentation provided by Dr Timothy Skewes, scientific observer, detailing the plan for the 2018 pre-season survey. The 2018 pre-season survey will be conducted from 11-24 November 2018 and will survey 80 sites.
- 39. The RAG discussed the use of industry vessels to conduct future surveys, noting CSIRO charter requirements (**Attachment D**). An industry member noted that they would be able to meet the requirements detailed.
- 40. The RAG noted a poster presented by CSIRO showing the TRL age classes. The RAG agreed to provide comments out-of-session, prior to finalisation.

Action

RAG members to provide comments on the CSIRO TRL age class poster. CSIRO to include a better image of the 2+ lobster on the poster

8 Better aligning the TAC setting process with the fishing season for the 2018/19 season and future seasons

- 41. The RAG discussed approaches to better aligning the current TAC setting process with the fishing season, noting the timing of the survey and stock assessment process means a TAC based on the latest survey results cannot be determined before the current season start date (1 December). Currently, the notional TAC has not been finalised until 4-5 months into the 10 month fishing season. Under the proposed Management Plan a TAC must be determined before the season start.
- 42. The RAG discussed two approaches:
 - a. <u>Delayed season start</u> delaying the fishing season start date so that it occurs after the TAC setting process is able to be finalised (e.g. 1 February, 1 March). This may require timeframes for some components of the TAC setting process to be completed earlier or compressed.
 - b. <u>Interim conservative TAC</u> setting a conservative TAC that could be determined before the start of the season and increased when the TAC setting process is finalised. The conservative TAC would need to be determined before the results of the pre-season survey become available in December.
- 43. The RAG considered that although it will be possible to finalise a RBC more quickly through the application of the eHCR once the Harvest Strategy is finalised, administratively, a TAC would still not be finalised by 1 December. Further, the draft Harvest Strategy requires annual RBCs to be set using the integrated stock assessment model if the if the data, analyses or other conditions indicates the eHCR recommended RBCs are outside the ranges tested by the MSE process conducted. Under this scenario the eHCR should be revised and annual RBCs need to be set using the integrated stock assessment model until a revised eHCR is agreed.
- 44. With regard to delaying the fishing season start date, the RAG discussed the following considerations:
 - a. <u>Inputs to the eHCR</u> the eHCR uses the pre-season survey 1+ and 0+ indices and both standardised CPUE indices (TVH and TIB) to calculate the RBC. CPUE data would be needed to the end of September. It usually takes until the end of October to chase up outstanding records and compile the data ready for analysis. CSIRO then conduct the

analyses and prepare the standardised CPUE indices in November. The pre-season survey is generally conducted between 5-20 November each year. At least two weeks are needed following the survey to compile and analyse the survey data and run the eHCR calculations.

- b. <u>Administrative decision making</u> the recommended RBC needs to be considered by the RAG and Working Group before the PZJA is asked to make a decision. The PZJA process can take up to 3 months, however, AFMA is working to streamline PZJA decision making processes to enable more timely decision making. The RBC and associated catch shares also need to be agreed with PNG.
- 45. Noting the above constraints, the RAG considered the conservative TAC approach a more viable approach. The RAG noted that other fisheries have adopted this approach and it can work well if formulated correctly. This approach will still require timeframes for some components of the TAC setting process to be completed earlier or compressed. The RAG discussed a range of options for setting a conservative TAC, to be described as the start of season catch limit:
 - a. <u>Constant catch limit</u> in developing the draft Harvest Strategy, MSE testing was conducted on a HCR whereby a constant TAC was set from year-to-year. The testing showed that 360 tonnes is a safe level to set the TAC in such a scenario. The RAG noted that this testing only showed that this is a safe level if it is set over a number of years, not in the context of a variable TAC.
 - b. <u>Cumulative catch from December-February</u> the RAG noted the following cumulative catches for December-February for the period 2005-2018.

	December-February Total (kg)	December-March Total (kg)
Maximum	201,715	366,212
Minimum	57,441	99,425
Mean (average across years)	93,723	165,292

- c. <u>Start of season catch limit</u> the RAG agreed that the start of season catch limit should cover 1 December through to the end of February, and be based on the maximum annual catch amount for the period 2005-2018, being 200 tonnes. This is to minimise the risk that the limit could artificially constrain fishing effort, particularly in a good year. The RAG noted that the use of hookah gear is not permitted during December-January.
- d. <u>PNG catch</u> the RAG further agreed that, if needed, an additional 100 tonnes be added to the start of season catch limit amount, to account for catches from PNG.
- e. <u>Exceptional circumstances</u> the RAG agreed the start of season catch limit should be overridden in seasons where the TRL stock abundance is exceptionally low and the final RBC is likely to fall below the start of season catch limit or where overridden by the Harvest Strategy decision rules. In such cases, the use of the start of season catch limit should not be used in subsequent seasons until reviewed by the RAG.

Recommendation

Considering the need under the proposed Management Plan to determine a TAC prior to the start of the fishing season on 1 December, and noting that current stock assessment and decision making processes do not enable a TAC to be determined until the end of February, the RAG recommended that once the Management Plan comes into force:

- a. a start of season catch limit of 200 tonnes be determined prior to 1 December each year covering the period 1 December through to the end of February, at which point a final TAC will be able to be determined; and
- b. a provision for the start of season catch limit to be overridden in seasons where the TRL stock abundance is exceptionally low and the final RBC is likely to fall below the start of season catch limit or where overridden by the Harvest Strategy decision rules. In such cases, the use of the start of season catch limit should not be used in subsequent seasons until reviewed by the RAG.

46. An industry observer advised that, considering the limits that were applied during the 2017/18 fishing season, the concept of a start of season catch limit could be confusing for, or misconstrued by industry if not communicated clearly. AFMA agreed to prepare some explanatory material and a diagram for members to use in any discussion they may have with industry.

Action

AFMA to prepare some explanatory material and a diagram explaining the start of season catch limit.

9 Draft five-year research plan for 2019/20 to 2022/23

- 47. The RAG considered an update provided by the Executive Officer concerning the new research planning framework for Torres Strait fisheries:
 - a. over the past 12 months, AFMA and the Torres Strait Scientific Advisory Committee (TSSAC) have been drafting a new Strategic Research Plan (SRP) for Torres Strait research. The SRP is an overarching document which details TSSAC's strategic themes which will guide priority setting for research in the Torres Strait fisheries over the next five years.
 - b. TSSAC now requires each fishery to develop a rolling five year research plan, which fits into the themes identified in this SRP. The plans are written by the relevant Torres Strait forum (Working group, MAC or RAG). These plans will then be used by TSSAC to create an annual research statement (ARS), listing annual priorities for Torres Strait research across all fisheries. The rolling five year research plans will be updated annually, thus always having a five year projection for research.
- 48. The RAG discussed the draft Rolling Five Year Research Plan for 2019/20-2022/23 for the Torres Strait Tropical Rock Lobster (TRL) Fishery and recommended changes as detailed in **Attachment E**.

10 Other business

49. Members did not raise any other business for consideration.

11 Date and venue for next meeting

- 50. The RAG noted that the next meeting is scheduled for 11-12 December 2018 for the purpose of discussing the preliminary results of the 2018 pre-season survey and stock assessment.
- 51. The meeting was closed in prayer at 11:30 am on 19 October 2018.

Declaration of interests Dr Ian Knuckey – October 2018

Positions:

Director –	Fishwell Consulting Pty Ltd
Director –	Olrac Australia (Electronic logbooks)
Deputy Chair –	Victorian Marine and Coastal Council
Chair / Director –	Australian Seafood Co-products & ASCo Fertilisers (seafood waste)
Chair –	Northern Prawn Fishery Resource Assessment Group
Chair –	Tropical Rock Lobster Resource Assessment Group
Chair –	Victorian Rock Lobster and Giant Crab Assessment Group
Scientific Member –	Northern Prawn Management Advisory Committee
Scientific Member –	SESSF Shark Resource Assessment Group
Scientific Member –	Great Australian Bight Resource Assessment Group
Scientific Member –	Gulf of St Vincents Prawn Fishery Management Advisory Committee
Scientific participant -	SEMAC, SERAG

Current projects:

AFMA 2018/08	Bass Strait Scallop Fishery Survey – 2018 and 2019
FRDC 2017/069	Indigenous Capacity Building
FRDC 2017/122	Review of fishery resource access and allocation arrangements
FRDC 2016/146	Understanding declining indicators in the SESSF
FRDC 2016/116	5-year RD&E Plan for NT fisheries and aquaculture
AFMA 2017/0807	Great Australian Bight Trawl Survey – 2018
Traffic Project	Shark Product Traceability
FRDC 2018/077	Implementation Workshop re declining indicators in the SESSF
FRDC 2018/021	Development and evaluation of SESSF multi-species harvest strategies
AFMA 2017/0803	Analysis of Shark Fishery E-Monitoring data
AFMA 2016/0809	Improved targeting of arrow squid

24th MEETING OF THE PZJA TORRES STRAIT TROPICAL ROCK LOBSTER RESOURCE ASSESSMENT GROUP (TRLRAG 24)

Thursday 18 October 2018 (8:00 AM – 4:00 PM) Friday 19 October 2018 (8:00 AM – 12:00 PM)

Cairns (Northern Fisheries Centre, 38-40 Tingira Street, Portsmith)

DRAFT AGENDA

1 Preliminaries

- 1.1 Welcome and apologies
- 1.2 Adoption of agenda
- 1.3 Declaration of interests
- 1.4 Action items from previous meetings
- 1.5 Out-of-session correspondence

2 Updates from members

- 2.1 Industry and scientific members
- 2.2 Government agencies
- 2.3 PNG National Fisheries Authority
- 2.4 Native Title
- 3 Catch summary for the 2017/18 fishing season

Presentation from Dr Andrew Penney

- 4 Catch and CPUE analyses for the 2017/18 fishing season
- 5 Results of the 2018 mid-year survey
- 6 Comparison of CPUE analyses against results of the 2017 pre-season and 2018 mid-year surveys
- 7 Planning and design of future surveys and assessments
- 8 Better aligning the TAC setting process with the fishing season for the 2018/19 season and future seasons
- 9 Draft five-year research plan for 2019/20 to 2022/23
- 10 Other business
- 11 Date and venue for next meeting

Action items from	n previous	TRLRAG	meetings
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#	Action Item	Agenda	Agency	Due Date	Status
1.	 AFMA to review the effectiveness of certain TIB licensing arrangements (in its 2016 licencing review) including: TIB licenses should share a common expiry date licences to last for longer than the current 12 month period. 	TRLRAG14 (25-26 August 2015)	AFMA	2017	 Ongoing AFMA has begun undertaking a review of licensing of Torres Strait Fisheries, this issue will be considered as part of this review. At present however, AFMA resources are focused on progressing the proposed legislative amendments as a matter of priority. Administrative arrangements can be made to provide for licences held by the same person to expire on the same day. This change can be progressed when resources allow.
					 The Torres Strait Fisheries Regulations 1985 currently provide for TIB and TVH licences to be issued for up to 5 years. Administrative arrangements can be progressed when resources allow.
2.	AFMA and CSIRO prepare a timeline of key events that have occurred in the Torres Strait Tropical Rock Lobster Fishery (e.g. licence buy backs, weather events and regulation changes) and provide a paper to TRLRAG.	TRLRAG14 (25-26 August 2015)	AFMA CSIRO	TRLRAG17 (31 March 2016)	Ongoing AFMA to complete further work. This has been difficult to action ahead of other priorities for the TRL Fishery.
3.	AFMA to prepare a summary of evidence that PNG trawl-caught TRL are a shared stock between Australia and PNG, including details such as the TRL biological characteristics, larvae dispersal, tag recapture data and catch and effort information. AFMA will circulate the paper to the RAG out-of-session for	TRLRAG19 (13 December 2016)	AFMA		Completed AFMA sent a letter to PNG NFA outlining concerns of trawlers retaining TRL on 8 March 2017. At TRLRAG 21 held from 12-13 December 2017, CSIRO presented the preliminary results of the research project titled ' <i>Environmental update for the Torres Strait tropical lobster Panulirus ornatus</i> '. AFMA presented the key findings of the CSIRO larval advection model at the Fisheries Bilateral meeting held in Port Moresby on 5 February 2018. The bilateral meeting

#	Action Item	Agenda	Agency	Due Date	Status
	comment before sending to PNG NFA.				noted that the findings show the Australian and PNG TRL fisheries are based on a single stock. AFMA and CSIRO (Dr Éva Plagányi) met with PNG NFA officials, including the NFA Managing Director, John Kasu on 7 February 2018 at the NFA offices in Port Moresby. Dr Plagányi presented the updated stock assessment results and larval advection modelling. There was agreement that the updated larval modelling together with past research provides strong evidence that TRL is a shared stock between Australia and PNG. These meetings have been followed up with teleconference between the PNG NFA Managing Director and AFMA CEO which included discussions on the importance of controlling catches so they do not exceed each jurisdiction's catch share of the recommended biological catch (RBC). CSIRO's final report, titled ' <i>Environmental Drivers of</i> <i>variability and climate projections for Torres Strait tropical</i> <i>lobster Panulirus ornatus</i> ', will be provided with these meeting papers for reference. This report has not been sent to members previously. This report will also be made available on the PZJA website.
4.	Malu Lamar RNTBC to provide AFMA with the map of traditional boundaries and regional area and reef names for each of the Torres Strait Island nations and for CSIRO to examine possible revised naming conventions for survey sites	TRLRAG20 (4-5 April 2017)	Malu Lamar		Completed CSIRO advised at TRLRAG23 that they have received some maps with information on traditional names but that this is not complete. CSIRO will work with Malu Lamar if further information is needed.
5.	AFMA to liaise with Mr Pitt and Malu Lamar to provide agreed traditional names for the area around Erub.	TRLRAG23 (15 May 2018)	AFMA		Ongoing

Attachment C

#	Action Item	Agenda	Agency	Due Date	Status
6.	Dr Campbell's corrected paper to be circulated to the RAG following the meeting.	TRLRAG23 (15 May 2018)	CSIRO	TRLRAG24 (18-19 October 2018)	Completed Updated paper provided to TRLRAG members on 16 May 2018.
7.	South Fly River studies to be provided for consideration at the next TRL and Finfish RAG meetings.	TRLRAG23 (15 May 2018)	AFMA	TRLRAG24 (18-19 October 2018)	Ongoing To be provided out of session and for consideration at the next RAG and WG meetings if required.

Relevant action items from previous TRLWG meetings*

#	Action Item	Agenda	Agency	Due Date	Status
1	TRLRAG to provide advice on any findings relating to the impacts of changing the season start date to provide industry with a longer TAC notice period.	TRLWG5 (5-6 April 2016)	AFMA to draft RAG paper	TRLRAG22 (27-28 March 2018)	Ongoing To be discussed under Agenda Item 8.

*TRLWG actions not relevant to TRLRAG have not been included in the above.

CSIRO charter requirements for TRL survey

Mandatory Requirements

- Charter vessel greater than 16m and surveyed as a 1B or 2B class vessel
- Tenderer must meet all legislative and regulatory requirements for sea worthiness for Marine Safety (Domestic Commercial Vessel) National Law Act 2012 and associated Marine Orders
- Capacity to accommodate 4 CSIRO staff and 2 charter vessel crew
- Be available for a period of 14 days charter during November neap tides (up to 80 dive sites)
- Protection and Indemnity Insurance and WorkCover for Tenderer's employees

Goods and Services to supply

- Charter crew are required to have Advanced Resuscitation Certification or similar which includes oxygen therapy
- Provide all meals, linen and accommodation for 4 CSIRO staff
- Provide enough fresh water for adequate drinking, showering (6 persons), washing of clothes and dive equipment for the survey period
- Have an emergency plan for evacuation from the survey region in case of medical emergency, particularly related to diving incidents
- Provide and operate dive compressor with recent air test certificate (within the last 6 months)
- Capacity to stow away approximately 2.5 cubic meters of survey equipment (wt. 300kg)
- Tenderer to supply the following equipment
 - 400L unleaded fuel and 10L 2 stroke outboard oil
 - dive tanks with A-clamp fittings (in test)
 - 20 x 1.5kg dive weights
 - F-size oxygen tank and Oxy-Viva kit (in service) for therapy in case of medical emergency.

TORRES STRAIT

PROTECTED ZONI JOINT AUTHORITY

🖉 Queensland

Government

Australian Fisheries Management Authority







Compiled by AFMA October 2018

ABOUT THIS PLAN

The Torres Strait Scientific Advisory Committee (TSSAC) seeks input from each fishery advisory body (Resource Assessment Group (RAG), Management Advisory Committee (MAC) or Working Group (WG)) to identify research priorities over five year periods from 2019/2020 to 2022/23. This template is to be used by the relevant advisory body to complete their five-year plan. The plans are to be developed in conjunction with the TSSAC Five-year Strategic Research Plan (SRP) with a focus on the three research themes and associated strategies within the SRP.

All fishery five-year plans will be assessed by the TSSAC using a set of criteria, and used to produce an Annual Research Statement for all Torres Strait fisheries.

The TSSAC then develop scopes for the highest ranking projects in order to publish its annual call for research proposals. There are likely to be more scopes that funding will provide for so TSSAC can consider a number of proposals before deciding where to commit funding.

The fishery five-year plans are to be reviewed and updated annually by the Torres Strait forums to add an additional year onto the end to ensure the plans maintain a five year projection for priority research. Priorities may also change during the review if needed.

RESEARCH PRIORITIES

 Table 1. Five year Torres Strait Tropical Rock Lobster Fishery research plan for 2018/19 – 2022/23.

			Year proje	ct to be carrie	ed out and in	dicative cost	*			Evaluation	
Proposed Project	Objectives and component tasks	2018/19	2019/20	2020/21	2021/22	2022/23	Notes on project timings	Other funding bodies ¹	Priority essential /desirable	Priority ranking (1-5 – 1 being highest priority)	Theme
Fishery surveys, stock assessment, harvest control rules and recommended biological catch (RBC)	Monitor ongoing changes in the fishery and update or develop fishery performance indicators as required; Recommend a recommended biological catch (RBC) annually for each season; Every third year update and implement the long-term stock assessment; Conduct a pre- season survey in November each year, including seabed habitat monitoring; Continue development of a harvest	277,477 (funded under 2016/ 0822)	260,000	240,000	240,000	240,000	Nil	AFMA CSIRO PNG NFA Industry	Essential		1

	strategy for the TRL Fishery including an empirical harvest control rule. Facilitate data sharing with PNG. Development of a tiered harvest strategy for the TRL Fishery.										
Mid-year survey	Conduct mid- year survey, as required under the Harvest Strategy for the TRL Fishery	0	0	0	0	0	To be conducted on an as needs basis – indicative cost \$110,000 with in-kind contribution from CSIRO	AFMA CSIRO PNG NFA Industry	Essential (when required)	1	1
Science peer review	Consistent with best practice Guidelines for quality assurance of Australian fisheries research and science information (the Guidelines), a peer review be conducted of the TRL Fishery survey design, stock assessment	0	60,000- 80,000 (depen- dent on final scope)	0	0	0	Terms of reference to be developed and considered by the RAG in first quarter of 2019	AFMA	Essential	1	1

		and draft Harvest Strategy.										
Ecologica assessmo	al risk ent (ERA)	Conduct an update to the 2007 ERA for the TRL Fishery.	0	20,400	0	0	0	To be conducted in the next three years	AFMA CSIRO	Essential	1	1
Improven data colle	nent of ection	Improved monitoring of commercial catch and effort in all sectors of the fishery; Estimate of non- commercial take of TRL; Alternative monitoring techniques of effort, for example GPS tracking.	0	20,000	0	0	0	Sub-group of the RAG to progress alongside upcoming RAG meetings – funding for sub-group meetings to be sourced from RAG budget	AFMA PNG NFA	Essential	1	1,3
Understa connectiv environm drivers ar adaptatio strategies	nding vity, nd nd s	Understanding of migration of lobster between, and within, jurisdictions.; Understanding of recruitment connectivity between, and within, jurisdictions; Management implications of movement and recruitment connectivity	0	0	ТВА	ТВА	ТВА	Nil	AFMA PNG NFA CSIRO	Essential	2	1

	between, and within, jurisdictions.										
Understanding changes to fishing power through time	Understanding changes in fishing behaviour and power over time (e.g. changes to the size of engines, use of GPS, gear, areas fished, time fished, experience of divers), to inform the standardisation of CPUE data.	0	0	ТВА	TBA	ТВА	Sub-group of the RAG to progress once progress on improving data collection has been made – funding for sub-group meetings to be sourced from RAG budget	AFMA CSIRO	Desirable	2	1
Understanding fishing behaviour	Understanding the drivers and incentives in determining fishing behaviour in all sectors; Understanding fishing behaviour under output controls: the impact of ITQs or competitive quota on the fishery; the extent and impact of discard mortality; the effect of changing market	0	TBA	TBA	TBA	TBA	Timing of project to be considered once a Management Plan has been fully implemented in the TRL Fishery	AFMA	Desirable	3	1

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preferences on					
fishing					
behaviour					
under output					
controls; the					
extent of value					
adding e.g.					
moving to live					
product,					
targeting					
different sizes;					
the extent of					
high grading					
under output					
controls.					