

TROPICAL ROCK LOBSTER RESOURCE ASSESSMENT GROUP (TRLRAG) Thursday Island	MEETING 33 13-14 December 2022
PRELIMINARIES Welcome and apologies	Agenda Item 1.1 For NOTING

RECOMMENDATIONS

1. That the RAG **NOTE**:
 - a. an acknowledgement of Traditional Owners;
 - b. the Chair's welcome address;
 - c. apologies received from members unable to attend.

BACKGROUND

2. As at 1 December 2022, no apologies had been received.

TROPICAL ROCK LOBSTER RESOURCE ASSESSMENT GROUP (TRLRAG) Thursday Island	MEETING 33 13-14 December 2022
PRELIMINARIES Adoption of agenda	Agenda Item 1.2 For DECISION

RECOMMENDATIONS

1. That the RAG consider and **ADOPT** the agenda.

BACKGROUND

2. This meeting was noted by members at TRLRAG 32 (15 December 2021) with key agenda items including:
 - a. consideration of the results of the November 2022 pre-season survey;
 - b. consideration of the CPUE analyses for the 2021-22 fishing season; and
 - c. consideration of the recommended biological catch (RBC) estimates derived through the application of the empirical harvest control rule (eHCR) under the TRL Harvest Strategy and provision of advice on a RBC for the 2022-23 fishing season.
3. A draft agenda was circulated to members on 3 November 2022 and a revised version 2 agenda was circulated on 7 November 2022.
4. Comments were sought from members by Friday 11 November however no comments were received.

TROPICAL ROCK LOBSTER RESOURCE ASSESSMENT GROUP (TRLRAG) Thursday Island	MEETING 33 13-14 December 2022
PRELIMINARIES Declaration of interests	Agenda Item 1.3 For Decision

RECOMMENDATIONS

1. That RAG members and observers:
 - a. **DECLARE** all real or potential conflicts of interest in the Torres Strait Rock Lobster Fishery at the commencement of the meeting (**Attachments 1.3a** and **1.3b**);
 - b. **DETERMINE** whether the member may or may not be present during discussion of or decisions made on the matter which is the subject of the conflict;
 - c. **ABIDE** by decisions of the RAG regarding the management of conflicts of interest; and
 - d. **NOTE** that the record of the meeting must record the fact of any disclosure, and the determination of the RAG as to whether the member may or may not be present during discussion of, or decisions made, on the matter which is the subject of the conflict.

BACKGROUND

2. Consistent with the *Protected Zone Joint Authority (PZJA) Fisheries Management Paper No. 1* (FMP1), which guides the operation and administration of PZJA consultative forums, members are asked to declare any real or potential conflicts of interest.
3. RAG members are asked to confirm the standing list of declared interests (**Attachments 1.3a** and **1.3b**) is accurate and provide an update to be tabled if it is not.
4. FMP1 recognises that members are appointed to provide input based on their knowledge and expertise and as a consequence, may face potential or direct conflicts of interest. Where a member has a material personal interest in a matter being considered, including a direct or indirect financial or economic interest; the interest could conflict with the proper performance of the member's duties. Of greater concern is the specific conflict created where a member is in a position to derive direct benefit from a recommendation if it is implemented.
5. When a member recognises that a real or potential conflict of interest exists, the conflict must be disclosed as soon as possible. Where this relates to an issue on the agenda of a meeting this can normally wait until that meeting, but where the conflict relates to decisions already made, members must be informed immediately. Conflicts of interest should be dealt with at the start of each meeting. If members become aware of a potential conflict of interest during the meeting, they must immediately disclose the conflict of interest.
6. Where it is determined that a direct conflict of interest exists, the forum may allow the member to continue to participate in the discussions relating to the matter but not in any decision making process. They may also determine that, having made their contribution to the discussions, the member should retire from the meeting for the remainder of discussions on that issue. Declarations of interest, and subsequent decisions by the forum, must be recorded accurately in the meeting minutes.

TRLRAG Declarations of interests from most recent meetings

Name	Position	Declaration of interest
Members		
Ian Knuckey	Chair	<p>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.</p> <p>In 2019, delivered components of TSRA Induction Program for Traditional Inhabitant members on PZJA advisory committees.</p> <p>Full declaration of interests provided at Attachment 1.3b.</p>
Eva Plaganyi	Scientific Member	Lead scientist for PZJA funded TRL research projects conducted by CSIRO.
Andrew Penney	Scientific Member	<p>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.</p> <p>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.</p> <p>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.</p> <p>No shareholding and hold no positions relating to any other companies, including any fishing companies or industry associations.</p>
Les Pitt	Traditional Inhabitant Member – Kemer Kemer Meriam	TIB licence holder and runs an independent freezer facility on Erub Island.
Charles David	Traditional Inhabitant Member - Kulkalgal	To be declared.
Patrick Mooka	Traditional Inhabitant Member – Guda maluylgal	To be declared.
Jermaine Reuben	Traditional Inhabitant Member - Maluyilgal	To be declared.

Thomas Fujii	Traditional Inhabitant Member - Kaiwalalgal	To be declared.
Brett Arlidge	Industry Member	General Manager MG Kailis Pty Ltd. MG Kailis Pty Ltd is a holder of 5 TVH licences. Seafood buyer from Torres Strait, QLD and PNG TRL fisheries.
Ken McKenzie	Industry Member	To be declared.
Nicholas Richards	TSRA Member	To be declared.
Jenny Keys	QDAF Member	To be declared.
Emma Freeman	AFMA Member	Nil.
Elissa Mastroianni	Executive Officer	To be declared.
Georgia Langdon	Executive Officer support	Nil
Observers		
Joseph Posu	PNG National Fisheries Authority	To be declared.
Yen Loban	TSRA Board Member, TSRA Portfolio Member for Fisheries, Chair of Zenadth Kes Fisheries	To be declared.
Leo Dutra	CSIRO	No other interest in TRL fishery apart from involvement in research. Project lead for FRDC funded project: Shared science and Indigenous knowledge to support fisheries capacity building in Torres Strait. Member of TRL science survey project team.
Laura Blamey	CSIRO	To be declared.
Alice McDonald	AFMA	To be declared.
Peter Frazis	TRL WG Industry member	To be declared.
Brooke D'Albertto	ABARES	To be declared.
Lachlan Farquhar	AFMA	To be declared.
Quinten Hirakawa	TSRA	To be declared.

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
Expert Witness	Gladstone Harbour development impacts

TROPICAL ROCK LOBSTER RESOURCE ASSESSMENT GROUP (TRLRAG) Thursday Island	MEETING 33 13-14 December 2022
PRELIMINARIES Action items from previous meetings	Agenda Item 1.4 For Discussion and Advice

RECOMMENDATIONS

1. That the RAG:

- a. **NOTE** the progress against actions arising from previous meetings (**Attachment 1.4a**)
- b. **NOTE** the final meeting record for TRLRAG 32 (**Attachment 1.4b**) held on 15 December 2021.
- c. **PROVIDE ADVICE** on any new key events to be added to the TRL Management History timeline (**Attachment 1.4c**).

BACKGROUND

Actions arising

2. Updates are provided on the status of actions arising from previous TRLRAG meetings and relevant TRLWG meetings at **Attachment 1.4a**.

Meeting records

3. The draft meeting record for TRLRAG 32 held on 15 December 2021 as a hybrid meeting face to face and via video conference was provided out of session for comment on 22 December 2021. Comments received focussed largely on discussions relating to the RBC and future revisions of the empirical Harvest Control Rule.
4. The record was finalised out of session following the closure of the comment period and circulated to members on 28 January 2022. This included a tracked-change version showing the comments received.
5. The final meeting record is provided at **Attachment 1.4b** for information and is also available on the [PZJA website](#).

TRL Management History Timeline

6. As an action arising from TRLRAG 14 (25-26 August 2015), AFMA and CSIRO were tasked with preparing a timeline of key events that have occurred in the Torres Strait Tropical Rock Lobster Fishery. An initial draft timeline was provided to TRLRAG 30 (16 December 2020).
7. The timeline is intended to be a living document, to be updated as relevant management events in the fishery occur. AFMA proposed at TRLRAG 32 that this document be a standing agenda item under Agenda Item 1.4 Actions Arising for the RAG to be updated as required.
8. The RAG is asked to provide advice on any new key events to be added to the Management History timeline since the last RAG meeting (provided at **Attachment 1.4c**).

Action items from previous TRLRAG meetings

#	Action Item	Meeting	Responsible Agency/ies	Due Date	Status
1.	CSIRO to investigate the length frequency conversion factors from the catch weight data provided by MG Kailis.	TRLRAG25 (11-12 December 2018)	CSIRO	2019	Ongoing This work is budgeted as part of the current TRL research project. CSIRO will provide a verbal update on this action at the meeting.
2.	Considering assessment timelines, PNG NFA to provide CSIRO with a best estimate of PNG catches by mid-November. CSIRO to liaise closely with PNG regarding reporting timeframes and provision of catch data. In parallel, the RAG data sub-group to examine ways to adjust the stock assessment model to account for delayed catch data from PNG.	TRLRAG25 (11-12 December 2018)	PNG NFA CSIRO AFMA RAG Data Sub-Group	2019	Ongoing PNG provided AFMA with a summary of TRL catch by month and processed weight from January – October 2022 and an update on total catch by month for 2021, which is included in Attachment 3b . The RAG may need to consider using an extrapolation approach to estimating total PNG catch in the absence of complete data sets on an ongoing basis – for discussion under Agenda Item 3 . AFMA continues to liaise with PNG NFA to obtain best estimate catch data and logbook data as inputs to the eHRC calculations and stock assessment models.
3.	That the TRL RAG data subcommittee discuss which TVH CPUE series are the best to use within the model.	TRLRAG25 (11-12 December 2018)	AFMA RAG Data Sub-Group	2019	Ongoing The RAG Data Sub-Group last met on 18 June 2019, however this item was not considered. This item remains on the agenda for the Data Sub-group. – to be discussed under Agenda Item 11 .
4.	CSIRO to undertake further investigations to improve the GLM approach, and present the findings to the next meeting of the RAG.	TRLRAG26 (5 February 2019)	CSIRO	TRLRAG27	Complete. CSIRO presented a comprehensive analyses at TRLRAG 32 (15 December 2022) which is also captured in the final project report 2019/0825 “Torres Strait Tropical Rock Lobster ‘kaiar’ (TRL) Fishery:

Attachment 1.4a

#	Action Item	Meeting	Responsible Agency/ies	Due Date	Status
					<i>surveys, CPUE, stock assessment and harvest strategy – 2022 Final Report”</i>
5.	AFMA and CSIRO to work closely with industry to develop an index or key of diver names and ‘clean up’ the data diver name dataset to feed in to the next seasons’ CPUE standardisation.	TRLRAG27 (10-11 Dec 2019)	AFMA CSIRO	TRLRAG29	Ongoing. CSIRO will provide an update on this action at the meeting – necessity and feasibility to be discussed by the RAG.
6.	That the RAG (or RAG Data Sub-Group) determine whether there are better measures of effort in the fishery (hours vs days; time spent travelling, searching and actively fishing), and clarifying “number of fishers/divers” on TDB02 catch disposal record book.	TRLRAG27 (10-11 Dec 2019)	TRLRAG Data Sub-group	TRLRAG29	Ongoing. This item remains on the agenda for the Data Sub-group. To be placed on the agenda for the next RAG Data Sub-group meeting – to be discussed under Agenda Item 11.
7.	AFMA to provide all available information and data on the Torres Strait Prawn Fishery (TSPF) observer program for further analysis by CSIRO and the RAG to examine the impacts of the TSPF on the TRL Fishery.	TRLRAG27 (10-11 Dec 2019)	AFMA CSIRO	TRLRAG29	Complete. CSIRO prepared a preliminary analysis of available Torres Strait Prawn Fishery (TSPF) observer data to examine the interactions between the Torres Strait prawn and TRL fisheries and presented this at TRLRAG 32. The RAG recommended continuation of this analysis and a further update will be presented by CSIRO under Agenda Item 4.
8.	Industry member Brett Arlidge to provide size distribution data on tailed PNG product to CSIRO when available.	TRLRAG28 (7 May 2020)	Brett Arlidge, industry member	TRLRAG30	Complete. MG Kailis provided CSIRO with size data on tailed PNG product in November 2022 and is committed to providing more historical data when accessible.

#	Action Item	Meeting	Responsible Agency/ies	Due Date	Status
9.	AFMA to approach known TRL buyers and request the sharing of price data to support CSIRO's catch and effort data analysis.	TRLRAG29 (6 Oct 2020)	AFMA	TRLRAG30	Ongoing. AFMA contacted key buyers in 2020 however no responses were received. AFMA has contacted buyers again in mid-November 2022 and requested that any data be provided directly to CSIRO if buyers are willing.
10.	PNG NFA to follow up on reports of the PNG TRL Fishery hookah closure being lifted and report back to AFMA.	TRLRAG 32 (15 Dec 2021)	PNG NFA	TRLRAG 33	Ongoing. NFA will provide an update on this at the meeting.
11.	The TRL RAG Data Sub-group to look at ways to facilitate the reporting of discards and mortality on CDRs and Logbooks	TRLRAG 32 (15 Dec 2021)	TRLRAG Data Sub-group	2023	Not commenced. To be placed on the agenda for the next RAG Data Sub-group meeting – to be discussed under Agenda Item 11.
12.	AFMA to ensure that all available length data for TRL in the TSPF observer data is provided to future analysis.	TRLRAG 32 (15 Dec 2021)	AFMA	TRLRAG 33	Complete. AFMA has provided CSIRO with an updated data extract of all available observer data from the TSPF which now includes all available length data.

Relevant action items from previous TRLWG meetings*

#	Action Item	Meeting	Responsible Agency/ies	Due Date	Status
1.	Discard reporting and estimation be considered by the RAG (possibly by the RAG data subgroup)	TRLWG8 (8 November 2018)	AFMA RAG Data Sub-Group	2019	Ongoing This item remains on the agenda for the Data Sub-group to be discussed under Agenda Item 11 .
2.	RAG to consider the merit and options for improving the index of 0+ lobster abundance, through logbooks or other means. The Working Group noted that this would may be relevant to the RAG data sub-committee.	TRLWG8 (8 November 2018)	AFMA RAG Data Sub-Group	2019	Ongoing This item remains on the agenda for the Data Sub-group to be discussed under Agenda Item 11 .

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

Torres Strait Tropical Rock Lobster Resource Assessment Group Meeting 32

Final Meeting Record

15 December 2021

Cairns / Video Conference

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



Australian Government

Australian Fisheries Management Authority

Contents

Meeting participants	3
Members	3
Observers	4
1 Preliminaries	5
1.1 Welcome and apologies	5
1.2 Adoption of agenda	5
1.3 Declaration of interests	6
1.4 Actions arising from previous meetings	6
1.5 Out of session correspondence	7
2 Updates from members	7
2.1 Industry and scientific members	7
2.2 Government agencies	8
2.3 Papua New Guinea National Fisheries Authority	8
2.4 Native Title	9
3 Catch and effort analyses for 2020-21 fishing season	9
4 Results of the 2021 pre-season survey	11
5 Recommended Biological Catch	13
6 Compliance monitoring and reporting of discards	17
7 Overview of the Queensland East Coast TRL Fishery stock assessment	17
8 Interactions between the Torres Strait TRL and Prawn fisheries	18
9 Research priorities	20
10 Other business	20
11 Date and venue of next meeting	20

Meeting participants

Members

Name	Position	Declaration of interest
Dr Ian Knuckey	Chair	In addition to the declaration of interests provided at Attachment A , the Chair also declared that he has been commissioned to design a fishery independent survey for the Commonwealth Coral Sea Sea Cucumber Fishery.
Dr Andrew Penney	Scientific member	<p>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.</p> <p>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.</p> <p>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.</p> <p>No shareholding and hold no positions relating to any other companies, including any fishing companies or industry associations.</p>
Dr Éva Plagányi	Scientific member	<p>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.</p> <p>Independent scientific member of HCRAG and NPFRAG.</p>
Aaron Tom	Traditional Inhabitant member	Traditional Inhabitant Gudamalulgal and TIB licence holder.
Les Pitt	Traditional Inhabitant member	Traditional Inhabitant Kemer Kemer Meriam, TIB licence holder and runs an independent freezer facility on Erub Island. Board member of Zenadth Kes Fisheries.
Harry Nona	Traditional Inhabitant member	Traditional Inhabitant Kaiwalalgal and TIB licence holder. Board member of Zenadth Kes Fisheries.

Name	Position	Declaration of interest
James Ahmat	Traditional Inhabitant member	Traditional Inhabitant Maluililgal and TIB licence holder.
Dr Ray Moore	Industry member	Torres Strait Master Fisherman's licence holder and East Coast TRL fishery licence holder. Has previously undertaken research relevant the TRL Fishery (~1974).
Brett Arlidge	Industry member	General Manager, MG Kailis Pty Ltd. MG Kailis Pty Ltd is a holder of 5 TVH licences. Seafood buyer from Torres Strait, Queensland and PNG fisheries and exporter of TRL.
Selina Stoute	AFMA member	Nil.
Keith Brightman	TSRA member	Employee of TSRA. TSRA holds multiple TVH TRL fishing licences on behalf of Torres Strait Communities but does not benefit from them. Has no personal pecuniary interest.
Georgia Langdon	AFMA Executive Officer	Nil.

Observers

Name	Position	Declaration of interest
Joseph Posu	Papua New Guinea National Fisheries Authority	Works in the Fisheries Management Unit responsible for managing the prawn and lobster fisheries in the Western Province.
Yen Loban	TSRA	TSRA Board member and TSRA Fisheries Portfolio member. Board member of Zenadth Kes Fisheries.
Maluwap Nona	Malu Lamar (Torres Strait Islander) Corporation RNTBC	Chair of Malu Lamar RNTBC
Dr Leo Dutra	CSIRO	Scientist for PZJA funded TRL research projects conducted by CSIRO. Recently received Fisheries Research and Development Council (FRDC) funding to undertake a capacity building project. Project lead on an AFMA funded climate change project (2019/0830).
Dr Rob Campbell	Scientific observer	Independent fisheries consultant with no pecuniary interest in the Torres Strait Rock Lobster fishery. Former employee of CSIRO and former team member of PZJA funded TRL research projects conducted by CSIRO. Currently contracted to CSIRO to undertake CPUE analyses for the TRL fishery.
Dr Laura Blamey	CSIRO	Scientist for PZJA funded TRL research projects conducted by CSIRO.
Nicole Murphy	CSIRO	Scientist for PZJA funded TRL research projects conducted by CSIRO. Cruise leader

Name	Position	Declaration of interest
		and dive supervisor for TRL pre-season survey. Project lead on AFMA funded Torres Strait Beche-de-mer project (2019/0826).
Marjoleine Roos	CSIRO	Scientist for PZJA funded TRL research projects conducted by CSIRO.
Dr Fay Helidoniotis	Fisheries Queensland	Undertaking a stock assessment for the Queensland East Coast TRL Fishery. No pecuniary interests or otherwise in the TRL fishery.
Mark David	TRL Working Group	Traditional inhabitant member, Kulkalgal
Patrick Mills	TRL Working Group	Traditional inhabitant member, Kaiwalagal and member of Torres Strait Fishers Association. Member of Torres Strait Scientific Advisory Committee. TIB licence holder with TRL, mackerel and trochus endorsements.
Daniel Takai	Zenadth Kes Fisheries	CEO of Zenadth Kes Fisheries
Quinten Hirakawa	TSRA	TSRA senior project officer. TIB licence holder, with a TRL entry
Tamre Sarhan	AFMA Observer Coordinator	Nil.
Lisa Cocking	AFMA Senior Management Officer	Nil.

1 Preliminaries

1.1 Welcome and apologies

1. The 32nd meeting of the Tropical Rock Lobster Resource Assessment Group (the RAG) was opened in prayer at 9:03 am on Wednesday 15 December 2021. The Chair welcomed participants and acknowledged the Traditional Owners of the various lands on which members were participating from and paid respect to the elders' past, present and emerging.
2. Attendees at the RAG meeting are detailed in the meeting participant tables at the start of this meeting record. Members from interstate attended the meeting via video conference. Apologies were received from Jenny Keys, Queensland Department of Agriculture and Fisheries (QDAF) member. Kulkalgal Traditional Inhabitant member, James Billy was not in attendance.
3. AFMA officers, Tamre Sarhan and Lisa Cocking attended the meeting via video conference for Agenda Item 8 only.
4. 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 recorded is kept secure and is deleted once the final meeting record is published. There were no objections to the meeting proceedings being recorded.

1.2 Adoption of agenda

5. The RAG considered draft v3 agenda which was circulated to members on 2 December 2021. Traditional inhabitant industry members requested that an additional agenda item on reporting and compliance monitoring of discards in the fishery.
6. The draft agenda with the additional item was adopted by the RAG and is provided at **Attachment B**.

1.3 Declaration of interests

7. Consistent with PZJA Fisheries Management Paper No. 1 (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.
8. Where it is determined that a direct 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 the remainder of the discussions on that issue. The Chair noted that this is a standard RAG and Working Group process that aids in protecting the integrity of the advice provided by the group as well as the individual members.
9. The Chair requested that members update the record of declarations. These are detailed in the meeting participant tables at the start of this meeting record.
10. The Chair then proposed that the RAG agree for all members to be participate in discussions and recommendation making across all agenda items noting the:
 - a) declarations remain relatively unchanged since the last RAG meeting.
 - b) experience of the RAG with dealing with potential conflicts of interests.
 - c) potential technical difficulties and challenges with convening a further process to exclude members to allow consideration of declared interests given some members were joining the meeting via video conference.
 - d) members are encouraged and obliged to raise any new concerns with potential conflicts of interest during the meeting.
11. There were no objections to the Chair's proposed approach.

1.4 Actions arising from previous meetings

12. The RAG noted an update from the RAG Executive Officer 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 31 meeting record which was completed out of session and circulated to members on 1 December 2021.
13. The RAG was supportive of the development of the TRL management history timeline and members were encouraged to review the document out of session and provide feedback to AFMA on its completeness and accuracy. The TSRA Fisheries Portfolio member noted that the first event in the timeline is incorrect and should be amended to state that commercial fishing in the Torres Strait began in the late 1960's, rather than in 1960.
14. The RAG noted further updates provided by CSIRO on the following Action Items:
 - a) Action Item 2 – CSIRO is continuing to work on this analysis and hopes to be able to provide an update in the coming months (early 2022).
 - b) Action Item 5 – This action is ongoing and is aimed at trying to tease out some of the influences and effects different variables have on the CPUE analyses.
 - c) Action Item 6 – This item is related to understanding whether diver skill or experience has an influence on the CPUE of certain vessels in the TVH sector. In 2019 AFMA had the diver names entered into the data base which was provided to CSIRO for analysis. There were 1,539 diver names/combinations, which requires further work to 'clean' the data to ensure it can be used in the analysis.
15. The RAG also noted an update from Industry member Brett Arlidge on the status of Action 9 which was to provide any available size distribution data on tailed PNG product to CSIRO. Brett Arlidge committed to providing CSIRO with at least the five most recent years' worth of data, and to provide any historical data if possible.

1.5 Out of session correspondence

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

2 Updates from members

2.1 Industry and scientific members

17. The RAG noted verbal updates provided by industry and scientific members and observers on the trends and observations in the TRL fishery during the 2020-21 season, and the start of the 2021-22 season, in particular:
- a) Fishing effort has not been as high as previous years, and likely contributed to the under-caught TAC. Industry members attribute this to the impacts of COVID-19, increased fuel prices and at times, limited fuel availability and low buying prices associated with changed Chinese markets.
 - b) Observations in the eastern Islands indicate that there has been some unusual movement and/or location of crays (around Erub), with movement heading towards the central islands (Poruma) since the start of the 2021-22 season. This type of movement (in terms of good catches from this area) has not been seen in the past few years.
 - c) An ongoing obstacle for vessel operators not being able to catch the TAC is due to the crewing restriction policy and being unable to employ non-traditional inhabitant divers.
 - d) Since the start of the 2021-22 season, early catches have been mainly coming from the central and eastern parts of the Torres Strait, with less coming from the western side.
 - e) Australia is still unable to send Australian TRL product directly into China. Any live lobster being sold is being sent to South East Asia. Prices are intermediate. For the first time in months, MG Kailis have been able to secure a shipment of live lobster out of Daru direct to Cairns.
18. Industry members noted that the PNG TRL fishery has a hookah closure during the months of January, February and March each season. One industry member been informed that allegedly to help alleviate the effects of COVID-19, that the PNG TRL hookah closure had been lifted however this was unable to be confirmed by the NFA officer present at the meeting.
19. A scientific member queried if fishers were able to catch more product, whether there would still be the market demand. The RAG noted industry advice that the strategy remains to continue selling Australian TRL into South East Asian markets, which is dependent on those markets selling into China. If the demand from China of South East Asian product was to reduce, this could impact market demand of Australian, and therefore Torres Strait TRL product. Industry advised that China still has an 'zero COVID' policy, and that new and ongoing outbreaks are creating negative sentiment within the Chinese market, and therefore demand.
20. The RAG noted that CSIRO continue to look for opportunities for Torres Strait Islanders to participate in scientific conferences, with one position available for a suitable person to be involved in the upcoming international lobster conference (Perth, Oct 2022). The TSRA Fisheries Portfolio member recounted his involvement in presenting at the World Fisheries Congress in 2021 and expressed support for more industry members to get involved. CSIRO noted that while there is only limited funding, if there is greater interest from industry then additional funds could be sought.

ACTION ITEM – PNG NFA to follow up on reports of the PNG TRL Fishery hookah closure being lifted and report back to AFMA.

2.2 Government agencies

21. The RAG noted an overview of key management updates relating to the TRL Fishery provided by the AFMA member, in particular:
- a) The TRL fishery was re-accredited as an approved Wildlife Trade Operation (WTO) on 4 December 2020 under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).
 - b) In recent months, AFMA has launched electronic Catch Disposal Records (eCDRs) as part of the mandatory Fish Receiver System. AFMA hopes to talk more with industry about using eCDRs during their round of community visits planned for early 2022.
 - c) AFMA continues to liaise with Fisheries Queensland to look at opportunities for PZJA advisory committee members to accompany AFMA when attending Fisheries Queensland Working Group meetings relevant to Torres Strait fisheries.
22. An update from the QDAF member was not provided as the QDAF member was not in attendance.
23. The RAG also noted the following update provided by the acting TSRA member:
- a) The focus of the TSRA Fisheries Program has been preparing traditional inhabitant members for all PZJA advisory committee meetings.
 - b) There has been increasing demand for TSRA to support the members, however with the establishment of the Fisheries Advisory Committee of the TSRA Board and Zenadth Kes Fisheries, TSRA's direct involvement will start to reduce as Traditional Owners to take on a more prominent role.

2.3 Papua New Guinea National Fisheries Authority

24. The RAG noted the following updates from the PNG National Fisheries Authority representative who participated in the meeting via video conference:
- a) Both the TRL fishing industry, and capacity of NFA have been significantly impacted by COVID-19 in PNG in recent years. The provision of data from industry is also slow and remains a pending management item for the NFA to follow up. Additional quality checks will need to be conducted before providing any further catch and effort data to AFMA.
 - b) Catches from January 2021 through to mid-November have been provided and NFA commit to providing the remaining data for November and December 2021 to AFMA by the end of January 2022.
 - c) Reported catches from the PNG TRL Fishery inside the Torres Strait Protected Zone (TSPZ) in 2021 are 40.3 tonnes, with 27.8 tonnes reported from outside the TSPZ. NFA acknowledged that while the catches inside and outside the TSPZ are part of the same stock for the purposes of stock assessment and calculating the TAC, NFA do not consider that the catches 'outside but near the TSPZ' should count towards PNG's total catch share allocation because that would contribute towards PNG reaching their TAC sooner.
 - d) NFA remain committed to discussing the increasing use of a new fishing method – the 'electric spike' or 'electrode' that is being used by some commercial fishers in the Western Province. The electrodes are described as being an electric rod, powered by four rechargeable size D batteries and a switch at one end. Fishers reportedly poke the crayfish with the rod which stuns them from anywhere between 20 seconds up to one minute and allows the diver to retrieve the crayfish without any struggle or damage to the animal. Based on advice from PNG industry operators, the crays revive back to normal when brought back to the storage cage, though to what extent still needs to be confirmed. There are other reports that the use of electrode is also having a negative impact on coral reefs. NFA are working to verify this information and assess the impacts. The RAG noted that the effectiveness of this new fishing equipment could have a significant impact on catch rates and mortality and should be monitored closely.

- e) NFA are also investigating the validity of the video circulating the TRL industry in recent months of a prawn trawler hauling up a significant catch of TRL and suggested that observers on board trawlers during the TRL migration months would be useful to monitor ongoing interactions between the two fisheries.
- f) Both NFA and AFMA acknowledged that the use of the electrode, and the trawling video should be part of the upcoming bilateral discussions in early 2022.

2.4 Native Title

- 25. As Chairperson of Malu Lamar (Torres Strait Islanders) Corporation Registered Native Title Body Corporate (RNTBC), Mr Maluwap Nona that Malu Lamar, as a trustee under section 203(b) of the *Native Title Act 1993*, has a mandated duty of care to support the aspirations of and protect the rights and interests of Torres Strait Islanders.

3 Catch and effort analyses for 2020-21 fishing season

- 26. 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 2020-21 season undertaken by CSIRO and presented by Rob Campbell. Further detail is available in Attachments 3d, 3f and 3g of the TRLRAG 32 meeting papers.

Catch and Effort Data

- 27. Total reported catch for the Australian TRL fishery (1 December 2020 – 30 September 2021) was 240.3 tonnes, with 123.2 tonnes caught by the Traditional Inhabitant Boat (TIB) sector and 116.3 tonnes caught by the Transferable Vessel Holder (TVH) sector.
- 28. Total reported catch from Papua New Guinea was 68.17 tonnes (January – the first half of 2021) however, the RAG noted that this number is incomplete for the PNG TRL season. Using the same methodology applied last year (at TRLRAG 30), and assuming an average monthly catch is also caught in the missing months (December 2020 and a completed November 2021), the total extrapolated PNG catch is increased to 81.24 tonnes (1 December 2020 – 30 November 2021).
- 29. This extrapolated PNG catch results in a total Torres Strait TRL catch of 320.7 tonnes, under a 623.5 tonne global TRL TAC, equating to 51.3 per cent of the TAC. 2021 catches were the lowest recorded since 2009.

TVH sector trends

- 30. Almost all fishing activity used the hookah method in 2021, after several seasons of a small amount of free diving (~5 per cent). Prior to 2020, almost all lobster product was reported as “whole” however there has been a small increase in tailed product in the past two years (6 per cent in 2021).
- 31. Catch in the last two seasons during December to March was the lowest since 2012-13 which can largely be attributed to the disruptions fishers experienced during the early impacts of COVID-19 on the markets.
- 32. The greatest proportion of catches continues to come from Warrior (42 per cent), Warraber (21 per cent), Kircaldie (11 per cent) and Northern (19 per cent) regions.
- 33. In 2021, the highest proportion (27 per cent) of “sets” (fishing duration per day) were of 8 hours duration, with a large decline in 6-hour sets in the past two seasons and an increase in 10-hour sets which reinforces the need to better understand the accuracy of this data. The RAG noted it also remains on the agenda for the RAG Data Sub-group to work on differentiating the difference between time searching and time in the water fishing when analysing logbook data.

34. Data for 2021 indicates a 32 per cent increase in hours fished compared to 2020 and a 28 per cent increase in the number of tender-sets. Hours fished in 2021 is slightly higher (2.4%) than in 2019 despite a 15 % decrease in tender-sets.

TIB sector trends

35. The provision of voluntary effort data by the TIB sector continues to suffer from incomplete data, which creates problems in providing analyses of the information in the TIB sector.
36. Catch in the 2020-21 season during December and January was lower than during the 2019-20 season, though catches in February were higher. Most of the catch was recorded as taken in the Thursday Island area, which is a higher proportion than in recent seasons.
37. Hookah continues to be the dominant catch method in the TIB sector, followed by freediving however there remains a high proportion of catch taken using an 'unknown' fishing method. There continues to be an increase in the proportion of catch taken as whole lobsters.
38. During 2020 and 2021 there has been an increase in the proportion of trips with a length of 1 day (77% in 2021).

TVH CPUE Standardisation

39. The RAG noted some differences between the nominal and standardised indices, but little differences between the four standardising models that consider the effects of month, area, method, vessel, proportion of tails, Southern Oscillation Index and moon-phase.
40. 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.
41. The point estimates of each standardised index, and the nominal CPUE index for 2020-21 show a slight decrease compared to 2020 but still contribute to a positive five-year trend in the empirical Harvest Control Rule (eHRC).
42. **The RAG noted that the "Int-1 model" is the previously agreed default model used in the eHCR.**
43. A series of sensitivity analyses were undertaken to examine the impact of COVID on the distribution of fishing effort. While the distribution of fishing effort during 2018 is seen to be very low in some months due to the low TAC that season, the number of tender-sets each month has generally been lower since 2019 than during previous seasons. During 2020 and 2021, effort levels in both February and March were the lowest of all the seasons. This was due to the low market prices available for lobsters and the lack of suitable markets during the early stages of the 2021 fishing season.
44. To ascertain whether the low effort in these months could influence the annual index, the models were fitted to the data with these two months excluded. An extra model was also fitted where the data for the 2018 season was also excluded. However, excluding the data for 2018 had no influence on the index based on only excluding the data for February and March.

TIB CPUE Standardisation

45. The RAG noted a number of differences between the nominal and standardised TIB indices without a seller-effect, generally being lower than the nominal index over the first half of the time-series and higher than the nominal index during the second half (i.e., since 2014). The influence on the season index is seen to be greatest for the *proportion-tails* effect, 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.
46. Similarly, there are a number of differences between the Nominal and Standardised TIB indices with the seller effect, with both *proportion-tails* and *seller effects* having a substantial influence on the annual index. The seller effect index is considerably flatter than without the seller effect which can possibly be explained by a general increase in the skill or efficiency of the Sellers in the fishery over time.

47. 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.

Further work for data analyses

48. 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) Investigation 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 hyper-stability in CPUE require further investigation?
 - f) Further investigation of the influence of oceanographic conditions (e.g. water temperature, prevailing winds).

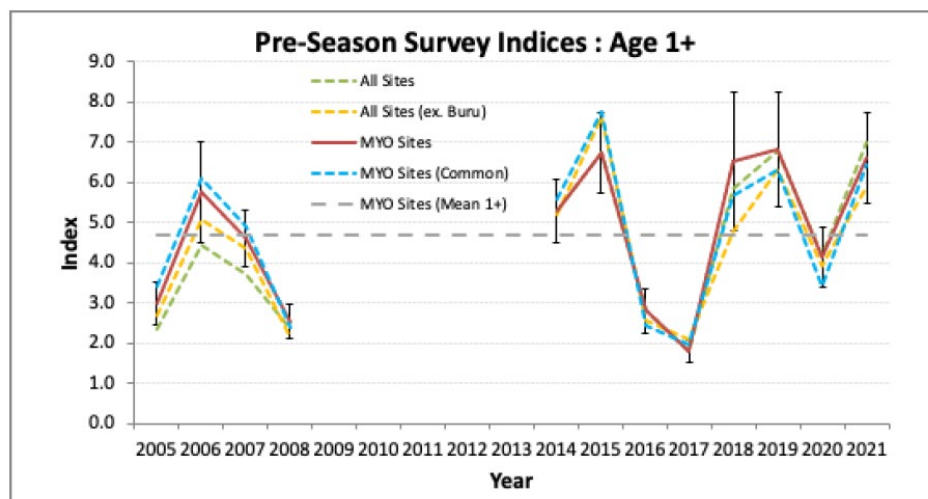
4 Results of the 2021 pre-season survey

49. The RAG considered a presentation provided by Dr Leo Dutra, CSIRO detailing the preliminary results of the 2021 pre-season survey (as detailed in Attachment 4-5a and 4b of the TRLRAG 32 meeting papers).
50. The pre-season diver survey was conducted between 10 - 20 November 2021 aboard the *Wild Blue* with a CSIRO dive tender. For the first time, the CSIRO team included a TIB fisher, Mr Tony Salam, along with four CSIRO divers; Leo Dutra, Nicole Murphy, Kinam Salee and Steven Edgar.
51. 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. At the time of the survey, most older lobsters (age 2+) have migrated and those that remain are mostly remnant males.
52. Dive transects were conducted at 77 repeat pre-season sites (with four 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. Survey conditions ranged from 0-10 knots in the first week, up to raining and windy with 15-20 knot winds in the last four days. Visibility ranged from 1 to 9 metres and on average around 3 metres.
53. A total of 356 lobsters were counted and 172 lobsters were measured. The sex ratio of lobsters was 55 per cent males and 45 per cent females.
54. At each survey site:
- a) Two divers swim with the current to survey a 2000m² belt transect (each diver scanning 2m by 500m);
 - b) Lobsters are counted for each age-class;
 - c) Habitat is assessed (i.e. substrate type and biota);
 - d) Temperature/depth profiles are collected; and,
 - e) lobsters are measured (TW), sex determined and datasheets completed.

55. Additionally this year, 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 17m.

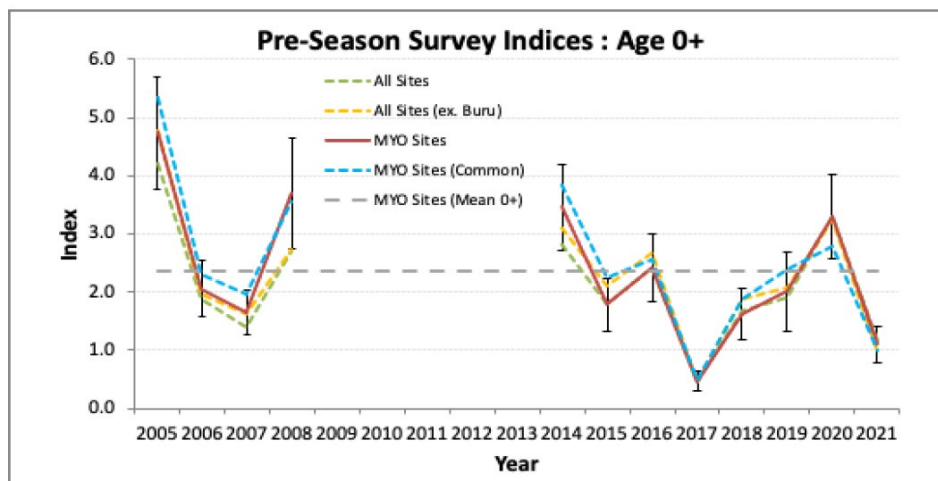
Age 1+ recruiting lobster counts and index

- The 2021 1+ abundance index was above the Mid-Year Only (MYO) sites long term average (2006-2021) and higher than in 2020. The survey variance was higher than 2020, but lower than high variances in both 2018 and 2019.
- Lobster counts were higher in the north western side compared to 2020, and similar to 2019. 1+ lobsters were generally widespread across different regions (strata). South-East strata had the highest abundance index, followed by Buru and Warraber Bridge.
- The abundance index for 1+ lobsters in 2021 indicates that recruitment into the fishery is generally widespread across the different strata surveyed, with the highest recruitment recorded at South-East, followed by Buru and Warraber Bridge. All strata point-estimate abundance indices were above average apart from TI Bridge, though this historically has a relatively low abundance.
- Buru and Reef Edge exhibited the greatest count variability between sites indicated by the high standard error at these strata.
- South East recorded the second highest densities across all surveys in 2021.



Age 0+ recently settled lobster counts and index

- The 2021 0+ abundance index was the second lowest point estimate abundance recorded since 2017 and well below the long-term pre-season survey average index (2005-2020). Variability was smaller in 2021 compared to 2020.
- The 2021 survey indicated a typical lobster settlement pattern, with most 0+ lobsters counted on the western side of the survey area, though there were very different observations/counts of 0+ lobsters in 2021 (45) compared to 2020 (101). Historically 0+ counts are highly variable between east and west, however contrary to previous years, 0+ lobsters were observed more consistently across the western and eastern sides. This demonstrates highly variable spatial distribution of lobster settlement year to year.
- The highest abundance of 0+ indices were recorded for South East, Buru and Mabuyag strata and Buru exhibited a very large variability. All strata indices were below the 2006-2020 average with no counts at Kircaldie or Reef Edge.



Habitat changes

56. There were some improvements in the average percentage cover of algae, live coral and sea grass. Percentage coverage of seagrass has improved since 2020 but not compared to pre-2018. Some minor sand incursions were observed at one site in the north west.

Discussion

57. The independent scientific member noted that there is some international work being conducted on the decline of seagrass beds in response to increasing temperatures and queried whether changes in temperature in the Torres Strait have been impacting the settlement of 0+ lobsters.
58. CSIRO advised that there was not enough time between the survey and the RAG to analyse such results, but that an increase in temperatures has been observed since 2019.
59. The Fisheries Portfolio member noted that for the last three years, the North West winds (*Kuki*) have come late (in January or February) but this year the NW winds are early with the wind and rains having started in November. The RAG noted that the weather, rainfall, wind, turbidity, flooding etc can all have a significant impact on the growth of seagrass though it is complex to understand which components might be the most influential. CSIRO are also working closely with JCU to compare the results of their annual seagrass surveys to further understand.
60. 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 within a matter of weeks, analyse and report on the survey results in time for the RAG meeting.

5 Recommended Biological Catch

61. The RAG considered information provided by the Scientific Member Dr Éva Plagányi on the RBC for the 2021-22 fishing season as derived through the application of the empirical harvest control rule (eHCR) under the TRL harvest strategy, as detailed in Attachment 4-5a of the TRLRAG 32 meeting papers, titled *Summary of Torres Strait TRL 2021 CPUE, Pre-season population survey and eHCR analyses*.
62. The eHCR is applied in December and outputs an RBC for the following year. This formula is the multiple of the average annual catch over the last 5 years (using available catch from TIB, TVH, PNG) and a statistic which measures 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);
 - nominal CPUE for TIB sector (10 per cent); and,
 - standardised CPUE for TVH sector (using data available up until end of October) (10%).

Average annual catch

63. The RAG noted that the actual reported total catch for the 2020-21 season was the lowest on record, being only 51.3 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 30 and TRLRAG 31), then the low five-year average catch value can unjustifiably penalise the TRL industry with a lower RBC. Reduced catches are considered to be primarily a result of impediments to exports.
64. 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 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.
65. The RAG considered the results of the analyses on the two options as outlined in **Table 1**.

Table 1. Summary of RBC values using options 1 and 2 as recommended by TRLRAG 31.

Season	Reported Torres Strait Total Catch (t)	Option 1: Adjusted total catch for eHCR	Global TAC (t)	Catch / TAC	Adjusted catch proportion (capped)	Option 2: Adjusted total for eHCR based on ave. catch proportion	Global TAC (t)	Catch / TAC
2012-13	612.5	-	871	70.3%	-	-	871	70.3%
2013-14	733.2	-	616	119.0%	-	-	616	119.0%
2014-15	591.0	-	769	76.9%	76.9%	-	769	76.9%
2015-16	758.2	-	796	95.2%	95.2%	-	796	95.2%
2016-17	390.8	390.8	495	79.0%	79.0%	390.8	495	79.0%
2017-18	412.1	412.1	320	128.8%	100.0%	412.1	320	128.8%
2018-19	583.5	583.5	641	95.1%	95.1%	583.5	641	95.1%
2019-20	451.7	582	582	77.6%		519.4	582	77.6%
2020-21	320.6	623.5	623.5	51.3%		556.4	623.5	
5 year average input to eHCR	431.7	518.4			89.24%	492.4		

eHCR indices

66. When considering the recent log-transformed slopes of the four eHCR indices, the RAG noted that:
- although the most recent 0+ pre-season survey value, the TIB CPUE and the TVH CPUE values in 2021 (each with a 10 per cent weighting in the eHCR) had come down since 2020, the overall average five-year trend remained positive for all three indices.
 - the 1+ pre-season survey index saw an increase in the 2021 value which maintains a positive slope. This index carries a 70 per cent weighting and is used to best predict how many lobsters are available to be sustainably caught next season.
 - together, these indices indicate that the TRL stock has not declined, confirming that reduced catches are likely due to marketing limitations.

Application of the empirical Harvest Control Rule (eHCR)

67. Table 2 illustrates a comparison of all eHCR RBC outputs the different average catch values with ad-hoc adjustments from Options 1 and 2 above, a default application using non-adjusted catch values (Option 3), as well testing alternative CPUE indices inputs combined with options 1 and 2 as a comparison (referred to as Option 4 and Option 5) ranging between 512 tonnes and 617.5 tonnes. Options 4 and 5 were presented as sensitivities to illustrate that using an alternative CPUE index has very little impact on the RBC outputs.
68. The RAG noted that the eHCR has been MSE-tested and is shown to be robust and precautionary. It captures longer-term trends over a five-year period, it places substantially more weighting (70%) 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.

Table 2. Comparison of eHCR RBC outputs.

eHCR Inputs	Option 1	Option 2	Option 3	Option 4	Option 5
	Index_MY0; Seller; Int1 - using avg catch option 1	Index_MY0; Seller; Int2 - using avg catch option 2	Default -using actual 2021 catch	Alternative CPUE (Mod3) for TIB & TVH - using avg catch option 1	Alternative CPUE (Mod3) for TIB & TVH - using avg catch option 2
Pre-season 1+	1.215	1.215	1.215	0.850	1.215
Pre-season 0+	1.242	1.242	1.242	0.124	1.242
CPUE_TIB	1.058	1.058	1.058	0.108	1.081
CPUE_TVH	1.057	1.057	1.057	0.109	1.086
Ave Catch (t)	518.4	492.44	431.7	518.4	492.44
RBC (t)	614.8	584.0	512.0	617.5	586.6

69. The RAG had previously agreed at TRLRAG 30 that application of the catch multiplier in the eHCR was not appropriate where catches had been significantly impacted by external factors (COVID and markets). The RAG debated the appropriateness of applying either Option 1 or Option 2 to the eHCR to address the lower-than-expected catch values in both the 2019-20 and 2020-21 fishing seasons and discussed the following key points:
- Depending on whether the current market issue is ongoing into next season, the impact on total catches could also be expected to continue. In that regard, Option 1 will allow the

eHCR to be applied without the impacts of external factors reducing the recommended total catch amount. Option 2 will slowly continue to drive the RBC output down as a result of marketing constraints.

- b) An industry member queried whether the total catch figures included all lobsters that have died, or only those that are sold. The RAG noted that the total catch value should include all lobsters that have died, including those that are sold, those that might die in cages, and those that might be discarded. Considering the catches in the 2020-21 season were so low, any substantial mortality of discards would not be very influential in the eHCR calculation.
- c) In the absence of formally recording all lobster mortality, the harvest control rule assumes a small proportion of mortality, though if this proportion was to suddenly change (for example, due to an increase in water temperatures causing an increase in mortality), then that should be considered. The RAG agreed that it is important to report all discards and report all lobsters that come out of the water, not only those that are sold, particularly in the face of a warming climate and increasing water temperatures.
- d) Acknowledging that the eHCR is robust to (and tested against) the TAC being fully caught, the independent scientific member expressed a preference to use Option 1 this year and replace the anomalous years catch values with the TAC. It was suggested the RAG consider a future revision of the eHCR that uses the previous year's TAC, rather than catch, as a multiplier. The RAG noted that this may require the harvest strategy to be re-tested using management strategy evaluation (MSE).
- e) The RAG noted that whilst likely to be more reflective of what actual catches may have been in the absence of COVID-19 and market impacts, Option 2 provides a level of precaution on top of what is already a precautionary harvest strategy. This is because the average catch will continue going downwards, particularly if external factors like the export market continue to impact catches. An industry member added that the current, fragile market situation is expected to continue in 2022, and expressed support for using the TAC values in substitution for the actual catches (i.e., Option 1).
- f) An industry member noted that if the current circumstances of low catches were to continue, unrelated to stock abundance, the default application of the eHCR will cause the RBC to continue to be unjustifiably reduced over time. If the RAG is confident that catches are low because of external factors and not low lobster abundance, then the eHCR catch should be adjusted by applying Option 1.
- g) Noting that the eHCR is precautionary, and the harvest strategy was rigorously tested based on the assumption that the TAC would be close to or fully caught in a standard fishing season, the AFMA member supported the application of Option 1 to set the RBC for the 2021-22 fishing season.
- h) The RAG also noted that in the event there was in fact a low stock abundance, reflected in the CPUE indices and the 1+ survey index (which has a 70 per cent weighting) then the eHCR would produce an RBC to reflect those trends. This reinforces the concept that applying Option 1 and using the TAC as the total catch value will not undermine the already precautionary harvest control rule.

70. Following an informal break-out discussion requested by traditional inhabitant industry members to review each of the options, and **having considered both options to address the lower than expected recent two years' catch, the RAG recommended the application of 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. This resulted in an RBC value of 615 tonnes (rounded) for the 2021-22 season.**

71. **The RAG further recommended that revision of the eHCR be investigated, e.g. to use previous year TAC rather than catch as a multiplier, noting that the stock assessment scheduled for 2022 will help to recalibrate the stock biomass with the eHCR.**

ACTION ITEM – The RAG Data Sub-group to look at ways to facilitate the reporting of discards and mortality on CDRs and Logbooks.

6 Compliance monitoring and reporting of discards

72. On behalf of the traditional inhabitant members, the TSRA Fisheries Portfolio member raised the issue of discarded or dead crayfish not being reported to AFMA, and the need for better reporting and compliance monitoring to ensure these crayfish are accounted for. The concern arises from industry reports of an apparent increase in crayfish mortality and discards, in some cases due to increasing water temperatures causing higher mortality.
73. Traditional inhabitant members advised of their intention to get the TIB sector to lead the way in monitoring and data collection of all discarded crayfish. The members are willing to work with the broader TIB industry to start educating and encouraging the reporting of discards and all crayfish that come out of the water, with the support of AFMA.
74. The RAG noted that Torres Strait Fisheries have no requirements to report lobsters that are discarded, neither on the TDB02 Catch Disposal Records (CDRs), nor the TRL04 Daily Fishing Logbooks. Some Torres Strait fisheries operators do record this information informally on the CDRs but it will need to be formalised through changes to the CDR books and logbooks to enable this.
75. The RAG further noted that in other fisheries, it is very challenging to monitor and keep records on discards at an individual accountability level. Other tools, such as independent monitoring using on board observers are used to then estimate discards at the fishery level, which is then subtracted from the final TAC calculation.
76. An industry member added that on the East Coast, boats have a policy that live tanks must be checked twice a day, and any weaker lobsters must be processed and frozen to ensure that every lobster that is caught, is also sold and mortalities are reduced. The same should apply for live cages sitting off islands, whereby cages are regularly checked and maintained to ensure maximum value for the fishery and reduce the number of crays that are lost. On average, 10 per cent of lobsters should be frozen.
77. The Chair commended the traditional inhabitant members on raising the issue and taking the initiative to improve reporting of discards. AFMA expressed support for the initiative and acknowledged that there is further work to be done to ensure the reporting can be facilitated and that the data can be extracted and used from the database as required.
78. An observer sought advice from AFMA on time required to amend CDR and daily fishing logbooks to support discard reporting. AFMA advised that changes could be enacted before the next fishing season.

7 Overview of the Queensland East Coast TRL Fishery stock assessment

79. The RAG noted a presentation on the Queensland East Coast TRL Fishery stock assessment as provided by Dr Fay Helidoniotis (via video conference). A copy of the presentation slides is provided in Attachment 6a of the TRLRAG32 meeting papers.
80. Noting that the TRL Fisheries between the Queensland east coast and the Torres Strait are considered a single biological population, the RAG was invited to provide any experiences and input to the parameters of the preliminary stock assessment model.
81. Noting that the model presented was preliminary, and the data contained within is confidential, the RAG discussed the following key points:
 - a) Although the area of Queensland TRL fishery extends only both the east and west coasts of Queensland, on the east coast fishery grounds are considered as part of the stock assessment.

- b) Catch data inputs start from roughly 1988, and CPUE indices start in 1994 due to the poorer catch records prior to 1994, though one industry member noted that the fishery in fact commenced in the 1960s when catch was mostly unloaded in Thursday Island.
- c) Noting a sharp increase in the standardised CPUE index between 2002 and 2008, Dr Helidoniotis sought input from the RAG as to whether the CPUE series should commence in 2004 or be considered to have two split series as two separate fleets. The RAG Chair noted that unless something is known to have fundamentally changed in 2003, then the CPUE index cannot be simply considered as two separate fleets or series. An industry member also noted that operators in 1994/95 were inexperienced as they began switching from spearing lobsters to live catch operators till around 2001-02. After that period, more experienced operators began working out of Cairns (rather than unloading to Thursday Island) and the effort in the fishery increased.
- d) Noting that the model predicts that males grow faster than females, Dr Helidoniotis sought input from the RAG as to whether that is what is observed in the east coast lobsters. An industry member noted that males do grow larger than females and so it is assumed they would also grow faster. An observer to the meeting also noted that generally, lobsters on the east coast are a lot larger than Torres Strait lobsters, particularly the males. A scientific member also noted that older lobsters are rarely observed in the Torres Strait as the mature crays walk out of the fishery at around three years of age. However, it is assumed that the age at maturity between the two fisheries are similar. Another industry member noted that there have been some observations of 6.5 – 7cm berried females in PNG, but more data would be available from trawl catch data.
- e) The CSIRO scientific member advised that it would be useful to have a discussion offline about some of the parameters which may change depending on assumptions made regarding the CPUE series, which may also then impact recruitment variability and steepness parameters in the model.
- f) The RAG noted that the model sex ratio of male to female lobsters is 50:50, but that the ratio for observed data is yet to be calculated.
- g) Noting the low catches early on in the time series followed by a sharp increase in CPUE, the model must be estimating a higher recruitment residual which will be an area requiring closer examination as to how plausible that scenario is to explain those trends.
- h) The AFMA member noted it would be important to better understand how and if the results of the stock assessment will be applied in the context of the TRL Harvest Strategy for the East Coast.

82. The Chair thanked Fay for the opportunity for the RAG to provide input on the development of the stock assessment. The RAG noted that Fisheries Queensland are aiming to have a base case model developed by the end of December and present the final model by February 2022.

8 Interactions between the Torres Strait TRL and Prawn fisheries

- 83. 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 against the TRL TAC is an important issue for the TRL RAG, WG and the Australian-PNG Fisheries Committee bilateral meetings.
- 84. To help understand the interactions better, 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 TSPF is required to obtain 2.6 per cent observer coverage of the total prawn fishing effort each year which over time generates a sizeable dataset of fishery independent scientific data.

- b) Trawling effort mainly occurred in Great North East Channel area, and western zone of the Darnley area with 35 per cent of all recorded shots containing at least one lobster and the greatest counts of lobsters occurring in the central part of the Great North East Channel area.
 - c) There was no trawling effort that occurred in the western part of the Torres Strait, west of Warrior reef (due to spatial closures in the TSPF). These grounds are considered key TRL fishing grounds. There is also little trawling effort east of Warrior Reef as a spatial closure applies in this area of the TSPF from December to July each year.
 - d) Lobster bycatch was greatest in March 2013 and March 2015, which is attributed to a small number of trawl shots with high lobster counts. For other months and other years, the catch was variable but considerably smaller than March 2013 and March 2015.
 - e) The age class ratio of lobsters was generally even across years, however the ratio of 1+ lobster to 2+ lobsters in 2010 was considerably different with more 2+ lobsters were recorded. Sex ratio was also generally similar across years, except in 2008, 2010 and 2019 more females were observed, and in 2017 more males were observed.
85. The RAG noted a summary of results illustrating the observed TRL bycatch in tonnes from 2012 to 2019, and the scaled up TRL bycatch as a percentage of the total TRL catch in the Torres Strait. The scaled TRL bycatch ranged from 0.6 tonnes in 2017 (0.15 per cent of the total TRL catch), to 25.7 tonnes in 2013 (4.2 per cent of the total TRL catch).
86. However, the RAG noted that it is important to understand that the extrapolated values may not be an accurate indication of the true annual lobster bycatch values due to the limited representation of the observer data and spatial and temporal patchiness of the TRL bycatch. For example, there is uncertainty in the extrapolation method which is potentially biased by a small number of anomalously high lobster bycatch in the months of March. It remains unknown whether observed lobster bycatch from March was representative of the total spatial and temporal coverage of the TSPF. The RAG noted that this requires further investigation. If the months of March in 2013 and 2015 are excluded from the analyses, then the total extrapolated TRL bycatch ranges from 0.15 per cent and 2.0 per cent of the total TRL catch.
87. While 98.5 per cent of observed discarded lobsters are reported as being alive, post-capture mortality is uncertain.
88. Having regard to the preliminary analyses, the RAG noted that there is scope for potential future work to refine the analyses, including:
- a) Better understanding the small number of high lobster bycatch counts and their effect on the extrapolated values, including how these outliers may be handled in future analyses.
 - b) Undertaking a more detailed spatial analysis of the data (e.g., fishery regions); and
 - c) If feasible, collecting weight data on all individual lobsters as bycatch (to look at age class information).
89. The Chair suggested that in examining the spatial footprint of the bycatch more closely, using a gridded approach by month may help dampen the influence of the high outlier data in March and provided a more robust overall estimated of annual bycatch levels.
90. An industry member noted that there are two migrations of lobsters often observed in the Torres Strait, the first being the annual spawning migration later in the year where breeding lobsters march off into the Gulf of Papua which generally has a greater proportion of females to males. However there are theories about 1+ lobsters migrating from the South East corner in to the Torres Strait which is not captured in the annual pre-season lobster survey. If these lobsters in fact do recruit to the Torres Strait and become part of the fishery, that could be one reason for any discrepancies between the survey and catches of 2+ lobsters later on.
91. There are old reports from the 1970s where high numbers of juvenile TRL were being caught by trawl boats around Dugong Island and aeroplane sandbanks, though there are no firm records to verify this. If in fact the high number of lobsters caught in March are 1+ lobsters, this would reaffirm the theory of 1+ lobster migration during through the trawling grounds at that time of year. However, the RAG noted that from the data available, there appeared to be no trawling

effort around Dugong Island indicating that the high lobster counts in March occurred within the Great North East Channel.

92. The RAG noted that although individual weights of lobsters were not recorded after 2012, carapace length data is collected on all lobsters (which can be used to convert into weight data and categorise into 1+ and 2+ age classes). CSIRO added that these data were not part of the data they received and so AFMA will undertake another data extract of the available observer data to ensure that all available length data is also included.
93. The RAG noted that reporting of bycatch in the TSPF is challenging, which is why independent monitoring is required through observers, but that TRL is a species of interest for the TSPF which places greater emphasis on the collection of data for species like TRL. CSIRO also noted that cross-correlation with available logbook data is another avenue that can be used in the analysis (with respect to extrapolating observer data).
94. Noting that the observer coverage in the TSPF is as random as practically possible in terms of vessel selection and subsequent temporal scaling of the data, the Chair suggested that future analyses may need to be pooled over years and this may also address confidentiality issues. AFMA added that although there is generally two observer TSPF trips undertaken each year, there is scope to do more targeted observer trips to better suit the value of the data for the TRL fishery, provided it aligns with the AFMA observer program needs.
95. The RAG would first need to consider what kinds of further analyses would be beneficial, which in turn would help guide the timing for future observer trips in the TSPF that may improve the value of the observer data to the TRL Fishery.
96. The RAG acknowledged that these analyses were not part of CSIRO's contracted work but it has created a very valuable baseline for future analyses. AFMA expressed that this work is a high priority and AFMA is supportive for this agenda item to be a standing item for the RAG's consideration noting that it is an important issue at the bilateral level and specific objective of the PZJA. Any future analyses of the data are subject to available resourcing.
97. **Subject to future resourcing, the RAG recommended to continue further analysis of the available observer data from the TSPF with the aim of getting an annual assessment of likely TRL catch to be included in the TRL stock assessment and eHCR, noting that the extrapolation method will need to be revised, and noting that further analysis presents opportunities for potential investigation of other species of interest in other Torres Strait fisheries such as sea cucumbers.**

ACTION ITEM – AFMA to ensure that all available length data for TRL in the TSPF observer data is provided to future analysis.

9 Research priorities

98. This agenda item was deferred until the next RAG meeting.

10 Other business

99. No other business was nominated for discussion.

11 Date and venue of next meeting

100. On behalf of the RAG, the Chair thanked and congratulated the AFMA member, Selina Soute for her seven years of dedicated service as Senior Manager of Torres Strait Fisheries.
101. The RAG noted that the dates and venues for future RAG meetings will be discussed out of session.

102. The 32nd TRL RAG meeting was closed in prayer at 4:22pm on Wednesday 15 December 2021.

Declaration of interests

Dr Ian Knuckey – October 2021

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 –	SESSF Shark Resource Assessment Group
Scientific Member –	SESSF Great Australian Bight Resource Assessment Group
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
Member –	Victorian Marine and Coastal Council
Member –	The Geelong Agri Collective

Fishwell current projects:

DAWE Project	Multi-sector fisheries capacity building
AFMA 2020-0807	Bass Strait Scallop Fishery Survey – 2020-22
AFMA 2019-0836	Information the Bass Strait Central Zone Scallop Fishery Harvest Strategy and TAC setting process with economic data and MEY proxies
FRDC project	Principal Investigator for SA Peak Industry body project
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 2019-072	A survey to detect change in Danish Seine catch rates of Flathead and School Whiting resulting from CGG seismic exploration.
FRDC 2019-129	Potential transition of shark gillnet boats to longline fishing in Bass Strait - ecological, cross-sectoral, and economic implications
FRDC 2018-021	Development and evaluation of SESSF multi-species harvest strategies
Traffic Project	Shark Product Traceability
NT Fisheries	Design and implementation of a tropical snapper trawl survey
Sea Cucumber Ass.	Design and implementation of various sea cucumber dive surveys.
Australia Bay	Queensland Gulf of Carpentaria Developmental Fin Fish Trawl Fishery
Tas. Abalone	Scientific Advisor for Tasmanian Abalone Council Ltd
PEMSEA	Developing EAFM Plan for Red Snapper in Arafura and Timor Seas
Beach Energy	BACI study of Prion Marine Seismic Survey impacts relative biomass of scallops on beds in the immediate vicinity.
Expert Witness	Gladstone Harbour development impact

**TROPICAL ROCK LOBSTER RESOURCE ASSESSMENT
GROUP 32****Wednesday 15 December 2021 9am – 5pm****The Sebel, Cairns / Video conference****ADOPTED AGENDA****1 PRELIMINARIES****1.1 Welcome and apologies**

The Chair will welcome members and observers to the 32nd 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 this 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 Island) Corporation RNTBC.

3 CATCH AND EFFORT ANALYSES FOR THE 2020-21 FISHING SEASON

The RAG will be invited to discuss TRL fishery catch and effort data for the 2020-21 fishing season, including catch-per-unit-effort (CPUE) analyses to be presented by the CSIRO.

4 RESULTS OF THE NOVEMBER 2021 PRE-SEASON SURVEY

The RAG is invited to discuss the results of the November 2021 pre-season survey to be presented by the CSIRO.

5 RECOMMENDED BIOLOGICAL CATCH

The RAG will be invited to provide advice on a recommended biological catch (RBC) for the TRL Fishery for the 2021-22 fishing season, based on estimates derived through the application of the empirical harvest control rule (eHCR). The RAG will also consider the options for managing the lower than expected total catch value for the 2021-22 fishing season and its implications for applying the eHCR, as per the recommendations of TRLRAG 31 (12 October 2021), to be presented by the CSIRO.

6 COMPLIANCE MONITORING AND REPORTING OF DISCARDS

(NEW)

Traditional inhabitant members requested this agenda item to discuss the issue of reporting and compliance monitoring of discards in the fishery to ensure accurate reports of the total amount of lobsters being taken from the fishery.

7 OVERVIEW OF THE QUEENSLAND EAST COAST TRL FISHERY STOCK ASSESSMENT

The RAG is invited to note an overview of the Queensland East Coast TRL Fishery Stock Assessment presented by Fisheries Queensland Scientist, Fay Helidoniotis. Given that both the Torres Strait and Queensland East Coast fisheries are considered part of a single population, it is useful for the TRLRAG and the Queensland TRL Working Group liaise together on the stock assessments for the TRL fisheries and ensure consistency where possible.

8 INTERACTIONS BETWEEN THE TRL AND TORRES STRAIT PRAWN FISHERY

The RAG is invited to note a presentation from CSIRO on the results of the preliminary analyses of available observer data on TRL bycatch in the Torres Strait Prawn Fishery (TSPF) as collected from the AFMA Observer Program from 2007 to 2019.

9 RESEARCH PRIORITIES

The RAG will be invited to discuss and provide advice on future research priorities for the TRL Fishery.

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 discuss a suitable date for the next RAG meetings.

The Chair must approve the attendance of all observers at the meeting. Individuals wishing to join the meeting as an observer must contact the Executive Officer – Georgia Langdon (georgia.langdon@afma.gov.au)

Timeline of key events in the Torres Strait Tropical Rock Lobster Fishery¹
Last updated December 2022

Commonly used acronyms and terms:

- **FMN** means Torres Strait Fisheries Management Notice.
- **FMI** means Torres Strait Fisheries Management Instrument.
- **LN** means Logbook Notice
- **PZJA** means Protected Zone Joint Authority.
- **TRL** means Tropical Rock Lobster.
- **TRL Fishery** means the Torres Strait Tropical Rock Lobster Fishery.
- **Instrument** means the *Torres Strait Fisheries (Tropical Rock Lobster) Management Instrument 2018*
- **Management Plan** means the *Torres Strait Fisheries (Quotas for Tropical Rock Lobster (Kaiar)) Management Plan 2018*

Time period	Topic/Keywords	Description
Late 1960's	Fishery development	Commercial fishing for TRL by the non-Traditional Inhabitant sector began in the Torres Strait
1970s-1980s	Fishery development	Traditional Inhabitant fishers begin to enter the fishery.
Dec-1978	Treaty, PNG	Torres Strait Treaty signed
Feb-1985	Legislation, regulations, PZJA	Torres Strait Treaty entered into force, <i>Torres Strait Fisheries Act 1984</i> and <i>Torres Strait Fisheries Regulations 1985</i> commenced and the PZJA is established
Feb-1985	Regulations	Under FMN 1: <ul style="list-style-type: none">• Method restrictions introduced - only diving, collection by hand and use of spear permitted
Feb-1985	PNG, catch sharing	Agreement between PNG and Australia for the joint management of the TRL fishery concluded.

¹ This is intended to be a living document and is to be updated as key events happen.

Time period	Topic/Keywords	Description
Jul-1985	Regulations	Under FMN 9 (replaced FMN 1): <ul style="list-style-type: none"> Method restrictions amended to introduce a time period within which the method restrictions are in place – only diving, collection by hand and use of spear permitted between 15 Jul-31 Oct
Jan-1986	Management arrangements	Introduction of prohibition on prawn trawlers taking TRL during the annual migration period (1 Jul-31 Oct) in order to reduce fishing pressure on the lobster population - in place until 1987, when all prawn trawlers were prohibited from taking TRL
Jun-1986	Regulations	Under FMN 12 (replaced FMN 9): <ul style="list-style-type: none"> Method restrictions amended to change the dates between which methods are restricted – only diving, collection by hand and use of spear permitted between 1 July - 31 October only
Mar-1988	Regulations	Under FMN 19: <ul style="list-style-type: none"> Introduction of prohibition on the take, processing or carrying of TRL by boats with a prawn endorsement
Jun-1988	Regulations	Under FMN 22: <ul style="list-style-type: none"> Minimum size limit introduced - 100 mm tail length
Oct-1988	Regulations	Under FMN 24 (replaced FMN 12): <ul style="list-style-type: none"> Method restrictions amended - only diving, collection by hand and use of spear permitted, no underwater breathing apparatus except hookah, no underwater mechanical propulsion Introduction of exemption which can be sought for some method restrictions, specifically the use of underwater breathing apparatus and underwater mechanical propulsion Traditional fishing bag limits introduced - 3 per person up to 6 per boat
October 1988	Management objectives	PZJA agrees to six key management objectives for the fishery: <ul style="list-style-type: none"> - To conserve the stock of tropical rock lobster - To maximise the opportunities for traditional inhabitants of both countries to participate, including by managing the fishery for tropical rock lobster as a dive fishery - To promote the dive fisheries for tropical rock lobster in Torres Strait - Encouragement and facilitation of participation by Australian traditional inhabitants for whom future expansion of the fishery should be reserved - Containment of the capacity of the existing commercially licensed fleet and elimination of entrepreneurial speculation and subsequent upgrading/replacement of commercially licensed dinghies with large boats

Time period	Topic/Keywords	Description
		- To minimise impact of any new management measures on existing operators.
March 1989	Traditional Inhabitant access, identification, definition	Tropical Rock Lobster Working Party agrees to Island Coordinating Council suggestion that “amnesty” Papua New Guineans be considered Traditional Inhabitants for fisheries management purposes. Following this, PZJA agrees to “measures to be used for identifying those Papuans resident in Torres Strait who should be treated as Australian traditional inhabitants for all fisheries management and enforcement purposes, including community fishing rights” in the fishery.
Aug-1989	Regulations	Under FMN 31 (replaced FMN 24): <ul style="list-style-type: none"> No substantive changes to FMN 24
November 1989	PNG, catch sharing, cross-endorsement	Catch-sharing arrangements for the fishery agreed by PNG and Australia. 27 PNG lobster dinghies to be allowed to operate in Australian TSPZ waters, while Australian operations in PNG waters are precluded.
1989	Management arrangements, fishery surveys	Fishery independent surveys commence in the TRL Fishery
February 1990	PNG, catch sharing, cross-endorsement	Catch-sharing arrangements come into effect 15 February, but no PNG boats begin fishing.
Oct-1990	Regulations	Under FMN 34 (replaced FMN 22): <ul style="list-style-type: none"> No substantive changes to FMN 22
1991-1992	Traditional Inhabitant access, identification, definition	PZJA establishes a working group to consider the involvement in PZJA fisheries of Torres Strait Islanders and Aboriginals living in the Northern Peninsula Area of Cape York and Australian citizens of Papua New Guinean origin.
June 1991	PNG, catch sharing, cross-endorsement	Cross-endorsements issued to 4 PNG mother ships with 18 dinghies on 14 June. PNG boats agreed to respect home reefs closures, not go ashore on Australian territory, and make no contact with Australian inhabitants, Australian vessels, or PNG traditional fishers.
Jun-1992	Native title	Mabo High Court decision recognises existence of native title (Aboriginal and Torres Strait Islander rights and interests to land and waters according to their traditional law and customs)

Time period	Topic/Keywords	Description
1993	Community licensing	Concerns about the current licensing systems run by the PZJA and Queensland for community fishing begin to be raised by Island Coordinating Council. Concerns include that Traditional Inhabitants living outside the Island Coordinating Council area are excluded from obtaining licences, the administrative and financial burden placed on island councils by the systems, a lack of detailed information to inform fisheries management decisions, and the fact that island chairmen rather than individual fishers are legally responsible for any fishing violations.
February 1993	PNG, catch-sharing, cross-endorsement	New PNG catch-sharing arrangements commence on 15 February 1993 for a three-year period to 14 February 1996. Allow for cross-endorsement of 27 PNG dinghies and associated freezer boats. Nominations received for cross-endorsement of 3 PNG TRL freezer boats with 27 associated dinghies.
Oct-1993	Regulations	Under FMN 38 (replaced FMN 31): <ul style="list-style-type: none"> • Introduction of prohibition on taking TRL using hookah between 1 Oct-30 Nov • Traditional fishing bag limits amended - 3 without a boat, 3 with 1 person in a boat, 6 with more than 1 person in a boat • All other requirements remained unchanged - method restrictions
Dec-1993	Native title, legislation	<i>Native Title Act 1993</i> commences, legislating the framework for recognition of native title (including over maritime areas) in Australia following the High Court's Mabo decision. The Act covers the determination of whether native title exists, acts affecting native title, and compensation for acts affecting native title.
1994	Logbooks	Noted under LN 8: <ul style="list-style-type: none"> • Tropical Rock Lobster Logbook TRL02 implemented – voluntary, records frozen tails only
1994	Legislation, TSRA	Torres Strait Regional Authority established under the <i>Aboriginal and Torres Strait Islander Commission Act 1989</i>
April-June 1995	Single jurisdiction, licensing	PZJA establishes Task Force to investigate the feasibility of introducing single jurisdiction fisheries management and to advise on matters such as eligibility criteria for entry to the newly created fisheries. Investment warning is issued.
Jul-1995	Regulations	Under FMN 42 (amended FMN 38): <ul style="list-style-type: none"> • No changes to regulation of fishing provided under FMN 38. Amendments made to correct a drafting error that excluded several words from the section relating to bag limits for traditional fishing.
October 1996	Single jurisdiction, licensing,	PZJA endorses single jurisdiction (the management of all Torres Strait fisheries by the PZJA, rather than a division of responsibility between the PZJA and the Queensland government) and the Task Force's

Time period	Topic/Keywords	Description
	community licences, TIB licensing	recommendations for licensing reform. Due to opposition from Islander representatives, related to broader issues such as autonomy and the desire for a regional agreement for Islander control over Torres Strait waters, the implementation of these reforms was delayed and then boycotted until agreement was reached in 1999.
Mar-1997	Regulations	Under FMN 44 (amended FMN 38): <ul style="list-style-type: none"> Method restrictions amended - only collection by hand, use of spear or other handheld implement permitted, no underwater breathing apparatus except hookah, no underwater mechanical propulsion
May-1997	Logbooks	Under LN 8: <ul style="list-style-type: none"> Tropical Rock Lobster Logbook TRL03 implemented – both TRL02 and TRL03 mandatory for boats with freezing capacity, records both live and frozen tails
Apr-1998	Regulations	Under FMN 48 (replaced FMN 34): <ul style="list-style-type: none"> Minimum size limits amended - 80 mm carapace length, 100 mm tail length
1999	Traditional Inhabitant access, identification, definition	PZJA agrees that children of “amnesty” Papua New Guineans be considered Traditional Inhabitants, following the 1989 decision to include “amnesty” people within the definition of Traditional Inhabitants.
July-December 1999	Single jurisdiction, licensing, community licences, TIB licensing	Islander representatives propose a series of principles to underlie community licensing, consistent with the previously proposed system.
Apr-2000	Single jurisdiction, licensing, community licences, TIB licensing	Following a meeting between the PZJA and Islander representatives, the Traditional Inhabitant Boat (TIB) licence is introduced for a one year trial period.
Nov-2001	Regulations	Under FMN 58 (replaced FMN 38, 42, 44, 48): <ul style="list-style-type: none"> Introduction of fishery closure from 1 Oct-30 Nov (revoking previous prohibition on taking TRL using hookah between 1 Oct-30 Nov). Exemption from closure but bag limits apply - 3 without a boat, 3 with 1 person in a boat, 6 with more than 1 person in a boat

Time period	Topic/Keywords	Description
		<ul style="list-style-type: none"> • Introduction of prohibition on taking or carrying of TRL while using, or in the possession of, hookah gear between 1 Oct-31 Jan • All other requirements remained unchanged - method restrictions, minimum size limits
2002	Legislation, TSRA, PZJA	<i>Torres Strait Fisheries Act 1984</i> is amended to make the Torres Strait Regional Authority Chairperson a member of the Protected Zone Joint Authority
Nov-2002	Latent effort, fishery participation	A 30% reduction in the number of tenders attached to each non-Traditional Inhabitant licence package was implemented, except where only 1 tender exists, in which case the tender will be entitled to continue working. This was done in order to reduce latent effort in the fishery and restrict expansion of effort by non-Traditional Inhabitant fishers. This arrangement was in place until 2011.
November 2002	Traditional Inhabitant access, Skehill report, management objectives	Skehill report – “A Fair Share of the Catch” – is delivered, evaluating Torres Strait fisheries and establishing an order of priority for their management. Recommends Traditional Inhabitants be given priority of access to the TRL Fishery.
Dec-2002	Regulations	Under FMN 62: <ul style="list-style-type: none"> • Introduction of prohibition of processing or carrying TRL meat removed from the shell on a boat. Exemption provided for traditional fishing.
Dec-2003	Latent effort	Cap on Traditional Inhabitant licences for boats greater than 6 m with a TRL Fishery endorsement – in place until 2006
Late 2003	Logbooks	Torres Strait Seafood Buyers and Processors Docket Book (TDB01) implemented – voluntary
Jun-2003	Logbooks	Under the <i>Torres Strait Fisheries Logbook Instrument No. 1</i> : <ul style="list-style-type: none"> • Tropical Rock Lobster Logbook TRL04 implemented – mandatory for all non-Traditional Inhabitant operators
Jan-2005	Management arrangements	Moon-tide hookah closures (a periodic closure on the use of hookah gear three days either side of the full or new moon each month during between February and September) introduced – first implemented in 2005 as a way to reduce fishing effort to levels recorded in 2002. In 2013 the closures were removed following a buy-out of non-Traditional Inhabitant licences however were reintroduced in 2014 following agreement from both the sectors, and continue to date

Time period	Topic/Keywords	Description
Jul-2005	Management plan	PZJA agreed to create a plan of management to implement a quota management system in the fishery.
July 2005	Allocation	PZJA agrees to transition to initial 50:50 sectoral split in the fishery, brought about by government funded buyout, with a later goal of a 70:30 split between Traditional Inhabitants and non-Traditional Inhabitants, funded by an "open market and self-funded tender process".
2006	TAC	Notional total allowable catches implemented (notional as allocation had not yet been undertaken nor a management plan developed)
Mar-2006	Regulations	<p>Under FMN 73 (replaced FMN 58, 62):</p> <ul style="list-style-type: none"> • Introduction of fishery closure from 1-30 Nov (revoking previous fishery closure from 1 Oct-30 Nov). Exemption from closure for traditional fishing only but bag limits apply - 3 without a boat, 3 with 1 person in a boat, 6 with more than 1 person in a boat • Introduction of prohibition on carriage of diving equipment between 1900-0600 AEST. Exemption can be sought, but all diving equipment (face mask and fins) in possession of that person, or on board the boat, is stowed and secured during the prohibited hours. ES states that this was implemented in response to concerns that night diving may occur in the Fishery • All other requirements remained unchanged - method restrictions, prohibition of processing or carrying TRL meat, minimum size limits, hookah gear restrictions
April 2006	IAAP, allocation	PZJA agrees to create an Independent Allocation Advisory Panel (IAAP) to advise on the appropriate basis for the allocation of fishing concessions in the non-Traditional Inhabitant sector.
Sep-2006	Regulations	<p>Under FMN 80 (replaced FMN 73):</p> <ul style="list-style-type: none"> • Correction made to error in FMN 73 regarding the fishery closure, reinstated to 1 Oct-30 Nov. Exemption from closure for traditional fishing only but bag limits apply - 3 without a boat, 3 with 1 person in a boat, 6 with more than 1 person in a boat • All other requirements remained unchanged - method restrictions, prohibition of processing or carrying TRL meat, minimum size limits, hookah gear restrictions, prohibition on carriage of diving equipment between 1900-0600 AEST
Jun-2007	IAAP, allocation	PZJA agrees to final Independent Allocation Advisory Panel (IAAP) report and a sectoral catch share ratio of 35:65 between the Traditional Inhabitant and non-Traditional Inhabitant sectors as detailed in the 'Report to stakeholders on the data used to establish the historical catch ratios of the Community and non-community sectors'

Time period	Topic/Keywords	Description
Apr-2008	Buyback, structural adjustment	Australian Government buy-back of non-Traditional Inhabitant licences. 13 primary licences and 29 associated tenders removed from the TRL Fishery. Based on the provisional allocations associated with the 'bought-out' licences the sectoral catch share between the Traditional Inhabitant and non-Traditional Inhabitant sectors changed to 53.5:46.5.
2008	Conversion factor	TRL tail to whole weight conversion ratio (2.677) implemented
2009	Harvest strategy	Interim Harvest Strategy implemented for the TRL Fishery in response to the planned transition to a quota management system, laying out the biological objectives for the fishery and how this could be achieved.
Mar-2010	Environment	Torres Strait coral bleaching event
Aug-2011	Regulations	<p>Under FMI 9 (replaced FMN 80):</p> <ul style="list-style-type: none"> • Application of arrangements extended to PNG Treaty endorsed operators • All other requirements remained unchanged – method restrictions, prohibition of processing or carrying TRL meat, minimum size limits, hookah gear restrictions, prohibition on carriage of diving equipment between 1900-0600 AEST, fishery closure. <p>FMI 9 was intended to amend an administrative oversight that had excluded cross-endorsed fishers from the provisions of FMN 80.</p>
Apr-2012	Buyback, structural adjustment	Based on a further buy-out of one licence (1 primary and 1 tender) the sectoral catch share between the Traditional Inhabitant and non-Traditional Inhabitant sectors changed to 56.2:43.8
7-Aug-2013	Native title, sea claim	The High Court hands down decision regarding Torres Strait Sea Claim Part A. The decision overturned the Full Federal Court decision from March 2012 and found that the native title rights in the sea claim area include the right to take fish for commercial or trading purposes. This was found to be a non-exclusive right, and native title holders are still required to hold the appropriate licences and abide by the relevant laws and regulations.
2014	Fishery participation, Traditional Inhabitant access, 100% ownership	The Protected Zone Joint Authority acknowledges and supports the aspiration of Torres Strait Communities to own 100% of access to commercial Fisheries in the Australian area of the Torres Strait Protected Zone

Time period	Topic/Keywords	Description
May-2014	Native title	Malu Lamar (Torres Strait Islander) Corporation is appointed as the Registered Native Title Body Corporate for the Sea Claim Area Part A.
Mar-2016	Environment	Torres Strait coral bleaching and sea cage mortality event
Oct-2016 to Oct-2017	Buyback, structural adjustment	Based on a further buy-out of three licences (3 primaries and 7 tenders) the sectoral catch share between the Traditional Inhabitant and non-Traditional Inhabitant sectors changed to 66.17:33.83
Jul-2017	Vessel monitoring	Vessel monitoring system (VMS) implemented – mandatory for primary boat and/or operating with a Carrier Boat License (Class A, B, or C). Vessels operating for freight shipping are exempt from installing VMS. Exemptions may also be provided for carrier vessels that are six meters or less in length.
Dec-2017	Logbooks	Torres Strait Fisheries Catch Disposal Record (TDB02) implemented – mandatory for all Torres Strait licence holders
10-Apr-2018	Management arrangements	Following a low Recommended Biological Catch, additional moon-tide hookah closures introduced covering all new and full moon periods for the remainder of the 2017-18 fishing season, in order to slow down fishing effort and provide the TIB sector with the longest possible fishing season, avoiding an early closure of the fishery.
27-Apr-2018	Management arrangements, hookah	Prohibition on the carriage and use of hookah gear for the remainder of the 2017-18 fishing season.
29-Jun-2018	Management arrangements, hookah	Federal Court of Australia order to revoke prohibition on the carriage and use of hookah gear – reverted to additional moon-tide hookah closures.
20-Jul-2018	Regulations	Under the TRL Management Instrument 2018 (replaced FMI 9): <ul style="list-style-type: none"> • Traditional fishing bag limits removed. Noted that PZJA does not have jurisdiction in relation to traditional fishing conducted by Traditional Inhabitants • Introduction of capacity to close the TRL Fishery early to commercial fishing, when the total allowable catch is reached • Introduction of capacity to prohibit the use of hookah gear (i.e. moon-tide hookah closures) during the hookah season (1 Feb-30 Sep)

Time period	Topic/Keywords	Description
		<ul style="list-style-type: none"> All other requirements remained unchanged – method restrictions, prohibition of processing or carrying TRL meat, minimum size limits, hookah gear restrictions, prohibition on carriage of diving equipment between 1900-0600 AEST, fishery closure
31-Jul-2018	Management arrangements	TRL Fishery closed for the remainder of the 2017-18 fishing season due to total allowable catch being reached.
1-Dec-2018	Management plan	<i>Torres Strait Fisheries (Quotas for Tropical Rock Lobster (Kaiar)) Management Plan 2018</i> commenced
1-Dec-2018	Regulations	<p>Under the TRL Management Instrument 2018 (amendment to Jul-2018 Instrument):</p> <ul style="list-style-type: none"> Ability to close the TRL Fishery early to commercial fishing revoked Implementation of a split of the total allowable catch for the TRL Fishery between the Traditional Inhabitant (66.17% of the total allowable catch) and non-Traditional Inhabitant sectors – applied from 1 Dec 2017-30 Sep 2018 only Introduction of capacity to close of the TRL Fishery to the Traditional Inhabitant sector once their part of the total allowable catch is reached – applied from 1 Dec 2017-30 Sep 2018 only Provide for individual transferrable quota arrangements to be established for the non-Traditional Inhabitant sector via licence conditions – applied from 1 Dec 2017-30 Sep 2018 only Provide for the operation of the proposed Management Plan should the quota allocation process be finalised before the start of the 2019-20 fishing season All other requirements remained unchanged – method restrictions, prohibition of processing or carrying TRL meat, minimum size limits, hookah gear restrictions, prohibition on carriage of diving equipment between 1900-0600 AEST, fishery closure, moon-tide hookah closures
16-Sep-2019	Management plan, allocation	<p>Quota units allocated under the Management Plan:</p> <ul style="list-style-type: none"> 662,016 quota units to the Torres Strait Regional Authority (TSRA) comprising: 562,000 to hold for the benefit of the traditional inhabitant sector; and 100,016 for the TVH licences it holds 337,981 quota units to the remaining TVH principal licence holders
19-Nov-2019	Harvest strategy	PZJA adopts final Harvest Strategy for the TRL Fishery
1-Dec-2019	Management plan, management arrangements	TRL Fishery commences operation under a quota management system as per the Management Plan

Time period	Topic/Keywords	Description
Early 2020	Markets, price, export	<ul style="list-style-type: none"> • Live export market into China closed temporarily prior to 2020 Chinese New Year. • Prices in the fishery were down significantly, similar to lowest prices on record in 2002-03. • TVH boats in Torres Strait and QLD East Coast were forced to stop fishing. • Whole frozen product only purchased at reject prices. • COVID-19 impacts affect flights and freight routes from Australia to Asian markets
~ October 2020	Markets, export, Cadmium	China began to increase inspection levels and testing of cadmium in Australian live lobster at the point of entry in major Chinese ports, causing considerable delays while inspection and testing was being undertaken. This resulted in high mortality rates of lobster product (not Torres Strait product).
November 2020	Markets, export	China formally notified the DAWE of two instances of non-compliance of lobster shipments with detections of cadmium above the maximum levels set by the Chinese Government.
November 2020	Management Plan, allocation	The PZJA (meeting 36) agreed to amend the TRL Management Plan to provide the PZJA with additional time in which to commence a review of the allocation of quota units to the Traditional Inhabitant sector, to within 4 years of the Plan commencement.
December 2020	Markets, export	China banned the import of Australian lobster product
December 2020	Wildlife Trade Operation	On 4 December 2020 the TRL Fishery was re-accredited as an approved Wildlife Trade Operation (WTO) under the <i>Environment Protected and Biodiversity Conservation Act 1999</i> .

TROPICAL ROCK LOBSTER RESOURCE ASSESSMENT GROUP (TRLRAG) Thursday Island	MEETING 33 13-14 December 2022
PRELIMINARIES Out-of-session correspondence	Agenda Item 1.5 For NOTING

RECOMMENDATIONS

1. That the RAG **NOTE** the correspondence sent out-of-session since the last TRLRAG meeting held on 15 December 2021 (TRLRAG 32).

BACKGROUND

2. The following correspondence was circulated out-of-session since the last TRLRAG meeting held on 15 December 2021 (TRLRAG 32). Copies of this correspondence can be requested at any time from the TRLRAG Executive Officer.

Date	Item
21 December 2021	AFMA circulated the draft meeting record from TRLRAG 32 for member comment.
7 January 2022	AFMA reminded RAG members that comments were being sought on the draft meeting record from TRLRAG 32 with comments due by 12 January 2022.
28 January 2022	Following closure of the member comment period, AFMA circulated a final clean version of the TRLRAG 32 meeting record as well as a tracked change version illustrating the comments received. The meeting record was also posted on the PZJA website.
9 February 2022	AFMA sought feedback from TRLRAG members on research proposals received as part of the 2022-23 Torres Strait Scientific Advisory Committee (TSSAC) research call.
2 March 2022	AFMA sought feedback from TRLRAG members on an additional research proposal for a climate change project to also be considered for funding in the 2022-23 financial year. Comments on the proposal were due by 18 March 2022.
26 August 2022	AFMA circulated an update on TSSAC research funding matters, including: <ul style="list-style-type: none"> - The outcomes of the 2022-23 funding round; - A research proposal for the 2023-24 limited budget research funding cycle; and - An update on the changes to the TSSAC research cycle timeline.
3 November 2022	AFMA notified TRL RAG members of the 33 rd TRLRAG meeting to be held on 14 December 2022 and circulated a draft agenda to members for comment.

7 November 2022	AFMA circulated a revised version 2 of the draft TRLRAG 33 agenda, seeking comments by 11 November 2022.
18 November 2022	For information – AFMA circulated information to TRL WG members about the management arrangements for the 2022-23 TRL Fishing season.
1 December 2022	AFMA circulated the final meeting papers for TRLRAG 33, noting that some technical papers/attachments were pending while CSIRO complete their scientific analyses. A revised draft agenda (v3) was also circulated which had research priorities removed as an agenda item for this meeting.

TROPICAL ROCK LOBSTER RESOURCE ASSESSMENT GROUP (TRLRAG) Thursday Island	MEETING 33 13-14 December 2022
UPDATES FROM MEMBERS Industry & Scientific members	Agenda Item 2.1 For NOTING

RECOMMENDATIONS

1. That the RAG **NOTE** updates provided by industry and scientific members.

BACKGROUND

2. Verbal reports are sought from industry and scientific members under this item, with particular emphasis on market and export impacts to the previous fishing season and the start of the 2022-23 season.
3. It is important that the RAG develops a common understanding of any strategic issues, including economic, fishing and research trends relevant to the management the TRL Fishery. This includes within adjacent jurisdictions. This ensures that where relevant, the RAG is able to have regard for these strategic issues and trends.
4. RAG members are asked to provide any updates on trends and opportunities in markets, processing and value adding. Industry is asked to contribute advice on economic and market trends where possible. Scientific members are asked to contribute advice on any broader strategic research projects or issues that may be of interest to the Torres Strait in future.
5. At the last meeting of the RAG (TRLRAG 32), the RAG noted updates provided by industry members and observers regarding the performance of the TRL Fishery during the 2021-22 season, in particular that:
 - a) Fishing effort was as high as previous years, and likely contributed to the undercaught TAC. Industry members attributed this to the impacts of COVID-19, increased fuel prices and at times, limited fuel availability and low buying prices associated with changed Chinese markets.
 - b) Observations in the eastern islands indicate that there had been some unusual movement and/or location of crays (around Erub), with movement heading towards the central islands (Poruma) since the start of the 2021-22 season. This type of movement (in terms of good catches from this area) had not been seen in the past few years.
 - c) An ongoing obstacle for vessel operators not being able to catch the TAC was due to the crewing restriction policy and being unable to employ non-traditional inhabitant divers.
 - d) Since the start of the 2021-22 season, early catches had been mainly coming from the central and eastern parts of the Torres Strait, with less coming from the western side.
 - e) Australia was still unable to send Australian TRL product directly into China. Any live lobster being sold is being sent to South East Asia. Prices are intermediate. For the first time in months (at the time of the TRLRAG 32), MG Kailis had been able to secure a shipment of live lobster out of Daru direct to Cairns.

TROPICAL ROCK LOBSTER RESOURCE ASSESSMENT GROUP (TRLRAG) Thursday Island	MEETING 33 13-14 December 2022
UPDATES FROM MEMBERS Government agencies	Agenda Item 2.2 For NOTING

RECOMMENDATIONS

1. That the RAG:

- a. **NOTE** the written update provided by the Australian Fisheries Management Authority (AFMA) below;
- b. **NOTE** the written update provided by Queensland Department of Agriculture and Fisheries (QDAF); and
- c. **NOTE** the written update provided by the Torres Strait Regional Authority (TSRA).

KEY ISSUES

Australian Fisheries Management Authority

Wildlife Trade Operation (WTO) Approval under the EPBC Act 1999 – Annual Report

2. The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) requires the Australian Government to assess the environmental performance of all commercial fisheries, including those in the Torres Strait, and promote ecologically sustainable fisheries management. Approval under the EPBC Act is necessary for fisheries to be able to legally export commercially wild caught seafood from Australia. Such approvals may be subject to conditions applicable to the responsible management authority and fishers.
3. The Torres Strait TRL Fishery was first accredited as an approved Wildlife Trade Operation (WTO) in November 2004 for a period of three years and was subsequently reassessed and re-approved in 2007, 2011, 2014, 2017 and 2020.
4. The fishery was last assessed in 2020 and, as of 4 December 2020, was declared by the Delegate for the Minister of the Environment, as an approved WTO under the EPBC Act until 4 December November 2023 subject to several conditions being addressed during the period of the approval. The advice from the Delegate to AFMA on the WTO approval and the conditions imposed on the Torres Strait TRL Fishery is provided as **Attachment 2.2a**.
5. A WTO annual report is required to be submitted to the Department of Climate Change, Energy, the Environment and Water (DCCEEW) each year. The annual report for the TRL Fishery was due on 4 December 2022 and was submitted to the DCCEW on 29 November 2022 and is provided in **Attachment 2.2b**. The report includes a summary of progress against each condition and recommendation in the 12 months since the last annual report was submitted on 27 October 2021.

ABARES fishery status report

6. Each year, the Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES) compiles fishery status reports which provide an independent assessment of the biological status of fish stock and the economic status of fisheries managed, or jointly managed by the Australian Government (Commonwealth fisheries).
7. The latest ABARES Fishery Status Report 2022 (covering the performance of fisheries in 2022) was released in November 2022. The reports assess all key commercial species from Commonwealth managed fisheries and examines the broader impact of fisheries on the environment, including on non-target species.
8. In summary, the TRL Fishery has been assessed for the 2021 period as outlined below.
9. ABARES fishery status reports can be accessed on the ABARES website at:

<https://www.agriculture.gov.au/abares/research-topics/fisheries/fishery-status>

TABLE 16.1 Status of the Torres Strait Tropical Rock Lobster Fishery

Biological status					
Stock	2020		2021		Comments
	Fishing mortality	Biomass	Fishing mortality	Biomass	
Tropical rock lobster (<i>Panulirus ornatus</i>)					Fishing mortality is less than the recommended biological catch. Spawning stock biomass is above the target reference point.

Economic status

Economic status of the fishery is uncertain. Real GVP declined over the period 2010–11 to 2020–21, with the decline being driven by lower catch volumes. Although rock lobster prices increased in the early part of this period, supporting GVP, prices declined sharply after the onset of the COVID-19 pandemic in early 2020.

Note: **GVP** Gross value of production.

Fishing mortality	■ Not subject to overfishing	■ Subject to overfishing	■ Uncertain
Biomass	■ Not overfished	■ Overfished	■ Uncertain

Management arrangements for the 2022-23 fishing season

10. A letter was sent to all Torres Strait Tropical Rock Lobster Fishery (TRL Fishery) licence holders on 18 November 2022 (**Attachment 2.3d**). The letter detailed key management arrangements that will apply for the 2022-23 fishing season, including moontide hookah closures and the start of season 200 tonne TAC.
11. Enclosed to the letter was a copy of the new Tropical Rock Lobster Fishery Management Arrangements Booklet 2022-23 which was also made publicly available on the PZJA website.

AFMA Compliance update

12. From 1 July 2018, AFMA has been delivering domestic compliance functions in the Torres Strait in accordance with the National Compliance and Enforcement Program. There are three compliance officers based in the Thursday Island office delivering both domestic and foreign compliance outcomes. Further details are contained in AFMA's National Compliance and Enforcement Program document accessible on the AFMA website at: <https://www.afma.gov.au/domestic-compliance>. This document explains AFMA's compliance program priorities and objectives for the 2022-2023 financial year.
13. AFMA recommenced business as usual operational field activities in late 2021 and continues to conduct these activities in accordance with best practice, mandatory social distancing, and hygiene and in accordance with guidelines developed for field activities. In April 2022 Australia reopened its international borders after 2 years due to COVID-19. PNG Treaty village visits are being planned for the coming year.
14. With the support of partner agencies including Queensland Police and the Australian Border Force, AFMA have delivered the following outcomes between July 2021 – June 2022:
 - a. 34 ports/freight hubs visits;
 - b. 70 fish receiver inspections;
 - c. 33 vessel inspections;
15. In November and December 2021 AFMA conducted start of TRL season inspections of fishers and fish receivers targeting potential stock piling. For this same period AFMA conducted at sea inspections of vessels ensuring compliance with gear restrictions i.e. no possession of hookah. During February 2022 officers conducted pre-season primary tender vessel inspections. AFMA continues to remind fishers it's a requirement to land their catch directly to a licenced Fish Receiver.
16. With the easing of COVID restrictions the FMB team were able to recommence community visits in 2022, the compliance team was able to attend one of these meetings at Masig Island in addition to one on one discussions with fishers and receivers during port visits throughout the year. AFMA officers also delivered a number of training sessions to other joint agencies.
17. AFMA has one matter currently before the court, with one recent matter under investigation. A matter dating back to 2018 was also decided in favour of AFMA by the court this reporting year with fines and a conviction recorded.
18. AFMA reminds fishers to ensure all commercial vessels are marked in accordance with the *Torres Strait Fisheries Act 1984*. Whilst this is a legislative requirement it also assists emergency services in search and rescue scenarios.
19. All stakeholders are encouraged to report any suspicious or illegal fishing activity involving your fisheries to AFMA, either directly to our Torres Strait office or CRIMFISH (1800 274 634)

Fisheries Queensland (QDAF) update

Information on the Queensland Tropical Rock Lobster fishery:

General information on the fishery is available on the web - [Tropical rock lobster fishery | Business Queensland](#). The total annual quota for all commercial licences must not be more than 195 tonne of whole weight rock lobster. An individual transferrable quota exists for the fishery. This means quota can be transferred between licence- holders.

The fishery season is 1 January to 30 September so fishing is now finished for this season, 70% of the 195 tonne quota was taken for the 2022 season.

The current [Harvest strategy](#) can be found on the web.

The stock assessment has been delayed and is still underway, however FQ has now included a representative from the commercial sector onto the TRL stock assessment project team to tap into their expertise and knowledge.

Fisheries economic and social data reports for TRL is combined with other harvest fisheries such as sea cucumber, eel, worm and yabbies to keep the anonymity of fishers (if 5 or less license holders provide details the data is combined with other fisheries – this was the case for TRL). These two reports are available below.

[Queensland other harvest fishery - Fisheries economic and social indicators 2019–20 - Publications | Queensland Government](#)

[Queensland other harvest fishery - Fisheries economic and social indicators - 2017-18 and 2018-19 - Publications | Queensland Government](#)

The working group did not meet during 2022, however, past communiques can be found on the web: [Tropical rock lobster fishery working group | Department of Agriculture and Fisheries, Queensland \(daf.qld.gov.au\)](#).

There is a current WTO export approval place that is valid until 2025.

Torres Strait Regional Authority (TSRA) update

National Seafood Industry Awards 2022

1. A series of Torres Strait fishing workshops was recognised as a finalist at the National Seafood Industry Awards 2022 in Brisbane. The Torres Strait Regional Authority (TSRA) and Fishwell Consulting progressed from state to national finalists in the People and Development category for their fisheries workshops with Traditional Owners from across the region. They received the People Development Award for this work focussed on capacity building of local people and communities to support sustainable seafood stock and fishing industries in Northern Australia waters. The workshops were funded by TSRA and the Department of Climate Change, Energy, the Environment and Water.

WAPIL Project update

2. The WAPIL project (Fishing for our Future) has slipped significantly mostly due to land access issues and native title consultation processes, for cold chain facilities and is being reviewed. Suggested improvements in implementation and approaches will be discussed internally within TSRA. The potential benefits and objectives of WAPIL remain valid for the TS fisheries. These relate to improved and increased capacity for cold chain sea food storage, processing and transport; commercial fishing operations and skills development; business planning and development and increased employment opportunities.

Torres Strait Regional Adaptation and Resilience Plan

3. The Torres Strait Regional Adaptation and Resilience Plan 2016-2021 is being updated and details how climate change will impact the region's communities and land and sea country, and what steps can be taken to reduce the likely impacts to ensure the region has a strong viable future. The report focusses on the impacts and vulnerabilities across five dimensions of climate change resilience including human, financial, natural, physical and social capital climate change adoptions and mitigations. This updated report will complement the CSIRO scoping study and joint TSRA and FRDC proposal for funding on climate change and variability, and the AFMA planned climate change data incorporation into fisheries management.



Australian Government
**Department of Agriculture,
Water and the Environment**

Ref: 002068366

Mr Wez Norris
Chief Executive Officer
Australian Fisheries Management Authority
GPO Box 7051
CANBERRA ACT 2610

Dear Mr Norris

I am writing to you as Delegate of the Minister for the Environment in relation to the reassessment of the Torres Strait Tropical Rock Lobster Fishery (the fishery) under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

In October the Australian Fisheries Management Authority applied for export approval for the fishery under the EPBC Act on behalf of the Protected Zone Joint Authority.

The application has been assessed and I have declared the fishery an approved wildlife trade operation under Part 13A of the EPBC Act until 4 December 2023.

The Part 13A declaration includes conditions that were agreed by officials from both departments as areas requiring ongoing attention. These are set out at Attachment 1.

The existing Part 13 accreditation will remain in place based on the previous assessment of the fishery's management arrangements designed to minimise interactions with species listed under the EPBC Act.

Please note that any person whose interests are affected by this decision may make an application to the Department for the reasons for the decision and may apply to the Administrative Appeals Tribunal to have this decision reviewed. I have enclosed further information on these processes at Attachment 2.

Yours sincerely

A handwritten signature in blue ink, appearing to read 'Laura Timmins'.

Laura Timmins
Delegate of the Minister for the Environment

4 December 2020

Part 13A conditions on the approved wildlife trade operation declaration for the Torres Strait Tropical Rock Lobster Fishery – December 2020

1. The Torres Strait Protected Zone Joint Authority must ensure that operation of the Torres Strait Tropical Rock Lobster Fishery is carried out in accordance with management arrangements defined in the *Torres Strait Fisheries Act 1984*, Torres Strait Fisheries Regulations 1985, licence conditions and the Torres Strait Tropical Rock Lobster Fishery Harvest Strategy (2019).
2. The Torres Strait Protected Zone Joint Authority must inform the Department of the Environment and Energy of any intended material changes to the Torres Strait Tropical Rock Lobster Fishery management arrangements that may affect the assessment against which *Environment Protection and Biodiversity Conservation Act 1999* decisions are made.
3. The Torres Strait Protected Zone Joint Authority must inform the Department of Agriculture, Water and the Environment of any intended changes to fisheries legislation that may affect the legislative instruments relevant to this approval.
4. The Torres Strait Protected Zone Joint Authority must provide reports to the Department of Agriculture, Water and the Environment annually as per Appendix B of the *Guidelines for the Ecologically Sustainable Management of Fisheries - 2nd Edition*.

Recommendation on the approved wildlife trade operation declaration for the Torres Strait Tropical Rock Lobster Fishery – December 2020

1. The Australian Fisheries Management Authority to continue to work with the Department of Agriculture, Water and the Environment and the Protected Zone Joint Authority to implement changes to the *Torres Strait Fisheries Act 1984* to allow data reporting requirements to apply to all fishing sectors in the fishery.

Data collection requirements for target species are to include:

- the total quantity of each species removed from the fishery, including any catch discarded prior to landing to an authorised fish receiver; and
- catch and effort data, including location of all commercial fishing activity.

Progress and outcomes of this recommendation to be included in annual reports required under condition 4.

Notification of Reviewable Decisions and Rights of Review¹

There is a right of review to the Administrative Appeals Tribunal (AAT) in relation to certain decisions/declarations made by the Minister, the Minister's delegate or the Secretary under Part 13A of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Section 303GJ(1) of the EPBC Act provides that applications may be made to the AAT for the review of the following decisions:

- (a) to issue or refuse a permit; or
- (b) to specify, vary or revoke a condition of a permit; or
- (c) to impose a further condition of a permit; or
- (d) to transfer or refuse to transfer a permit; or
- (e) to suspend or cancel a permit; or
- (f) to issue or refuse a certificate under subsection 303CC(5); or
- (g) of the Secretary under a determination in force under section 303EU; or
- (h) to make or refuse a declaration under section 303FN, 303FO or 303FP; or
- (i) to vary or revoke a declaration under section 303FN, 303FO or 303FP.

If you are dissatisfied with a decision of a type listed above you may:

- by notice, provided in writing, request that the Minister or the Minister's delegate give you a statement in writing setting out the reasons for the decision as per section 28 of the *Administrative Appeals Tribunal Act 1975*. The Minister, or Minister's delegate may refuse to give you a statement of reasons if your application is made more than 28 days after the day on which you received this notice.
- apply to the AAT for independent merits review of the decision. The AAT undertakes *de novo* merits review. This means they take a fresh look at the facts, law and policy relating to the decision and arrive at their own decision. They decide if the decision should stay the same or be changed. They are independent of the Department.

Application for review of a decision must be made to the AAT within **28 days** after the day on which you have received the reviewable decision. However an extension of time for lodging an application may be granted by the AAT under certain circumstances. Please visit the AAT's website at <http://www.aat.gov.au/> or telephone 1800 228 333 for further information. The role of the AAT is to provide a review mechanism that is fair, just, economical, informal and quick.

Applications & Costs

Applications to the AAT are made by lodging an Application Form (Form 1). This can be found on the AAT's website at <http://www.aat.gov.au/>.

There are no strict timelines in which the AAT must review the decision, however the first conference between the parties will usually be held within 6 to 10 weeks of the application being lodged. The time frame for review of certain decisions can be expedited in some circumstances.

¹ In accordance with the *Administrative Appeals Tribunal Act 1975* Code of Practice for Notification of Reviewable Decisions and Rights of Review

The cost of lodging an application for review is \$952 (as of 1 July 2020) (GST inclusive). You may be eligible to pay a reduced fee of \$100.00 if

- you are receiving legal aid for your application;
- you hold a health care card, a Commonwealth seniors health card or any other card issued by the Department of Social Services or the Department of Veteran's Affairs that entitles the holder to Commonwealth health concessions;
- you are in prison or lawfully detained in a public institution;
- you are under 18 years of age; or
- you are receiving youth allowance, Austudy or ABSTUDY.

You may also be eligible for a reduced fee if you can demonstrate to the AAT that paying the full fee would cause you financial hardship. Further information can be found on the AAT's website. Additionally, you can access information about legal assistance at <https://www.ag.gov.au/LegalSystem/Legalaidprogrammes/Commonwealthlegalfinancialassistance/Documents/LegalFinancialAssistanceInformationSheet.pdf>.

If you pay a standard application fee, most of it will be refunded if the case is resolved in your favour. The refund amount is the difference between the fee you paid and \$100. So, if you paid \$920, you get back \$820 and if you pay \$952, you get back \$852. There is no refund if you paid the lower application fee for certain taxation decisions or the reduced fee of \$100.

Contact Details

Further information or enquiries relating to the decision should be directed to:

The Director
Wildlife Trade Assessments Section
Department of Agriculture, Water and the Environment
GPO Box 858
Canberra ACT 2601
Telephone: +61 (0) 2 6274 1917
Email: sustainablefisheries@environment.gov.au

Alternatively you may contact the AAT at their Principal Registry or the Deputy Registrar, Administrative Appeals Tribunal in your Capital City or Territory.

Administrative Appeals Tribunal
Street address: Level 6, 83 Clarence Street, Sydney
Mailing address: GPO Box 9955, Sydney, NSW 2001
T: 1800 228 333 and (02) 9276 5000
F: (02) 9276 5599
E: generalreviews@aat.gov.au
W: <http://www.aat.gov.au>

Freedom of Information Request

You may make an application under the *Freedom of Information Act 1982* (FOI Act) to access documents. Further information can be found at <http://www.environment.gov.au/foi/index.html>. Please contact the Freedom of Information Contact Officer at foi@environment.gov.au for more information.



Australian Government

Australian Fisheries Management Authority

Torres Strait Tropical Rock Lobster Fishery

**Wildlife Trade Operation
Annual Report 2022**



1 Introduction

All fisheries granted export approval under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) are required to produce annual reports containing the information outlined in Appendix B of the Australian Government's *Guidelines for the Ecologically Sustainable Management of Fisheries – 2nd Edition* (the Guidelines).

This report to the Department of Climate Change, Energy, the Environment and Water (DCCEEW) meets the annual reporting requirements (Condition 4) for AFMA managed fishery approvals under the EPBC Act. The information provided in this report covers the 12 months since the *Torres Strait Tropical Rock Lobster Fishery Wildlife Trade Operation Annual Report 2021* was delivered on 27 October 2021.

Table 1 below summarises the level of information contained in this annual report. Detailed responses are provided under relevant section headings.

Table 1. Summary of key changes to the TRL Fishery since last annual report submitted on 27 October 2021.

Section	Since the last accreditation	Yes / No	Refer to section below
Description of the Fishery	Has there been any significant change to the description of the Fishery?	No	n/a
Management arrangements	Has there been any significant change to management arrangements and/or fishing practices that may affect EPBC Act approval criteria? If yes, please provide relevant information.	No	n/a
Research and monitoring	Has any research and/or monitoring of fishing activities including stock assessments or risk analysis been conducted? If yes, please provide relevant information.	Yes	2
Catch data for target, byproduct and bycatch species	Has there been any change in average annual catch data for target, byproduct and bycatch species including upward or downward trend in catches and its relevance to limit reference points or performance indicators? If yes, please provide details.	Yes	3
Stock status for target, byproduct and bycatch species	Has there been any change in the stock status for target and byproduct species including any increase or decrease in the number of overfished or uncertain stocks, or where limit reference points or performance indicators have been triggered? If yes, please provide details.	No – a stock assessment update is scheduled for December 2022	n/a

Section	Since the last accreditation	Yes / No	Refer to section below
Interaction with EPBC-listed protected species	Has there been any change in the nature, scale, intensity of impact, and/or management response in relation to interactions? If yes, please provide details.	No	n/a
Ecosystem impact (e.g. habitat, food chains etc).	Has there been any fishery and/or non-fishery change in the nature, scale, intensity of impact, and/or management response including identification and mitigation measures? If yes, please provide details.	No	n/a
Conditions and/or recommendations	Has any progress been made towards implementing the conditions and/or recommendations from the last fishery assessment or annual report under the EPBC Act. If yes, please provide details.	Yes	4

2 Research and monitoring

2.1 Fishery independent survey and stock assessment

The outcomes of the 2021 fisheries independent scientific survey of the TS TRL population and subsequent Resource Assessment Group advice are provided in the meeting record of the 32nd Tropical Rock Lobster Resource Assessment Group (TRLRAG 32) on the [Protected Zone Joint Authority \(PZJA\) website](#).

At the time of writing, the annual fisheries independent scientific survey of the Torres Strait Tropical Rock Lobster population was scheduled to take place between 8 and 22 November 2022. The survey is part of a three-year funded research project “*Fishery independent surveys, stock assessment, Harvest Strategy and Recommended Biological Catch calculation for the Torres Strait Tropical Rock Lobster Fishery*” aimed at delivering annual TRL surveys and stock assessments to support the determination of an annual Total Allowable Catch (TAC). The survey is used to determine the relative abundance and size of lobsters in the Torres Strait, together with an assessment of the habitat. The TRLRAG is expected to consider the results of the survey, the preliminary results of an update to the stock assessment and the results of applying the empirical Harvest Control Rule (eHCR) in accordance with the TRL Harvest Strategy to recommend a biological catch of TRL for the 2022-23 fishing season at their upcoming meeting on 13-14 December 2022.

2.2 Climate change impacts on Torres Strait Fisheries

In the 2019-20 financial year, the Torres Strait Scientific Advisory Committee (TSSAC) funded a project applicable across all Torres Strait fisheries entitled '[Climate variability and change relevant to key fisheries resources in the Torres Strait – a scoping study](#)'.

Following on from the Torres Strait Scientific Advisory Committee (TSSAC) recommendations on the climate change scoping study, a follow up call for research proposals for a climate change modelling project was made in February 2022 with one proposal received from CSIRO. Having regard to feedback from all PZJA advisory committee RAGs and Working Groups out of session, the TSSAC considered this research proposal at their meeting on 6-7 April 2022 (TSSAC 81).

The modelling project is intended to:

- a) enable fisheries managers and communities to better prepare for climate change mitigation and adaptation, where possible;
- b) integrate new and existing fisheries and environmental data within an over-arching data framework;
- c) provide estimates of the impacts that different climate change scenarios could have on the marine ecosystem and associated fisheries/species;
- d) provide estimates of the economic, social and other fisheries-related livelihood impacts of climate change on communities in the short (2 yrs), medium (5 yrs) and longer term (10+ yrs), and suggest some possible actions for adaptation; and
- e) help differentiate between the relative effects of fishing and climate change on marine resources.
- f) provide results in formats (e.g. graphical, video, written) which can be communicated to stakeholders (Torres Strait Island Communities, Fishers, Fisheries Managers and local and regional organisations).

Due to limited AFMA funding available to support all recommended research projects in 2022-23, the climate change modelling project is to be partially funded through a \$500,000 co-contribution from the Torres Strait Regional Authority and the remainder of the project funds are currently under consideration by the Fisheries Research and Development Corporation (FRDC).

2.3 Developing an approach for measuring non-commercial fishing in Torres Strait

The scoping study [Developing an approach for measuring non-commercial fishing in the Torres Strait in order to improve fisheries management and promote sustainable livelihoods](#) was funded for the 2019/20 financial year. The study assessed the feasibility to quantify the subsistence and recreational (i.e. non-commercial) take of key commercial species. It also sought to gauge interest from Torres Strait communities in collecting information on the subsistence take of other non-commercial species, to identify the most culturally significant and important species to communities (including contribution to health and livelihoods).

The research need was identified the Torres Strait Regional Authority (TSRA) Finfish Fishery leasing quota committee. A committee at the time, comprising TSRA Board members and traditional inhabitant representatives from eastern island communities. Members identified the

need to improve estimates of non-commercial catch of commercial species to inform stock assessment, the setting of sustainable catch levels and to determine the how much of the available catch needs to be reserved for traditional fishing.

The project found self-reporting using an app (or web-based approach indistinguishable from an app) was likely to be the best approach to monitoring non-commercial fishing, paired with a data validation method of conducting household surveys. The project undertook consultation with stakeholders on this monitoring approach which would need to continue should the project recommendation proceed. This would ensure communities are on board with this approach and identify risks and concerns that would need to be managed around it.

As a result of this scoping study, 'Phase 2' of the non-commercial catch project *Measuring non-commercial fishing catches (traditional subsistence fishing) in the Torres Strait in order to improve fisheries management and promote sustainable livelihoods* has been approved for co-funding between AFMA and the FRDC in the 2022/23 and 2023/24 financial years.

3 Catch data for target species

The Torres Strait TRL Fishery has experienced a series of disruptions to both the export market and the fishing sector over the past three fishing seasons (2019-20, 2020-21 and 2021-22) including a temporary collapse of the live export market, continued suppressed TRL prices, freight route disruptions, ongoing import bans of Australian lobster product directly into China and increased fuel prices.

While fishing in the Torres Strait has continued for the most part throughout these anomalous periods, there has been noticeable reductions in fishing effort and total catch, particularly in the Traditional Inhabitant (TIB) sector.

[TRLRAG 31](#) (12 October 2021) acknowledged that the 2021-21 fishing season was another anomalous year with both the non-traditional inhabitant (TVH) and TIB sectors exhibiting significant decreases in fishing effort due to ongoing impacts from the ban on Australian lobster product into China and subsequent uncertainty of lobster markets. Industry members of the RAG reported that many TIB fishers sought alternative employment, and limited diver availability in the TVH sector is attributed to lower than expected catches across both sectors. By the end of the 2020-21 fishing season, the TIB sector had caught 43.64 per cent of their 278.62 tonne TAC, and the TVH sector had caught 81.5 per cent of their 142.24 tonne TAC (see [end of 2020-21 season TRL Catch Watch Report](#)). TRLRAG 31 had extensive discussions regarding the implications of a reduced average total catch value on the application of the empirical Harvest Control Rule. The RAG recommended that CSIRO present two different options for dealing with the under-catch in both the 2019-20 and 2020-21 fishing seasons which was presented at [TRLRAG 32](#) (15 December 2021).

Industry reports on the performance of the TRL Fishery during 2021-22 fishing season is expected at the upcoming TRLRAG 33 (scheduled to meet 13-14 December 2022). While 2021-22 season TIB catches were slightly higher than previous seasons (54.17 percent of the 274.82 tonne TAC), TVH catches were resumed to being fully caught (99.58 per cent of their 140.3 tonne TAC) (refer to [end of 2021-22 season TRL Catch Watch Report](#)).

4 Progress against conditions and recommendations

As per details in Table 2 below.

Table 2. Summary of progress against WTO conditions and recommendations for the Torres Strait TRL Fishery.

WTO Conditions for the Tropical Rock Lobster Fishery	Progress as of November 2022
Condition 1: The Torres Strait Protected Zone Joint Authority must ensure that operation of the Torres Strait Tropical Rock Lobster Fishery is carried out in accordance with management arrangements defined in the <i>Torres Strait Fisheries Act 1984</i> , <i>Torres Strait Fisheries Regulations 1985</i> , licence conditions and the Torres Strait Tropical Rock Lobster Fishery Harvest Strategy (2019).	On track The Torres Strait Tropical Rock Lobster fishery continues to be managed in accordance with management arrangements in force under the <i>Torres Strait Fisheries Act 1984</i> .
Condition 2: The Torres Strait Protected Zone Joint Authority must inform the Department of Agriculture, Water and the Environment (now the Department of Climate Change, Energy, the Environment and Water) of any intended material changes to the Torres Strait Tropical Rock Lobster Fishery management arrangements that may affect the assessment against which <i>Environment Protection and Biodiversity Conservation Act 1999</i> decisions are made.	On track: There have been no material changes to management arrangements for the Fishery. As a result AFMA, on behalf of the PZJA, has not been required to inform the Department.
Condition 3: The Torres Strait Protected Zone Joint Authority must inform the Department of Agriculture, Water and the Environment (now the Department of Climate Change, Energy, the Environment and Water) of any intended changes to fisheries legislation that may affect the legislative instruments relevant to this approval.	On track: AFMA, on behalf of the PZJA, provided the Sustainable Fisheries team with an update on changes to legislative amendments via email on 8 November 2022.
Condition 4: The Torres Strait Protected Zone Joint Authority must provide reports to the Department of Agriculture, Water (now the Department of Climate Change, Energy, the Environment and Water) and the Environment annually as per Appendix B of the <i>Guidelines for the Ecologically Sustainable Management of Fisheries - 2nd Edition</i> .	On track: This report meets this requirement.

WTO Conditions for the Tropical Rock Lobster Fishery	Progress as of November 2022
<p>Recommendation 1:</p> <p>The Australian Fisheries Management Authority to continue to work with the Department of Agriculture, Water and the Environment and the Protected Zone Joint Authority to implement changes to the <i>Torres Strait Fisheries Act 1984</i> to allow data reporting requirements to apply to all fishing sectors in the fishery.</p> <p>Data collection requirements for target species are to include:</p> <ul style="list-style-type: none"> • The total quantity of each species removed from the fishery, including any catch discarded prior to landing to an authorised fish receiver; an • catch and effort data, including location of all commercial fishing activity. <p>Progress and outcomes of this recommendation to be included in annual reports required under condition 4.</p>	<p>Progress on this item is directly linked to the update provided via email on 8 November 2022 in relation to Condition 3.</p> <p>AFMA is continuing the work with DAFF to progress amendments to the <i>Torres Strait Fisheries Act 1984</i> to create head power provisions that would require all fishing sectors in the TRL fishery to undertake daily fishing logbook reporting.</p> <p>AFMA, DAFF and OPC have made substantial progress in drafting the amendments over the past 12 months despite some delays during the caretaker and election period.</p> <p>Subject to available resourcing, finalisation of drafting and Prime Ministerial approval to consult, AFMA intends to undertake public consultation on the amendments with Torres Strait communities in early 2023. It is therefore anticipated that an Exposure Draft of both the Bill and Amendment Regulations and plain English summaries will be ready and available for the public consultation process, once also considered by the PZJA.</p>



18 November 2022

Dear Torres Strait Tropical Rock Lobster Fishery licence holder

Management Arrangements for the 2022-23 Fishing Season

The 2022-23 fishing season for the Torres Strait Tropical Rock Lobster Fishery (TRL Fishery) will commence on 1 December 2022. This letter details some key management arrangements that will apply this season.

Total Allowable Catch

On 4 October 2022, Senator the Hon. Murray Watt, Commonwealth Minister for Agriculture, Fisheries and Forestry determined a total allowable catch (TAC) of 200,000 kilograms of tropical rock lobster (TRL) in the Australian waters of the TRL Fishery for the 2022-23 fishing season to apply for the fishing season commencing on 1 December 2022. It is expected that the TAC will be increased once the outcomes of the scientific assessment processes and the catch sharing arrangements under the Torres Strait Treaty between Australia and Papua New Guinea (PNG) have been considered. Any increase in the TAC is expected to be determined by the end of February 2023.

Under this TAC, the value of each quota unit and available catch for each TRL Fishery sector is outlined in the table below. All weights are provided in unprocessed weight in kilograms.

TRL Fishery Sector	TAC (kilograms)	Number of quota units	Value of each quota unit (kilograms)	Available catch per sector (kilograms)
Traditional Inhabitant Boat (TIB) licence holders	200,000	662,016*	0.200000	132,403.597
Transferrable Vessel Holder (TVH) licence holders		337,981		67,596.403

* Held by the Torres Strait Regional Authority (TSRA)

A further explanation of how TACs are determined for the TRL Fishery, how catch is shared between Australia and PNG, and how each sector's catches will be managed for the 2022-23 fishing season, is provided in the enclosed TRL Management Arrangements Booklet 2022-23 (**Enclosure A**).

Moontide Hookah Closures

For the purpose of subsection 13(2) of the *Torres Strait Fisheries (Tropical Rock Lobster) Management Instrument 2018*, I provide notice that the use, possession or control, on a boat, of hookah gear to take, process or carry TRL will not be permitted during the 2022-23 fishing season during the moontide hookah closure periods shown in the calendar provided in **Enclosure B** to this letter. The first scheduled moontide hookah closure period starts on 17 February 2023.

These moontide hookah closures are in addition to the hookah closure period from 1 December until 31 January each fishing season. Free-diving, lamp fishing and traditional fishing are permitted during all hookah closure periods.

Changes to fishing and carrier licence conditions in the TRL Fishery

On 16 November 2022, and effective from 1 December 2022, my Deputy CEO, as a delegate of the PZJA, agreed to vary the conditions imposed on fishing boat and carrier boat licences in the TRL Fishery. These changes are:

- a. To strengthen existing requirements and reporting obligations on licenced fishers when landing commercial catch under the Fish Receiver System
- b. Provide operational flexibility for licenced carrier boats to reasonably transport crew between the carrier boat and land
- c. To clarify that licence holders can only take, process and carry fish that they are authorised to do so as indicated by the symbols noted on the licence (e.g. CR)
- d. To make other minor amendments to ensure condition language is clear, contact details are correct and relevant conditions apply to relevant licences.

Further details on the condition changes are provided in **Enclosure C**.

Should you have any questions concerning the matters covered in this letter, please contact the AFMA Thursday Island office on 07 4069 1990 or FisheriesTI@afma.gov.au. If you would also like to receive future management updates by email or SMS please contact the AFMA Thursday Island office to update your contact details.

Yours sincerely



Wez Norris
Chief Executive Officer

Enclosures

- A TRL Fishery Management Arrangements Booklet 2022-23
- B TRL Fishery moontide hookah closure calendar for the 2022-23 fishing season
- C Further detail on licence condition variations

Further detail on TRL fishing boat and carrier licence condition variation

Condition	Description of change	Applicable to	Rationale for change
Landing catch to a licenced fish receiver	Strengthening the language to ensure that when a licenced fisher is signing a CDR, they are verifying their fishing licence details <u>and</u> the catch they have landed. Existing conditions require the fisher to only verify their licence details. This condition is also strengthened by applying to the licence holder	All fishing boat licences (TIB and TVH)	The conditions relating to 'landing catch to a licenced fish receiver' have been varied to place a greater responsibility on fishers to verify the details of the fishing licence <u>and</u> the catch they land to a licenced fish receiver as an accurate record upon signing each Catch Disposal Record (CDR). This variation does not change the widely understood obligations of either the fisher or receiver at an operational level, but seeks to reinforce the need for licenced fishers to be sure of the record that is being produced by the fish receiver when landing their commercial catch and signing the CDR.
Carrier Licence conditions	Provide operational flexibility for licenced carrier boats to reasonably transport crew between the carrier boat and land. The variation seeks to limit the scope and operation of such a boat that could be towed. For example, being of a certain length, and for specific activities.	All Carrier class B and C licences	Currently, Carrier C licences are prohibited from towing any boat. This variation is intended to provide some flexibility for carrier boat licence class C and B holders to authorise them to be able to tow a boat that would allow the reasonable transport of crew between the carrier boat and land.
Fishery symbols	Adding in: "The licence holder must not [take], [carry], or [process or carry] fish other than those authorised under this licence as indicated by the symbol(s) noted on this licence." Note: the terms applicable in square brackets will vary and depend on the type of applicable licence and what it authorises.	All fishing boat and carrier licences (TIB and TVH)	Each Torres Strait licence will have one or more fishery entries (sometimes referred to as 'endorsements' (e.g. CR for the TRL fishery) which authorise the taking processing or carrying of certain fish in specific areas of fishery waters. These conditions have been strengthened to clarify that the licence holder cannot take, process or carry fish other than those authorised by the fishery entry. This variation seeks to remove any unintended loop holes, strengthen enforceability of the conditions and should not change the existing understanding of licence holders or their operations.
VMS	Updating the relevant contact details for the VMS team	All primary fishing & carrier boat licences greater than 6m in length	Email contact updated to: ausvms@afma.gov.au

TROPICAL ROCK LOBSTER RESOURCE ASSESSMENT GROUP (TRLRAG) Thursday Island	MEETING 33 13-14 December 2022
UPDATES FROM MEMBERS PNG National Fisheries Authority	Agenda Item 2.3 For NOTING

RECOMMENDATIONS

1. That the RAG:
 - a) **NOTE** the verbal update to be provided by the PNG National Fisheries Authority (NFA); and
 - b) **NOTE** the preliminary outcomes of the 2022 Torres Strait Treaty Bilateral Fisheries Committee Meeting held on 30 August 2022 in Cairns, Australia, relevant to the TRL Fishery.

KEY ISSUES

2. AFMA has a standing invite for officials from the PNG National Fisheries Authority (NFA) to attend all PZJA advisory committee meetings. If in attendance, NFA officials will provide an update on the PNG TRL fishery at the meeting.

BACKGROUND

3. The *Treaty between Australia and the Independent State of Papua New Guinea concerning Sovereignty and Maritime Boundaries in the area between the two Countries, including the area known as Torres Strait, and Related Matters* (the Treaty) was signed by both Parties at Sydney on 18 December 1978 and ratified by Australia on 15 February 1985. The Treaty defines the border between Australia and PNG and provides a management framework of the common border area. This area is defined by the Treaty and is known as the TSPZ.
4. Australia and PNG established the TSPZ with the principal purpose of acknowledging and protecting the traditional way of life and livelihood of the traditional inhabitants of both Parties, including their traditional fishing and free movement (Article 10(3)). A further purpose is to protect and preserve the marine environment and indigenous fauna and flora in, and in the vicinity of, the TSPZ (Article 10(4)). A range of subsidiary obligations and rights exist under the Treaty. Relevantly, Australia and PNG commit under the Treaty to co-operate in the conservation management and optimum utilisation of Protected Zone commercial fisheries (Article 21) insofar that the achievement of the purposes for the establishment of the TSPZ are not prejudiced in regard to traditional fishing (Article 20(1)).
5. The Treaty recognises the rights of both countries to Protected Zone commercial fisheries. This recognition is implemented through cooperative management and catch sharing provisions of Part 5 of the Treaty. Since the Treaty was ratified, Australia and PNG have entered into formal arrangements under Article 22 to cooperatively manage six fisheries, referred to as 'Article 22 fisheries'. These are the commercial fisheries for prawns, tropical rock lobster, Spanish mackerel, pearl shell, and traditional fisheries for turtles and dugong.

Torres Strait Treaty Fisheries Committee Bilateral Meeting 2022

6. For the first time since 2019, Australia and Papua New Guinea officials were able to meet face to face in Cairns for a series of Torres Strait Treaty Bilateral meetings including the Fisheries Bilateral Meeting (FBM) between AFMA and PNG NFA on 30 August, the Environment Management Committee Meeting, the Health Issues Committee and the Traditional Inhabitant Meeting.

The meeting led to the Joint Advisory Council (JAC) meeting which took place on 2 September 2022. A copy of the report of the 2022 JAC meeting is provided at **Attachment 2.3a**.

7. Of particular importance to the TRL Fishery, the FBM noted:
- a) That AFMA and PNG met virtually on 15 February 2022 to discuss catch sharing arrangements for the 2021-22 season and agreed the following:
 - i. As per Article 22(1), the global TAC of 615 tonnes was to be apportioned within each jurisdiction equal to 85 per cent (522.75 tonnes) in Australian waters and 15 per cent in PNG waters (92.25 tonnes);
 - ii. In line with the apportionment of catch in each Party's waters under Article 23 of the Treaty (being 75%:25% to the home Party), Australian boats can take in Australian waters, part of the cross-endorsement catch entitlement ordinarily available to PNG boats in Australian waters, equivalent to Australia's cross-endorsement catch entitlement in PNG waters (equal to 23.062 tonnes);
 - iii. The remaining part of PNG's cross-endorsement catch entitlement (107.625 tonnes) would remain available for PNG boats to take in Australian waters under cross-endorsement arrangements; and
 - iv. AFMA would not seek access to Australia's cross-endorsement catch entitlement in PNG waters and this could instead be taken by PNG boats in PNG waters, bringing the total catch apportionment for PNG boats in PNG waters up to 92.25 tonnes (**Attachment 2.3b**).
 - b) That AFMA has developed a set of draft *Guidelines for authorising cross-endorsement in areas of Australian jurisdiction in areas of the Torres Strait Protected Zone* (draft Guidelines).
 - i. The draft Guidelines (provided at **Attachment 2.3c**) are currently with NFA for comment, and out for public comment with Australian licence holders. The TRL Working Group will be asked to provide advice on the draft Guidelines at their meeting on 15 December 2022.
 - ii. AFMA remains committed to seeking agreement from the PZJA, with input from PNG on the draft cross-endorsement Guidelines in preparation for future nominations from the PNG Government.
 - c) That consistent with previous years, and in accordance with the TRL Harvest Strategy and *Torres Strait Fisheries (Quotas for Tropical Rock Lobster (Kaiar)) Management Plan 2018* (the TRL Management Plan), AFMA intends to apply the same process for finalising the global TAC for the TSPZ TRL Fishery and negotiating catch sharing arrangements between AFMA and NFA. Both parties agreed to continue to apply this process and indicative timeline for finalising the

global TAC as the default process for 2023 onwards unless in exceptional circumstances whereby the scientific outputs and advice from the PZJA Tropical Rock Lobster Resource Assessment Group (TRLRAG) and TRL Working Group (TRLWG) are outside the bounds of the TRL Harvest Strategy.

8. The timely and accurate reporting of all sources of TRL mortality from both AFMA and PNG NFA is critical and AFMA continues to work collaboratively with NFA to ensure that all available catch and effort data is provided to support effective application of the eHCR and stock assessment processes in the TAC setting processes.

Report of the 29th Meeting of the
Torres Strait Treaty Joint Advisory Council (JAC)
2 September 2022
Cairns, Australia

1. The Joint Advisory Council (JAC) met on 2 September 2022 in Cairns, Australia, in accordance with Article 19 of the Torres Strait Treaty.
2. The JAC began with a Welcome to Country by Cairns-based indigenous performance group Minjil and acknowledged the role of the JAC in the lives of First Nations people in the Torres Strait from Australia and PNG.
3. The meeting was co-chaired by Kate Duff, First Assistant Secretary Pacific Melanesia Division of the Australian Department of Foreign Affairs and Trade (DFAT), and Joe Warisan, Acting Director-General Border Management and Security Division of the Papua New Guinea (PNG) Department of Foreign Affairs and International Trade (DFAIT).
4. In accordance with Article 19 of the Torres Strait Treaty (the Treaty), Council members comprised national, state and provincial representatives, and Traditional Inhabitant representatives. The delegation list is at Attachment A and JAC functions set out in Attachment B.
5. The JAC recognised the Traditional Inhabitant Meeting (TIM) of 1 September 2022 and endorsed the TIM Outcomes Report tabled by the TIM Co-Chairs. The JAC noted the updates by TIM Co-Chair for Australia, Cr Getano Lui, and TIM Co-Chair for PNG, Cr Kebei Salee.
6. The JAC noted that the JAC Outcomes Report will be transmitted to the Foreign Ministers of PNG and Australia, and include recommendations of the TIM.

Treaty Implementation, Management and the Resumption of Traditional Visits

7. The JAC noted that the TIM reached mutual agreement for the resumption of traditional visits to occur in mid-October 2022. JAC Co-Chairs accepted all recommendations in the TIM Outcomes Report and committed to work with their respective Traditional Inhabitants and relevant agencies to implement the recommendations.
8. The JAC welcomed the confirmation by PNG's Co-Chair that a permanent Border Liaison Officer (BLO) would be based in Daru soon, with recruitment underway. The JAC noted the importance of a permanent PNG BLO in accordance with Article 18, Section 4 of the Treaty.
9. The JAC acknowledged the role of the PNG Immigration Citizenship Authority (ICA), and Department of Provincial and Local Level Affairs Border Administration Officer, in support of the management of traditional crossings in the Torres Strait.
10. The JAC noted the reports by the Australian TLO and PNG Immigration Officer. The JAC welcomed future treaty awareness visit activities, including once traditional visits resumed.
11. The JAC noted the update from TIM Co-Chairs on the need for more regular meetings between Treaty communities to discuss shared issues as they arose.

Customs and Cross Border Law Enforcement

12. The JAC thanked traditional inhabitants for their support and adherence to border measures during the suspension of traditional visits. No cross-border transmission of COVID-19 had been recorded.
13. The JAC acknowledged the significant role of Operation OVERARCH under the Australian Border Force (ABF) during the COVID-19 pandemic.
14. The JAC also welcomed advice from the ABF on planned Joint Cross Border Patrols (JCBPs). The JAC noted that three JCBPs were planned for the remainder of 2022, with the first to commence 5-9 September 2022. Up to six JCBPs were being considered for 2023.

15. The JAC noted the additional training and technology enabled assistance provided to ABF Border Monitoring Officers in Australian Treaty communities who monitor and record arrivals.
16. The JAC welcomed the update regarding the Community Safety and Security Facility on Saibai Island which will officially open in November 2022. The facility was now operational and staffed by ABF and the Queensland Police Service, and was regularly utilised by the Australian Federal Police (AFP). It allowed greater collaboration across law enforcement in the Torres Strait as well as engagement with community members who were the eyes and ears of illegal activity in the Torres Strait.
17. The JAC also noted the update from the Australian Federal Police (AFP) about ongoing cooperation and capacity building with the Royal PNG Constabulary (RPNGC). Since the last JAC, the AFP (through the PNG-Australia Policing Partnership or PNG-APP) visited Daru in May 2022 to assess the progress of the South Fly Provincial Police Command headquarters refurbishment, completed in June 2022.
18. The JAC heard that the AFP visit provided opportunity for AFP-APP to engage with RPNGC, the PNG Customs Service, ICA and PNG National Fisheries Authority (NFA) on collaboration and cooperation to detect and deter transnational crime activities in the Torres Strait.
19. The JAC noted that a strong collaborative and productive working relationship continues to exist between AFP and the Transnational Crime Unit in Daru.
20. The JAC noted that the resumption of traditional visits was strongly supported by both Australian and PNG law enforcement agencies and was a key topic between a meeting of the PNG Police Commissioner and AFP Commissioner earlier in 2022.

Development and Program Support

21. The JAC acknowledged the investment made by the Australian and PNG governments to the development of PNG's Treaty Villages including health facilities, specifically the Mabudawan Health Centre, to food and water security, and economic development under the Australian-funded South Fly Resilience Plan. This was articulated in a Memorandum of Understanding between the Governor of Western Province and the Australian High Commissioner to PNG (signed May 2021).
22. The JAC noted that as part of Australia's commitment to deepen engagement in PNG priority regions under the Comprehensive Strategic and Economic Partnership (CSEP) a joint Australia-PNG Western Province Strategy to promote an inclusive, healthy, educated, stable and economically prosperous Western Province. The Strategy will outline a range of joint development initiatives, and will capture a shared strategic vision out to 2030 and subject to ongoing review.
23. The JAC acknowledged that Australian-supported development initiatives in Western Province's South Fly district must be delivered through the National Government and in close consultation with the Western Provincial Administration and not Australia's Torres Strait Islands, to minimise the impacts on their communities. JAC also noted the support from the Australian Government to work in close alignment to the objectives and priorities of the GoPNG's Medium Term Development Plan (MTDP). The JAC further noted the extension of the DFAT-funded supplies barge, the *MV Islander*, which supports Australian programs from within PNG.

Health

24. The JAC noted the impact of the COVID-19 pandemic on both countries, and on the lives of Traditional Inhabitants on both sides.
25. The JAC welcomed the outcomes of the Health Issued Committee (HIC) which occurred on 31 August 2022 and welcomed the presentations by the HIC Co-Chairs.
26. The JAC noted the update from the HIC Co-Chairs that there were no COVID-19 restrictions in place that would prevent the resumption of Treaty travel in the Torres Strait. This advice

reflected the views of PNG and Australian health agencies, including the Commonwealth Department of Health and Queensland Health's Torres and Cape Regional Health and Hospital Service (TCHHS).

27. The JAC noted that in emergency and life-saving circumstances that medical presentations from PNG Treaty Villages into the Torres Strait may occur on humanitarian grounds. This arrangement was provided for under established mechanisms.
28. The JAC noted the Australian support to COVID-19 in PNG and high rates of COVID-19 vaccination and booster in Treaty communities on both sides. The JAC also noted Australia's broad health support in Western Province, particularly relating to tuberculosis (TB) and multi-drug resistant TB.

Environment, Fisheries and Biosecurity

29. The JAC noted the Environment Management Committee (EMC) and Fisheries Management Committee (FMC) were held on 30 August 2022.
30. The JAC noted the need for early consultation on any development proposals in or near the Torres Strait Protected Zone (TSPZ), including in Daru, that could impact the interest of either country, particularly Traditional Inhabitants, including on environmental matters.
31. The JAC noted the update from the Torres Strait Regional Authority (TSRA) that it would establish a 'Centre of Excellence for Climate Change' on Thursday Island as announced by Prime Minister Albanese during his visit to the Torres Strait in August 2022.
32. The JAC noted results from the National Environment Science Program '*Assessing the influence of the Fly River discharge on the Torres Strait*' of dissolved trace metals discharged from the Fly River arising from Ok Tedi Mine contamination. The JAC noted concentrations in the Torres Strait were all below the Australia – New Zealand marine water quality guideline value for 95 per cent species protection.
33. The JAC noted that catch-sharing arrangements for Tropical Rock Lobster (TRL) for the 2023 fishing season would be progressed, and that PNG would advise if it intended to pursue arrangements to access any additional catch entitlements in accordance with the Treaty.
34. The JAC also noted that the PNG government and the PNG traditional inhabitants would engage further on a consultations process for the issuing of licenses in the TSPZ, noting that on the Australian side Australian traditional inhabitants were consulted through TSRA's representation on the Protected Zone Joint Authority.
35. The JAC noted the importance of protecting migration routes of TRL through the Gulf of Papua and the need for heightened compliance measures to protect stocks.
36. The JAC noted PNG NFA's commitment to work together on managing overfished stocks in the TSPZ, emphasising the need for cooperation and consultation with the Australian Fisheries Management Authority (AFMA).
37. The JAC noted the reports from PNG's National Agriculture, Quarantine and Inspections Authority (NAQIA) and Australia's Department of Agriculture, Fisheries and Forestry (DAFF).
38. The JAC noted the ongoing collaboration between NAQIA and DAFF to perform joint surveillance and planning activities to address current and emerging biosecurity risks including Foot and mouth disease (FMD), African swine fever (ASF), Lumpy skin disease (LSD), and exotic fruit fly. The JAC also noted measures for visitors from Queensland that had been put in place to limit the movement of pests into the Torres Strait and further into PNG.
39. The JAC noted that during the COVID-19 pandemic traditional visitors were subject to an *additional* administrative process to determine the health pratique status of vessel arrivals into the TSPZ and that this process will remain in place when traditional travel resumes.

Maritime Safety

40. The JAC noted the report from Australian Maritime Safety Authority (AMSA) on maritime safety activities and acknowledged the ongoing cooperation with PNG's National Maritime Safety Authority (NMSA), and the development of PNG's maritime legislation. The report highlighted recorded vessel movements and incidents (91), including emergency distress incidents (25)
41. The JAC heard about existing arrangements and programs to further enhance ship safety in the Torres Strait, such as mandatory pilotage, marine pollution prevention, response and search and rescue in the region, and the shore-line protection study at Poruma (Coconut) Island.
42. The JAC welcomed NMSA's update on the trial of 450 'Lifecell' maritime safety devices (which contain an emergency beacon) for PNG traditional inhabitants' small craft movements. NMSA will seek funding for 9,000 devices if the trial is successful.

Other business

43. The JAC observed a condolence motion for the passing PNG Treaty Village Councillor and Ward Member for Mabudawan, Greg Nabaka.
44. PNG Co-Chair for the JAC advised that consideration to publish future JAC Outcomes Reports would need to be decided at a higher level of government in PNG, including possibly via the bilateral Senior Officials' Meeting in 2022. The JAC noted that the decision to publish the JAC Outcomes Report would be considered at the 30th JAC in 2023.
45. Agencies agreed to progress matters out of session, in accordance with the outcomes of the JAC meeting, and report on progress at the 30th JAC meeting.
46. The JAC heard from PNG officials on the 50th anniversary of PNG Independence in 2025, and to identify opportunities for the people of Western Province to benefit from this anniversary.
47. The JAC also noted the 40th anniversary of Treaty in 2025 and that officials should give thought initiatives or opportunities relevant to the future of the Treaty.
48. The JAC heard from the PNG TIM Co-Chair about the importance of bringing livelihoods and development support to levels similar to those in Australian Treaty communities.
49. The JAC noted the post-COVID opportunities for Australia and PNG to convene bilateral engagement and noted the recent visit by the Australian Foreign Minister to PNG.
50. The JAC noted perspectives on the history of the Treaty by TIM Co-Chairs and importance of development of both sides.
51. The JAC also noted the information from the Australian TIM Co-Chair about the current discussions in Australia between Torres Strait Regional Leaders on First Nations issues.

Date of next JAC Meeting

52. PNG JAC Co-Chair advised that DFAIT would convey proposed dates for the 30th JAC in 2023 to be held in PNG to the PNG Foreign Minister and provide advice to Australia once known.

Co-signed on

September 15th, 2022



Kate Duff

Co-Chair and Leader of the Australian
Delegation



Joe Warisan

Co-Chair and Leader of the PNG
Delegation

Delegation list – Australia (in person)

Australian Delegation			
1	Kate Duff	FAS Pacific Melanesia Division	Dept of Foreign Affairs and Trade
2	Joanne Loundes	Deputy Head of Mission	Australian High Commission (DFAT)
3	Andrew Berryman	Torres Strait Treaty Liaison Officer	Dept of Foreign Affairs and Trade
4	Getano Lui Jnr AM	Councillor for Iama (Yam), Deputy Mayor	Torres Strait Island Regional Council
5	Conwell Tabuai	Councillor for Saibai	Torres Strait Island Regional Council
6	Toby Dimas	Councillor for Boigu	Torres Strait Island Regional Council
7	Lama Trinkoon	Councillor for Kubin (Moa/Mua Island)	Torres Strait Island Regional Council
8	Rocky Stephen	Councillor for Ugar	Torres Strait Island Regional Council
9	CMDR Budhy Tanddo	A/g Cmdr, Operations North, North and Detention	Australian Border Force
10	SUPT Michael Talbot	Superintendent, Operation OVERARCH	Australian Border Force
11	Stefan Noble	Federal Agent, Thursday Island	Australian Federal Police
12	Dr Andrew Chek	Assistant Director, Pacific Engagement Section	DCCEEW
13	Kathryn McKenna	Policy Officer, Pacific Engagement Section	DCCEEW
14	Murray Korff	A/g AS Science and Surveillance Group	Dept of Agriculture, Fisheries and Forestry
15	Trish Hayes	Acting Director, Torres Strait and Field Operations	Dept of Agriculture, Fisheries and Forestry
16	John Jones	Compliance Manager, Torres Strait Fisheries	Australian Fisheries Management Authority
17	Anna Willock	Deputy Chief Executive Officer	Australian Fisheries Management Authority
18	Danait Ghebrezgabhier	Senior Management Officer	Australian Fisheries Management Authority
19	Georgia Langdon	Senior Fisheries Management Officer	Australian Fisheries Management Authority
20	Ugarie Mene	Torres Strait Treaty Liaison Office Manager	Dept of Foreign Affairs and Trade
21	Jordan Hartas	A/g Director, PNG Subregional	Dept of Foreign Affairs and Trade
22	Dr Adam Thompson	Policy Officer, PNG Subregional	Dept of Foreign Affairs and Trade
23	Amanda Young	First Secretary, Subnational	Australian High Commission (DFAT)
24	David Port	First Secretary, Political	Australian High Commission (DFAT)
25	Lara Andrews	Counsellor, Health Security	Australian High Commission (DFAT)
26	Susan Sapa	Health Security	Australian High Commission (DFAT)
27	Tiali Goodchild	Assistant Secretary, Health Equity Branch	Department of Health and Aged Care
28	Vonda Malone	Chief Executive Officer	Torres Strait Regional Authority
29	Pedro Stephen	Chairperson	Torres Strait Regional Authority
30	Ingrid Nielsen	A/g Program Manager, Governance and Leadership	Torres Strait Regional Authority
31	Justin Williams	Operations North Manager	Australian Maritime Safety Authority
32	LT COL Clare O'Neil	Lieutenant Colonel, Charlie Company 51 FNQR	Australian Defence Force
33	Major Chris Freeman	Officer Commanding (OC) Charlie Company 51 FNQR	Australian Defence Force
34	INSP Nick O'Brien	Inspector, Torres Strait Patrol Group	Queensland Police Service
35	Julian Evans	Principal Policy Officer	Dept of Premier and Cabinet (QLD)

Delegation list – Australia (virtual)

36	Dr Marlow Coates	ED – Torres and Cape Hospital and Health Services	Queensland Health
37	Bassini Blazey	Assistant Secretary PNG Political and Strategy	Dept of Foreign Affairs and Trade
38	Liz Carter	Counsellor Home Affairs	Australian High Commission (Home Affairs)
39	Murimi Njora	Health Issues Committee (HIC) Secretariat	Dept of Health and Aged Care

*DCCEEW: Department of Climate Change, Energy, the Environment and Water

PNG Delegation			
1	Joe Warison	Director-General, Border Management and Security	Dept of Foreign Affairs and International Trade
2	Peter Mirino	Director, Border Management and Security	Dept of Foreign Affairs and International Trade
3	Kebei Salee	Councillor for Sigabadaru	Treaty Village Council
4	Murray Dimia	Councillor for Sui	Treaty Village Council
5	Biza Gera	Councillor for Kadawa	Treaty Village Council
6	Abua Roy	Councillor for Ture Ture	Treaty Village Council
7	Ipa Gopave	Acting Director – PNG/Indonesia Border Branch	Dept of Foreign Affairs and International Trade
8	Clare Kliawi	Foreign Service Officer - DFA	Dept of Foreign Affairs and International Trade
9	Matlina Somo	Senior Foreign Service Officer - DFA	Dept of Foreign Affairs and International Trade
10	Glynis Farari	Assistant Director – Regional Economic Arrangements Branch - DFA	Dept of Foreign Affairs and International Trade
11	Henao Idau	Protocol Officer – DFA	Dept of Foreign Affairs and International Trade
12	Ivan Solanica	Assistant Director, Enforcement	Immigration and Citizenship Authority (ICA)
13	Terry Mape	International Border Branch, Border Division	Immigration and Citizenship Authority (ICA)
14	Hendrick Naimo	Manager – Daru	Immigration and Citizenship Authority (ICA)
15	Dr Ken Wai	Acting Deputy Secretary – Public Health	National Department of Health (NDOH)
16	Kelwyn Browne	Western Province COVID Response Advisor	PNG-Australia Transition to Health (PATH)
17	Kay Kumaras Kalim	Director, Sustainable Environment Programs	CEPA
18	Yvonne Tio	Exec Manager, Sustainable Marine Environments	CEPA
19	Gisa Komangin	Exec Manager, Monitoring, Control and Surveillance	National Fisheries Authority
20	Leban Gisawa	Executive Manager, Licensing and Data Management	National Fisheries Authority
21	Bonny Barnabas Koke	Research Assistant, Lobster / TSPZ Fishery (FMU)	National Fisheries Authority
22	Joseph Eka Posu	Management Officer, Lobster / TSPZ Fishery	National Fisheries Authority
23	Esther Litau	A/g Director, Compliance, International Relations	Dept of Prime Minister and NEC
24	Brown Monda	Social Political Security Officer, OSCA	Dept of Prime Minister and NEC
25	Michael Kumung	Deputy Secretary – Policy Wing	Department of National Planning and Monitoring
26	Reichert Thanda	First Assistant Secretary – Development Cooperation Management Division	Department of National Planning & Monitoring
27	Martin Pomat	Assistant Secretary, Australian Aid Branch	Department of National Planning & Monitoring
28	Terry Udu	First Assistant Secretary, Strategic Policy Research and Development Division	Department of Defence
29	Godana Papua	Assistant Secretary International Policy	Department of Defence
30	Henrietta Gorea	Australia Desk Officer - International Policy Division	Department of Defence
31	Vincent Wriken	Chief Warrant Officer	Department of Defence
32	Jack Dipa	Southern Border Administration, Daru	DPLLGA
33	Benjamin Sine	Commissioner, Border Security and Operations	PNG Customs Service
34	Jack Leo	Customs Officer	PNG Customs Service
35	Ishmael Kawi	Senior Small Craft Safety Education / Liaison Officer	National Maritime Safety Authority
36	Sylvia Kivali	Small Craft Officer	National Maritime Safety Authority
37	Bradley Morris	Executive Driver/Assistant	National Maritime Safety Authority
38	David Boas Tenakanai	General Manager – Technical & Advisory Division	NAQIA
39	Wilfred Gaso	Deputy Provincial Administrator	Western Provincial Administration
40	Elias Anden	Coordinator, National Functions	Western Provincial Administration
41	Tau Asigau-Fridrikson	Economic and Trade Advisor	Consulate of PNG – Cairns

*CEPA: Conservation and Environment Protection Authority

*NAQIA: National Agriculture Quarantine Inspection Authority

*DPLLGA: Department of Provincial and Local-level Government Affairs

Article 19

Torres Strait Joint Advisory Council

1. The Parties shall jointly establish and maintain an advisory and consultative body which shall be known as the Torres Strait Joint Advisory Council (called in this Article "the Advisory Council").
2. The functions of the Advisory Council shall be-
 - (a) to seek solutions to problems arising at the local level and not resolved pursuant to Article 18 of this Treaty;
 - (b) to consider and to make recommendations to the Parties on any developments or proposals which might affect the protection of the traditional way of life and livelihood of the traditional inhabitants, their free movement, performance of traditional activities and exercise of traditional customary rights as provided for in this Treaty; and
 - (c) to review from time to time as necessary, and to report and to make recommendations to the Parties on, any matters relevant to the effective implementation of this Treaty, including the provisions relating to the protection and preservation of the marine environment, and fauna and flora, in and in the vicinity of the Protected Zone.
3. The Advisory Council shall not have or assume responsibilities for management or administration. These responsibilities shall, within the respective areas of jurisdiction of each Party, continue to lie with the relevant national, State, Provincial and local authorities.
4. In the exercise of its functions, the Advisory Council shall ensure that the traditional inhabitants are consulted, that they are given full and timely opportunity to comment on matters of concern to them and that their views are conveyed to the Parties in any reports and recommendations made by the Advisory Council to the Parties.
5. The Advisory Council shall transmit its reports and recommendations to the Foreign Ministers of the Parties. After consideration by appropriate authorities of the Parties, consultations may be arranged with a view to the resolution of matters to which the Advisory Council has invited attention.
6. Unless otherwise agreed by the Parties, the Advisory Council shall consist of eighteen members, that is nine members from each Party who shall include-
 - (a) at least two national representatives;
 - (b) at least one member representing the Government of Queensland in the case of Australia and one representing the Fly River Provincial Government in the case of Papua New Guinea; and
 - (c) at least three members representing the traditional inhabitants,
 with each Party being free to decide from time to time from which of the aforementioned categories any other of its members will be drawn.
7. The Advisory Council shall meet when necessary at the request of either Party. Consecutive meetings of the Advisory Council shall be chaired alternately by a representative of Australia and a representative of Papua New Guinea. Meetings shall be held alternately in Australia and Papua New Guinea or as may from time to time be otherwise arranged.

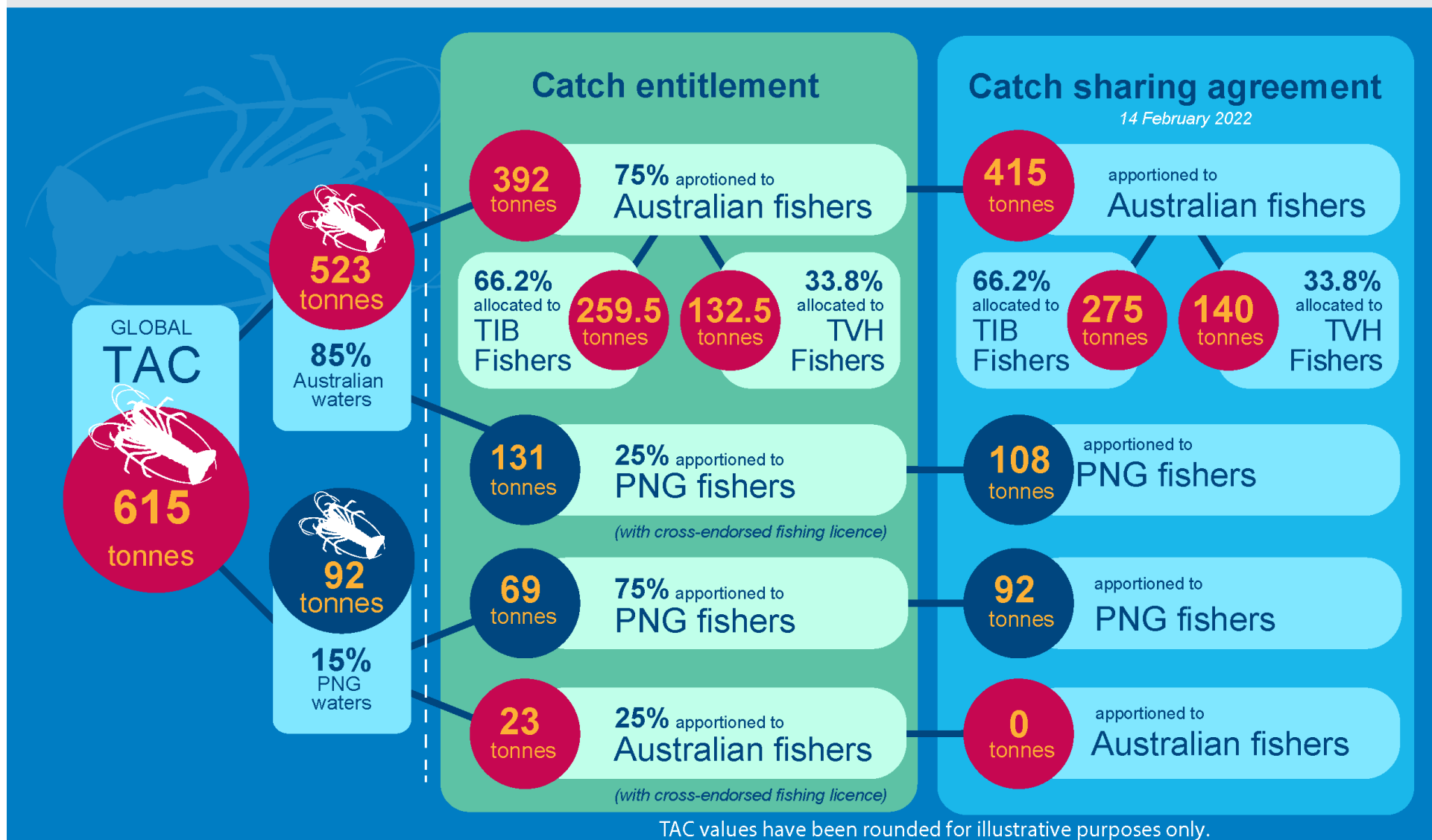
Source: <https://www.austlii.edu.au/au/other/dfat/special/treaties/1985/4.html>

TORRES STRAIT TROPICAL ROCK LOBSTER CATCH SHARING AGREEMENT 2021-22



Australian Government

Australian Fisheries Management Authority



TROPICAL ROCK LOBSTER RESOURCE ASSESSMENT GROUP (TRLRAG) Thursday Island	MEETING 33 13-14 December 2022
UPDATES FROM MEMBERS Native Title Update	Agenda Item 2.4 For NOTING

RECOMMENDATIONS

1. That the RAG **NOTE** any updates on Native Title matters from members, including representatives of Malu Lamar (Torres Strait Islanders) Corporation RNTBC (Malu Lamar).

BACKGROUND

2. AFMA has a standing invite for a representative from Malu Lamar to attend all PZJA advisory committee meetings.
3. On 7 August 2013 the High Court of Australia confirmed coexisting Native Title rights, including commercial fishing, in the claimed area (covering most of the Torres Strait Protected Zone). This decision gives judicial authority for Traditional Owners to access and take the resources of the sea for all purposes. Native Title rights in relation to commercial fishing must be exercisable in accordance with the *Torres Strait Fisheries Act 1984*.
4. Traditional Owners and Native Title representative bodies have an important role in managing Torres Strait fisheries. It is important therefore that the RAG keep informed on any relevant Native Title issues arising.

TROPICAL ROCK LOBSTER RESOURCE ASSESSMENT GROUP (TRLRAG) Thursday Island	MEETING 33 13-14 December 2022
CATCH AND EFFORT ANALYSES FOR THE 2021-22 FISHING SEASON	Agenda Item 3 For discussion and advice

RECOMMENDATIONS

1. That the RAG:

- a. **NOTE** the reported landed catch for the Australian Torres Strait Tropical Rock Lobster Fishery (TRL Fishery) (**Attachment 3a**).
- b. **NOTE** the reported landed catch for the PNG TRL Fishery as reported by the PNG National Fisheries Authority (NFA) (**Attachment 3b**).
- c. **DISCUSS** and **PROVIDE ADVICE** on the catch, effort and catch per unit effort (CPUE) data analyses for the Australian TRL Fishery for the 2021-22 fishing season undertaken and presented by CSIRO (**Attachment 3c**).

KEY ISSUES

Australian TRL Fishery catch

2. The Australian TRL Fishery fishing season runs from 1 December through to 30 September the following year. There is a prohibition on the use of hookah gear from 1 December through to 31 January the following year and periodically each month throughout the remainder of the season.
3. The reported landed catch for the Australian TRL Fishery for the 2021-22 fishing season is 290,308.496 kilograms (290.31 tonnes). All reported catches are from inside the Torres Strait Protected Zone (TSPZ) and Australia's declared outside but near area combined.
4. This equates to 69.93 per cent of Australia's 415,125.0 kilogram (415.125 tonnes) total allowable catch (TAC) for the 2021-22 fishing season. This catch data is sourced from Torres Strait Fisheries Catch Disposal Record (TDB02) and electronic Catch Disposal Records (e-CDRs) and covers the Traditional Inhabitant Boat (TIB) and Transferable Vessel Holder (TVH) sectors.
5. The TIB sector caught 150,592.73 kilograms (150.59 tonnes) of TRL which equates to 54.79 per cent of the TIB TAC and the TVH sector caught 139.72 kilograms (139.72 tonnes) of TRL which equates to 99.58 per cent of the TVH TAC.
6. A summary of the reported landed catch for the Australian TRL Fishery is provided at **Attachment 3a**.

PNG TRL Fishery catch

7. The PNG TRL Fishery fishing season runs from 1 January through to 31 December each year. There is a prohibition on the use of hookah gear in the waters of Western Province and Torres Strait from 1 December through to 31 March the following year.

8. The total reported catch of the PNG TRL Fishery for 2022 (January – October 2022, as at 24 November 2022) is 72,739.86 kgs. This is reported as 40,712.28 kg caught within the Torres Strait Protected Zone (TSPZ) and 31,788.80 kg outside the TSPZ. (**Attachment 3b**).
9. The TAC for the PNG TRL Fishery in 2022, in PNG waters is 92,250 kilograms. Due to COVID-19 restrictions, PNG boats were unable to catch their 107.6 tonne catch allocation in Australian waters this season.
10. NFA have also provided an update on total catch for 2021 (Jan – Dec) which includes the completed months of November and December. An overview of this is also provided at Attachment 3b. The updated total reported catch of the PNG TRL fishery in 2021 is 83,385.61 kilograms. This is an increase of 15,213.99 kilograms of reported catch (without extrapolation) at TRLRAG 32.
11. An infographic showing the final catch sharing agreement between Australia and PNG is shown at **Attachment 2.4b**.

Total reported commercial catch for the TRL stock

12. The total reported commercial catch for the TRL stock is:

Area	Total (kg)	TAC (kg)
Australian TRL Fishery (1 Dec 2021 – 30 Sept 2022)	290,290.65	415,125.00
PNG TRL Fishery* (January – October 2022)	72,739.86	92,250.00
catches inside the TSPZ	40,712.28	
catches outside the TSPZ	31,788.80	
PNG catch allocation within Australian waters	0	107,625.00
Total	297,530.51	615,000.00

* Reported as at 24 November 2022

Catch and catch per unit effort (CPUE) data analyses

13. The annual data summary to be presented by CSIRO under this agenda item reviews the nominal and standardised catch per unit effort (CPUE) from the TIB and TVH sectors, as well as total catch from all sectors, the size-frequency information provided from a sub-sample of commercially caught TRL and the fishery-independent survey indices of 0+ and 1+ age lobsters. The data summary is used as an indicator to identify if catches correspond to the RBC, and to monitor CPUE (section 2.9 of the TRL Harvest Strategy).
14. The RAG is asked to consider the following catch and CPUE analyses CSIRO has prepared for the 2021-22 fishing season and provide advice as appropriate (*TS TRL Data and CPUE summary paper* (**Attachment 3c**)).
15. These analyses will be presented by CSIRO at the meeting. The total catch data and standardised CPUE indices for the TVH and TIB sectors are key inputs to the empirical harvest control rule (eHCR) and integrated stock assessment.
16. Further analyses of the November 2022 pre-season survey data will be presented under **Agenda Item 5**.

Table 1. Reported landed catch (kilograms whole weight) of Tropical Rock Lobster (TRL) for the Australian Torres Strait TRL Fishery by month and sector for the 2021-22 fishing season.

Source: Torres Strait Fisheries Catch Disposal Records (TDB02) and electronic Catch Disposal Records as at 11 November 2022.

Month	Traditional Inhabitant Boat (TIB) sector	Transferable Vessel Holder (TVH) sector	Total (kg)
Dec-21	11,488.54	5,899.06 [#]	17,387.60
Jan-22	11,818.72		
Feb-22	18,085.00	27,770.59	45,855.59
Mar-22	28,485.89	15,002.85	43,488.73
Apr-22	15,671.35	9,541.35	25,212.70
May-22	15,003.07	27,729.13	42,732.20
Jun-22	12,541.94	19,119.06	31,661.00
Jul-22	14,937.56	22,144.83	37,082.39
Aug-22	14,417.21	9,189.39	23,606.60
Sep-22	8,125.60	3,319.50	11,445.11
Total reported catch (kg)	150,574.89	139,715.76	290,290.65
TAC (kg)	274,820.216	140,304.784	415,125.00
Reported catch as a per cent of the TAC*	54.80 %	99.58 %	69.93 %

[#] In accordance with AFMA's Information Disclosure policy (*Fisheries Management Paper 12*), catches by month have been aggregated for December 2021 through to January 2022, as less than 5 boats operated in the Transferable Vessel Holder (TVH) sector.

Table 2. Reported landed catch (kilograms) of TRL for the PNG Torres Strait TRL Fishery by month and processed weight for the Jan – Oct 2022.

Source: PNG National Fisheries Authority reported as at 24 Nov 2022.

PNG Jurisdiction of the TSPZ: Jan - Oct 2022				
Month (2020)	Tail weight (kg)	Tail wt converted to whole wt (C. factor 2.677)	Whole weight (kg)	Total Catch (kg)
JANUARY	367.61		2,739.10	2,739.10
FEBRUARY	353.09	945.22	3,073.49	4,018.71
MARCH	367.87	984.79	5,855.19	6,839.98
APRIL	545.77	1,461.03	7,681.11	9,142.14
MAY	366.04	979.89	5,573.98	6,553.87
JUNE	149.93	401.36	2,394.30	2,795.66
JULY	469.32	1,256.37	1,469.40	2,725.77
AUGUST	382.90	1,025.02	3,984.17	5,009.19
SEPTEMBER	57.77	154.65	175.84	330.49
OCTOBER		-	557.37	557.37
TOTAL	3,060.30	7,208.33	33,503.95	40,712.28
PNG Waters outside but near TSPZ: Jan - Oct 2022				
Month (2018)	Tail weight (kg)	Tail wt converted to whole wt (C. factor 2.677)	Whole weight (kg)	Total Catch (kg)
JANUARY	295.43	790.87	3,538.50	5,313.46
FEBRUARY	277.93	744.02	2,193.09	2,937.11
MARCH	508.46	1,361.15	4,568.83	5,929.98
APRIL	530.51	1,420.18	3,250.39	4,670.57
MAY	450.65	1,206.39	4,810.87	6,017.26
JUNE	96.90	259.40	1,394.60	1,654.00
JULY	382.60	1,024.22	1,531.20	2,555.42
AUGUST	248.90	666.31	2,044.70	2,711.01
SEPTEMBER	83.34	223.10	-	223.10
OCTOBER	-	-	15.68	15.68
TOTAL	2,791.38	7,472.52	23,332.18	31,788.80
PNG Catch Total: Jan - Oct 2022				
Month (2020)	Tail weight (kg)	Tail wt converted to whole wt (C. factor 2.677)	Whole weight (kg)	Total Catch (kg)
JANUARY	663.04	1,774.96	6,277.60	8,052.56
FEBRUARY	631.02	1,689.24	5,266.58	6,955.82
MARCH	876.33	2,345.94	10,424.02	12,769.96
APRIL	1,076.28	2,881.20	10,931.50	13,812.70
MAY	816.69	2,186.28	10,384.85	12,571.13
JUNE	246.83	660.76	3,788.90	4,449.66
JULY	851.92	2,280.59	3,000.60	5,281.19
AUGUST	631.80	1,691.33	6,028.87	7,720.20
SEPTEMBER	141.11	377.75	175.84	553.59
OCTOBER		-	573.05	573.05
TOTAL	5,935.02	15,888.05	56,851.81	72,739.86

Table 3. Update on reported landed catch (kilograms) of TRL for the PNG TRL Fishery by month and processed weight for the Jan – Dec 2021.

Source: PNG National Fisheries Authority reported as at 24 November 2022.

PNG Jurisdiction of the TSPZ: Jan - Dec 2021				
Month (2020)	Tail weight (kg)	Tail wt converted to whole wt (C. factor 2.677)	Whole weight (kg)	Total Catch (kg)
JANUARY	1,167.08	3,124.27	986.22	4,110.49
FEBRUARY	1,277.72	3,420.46	1,468.80	4,889.26
MARCH	1,027.28	2,750.03	1,922.35	4,672.38
APRIL	968.75	2,593.34	1,628.61	4,221.95
MAY	660.72	1,768.75	1,881.60	3,650.35
JUNE	1,088.62	2,914.24	2,627.05	5,541.29
JULY	1,272.12	3,405.47	4,862.17	8,267.64
AUGUST	732.50	1,960.90	1,343.41	3,304.31
SEPTEMBER	630.09	1,686.75	451.70	2,138.45
OCTOBER	1,035.97	2,773.29	886.57	3,659.86
NOVEMBER	1,278.56	3,422.71	659.19	4,081.90
DECEMBER	143.93	385.30	171.39	556.69
TOTAL	11,283.34	30,205.50	18,889.06	49,094.56

PNG Waters outside but near TSPZ: Jan - Dec 2021				
Month (2018)	Tail weight (kg)	Tail wt converted to whole wt (C. factor 2.677)	Whole weight (kg)	Total Catch (kg)
JANUARY	1,271.55	3,403.94	627.79	4,031.73
FEBRUARY	488.96	1,308.95	391.54	1,700.49
MARCH	661.13	1,769.85	746.00	2,515.85
APRIL	784.06	2,098.93	761.59	2,860.52
MAY	790.73	2,116.78	1,203.27	3,320.05
JUNE	876.53	2,346.47	1,396.57	3,743.04
JULY	757.10	2,026.76	2,374.05	4,400.81
AUGUST	436.90	1,169.58	230.17	1,399.75
SEPTEMBER	172.58	462.00	113.14	575.14
OCTOBER	1,846.71	4,943.64	622.54	5,566.18
NOVEMBER	1,466.57	3,926.01	251.49	4,177.50
DECEMBER	-	-	-	-
TOTAL	9,552.82	25,572.90	8,718.15	34,291.05

PNG Catch Total: Jan - Dec 2021				
Month (2020)	Tail weight (kg)	Tail wt converted to whole wt (C. factor 2.677)	Whole weight (kg)	Total Catch (kg)
JANUARY	2,438.63	6,528.21	1,614.01	8,142.22
FEBRUARY	1,766.68	4,729.40	1,860.34	6,589.74
MARCH	1,688.41	4,519.87	2,668.35	7,188.22
APRIL	1,752.81	4,692.27	2,390.20	7,082.47
MAY	1,451.45	3,885.53	3,084.87	6,970.40
JUNE	1,965.15	5,260.71	4,023.62	9,284.33
JULY	2,029.22	5,432.22	7,236.22	12,668.44
AUGUST	1,169.40	3,130.48	1,573.58	4,704.06
SEPTEMBER	802.67	2,148.75	564.84	2,713.59
OCTOBER	2,882.68	7,716.93	1,509.11	9,226.04
NOVEMBER	2,745.13	7,348.71	910.68	8,259.39
DECEMBER	143.93	385.30	171.39	556.69
TOTAL	20,836.16	55,778.40	27,607.21	83,385.61

Torres Strait Tropical Rock Lobster Fishery – Summary of Catch and Effort Data pertaining to the 2022 Fishing Season (Dec-2021 to Sep-2022)

Roy Deng, Robert Campbell, Steven Edgar, Éva Plagányi, Laura Blamey, Nicole Murphy, Leo Dutra and Kinam Salee



CSIRO Environment

December 2022

1. Introduction

This paper provides a summary of the catch and effort data pertaining to the Torres Strait Tropical Rock Lobster (TSTR) fishery during the 2022 fishing season. (Note, a fishing season begins on 1-December in a given year and extends through to 30-September the following year).

2. Catch summary

The catch summary in Table 1 is updated with 2022 season data for TSTR. The TIB sector data are mainly updated from TDB02 - the Torres Strait Catch Disposal Record (CDR) and TVH data are updated mainly from TRL04 - the Torres Strait Tropical Rock Lobster Fishery Daily Fishing Log. PNG data are updated to October 2022 from PNG NFA data via AFMA; East coast data are from the QFish website (<https://fishnet.fisheries.qld.gov.au/Content/Public/ViewReport.aspx?ReportID=2>).

A couple of TIB records were dated as November 2022, but they are considered as error reporting and the associated catches are added to the December totals for correctly analysing the data.

The 2022 fishing season combined catch recorded by the TIB and TVH sectors was 291.4 tonnes (rounded) which represents a 19.5% increase from last season and equates to about 70% of their quota. The total catch of TIB, TVH and PNG is 380.2 tonnes representing 61.8% of the 2022 TAC. TIB and TVH caught 150.6 and 140.8¹ tonnes respectively, representing a 19% and 20% increase from last season. The Australian sector catches represent 55% and 100% of the allocations for the TIB and TVH sectors respectively.

Please refer to the following figures and tables for summaries of catch:

- Table 1 for the annual catch for TSTR shown by fishing season (Dec-Sept for each year)
- Figure 1 for Catch composition for each of sectors
- Figure 2 for Catch time series for each of the processed states.
- Figure 3 for TIB data-coverage by each of the report categories
- Figure 4 for TVH annual catch for different processed states.
- Figure 5 for TVH annual tail/whole catch percentage.

¹ Note the CDR official data total is 139.716 tonne whereas the CSIRO logbook database for TVH totals 140.772 tonne.

- Figure 6. TIB and TVH 2022 monthly catch proportion vs average (2004-2022) monthly catch proportion.
- Figure 7. TIB and TVH 2022 monthly catch proportion vs average (2004-2022) monthly catch proportion.
- Figure 8. TIB and TVH annual effort trajectories

3. Effort summary

The effort summary in Table 2 is updated from the same data sources indicated in the catch summary, except that they exclude the small number of additional late records as referred to above. The effort unit for TVH is tender-shot day and TIB is crew day adjusted from the original data source.

The 2022 TVH sector fishing effort was 1,328 tender-days and TIB sector was 3,318 days fished which indicates respectively a 18% drop and 12% increase relative to the previous season. The nominal catch rates for both sectors increased during the 2022 season (see TVH_CPUE and TIB_CPUE updates).

Summaries of the effort data are provided in the following figures and tables:

- Table 2 for the annual effort for TVH and TIB sector
- Figure 8 for TIB and TVH annual effort trajectories.

Table 1. Total annual catch (in tonnes) for each of the sectors as indicated

SEASON	TIB	TVH	PNG DIVERS	PNG TRAWL	TS TOTAL	EAST COAST
2001	52.0	79.9	173.0	5.4	310.3	204.3
2002	68.0	147.2	327.0	42.8	585.0	114.2
2003	123.0	358.8	211.0	5.4	698.2	95.3
2004	210.4	481.0	182.0	0.0	873.4	185.5
2005	367.6	549.0	228.0	0.0	1144.6	140.6
2006	140.5	135.4	142.0	0.0	417.8	202.4
2007	268.7	268.6	228.0	0.0	765.3	239.5
2008	185.7	100.4	221.0	0.0	507.1	243.9
2009	147.8	91.1	161.4	0.0	400.3	182.6
2010	140.0	282.6	292.8	0.0	715.5	128.8
2011	199.1	503.5	165.0	0.0	867.6	146.6
2012	142.4	387.3	173.7	0.0	703.4	157.6
2013	142.5	361.7	108.3	0.0	612.5	166.2
2014	198.8	273.2	151.4	109.8	733.2	176.4
2015	202.6	152.7	235.7	0.0	591.0	125.0
2016	267.1	243.0	248.0	0.0	758.1	194.0
2017	111.6	166.3	113.0	0.0	390.8	194.9
2018	127.4	128.3	156.4	0.0	412.1	159.8
2019	260.6	155.9	167.0	0.0	583.5	108.0
2020	216.2	145.1	126.4	0.0	487.7	108.0
2021	126.8	117.1	97.0	0.0	340.8	108.0
2022	150.6	140.8	88.8 ²	0.0	380.2	136.7
Last 5 year mean	176.3	137.4	127.1	0.0	440.9	124.1

² 2022 PNG catch data is only available to October. Further extrapolation applied to get the whole seasonal catch using the same assumption (based on average catch) as previously.

Table 2. Effort for TVH (tender-shot days) and TIB (days fished)

Season	TVH	TIB
2004	5217	4830
2005	4389	8613
2006	2427	4795
2007	2861	7099
2008	1211	5788
2009	1293	4859
2010	2366	3717
2011	2667	3460
2012	2380	2330
2013	3008	288
2014	2910	2930
2015	2682	3228
2016	2654	2932
2017	2515	3100
2018	1506	3537
2019	1910	4530
2020	1267	2742
2021	1621	2962
2022	1328	3318

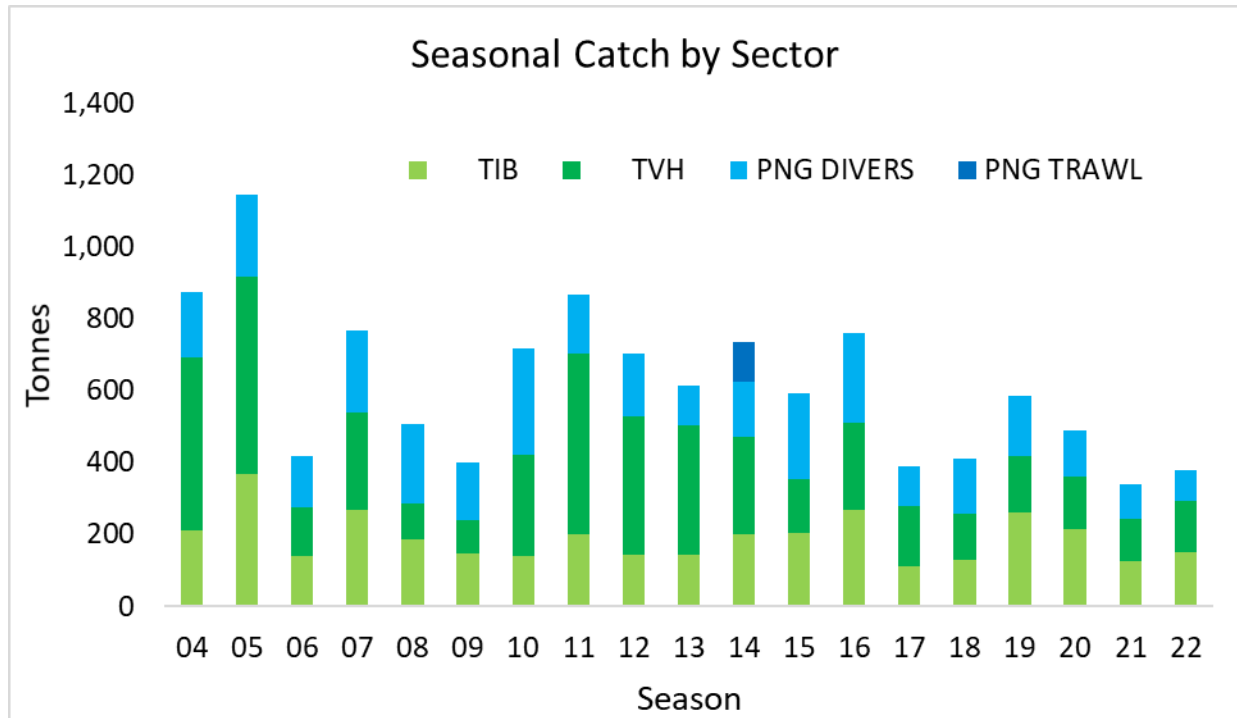


Figure 1. Catch composition for each of the Torres Strait Tropical Rock Lobster sectors

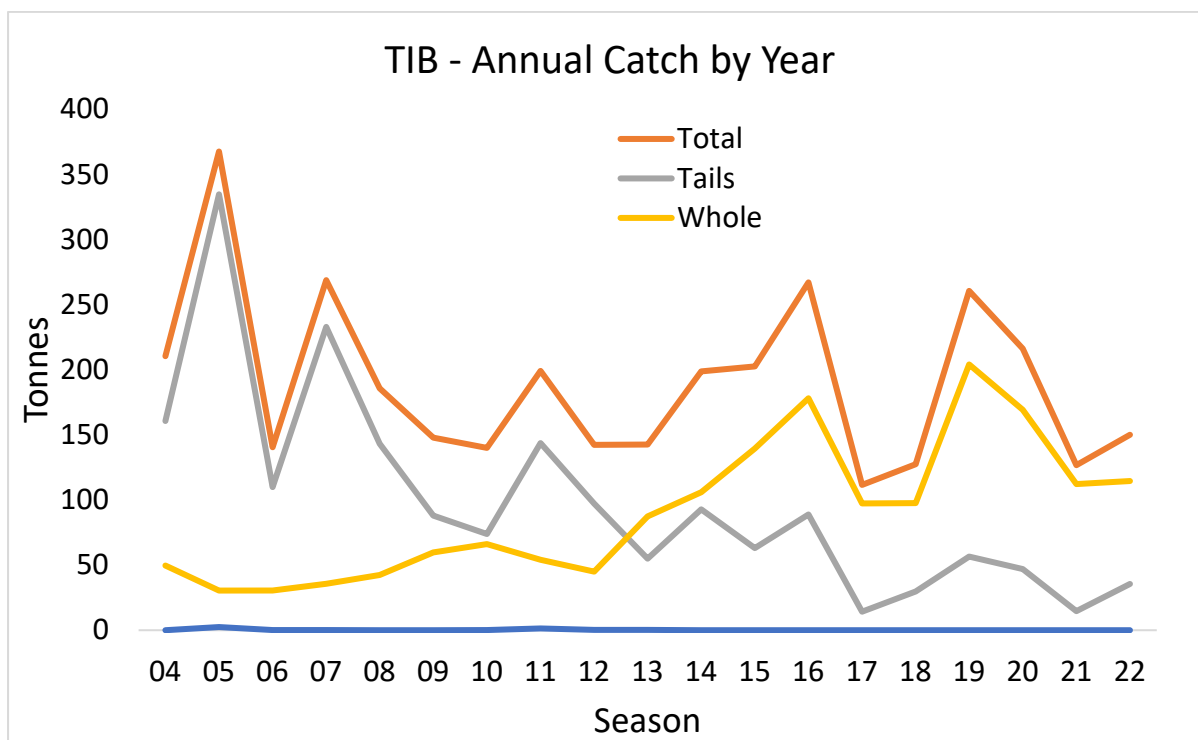


Figure 2. Catch time series for each of the processed states for TRL taken by the TIB sector.

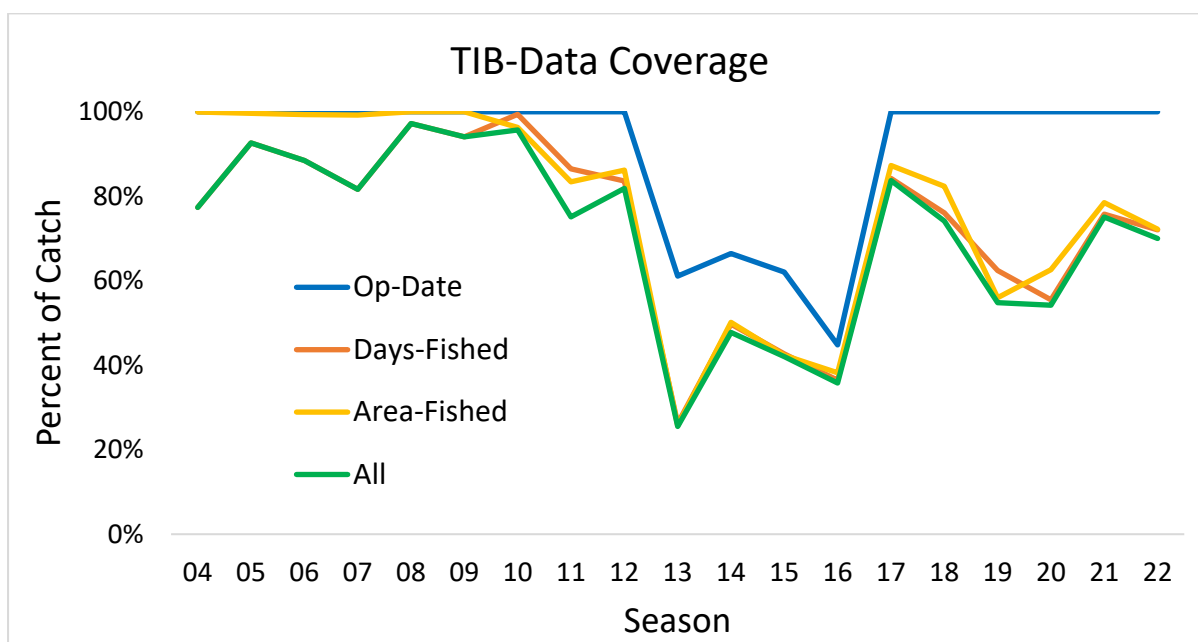


Figure 3. TIB data-coverage by each of the report categories as shown (Op-Date refers to “Operation date” in the logbook)

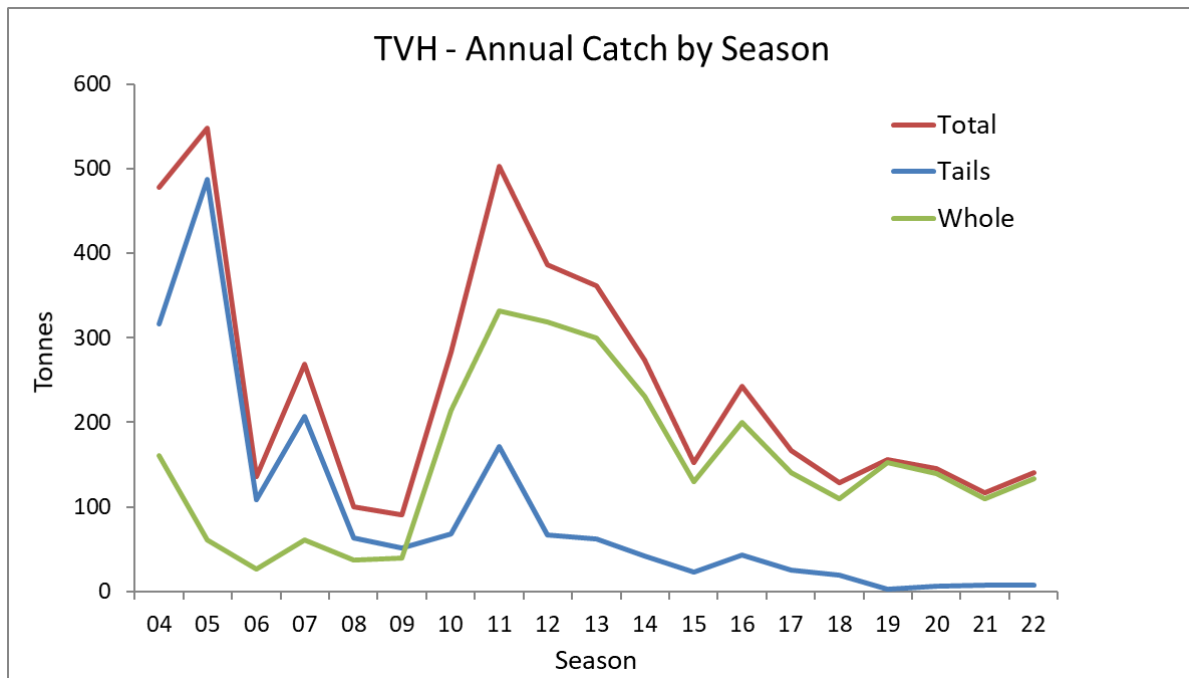


Figure 4. TVH annual catch for different processed states.

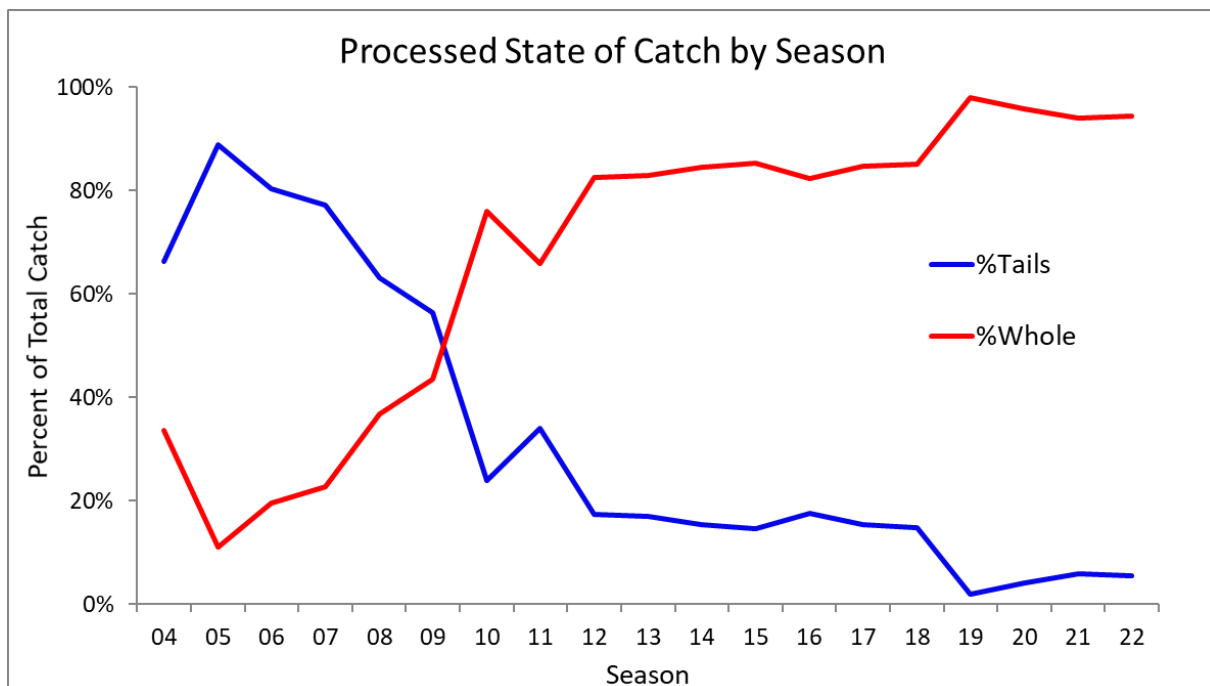


Figure 5. TVH annual tail versus whole catch percentage.

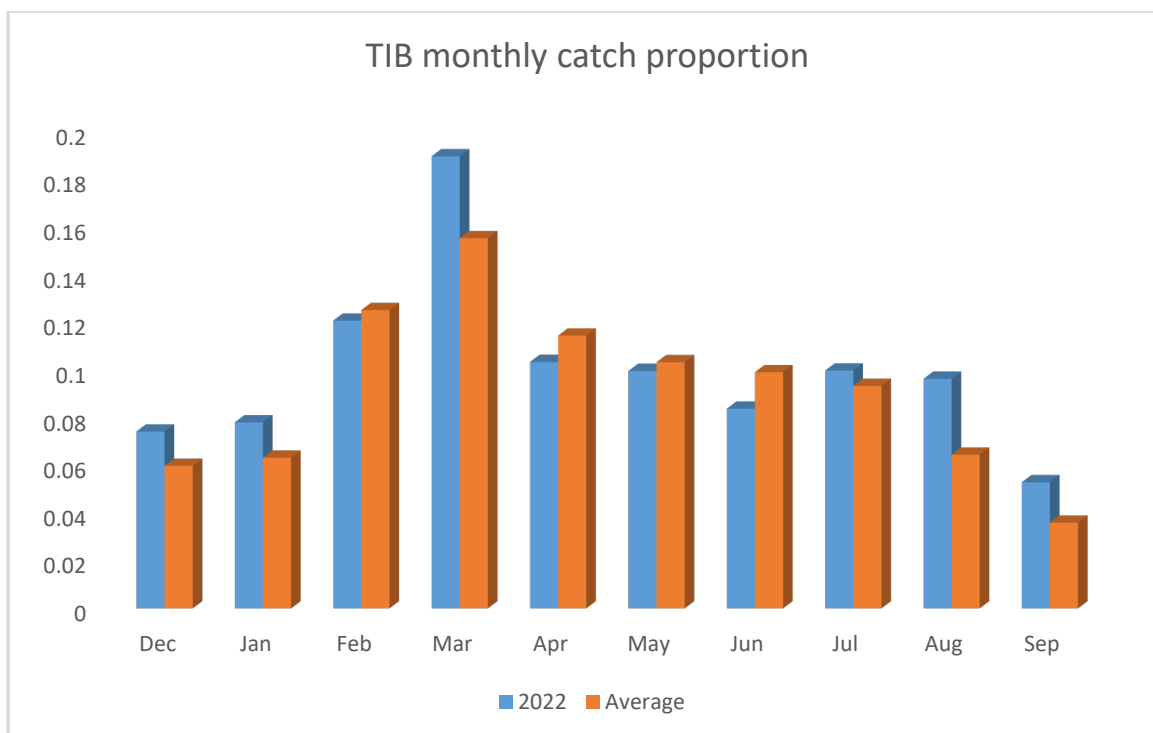


Figure 6. TIB 2022 monthly catch proportion vs average (2004-2022) monthly catch proportion.

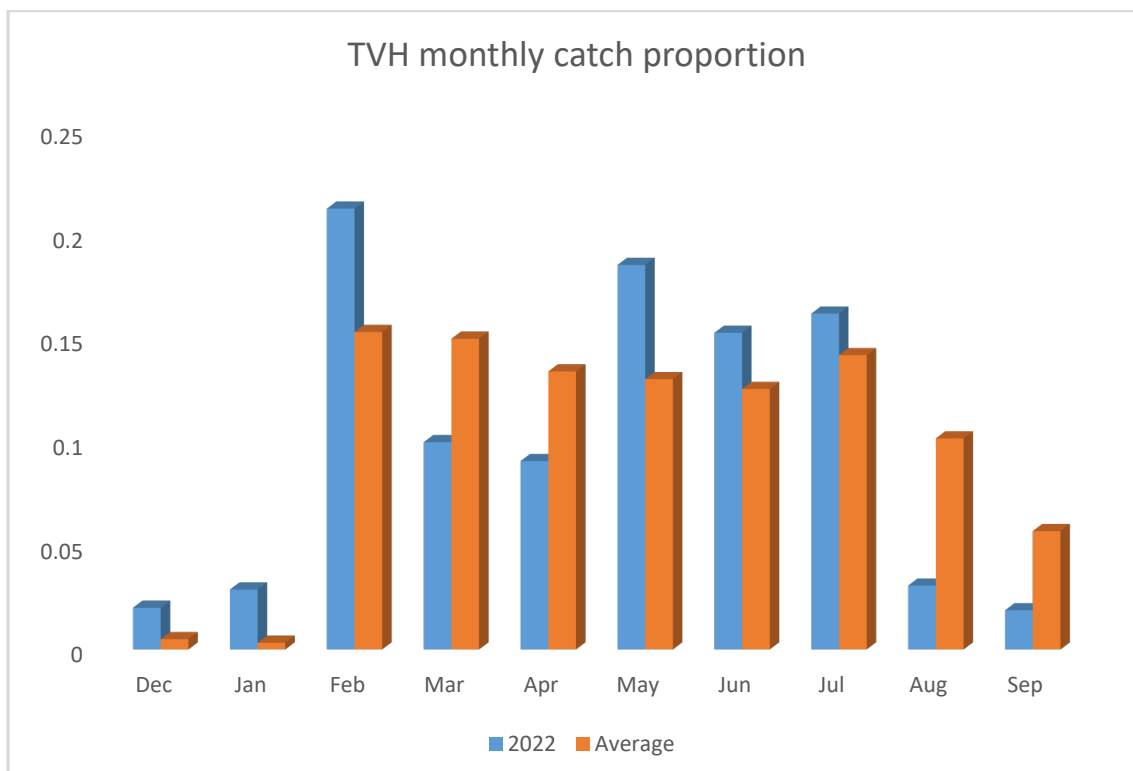


Figure 7. TVH 2022 monthly catch proportion vs average (2004-2022) monthly catch proportion.



Figure 8. TIB and TVH annual effort trajectories.

Use of TIB Logbook Data to construct an Annual Abundance Index for the Torres Strait Rock Lobster fishery— 2022 Update

Roy Deng, Robert Campbell, Steven Edgar, Éva Plagányi, Laura Blamey, Nicole Murphy, Leo Dutra and Kinam Salee



CSIRO Environment

December 2022

1. Selection of TIB Data for CPUE analysis

Considerable effort has gone into understanding the nature of both the TDB01, TDB02 Docket-Book and TRL04 Logbook data so as to identify the catch records that should be assigned to the TIB sector of the fishery. A full description of the approach and data-rules used to identify and remove these duplicate records from the Docket-Book data is described in Campbell and Pease (2017) and Campbell et al. (2021). Each catch record in the TIB data is associated with a Record-No, and the structure of the Docket-Book would seem to indicate that there should be a unique Record-No for each vessel, date and seller-name. However, investigation of the data indicates that there are often multiple Record-Nos associated for a given vessel, date and seller-name. The reason for these multiple records remains unknown but may be due to incorrect recording of dates, etc.

In order to identify an appropriate data structure for analysis, we used the same procedure as previously to filter the data:

1. The TIB data was aggregated over vessel-symbol, date and seller-name. Where the vessel-symbol or seller-name was null these fields were set to 'Unknown'. Data was limited to the seasons 2004 to 2022 resulting in a total of 62,721 aggregate Vessel-Day-Seller records (hence-forth known as VDS records);
2. Only those VDS records having a unique Record-No were selected for analysis – accounting for 60,256 (96.1%) of the VDS records identified in the previous step. It was assumed that where the vessel or seller were unknown, that selection of only those GLM records having a unique Record-No limited the GLM records chosen to those associated with a single vessel and a single seller;
3. VDS records were also deleted where any of the number of fishers, the number of days fished, the number of methods, the area fished, and the Seller-Home were not unique or remained unknown (i.e. not recorded). Records associated with the TRL04 logbook or where the catch was zero were also deleted. This resulted in 50,107 VDS-records being retained.
4. Finally, VDS records were only retained where they satisfied the following criteria:
 - a. the month was not October or November,
 - b. the fishing method listed in Table 2 was either 'Hookah diving', 'Free diving', 'Lamp fishing' or some combination of these three methods (denoted 'Mixed'),
 - c. the number of fishers was between 1 and 3,

- d. the number of days fished was between 1 and 9,
 - e. the recorded catch weight was between 1kg and 500kg, Note, the distribution of catches is over-dispersed, with 0.54% of records having a catch greater than 500kg and 0.17% of records having a catch greater than 1000kg.
- The records for a few large vessels which were considered non-representative of the TIB fishing sector were also removed.
5. Finally, the records for the 2013 season were also deleted due to the small number of records for this season (72) compared to all other seasons (between 1,111 and 5,725). The small number for 2013 was because many of the fields on the TDB-01 Docket-Book that season were left blank.
 6. This procedure resulted in 47,280 VDS records being selected for analysis.

2. Method

As in previous years, several different General Linear Models (GLMs) were adopted for analysing the data in order to obtain a standardised relative index of stock abundance in each year. Rob Campbell originally implemented the GLM methods to apply to TIB CPUE standardisation, and the full technical details are provided in Campbell et al. (2019), Plagányi et al. (2022) and Campbell et al. (2021).

General Linear Models (GLM) were fitted to the selected TIB data in order to standardise the CPUE to account for changes in the distribution of records across a number of effects (e.g. Season, Month, Area and Fishing-Method). The measure of effort for the TIB data was taken to be days-fished. The catch rate associated with each GLM record was then defined to be the mean weight of lobsters caught per day-fished, i.e.

$$CPUE = \frac{\text{Whole Weight of landed lobsters}}{\text{Number of days fished}}$$

In order to investigate the influence of the various effects on the catch rate associated with each GLM data record, and to help account for the possible misreporting of the Area fished on Docket-Book records (as noted by TSRL-RAG23 in May 2018), the following two models were fitted to the data records as described above. All GLMs were weighted as described in Campbell (2019) and Campbell et al. (2021).

Model-1: Main Effects Model

To explore the impact of each main effect included in the GLM, the first set of analyses was based on the following model where no interactions between main effects were included:

$$CPUE = \text{Intercept} + \text{Season} + \text{Month} + \text{Area-Fished} + \text{Fishing-Method} \\ + \text{Proportion-landed as Tails} \\ + \text{Southern Oscillation Index} + \text{Moon-Phase} \\ / \text{distribution} = \text{gamma, link} = \log$$

$$= I + S + M + SI + + F + P + SOI + Moon / \text{dist} = \text{gamma, link} = \log$$

where:

- a) *Season* has 18 levels: 2004-2012, 2014-2022.
- b) *Month* has 10 levels: December-to-September.
- c) *Area-Fished* corresponds to the *Seller-Home* and has 13 levels as shown in Table 7 (the three levels Other, Northern-TS and Unknown were not used due to the small number of records for these areas).
- d) *Fishing-Method* has 4 levels: (1) Hookah, (2) Free Diving, (3) Lamp Fishing, and (4) Mixed methods.
- e) *Proportion-Tails* has 5 levels: (1) <20%, (2) 20-40%, (3) 40-60%, (4) 60-80%, and (5) ≥80%.
- f) *SOI* is the monthly value of the Southern Oscillation Index.
- g) *Moon-Phase* has 30 levels: the number of days after the last full moon.

Interactions Models

A second set of analyses was undertaken to explore whether the inclusion of interactions between the main spatial-temporal effects improved the model fit to the data. Specifically, the following three models were examined:

Model-2: Int-1:

$$CPUE = \text{Intercept} + \text{Season} + \text{Month} + \text{Month} * \text{Area} \\ + \text{Fishing-Method} + \text{Proportion-Tails} + \text{SOI} + \text{Moon} \\ / \text{distribution} = \text{gamma, link} = \log$$

Model-3: Int-2:

$$CPUE = \text{Intercept} + \text{Season} * \text{Month} + \text{Season} * \text{Area} + \text{Month} * \text{Area} \\ + \text{Fishing-Method} + \text{Proportion-Tails} + \text{SOI} + \text{Moon} \\ / \text{distribution} = \text{gamma, link} = \log$$

Model-4: Int-3:

$$CPUE = \text{Intercept} + \text{Season} * \text{Month} * \text{Area} \\ + \text{Fishing-Method} + \text{Proportion-Tails} + \text{SOI} + \text{Moon} \\ / \text{distribution} = \text{gamma, link} = \log$$

where * indicates an interaction between the related effects. The inclusion in these interactions allows for the relative distribution of the resource between the different areas and months to be different between seasons.

A further set of models were run to include the “Seller” effect, this model has previously been adopted by the TRLRAG as the default for input to the eHCR. All effects were fitted as categorical effects except for SOI which was fitted as a continuous cubic function.

Using results from each GLM, an annual abundance index was constructed. As the standardised-CPUE is taken as an index of the density of fish within each stratum, an index of the abundance of lobsters across the fishery for each season can be obtained

by taking the average across the *Month* indices in each season. Finally, a relative annual abundance index, B_s , was calculated such that the mean index over all seasons equals 1.

3. Results of Standardisation of Annual Abundance Indices

The seasonal abundance indices based on each of the four GLM models listed in the previous section are listed in Table 1 and Figure 1 respectively. Relative to the nominal index, each of the standardised indices displays a number of substantive shifts, generally being lower than the nominal index over the first half of the time-series and higher than the nominal index during the second half (i.e. since 2012 to 2018). The general nominal TIB CPUE trends are also shown in Figure 2.

As outlined in Campbell et al (2019, 2021), the reasons for these changes can be investigated using the seasonal influence of each factor for the Main and Seller models. The influence on the seasonal index is seen to be greatest for the *Proportion-Tails* effect, and the decreasing trend observed over time is correlated with the shift from the catch being predominantly tails to now being predominantly whole lobsters, with the latter process type decreasing CPUE. The other effect having a substantive influence on the annual index is the *Seller* effect, and while displaying a variable influence over time, the influence of this effect has increased in recent seasons resulting in an increase in catch rates. This indicates that there has been an increase in the relative fishing efficiency of *Sellers* in recent seasons, which when accounted for in the standardisation model leads to a decrease in the standardised CPUE. The influence of the *Seller* effect in recent seasons therefore explains the divergence seen between the standardised indices based on the Main and Seller models during this period. The annual influence of the other effects included in the standardising models is seen to be negligible, likely because there has been no systematic shift in the relative degree of fishing within each level of these effects over time. For example, the proportion of fishing during each level of Moon-phase is likely to have remained unchanged over time (likely being relatively equal each season).

Based on discussions over the past few years, Model “Seller” is considered the preferred model.

Table 1. Relative abundance indices based on standardised CPUE data for the TIB fishery. Note, each index is scaled so that the mean of the index over all years is equal to 1. The model “Seller” has previously been adopted by the TRLRAG as the default for input to the eHCR.

Models	Main	In(CPUE) = Season + Month + Method + Percent_Tails + SOI + Moon							
	Int - M*A	In(CPUE) = Season+ Month + Month*Area + Area + Method + Percent_Tails + SOI + Moon							
	Seller	In(CPUE) = Season + Month + Method + Percent_Tails + Seller + SOI + Moon							
	Seller -Int M*A	In(CPUE) = Season + Month +Month*Area + Area + Method + Percent_Tails + Seller + SOI + Moon							
Index scales so mean over all years = 1									
Season	Nominal	Main	Int - M*A			Seller	Seller Int-M*A		
04	0.97	0.85	0.85			0.92	0.92		
05	1.18	0.97	0.98			1.04	1.05		
06	0.78	0.73	0.73			0.77	0.78		
07	0.94	0.84	0.85			0.88	0.90		
08	0.91	0.75	0.76			0.84	0.84		
09	0.84	0.90	0.91			0.97	0.98		
10	0.93	0.97	0.96			1.00	1.01		
11	1.48	1.35	1.35			1.35	1.35		
12	1.21	1.11	1.10			1.16	1.16		
13									
14	0.94	0.95	0.96			0.96	0.96		
15	0.69	0.80	0.80			0.85	0.83		
16	0.94	1.10	1.08			1.03	1.02		
17	0.80	0.96	0.96			0.92	0.92		
18	0.84	0.88	0.88			0.85	0.86		
19	1.12	1.29	1.25			1.13	1.12		
20	1.40	1.41	1.42			1.23	1.22		
21	1.03	1.16	1.16			1.08	1.08		
22	1.01	0.99	0.99			1.00	1.00		
Mean	1.00	1.00	1.00			1.00	1.00		

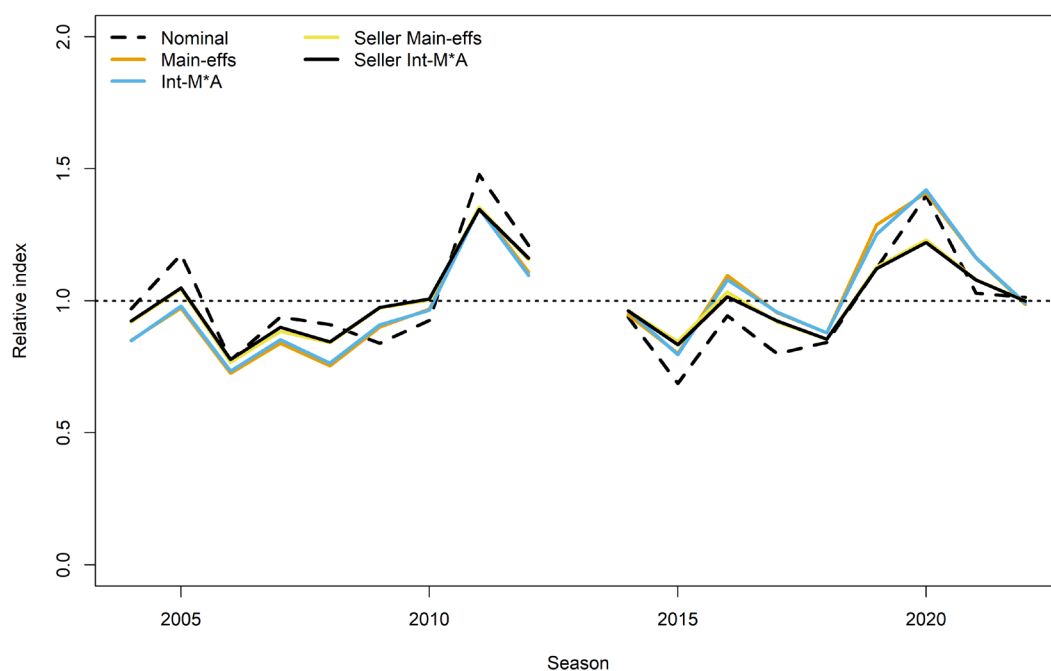


Figure 1. Relative indices of resource abundance based on each of the models fitted to the catch and effort data for the TIB fishery. The nominal CPUE is also shown for comparison. The model “Seller” is the default series used for the eHCR.

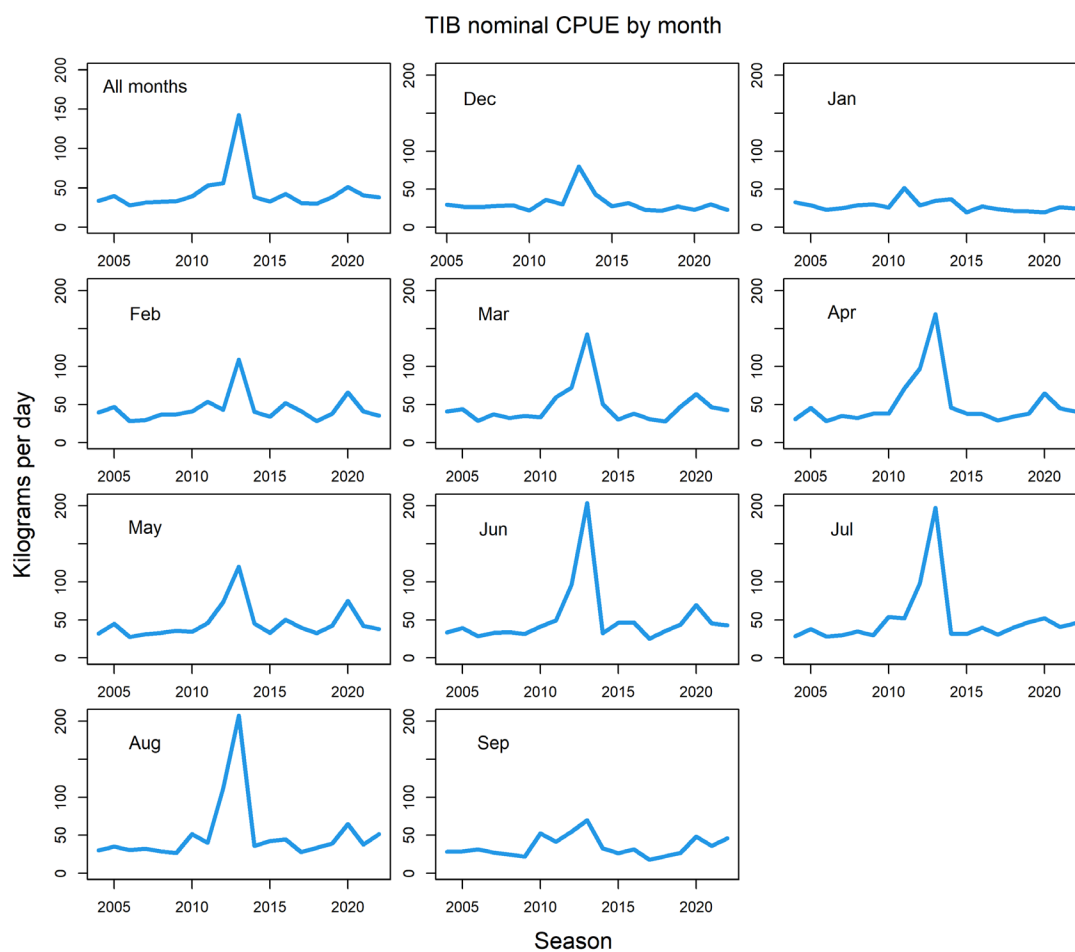


Figure 2. The TIB CPUE nominal time series shown per month.

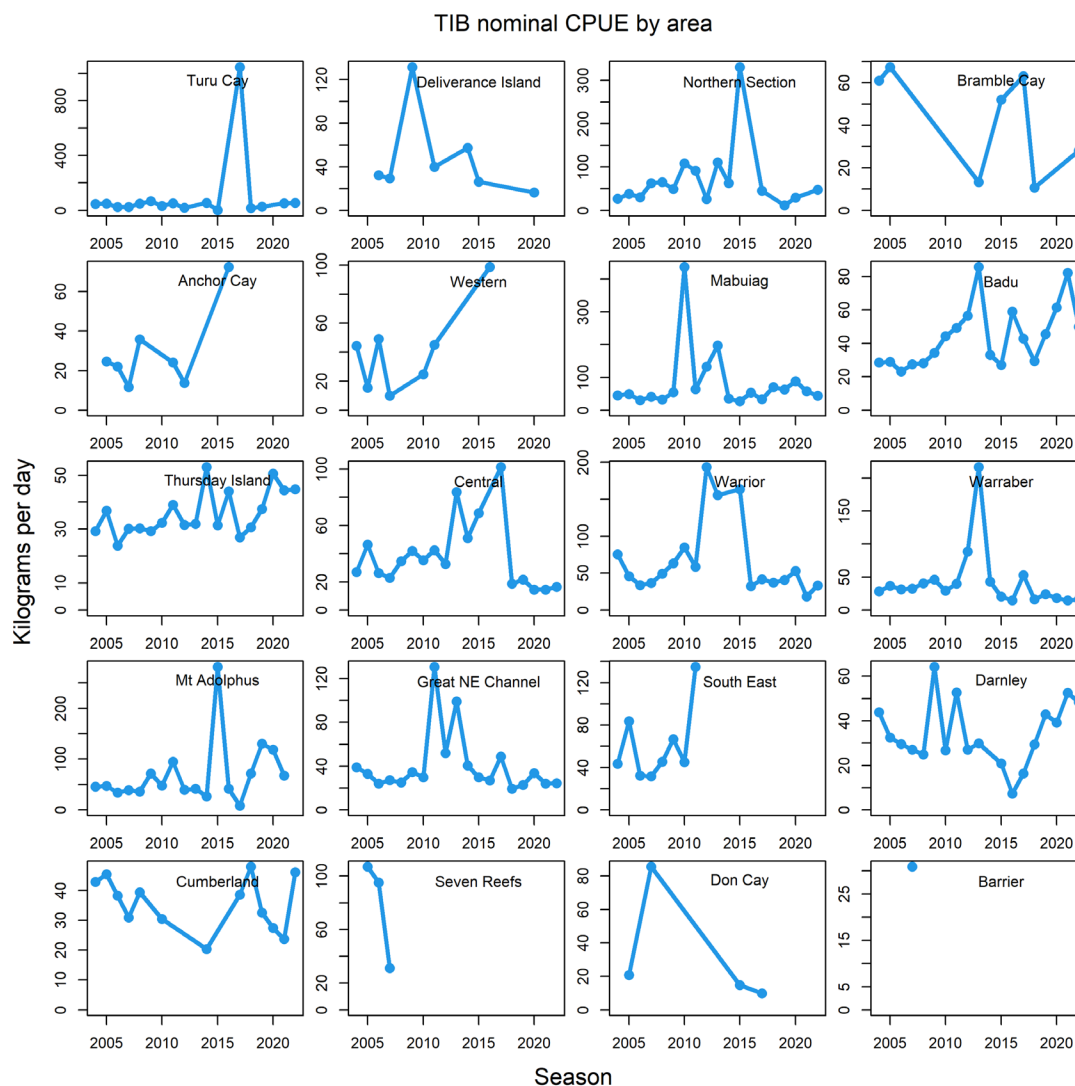


Figure 3. The TIB CPUE nominal time series as per fished area.

Acknowledgement

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Use of TVH Logbook Data to construct an Annual Abundance Index for Torres Strait Rock Lobster – 2022 Update

Roy Deng, Robert Campbell, Steven Edgar, Éva Plagányi, Laura Blamey, Nicole Murphy, Leo Dutra and Kinam Salee



CSIRO Environment

December 2022

1. TVH Data

The Torres Strait Tropical Rock Lobster Fishery Daily Fishing Log (TRL04) was used to record the catches taken in the TVH sector of the Torres Strait Tropical Rock Lobster fishery. Logbook data obtained from AFMA consists of over 100,000 individual catch records for the TVH rock-lobster fishery for the 28 years from 1994 to 2022. For each vessel-day there can be multiple shots (up to 4) with each shot consisting of up to 8 tenders. Each tender has a catch recorded by diving method (hookah, free or unknown) and the catch is recorded by processed form (whole, tailed or unknown). The data were aggregated so that each record refers to the rock-lobster catch for a unique vessel-day, shot, tender and diving method. This gave 76,601 records.

The distribution of these 76,601 catch records was analysed by year and month, diving method, processed state of catch and area. The analysis was limited to the 8 months between February and September, the other months had minimal effort recorded and are omitted (see Campbell et al., 2019 and 2021 for details). Similarly, the analysis was also limited to those records with a known MSE-area (i.e. areas designated A0 and A99 were excluded). MSE-areas 201 and 202 were combined and designated as area 101 (to provide a better data coverage), and area 401 (GBR) was also excluded.

2. Method

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 GLM methods applied were the same as those previously applied (see full technical details provided in Campbell et al. 2019 and 2021, Plagányi et al. 2020).

The GLM models include:

Model-1: Main Effects Model

To explore the impact of each main effect included in the GLM, the first set of analyses was based on the following model where no interactions between main effects were included:

$$\begin{aligned} \text{CPUE} = & \text{Intercept} + \text{Season} + \text{Month} + \text{Area} + \text{Vessel} + \text{Fishing-Method} \\ & + \text{Proportion of Catch Landed as Tails} \\ & + \text{Southern Oscillation Index (SOI)} + \text{Moon-Phase} \\ & / \text{distribution} = \text{gamma, link} = \text{log} \end{aligned}$$

where:

- a) *Season* has 28 levels: 1994-2022 (see below)

- b) *Month* has 8 levels: February–to–September.
- c) *Area* has 10 levels (Campbell, et al 2021, Table 3)
- d) *Vessel* has 51 levels (Campbell, et al 2021, Figure9)
- e) *Fishing-Method* has 3 levels: (1) Hookah, (2) Free Diving, (3) Unknown
- f) *Proportion-Tails* has 5 levels: (1) <20%, (2) 20-40%, (3) 40-60%, (4) 60-80%, (5) ≥80%
- g) *SOI* is the monthly value of the Southern Oscillation Index
- h) *Moon-Phase* has 30 levels: the number of days after the last full moon.

The SAS GENMOD procedure was used to fit the model. All effects were fitted as categorical effects except for SOI which was fitted as a continuous cubic function. A log-gamma distribution was assumed for the distribution of CPUE values. The annual index of abundance was determined using the method described in the next section

The simple structure of this Main Effects model is based on some simplified assumptions. For example, it assumes that the influence of each level of a given main effect is the same across all other combinations of the other main effects. For example, the relative influence of each *Month* is assumed to be the same across all *Seasons* and *Areas*, and similarly the relative influence of each *Area* is the same across all combinations of *Month* and *Season*. Whilst these assumptions may to some extent approximate reality, there may be instances where some assumptions are not fulfilled. For example, there appears to be a degree of inter-annual variation in the relative level of catch rates in different areas across different seasons. Such variation can be accounted for in the models described below.

For each of the main effects, a measure of the impact of each level on the modelled CPUE was obtained by taking the exponent of the estimated parameter for each level. The impact of each level was then compared to the impact of a reference level. For each main effect these reference levels were:

<i>Month</i>	September
<i>Area</i>	A110, Eastern Torres Strait
<i>Method</i>	Hookah diving
<i>Vessel</i>	Vessel with the largest number of records
<i>Proportion-tails</i>	>80%

Finally, the annual influence of each of the main effects on the resulting index of abundance was calculated using the method described in Bentley et al (2012).

As shown in Campbell (2004) a bias in the annual abundance index can result when there is an unequal number of observations within each spatial-temporal stratum used for calculating the abundance index. In order to overcome this problem a weighting of the observations needs to be incorporated when fitting the data to the GLM. Each observation was therefore weighted such that the sum of the weights for all observations in each of the *Season-Month-Area* strata was the same for all strata. Furthermore, in order to account for the weighting given each observation in determination of the annual influence of each main effect, the sum of the weights for all observations within a given level was used instead of just the number of observations.

Interactions Models

A second set of analyses was undertaken to explore whether the inclusion of interactions between the main spatial-temporal effects improved the model fit to the data. Specifically, the following three models were examined:

Model-2: Int-1:

$$CPUE = \text{Intercept} + \text{Season} + \text{Month} + \text{Month} * \text{Area} \\ + \text{Vessel} + \text{Fishing-Method} + \text{Proportion-Tails} + \text{SOI} + \text{Moon} \\ / \text{distribution} = \text{gamma, link} = \log$$

Model-3: Int-2:

$$CPUE = \text{Intercept} + \text{Season} * \text{Month} + \text{Season} * \text{Area} + \text{Month} * \text{Area} \\ + \text{Vessel} + \text{Fishing-Method} + \text{Proportion-Tails} + \text{SOI} + \text{Moon} \\ / \text{distribution} = \text{gamma, link} = \log$$

Model-4: Int-3:

$$CPUE = \text{Intercept} + \text{Season} * \text{Month} * \text{Area} \\ + \text{Vessel} + \text{Fishing-Method} + \text{Proportion-Tails} + \text{SOI} + \text{Moon} \\ / \text{distribution} = \text{gamma, link} = \log$$

where * indicates an interaction between the related effects. The inclusion in these interactions allows for the relative distribution of the resource between the different areas and months to be different between seasons.

Using results from each GLM an annual abundance index was constructed based on the standardised CPUE with the major effects from the Year, Month and Area factors to derive the annual index. In total there are 2240 (=28 years x 8 months x 10 areas) *Year-Month-Area* strata. The standardised-CPUE is taken as an index of the density of fish within each stratum, used to inform an index of the abundance of lobsters across the fishery in each year and month (and/or area). Finally, a relative annual abundance index, B_y , was calculated such that the mean standardised index over all years equals 1.

3. Results of Annual Abundance Indices

The relative abundance indices based on each of the six GLM models are listed and displayed in Table 1 and Figure 1 respectively. Relative to the nominal index (see Fig. 1), each of the standardised indices is similar but is higher at the start of the time-series and lower after 2012. As outlined in Campbell et al (2019, 2021), the reasons for these differences can be investigated using the annual influence of each main effect for the Main-Effects and Int-1 models. The influence on the annual index is seen to be greatest for the *Vessel* effect followed by the *Proportion-Tails* effect, with the influence of each effect showing an opposing trend over time. The change in the influence of the *Proportion-Tails* effect correlates with the shift from the catch being all tails to now being predominantly whole, which decreases CPUE, while the change in the influence of the *Vessel* effect could be due to an (expected) increase in the relative fishing power of vessels over time. The relative influence of the *Vessel* effect is seen to be greatest towards the start and end of the time-series and explains the divergence seen between the nominal and standardised indices at these times.

For strata with missing observations, the standardised CPUE needs to be imputed. (Note, the number of factors for which the standardised CPUE needs to be imputed for each model is shown in Table 1). The corresponding value using the Int-1 model was

used for the imputation, as this model allows the standardised CPUE to be calculated within all strata.

The relative abundance indices based on each of the four GLM models are displayed and listed in Figure 1 and Table 1, respectively. Relative to the nominal index, each of the standardised indices displays a similar seasonal pattern but is higher at the start of the time-series and similar, if not slightly lower, than the nominal index for seasons after 2012.

Figure 2 demonstrates the seasonal variation in the nominal CPUE. The figure shows no obvious difference of nominal CPUE when using tender-set as effort from the record of all tenders and set fishing 0.5-12 hours. The CPUE in kilograms per fished hour also track the same trends as the former type CPUE.

Figure 3 shows the equivalent CPUE to those of Figure 2 in monthly variation, and with a focus on Season 2022. It indicates that in Jan, CPUE peaks, then flattens during the winter and increases at the end of the season.

Figure 4 shows the seasonal CPUE from all tender records for each of the months.

Figure 5 shows the seasonal CPUE from all tender records for each of the Areas.

Table 1. Annual relative abundance indices for the TVH sector of the Torres Strait rock lobster fishery based on the standardised CPUE from the weighted GLM models. The index based on nominal CPUE is also shown for comparison. The model “Int-1” has been adopted by the TRLRAG as the default index for use as an input to the eHCR.

Models	Main Effs	cpue = season month area method tails vessel soi				
	Int-1 (Int-M*A)	cpue = season month*area method tails vessel soi				
	Int-2 (S*M+S*A+M*A)	cpue = season*month season*area month*area method tails vessel soi				
	Int-3 (S*M*A)	cpue = season*month*area method tails vessel soi				
Season	Nominal	Main-Effs	Int-1	Int-2	Int-3	Mid-year Survey
94	0.89	1.44	1.44	1.38	1.36	1.03
95	0.96	1.41	1.38	1.34	1.32	1.76
96	0.93	1.04	1.03	1.04	1.01	0.91
97	1.03	1.19	1.17	1.10	1.11	0.79
98	0.98	1.12	1.11	1.09	1.06	1.05
99	0.76	0.68	0.67	0.67	0.66	0.35
00	0.62	0.70	0.70	0.73	0.72	0.47
01	0.44	0.44	0.44	0.46	0.48	0.18
02	0.77	0.69	0.68	0.62	0.63	0.64
03	1.03	1.05	1.04	0.98	0.97	1.71
04	1.09	1.16	1.16	1.11	1.10	1.24
05	1.48	1.48	1.48	1.38	1.34	1.60
06	0.68	0.69	0.69	0.64	0.63	0.59
07	1.08	0.98	0.98	0.96	0.97	1.20
08	0.87	0.86	0.86	0.90	0.93	0.71
09	0.62	0.65	0.66	0.69	0.72	0.90
10	1.24	1.12	1.14	1.25	1.27	1.01
11	2.11	1.74	1.75	2.04	2.06	1.71
12	1.68	1.39	1.40	1.26	1.29	1.11
13	1.27	1.22	1.23	1.32	1.33	1.04
14	1.04	0.93	0.94	0.93	0.93	1.01
15	0.63	0.62	0.62	0.54	0.53	
16	1.21	1.10	1.10	1.13	1.15	
17	0.76	0.72	0.73	0.65	0.64	
18	0.90	0.71	0.71	0.74	0.75	0.58
19	1.01	0.94	0.94	0.89	0.89	
20	1.19	1.26	1.26	1.34	1.35	
21	0.73	0.70	0.71	0.72	0.73	
22	1.01	0.98	0.98	1.06	1.08	
Mean	1.00	1.00	1.00	1.00	1.00	0.98

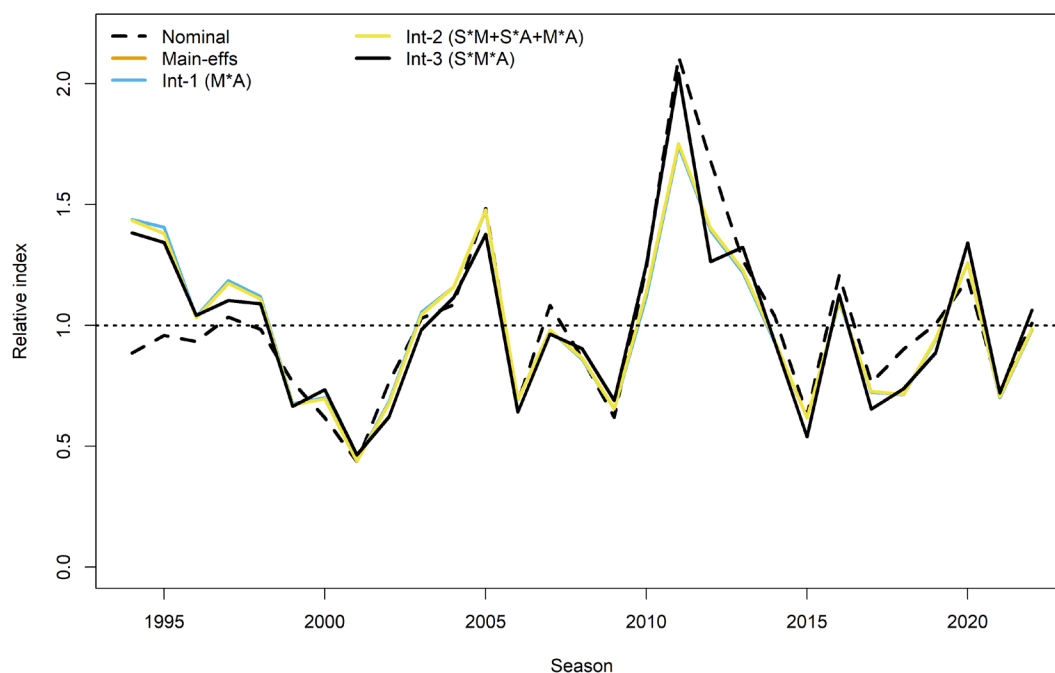


Figure 1. The seasonal abundance indices for the TVH sector of the Torres Strait rock lobster fishery based on the standardised CPUE from the Main-Effects and several interaction models.

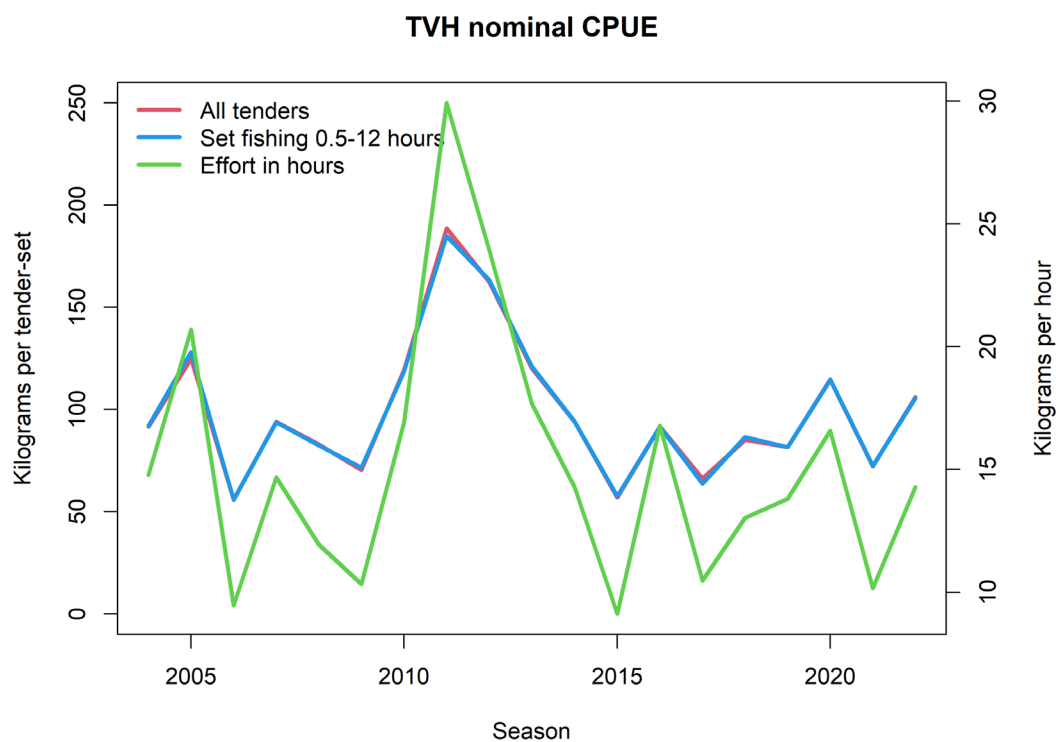


Figure 2. The alternative nominal TVH CPUE series (from 2004).

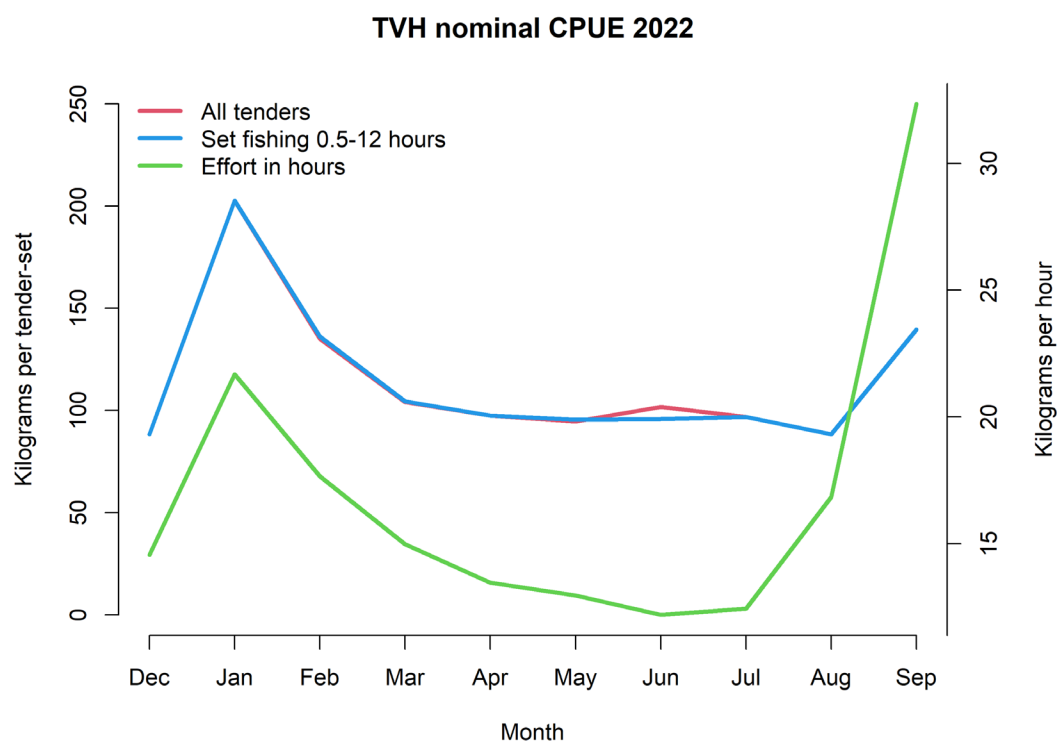


Figure 3. Season 2022 nominal TVH CPUE per month.

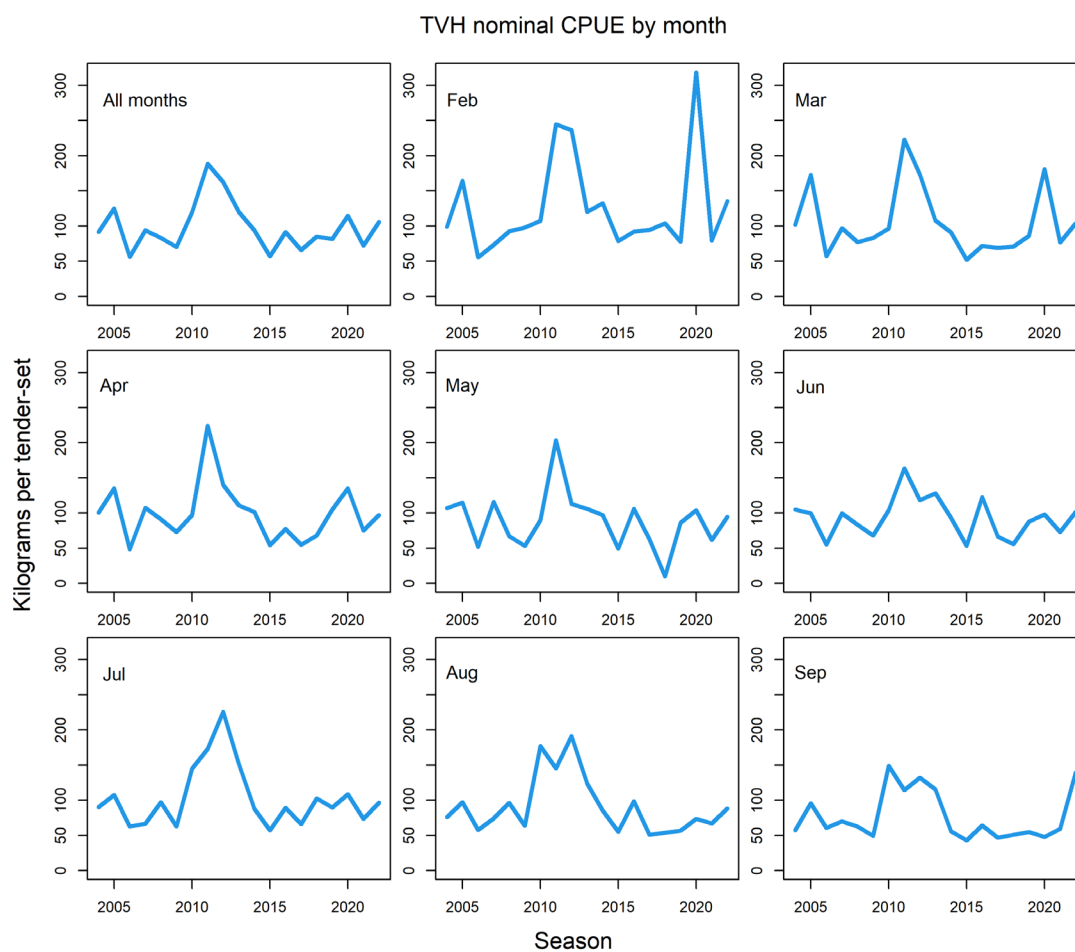


Figure 4. Monthly CPUE time series from nominal CPUE per month. No plots for Dec and Jan due to their limited data points.

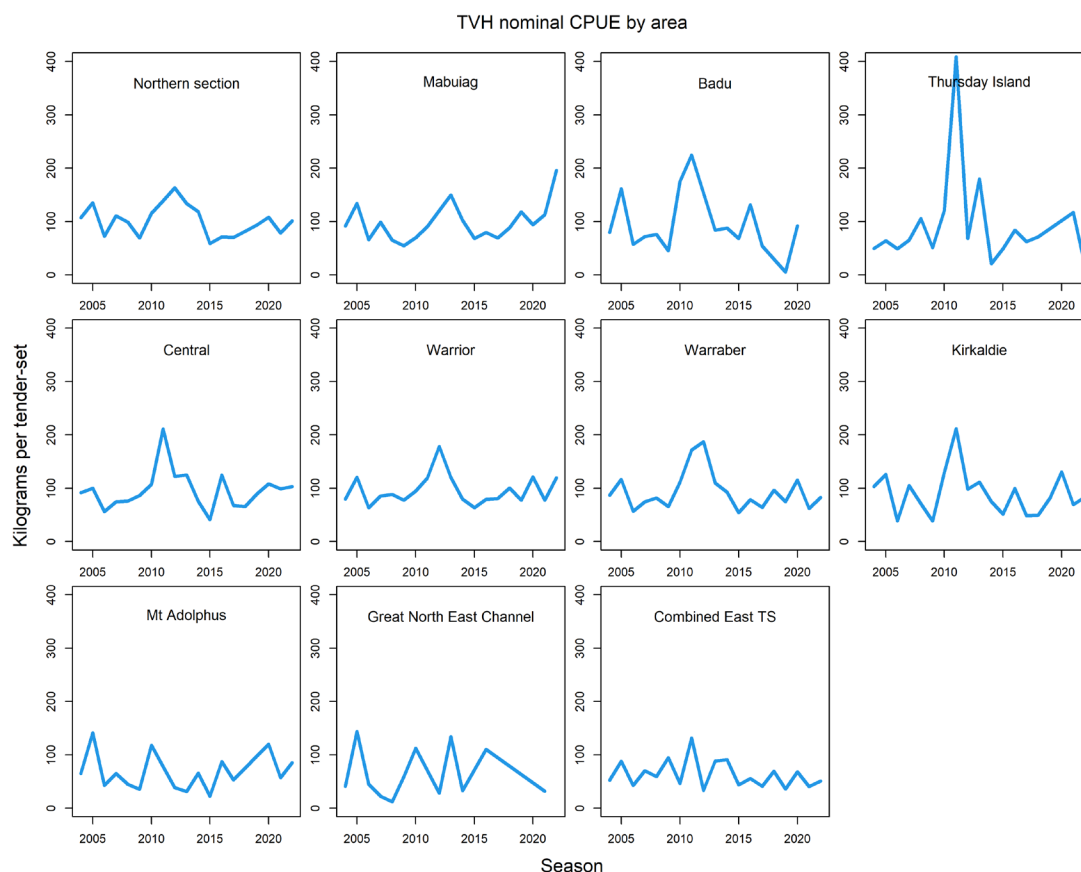


Figure 5. TVH CPUE time series from nominal CPUE per area.

Acknowledgements

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Revisiting Tropical Rock Lobster Morphometric Conversion Ratios

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CSIRO Environment

Background

The effects of environmental change, particularly warming waters, have already been identified for a number of lobster stocks around the globe (Pecl et al. 2009, Caputi et al. 2010, Boavida-Portugal et al. 2018, Goode et al. 2019, Klymasz-Swartz et al. 2019, McLeay et al. 2019, Shields 2019). These can include changes to lobster life history including recruitment, distribution, migration, growth, and size-at-maturity (see review by (Caputi et al. 2013)).

Australia's oceans are warming and becoming more acidic (State of the Climate Report 2022; <https://www.csiro.au/en/research/environmental-impacts/climate-change/State-of-the-Climate>) and could have implications for life history parameters for a number of marine species including tropical rock lobster (TRL) *Panulirus ornatus*. Changes in growth or size at maturity have implications for fisheries management. Currently, rock lobsters that are caught by the Torres Strait TRL fishery are either measured or weighed and converted to other metrics such as size (and age) based on established morphometric conversion ratios (Appendix 1 Table 1). These converted data are then used in a variety of analyses, such as length frequency analyses, splitting into age classes and for incorporation into the stock assessment model

Morphometric conversion ratios for TRL were established nearly 20 years ago using data collected from the Torres Strait and from laboratory experiments at CSIRO Cleveland Marine Laboratories (Pitcher et al. 2005). These data were collected between the 1980s and 2003. Further work was undertaken in 2008 to assess size composition of catches and establish a live weight to tail weight conversion ratio for TRL (Appendix 1 Table 2; (Dennis et al. 2009)). Given environmental changes taking place across northern Australia (Babcock et al. 2019), there is a need to revisit these conversion ratios to assess if any of these have changed. Moreover, recognising that lobster growth isn't uniform across Torres Strait, it would be helpful to have spatially resolved data on length-weight ratios. To revise the morphometric conversion ratios, lobster size and weight data would need to be collected across the Torres Strait.

Aim

To revise the following conversion ratios:

- Carapace Length / Tail Width
- Carapace Length / Total Weight
- Total Weight / Tail Width

Proposed Method

- Training to be provided by CSIRO staff at the start of the research program with follow up trips
- Lobsters sampled from the TVH and TIB sectors of the TRL fishery from three processing companies: a Cairns location and then looking for assistance from a range of locations in Torres Strait, including Badu Island, Thursday Island to provide some spatial coverage. Training and materials will be provided. Payment to be negotiated based on 8 days sampling for first year per processing facility.
- Sampling to be undertaken each month between February and September 2023, based on lobsters caught in one of that month's neap tides to increase the likelihood of suitable numbers of lobsters.
- Approximately 50 – 80 lobsters to be measured and sexed each month at each site (25 – 40 x male and 25 – 40 x female).
- Waterproof data sheets, scale and 2 x callipers to be sent to the processors by CSIRO
- Data sheets to be returned to AFMA office on Thursday Island. Please also take a clear photo or scan of the data sheet as a backup and sms to the number provided or email all data sheet photos to Leo.Dutra@csiro.au
- Measurements to be recorded include total weight, carapace length and tail width (Appendix 2 draft data sheet).

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Appendix 1: Morphometric relationships developed by Pitcher et al. (2005) and Dennis et al. (2009)

Table 1: Current morphometric relationships where M = male, F = female, TW = tail width (mm), CL = carapace length (mm), TL = tail length (mm), TOTWT: total weight (grams), TAILWT: weight of removed tail (grams), TAILWT is approximately 42% of TOTWT. Taken from Pitcher et al. (2005).

Sex	Relation	Relationship	Range	R ²
M	TW/CL	$CL = (1.493 * TW) - 0.132$	CL:6-160	0.998
F	TW/CL	$CL = (1.371 * TW) + 2.485$	CL:6-160	0.997
All	TW/CL	$CL = (1.433 * TW) + 1.089$	CL:6-160	0.992
All	TW/TL	$TL = (1.920 * TW) + 1.413$	TW:6-80	0.996
All	CL/TL	$CL = (0.778 * TL) + 0.014$	CL:6-120	0.994
All	TW/TAILWT	$TAILWT = 0.00114 * (TW^{2.97537})$	TW:22-98	0.974
All	CL/TOTWT	$TOTWT = 0.00258 * (CL^{2.76014})$	CL:6-120	0.992
All	CL/TAILWT	$TAILWT = 0.00097 * (CL^{2.77007})$	CL:30-150	0.954
F	TOTWT/TAILWT	$TOTWT = 2.312 * TAILWT$	TOTWT < 3kg	0.991
M	TOTWT/TAILWT	$TOTWT = 2.431 * TAILWT$		0.989
All	TOTWT/TAILWT	$TOTWT = 2.385 * TAILWT$		
	or	$TAILWT = 41.93\% \text{ of TOTWT}$		

Table 2: Live total weight to tail weight conversion ratio developed by Dennis et al. (2009).

Sex	Relation	Relationship
All	TOTWT/TAILWT	$TOTWT = 2.7 * TAILWT$
	or	$TAILWT = 37\% \text{ of TOTWT}$

LOBSTER SIZE AND WEIGHT DATA COLLECTION

LOCATION LOBSTERS CAUGHT:

[illegible]

¹ Random selection means one doesn't select particular lobsters (eg preferably large lobsters) but randomly selects individual lobsters to be measured such that every lobster in that day's sampling pool has the same chance of being selected – this leads to a representative sample for the study.

TROPICAL ROCK LOBSTER RESOURCE ASSESSMENT GROUP (TRLRAG)	MEETING 33 13-14 December 2022
INTERACTIONS BETWEEN THE TRL AND TORRES STRAIT PRAWN FISHERY	Agenda Item 4 For discussion and advice

RECOMMENDATIONS

1. That the RAG:
 - a. **NOTE** short summary report on the results of an analyses of available observer data on TRL bycatch in the Torres Strait Prawn Fishery (TSPF) as collected from the AFMA Observer Program until 2020 (**Attachment 4a**).
 - b. **CONSIDER** whether the updated analyses and results are to be included as part of the total catch of TRL in the application of the eHCR, the stock assessment model.
 - i. The RAG is also asked to consider any suggestions to future work in this space.

KEY ISSUES

2. Understanding TRL interactions in both the Australian TSPF and PNG prawn trawl fishery for the purposes of the TRL stock assessment and monitoring overall fishing mortality against the TRL TAC has been raised as an important issue by both the TRL RAG (Meeting no. 19 on 13 December 2016), TRL Working Group (WG) (Meeting no. 8 on 8 November 2018) and recent Australia-PNG Fisheries Committee Bilateral meetings (4 March 2019 and 30 August 2022).
3. Monitoring interactions between the prawn and lobster fisheries is also one of six objectives for the TRL fishery as agreed to by the PZJA in 1988.
4. TRLRAG 27 (10-11 December 2019) noted that the impacts of the TSPF on the TRL fishery may be significant and recommended that an analyses of available AFMA Observer Program data be undertaken by CSIRO.
5. TRLRAG 32 (15 December 2021) considered the first preliminary analyses of available observer data on TRL bycatch in the Australian TSPF. The RAG recommended to continue further analysis of the available observer data from the TSPF with the aim of getting an annual assessment of likely TRL catch to be included in the TRL stock assessment and eHCR, noting that the extrapolation method will need to be revised, and noting that further analysis presents opportunities for potential investigation of other species of interest in other Torres Strait fisheries such as sea cucumbers.
6. The RAG is invited to note an updated analysis of available TSPF data to be presented by CSIRO and consider whether the outputs of the analyses are to be included as an estimate of total catch in the application of the eHCR (under **Agenda Item 7**) and the RBC advice (under **Agenda Item 9**).

BACKGROUND

7. The TSPF has a number of management measures in place that reduces the potential level of interactions with TRL. Specifically:

- a. under the *TSPF Management Plan 2009* trawl boats in the TSPF are prohibited from taking, processing or carrying TRL or TRL products. This ban has been in place since 1987.
 - b. there are extensive spatial closures in the TSPF which overlap with key TRL Fishery grounds - see map provided at **Attachment 4b**.
- 8. Discards of TRL are not required to be recorded in the TSPF daily fishing logbook (NP16). There are numerous bycatch species in the TSPF and given this, it is not practical that they all be recorded in the logbook.
- 9. However, it is a condition of TSPF licences that licence holders carry an AFMA scientific observer when required to do so, to collect fishery independent scientific data. The AFMA Observer Program in the TSPF aims to observe 2.6% of actual days fished in a given TSPF season. A range of biological data is collected through catch sampling, including length, sex, weight, fate and life status.
- 10. The observer data on fate (discarded/retained) and life status appear consistent with a historical report on the *Joint Australia/Papua New Guinea Research Program on the Tropical Rock Lobster (*Panulirus ornatus*) in Torres Strait* undertaken by CSIRO and PNG Department of Primary Industries in September 1984 which examined the post-capture survival rates of TRL in the TSPF.
- 11. This study reported that trawled TRL were generally in 'excellent condition' and that TRL that was trawled and returned to the sea have a good chance of surviving predation. A summary of the report notes is provided at **Attachment 4c**, and a copy of the technical report can be provided by AFMA on request.



Update on the bycatch of Tropical Rock Lobster (*Panulirus ornatus*) from the Torres Strait Prawn Fishery

Laura Blamey, Éva Plagányi, Marjoleine Roos, Steven Edgar

CSIRO Environment

Background

Independent observer programs remain the gold standard in obtaining independent scientific data on fisheries bycatch. It is often not feasible and too costly to include scientific observers onboard every fishing trip. Hence, the design of observer programs, including observer coverage levels, is an important consideration if the data collected are to provide an accurate and precise estimate of bycatch in the fishery (Babcock et al. 2003, Bravington et al. 2003, Curtis and Carretta 2020, Moore et al. 2021).

The Torres Strait Prawn Fishery (TSPF) has some overlap with the Tropical Rock Lobster (TRL) fishery although there are several management measures in place that reduce the potential level of interactions between the TSPF and TRL fishery. Specifically, 1) under the TSPF Management Plan 2009, trawl boats in the TSPF are prohibited from taking, processing, or carrying TRL or TRL products; and 2) there are extensive spatial closures in the TSPF which overlap with key TRL Fishery grounds (e.g., the West of Warrior Reef Exclusion Zone; (Turnbull and Cocking 2020)).

The TSPF operates at night and TSPF license holders are required to carry an AFMA observer onboard when requested to do so, to collect fishery-independent scientific data on bycatch. These bycatch data include lobsters that are recorded as count and sometimes species weight per shot. Individuals' length, sex, life status, and fate (discarded/retained) are also recorded and sometimes their weight. The AFMA Observer Program in the TSPF aims to achieve an observer coverage of 2.6% of actual days fished in a given TSPF season.

During the TRLRAG 32, a preliminary investigation of interactions between the TRL fishery and the TSPF was presented to the RAG (see Roos et al. (2022) in Plagányi et al. (2022)). Results from these analyses showed that the footprint of the TSPF was relatively local (restricted to the Great North East Channel and western Darnley zones) and not largely overlapping with that of the TRL Fishery. Nonetheless, the RAG thought it would be useful to include an annual estimate of TRL bycatch in the assessment model but before this could be done, further investigation was needed into deriving suitable extrapolation methods for upscaling data from the TSPF Observer Program (2.6% of total annual fishing effort) to represent total annual fishing effort of the entire TSPF footprint.

Here we provide a summary for discussion by the TRLRAG on the ongoing work to provide an estimated TRL bycatch.

Data Update Summary

Updated bycatch data from the AFMA Observer Program in the TSPF were received from AFMA for the period 2010-2020. Specifically, these data now included length measurements (carapace length, CL) for Tropical Rock Lobster (*Panulirus ornatus*).

Estimating lobster bycatch from the TSPF Observer Program (not scaled up)

Using an established Carapace Length to Total Weight ratio (Pitcher et al. 2005), a better estimate of TRL biomass caught by the TSPF (Observer Program only) can be provided. All lobsters caught as bycatch were recorded, and of these approximately 98% or more were measured except in 2013. Estimated biomass of TRL observed as bycatch ranged from 0 – 0.39 t (Fig. 1). For 2013, lobster biomass is underestimated because in this instance lobster numbers caught were particularly high and not all lobsters were measured (only 62% were measured). Generally, there was an even split in biomass between male and female lobsters.

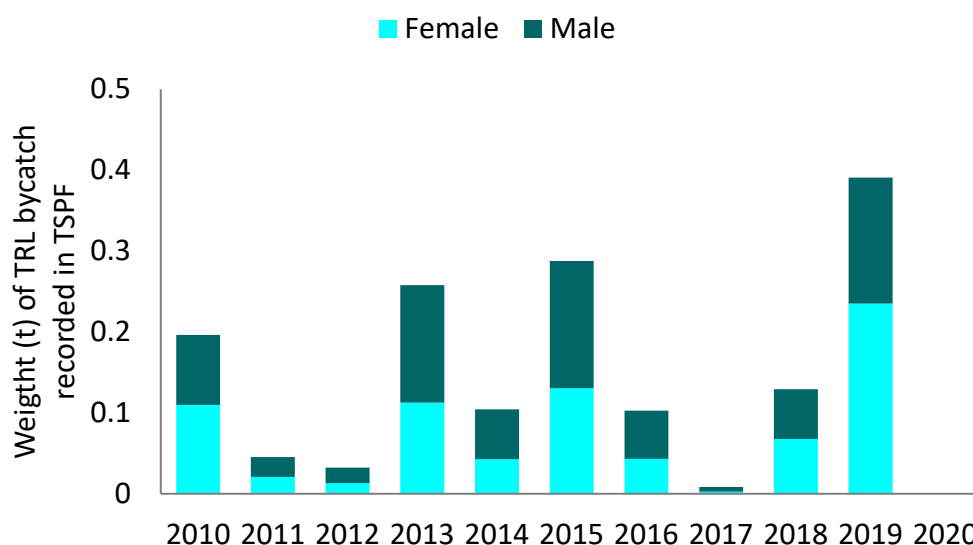


Fig 1: Estimated biomass of TRL recorded as caught in the TSPF Observer Program, also shown for male and female. Biomass estimates were calculated from length measurements using an established Carapace Length to Total Weight ratio (Pitcher et al. 2005)

Estimating total lobster bycatch in the TSPF (scaled up)

Rare events and observer coverage

When bycatch of a particular species is rare (as is often the case for Threatened, Endangered or Protected Species - TEPS), there can be estimation challenges and a fairly high observer coverage is needed to avoid biases due to small sample sizes (Wakefield et al. 2018, Moore et al. 2021). Moreover, to be able to scale up bycatch from an Observer Program to the whole of the fishery, the observer data need to be collected from a representative sample of the fishery including spatial and temporal distribution of fishing effort, vessel and gear characteristics etc. For example, observer coverage should follow similar patterns of effort throughout the year as for the fishery. If not, then stratification of the sampling and effort could help reduce bias (Moore et al. 2021).

Here, we have assumed the Observer Program in the TSPF is a representative sample of the fishery and is conducted as randomly as possible. This should be further checked and confirmed.

To consider if lobsters were a rare event in the TSPF we checked to see what the frequency of occurrence was in the number of days with and without lobsters caught across the period 2010-2020. We found that lobsters were caught in 70% of the days observed between 2010-2020. In most cases lobster counts were less than 15 per day with an average of 7.4 lobsters per day across the Observer Programme from 2010-2020 (Fig. 2).

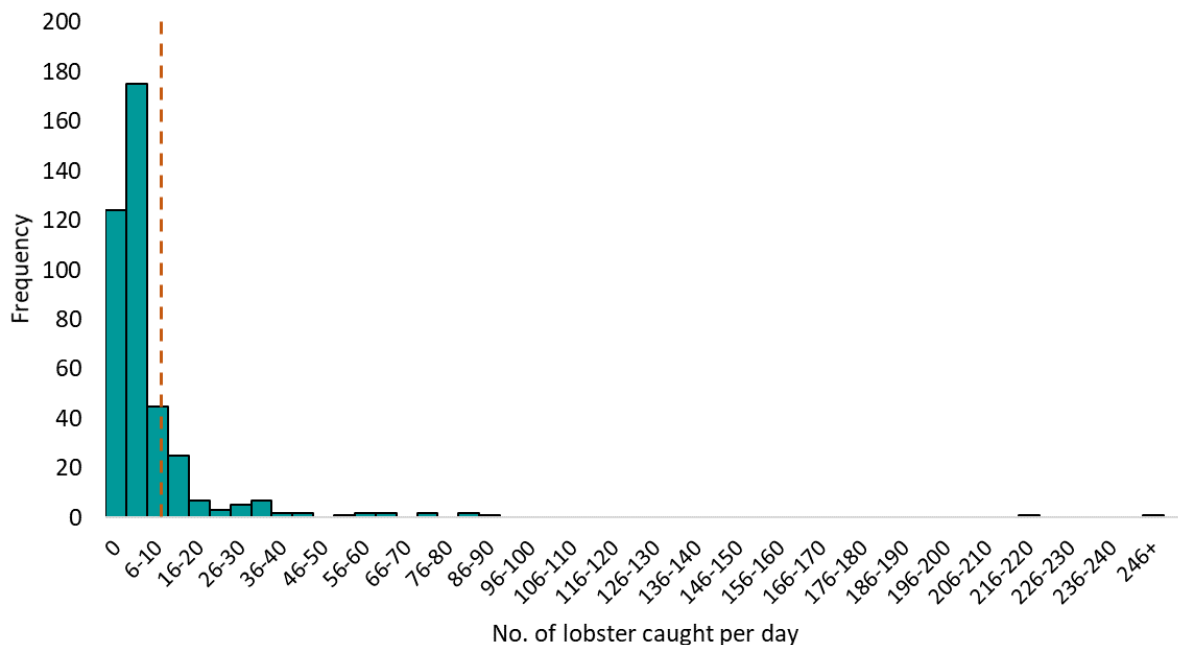


Fig 2: Frequency of occurrence with respect to the number of lobsters caught per day taken from the Catch Composition data from the TSPF Observer Program. Dashed line indicates approximately the mean of 7.4 lobsters caught per day.

In this case, we do not consider lobsters to be a ‘rare event’ as is typical for other bycatch species in other fisheries e.g. marine mammals or other TEPS. Thus a fairly high observer coverage (e.g. > 20%) may not be needed to estimate a total TRL bycatch for the TSPF, assuming the Observer Program is representative of the TSPF.

We did a further check using an observer coverage calculator *ObsCovgTools* that was developed by Curtis and Carretta (2020) and allows one to calculate coverage levels required to meet bycatch estimation objectives e.g. estimating bycatch to a desired precision level, estimating the probability of observing bycatch. An acceptable level of precision in bycatch estimates has generally been a CV of ≤ 0.3 (Curtis and Carretta 2020).

Using an average total effort in the fishery of 2098 days per year (for the period 2009-2021, taken from Turnbull and Cocking (2022) and an average catch of 7.4 lobsters per day (for the period 2010-2020) and a dispersion value (variance/mean) of $d = 60$, we used the observer coverage calculator to calculate the observer coverage required for a CV ranging from 0.2 – 0.4 and found that for this, observer coverage would need to be between 2.4% – 8.9%.

Estimating a total bycatch

If data from the TSPF Observer Program is a representative sample from the fishery (i.e. unbiased) then a lobster bycatch estimate can be worked out using a ratio estimator

(essentially scaling up) and the variance around this calculated using bootstrapping. If there are some biases in the sampling, but total fishing effort is well characterised, then stratifying observer data can help overcome some of the biases (Moore et al. 2021). If biases are still not overcome, then model-based approaches might be useful.

Pooling data across years to come up with a mean annual bycatch can also be used to increase precision around bycatch estimates and can reduce biases (overestimating or under estimating) in single year estimates arising from e.g. observer coverage or outliers in the data. This has typically been used for cases when bycatch is a rare event e.g. marine mammals and thus sample sizes are small. Estimation error has been shown to reduce when the number of years pooled increases (Carretta and Moore 2014).

As an example, here we scaled up TRL bycatch based on the TSPF Observer Program data and total fishing effort observed each year in the TSPF taken from Turnbull and Cocking (2022). First, we calculated the average number of lobsters caught as bycatch per day for each year (2010-2019) and multiplied this by the effort (number of days fished) for the corresponding year in the TSPF (2010-2019) to get an estimate of the total number of lobsters caught in the TSPF. We then did the same thing except instead of using an average number of lobsters caught per day for each year, we used a 5-year pooled average and a 10-year pooled average and multiplied these by the total effort for each year.

Similarly, to work out an estimate of biomass caught we calculated the average mass of lobsters caught as bycatch per day for each year (years not pooled) and multiplied this by the effort (number of days fished) for each year in the TSPF (2010-2019). This gave an approximate biomass of TRL caught in the whole TSPF. We then did the same thing except instead of using an average mass of lobsters caught per day for each year, we used a 5-year pooled average and a 10-year pooled average.

The approach to pool data across years reduced the variability in the number of lobsters caught as bycatch between years (Fig. 3). In particular it reduced estimates in years with rare large catches e.g. 2013, but also increased estimates in years where fewer lobsters were caught e.g. 2011 and 2012 (Fig. 3). When looking at biomass estimates (Fig. 4), only a subsample of lobsters were measured in some years (2013 and 2015) and thus biomass estimates of TRL bycatch are more similar to those in which pooled averages were used (Fig. 4).

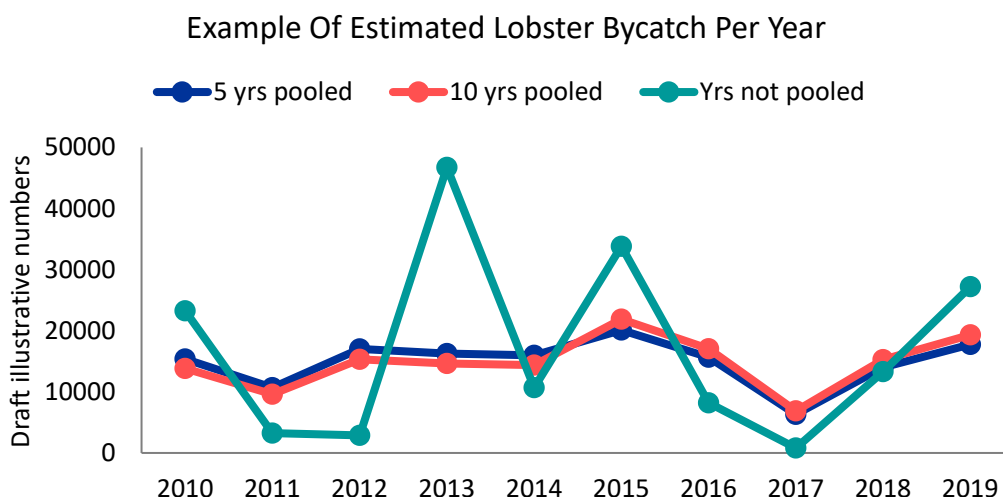


Fig. 3: Example of estimated bycatch of TRL (numbers caught) for the whole TSPF from 2010-2019 with and without pooling across years when calculating an average bycatch (numbers) per day (from the TSPF Observer Program). Assumes the Observer Program in the TSPF is a representative sample of the fishery.

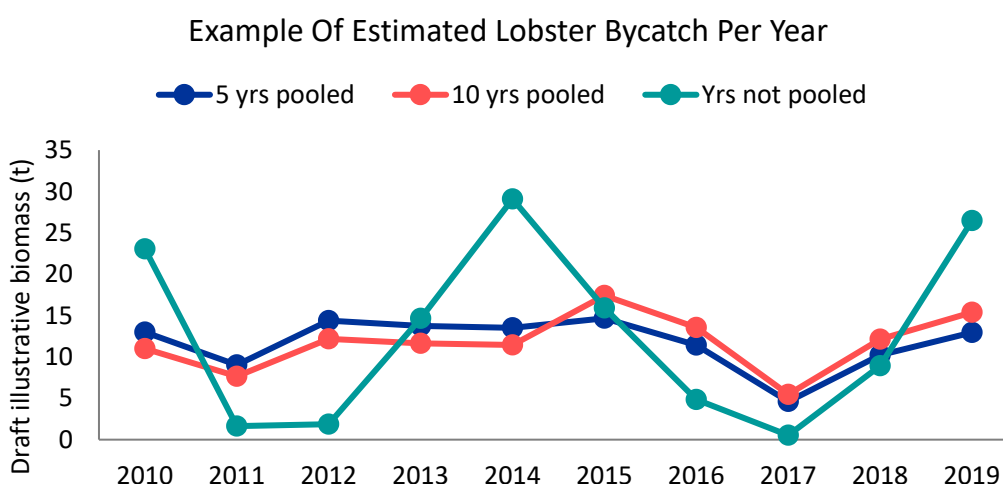


Fig. 4: Example of estimated bycatch of TRL (biomass caught) for the whole TSPF from 2010-2019 with and without pooling across years when calculating an average bycatch (t) per day (from the TSPF Observer Program). Assumes the Observer Program in the TSPF is a representative sample of the fishery.

Concluding comments

This paper provides a summary of the ongoing work into bycatch of TRL from the Torres Strait Prawn Fishery in order to inform whether TRL bycatch estimates could be added to the total catches used as inputs to the eHCR and stock assessment.

- Discussion on whether the Observer Program is representative of the TSPF fishery – this would help direct which approach could be used when calculating a total TRL bycatch for TSPF.
- Data from the Observer Program could be checked against logbook data from the TSPF. Logbooks have records of by-product species and TEPS (Turnbull and Cocking 2022) but it's not clear if lobster are recorded.
- Discussion on timing as to availability of Observer Program data – for example, in Nov 2022, we only had data up until 2020 (i.e. 2 year lag) so need to evaluate how this timing line up with the annual assessment process
- In looking at estimated bycatch, we have not yet specifically considered how many lobsters survive vs die. We still need to consider bycatch mortality rate and could work this out given data recorded (discard vs retained ratios) but there are currently no estimates on post-capture mortality. For post-capture mortality, could look at estimates from elsewhere/other lobsters.
- We still need to look further at spatial patterns

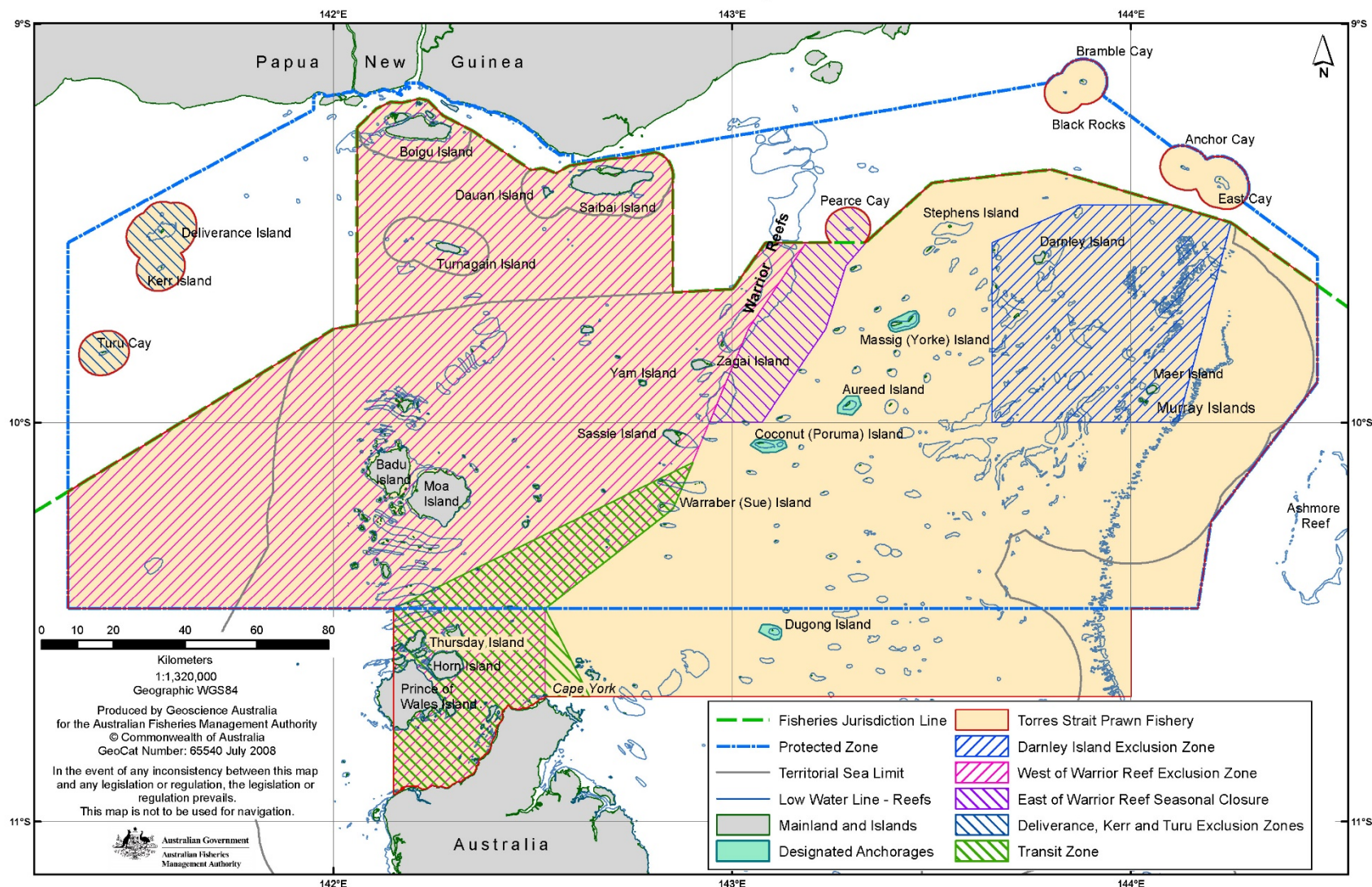
Acknowledgments

Thanks to Lisa Cocking, Tamre Sarhan, Ben Liddell and Clive Turnbull for assistance and interpretation of the prawn bycatch data. We gratefully acknowledge funding support for project R2021/0816 from AFMA and CSIRO.

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Torres Strait Prawn Fishery and Closures



Notes on the “Melisa” TRL Tagging Program, September 1984

Introduction

Joint CSIRO / PNG DPI Fisheries study in NE channel of TS during September 1984, using the PNG research trawler “Melisa”.

Staff

Jim Prescott, Dan Tyson (PNG)

Clive Turnbull, Aubrey Harris, Clive Jones (CSIRO)

Geoff Williams (BRS)

Objectives:

1. To trawl and tag the lobster migration in the NE channel to determine whether they migrate into the GOP.
2. Measure the degree of predation by sharks on tagged TRL returned to the sea from prawn trawlers.
3. Recapture TRL that were tagged in western and southern TS during May/July of 1984 by CSIRO/PNG.

Methods & Results

Tagging in NE channel

- Total of 2373 tagged (527 trawled by Melissa and 1846 trawled by commercial trawlers).
- Permission from QBFP for commercial trawlers to hold TRL for use to collect in the morning & tag. So large percentage of the tagged TRL had been held in fin bins for 4-8 hrs.
- 45 tag returns (8 Aust. Trawlers in NE Channel and 37 from Kulasi and joint venture trawler in GOP) plus 6 from tagging near Daru. ~2% return rate.
- The results indicate than TRL trawled up, tagged and released from trawlers in the NE channel migrated into the GOP.

Survival

- Trawled TRL were generally in good condition – only 5 (over 500) were damaged despite 2hr shots with a single 40m (20 fathom) stern trawl net that resulted in large amounts of material in the cod end.
- On several occasions tagged animals were returned while trawling. Although they were thrown as far as possible away from the trawler many were recaptured, indicating that they make it back to the sea bed and that they need to be released while the nets are up.
- On one occasion, good weather allowed us to video tagged TRL rapidly descending to the sea bed through a school of sharks (~50) that was feeding on trash fish. All of the TRL appeared to safely descend through the feeding sharks.
- Dolphins following the vessel at night turned towards TRL and bugs that were thrown amongst them but they then ignore them.
- On two occasions (once near and island and the other occasion near a reef) underwater observations were made of tagged lobsters being released. The behaviour on both occasions was similar. They initially aggregated on the sea bed then quickly dispersed in small groups in every direction. The lobster released near the reef were followed down a sand ridge to 25m then disappeared from view. Only a few lobsters moved towards the reef.

West & Southern TS tagging

- No tag returns from but 6 TRL with first left pleopod regrowing were observed suggesting that the animals had been tagged but shed the tag, indicating movement from the western and southern TS into the NE channel. The first left pleopod was clipped on the tagged animals.

Notes from a report on capture of lobsters by trawlers

“Catches of tropical spiny lobster by Australian prawn trawlers, September to October 1981”, Geoff Williams, BRS.

- Vessels working TS prawn grounds during September and October 1981 made the largest catches of TRL by Australian trawlers to date.
- Isolated catches of more than 1000 lobsters per night were reported by many boats during 18-25th September 1981.
- The largest catches were in the Pearce Cay region, NE of Moon Passage.

TROPICAL ROCK LOBSTER RESOURCE ASSESSMENT GROUP (TRLRAG) Thursday Island	MEETING 33 13-14 December 2022
RESULTS OF THE NOVEMBER 2022 PRE-SEASON SURVEY	Agenda Item 5 For discussion and advice

RECOMMENDATIONS

1. That the RAG:

- a) **DISCUSS** and **PROVIDE ADVICE** on the results of the November 2022 pre-season survey to be presented by CSIRO at the meeting and summarised in a report provided at **Attachment 5a**; and
- b) **NOTE** that in accordance with the TRL Harvest Strategy, under section 2.10 Decision Rules, if in any year the pre-season survey 1+ index is 1.25 or lower (average standardised number of 1+ age lobsters per survey transect) it triggers a stock assessment.

KEY ISSUES

2. CSIRO conducted the annual pre-season survey from 8-22 November 2022. A total of 74 sites were surveyed, selected to provide for comparison with previous surveys. The amount of seabed biota (plants and some selected animals) and also substrate type was also recorded at each survey site. Length frequency data was collected from captured TRL.
3. The pre-season survey data is a key data input (with a 70 per cent weighting) in the empirical harvest control rule (HCR), and the integrated stock assessment when it is run (every three years under the TRL Harvest Strategy).
4. The results of the November 2022 pre-season survey will be presented by CSIRO at the meeting. A summary report of the pre-season population survey is provided at **Attachment 5a**.
5. The RAG is being asked to review the analysis and where relevant provide advice on the findings and/or need for further analysis.
6. Of particular relevance, section 2.10 Decision Rules of the Harvest Strategy provides that:
 - **If in any year the pre-season survey 1+ index is 1.25 or lower (average standardised number of 1+ age lobsters per survey transect) it triggers a stock assessment.**
7. The preseason survey is a key annual output as part of the three year AFMA/TSRA funded project "*Fishery independent surveys, stock assessment, Harvest Strategy and Recommended Biological Catch calculation for the Torres Strait Tropical Rock Lobster Fishery*" which was supported by the Torres Strait Scientific Advisory Committee (TSSAC) at their meeting on 6-7 April 2022, funded from 2022-23 through to 2024-25.

BACKGROUND

8. Each year in November, the CSIRO undertake an independent scientific pre-season survey to determine the relative abundance and size of lobsters in the Torres Strait, together with an assessment of the habitat. Benchmark fishery-independent surveys (1989 and 2002) identified regions of lobster habitat within the TRL Fishery area. This allowed scientists to design ongoing annual population surveys using a few randomly selected sites, with the number of sites commensurate with the subregion area and lobster abundance.
9. Fishery-independent surveys have been conducted in the Fishery since 1989. Historically (1989-2014 and 2018), mid-season (July) surveys focused on providing an index of abundance of the spawning (age 2+) and juvenile (age 1+) lobsters. Mid-season surveys have been replaced with pre-season (November) surveys (2005-2008; 2014 to current) which focus on providing an index of recruiting (age 1+) lobsters as close as possible to the start of the fishing season to support the change to a quota management system and setting of a TAC. Pre-season surveys also provide indices of recently-settled (age 0+) lobsters, which may become useful depending on how reliable they are, as they allow forecasting of stock one year in advance and are used in the eHCR.

Torres Strait Tropical Rock Lobster 2022 Pre-season Population Survey

Leo Dutra, Nicole Murphy, Steven Edgar, Kinam Salee, Robert Campbell, Roy Deng, Laura Blamey and Éva Plagányi

CSIRO Environment

Tropical Rock Lobster Pre-Season Survey Trip Report – 01 December 2022

Milestone Progress Report – AFMA project no. 2021/0816

The 2022 Tropical Rock Lobster (TRL) Pre-season survey was conducted between the 9th and the 19th of November 2022. Since 2021 the CSIRO team included a TIB fisher (Mr Tony Salam – skipper of CSIRO NAIAD RIB and research assistant supporting tail width measurements onboard mothership), along with Leo Dutra, Nicole Murphy, Kinam Salee, and Steven Edgar). The 2022 CSIRO team completed 77 survey sites (Figure 1) using the CSIRO NAIAD RIB to conduct the dives, supported by the mothership “Wild Blue” (Rob Benn Holdings) (Figure 2).

Figure 1. Map of western Torres Strait showing the sites surveyed during the 2022 TRL pre-season survey. The yellow dots and corresponding numbers are site identifiers for the survey.

