Torres Strait Tropical Rock Lobster Resource Assessment Group Meeting 33

Final Meeting Record

13-14 December 2022

Thursday Island

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
Ian Knuckey	Chair	Declaration of interests provided at **Attachment A**
Andrew Penney	Scientific member	Director of Pisces Australis Pty Ltd, an Australian registered marine/coastal research and management consultancy based in Canberra - interests in any opportunities in this regard. Currently Principal Investigator on FRDC Projects Nos 2017-180: Design and implementation of an Australian National Bycatch Report: Phase 1 – Scoping; and 2019-036: Implementation of dynamic reference points and harvest strategies to account for environmentally-driven changes in productivity in Australian fisheries, potentially red leg banana prawns or TRL. Independent scientific member on the AFMA Southeast RAG, the Tropical Rock Lobster RAG, and the Small Pelagic Fishery RAG. Member of the AFMA ERA Technical Working Group. No shareholding and hold no positions relating to any other companies, including any fishing companies or industry associations.
Éva Plagányi	Scientific member	Lead scientist for PZJA funded TRL research projects conducted by CSIRO. Contribute to other Torres Strait research projects that receive research funding, including currently Shared science and Indigenous knowledge to support fisheries capacity building in Torres Strait. No other interests in the fishery. Independent scientific member of HCRAG and NPFRAG.
Les Pitt	Traditional Inhabitant Member – Kemer Meriam	Traditional Inhabitant Member Kemer Kemer Meriam, TIB licence holder and runs an independent freezer facility on Erub Island. Board member of Zenadth Kes Fisheries.
Charles David	Traditional Inhabitant Member - Kulkalgal	Traditional Inhabitant Member Kulkalgal, TSRA Fisheries Advisory Committee and Zenadth Kes Fisheries member.
Patrick Mooka	Traditional Inhabitant Member – Guda maluylgal	Traditional Inhabitant Member, Guda maluylgal. Zenadth Kes Fisheries representative.
Jermaine Reuben	Traditional Inhabitant Member - Maluylgal	Apology

Name	Position	Declaration of interest
Thomas Fujii	Traditional Inhabitant Member - Kaiwalalgal	Traditional Inhabitant Member Kaiwalalgal. Queensland East Coast TRL and TIB license holder. Zenadth Kes Fisheries member.
Brett Arlidge	Industry Member	General Manager MG Kailis Pty Ltd. MG Kailis Pty Ltd is a holder of 5 TVH license. Seafood buyer from Torres Strait, QLD, and PNG TRL fisheries.
Ken McKenzie	Industry Member	TVH license and quota holder. Queensland East Coast TRL license and quota holder.
Nicholas Richards*	TSRA Member	TSRA Fisheries Project Manager, TSRA holds multiple TVH TRL fishing license on behalf of Torres Strait Communities but dos not benefit from them. no personal pecuniary interest.
Jenny Keys#	QDAF Member	Queensland TRL Fishery Manager.
Emma Freeman^	AFMA Member	Nil.
Elissa Mastroianni	Executive Officer	Nil.
Georgia Langdon	Executive Officer support	Nil.

*Absent during Agenda Item 3
#Attended virtually
^ Joined the meeting at Agenda Item 3

Observers

Name	Position	Declaration of interest
Joseph Posu	PNG National Fisheries Authority	Works in the Fisheries Management Unit responsible for managing the prawn and lobster fisheries in the Western Province
Yen Loban^	TSRA Board Member and Portfolio Member for Fisheries	TSRA Board member and TSRA Fisheries Portfolio member. Chair of Zenadth Kes Fisheries. Attended from
Quinten Hirakawa	TSRA	TSRA employee, TIB license holder with a TRL endorsement.
Leo Dutra	CSIRO	Contribute to other Torres Strait research projects that receive research funding, including currently Shared science and Indigenous knowledge to support fisheries capacity building in Torres Strait. No other interests in the fishery.
Laura Blamey#	CSIRO	Contribute to other Torres Strait research projects that receive research funding, including currently Shared science and Indigenous knowledge to support fisheries capacity building in Torres Strait. No other interests in the fishery.
Peter Frazis	TRL WG Industry member	Employee of MG Kailis Pty Ltd. MG Kailis Pty Ltd is a holder of 5 TVH license. Seafood buyer from Torres Strait, QLD, and PNG TRL fisheries.

Name	Position	Declaration of interest
Brooke D'Alberto[#]	ABARES	Nil
John (Toshi) Kris	Maluylgal Observer	TIB license holder, member of Zenadth Kes Fisheries.
Lachlan Farquhar	AFMA	Nil.
Alice McDonald	AFMA	Nil.
Lisa Cocking*	AFMA	Nil.
Ben Liddell*	AFMA	Nil.

^joined the meeting at Agenda Item 8
[#]Attended virtually
*Attended for Agenda Item 4

1 Preliminaries

1.1 Welcome and apologies

1. The 33rd meeting of the Tropical Rock Lobster Resource Assessment Group (the RAG) was opened at 12:30 pm on Tuesday 13 December 2022 with a prayer and an Acknowledgement of Country. The Chair welcomed both members and observers as participants of the meeting.
2. Attendees at the RAG meeting are detailed in the meeting participant tables at the start of this meeting record. Jenny Keys, the member from Queensland Department of Agriculture and Fisheries (QDAF) attended the meeting via video conference. Apologies were received from RAG member Jermaine Reuben, Maluylgal Traditional Inhabitant Member.
3. The Chair sought consent from the RAG to record the meeting for the purpose of ensuring an accurate meeting record. The Chair advised that the recording is kept secure and is deleted once the final meeting minutes are published. There were no objections to the meeting proceedings being recorded.
4. Given the extensive new membership of the RAG, the Chair reminded members of the Terms of Reference (ToR) for the TRLRAG and gave a presentation on the roles and responsibilities of members and the obligations required of observers.
5. The RAG noted advice from the Traditional Inhabitant member for Kulkalgal that although the RAG membership includes TIB members from each cluster nation input from Traditional Owners in PZJA Advisory Committees would be valuable.
6. The RAG noted that AFMA is currently undertaking a review aimed at improving the effectiveness of MACs and RAGs. The RAG supported this review, and requested that the ToR particularly reflect the interests of the Torres Strait. Additionally, the RAG recommended PZJA Fisheries Management Paper No. 1 (FMP1), be reviewed to ensure it remains current and fit for purpose.
7. The RAG also noted that AFMA and TSRA continue to work towards communique-type summary documents for advisory committee meetings, to allow easy communication of meeting outcomes back to the various communities.

ACTION ITEM – Chair to share a copy of the presentation on the TRLRAG roles and responsibilities.

1.2 Adoption of agenda

8. The RAG considered draft v3 agenda which was circulated to members on 30 November 2022.
9. The draft v3 agenda was adopted by the RAG and is provided at **Attachment B**.

1.3 Declaration of interests

10. Consistent with FMP1, all members of the RAG must declare all real or potential conflicts of interest in the Torres Strait TRL Fishery at the commencement of the meeting.

11. Where it is determined that a conflict of interest exists, the RAG may allow the member(s) to continue to participate in the discussions relating to the matter but may also determine that, having made their contribution to the discussions, the member should retire from the meeting for any recommendations made on that issue. The Chair noted that this is a standard RAG and Working Group process that is accepted good governance and aids in protecting the integrity of the advice provided by the group as well as the individual members.

12. The Chair requested that members update their record of declarations. These are detailed in the meeting participant tables at the start of this meeting record.

13. The Chair noted the value in having the experience, knowledge and opinions of all members present during discussions on all agenda items. However, the Chair also noted the significant conflict for industry members associated with the advice on setting the Recommended Biological Catch (RBC) under Agenda Item 9.

14. The Chair then proposed that the RAG agree for all members to participate in discussions across all agenda items, but ask that TIB and TVH industry members leave the room during the final RBC advice.

15. There were no objections to the Chair's proposed approach.

1.4 Actions arising from previous meetings

16. The RAG noted an update from the RAG Executive Officer support member on the status of action items arising from previous RAG meetings and where relevant, TRL Working Group meetings (**Agenda item paper 1.4a**), including the finalisation of the TRLRAG 32 meeting record which was completed out of session and circulated to members on 28 January 2022.

17. The RAG noted further updates provided on the following Action Items:

    a) Action Item 2 – PNG NFA have provided AFMA with a summary of TRL catch by month and processed weight from January – October 2022 and an updated total catch by month for 2021.
    b) Action Items 3, 6, 9, 10 and 11 – these relate to the data sub-group, which last met in 2019. This group plans to meet in 2023 as a priority for the fishery, and discussion on when this might occur should be part of the future workplan of RAG.
    c) Action Item 9 – AFMA reached out to key buyers in 2020 and again in November 2022 to ask that price data be voluntarily provided to CSIRO, however no responses have been received.
    d) Action Item 10 – the temporary pause on the hookah ban by PNG as introduced during COVID has now ended, with the ban to once again be in place from December to April as usual.
    e) Action Item 12 – AFMA has provided CSIRO with an updated data extract of all available observer data from the Torres Strait Prawn Fishery (TSPF), which now includes all available length data.

18. The RAG was asked to provide advice on any new key events to be added to the Management History timeline since the last RAG meeting, noting the last addition to the timeline was in December 2020.

19. Two key changes were identified, namely:
    a) changes to QLD East Coast Fishery closures and size limits in the early 2000s
    b) the impacts of COVID, flight availability and the import ban to China in the past few years
20. Members agreed to go through the timeline out of session and provide any updates and comment to AFMA for inclusion.

ACTION ITEM – All members to review the Management History Timeline out of session and provide any updates and comment to AFMA for inclusion.

AFMA to include the two key changes identified in the Management History Timeline.

1.5 Out of session correspondence

21. The RAG noted the out of session correspondence on RAG matters since the previous meeting, including agreement on the minutes from the last TRLRAG meeting.

2 Updates from members

2.1 Industry and scientific members

22. The RAG noted verbal updates provided by industry members and observers on the trends and observations in the TRL fishery during the 2021-22 season, and the start of the 2022-23 season, in particular:
    a) Fuel prices have been extremely high across the fishery
    b) Prices achieved for Tropical Rock Lobster have been low, as with a direct result of changed Chinese markets.
    c) The cost and availability of airfreighting also continues to negatively impact the export opportunities and economics of the fishery.
    d) The combination of the above has put the fishery under severe economic pressure and substantially reduced profitability of fishing operations.
    e) The ongoing challenges in the fishery are contributing to changed temporal and spatial patterns of fishing.
    f) Observations from the east indicate the number of soft crays is higher than usual, with some evidence that moulting may be occurring a little later than usual across the fishery.
23. The RAG noted verbal updates provided by scientific members and observers, in particular:
    a) There is a current CSIRO project on building resilience in supply chains. Using the TRL as one example there will be surveys and workshops relating to this, and CSIRO are seeking interest for participation.
    b) The RAG noted that CSIRO continue to look for opportunities for Torres Strait Islanders to participate in scientific conferences, with funding available from FRDC to support one person to attend the upcoming 12th International Conference on Lobster Biology in Fremantle next year.

ACTION ITEM – CSIRO to circulate flyer for the project on building resilience in supply chains.

2.2 Government agencies

24. The RAG noted an overview of key management updates relating to the TRL Fishery provided by the RAG Executive Officer support member, in particular:

a) The annual report for WTO approval under EPBC act was submitted last month and the re-assessment process will begin next year. Legislative changes to allow collection of logbook data across both TVH and TIB sectors are underway in line with recommendations under WTO conditions.

b) The most recent ABARES status reports have identified the TRL fishery as sustainable (not overfished and not subject to overfishing).

25. An update from the QDAF member was provided:

a) The East Coast TRL fishery has had one working group meeting at the start of the year.

b) 70% of the 195t quota was taken for the 2022 season, with similar economic and export pressures to the Torres Strait TRL fishery also impacting the East Coast fishery.

c) The stock assessment has been delayed and is still underway, with a representative from the commercial sector now included in the TRL stock assessment project team.

d) Fisheries economic and social data reports for TRL have been combined with other harvest fisheries (for confidentiality reasons) and these reports are now available online.

26. The RAG also noted the following update provided by the TSRA member:

a) A review of the WAPIL project is currently going through the TSRA board. The project still aims to facilitate capacity building and skill development in seafood operations and infrastructure.

b) Multiple climate change projects are underway, including a CSIRO scoping study and joint TSRA and FRDC proposal for funding on climate change and variability.

c) TSRA are looking to appoint a consultant to develop an allocation alternative to the independent allocation advisory panel.

2.3 Papua New Guinea National Fisheries Authority

27. The RAG noted the following updates from the PNG National Fisheries Authority (NFA) representative:

a) PNG catch reached about 79% of the TAC for 2022 (73t out of 92t), with a major fishing area within the TSPZ located north Warrior Reef. There is continued interest in cross-endorsement going into 2023.

b) The PNG TRL fishery is in the second phase of applying for MSC certification, and NFA will continue to be in close communication with AFMA and the TRLRAG regarding this process.

c) There continues to be interest in improving data quality and protocols, in line with refining assessments for PNG fisheries. This may include the possibility of extending the stock assessment and surveys into PNG waters, with co-funding from NFA.

ACTION ITEM

PNG to be invited to the next data sub-group meeting.

CSIRO to discuss potential survey with NFA

2.4 Native Title

28. The RAG noted that there is a standing invitation extended to Malu Lamar, but that there was no update provided at this meeting.

3 Catch and effort analyses for 2021-22 fishing season

29. The RAG considered an overview of total reported catches for Australia and PNG and the following catch and effort analyses for the Australian TRL Fishery for the 2021-22 season undertaken by CSIRO and presented by Dr Eva Plaganyi. Further detail is available in Attachments 3c of the TRLRAG 33 meeting papers.

Catch and Effort Data

30. Total reported catch for the Australian TRL fishery (1 December 2021 – 30 September 2022) was 290.31 tonnes, with 150.59 tonnes caught by the Traditional Inhabitant Boat (TIB) sector and 139.72 tonnes caught by the Transferable Vessel Holder (TVH) sector.
31. Total reported catch from Papua New Guinea for 2022 was 72.74 tonnes (January – October 2022, as at November 2022) however, the RAG noted that this number is incomplete for the PNG TRL season. Using the same method applied last year (at TRLRAG 32), that assumes an average monthly catch is also caught in the missing months (December 2021 and a completed October 2022), the total extrapolated PNG catch was increased to 88.8 tonnes.
32. This extrapolated PNG catch results in a total Torres Strait TRL catch of 380.2 tonnes, under a 615 tonne global TRL TAC, equating to 61.8 per cent of the TAC.
33. The proportion of annual catch taken by the TIB sector remained similar to previous years, but there was a slight increase in the proportion of TIB catch for December 2021 and January 2022.
34. The TVH sector displayed a higher proportion of catch taken by freediving during December and January than in previous years, as well as dips in March and April (which correlates with a pause in fishing to continue buying product from the TIB sector).
35. The RAG noted that further information on discard mortality would be valuable, and noted some examples of voluntary recording (without any legislative requirement) in the East Coast fishery.
36. The RAG recommended working towards a better estimate on discard mortality, and for information on how this is captured in the East Coast fishery to be considered by the data sub-group at their next meeting. A ‘snapshot’ trial was suggested, but the RAG agreed that any approach needed to be well-planned to meet the data needs of the fishery. It was agreed that this should be developed with partnerships between researchers and fishers to move forward on this.

ACTION ITEM – AFMA to look at how discards are captured in the East Coast, and pass this along to the data sub-group to be considered on their agenda.

TVH CPUE Standardisation

37. As in previous years, several different General Linear Models (GLMs) were used for analysing the data in order to obtain a standardised index of stock abundance in each year. The RAG noted that the trends in each of the standardised indices are similar to the nominal index, but are higher at the start of the time-series and similar, if not slightly lower, after 2012.
38. Vessel effect has the greatest influence on the annual index followed by the proportion of tails effect. There has been a decrease in catch rates over time due to a shift to less tails in the catch, but an increase in catch rates due to the vessel effect.
39. The RAG noted that the “Int-1 model” is the previously agreed default model used in the eHCR, and supported that this continues to be applied.
40. Overall, estimates for each standardised index, and the nominal CPUE index for 2021-22 are about average, with a slight increase compared to 2021.

TIB CPUE Standardisation

41. The RAG noted a number of differences between the nominal and standardised TIB indices. The standardised indices are generally lower than the nominal index over the first half of the time-series and higher than the nominal index during the second half.

42. The proportion of tails has the greatest influence on the season index, and the decreasing trend observed over time is correlated with the shift from the catch being predominately for frozen tails to now being predominantly whole live lobsters, with the latter process type decreasing catch rates.

43. The seller effect also had a substantive influence on the annual index. The influence of this effect has increased in recent seasons, indicating an increase in the fishing skill or efficiency of divers, which leads to a decrease in the standardised CPUE.

44. The RAG noted that the "Seller model" is the default model used in the eHCR, which accounts for an increase in the relative fishing efficiency of *Sellers* in recent seasons.

45. The RAG noted that CPUE results from **both** the TIB and TVH sectors indicate an average year (with no significant concern for the stock) as do the overall shape of the nominal CPUE and survey results (discussed further under Agenda Item 5). This consistency provides confidence that the CPUE is providing a reasonable indication of the actual abundance of the stock.

Further work for data analyses

46. The RAG noted further work to be potentially undertaken, informed through discussions of the RAG data sub-group including:

    a) Data issues; completeness and accuracy; finer spatial resolution; clarity on fields.

    b) Investigate the potential for effort creep:

        i. Is 'vessel-effect' a proxy for skill of divers?

        ii. Increase in boat size; can larger boats search more?

        iii. Other changes in fishing gears leading to increased CPUE

    c) What factors influence the spatial distribution of lobsters and 'hot-spots', and what influences the spatial distribution of fishing effort?

    d) How do fishing aggregations influence CPUE, and what factors influence aggregation dynamics?

    e) Does the potential for hyper-stability in CPUE require further investigation?

    f) Further investigation of the influence of oceanographic conditions (e.g. water temperature, prevailing winds).

47. The RAG also noted that CSIRO has funding to collect updated morphometric measurements in order to better understand length/weight relationships and variability in growth rates across the Torres Strait. There is the opportunity for community and industry involvement for collecting this data.

ACTION ITEM – CSIRO to write to the Chair of Malu Lama to help identify and facilitate participation in morphometric data collection.

4 Interactions between the Torres Strait TRL and Prawn fisheries

48. Understanding TRL interactions in both the Australian Torres Strait Prawn Fishery (TSPF) and PNG prawn trawl fisheries for the purposes of the TRL stock assessment and monitoring overall fishing mortality is an important issue for the TRL RAG, WG and the Australian-PNG Fisheries Committee bilateral meetings.

49. To help better understand the interactions, the RAG noted a presentation by CSIRO on the results of preliminary analyses of available observer data on TRL bycatch in the Australian TSPF. The RAG also noted that some of the data presented is commercial in confidence and should not be distributed beyond the RAG. In particular, the RAG noted the following:

    a) The footprint of the TSPF is quite small, with not much overlap with the TRL fishery.

    b) AFMA observer coverage of TSPF fishing effort is 2.6%. In this study, CSIRO scaled up observer-reported lobster bycatch in different ways to get total catch estimates, and presented estimates produced using average number of lobsters per day, a 5-year pooled average and a 10-year pooled average.

    c) Scaled catch estimates ranged from 0-30 tonnes per year for unpooled data, and approximately 5-15 tonnes per year for pooled data.

50. The RAG discussed the time lag on availability of Observer Program data – for example, in Nov 2022, data was only available up until 2020 (i.e. 2 year lag), making near real-time use of the data problematic.
51. The RAG noted information from AFMA observer Ben Liddell that additional temporal analyses would be worth exploring, including particular information on moon phase. There is also some evidence of two migrations, in September and March.
52. Lisa Cocking informed the RAG that a letter will be sent to all license holders to request recording of lobsters in logbooks which should enable better estimates. A study by Clive Turnbull in the 1980's also suggested that post release mortality may be quite low.
53. The RAG also noted that along with temporal analyses, further investigation into spatial variability and estimates of post release mortality should be conducted. Additionally, proportional catch estimates, as opposed to pooled averages, were preferred.
54. The RAG recommended that this further research be undertaken before any estimate be included in the stock assessment model, with the intention that estimated catches from the TSPF be available for inclusion in the 2023 TAC eHCR calculations.

ACTION ITEM –

Ben Liddell to provide further information to CSIRO on two migrations of TRL in the year.

AFMA to confirm the post capture mortality rate from Clive Turnbull's 1980's study and provide this to the group.

AFMA to follow up on prioritising data entry times on TSPF observer data to avoid a time lag to better support these analyses.

5 Results of the 2022 pre-season survey

55. The RAG considered a presentation provided by CSIRO observer, Dr Leo Dutra, detailing the preliminary results of the 2022 pre-season survey (as detailed in Attachment 5a of the TRLRAG 33 meeting papers).

56. The pre-season dive survey was conducted between 9 - 19 November 2022 aboard the *Wild Blue* with a CSIRO dive tender. The CSIRO team included a TIB fisher, Mr Tony Salam, along with four CSIRO divers; Leo Dutra, Nicole Murphy, Kinam Salee and Steven Edgar.

57. The pre-season TRL surveys provide indices of abundance for recruiting age lobsters (age 1+) and recently-settled lobsters (age 0+), abundance indices by stratum (region) and length-frequency and sex ratios. Generally, most older lobsters (age 2+) have migrated out of the fishery by the time of the survey and those that remain are mostly remnant males.

58. As in the 2021 survey, a multiparameter water quality sonde was also used to collect data on chlorophyll, depth, fluorescent dissolved organic matter, conductivity, dissolved oxygen, salinity, turbidity, total suspended solids, total dissolved solids, pH, and temperature down to 25m.

59. Additionally, species of interest (i.e. pearl oyster (Pinctada maxima), crown-of-thorns starfish and holothurian species) were counted and the habitat recorded, including presence of bleached corals (where applicable).

60. Dive transects were conducted at 77 repeated pre-season sites (with 11 partial transects), starting with shallow dives in the western Torres Strait while currents were at their weakest and moving in an easterly direction to utilise stronger currents for deeper dives. During days 1-3 of the survey winds were strong (20-25 knots), dropping to 10-15 knots for the remainder of the survey. Underwater visibility averaged around 4m (range 0.5-10m) with neap tidal flows allowing for a good visual census and collection of TRL.

61. A total of 266 lobsters were counted and categorised into three age classes, with 124 lobsters measured. The sex ratio of lobsters was 49 per cent males and 51 per cent females.

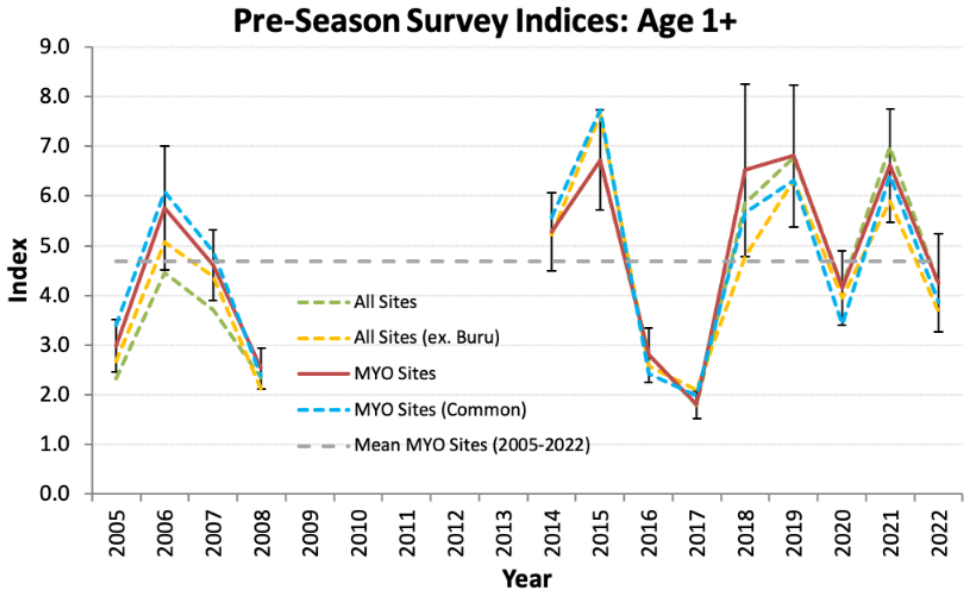
62. **Age 1+ recruiting lobster counts and index**

    a) This is the most important index for the eHCR.

    b) The 2022 1+ abundance index was lower than the Mid-Year Only (MYO) sites long term average (2005-2022) and lower than in 2021. The survey variance was similar to 2021, but lower than high variances in both 2018 and 2019.

    c) 2020 and 2022 were similar with regards to abundance index. spatial distribution of lobsters was similar to previous years, with higher counts of Age 1+ lobsters on the eastern side of the surveyed area. However, counts on the Eastern central region of the surveyed area in 2022 were lower compared to 2020-21. Similar to 2021, counts of Age 1+ lobsters on the SE region were relatively high compared to 2020.

    d) The abundance index for 1+ lobsters in 2022 indicates that recruitment into the fishery is generally widespread across the different strata surveyed, with the highest recruitment recorded at South-East, Buru and Kirkaldi. Abundance index was above average in Buru, Kirkaldi, Reef Edge and South-East and below average at Mabuiag, TI Bridge and Warraber Bridge (historically the indices of these three strata are generally below the overall average).

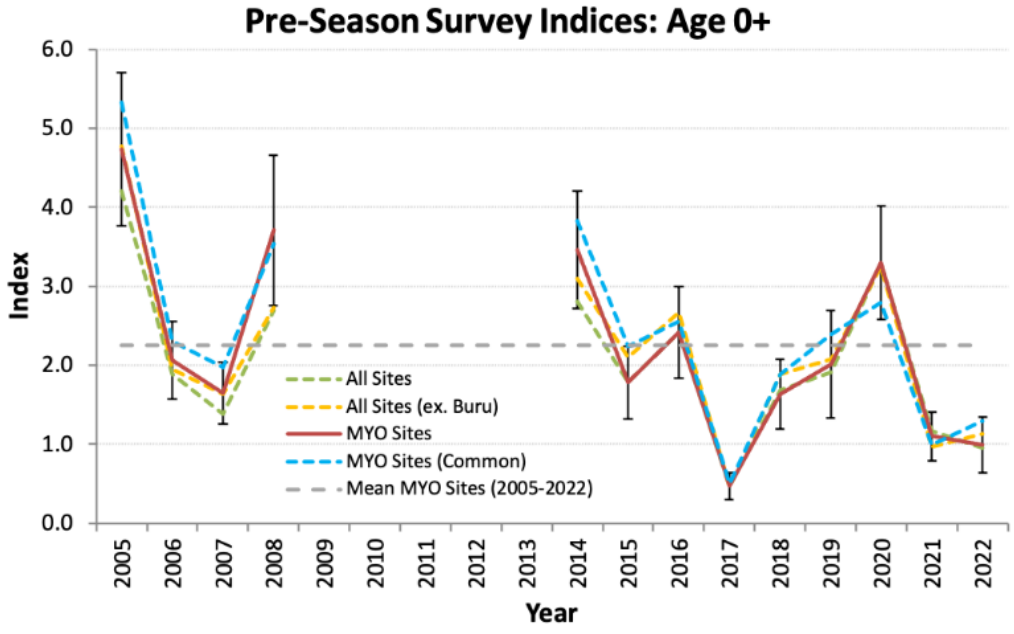


63. Age 0+ recently settled lobster counts and index

a) In 2022 the 0+ abundance index point estimate showed a slight but non-significant decline from last year to levels that are the second lowest after 2017.

b) Historically, survey data indicate that Age 0+ lobsters typically settle on the western side of survey area. Until 2020 there were more than 3 times more Age 0+ lobsters settling on the west relative to the east side of the survey area. However, in 2022 the distribution was more even, with 30% Age 0+ lobsters observed on the east and 70% on the west side of the survey area.

c) The highest abundance of 0+ lobsters were recorded for TI bridge, South East, and Warraber Bridge, noting large variability in TI Bridge and Warraber Bridge and no 0+ lobsters observed in Buru, Kirkaldi and Reef Edge. Overall, similar to 2021, the 2022 abundance of recently settled lobsters were below average across all strata.



64. **Habitat changes**

a) There were some improvements in the average percentage cover of seagrass from 2020, but not much change compared to 2021.

b) Sand incursions were observed at four sites: two in the north west, one in the south west, and one in the south east.

Discussion

65. There was some discussion on the survey design and areas covered by the survey. The inclusion of more northern areas in the survey and the potential to extend the survey into PNG waters was raised. The RAG agreed that further discussion on this was of value, and could be continued between CSIRO, industry members and PNG out of session.

66. The relationship between lobster abundance and seagrass was raised by an industry member. It was noted that the inverse relationship, where sand incursions appear to result in lower lobster numbers, has been observed and that further work on this (by CSIRO) could be considered.

67. On behalf of the RAG, the Chair acknowledged and thanked the CSIRO team for the significant level of work undertaken to complete the survey safely and successfully; and to analyse and report on the survey results in a short time for presentation for the RAG meeting.

6 Update on Climate Change Impacts on Torres Strait Fisheries

68. The RAG noted a presentation from AFMA's Climate Adaptation Manager on the predicted impacts of climate change on fisheries and AFMA's Climate Adaptation Program. In particular, the RAG noted the following:

a) AFMA is building explicit and structured consideration of climate change impacts into decision-making processes, including adding a standing agenda item on climate change to advisory body meetings and preparing Climate and Ecosystem Status reports for key fisheries.

b) Some of the impacts most likely in the Torres Strait include increasing severity and intensity of heat waves and cyclones, sea level rise, ocean acidification, and species range shifts.

c) Variability in year-to-year abundance in short-lived species such as lobsters is expected to increase. The uncertainty around conditions and fishery performance will also influence operations into the future.

d) Recognising the priority that the Torres Strait community places upon management of climate change impacts and the vulnerability of Torres Strait fisheries to climate change, AFMA hopes to work with Torres Strait fisheries on climate adaptation as a priority.

69. Members of the RAG explained that the importance of work on climate change impacts had been identified some time ago as a priority and models are being developed to take this into account.

70. The RAG noted a presentation from CSIRO on future and ongoing climate change research in the Torres Strait.

a) The Torres Strait climate change scoping project is now complete, with agreement from TSSAC (at their 79th meeting) on the value of progressing this project.

b) The resulting Torres Strait Climate Change Modelling Project will be partially funded through a $500,000 co-contribution from the TSRA and the remainder of the project funds

are being considered for funding through the Fisheries Research and Development Corporation (FRDC). An outcome on FRDC funding is pending.

c) This modelling would aim to address some of the uncertainty associated with climate change to enable better operational planning. The proposed approach is to use Models of Intermediate Complexity for Ecosystem Assessment (MICE models), which can include more holistic ecosystem level impacts and effects.

71. The RAG also had the opportunity to review a draft Climate and Ecosystems Status Report for the TRL/Kaiar Fishery (produced by CSIRO and AFMA), which showed examples of environmental information and indicators which could be included. This included a section specifically for fisher observations, to capture industry, community and on water knowledge of what is happening in the region.
72. When asked to provide feedback on this draft the RAG suggested that information on the tides would also be useful. It was agreed that members would review this draft report out of session and provide comments back to CSIRO, to allow sufficient time to consider this.
73. The RAG agreed that consideration of climate change was a priority for the TRL fishery and the Torres Strait region and welcomed the possibility of including this information directly into the stock assessment model in the future.

74. **ACTION ITEM** – Members to review the draft Climate and Ecosystems Status Report out of session and provide comment back to CSIRO.

7 Empirical Harvest Control Rule

75. Having regard to the analyses and discussions from agenda items 3, 4, 5 and 6, the RAG considered the outputs of the empirical Harvest Control Rule (eHCR).

Pre-season survey and CPUE indices

76. The eHCR is applied in December and outputs an RBC for the following year. The eHCR considers the relative performance of the fishery based on the following data inputs:
    - Pre-season survey recruiting lobster (1+) standardised relative numbers (70 per cent);
    - Pre-season survey recently-settled lobster (0+) standardised relative numbers (10 per cent);
    - standardised CPUE for TIB sector (10 per cent); and,
    - standardised CPUE for TVH sector (using data available up until end of October) (10 per cent).

Average annual catch

77. The eHCR then applies a multiplier based on the average annual catch over the last 5 years (using available catch from TIB, TVH, PNG).
78. The RAG noted that the actual reported total catch for the 2021-22 season was the second lowest on record (after 2021), being only 61.8 per cent of the global TAC. If the fishery was genuinely experiencing low catches due to low lobster abundance, then it would be appropriate for the RBC value to be reduced. However, if the low catches are due to factors other than stock abundance (such as markets and COVID-19) (as discussed by TRLRAG 31 and TRLRAG 32), then the low five-year average catch value can unjustifiably penalise the TRL industry with a lower RBC.

79. Based on industry feedback (see Agenda Item 2), similar to the previous two years, reduced catches during the 2021-22 season were considered to be primarily a result of impediments to exports and increasing economic pressure, rather than biological or stock-related reasons.

80. Noting that the 2020-21 fishing season exhibited lower than expected total catch, TRLRAG 31 (12 October 2021) discussed the implications of a lower-than-expected average catch multiplier on the eHCR. TRLRAG 31 recommended that CSIRO present two different options for dealing with the anomalous under-catch in both the 2019-20 and 2020-21 fishing season in the eHCR.

    - **Option 1:** substitute the actual catch values with the TAC value in outlier years (2019-20, and 2020-21); use the actual catches in the three years prior (2016-17, 2017-18 and 2018-19) and apply an average of these five values.
    - **Option 2:** noting that there has been a change in the relative proportion of the TAC caught between the TIB and TVH sectors in recent years, use the combined sector (TIB, TVH and PNG) average catch proportion against the global TAC over the recent five-year period, capping any overcatch at 100 per cent of the TAC, and apply this proportion to the TAC for 2019-20 and 2020-21 to obtain an estimated catch value for those years. As above, use the actual catches in the three years prior (2016-17, 2017-18 and 2018-19) and apply an average of these five values.

81. TRLRAG 32 chose to apply Option 1 (to substitute the anomalous catches of 2019-20 and 2020-21 with the fishery global TAC) in the average catch multiplier in the eHCR to calculate the RBC value for the 2021-22 season.

Application of the empirical Harvest Control Rule (eHCR)

82. For the 2022-23 RBC the RAG was asked to consider similar options as discussed at TRLRAG 32, namely **whether to used actual catches from 2021-22 or substitute the 2021-22 TAC to calculate the 2022-23 RBC**.

83. The table below illustrates a comparison of eHCR RBC outputs for the 2022-23 season using the different average catch values with ad-hoc adjustments from Options 1 and 2 above.

	Base-Case with Observed Catch for 2021-22 (Option 2)	**Scenario with Adjusted catch for 2021-22**
	Index_MYO; Seller; Int1; TAC substituted for 2020 & 2021 Catches, actual 2022 catch used	Index_MYO; Seller; Int1; TAC substituted for 2020, 2021 & 2022 Catches
Preseas1	-0.092	-0.092
Preseas0	-0.163	-0.163
CPUE_TIB	0.027	0.027
CPUE_TVH	0.035	0.035
Ave Catch (t)	516.28	563.24
RBC (t)	**478**	**521**

84. The RAG noted that the eHCR has been MSE-tested assuming the entire TAC could be caught and shown to be robust and precautionary. So even if the TAC is always caught, it would still be adequately precautionary. It captures longer-term trends over a five-year period, and places

substantially more weighting (80%) on the pre-season survey which is not affected by trade and other disruptions. Also, using a five-year average (including average catch) helps to dampen the influence of a single anomalous year.

85. The RAG identified that the combination of high fuel prices, low prices and changed global markets greatly impacted profitability and fishing practice during the 2021-22 season and do represent an exceptional circumstance, but acknowledged that there is ongoing work to formalise the exceptional circumstances clause, as identified in TRLRAG 31.

86. Industry members emphasised the concern that fuel price and market price are creating only marginal profits, and particularly impacting the ability to fish further afield. The past season has seen patchy distribution of TRL across different regions, with catches average at best. There is an overarching feeling that market disruption is still having some impact.

87. Noting that although there were slightly negative trends in 0+ and 1+ indices, the CPUE trends for both the TIB and TVH sector were positive, the Chair reiterated the value of having the stock assessment run this year to aid in the RAGs understanding of the current status of the fishery.

8 Preliminary Stock Assessment Results

88. The RAG recalled that the stock assessment is run every three years, and that this was last undertaken in 2019.

89. The RAG noted the presentation on the preliminary stock assessment results from CSIRO, in particular:

    a) An overview of the summary of the lobster life cycle and how this is considered in the model, including the data inputs for the assessment and the benchmark surveys to which the model is fitted.

    b) The model showed an excellent fit to the pre-season survey 1+ index, and is also fitted to the mid-year survey series for past years, as well as the benchmark surveys. The model also fits both TVH and TIB CPUE series reasonably well and accounts for hyperstability.

    c) All three indices of abundance (TIB CPUE, TVH CPUE, and the survey index) show very similar trends which provides confidence in the results.

    d) The model results indicate that the TRL spawning biomass is approximately at the 1973 reference level, which is well above the agreed target reference point of 65 per cent unfished biomass under the harvest strategy (noting that the target reference point is deliberately high to allow for non-commercial take of TRL in support of traditional practices and livelihoods in the Torres Strait).

    e) The 2022 commercially available biomass estimate (i.e. the lobsters that are available to be caught by the fishery) was estimated to be roughly average (relative to the average over the period 1989 to 2021)

90. Overall, the model suggested the fishery was in a healthy state (especially considering the high spawning biomass).

91. Although it is not used in this manner under the harvest strategy, based on the stock-assessment, the RBC indicated for 2023 would be 497 tonnes which is similar to the eHCR reference case of 478 tonnes. The RAG accepted that the stock assessment confirms that the eHCR is working as intended (and accounting for variability in the stock), but also noted that the stock assessment and eHCR were not designed with the current economic and market disruptions in mind.

92. The RAG acknowledged that significant socio-economic factors at play in the fishery could not be accounted for in the model, and that this may need to be addressed in the Harvest Strategy.

9 Recommended Biological Catch 2022-23

93. Having regard to the preliminary stock assessment results, the outputs from the eHCR and the decision rules under the TRL Harvest Strategy, the RAG considered the recommended biological catch (RBC) for the TRL Fishery for the 2022-23 fishing season. In particular, the RAG contemplated whether to:
    a) use the actual catch from 2021-22 in calculating the RBC (resulting in a 2022-23 TAC of 478 tonnes) or;
    b) substitute the 2021-22 TAC for actual catches in calculating the RBC (resulting in a 2022-23 TAC of 521 tonnes).
94. The RAG was unable to reach consensus between these two options.
    a) TIB members supported a lower RBC as a more precautionary approach that better reflected the needs of Traditional Owners. This also considered patchy catches with some low catch rates close to island groups leading to concerns about sustainability.
    b) TVH members supported a higher RBC to enable supply chain needs to be met and maintained, and to allow for a better response for the entire fishery if market access to China improves.
95. Conflicted RAG members were requested to leave while the remaining non-conflicted members discussed the possible RBC recommendations.
96. The RAG considered that based on the design and application of the eHCR and broader Harvest Strategy both RBC options are sustainable and precautionary against major risks to the stock.
97. RAG members considered that exceptional circumstances (outside those previously MSE-tested) still existed in the fishery, driven by the ongoing effects of the COVID-19 pandemic, reduced market opportunities, and increased operating costs.
98. Members understood that these exceptional circumstances were heavily affecting all industry participants, making business profitability marginal at best, and driving a range of temporal and spatial changes in fishing practices across the fishery.
99. This appeared to have resulted in greater interaction and overlap between fishing operations and may have contributed to concern about regionally based low catches (i.e. close to island groups).
100. The market, fuel price and economic factors impacting the fishery were highlighted again, as were the positive results of the stock assessment, providing further confidence that low catches are not the result of any biological sustainability concerns.
101. As such, the non-conflicted members agreed that the use of the 2021-22 TAC (and resulting in an RBC of 521 tonnes) was the more appropriate option. This is reflective of the decision made under similar circumstances at TRLRAG 32.
102. The non-conflicted members recognised that significant socio-economic concerns are currently at play in the TRL fishery, including changes in fishing patterns and concern about regionally based low catch rates, but highlighted that the lower RBC option is not an adequate lever for addressing impacts of this nature.
103. The RAG recommended that, as well as the RBC, the WG consider alternative management options to alleviate socio-economic issues identified during this meeting.

10 Other Business

104. No other business was nominated for discussion.

11 Date and venue for next meeting

105. The RAG noted that the dates and venues for future RAG meetings will be discussed out of session.

106. The 33rd TRL RAG meeting was closed in prayer at 5:29pm on Wednesday 14 December 2022.

Declaration of interests

Dr Ian Knuckey – October 2022

Ian Knuckey positions:

Director –	Fishwell Consulting Pty Ltd
Director –	Olrac Australia (Electronic logbooks)
Chair –	Northern Prawn Fishery Resource Assessment Group
Chair –	Tropical Rock Lobster Resource Assessment Group
Chair –	Victorian Rock Lobster and Giant Crab Assessment Group
Chair –	Victorian Central Zone Abalone Fisheries Resource Advisory Group
Chair –	Gulf of St Vincent's Prawn Fishery MAC Research Scientific Committee
Scientific Member –	Northern Prawn Management Advisory Committee
Scientific Member –	Gulf of St Vincent's Prawn Fishery Management Advisory Committee
Scientific Member –	Tropical Tuna Resource Assessment Group
Scientific Member –	SESSF Resource Assessment Group
Councillor –	Victorian Marine and Coastal Council
Member –	The Geelong Agri Collective

Fishwell current projects:

DAWE Project	Multi-sector fisheries capacity building
AFMA 2022-	Annual monitoring, reporting and assessment of SPF marine mammal interactions, including effectiveness of mitigation measures
AFMA 2020-0807	Bass Strait Scallop Fishery Survey – 2020-22
AFMA project	Design sea cucumber fishery-independent survey for Coral Sea
FRDC 2019-027	Improving and promoting fish-trawl selectivity in the SESSF and GABTS
FRDC 2018-021	Development and evaluation of SESSF multi-species harvest strategies
Traffic Project	Shark Product Traceability
Sea Cucumber Ass.	Design and implementation of various sea cucumber dive surveys.
Australia Bay	Queensland Gulf of Carpentaria Developmental Fin Fish Trawl Fishery

TROPICAL ROCK LOBSTER RESOURCE ASSESSMENT (TRLRAG 33)

Tuesday 13 December 2022 | 12:30pm – 5pm

Wednesday 14 December 2022 | 830am – 5pm

TSRA Board Room | Thursday Island

ADOPTED AGENDA

1 PRELIMINARIES

1.1 Welcome and apologies

The Chair will welcome members and observers to the 33rd meeting of the TRL RAG.

1.2 Adoption of agenda

The RAG will be invited to adopt the draft agenda.

1.3 Declaration of interests

Members and observers will be invited to declare any real or potential conflicts of interest and determine whether a member may or may not be present during discussion of or decisions made on the matter which is the subject of the conflict.

1.4 Action items from previous meetings

The RAG will be invited to note the status of action items arising from previous meetings.

1.5 Out of session correspondence

The RAG will be invited to note out of session correspondence on RAG matters since the previous meeting.

2 UPDATES FROM MEMBERS

2.1 Industry and Scientific members

Industry, scientific and government agency members, and observers will be invited to provide verbal updates on matters concerning the Torres Strait TRL Fishery including updates on fishing patterns, behaviours, prices, and market trends for the 2021-22 season and the start of the 2022-23 season.

2.2 Government agencies

The RAG will be invited to note updates from AFMA, TSRA and QDAF on matters concerning the Torres Strait TRL Fishery.

2.3 Papua New Guinea National Fisheries Authority

The RAG will be invited to note a verbal update from the PNG National Fisheries Authority.

2.4 Native Title

The RAG will be invited to note a verbal update from Malu Lamar (Torres Strait Islander) Corporation RNTBC and other RAG members on native title matters relevant to the TRL Fishery.

3 CATCH AND EFFORT ANALYSES FOR THE 2021-22 FISHING SEASON

The RAG will be invited to discuss TRL fishery catch and effort data for the 2021-22 fishing season, including catch-per-unit-effort (CPUE) analyses to be presented by the CSIRO.

4 INTERACTIONS BETWEEN THE TRL AND TORRES STRAIT PRAWN FISHERY

The RAG is invited to note and discuss the outcomes of a preliminary analyses of available observer data on TRL bycatch in the Torres Strait Prawn Fishery (TSPF) (as collected by the AFMA observer program).

5 RESULTS OF THE NOVEMBER 2022 PRE-SEASON SURVEY

The RAG is invited to discuss the results of the November 2022 pre-season survey to be presented by the CSIRO.

6 UPDATE ON CLIMATE CHANGE IMPACTS ON TORRES STRAIT FISHERIES

The RAG is invited to note:

- An overview of previous work undertaken in Torres Strait fisheries related to climate change; and
- a presentation on the work that AFMA is doing to build climate change information decision making processes.

7 EMPIRICAL HARVEST CONTROL RULE

Having regard to the analyses and discussions from agenda items 3, 4, 5 and 6, the RAG will be invited to consider the outputs of the empirical Harvest Control Rule (eHCR).

8 PRELIMINARY STOCK ASSESSMENT RESULTS

Under the TRL harvest strategy, an integrated stock assessment is required to be undertaken every third year (unless triggered by a decision rule in the harvest strategy). The stock assessment is used to determine the stock status of the Torres Strait TRL stock and to evaluate the performance of the eHCR to identify if any revisions to the eHCR are required. The RAG will be invited to consider the preliminary results of the integrated stock assessment to be presented by CSIRO.

9 RECOMMENDED BIOLOGICAL CATCH 2022-23

Having regard to the preliminary stock assessment results, the outputs from the eHCR and the decision rules under the TRL Harvest Strategy, the RAG will be invited to provide advice on a recommended biological catch (RBC) for the TRL Fishery for the 2022-23 fishing season.

10 OTHER BUSINESS

The RAG will be invited to raise any other matters for consideration.

11 DATE AND VENUE FOR NEXT MEETING

The RAG will be invited to consider the RAGs workplan and discuss a suitable date for the next RAG meetings.