10th MEETING OF THE PZJA TORRES STRAIT TROPICAL ROCK LOBSTER WORKING GROUP (TRLWG 10)

12 December 2019 (9:00 AM – 5:00 PM)

TSRA Boardroom
Level 1 Torres Strait Haus
46 Victoria Parade, Thursday Island

DRAFT AGENDA

1 PRELIMINARIES

1.1 Welcome and apologies

The Chair will welcome members and observers to the 10th meeting of the WG.

1.2 Adoption of agenda

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

1.5 Out-of-session correspondence

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

2 UPDATES FROM MEMBERS

2.1 Industry members

Industry members and observers will be invited to provide an update on matters concerning the Torres Strait TRL Fishery.

2.2 Scientific members

Scientific and economic members and observers will be invited to provide an update on matters concerning the Torres Strait TRL Fishery.

2.3 Government agencies

The WG will be invited to note updates from AFMA, TSRA and QDAF on matters concerning the Torres Strait TRL Fishery. AFMA will provide updates on the implementation of the Management Plan and draft Harvest Strategy for the TRL Fishery, management arrangements for the 2019-20 fishing season and delivery of the Compliance program.

2.4 PNG National Fisheries Authority

The WG will be invited to note an update from the PNG National Fisheries Authority.

2.5 Native Title

The WG will be invited to note an update from Malu Lamar (Torres Strait Islander) Corporation RNTBC.

3 CATCH AND EFFORT SUMMARY FOR THE 2018-19 FISHING SEASON

The WG will be invited to note TRL Fishery catch and effort data for the 2018-19 fishing season.

4 TOTAL ALLOWABLE CATCH

The WG will be invited to consider advice from the TRL Resource Assessment Group (RAG) on the recommended biological catch (RBC) for the TRL Fishery for the 2019-20 fishing season based on estimates derived through the application of the empirical harvest control rule (eHCR). The WG will then be invited to provide advice on a total allowable catch (TAC) for the TRL Fishery for the 2019-20 fishing season.

5 CATCH SHARING WITH PNG

The WG will be invited to discuss the future utilisation of Australia's cross-endorsement catch share in PNG waters under the Torres Strait Treaty.

6 FIVE-YEAR RESEARCH PLAN

The WG will be invited to provide further advice on research priorities for the Torres Strait TRL Fishery for the next five funding years (2020/21 to 2024/25). This is to include consideration of matters raised by members out-of-session and advice from the RAG.

7 FUTURE MANAGEMENT PRIORITIES

The WG will be invited to discuss future management priorities.

8 OTHER BUSINESS

The WG will be invited to raise other business for consideration.

9 DATE AND VENUE FOR NEXT MEETING

The WG will be invited to discuss a suitable date for the next meeting.

The Chair must approve the attendance of all observers at the meeting. Individuals wishing to attend the meeting as an observer must contact the Executive Officer – Natalie Couchman (natalie.couchman@afma.gov.au)

TROPICAL ROCK LOBSTER WORKING GROUP (TRLWG)	MEETING 10 12 December 2019
PRELIMINARIES Welcome and apologies	Agenda Item 1.1 For noting

RECOMMENDATIONS

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

BACKGROUND

2. Apologies have been received from:
   a. Danielle Stewart (QDAF Member); and
   b. Darren Dennis (Scientific Member).

TROPICAL ROCK LOBSTER WORKING GROUP (TRLWG)	MEETING 10 12 December 2019
PRELIMINARIES Adoption of agenda	Agenda Item 1.2 For decision

RECOMMENDATIONS

1. That the Working Group consider and **ADOPT** the agenda.

BACKGROUND

2. A draft agenda was circulated to members on 12 November 2019. No suggestions for changes were received.

TROPICAL ROCK LOBSTER WORKING GROUP (TRLWG)	MEETING 10 12 December 2019
PRELIMINARIES Declaration of interests	Agenda Item 1.3 For decision

RECOMMENDATIONS

1. That Working Group 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-b**);
   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 Working Group 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 Working Group 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. Working Group members are asked to confirm the standing list of declared interests (**Attachments 1.3a-b**) 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.

Attachment 1.3a

TRLWG Declarations of Interest from most recent meetings

Name	Position	Declaration of interest
Members		
John Glaister	Chair	To be declared.
Selina Stoute	AFMA Member	Nil.
Danielle Stewart	QDAF Member	Not applicable, will not be in attendance.
Allison Runck	TSRA Member	Nil. TSRA holds multiple TVH TRL fishing licences on behalf of Torres Strait Communities but does not benefit from them.
Darren Dennis	Scientific Member	Not applicable, will not be in attendance.
Sevaly Sen	Fisheries Economist Member	Nil interest in Torres Strait fisheries. Conducts various FRDC research projects relevant to AFMA fisheries.
Aaron Tom	Traditional Inhabitant Member	Traditional Inhabitant Gudumalulgal and TIB licence holder.
James Ahmat	Traditional Inhabitant Member	Traditional Inhabitant Maluialgal and TIB licence holder.
Mark David	Traditional Inhabitant Member	Traditional Inhabitant Kulkalgal 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.
Patrick Mills	Traditional Inhabitant Member	To be declared.
Mark Dean	Industry Member	TVH operator.
Jerome Kalwij	Industry Member	To be declared.
Trent Butcher	Industry Member	To be declared.
Natalie Couchman	Executive Officer	Nil.
Observers		
Yen Loban	TSRA Board Member and TSRA Portfolio Member for Fisheries	To be declared.
Maluwap Nona	Malu Lamar (Torres Strait Islander) Corporation RNTBC	To be declared.

Joseph Posu	PNG National Fisheries Authority (NFA)	Nil.
Dr Ian Knuckey	Chair, TRL Resource Assessment Group (TRLRAG)	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. In 2019, delivered components of TSRA Induction Program for Traditional Inhabitant members on PZJA advisory committees. Full declaration of interests provided at **Attachment 1.3b**.
Dr Eva Plaganyi	CSIRO	Lead scientist for PZJA funded TRL research projects conducted by CSIRO.
Lyndon Peddell	AFMA	Nil.
Tony Salam	Industry observer	To be declared.
Suzannah Salam	Industry observer	Torres Straits Seafood Pty Ltd (seafood buyer), partner is TIB licence holder.

Declaration of interests
Dr Ian Knuckey – February 2019

Positions:

Director – Fishwell Consulting Pty Ltd

Director – Olrac Australia (Electronic logbooks)

Deputy Chair – Victorian Marine and Coastal Council

Chair / Director – Australian Seafood Co-products & ASCo Fertilisers (seafood waste)

Chair – Northern Prawn Fishery Resource Assessment Group

Chair – Tropical Rock Lobster Resource Assessment Group

Chair – Victorian Rock Lobster and Giant Crab Assessment Group

Scientific Member – Northern Prawn Management Advisory Committee

Scientific Member – SESSF Shark Resource Assessment Group

Scientific Member – Great Australian Bight Resource Assessment Group

Scientific Member – Gulf of St Vincents Prawn Fishery Management Advisory Committee

Scientific participant – SEMAC, SERAG

Current projects:

AFMA 2018/08 Bass Strait Scallop Fishery Survey – 2018 and 2019

FRDC 2017/069 Indigenous Capacity Building

FRDC 2016/116 5-year RD&E Plan for NT fisheries and aquaculture

AFMA 2017/0807 Great Australian Bight Trawl Survey – 2018

Traffic Project Shark Product Traceability

FRDC 2018/077 Implementation Workshop re declining indicators in the SESSF

FRDC 2018/021 Development and evaluation of SESSF multi-species harvest strategies

TROPICAL ROCK LOBSTER WORKING GROUP (TRLWG)	MEETING 10 12 December 2019
PRELIMINARIES Action items from previous meetings	Agenda Item 1.4 For noting

RECOMMENDATIONS

1. That the Working Group:
   a. **NOTE** the progress against actions arising from previous meetings (**Attachment 1.4a**).
   b. **NOTE** the final meeting record for TRLWG held on 19 February 2019 (**Attachment 1.4b**).

BACKGROUND

Actions arising

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

Meeting record

3. The draft meeting record for TRLWG 9 held on 19 February 2019 was provided out of session for comment on 28 March 2019. No comments were received. The record was finalised out of session following the closure of the comment period and circulated to members on 26 April 2019. The final meeting record is provided at **Attachment 1.4b** for information.

Attachment 1.4a

Action items from previous TRLWG meetings

#	Action Item	Meeting	Agency	Status
1.	The following be presented at the next TRLWG meeting: a. an overview of the current understanding of stock connectivity between the Queensland East Coast and the Torres Strait TRL Fisheries; and b. the basis for the Queensland east coast TAC.	TRLWG 6 held on 25-26 July 2017	CSIRO	**a. Complete – stock connectivity** At TRLRAG 21 held from 12-13 December 2017, CSIRO presented the preliminary results of the research project titled '*Environmental update for the Torres Strait tropical lobster Panulirus ornatus*'. Some further results were presented at TRLRAG 22 held from 27-28 March 2018. CSIRO's final report, titled '*Environmental Drivers of variability and climate projections for Torres Strait tropical lobster Panulirus ornatus*', was provided as a meeting paper at the TRLWG 8 meeting held on 8 November 2018, for reference. **b. Complete – QLD TAC** See meeting record for TRLWG 8 meeting held on 8 November 2018.
2.	AFMA to clarify with PNG NFA if the PNG TRL Closure was for the entire fishery or for hookah fishing only.	TRLWG 8 held on 8 November 2018	AFMA	**Complete** PNG NFA provided clarification at TRLWG 9 held on 19 February 2019. 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.
3.	AFMA (and CSIRO) to provide the PNG NFA with: a. Further information concerning catch sharing arrangements under the Treaty, in particular the two tier formula and the basis of the historical agreement between Australia and	TRLWG 9 held on 19 February 2019	AFMA and CSIRO	**Complete** Additional information provided on 22 February 2019 and 16 August 2019.

	PNG on the likely distribution of the TRL stock. b. Guidance from AFMA and CSIRO on the desired timeframes for sharing catch data to support the stock assessment for the Torres Strait TRL Fishery.			
4.	AFMA to provide publically available information to the Working Group concerning Federal Court proceedings between Malu Lamar, the Assistant Minister for Agriculture and Water Resources and the PZJA.	TRLWG 9 held on 19 February 2019	AFMA	**Complete** Information provided to TRLWG members on 12 November 2019.
5.	In preparation for the next Working group meeting, TSRA to work with Traditional Inhabitant industry members to identify management measures for review and objectives against which any proposed changes can be assessed.	TRLWG 9 held on 19 February 2019	TSRA	**Complete** To be discussed under Agenda Item 7.
Recommendations requiring further action				
6.	The Working Group recommended AFMA provide further guidance to industry concerning: a. Current requirements concerning the possession and use of hookah gear around hookah closure periods. b. What fishers need to do should they have a situation where they wish to be in possession or use hookah gear	TRLWG 9 held on 19 February 2019	AFMA	**Complete** AFMA provided advice to fishers concerning these requirements throughout the 2018-19 fishing season. Further communication materials will be prepared for the upcoming 2019-20 fishing season to reiterate these requirements to fishers. Any questions can be directed to the AFMA Thursday Island office on 07 4069 1990.

	during a hookah closure period (e.g. contact AFMA).			
7.	The Working Group further recommended that the requirements concerning the possession and use of hookah gear around hookah closure periods be considered further at the next meeting of the Working Group. It was also recommended that industry submit proposals for changes to these requirements to AFMA for consideration at this meeting, noting that requirements need to be cost-effective and enforceable.	TRLWG 9 held on 19 February 2019	TRLWG members	**Not complete** A reminder concerning this action was sent to all TRLWG members on 12 November 2019. No written proposals had been received at the time this paper was prepared.
8.	The Working Group recommended that the PZJA develop a policy concerning the administration of developmental permits as a priority, and consult with industry in its development. Further, the Working Group recommended the existing developmental permit conditions be reconsidered in light of concerns raised by industry members.	TRLWG 9 held on 19 February 2019	PZJA	**Ongoing** Update provided under Agenda Item 2.3.
9.	The Working Group recommended that current TIB primary boat licence conditions which prohibit a TIB primary boat from towing dories not associated with the primary boat, be reviewed with a view to permitting this activity, noting survey requirements for individual primary boats. The Working Group further recommended a proposal be	TRLWG 9 held on 19 February 2019	PZJA	**Not complete** At TRLWG 9 held on 19 February 2019, the AFMA member noted that this issue has been raised by industry in the past and is relevant to all Torres Strait fisheries, not just the TRL Fishery. Given this, broader consultation is required, including with Native Title bodies. The AFMA member further noted that a range of issues will need to be considered in developing a proposal for PZJA consideration including who has ownership of catches carried aboard the primary boat and who is responsible should

	developed for PZJA consideration regarding this matter.			offences be committed by dories not associated with the primary boat. The TSRA member supported the development of a proposal for PZJA consideration, noting such a proposal did not have PZJA support in the past as, at that time, Torres Strait fisheries were primarily operating under input controls. To be discussed under Agenda Item 7.
10.	Noting that all current input controls will remain in place for the 2018-19 fishing season, the Working Group recommended that in preparation for the next meeting, members are to identify management measures for review and objectives (social, economic, biological) against which any proposed changes can be assessed.	TRLWG 9 held on 19 February 2019	All TRLWG members	**Complete** To be discussed under Agenda Item 7.

Relevant action items from previous TRLRAG meetings*

#	Action Item	Meeting	Agency	Status
1.	The RAG endorsed the draft TRL Harvest Strategy and recommended the WG further discuss and provide the RAG with details on the trigger level and proposed management response.	TRLRAG 22 held on 27-28 March 2018	AFMA	**Complete** Considered at TRLWG 9 meeting held on 19 February 2019. Please refer to the record of the meeting provided at **Attachment 1.4b**, for further details.

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

Torres Strait Tropical Rock Lobster Working Group Meeting 9

Meeting Record

19 February 2019

Thursday Island

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

Australian Government

Australian Fisheries Management Authority

Box 7051, Canberra Business Centre, ACT 2610 / Ph (02) 6225 5555 / Fax (02) 6225 5500 / AFMA Direct 1300 723 621 afma.gov.au

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Meeting participants

Members

Name	Position	Declaration of interest
Mr John Pollock	Chairperson	Nil
Ms Selina Stoute	AFMA member	Nil
Ms Allison Runck	TSRA member	Nil. TSRA holds multiple TVH TRL fishing licences on behalf of Torres Strait Communities but does not benefit from them
Mr Darren Dennis	Scientific member	Nil. Member of other RAGs and research consultant
Mr Aaron Tom	Industry member	Traditional Inhabitant Gudumalulgal and TIB licence holder
Mr Mark David	Industry member	Traditional Inhabitant Kulkalgal and TIB licence holder
Mr Les Pitt	Industry member	Traditional Inhabitant Kemer Kemer Meriam, TIB licence holder and independent freezer operator
Mr James Ahmat	Industry member	Traditional Inhabitant Maluialgal and TIB licence holder
Mr Mark Dean	Industry member	TVH operator
Mr Daniel Takai	Industry member	Pearl Island Seafoods (seafood buyer), Tanala Seafoods (seafood buyer) and TIB licence holder
Mr 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
Ms Natalie Couchman	AFMA executive officer	Nil

Observers

Name	Position	Declaration of interest
Mr Jerry Stephen	TSRA Deputy Chair, TSRA Member for Ugar and TSRA Portfolio Member for Fisheries	TIB licence holder and Native Title holder
Mr Joseph Posu	PNG National Fisheries Authority	Nil
Mr Thomas Fujii~	Industry observer	TIB licence holder
Mr Graham Hirakawa~	Industry observer	TIB licence holder

Name	Position	Declaration of interest
Mr Phil Hughes*	Industry observer	TIB licence holder
Mr Phillip Ketchell	Industry observer	TIB licence holder
Seri Stephen	Industry observer	TIB licence holder
John Jones*	AFMA	Nil

Notes:

* Departed the meeting at 12:30 pm on Tuesday 19 February 2019, at end of Agenda Item 2.5.

~ Departed the meeting at 3:00 pm on Tuesday 19 February 2019, at end of Agenda Item 6.

1 Preliminaries

1.1 Welcome and apologies

1. The meeting was opened in prayer at 9:10 am on Tuesday 19 February 2019.
2. The Chair acknowledged the Traditional Owners of the land on which the meeting was held and paid respect to Elders past and present. The Chairperson welcomed attendees to the 9th meeting of the Torres Strait Tropical Rock Lobster Working Group (TRLWG 9), including a welcome for new member, Mr James Ahmat.
3. The Chair advised that the Working Group is an advisory committee to the PZJA. The Working Group will seek to reach consensus on issues, but where this is not possible, the different views of members will be recorded in the meeting record.
4. Attendees at the Working Group are detailed in the meeting participant tables at the start of this meeting record. The Chair approved the attendance of those observers present at the meeting.
5. Apologies were received from:
    a. Mr Sandy Morison, Chairperson;
    b. Ms Danielle Stewart, Queensland Department of Agriculture and Fisheries (QDAF) member;
    c. Ms Sevaly Sen, Fishery Economist member; and
    d. Mr Maluwap Nona, invited observer and Chairperson for Malu Lamar (Torres Strait Islanders) Corporation RNTBC (Malu Lamar).

1.2 Adoption of agenda

6. The draft agenda was adopted (**Attachment A**), with the addition of a matter concerning developmental permits to be covered under Agenda Item 2.3.

1.3 Declaration of interests

7. The Chairperson advised members and observers, that as provided in PZJA Fisheries Management Paper No. 1 (FMP1), all members of the Working Group must declare all real or potential conflicts of interest in the Torres Strait TRL Fishery at the commencement of the meeting. Where it is determined that a direct conflict of interest exists, the Working Group may allow the member to continue to participate in the discussions relating to the matter but not in any decision making process. The Working Group 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.
8. Declarations of interests were provided by each meeting participant. These are detailed in the meeting participant tables at the start of this meeting record.
9. Those members and observers holding a fishing licence were asked to leave the room. The remaining members agreed that although the excused members have a conflicts of interest, their expertise is critical in the development of advice. It was also noted that there was no agenda item that favoured one licence holder over another. On this basis, it was agreed that the excused members be permitted to participate in discussions under all agenda items and the formulation of recommendations.
10. The TSRA member and observer were asked to leave the room. The remaining members agreed that although the TSRA member has a potential conflict of interest, as a PZJA agency and service provider in the region, their expertise is important in the development of advice. On this basis, it was agreed that the TSRA member be permitted to participate in discussions under all agenda items and the formulation of recommendations.

11. The AFMA member, observer and executive officer were asked to leave the room. The remaining members agreed the AFMA member, observer and executive officer have no conflicts of interest and so the member should be permitted to participate in discussions under all agenda items and the formulation of recommendations.

1.4 Action items from previous meetings

12. The Working Group noted the status of actions arising from previous Working Group, and where relevant, TRL Resource Assessment Group (TRLRAG) meetings (**Attachment B**).

13. The Working Group noted the final meeting record for TRLWG 8 held on 8 November 2018 was finalised out of session.

1.5 Out-of-session correspondence

14. The Working Group noted out of session correspondence on Working Group matters since the previous meeting.

2 Updates from members

2.1 Industry members

15. The Working Group noted updates provided by industry members and observers regarding the performance of the Torres Strait TRL Fishery during the 2018-19 fishing season to date:

    a. Two Traditional Inhabitant industry members advised that they had nothing to add to the updates they provided at the TRLRAG meeting held on 5 February 2019.

    b. An industry member advised that weather conditions were poor at the start of the season which had an impact on operations. Catches during the two-month hookah closure were higher than in previous years. Similar to last season, lobster numbers locally (around Thursday Island) have been low. There is also a high rate of mortality at present due to high temperatures and the harvesting of moulting individuals. The rejection rate is up to 20%, whereas the average throughout the year is normally 3-5%. The mortalities are also unpredictable, with lobsters looking to be in good condition when first received but not travelling well. The member is investigating whether there are any handling issues further down the logistics chain that may be contributing.

    c. Another industry member advised that there have been good catches from the start of season consistent with what would be expected from the November 2018 pre-season survey. However poor weather and visibility since the end of January has impacted on most recent catches. The weather appears to have reverted to a historical pattern. Prices have been good due to Chinese New Year festivities, but are expected to drop in the coming weeks as the festivities conclude. In response to a query from another member, the member advised that historically the best price obtained was $115/kg, with restaurant mark-ups in China being as high as $250/kg. This is significantly above the average prices expected this season.

    d. Another industry member advised that they were only able to fish for a few days on their last trip due to the poor weather, and also returned to port earlier to get the maximum prices before other boats unloaded.

16. The Working Group discussed how data on discards is currently being captured. The AFMA member advised that catches against the total allowable catch (TAC) are monitored at landing through catch disposal records (CDRs) under the mandatory Fish Receiver System. Members discussed that data on discards before lobsters are landed (i.e. at sea) and some discards at the point of landing to fish receivers is not currently captured. In particular:

a. Fishers discard lobsters that die while being held in cages at sea. This mortality can be due to poor weather, high water temperatures, cages overturning, not resting lobsters before towing, towing cages too quickly etc. These mortalities are not currently captured through CDRs or logbooks.

b. Lobsters in poor condition at landing are either tailed or outright rejected by fish receivers. The outright rejection rate is between 1-5% of total landings depending on the condition of lobsters. Those lobsters that are outright rejected are not currently captured through CDRs.

c. Fisher's landing tonnes of lobsters at the same time creates logistical problems. This can also result in a significant price drop (e.g. $4/kg less). The movement of larger volumes results in higher mortality rates. Industry members expressed concerns that recent changes to requirements concerning the possession and use of hookah gear around hookah closure periods is exacerbating this problem. These mortalities should be currently captured through CDRs.

17. The Working Group agreed that there is a need to capture better data on discards, noting that this issue has been identified for discussion at the upcoming TRLRAG Data Sub-Group meeting tentatively scheduled for April 2019. Industry members advised that any changes to data collection protocols to better collect this data needs to be accompanied by education for fishers.

18. The Working Group also discussed industry concerns regarding recent changes to requirements concerning the possession and use of hookah gear around hookah closure periods. The AFMA member and AFMA Compliance Manager advised that previous flexibility around this issue resulted in poor industry compliance and AFMA received many complaints from industry. Noting this, the AFMA member and observer explained the following arrangements will apply this season:

    a. It is an offence under the *Torres Strait Fisheries (Tropical Rock Lobster) Management Instrument 2018* (the Instrument) for a fisher to be in possession or use hookah gear during hookah closure periods, these being from December-January and periodic moon-tide hookah closures;

    b. Where there are hookah fishers that wish to free-dive during hookah closure periods, those fishers must remove all hookah gear from their boats during the hookah closure periods. Holding tanks are to be aerated through other means (e.g. pond pumps can be purchased locally);

    c. For boats that are transiting to port during the hookah closure periods (e.g. transiting from the East coast), AFMA have approved boats to transit directly to port with hookah stowed securely on the primary boat (removed from tenders). This was monitored through VMS and inspections. AFMA have also approved the testing of hookah gear during closure periods while a boat is at a designated anchorage;

    d. Boats fitted with hookah gear are not permitted to transit to fishing grounds during a hookah closure period;

    e. For boats anchored in port during periodic moon-tide hookah closures, hookah gear can be left on these boats while the boat remains at anchor;

    f. Fishers are advised to contact AFMA should they have a situation where they wish to be in possession or use hookah gear during a hookah closure period (e.g. to conduct maintenance, transit between ports). AFMA will assess each request on a case by case basis and provide approval as appropriate.

19. An industry observer noted that Traditional Inhabitants undertaking traditional fishing are not subject to these requirements.

Recommendation

20. The Working Group recommended AFMA provide further guidance to industry concerning:

a. Current requirements concerning the possession and use of hookah gear around hookah closure periods.

b. What fishers need to do should they have a situation where they wish to be in possession or use hookah gear during a hookah closure period (e.g. contact AFMA).

21. The Working Group further recommended that the requirements concerning the possession and use of hookah gear around hookah closure periods be considered further at the next meeting of the Working Group. It was also recommended that industry submit proposals for changes to these requirements to AFMA for consideration at this meeting, noting that requirements need to be cost-effective and enforceable.

2.2 Scientific members

22. The Working Group noted an update provided by the scientific member, Mr Darren Dennis, regarding research relevant to the Torres Strait TRL Fishery:

    a. The stock assessment report to be discussed under Agenda Item 3 provides comprehensive details of the results of the November 2018 pre-season survey, updated integrated stock assessment and recommended biological catch (RBC) calculations. The survey and stock assessment indicates that the TRL stock abundance has increased from a historical low level last season to a level approximating the long-term average. Further the July 2018 mid-year survey has verified the low stock abundance levels last season.

    b. The RBC is currently calculated by applying the interim Harvest Strategy to the results of the pre-season survey and integrated stock assessment. The information collected to manage this Torres Strait TRL Fishery is of a gold standard and includes fishery independent surveys and commercial catch data. The survey methodology has been presented at six conferences, detailed in over 100 peer reviewed papers and most recently reviewed by the US National Fisheries Service.

    c. A draft Harvest Strategy is currently being finalised for the Torres Strait TRL Fishery, which will work by taking the average catch over the past five years scaled to pre-season survey abundance and CPUE indices.

    d. The 0+ abundance index from surveys has been shown to be unreliable, but does provide an indication of expected biomass two years later. The scientific member encouraged industry to share any information they have with CSIRO on 0+ aged lobsters to improve the assessment and to ensure the survey is covering the right areas.

2.3 Government agencies

23. The Working Group noted an update provided by the TSRA member, Ms Allison Runck, regarding TSRA activities relevant to the management of the Torres Strait TRL Fishery:

    a. Traditional Inhabitant member induction – the TSRA, through a number of providers, will deliver an Induction Program for Traditional Inhabitant members on PZJA advisory committees. The program is to be delivered at sessions in late February and May 2019. The Program will provide an overview of member roles and responsibilities and fisheries management principles as well as provide support to members in disseminating the outcomes of meetings to communities in a timely manner. This includes support for members to travel to communities, other than the member's home community, at least once a year. Communiques will also be developed concerning key advice from each meeting, and key issues for discussion at upcoming meetings.

    b. Export and branding for Torres Strait seafood – last year, a consultant was engaged to assess the economic feasibility, regulatory requirements and infrastructure needs to export seafood directly from the Torres Strait and the potential value derived from creating a brand for Torres Strait seafood. Export handbooks will be made available shortly which aim to provide industry with a better understanding of supply chains and legislative requirements.

c. Independent entity – supporting the implementation of the *Torres Strait Fisheries (Quotas for Tropical Rock Lobster (Kaiar)) Management Plan 2018* (Management Plan), the TSRA continues to progress the establishment of an independent entity to hold and manage Torres Strait fisheries assets (e.g. licences and quota units) on behalf of Torres Strait communities. With a target implementation date of 30 June 2020, there is a large schedule of work ahead to develop the supporting community arrangements. This will include consulting closely with Prescribed Bodies Corporate (PBCs) in April-May 2019. There will also be a period of transition and support following the establishment of the entity. It was noted that under the Management Plan, TIB quota units will not be able to be permanently transferred or sold. Licences and quota units will be able to be leased. The TSRA has decided that the TVH licences they currently hold will not be leased while the process to formally allocate quota units, under the Management Plan, is undertaken. Future leasing decisions will be made by the entity.

d. Infrastructure investment – over next 18 months, the TSRA will invest in the development of community based infrastructure facilities across the Torres Strait. This investment plan is based on an earlier audit of existing infrastructure and services, and needs. A project manager will now work with communities to implement the plan. The TSRA member explained that the intention of this investment is not to put existing private businesses out of business. These businesses are able to seek support through the TSRA's Economic Development Program. Such businesses are advised to contact the TSRA to discuss available support further.

24. The Working Group noted an update provided by the AFMA member, Ms Selina Stoute, regarding management initiatives relevant to the Torres Strait TRL Fishery:

a. TRL Fishery Management Plan - AFMA has commenced the formal allocation process prescribed under the Management Plan and will be in contact with affected licence owners as the process progresses.

b. Management arrangements for the 2018/19 fishing season - AFMA wrote to all Torres Strait TRL Fishery licence holders prior to the start of the season providing details of key management arrangements for this season, including interim sectoral catch shares, interim TAC and moon-tide hookah closures.

c. Australia-PNG catch sharing - AFMA and the PNG NFA met on 17 January 2018 to discuss preliminary catch sharing arrangements for the 2018/19 fishing season, as per the terms of the Torres Strait Treaty (the Treaty). Agencies will meet again following the Working Group to agree on final arrangements, prior to the PZJA endorsing a final TAC for this season.

d. Research pre-proposals – the Torres Strait Scientific Advisory Committee (TSSAC), made a public call in December 2018 for research applications to address research priorities identified for potential funding in the 2019-20 financial year. Three research pre-proposals were received relevant to the Torres Strait TRL Fishery. These were circulated to the Working Group out of session just prior to this meeting. The AFMA member advised that these proposals can be further considered under Agenda Item 7 if members choose.

e. Reported catches to date - the reported landed catch for the Australian Torres Strait TRL Fishery for the 2018-19 fishing season to date (1 December 2018 - 8 February 2019), is 39.623 tonne, equating to 19.81 per cent of the 200 tonne interim TAC. The AFMA member noted that, as per AFMA's Information Disclosure Policy, sectoral catches have been aggregated, as the data from the TVH sector is currently from less than 5 vessels. The Policy does allow more detailed fishing information to be disclosed where the information has or will be used to guide fishery management decisions, but that is not necessary at this time. AFMA will provide public monthly catch updates from March 2019, via the AFMA and PZJA websites, to assist industry in monitoring catch against interim sectoral split arrangements this season.

f. Sea surface temperatures (SSTs) - SSTs are currently below the coral bleaching threshold, as determined by the Australian Institute of Marine Science (AIMS), which

monitors SSTs to identify the risk of bleaching events. Reports can be accessed on the AIMS website.

g. Fish Receiver System (FRS) - in the first half of 2019, AFMA will again visit all communities across the Torres Strait and Northern Peninsula Area (NPA), to provide ongoing support and education and receive feedback on how the FRS is functioning. AFMA will aim to have Traditional Inhabitant members accompany the visits.

h. Industry liaison visits – AFMA is looking at opportunities to invite members to visit the Canberra office. This would raise awareness of Torres Strait issues in Canberra and build members' knowledge of AFMA business. Mr David advised that his recent visit was very productive and preceded by a climate adaptation meeting in Melbourne. This meeting involved government, industry and scientists sitting down to work out how to best adapt to climate change.

i. Expiry of appointments for PZJA advisory committees – the appointment terms of members on PZJA consultative forums, excluding Traditional Inhabitant members, expire on 28 February 2019. AFMA will seek to have members' appointments extended until later in 2019, to allow time for a new appointment process to be completed.

j. Developmental permits – three developmental permits are currently issued to TIB operators for training purposes. A condition on TIB licences requires TIB licenced boats to be solely operated and crewed by Australian Traditional Inhabitants. However, from time to time, there is a need for skills development and training that is unable to be delivered by Traditional Inhabitants, and developmental permits are issued to facilitate such activities.

25. The Working Group discussed industry concerns regarding developmental permits currently issued to TIB operators for training purposes. The AFMA member advised that:

    a. Developmental permits have been issued for many years and applications are currently assessed on a case by case basis. Less than a handful of applications are received each year.

    b. The PZJA does not have a formal policy regarding the administration of developmental permits (eligibility/assessment criteria) and this is a weakness in the current process. AFMA currently seeks details of training proposals when applications are made but there are no criteria limiting the scope of proposals (e.g. trainers are not required to be accredited or be delivering an accredited training course). AFMA have heard varying views from industry concerning the TIB industry's current crewing capacity and needs for skills development and training.

    c. developmental permits are subject to a range of conditions concerning how many and for what purposes a non-traditional inhabitant can be aboard a TIB licenced boat, VMS, logbook reporting, reporting on training delivered and the outcomes. Permit conditions are able to be varied and permits are able to be revoked if an operator does not comply with the conditions of the permit.

26. Industry members and observers expressed their strong discontent that under the developmental permits currently issued, non-traditional inhabitants will be making money by taking lobsters during the course of training and this will be deducted from the TIB sectoral catch share. It was the strong view of industry members and observers that neither TIB operators nor non-traditional inhabitant trainers be allowed to make a profit from activities conducted under developmental permits and that trainers should be paid a wage to deliver training. It was also suggested that a limit be placed on the number of lobsters that can be taken by a boat while operating under a developmental permit. Concern was also expressed that developmental permits could be used by non-traditional inhabitants to control TIB operations.

27. The AFMA member advised that the development of a policy regarding the administration of developmental permits is a priority. Some industry members suggested that a draft policy be made available for consideration at the next Working Group meeting. However, the AFMA member advised that given current workloads, this would be unlikely.

Recommendation

28. The Working Group recommended that the PZJA develop a policy concerning the administration of developmental permits as a priority, and consult with industry in its development. Further, the Working Group recommended the existing developmental permit conditions be reconsidered in light of concerns raised by industry members.

29. The Working Group discussed current TIB primary boat licence conditions which prohibit a TIB primary boat from towing dories not associated with the primary boat – a TIB primary boat can only tow associated tenders (denoted through a common boat mark). Industry members and observers expressed concerns that this prohibition restricts the ability of the TIB sector to catch the TIB sectoral catch share and creates inefficiencies (e.g. fuel costs). The AFMA member noted that this issue has been raised by industry in the past and is relevant to all Torres Strait fisheries, not just the TRL Fishery. Given this, broader consultation is required including with Native Title bodies. The AFMA member further noted that a range of issues will need to be considered in developing a proposal for PZJA consideration including who has ownership of catches carried aboard the primary boat and who is responsible should offences be committed by dories not associated with the primary boat. The TSRA member supported the development of a proposal for PZJA consideration, noting such a proposal did not have PZJA support in the past as, at that time, Torres Strait fisheries were primarily operating under input controls.

Recommendation

30. The Working Group recommended that current TIB primary boat licence conditions which prohibit a TIB primary boat from towing dories not associated with the primary boat, be reviewed with a view to permitting this activity, noting survey requirements for individual primary boats. The Working Group further recommended a proposal be developed for PZJA consideration regarding this matter.

2.4 PNG NFA

31. The Working Group noted an update provided by the PNG NFA observer, Mr Joseph Posu, regarding the PNG TRL Fishery:

    a. 2018 fishery closure – in October 2018, the PNG NFA issued a notice to close the PNG TRL Fishery. This included that area of the fishery in the Torres Strait Protected Zone (TSPZ) and the Western province. However, the provincial government was slow to implement the closure and fishing continued to the end of the season. It was also found that the closure did not have the appropriate legislative basis and so enforcement action was unable to be taken against those operators that continued fishing. The PNG NFA are working to ensure the necessary legislative, policy and administrative arrangements are in place for future seasons.

    b. Reported catches for the 2018 fishing season – the PNG NFA tabled a report on reported catch for the PNG TRL Fishery taken from within and outside the TSPZ for the 2018 fishing season (1 January 2018 - 31 December 2018). A total of 85.289 tonnes was taken from inside the TSPZ and 70.664 tonnes from outside the TSPZ (Western province only).

    c. 2019 fishing season – catches for the 2019 fishing season to date have been better than in previous years. In February 2019, a trial TRL survey was conducted by the PNG NFA, in areas that have been historically surveyed. Further details on this will be provided at the upcoming Australia-PNG Bilateral meetings to be held on Thursday Island in March.

    d. Catch sharing arrangements – the PNG NFA sought the support of AFMA to better understand and articulate catch sharing arrangements under the Treaty so that this can be communicated to PNG stakeholders. The AFMA member advised that catch sharing arrangements are determined using a two tier formula, the first being the 85%:15% split between Australia and PNG. This is based on a historical agreement between Australia and PNG on the likely distribution of the TRL stock. Each Party is then entitled to fish 25% of the other Party's share through cross-endorsement. The AFMA member further

noted that as the TRL stock is migratory, to ensure its effective management, both Australia and PNG need to ensure all impacts on the stock both inside and outside the Torres Strait Protected Zone are accounted for. The PNG NFA reiterated that they would like to continue meeting regularly with AFMA which was supported by the AFMA member.

e. Data sharing – the PNG NFA will be undertaking a data collection review in 2019. The PNG NFA are also committed to the continued sharing of catch data with Australia to support the stock assessment for the Torres Strait TRL Fishery (which covers both PNG and Australian waters). The PNG NFA sought guidance from AFMA and CSIRO on the desired timeframes for sharing catch data to support the stock assessment.

Action

32. AFMA (and CSIRO) to provide the PNG NFA with:

a. Further information concerning catch sharing arrangements under the Treaty, in particular the two tier formula and the basis of the historical agreement between Australia and PNG on the likely distribution of the TRL stock.

b. Guidance from AFMA and CSIRO on the desired timeframes for sharing catch data to support the stock assessment for the Torres Strait TRL Fishery.

2.5 Native Title

33. As a Malu Lamar (Torres Strait Islanders) Corporation RNTBC (Malu Lamar) representative was not in attendance at the meeting, no update was provided under this item.

34. Some members sought an update concerning Federal Court proceedings between Malu Lamar and the PZJA. The AFMA member advised that Malu Lamar commenced legal proceedings against the Assistant Minister for Agriculture and Water Resources and the PZJA in the Federal Court in late November 2018, challenging the legality of the Management Plan and the legislative amendments that implement the sectoral split for the 2018-19 fishing season. In their application to the Court, Malu Lamar requested and urgent hearing to have the matter heard before the Management Plan and legislative amendments were made.

35. The Federal Court considered Malu Lamar's application and determined that grounds for an urgent hearing had not been made out. This meant that the PZJA could proceed to determine the Management Plan and make the legislative amendments that implemented the sectoral split on 26 November 2018.

36. Malu Lamar subsequently asked to mediate in this matter, and raised concerns with respect to the condition imposed on TIB licence holders restricting them from having non-traditional crew. This is not raised in their application, and Malu Lamar has leave from the court to amend their application on or before 26 February 2019. The subsequent conduct of these proceedings should become clearer after this amended application is received.

Action

37. AFMA to provide publically available information to the Working Group concerning Federal Court proceedings between Malu Lamar, the Assistant Minister for Agriculture and Water Resources and the PZJA.

3 Total allowable catch for the 2018-19 fishing season

38. The Working Group considered an update provided by the AFMA member detailing recent developments concerning the RBC and TAC for the Torres Strait TRL Fishery for the 2018-19 fishing season:

a. In order to give effect to the sectoral split, at their meeting on 26 November 2018 the PZJA agreed to open the 2018-19 fishing season with an interim TAC of 200 tonnes for

the Australian TRL Fishery. This decision was based on advice received from the TRLRAG and Working Group.

b. Preliminary results of the November 2018 pre-season survey and integrated stock assessment update was presented at the TRLRAG meeting held on 11-12 December 2018 (TRLRAG 25). At this meeting, the TRLRAG discussed a conflict in the stock assessment model between the November 2017 0+ survey index (which was very low relative to historical) and the 2018 1+ index (which was closer to average). CSIRO undertook further intersessional work to reduce this conflict.

c. At the latest TRLRAG meeting held on 5 February 2019 (TRLRAG 26), CSIRO presented additional analyses to reduce this conflict in the stock assessment model. The TRLRAG considered these analyses and agreed to apply a series of additional variance parameters for all years (except the most recent) to the 0+ index series used in the model.

d. On this basis, the RAG recommended a final RBC of 641 tonnes. The RBC was calculated by applying the interim harvest strategy to the results of the integrated fishery stock assessment.

e. Current stock biomass is estimated at 46 per cent of B_0 which is above the limit reference point of 40 per cent. The stock biomass is predicted to rise to 92 per cent of B_0 in 2020.

f. The Working Group is being asked at this meeting to provide advice on the TAC for the Torres Strait TRL Fishery for the 2018-19 fishing season. This is to include consideration of whether to deduct other sources of mortality (e.g. traditional and recreational catches) from the RBC, noting previous advice of the TRLRAG on this matter. The RBC and TAC covers the Torres Strait Protected Zone which includes both Australian and PNG waters.

39. The Working Group discussed whether to account for other sources of fishing mortality in recommending a TAC for the Torres Strait TRL Fishery for the 2018-19 fishing season, noting previous advice from TRLRAG meetings held on 2-3 August 2016 and 4-5 April 2017 (TRLRAG 18 and 20).

Recommendation

40. Noting previous TRLRAG advice (TRLRAG 18 and 20), the Working Group recommended that estimates of other sources of fishing mortality not be deducted from the RBC in recommending a TAC for the Torres Strait TRL Fishery for the 2018-19 fishing season.

41. The Working Group considered the final results of the November 2018 pre-season survey, the integrated stock assessment and the recommendation of the TRLRAG concerning the RBC.

Recommendation

42. Taking into account these results, TRLRAG advice (TRLRAG 26) and the preceding recommendation concerning other sources of fishing mortality, the Working Group recommended a final TAC for the Torres Strait TRL Fishery for the 2018-19 fishing season of 641 tonnes.

43. The Working Group noted the TAC covers the Torres Strait Protected Zone (Australia and PNG) and a final Australian TAC is subject to negotiation with PNG subject to the terms of the Treaty.

44. The Working Group discussed cross-endorsement arrangements under the Treaty. The AFMA member clarified that should Australia decide to exercise cross-endorsement rights in PNG waters, all Australian operators would be entitled to apply for a cross-endorsement licence. There has been a small number of Australian and PNG operators that have expressed an interest in applying for a cross-endorsement licence in the last few seasons. Australia last issued a cross-endorsement licence to PNG operators in the 2014/15 fishing season and has not accessed cross-endorsement catch allocations for any fishery in PNG waters since the early 2000s. Cross-endorsement licences would be subject to the conditions placed on them by the country whose waters an operator is fishing in (i.e. PNG operators in Australian waters would be subject to Australian conditions). A key issue for consideration by Australia, particularly following the implementation of a quota management system under the Management Plan, is how access to cross-endorsement allocations should be shared between Australian licence holders.

45. The AFMA member advised that following this meeting, AFMA will seek final agreement with the PNG NFA on catch sharing arrangements, including cross endorsement, for the Torres Strait TRL Fishery for the 2018-19 fishing season. It was noted that the PNG NFA need to consult with their operators concerning cross-endorsement.

4 Finalising the draft Harvest Strategy for the TRL Fishery

46. The Working Group considered an update provided by the AFMA member concerning the development of the draft Harvest Strategy for the Torres Strait TRL Fishery:

    a. The draft Harvest Strategy for the TRL Fishery has been developed in consultation with the TRLRAG and Working Group at meetings held since 2016.

    b. The Working Group last considered the draft Harvest Strategy at its meeting on 25-26 July 2017 (TRLWG 6). There have been a number of developments since that meeting:

        i. The draft Harvest Strategy was endorsed by the TRLRAG at the meeting held on 27-28 March 2018 (TRLRAG 22).

        ii. At the TRLRAG meeting held on 11-12 December 2018 (TRLRAG 25), the number of years to be averaged in the empirical Harvest Control Rule (eHCR) index and decision rule triggers were reconsidered. The TRLRAG did not recommend any changes to the draft Harvest Strategy.

        iii. The Commonwealth Fisheries Harvest Strategy Policy was reviewed and updated in June 2018.

    c. In light of these developments, a number of changes were made to the draft Harvest Strategy in February 2019 – a copy of the draft Harvest Strategy showing these changes was tabled at the meeting (**Attachment C**). These changes did not change the principle substance of the draft Harvest Strategy. Specifically, the objectives, eHCR, reference points and decision rules have remained unchanged. Changes made included:

        i. Basic edits (e.g. spelling, punctuation etc.).

        ii. Updates to all references to the Commonwealth Fisheries Harvest Strategy Policy to reflect the June 2018 version, including glossary/definitions, background information, rationale for reference points and review requirements.

        iii. Updates to summary of the development of the draft Harvest Strategy, to reflect most recent meetings of the TRLRAG and Working Group where the draft Harvest Strategy has been considered.

        iv. Changes to reflect current arrangements regarding TAC setting.

            Updates to reflect new requirements regarding the introduction of the mandatory Fish Receiver System on 1 December 2017.

        v. Changes to directly quote TRLRAG advice regarding other sources of fishing mortality.

    d. At TRLWG 6 some Working Group members recommended that the reduction of catch under the draft Harvest Strategy as the stock biomass move towards the limit reference point should not be uniform across the TIB and TVH sectors. Rather, a trigger point should be included in the draft Harvest Strategy before B_{LIM} at which point priority is given for fishing to the TIB sector over the TVH sector. This was considered at TRLRAG 22 and referred back to the Working Group for further consideration.

    e. Since TRLWG 6, the management of the Torres Strait TRL Fishery has undergone significant change, specifically the determination of the Management Plan and interim sectoral catch shares. Under the interim sectoral catch shares and future quota management system under the Management Plan, each sector (TIB and TVH) is allocated (either as a pool or to individual operators) a relative share of the TAC. The

relative shares can only change through trading. Input controls, for example based on the catch trigger proposed at TRLWG 6, cannot be used to change the relative shares.

47. The Working Group further discussed the proposal for a catch trigger initially proposed at TRLWG 6. Members noted that it would be possible for the TIB sector to propose to use its catch share differently. For example, the TIB sector could propose to reserve a percentage of the TIB catch share for free-dive operators to extend the fishing season. Any such proposal would need to be consulted on widely before an amendment is made to the Harvest Strategy. It may also be more appropriate to give effect to such a proposal through the Instrument or other such legislative mechanism.
48. The Working Group noted an explanation from the scientific member that the eHCR is designed to smooth out peaks and troughs in the RBC. This means there will be less highs, but also less lows. Because the eHCR is scaled over five years, there would need a very steep decline in catches to set a very low RBC. The design of the eHCR has undergone extensive deliberation in the TRLRAG and Working Group. Extensive testing has also been conducted to ensure the eHCR is likely to meet objectives. There are also a range of triggers and decision rules built into the draft Harvest Strategy to respond to circumstances that were seen last season.
49. Noting this explanation, the TSRA member further explained that the low RBC from last season and the situation of intensive competition between sectors that this created, is unlikely to reoccur. The eHCR will mean that such a low RBC will be less likely. Further, the interim sectoral catch shares now implemented under the Instrument, and once fully operational the Management Plan, mean that the TIB sector now have the greater share of the Torres Strait TRL Fishery and will no longer need to compete with the TVH sector for their share of the TAC.
50. With the exception of a Traditional Inhabitant industry member, the Working Group agreed that the catch trigger proposed at TRLWG 6 not be progressed further at this point. A Traditional Inhabitant industry member advised that they still wished to progress the proposal for a catch trigger to reallocate shares between the TIB and TVH sectors in low RBC seasons. The objective is to ensure that the TIB sector does not have to stop fishing early as happened last season.

Recommendation

51. Noting the reservation of a Traditional Inhabitant industry member, the Working Group endorsed the draft Harvest Strategy for further PZJA consideration.

52. The Working Group noted that the PZJA will be asked to release the draft Harvest Strategy for public consultation.

5 Future management priorities

53. The Working Group considered an update provided by the AFMA member concerning future management priorities for the Torres Strait TRL Fishery:
    a. AFMA has committed resources to progress a number of management priorities over the coming year:
        i. Implementation of the Management Plan, to include the formal allocation of quota units.
        ii. Finalisation and implementation of the draft Harvest Strategy.
        iii. Improvement of fishery dependent data collection and analyses, to include meetings of the TRLRAG Data Sub-Group.
        iv. Legislative amendments to enable more efficient and effective fisheries management and enforcement.
    b. When determining the Management Plan, the PZJA reaffirmed existing management controls currently applied to the Torres Strait TRL Fishery. A review of existing PZJA licencing policies and management arrangements, including input controls, will be conducted periodically after the quota management system is operational.

c. At the TRLRAG meeting held on 11-12 December 2018, it was recommended that given the immediate changes that will apply as the Torres Strait TRL Fishery moves to a quota management system under the Management Plan, all current input controls remain in place for the 2018-19 fishing season before a review or change of input controls takes place.

d. AFMA proposed the Working Group develop a work plan to address management measures requiring review as the Torres Strait TRL Fishery moves to a quota management system under the Management Plan. It is proposed the next meeting of the Working Group, tentatively scheduled for August 2019, discuss this work plan.

54. The scientific member advised that in order to review management measures effectively, any proposed changes need to be assessed against what objectives are being pursued (e.g. a social objective could be Traditional Inhabitant participation in the commercial fishing industry). It was noted that previous MSE work compiled data on industry composition and assessed how proposed changes would affect industry. The member recommended a triple bottom line approach (social, economic and biological) be taken in reviewing management measures and proposing any changes. This would involve the collection of certain data for assessment against specified metrics and objectives. What these are needs to be determined by the industry and Working Group.

55. The TSRA member advised that a key objective of their work is to improve and support Traditional Inhabitant participation in the commercial fishing industry. There are likely other objectives the industry would like to see pursued, and the TSRA agreed to work with industry members in the intersessional period to identify these objectives and key management measures for review.

Recommendation

56. Noting that all current input controls will remain in place for the 2018-19 fishing season, the Working Group recommended that in preparation for the next meeting, members are to identify management measures for review and objectives (social, economic, biological) against which any proposed changes can be assessed.

Action

57. In preparation for the next Working group meeting, TSRA to work with Traditional Inhabitant industry members to identify management measures for review and objectives against which any proposed changes can be assessed.

6 TRL Fishery budget report for 2019/20

58. The Working Group considered an update provided by the AFMA member concerning the draft budget for the Torres Strait TRL Fishery for the 2019/20 financial year. The Working Group noted:

a. AFMA consults on its budget with all Commonwealth managed fisheries. Consultation with industry provides accountability and assists with driving management efficiency and priority setting. While Torres Strait fisheries management costs are not currently cost recovered, industry and management are likely to benefit in the same way from understanding and discussing AFMA's budgeting arrangements.

b. The draft budget was comprised of direct costs only, and excluded staff costs and associated overheads, compliance, licencing and data management costs.

c. The budget covers the convening of three Working Group meetings (two-day meetings on Thursday Island) and two TRLRAG meetings (two-day meetings on Thursday Island). Administrative costs associated with the management of the Fishery and implementation of the Management Plan are also included.

59. An industry member suggested that the spending on flights and accommodation could be reduced.

7 Other business

60. No other matters were raised for consideration under this agenda item.

8 Date and venue for next meeting

61. The Working Group noted that the next meeting is tentatively scheduled for August 2019, location to be advised.

62. The Chairperson thanked members for participating in the meeting in a constructive and effective manner. The meeting was closed in prayer at 3:10 pm on Tuesday 19 February 2019.

9th MEETING OF THE PZJA TORRES STRAIT TROPICAL ROCK LOBSTER WORKING GROUP GROUP (TRLWG9)

Tuesday 19 February 2019 – 9:00 AM-5:00 PM – TSRA Boardroom, Level 1 Torres Strait Haus, 46 Victoria Parade
Wednesday 20 February 2019 – 9:00 AM-12:00 PM – Loban Road Hall, Torres Shire Sports Complex, Loban Road

DRAFT AGENDA

1 PRELIMINARIES

1.1 Welcome and apologies

The Chair will welcome members and observers to the 9th meeting of the Working Group.

1.2 Adoption of agenda

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

1.5 Out-of-session correspondence

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

2 UPDATES FROM MEMBERS

2.1 Industry members

Industry members and observers will be invited to provide an update on matters concerning the Torres Strait TRL Fishery.

2.2 Scientific members

Scientific members and observers will be invited to provide an update on matters concerning the Torres Strait TRL Fishery.

2.3 Government agencies

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

2.4 PNG National Fisheries Authority

The Working Group will be invited to note an update from the PNG National Fisheries Authority.

2.5 Native Title

The Working Group will be invited to note an update from Malu Lamar (Torres Strait Islander) Corporation RNTBC.

3 TOTAL ALLOWABLE CATCH FOR THE 2018/19 FISHING SEASON

The Working Group will be invited to consider advice from the TRL Resource Assessment Group on the recommended biological catch (RBC) for the 2018/19 fishing season based on the updated integrated stock assessment and interim harvest strategy.

4 FINALISING THE DRAFT HARVEST STRATEGY FOR THE TRL FISHERY

The Working Group will be invited to consider the final draft Harvest Strategy for the TRL Fishery and process for implementation.

5 FUTURE MANAGEMENT PRIORITIES

The Working Group will be invited to consider future management priorities.

6 TRL FISHERY BUDGET REPORT FOR 2019/20

The Working Group will be invited to note the draft TRL Fishery budget for 2019/20.

7 OTHER BUSINESS

The Working Group will be invited to raise other business for consideration.

8 DATE AND VENUE FOR NEXT MEETING

The Working Group will be invited to discuss a suitable date for the next meeting.

Action items from previous TRLWG meetings

#	Action Item	Meeting	Agency	Status
1.	The following be presented at the next TRLWG meeting: a) an overview of the current understanding of stock connectivity between the Queensland East Coast and the Torres Strait TRL Fisheries; and b) the basis for the Queensland east coast TAC.	TRLWG 6 held on 25-26 July 2017	CSIRO	**Ongoing – stock connectivity** At TRLRAG 21 held from 12-13 December 2017, CSIRO presented the preliminary results of the research project titled '*Environmental update for the Torres Strait tropical lobster Panulirus ornatus*'. Some further results were presented at TRLRAG 22 held from 27-28 March 2018. CSIRO's final report, titled '*Environmental Drivers of variability and climate projections for Torres Strait tropical lobster Panulirus ornatus*', was provided as a meeting paper at the TRLWG 8 meeting held on 8 November 2018, for reference. TRLWG 8 agreed to amend the status of this action as 'ongoing' as this work is still being continued by the TRLRAG. A summary will be presented to the TRLWG when completed. **Complete – QLD TAC** See meeting record for TRLWG 8 meeting held on 8 November 2018.
2.	AFMA to clarify with PNG NFA if the PNG TRL Closure was for the entire fishery or for hookah fishing only.	TRLWG 8 held on 8 November 2018	AFMA	**Ongoing** AFMA sought confirmation from PNG NFA following the TRLWG 8 meeting, however further clarification from PNG NFA is required. To be considered under **Agenda Item 2.4**.

Relevant action items from previous TRLRAG meetings*

#	Action Item	Agenda	Agency	Status
1.	The RAG endorsed the draft TRL Harvest Strategy and recommended the WG further discuss and provide the RAG with details on the trigger level and proposed management response.	TRLRAG 22 held on 27-28 March 2018	AFMA	**Ongoing** To be considered under **Agenda Item 4**.

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

Australian Government

Australian Fisheries Management Authority

Torres Strait Tropical Rock Lobster Fishery

Draft ~~Working Draft~~

Harvest Strategy

~~May 2017~~February 2019

Box 7051, Canberra Business Centre, ACT 2610 / Ph (02) 6225 5555 / Fax (02) 6225 5500 / AFMA Direct 1300 723 621 afma.gov.au

CONTENTS

GLOSSARY

Types of reference points:

Reference Point	Description
Metarule	A rule that describes how the RBCs obtained from an assessment should be adjusted in calculating a recommended TAC
Target	The desired state of the stock or fishery (for example, MEY or B_{TARG})[1] ~~Relates to a target reference point as per the HSP. Expressed in terms of biomass~~
Limit	~~Relates to a limit reference point as per the HSP~~ The level of an indicator (such as biomass or fishing mortality) beyond which the risk to the stock is regarded as unacceptably high[1]. ~~Fishing stops if this reference point is exceeded a specified number of times. Expressed in terms of biomass~~
MEY	The sustainable catch or effort level for a commercial fishery that allows net economic returns to be maximised. In this context, maximised equates to the largest positive difference between total revenue and total cost of fishing[1] ~~Maximum economic yield occurs when the total profit from the Fishery is maximised~~
MSY	The maximum average annual catch that can be removed from a stock over an indefinite period under prevailing environmental conditions[1] ~~Maximum sustainable yield is the maximum that can be taken from a stock in perpetuity~~

Notation:

Notation	Description
B	Spawning biomass ~~level~~ - the total weight of all adult (reproductively mature) fish in a population[1]
B_0	The unfished spawning biomass (determined from an appropriate reference point)
F	Fishing mortality rate
B_{LIM}	Biomass limit reference point - the point beyond which the risk to the stock is regarded as unacceptably high[1]
B_{TARG}	Biomass target reference point - the desired biomass of the stock[1]

Other acronyms:

Acronym	Description
CPUE	Catch per unit effort
eHCR	Empirical Harvest Control Rule
HCR	Harvest Control Rule - pre-determined rules that control fishing activity according to the biological and economic conditions of the fishery (as defined by monitoring or assessment). Also called 'decision rules'. HCR are a key element of a harvest strategy[1]

[1] Definition sourced from the *Commonwealth Fisheries Harvest Strategy Policy: Framework for applying an evidence-based approach to setting harvest levels in Commonwealth fisheries* (June 2018)

HSP	*Commonwealth Fisheries Harvest Strategy Policy: Framework for applying an evidence-based approach to setting harvest levels in Commonwealth fisheries* (June 2018) ~~and Guidelines 2007~~
HS	Torres Strait Tropical Rock Lobster Fishery Harvest Strategy
~~HSF~~	~~Harvest Strategy Framework~~
~~HCR~~	~~Harvest Control Rule~~
PZJA	Protected Zone Joint Authority
MSE	Management Strategy Evaluation - a procedure whereby alternative management strategies are tested and compared using simulations of stock and fishery dynamics[1]
RBC	Recommended Biological Catch
TRLRAG	Protected Zone Joint Authority Tropical Rock Lobster Resource Assessment Group
TRLWG	Protected Zone Joint Authority Tropical Rock Lobster Working Group
TAC	Total Allowable Catch- the annual catch limit set for a stock, species or species group. Used to control fishing mortality within a fishery[1]
Tiered approach	A framework that uses different control rules to cater for different levels of uncertainty about a stock
TIB	Traditional inhabitant boat
TVH	Transferrable vessel holder
TRL	Tropical Rock Lobster

OVERVIEW

The Torres Strait Tropical Rock Lobster Fishery (the Fishery) Harvest Strategy (HS) sets out the management actions needed to achieve the agreed Fishery objectives. The Fishery HS describes the performance indicators used for monitoring the condition of the stock, the fishery-independent survey and stock assessment procedures and the rules applied to determine the recommended biological catch (RBC) and the ~~notional~~ total allowable catch (TAC) each fishing season.

The HS uses a single tier approach with an empirical harvest control rule (eHCR) that is used to determine a ~~recommended biological catch (~~RBC~~)~~. The eHCR uses the pre-season survey ~~to estimate an~~ index of abundance of juvenile (1+) and newly recruited (0+) Tropical Rock Lobster (TRL) and the catch per unit effort (CPUE) indices for the traditional inhabitant boat (TIB) and transferrable vessel holder (TVH) fishing sectors. The RBC is the best available scientific advice on what the total fishing mortality (landings from all sectors and discards) should be for the stock. The RBC is ~~currently~~ used to ~~monitor the performance of the fishery~~negotiate Australia-Papua New Guinea catch sharing~~, in future years it will be used to~~ and recommend ~~Total Allowable Catche~~TACs (an enforced limit on total catches).

The HS meets the requirements of the *Commonwealth Fisheries Harvest Strategy Policy: Framework for applying an evidence-based approach to setting harvest levels in Commonwealth fisheries* (June 2018)~~*Commonwealth Fisheries Harvest Strategy Policy and Guidelines 2007*~~ (HSP) by applying a precautionary approach to the reference points and measures to be implemented in accordance with the reference points. This is reflected in the use of proxy reference points that are more precautionary than those specified in the HSP. The eHCR is designed to decrease exploitation rate as the stock size decreases below the target reference point. The HS uses a biomass target reference point equal to recent levels (2005-2015) that take account of the fact that the resource is shared and important for the traditional way of life and livelihood of traditional inhabitants and is biologically and economically acceptable. The HS proxies are B_{LIM} is 32% of B_0, B_{TARG} is 65% of B_0.

Further work for the HS will include the development of a tiered approach. The tiered approach applies different types of control rules to cater for different amounts of data available and to account for changes to uncertainty on stock status. A tiered approach adopts increased levels of precaution that correspond to increasing levels of uncertainty about the stock status, in order to maintain the same level of risk across the different tiers.

The status of the stock and how it is tracking against the HS, is reported to the Tropical Rock Lobster Resource Assessment Group (RAG), ~~Torres Strait~~ Tropical Rock Lobster Working Group (~~the Working Group~~TRLWG) and the Protected Zone Joint Authority (PZJA). The stock assessment is conducted periodically to evaluate stock status relative to reference levels and, in doing so, performance of the eHCR. The stock assessment includes considerations of the catch rates in current and previous fishing seasons, how the catches compare to the RBCs, stock status indicators in relation to the reference points and an RBC for the upcoming fishing season.

1 BACKGROUND

This Torres Strait Tropical Rock Lobster Fishery (the Fishery) Harvest Strategy (HS) has been developed in accordance with the *Commonwealth Fisheries Harvest Strategy Policy: Framework for applying an evidence-based approach to setting harvest levels in Commonwealth fisheries* (June 2018) ~~*Commonwealth Fisheries Harvest Strategy Policy and Guidelines 2007*~~ (HSP) and consistent with objectives of the *Torres Strait Fisheries Act 1984* (the Act).

The Fishery HS takes into account key fishery specific attributes including:

a) there is potential for large, unpredictable inter-annual variations in availability and abundance of T~~t~~ropical R~~r~~ock L~~l~~obster (TRL);

b) TRL is a shared resource important for the traditional way of life and livelihood of traditional inhabitants, commercial and recreational sectors (Tropical Rock Lobster Resource Assessment Group (TRLRAG) 20, 4-5 April 2017); and

c) advice from the ~~Tropical Rock Lobster Resource Assessment Group (the~~TRL ~~-~~RAG~~)~~ industry members to maintain stock abundance at recent levels (2005-2015) (TRLRAG 17, 31 March 2016). (NOTE: Working Group advice to be added)

1.1 COMMONWEALTH FISHERIES HARVEST STRATEGY POLICY

The objective of the HSP is the ecologically sustainable and profitable use of Australia's Commonwealth commercial fisheries resources (where ecological sustainability takes priority) - through implementation of harvest strategies~~sustainable and profitable use of Australia's Commonwealth fisheries in perpetuity through the implementation of harvest strategies that maintain key commercial stocks at ecologically sustainable levels, and within this context, maximise the economic returns to the Australian community~~.

To pursue this objective the Australian Government will implement harvest strategies that:

a) ensure exploitation of fisheries resources and related activities are conducted in a manner consistent with the principles of ecologically sustainable development, including the exercise of the precautionary principle

b) maximise net economic returns to the Australian community from management of Australian fisheries - always in the context of maintaining commercial fish stocks at sustainable levels

c) maintain key commercial fish stocks, on average, at the required target biomass to produce maximum economic yield from the fishery

d) maintain all commercial fish stocks, including byproduct, above a biomass limit where the risk to the stock is regarded as unacceptable (B_{LIM}), at least 90 per cent of the time

e) ensure fishing is conducted in a manner that does not lead to overfishing - where overfishing of a stock is identified, action will be taken immediately to cease overfishing

f) minimise discarding of commercial species as much as possible

~~a)~~g) are consistent with the *Environment Protection and Biodiversity Conservation Act 1999* and the *Guidelines for the Ecologically Sustainable Management of Fisheries*.~~To meet the HSP objective, harvest strategies are designed to pursue an exploitation rate that keeps fish stocks at a level required to produce maximum economic yield (MEY) and ensure stocks remain above a limit biomass level (BLIM) at least 90 per cent of the time. Alternative reference points may be adopted for some stocks to better pursue the objective of maximising economic returns across the Fishery as a whole or other fishery specific objectives.~~

For fisheries that are managed jointly by an international organisation or arrangement, the HSP does not prescribe management arrangements. This includes management arrangements for commercial and traditional fishing in the Torres Strait Protected Zone, which are governed by provisions of the Torres Strait Treaty and the *Torres Strait Fisheries Act 1984*. However, it does articulate the government's preferred approach.

The HSP provides for the use of proxy settings for reference points to cater for different levels of information available and unique fishery circumstances. This balance between prescription and flexibility encourages the development of innovative and cost effective strategies to meet key policy objectives. Proxies, including those that exceed the minimum standards, must be demonstrated to be compliant with the HSP objective~~ensure stock conservation and economic performance as envisaged by the HSP~~. ~~Such proxies, including those that exceed these minimum standards, must be clearly justified.~~

With a harvest strategy in place, fishery managers and stakeholders are able to operate with pre-defined rules, management decisions are more transparent, and there are likely fewer unanticipated outcomes necessitating hasty management responses. However, due to the inherently natural variability of TRL abundance there may be a need for significant changes in recommended catch on an annual basis.

1.2 DEVELOPMENT OF THE TRL HARVEST STRATEGY

The HS has been developed in consultation with the TRLRAG (meeting no. 17 on 31 March 2016; meeting no. 18 on 2-3 August 2016; meeting no. 19 on 13 December 2016; ~~and~~ meeting no. 20 on 4-5 April~~;~~ 2017; meeting no. 22 on 27-28 March 2018; meeting no. 24 on 18-19 October 2018; and meeting no. 25 on 11-12 December 2018) and TRLWG (meeting no. 6 on 25-26 July 2017; meeting no. 9 on 19-20 February 2019). The HS ~~has been~~was endorsed by the TRLRAG at meeting no. [insert meeting number] on [insert date] and TRLWG at ~~Working Group~~ meeting no. [insert meeting number]~~X~~ on ~~25-26 July 2017~~[insert date]. The HS was adopted by the PZJA on [insert date]. This HS replaces the interim HS developed for the Fishery in 2008 ~~(Attachment A)~~.

NOTE: ~~TRLWG advice to be provided once TRLRAG advice finalised – t~~This statement is to be updated as required.

2 TRL FISHERY HARVEST STRATEGY

2.1 SCOPE

This HS applies to the whole F~~f~~ishery and it takes into account catch sharing arrangements between Australia and Papua New Guinea (PNG).

The HS outlines the control rules used to develop advice on the recommended biological catch (RBC) and ~~in future years it will be used~~ to recommend t~~T~~otal a~~A~~llowable c~~C~~atches (TACs) (an enforced limit on total catches)[2]. The HS sets the criteria that pre-agreed management decisions will be based on in order to achieve the ~~Fishery~~ HS objectives.

Over time the HS may be amended to use a tiered approach to cater for different amounts of data available and different types of assessments (for example mid-season~~year~~ surveys and annual assessments). Underpinning a tiered HS is increased levels of precaution with increasing levels of uncertainty about the stock status. Each tier has its own harvest control rule (HCR) and associated rules that are used to determine a RBC.

2.2 OBJECTIVES

The operational objectives of the ~~Harvest Strategy~~HS are to:

a) Maintain the stock at (on average), or return to, a target biomass point B_{TARG} equal to recent levels (2005-2015) that take account of the fact that the resource is shared and important for the traditional way of life and livelihood of traditional inhabitants and is biologically and economically acceptable.

   - The agreed B_{TARG} is more precautionary than the default proxy B_{MEY} (biomass at maximum economic yield) level as outlined in the ~~Commonwealth Harvest Strategy Policy and Guidelines 2007 (~~HSP~~)~~.

b) Maintain the stock above the limit biomass level (B_{LIM}), or an appropriate proxy, at least 90 per cent of the time.

   - The agreed B_{LIM} is more precautionary than the default proxy HSP B_{LIM}.

c) Implement rebuilding strategies, if the spawning stock biomass is assessed to fall below B_{LIM} in two successive years.

2.3 RECOMMENDING TACs FROM RBCs

The ~~Recommended Biological Catch (~~RBC~~)~~ is the recommended total catch of TRL (both retained and discarded) that ~~should~~ can be taken by all sectors of the Fishery. The HSP states that when setting the TAC for the next fishing season the HS should take into account all sources of fishing mortality.

[2] ~~The total allowable catch (TAC) for the Fishery is currently notional and is not used to control harvest. It is used to inform catch sharing arrangements with Papua New Guinea and to inform the status of the stock.~~

The HS does not include catches taken by non-commercial fishing sectors, for example traditional, recreational or research catches. The TRLRAG recommended at mMeeting nNo. 18 on 2-3 August 2016 that non-commercial catches not be estimated in the stock assessment model or when setting the TAC at this timeshould not be accounted for, noting the likely low level of overall catch and the lack of accurate databecause the overall catches are likely to be relatively low and there would be limited impact on the stock assessment. However, if unaccounted fishing mortality were to increase significantly this may impact on the performance of the stock assessment. The HS may be updated in the future to account for changing circumstances in the Fishery, the review provisions are described in **Section 2.13**.

The total allowable catch (TAC) for the Fishery is currently notional (not enforced) and is not used to control harvest. It is used to inform catch sharing arrangements with Papua New Guinea and to inform the status of the stock.

2.4 MONITORING

Biological data for the Fishery are monitored by a range of methods listed below. Currently there is no ongoing monitoring strategy in place to collect economic information.

Fishery independent surveys

A key component of the monitoring program is the fishery-independent survey which provides a time-series of relative abundance indices for TRL. 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 transition to quota management and setting of a TAC. Pre-seasons surveys also provide indices of recently-settled (age 0+) lobsters, which may become useful under quota management as they allow forecasting of stock one year in advance and are used in the eHCR.

Catch and effort information

Fishers in the transferrable vessel holder (TVH) sector are required to record catch and effort information in the Torres Strait Tropical Rock Lobster Daily Fishing Log (TRL04). The following data are recorded for each TVH fishing operation: the port and date of departure and return, fishing area, fishing method, hours fished and the weight (whole or tails) of TRL retained. Fishers in both the TVH and the traditional inhabitant boat (TIB) sectors are required to record catch voluntarily report catch and effort information to buyers and processors who record the information in the Torres Strait Seafood Buyers and Processors Docket BookFisheries Catch Disposal Record (TDB021). The provision of effort information under the TDB02 is voluntary. Some processors previously (2014-2016) reported aggregate TIB catch information directly to AFMA predominantly through the Torres Strait Seafood

Buyers and Processors Docket Book (TDB01), ~~these processors are currently reporting with the TDB01 docket book~~.

2.5 INTEGRATED STOCK ASSESSMENT MODEL

The stock assessment model (termed the 'Integrated Model') (Plagányi *et al.* 2009) was developed in 2009 and is an Age-Structured Production Model, or Statistical Catch-at-Age Analysis (SCAA) (e.g. Fournier and Archibald 1982). It is a widely used approach for providing RBC advice and the associated uncertainties.

The model integrates all available information into a single framework to assess resource status and provide a RBC. The model addresses all of the concerns highlighted in a review of the previous stock assessment approach (Bentley 2006, Ye *et al*. 2006, 2007). The model is fitted to the mid-season and pre-season survey data and TIB and TVH catch per unit effort (CPUE) data. The growth relationships used in the model were revised from the previous stock assessment model (Ye *et al*. 2006) to ensure that the modelled individual mass at age more closely resembled field measurements. The model ~~is compatible~~has been used as an Operating Model in a Management Strategy Evaluation (MSE) framework to support the management of the Fishery.

The stock assessment model is non-spatial and assumes (conservatively) that the Torres Strait Tropical Rock lobster Fishery stock is independent of the Queensland East Coast Tropical Rock Lobster Fishery stock. A spatial version of the model has been developed as part of an earlier MSE project, and can be used to investigate plausible linkages between these stocks (Plagányi *et al*. 2012, 2013).

The model includes three age-classes only (0+, 1+ and 2+ age lobsters) as it is assumed that lobsters migrate out of the Torres Strait~~s~~ in October each year. Torres Strait TRL emigrate in spring (September-November) and breed during the subsequent summer (November-February) (MacFarlane and Moore 1986; Moore and Macfarlane 1984). A Beverton-Holt stock-recruitment relationship is used (Beverton and Holt 1957), allowing for annual fluctuation about the average value predicted by the recruitment curve. The model is fitted to the available abundance indices by maximising the likelihood function. Quasi-Newton minimisation is used to minimise the total negative log-likelihood function (using the package AD Model Builder™) (Fournier *et al*. 2012).

2.6 EMPIRICAL HARVEST CONTROL RULE

The empirical harvest control rule (eHCR) recommended by the TRLRAG uses the pre-season survey 1+ and 0+ indices, both standardised CPUE indices (TVH and TIB), applies the natural logarithms of the slopes of the five most recent years' data and the average catch over the past five years, with ~~includes~~ an upper catch limit of 1,000 t. The relative weightings of the eHCR indices are 70 per cent pre-season survey 1+ index, 10 per cent pre-season survey 0+ index, 10 per cent TIB sector standardised CPUE and 10 per cent TVH sector standardised CPUE.

The basic formula is:

$$RBC_{y+1} = wt\_s1 \cdot \left(1 + s_y^{presurv,1}\right) \cdot \bar{C}_{y-4,y} + wt\_s2 \cdot \left(1 + s_y^{presurv,0}\right) \cdot \bar{C}_{y-4,y}$$
$$+ wt\_c1 \cdot \left(1 + s_y^{CPUE,TVH}\right) \cdot \bar{C}_{y-4,y} + wt\_c2 \cdot \left(1 + s_y^{CPUE,TIB}\right) \cdot \bar{C}_{y-4,y}$$

Or if RBC_{y+1} > 1000t, TAC_{y+1} = 1000.

Where:

$\bar{C}_{y-4,y}$ is the average achieved catch during the past 5 years, including the current year i.e. from year *y*-4 to year *y*,

$s_y^{presurv,1}$ is the slope of the logarithms of the preseason survey 1+ abundance index, based on the 5 most recent values;

$s_y^{presurv,0}$ is the slope of the logarithms of the preseason survey 0+ abundance index, based on the 5 most recent values;

$s_y^{CPUE,TVH}, s_y^{CPUE,TIB}$ is the slope of the logarithms of the TVH and TIB CPUE abundance index, based on the 5 most recent values;

wt_s1, wt_s2, wt_c1, wt_c2 are tuning parameters that assign relative weight to the preseason 1+ (wt_s1) and 0+ (wt_s2) survey trends compared with the CPUE TVH (wt_c1) and TIB (wt_c2) trends.

2.7 REFERENCE POINTS

The HS reference points are:

a) The unfished biomass B_0 is the model-estimate of spawning stock biomass in 1973 (start of the Fishery). $B_0 = B_{1973}$.

b) The target biomass B_{TARG} is the spawning biomass level equal to recent levels (2005-2015) that take account of the fact that the resource is shared and important for the traditional way of life and livelihood of traditional inhabitants and is biologically and economically acceptable. B_{TARG} is the proxy for B_{MEY}, $B_{TARG} = 0.65\ B_0$.

   - The agreed B_{TARG} is more precautionary than the default proxy B_{MEY} (biomass at maximum economic yield) level as outlined in the ~~(~~HSP~~)~~. The TRLRAG

noted a B_{TARG} higher that the HSP default was considered important for the Fishery because: 1) the stock~~:~~ is a shared resource that is particularly important for traditional fishing; 2) the stock has high variability; and, 3) all industry members recommended the HS maintain the stock around the relatively high current levels (TRLRAG meeting no. 17, 31 March 2016 and meeting no. 18, 2-3 August 2016).

c) The limit biomass B_{LIM} is the spawning biomass level below which the risk to the stock is unacceptably high and the stock is defined as 'overfished'. B_{LIM} is agreed to be half of B_{TARG}, $B_{LIM} = 0.32\ B_0$.

   - The agreed B_{LIM} is more precautionary than the default proxy HSP B_{LIM}.

d) If the limit reference point (B_{LIM}) is triggered in two successive years then the Fishery is closed.

e) The target fishing mortality rate F_{TARG} is the estimated level of fishing mortality rate that maintains the spawning biomass around B_{TARG}. $F_{TARG} = 0.15$.

   - $F_{TARG} = 0.15$ is the target fishing mortality rate that corresponds to an optimal level in terms of economic, biological and social considerations (TRLRAG meeting no. 18, 2-3 August 2016).

Rational for reference points

The HSP recognises that each stock/species/fishery will require an approach tailored to the fishery circumstances, including species characteristics. The HSP identifies that the selection of reference points within harvest strategies need to be realistic with respect to the scale or nature of the fishery and the resources available to manage it. Reference points should be set at levels appropriate to the biology of the species and the proper functioning of the broader marine ecosystem.~~for highly variable stocks that may naturally (in the absence of fishing) breach B_{LIM}, the default reference point proxies may not be appropriate. The HSP states 'with highly variable species it is important to develop a harvest strategy that meets the intent of the HSP.'~~ Further, ~~'~~stocks that fall below B_{LIM} ~~due to natural variability~~ will ~~still~~ be subject to the recovery measures stipulated in the HSP.~~'~~ A number of adaptive management approaches may be used to deal with this, such as pre-season surveys to provide estimates of abundance to which the eHCR is applied.

The Fishery is characterised by a highly variable stock where majority of the catch (since 2001 due to the introduction of a minimum size limit) is from a single cohort. The stock assessment model and MSE testing have identified the target biomass should be set between 65 and 80 per cent of the unfished biomass to account for the importance of the stock for the traditional way of life and livelihood of traditional inhabitants and to achieve biological and economic objectives. The HS's higher average target biomass level, compared to the default HSP target of 0.48 per cent of unfished biomass, reduces the risk of recruitment being compromised.

The unfished biomass (B_0) is calculated within the stock assessment model, the value of unfished biomass and target biomass have therefore varied over time in response to annual

data updates and model parameter settings and estimates. Estimates of unfished biomass and target biomass are particularly sensitive to changes to parameter *h*, which determines the steepness of the stock-recruit relationship, and the input parameter that controls the level of stock-recruit variability.

Independent of variability to the unfished biomass value, the target fishing mortality rate F_{TARG} = 0.15 is applied to maintain the spawning biomass around the biomass target reference point (B_{TARG}), which is the average level over the past two decades. This is assumed to be a proxy for B_{MEY} because stakeholders agreed that this target level corresponded to an optimal level in terms of economic, biological and social considerations (TRLRAG meeting no. 18, 2-3 August 2016).

The biomass limit reference point (B_{LIM}) is 32 per cent of unfished biomass. The higher limit reference point, compared to the HSP proxy of 20 per cent of unfished biomass, is supported by recommendations of similar limit reference points for other highly variable species such as forage fish (Pikitch *et al.* 2012). Due to the changing values of unfished biomass and target biomass the value of the limit reference point, taken as half the target reference point, has previously varied between 32 and 40 per cent of unfished biomass.

Recent MSE testing identified that a limit reference point of 40 per cent unfished biomass is too conservative, it would result in the limit reference point being breached more frequently and add unnecessary precaution~~ary~~ to the HS. The TRLRAG agreed to set the limit reference point at 32 per cent of unfished biomass with the condition that if the stock falls below the limit reference point in two successive years it triggers a Fishery closure. The eHCR is more precautionary than the HSP criterion to 'maintain all commercial fish stocks, including byproduct, above a biomass limit where the risk to the stock is regarded as unacceptable (B_{LIM}), at least 90 per cent of the time~~ensure that the stock stays above the limit biomass level at least 90 per cent of the time.~~'. The HSP provides for the designation of a limit reference point above the proxy (B_{20}) where this has been estimated or is deemed appropriate~~states that for highly variable species the risk criterion can be amended to increase the frequency the limit reference point may be breached or by altering the reference point value~~.

2.8 eHCR AND STOCK ASSESSMENT CYCLE

The eHCR and stock assessment cycle is as follows:

- The eHCR is run in November each year to provide a RBC by 1 December for the following fishing season.
- A stock assessment is run on a three year cycle ~~in~~ by March, unless the stock assessment is triggered by a decision rule **(Section 2.10)**. The stock assessment determines the Fishery stock status and evaluates the performance of the eHCR and identifies if any revisions to the eHCR are required.
- If the eHCR needs to be revised, the stock assessment is conducted annually to estimate the RBC until the revised eHCR is agreed.

2.9 DATA SUMMARY

The annual data summary 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.

2.10 DECISION RULES

The decision rules for the ~~Fishery Harvest Strategy~~HS are:

Maximum catch limit

- The eHCR includes a maximum catch limit of 1000 t. Once the HS is implemented the cap will be reviewed after three years using MSE testing with the updated stock assessment model.

Pre-season survey trigger

- If in any year the pre-season survey ~~+~~1+ ind~~ex~~ices~~~~ is 1.25 or lower (average standardised number of ~~+~~1+ age lobsters per survey transect) it triggers a stock assessment.

Biomass limit reference point triggered

- If the eHCR limit reference point is triggered in the first year, a stock assessment update must be conducted in March.
    - If after the first year the stock is assessed below the biomass limit reference point, it is optional to conduct a mid-season survey, the pre-season survey must continue annually.
- If the eHCR limit reference point is triggered two years in a row, a stock assessment must be conducted in December (of the second year).

Fishery closure rules

- If the stock assessment determines the stock to be below the biomass limit reference point in two successive years, the Fishery will be closed to commercial fishing.
    - ~~Management strategy evaluation (~~MSE~~)~~ testing of the eHCR has shown that it is extremely unlikely (<1%) for the Fishery to be closed based on its current performance.

Re-opening the Fishery

- Following closure of the Fishery, fishery-independent mid-season and pre-season surveys are mandatory. The Fishery can only be re-opened when a stock assessment determines the Fishery to be above the biomass limit reference point **(Attachment A, Figure 5)**.

Based on the decision rules, there are four alternative possible scenarios **(Section 2.11)** that may occur under the application of the eHCR. Graphic representations of the four scenarios are provided in **Attachment A**.

2.11 DECISION RULE SCENARIOS

Scenario 1 – eHCR limit not breached and the eHCR does not require revision

- The eHCR assesses the Fishery to be above the biomass limit reference point.
- The eHCR RBCs appear to remain within ranges tested by ~~management strategy evaluation (~~MSE~~)~~.
- The updated stock assessment does not indicate any need for revision of the eHCR.
- Application of the eHCR continues unchanged.
- A graphic representation of Scenario 1 is provided in **Attachment A, Figure 1**.

Scenario 2 – eHCR limit not breached, eHCR and stock assessment require revision

- The eHCR assesses the Fishery to be above the biomass limit reference point.
- The eHCR RBCs appear to remain within ranges tested by MSE.
- The updated stock assessment indicates the eHCR recommended RBC~~TAC~~s are outside the revised ranges tested by MSE, indicating that the eHCR should be revised.
- Annual RBCs need to be set using annual stock assessments until a revised eHCR has been agreed, after which the revised eHCR is applied.

A graphic representation of Scenario 2 is provided in **Attachment A, Figure 2**.

Scenario 3– limit is breached, eHCR is reviewed by stock assessment and the limit is not breached

- The eHCR assesses the Fishery to be below the biomass limit reference point in one year.
- A stock assessment update (March) is required to confirm if the limit has indeed been breached. This assessment update determines that the limit has not been breached.
- If the biomass limit reference point is breached once, discussions will be held on preventative measures to reduce the risk of closure.
- The eHCR RBC is applied and consideration is given to revising the eHCR to prevent future incorrect triggering of the biomass limit reference point.
- The stock assessment continues on a three year cycle, unless triggered to occur by a decision rule.

- A graphic representation of Scenario 3 is provided in **Attachment A, Figure 3**.

Scenario 4 – limit is breached, stock assessment confirms the limit is breached

- The eHCR assesses the Fishery to be below the biomass limit reference point in two successive years.
- A stock assessment update (March) is required to confirm if the limit has been breached. This assessment update determines that the limit has been breached.
- The eHCR assesses the Fishery to be below the biomass limit reference point for a second successive year.
- A second stock assessment update (December) is required to confirm whether the trigger has been breached a second time. This assessment update determines that the limit has been breached a second time.
- The commercial fishery is closed until an assessment update confirms that the stock has recovered to above the limit.
    - If the Fishery is closed to commercial fishing, discussions are held on future management arrangements.
    - Fishery-~~-~~independent mid-season and pre-season surveys are mandatory and conducted on an annual basis. The Fishery will only re-open when the Fishery is assessed to be above the biomass limit reference point by the stock assessment.
    - The eHCR must be revised before being re-implemented to reduce the risk of the Fishery breaching the biomass limit reference point and for the eHCR to incorporate rebuilding requirements.
- A graphic representation of Scenario 4 is provided in **Attachment A, Figure 4**.

2.12 GOVERNANCE

The status of the Fishery and how it is tracking against the HS is reported to the TRLRAG, ~~Working Group~~TRLWG and the PZJA as part of the yearly RBC and TAC setting process.

2.13 REVIEW

~~Under certain circumstances, it may be necessary to amend the harvest strategy. For example if:~~

~~there is new information that substantially changes the status of a fishery, leading to improved estimates of indicators relative to reference points; or~~

~~drivers external to management of the fishery increase the risk to fish stock/s; or~~

~~it is clear the strategy is not working effectively and the intent of the HSP is not being met; or~~

~~alternative techniques are developed (or a more expensive but potentially more cost-effective harvest strategy that includes mid-year surveys and annual assessments is agreed) for assessing the Fishery. The HSF may be amended to incorporate decision rules appropriate for those assessments.~~

Harvest strategies are to be reviewed every five years. However, it may be necessary to amend harvest strategies earlier if:

- a marked change in stocks targeted occurs, leading to a change in which stocks are categorised as key commercial
- new information substantially changes understanding of the fishery, leading to revised estimates of indicators relative to reference points
- external drivers have unexpectedly increased the risk to a fishery and fish stocks, including environmental or climate drivers that have substantially altered the productivity characteristics (growth or recruitment) of the stock
- performance indicators show that harvest strategies are not working effectively, and that the intent of the HSP is not being met.

Early review may be triggered when either:

- harvest strategies are implemented without formal testing or evaluation using methods such as MSE
- MSE testing did not take adequate account of the changes in risk factors subsequently observed, or
- subsequent estimates of the performance indicators used in the HCR are biased or uncertain to the extent that application of the control rule using these indicators fails to appropriately adjust fishing pressure.

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Torres Strait Tropical Rock Lobster Fishery – alternative annual Harvest Control Rule application scenarios

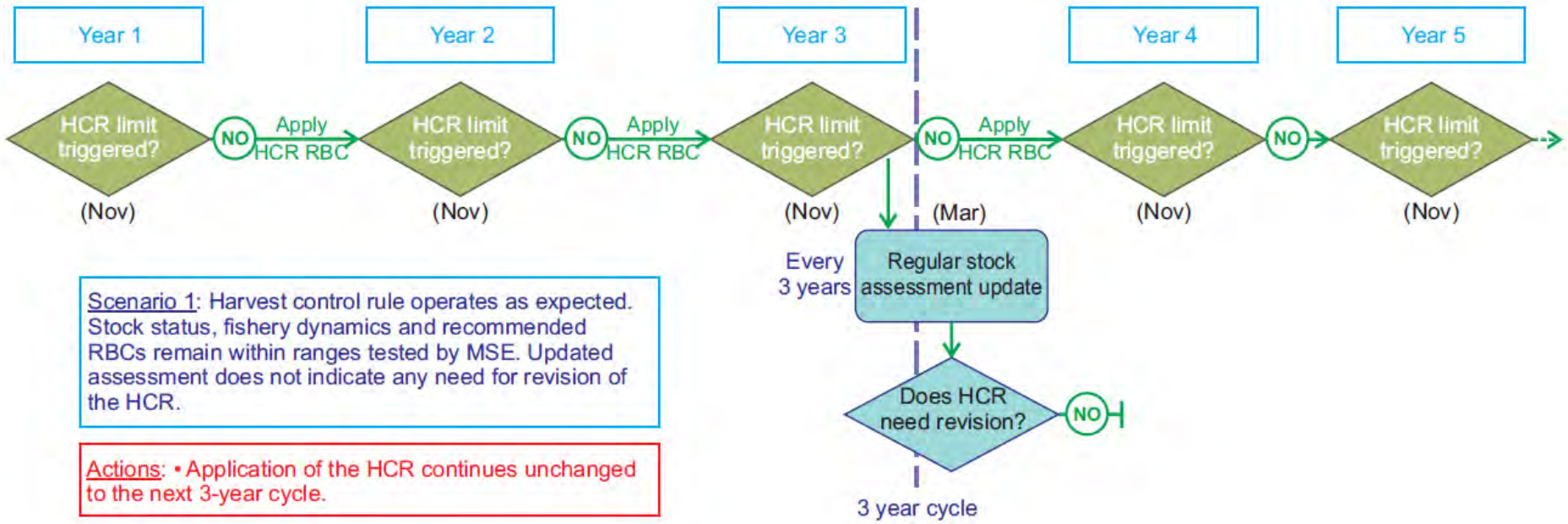


Figure 1. Torres Strait Tropical Rock Lobster Fishery decision rule scenario 1.

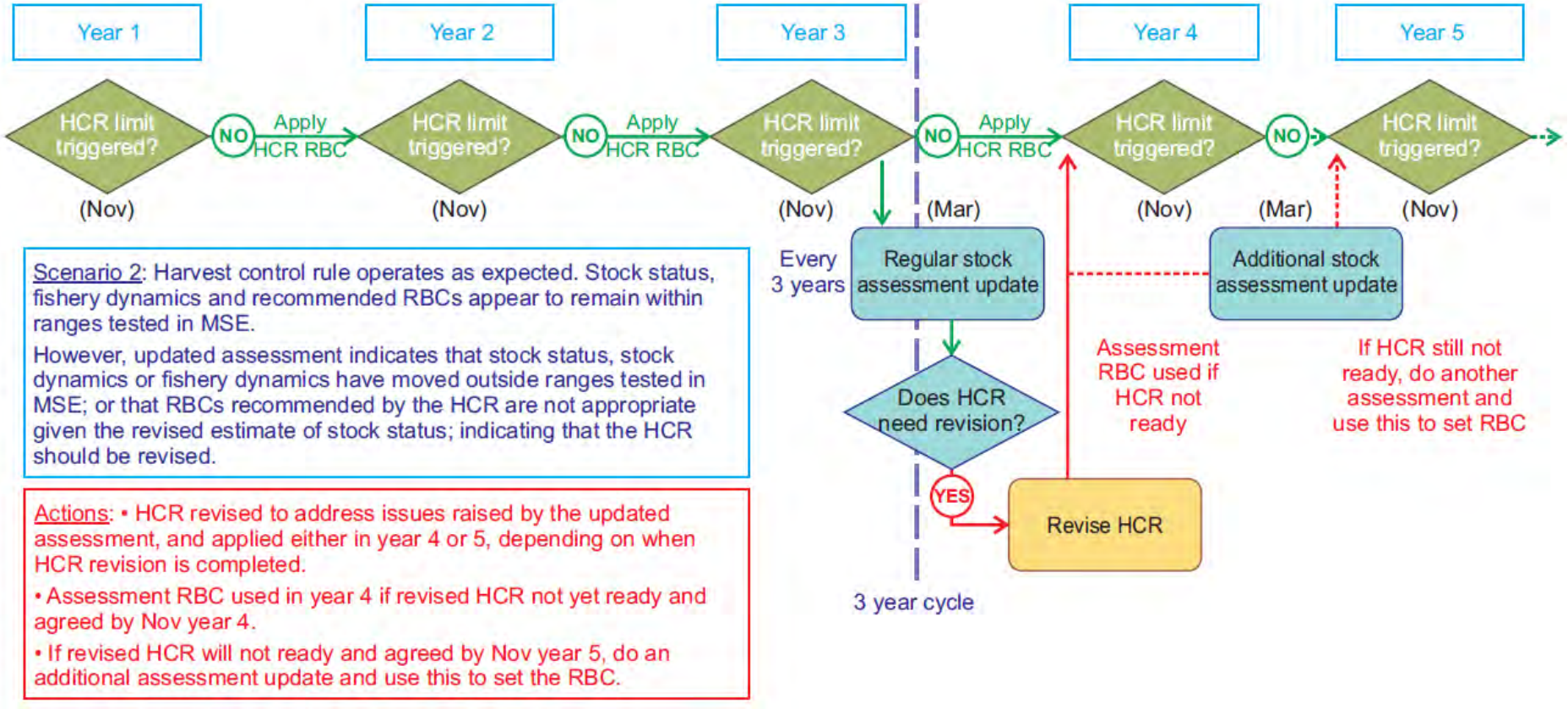
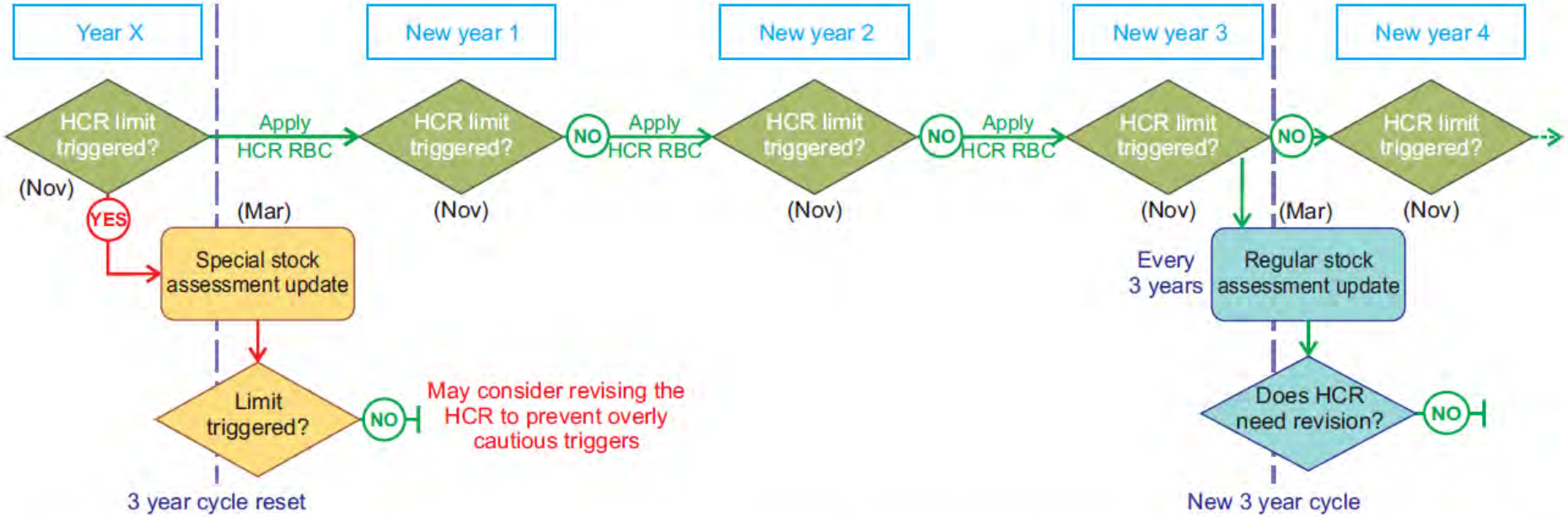


Figure 2. Torres Strait Tropical Rock Lobster Fishery decision rule scenario 2.

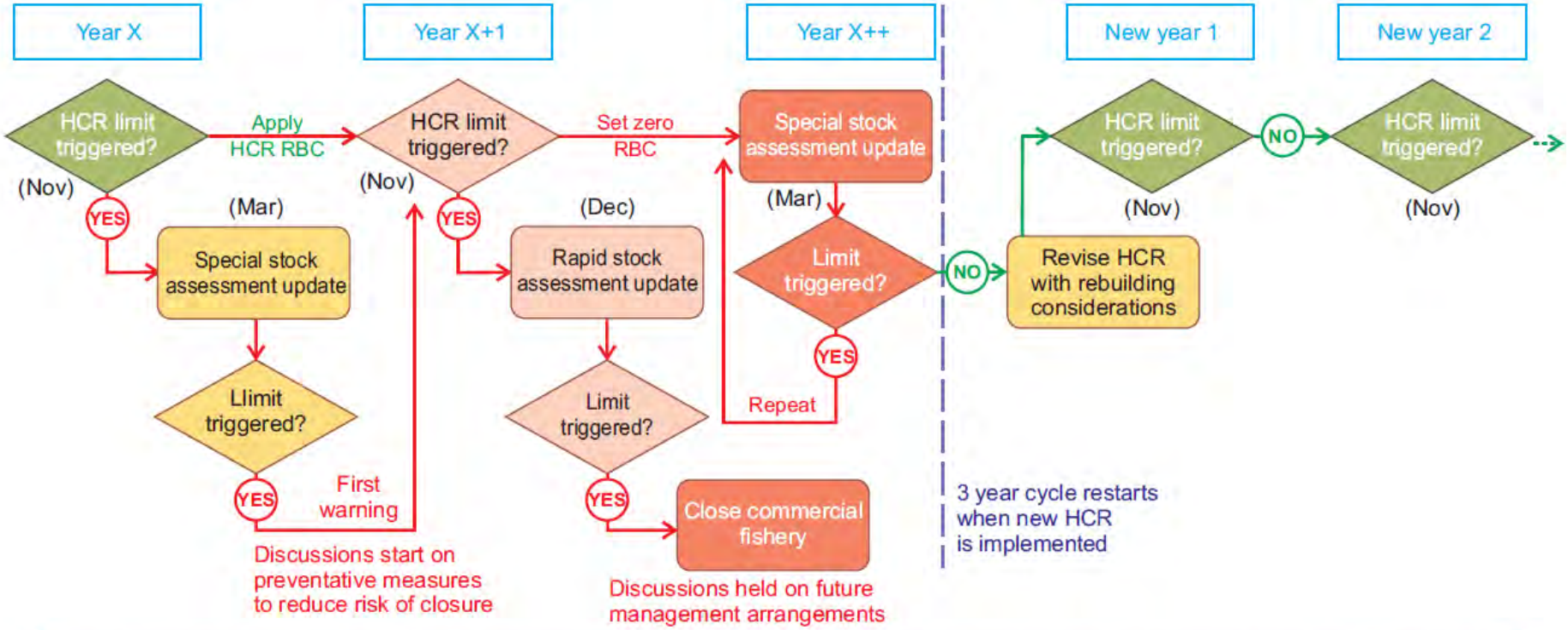


Scenario 3: Application of the HCR in a particular year results in the limit being triggered, requiring a special assessment update to confirm whether the limit has indeed been breached. However, this assessment update determines that the limit has not been breached.

Actions: • Application of the HCR continues unchanged, although consideration may be given to revising the HCR to prevent overly cautious triggering of the limit (refer to Scenario 2).

• The three-year cycle is reset, postponing the next regular assessment update to retain the 3 year spacing between assessments, provided the HCR does not breach the limit again in that period.

Figure 3. Torres Strait Tropical Rock Lobster Fishery decision rule scenario 3.



Scenario 4: Application of the HCR in a particular year results in the limit being triggered, requiring a special assessment update to confirm whether the limit has indeed been breached. Special assessment update confirms that the limit has indeed been breached.

Application of the HCR the following year results in the limit being triggered for the second successive year, requiring a second rapid assessment update to confirm whether the trigger has been breached a second time. Assessment update confirms that the trigger has been breached again.

The commercial fishery is closed until an assessment update confirms that the stock has recovered to above the limit.

Actions: • When it has been confirmed that the limit has been breached the first time, discussions will be held on preventative measures to reduce the risk of closure.

• If it is confirmed that the limit has been breached for a second year and that the commercial fishery must be closed, discussions will be held on future management arrangements to reduce the risk of future closures.

• If the fishery is closed, annual assessments will be done until an assessment update confirms that the stock has recovered to above the limit.

• Before being re-implemanted, the HCR will be revised to reduce risk of breaching the limit in future and to incorporate rebuilding requirements.

Figure 4. Torres Strait Tropical Rock Lobster Fishery decision rule scenario 4.

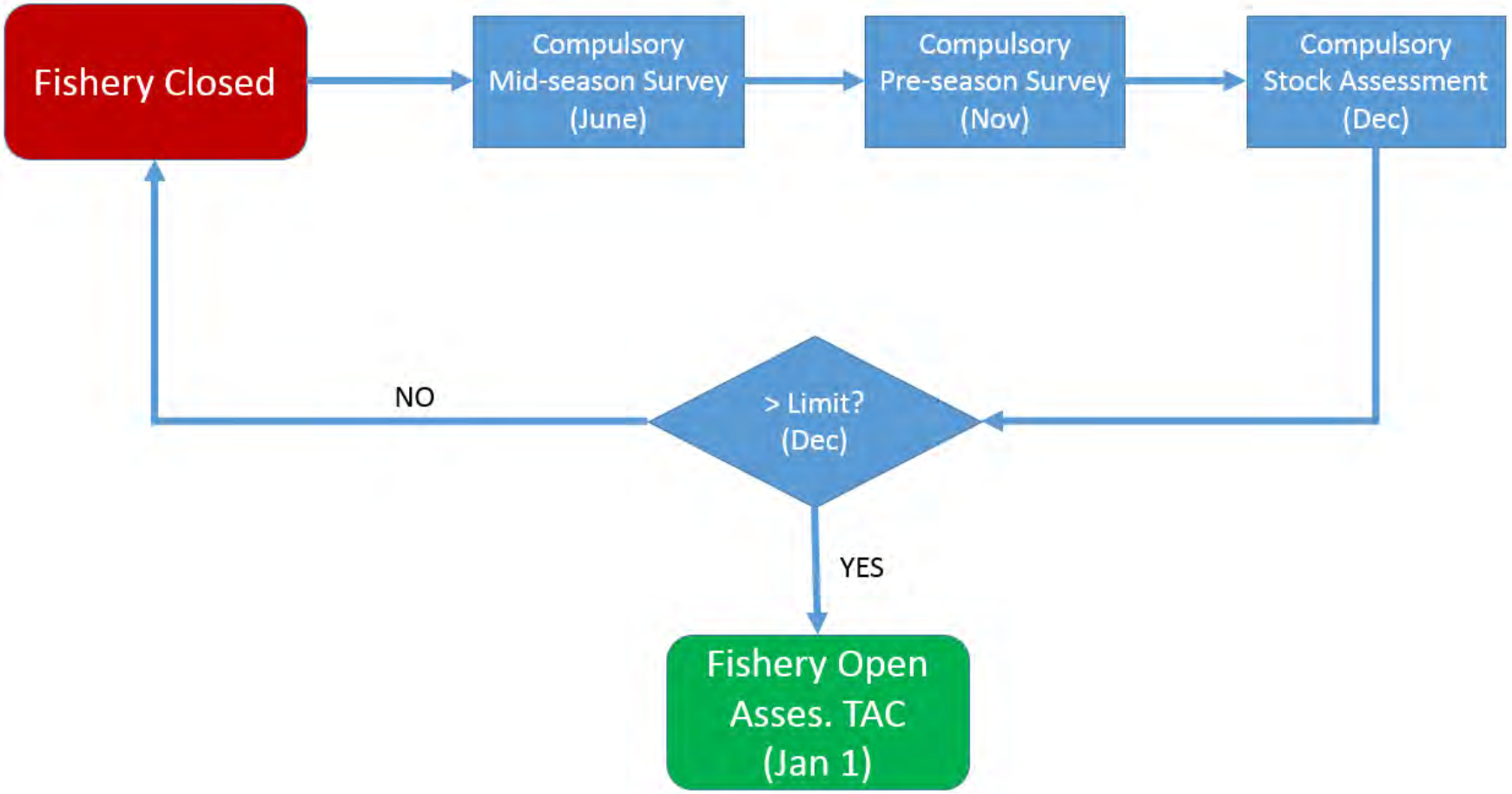


Figure 5. Torres Strait Tropical Rock Lobster Fishery closure and re-opening rule.

TROPICAL ROCK LOBSTER WORKING GROUP (TRLWG)	MEETING 10 12 December 2019
PRELIMINARIES Out-of-session correspondence	Agenda Item 1.5 For noting

RECOMMENDATIONS

1. That the Working Group **NOTE** the correspondence sent out-of-session since the last TRLWG meeting held on 19 February 2019.

BACKGROUND

2. The following correspondence was circulated out-of-session since the last TRLWG meeting held on 19 February 2019. Copies of this correspondence can be requested at any time from the TRLWG Executive Officer.

Date	Item
14-Mar-19	AFMA circulated offer for extension of appointments (ending 30 June 2019), to non-Traditional Inhabitant members on the TRLRAG, or until letters of offer can be made.
28-Mar-19	AFMA circulated the draft meeting record for TRLWG 10 held on 19 February 2019, seeking comment from members.
9-Apr-19	AFMA circulated notice seeking applications for non-Traditional Inhabitant memberships on the TRLWG.
9-Apr-19	AFMA circulated a letter inviting comments from all Torres Strait licence holders on draft harvest strategies for the TRL and Beche-de-mer (BDM) Fisheries and removal of the 'western line closure' in the Finfish Fishery. Members were also advised that PZJA has agreed to commence a review of how Developmental Permits are used for training purposes in all Torres Strait fisheries.
18-Apr-19	AFMA circulated catch watch report.
26-Apr-19	AFMA circulated the final meeting record for TRLWG 10 held on 19 February 2019.
26-Apr-19	AFMA circulated, for information, the final report from the Australia-PNG Fisheries Committee Bilateral meeting held on 4 March 2019.
26-Apr-19	AFMA circulated three research proposals for out-of-session consideration and advice.
14+17-May-19	AFMA circulated catch watch report.
7-Aug-19	AFMA emailed all TRLWG members seeking availability for TRLWG 10 proposed to be held on 27 September 2019 in Cairns.

26-Aug-19	AFMA circulated letters of offer for three-year appointments (ending 30 June 2022), to non-Traditional Inhabitant members on the TRLRAG.
27-Aug-19	AFMA emailed all TRLWG members seeking availability for TRLWG 10 proposed to be held on 10 October 2019 in Cairns/Thursday Island. Confirmed not enough members were available for the previously proposed dates.
11-Sep-19	AFMA confirmed not enough members were available for the proposed dates for TRLWG 10 to be held on 10 October 2019 in Cairns/Thursday Island.
16+17-Sep-19	AFMA circulated two items for out-of-session consideration and advice: - Outcomes of the draft TRL Harvest Strategy consultation; and - Rolling Five Year Research Plan 2020/21 to 2024/25.
17-Oct-19	AFMA circulated summary of comments received on the two out-of-session items and next steps.
18-Oct-19	Ian Knuckey (Chair) emailed all TRLRAG and TRLWG members requesting items to be placed on the agenda for TRLRAG 27 (in response to comments received on the two out-of-session items).
10-Oct-19	AFMA emailed all TRLWG members seeking availability for TRLWG 10 proposed to be held on 12 December 2019 on Thursday Island.
23-Oct-19	AFMA confirmed dates for TRLWG 10 to be held on 12 December 2019 on Thursday Island.
12-Nov-19	AFMA circulated the draft agenda for the TRLWG 10 meeting to be held on 12 December 2019 on Thursday Island, and updates concerning actions arising from previous TRLWG meetings.
18-Nov-19	AFMA circulated additional information concerning the submission of papers for the TRLWG 10 meeting.
22-Nov-19	AFMA circulated a letter to TRL Fishery licence holders advising of the adoption of the TRL Harvest Strategy, determination of an interim TAC of 200,000 kgs and moon-tide hookah closures for the 2019-20 fishing season.

TROPICAL ROCK LOBSTER WORKING GROUP (TRLWG)	MEETING 10 12 December 2019
UPDATES FROM MEMBERS Industry members	Agenda Item 2.1 For noting

RECOMMENDATIONS

1. That the Working Group **NOTE** updates provided by industry members.

BACKGROUND

2. Verbal reports are sought from industry members under this item.
3. It is important that the Working Group develops a common understanding of any strategic issues, including economic and fishing trends relevant to the management the TRL Fishery. This includes within adjacent jurisdictions. This ensures that where relevant, the Working Group is able to have regard for these strategic issues and trends.
4. Working Group members are asked to provide any updates on trends and opportunities in markets, processing and value adding. Industry is also asked to contribute advice on economic and market trends where possible.
5. At the last meeting of the Working Group (TRLWG 9), the Working Group noted updates provided by industry members and observers regarding the performance of the Torres Strait TRL Fishery during the 2018-19 fishing season to date:
    a. Two Traditional Inhabitant industry members advised that they had nothing to add to the updates they provided at the TRLRAG meeting held on 5 February 2019.
    b. An industry member advised that weather conditions were poor at the start of the season which had an impact on operations. Catches during the two-month hookah closure were higher than in previous years. Similar to last season, lobster numbers locally (around Thursday Island) have been low. There is also a high rate of mortality at present due to high temperatures and the harvesting of moulting individuals. The rejection rate is up to 20%, whereas the average throughout the year is normally 3-5%. The mortalities are also unpredictable, with lobsters looking to be in good condition when first received but not travelling well. The member is investigating whether there are any handling issues further down the logistics chain that may be contributing.
    c. Another industry member advised that there have been good catches from the start of season consistent with what would be expected from the November 2018 pre-season survey. However poor weather and visibility since the end of January has impacted on most recent catches. The weather appears to have reverted to a historical pattern. Prices have been good due to Chinese New Year festivities, but are expected to drop in the coming weeks as the festivities conclude. In response to a query from another member, the member advised that historically the best price obtained was $115/kg, with restaurant mark-ups in China being as high as $250/kg. This is significantly above the average prices expected this season.
    d. Another industry member advised that they were only able to fish for a few days on their last trip due to the poor weather, and also returned to port earlier to get the maximum prices before other boats unloaded.
6. Further details of discussions are provided in the record for TRLWG 9 provided at **Attachment 1.4b**.

TROPICAL ROCK LOBSTER WORKING GROUP (TRLWG)	MEETING 10 12 December 2019
UPDATES FROM MEMBERS Scientific members	Agenda Item 2.2 For noting

RECOMMENDATIONS

1. That the Working Group **NOTE** updates provided by scientific members.

BACKGROUND

2. Verbal reports are sought from scientific members under this item.
3. It is important that the Working Group develops a common understanding of any strategic issues, including research and economic trends relevant to the management the TRL Fishery. This includes within adjacent jurisdictions. This ensures that where relevant, the Working Group is able to have regard for these strategic issues and trends.
4. Working Group members are asked to provide any updates on trends and opportunities in markets, processing and value adding. Scientific members are asked to contribute advice on any broader strategic research projects or issues that may be of interest to the Torres Strait.

TROPICAL ROCK LOBSTER WORKING GROUP (TRLWG)	MEETING 10 12 December 2019
UPDATES FROM MEMBERS Government agencies	Agenda Item 2.3 For noting

RECOMMENDATIONS

1. That the Working Group:
   a. **NOTE** the updates provided by the Australian Fisheries Management Authority (AFMA) and Queensland Department of Agriculture and Fisheries (QDAF) below;
   b. **NOTE** a verbal update will be provided by the Torres Strait Regional Authority (TSRA).

AFMA UPDATE

Management Plan for the TRL Fishery

2. On 26 November 2018, having considered outcomes of consultation, the Protected Zone Joint Authority (PZJA) decided to determine the *Torres Strait Fisheries (Quotas for Tropical Rock Lobster (Kaiar)) Management Plan 2018* (the Management Plan) and to amend the *Torres Strait Fisheries (Tropical Rock Lobster) Management Instrument 2018* (the Instrument). AFMA wrote to all TRL Fishery licence holders on 28 November 2018 providing notification of these decisions and key management arrangements for the 2018-19 fishing season.
3. On 16 September 2019, Senator the Hon Jonathon Duniam, Assistant Minister for Forestry and Fisheries, allocated quota units in the TRL Fishery in accordance with the Management Plan (**Attachment 2.3a**). Assistant Minister Duniam allocated:
   a. 662,016 quota units to the TSRA comprising:
      i. 562,000 to hold for the benefit of the traditional inhabitant sector; and
      ii. 100,016 for the TVH licences it holds.
   b. 337,981 quota units to the remaining TVH principal licence holders.
4. The TRL Fishery will operate under a quota management system from 1 December 2019 (the start of the 2019-20 fishing season). A copy of the Management Plan and the Guide to the Management Plan, as well as links to information about quota management systems, can be found on the PZJA website at www.pzja.gov.au.

Management arrangements for the 2019-20 fishing season

5. A letter was sent to all Torres Strait Tropical Rock Lobster Fishery (TRL Fishery) licence holders on 22 November 2019 (**Attachment 2.3b**). The letter details key management arrangements that will apply for the 2019-20 fishing season, including arrangements for the setting of total allowable catches (TACs) each season under the Harvest Strategy, moon-tide hookah closures and catch sharing arrangements between Australia and Papua New Guinea (PNG).

PNG-Australia catch sharing arrangements

6. AFMA and the PNG National Fisheries Authority (NFA) met on 10 October 2019 to agree on a process for finalising catch sharing arrangements for the 2019-20 fishing season. AFMA and the PNG NFA will meet again in January 2020, to agree on the global TAC and catch sharing arrangements for the 2019-20 fishing season. Australia's final TAC will equate to Australia's share of the global TAC, as agreed with PNG. Further details on the expected timeline is provided at **Attachment 2.3c**.

7. At its meeting held on 19 November 2019, the PZJA agreed that, subject to further consultation with stakeholders, the preferred arrangement for utilising Australia's cross-endorsement allocation within PNG's waters is to not seek cross-endorsement but rather pursue a preferential entitlement arrangement under Article 25 of the Treaty. In effect this means, Australia will seek to take a proportion of PNG's cross-endorsement allocation within Australian waters equivalent to Australia's cross-endorsement allocation in PNG's waters. Conversely, PNG would be entitled to take Australia's cross-endorsement catch allocation in PNG's waters. Under such an arrangement, Australia's cross-endorsement allocation would be shared across all Australian licence holders in both sectors of the TRL Fishery.
8. Initial advice regarding the future utilisation of Australia's cross-endorsement allocation within PNG's waters will be sought from the Working Group at this meeting – to be discussed under **Agenda Item 5**. Broader consultation with stakeholders, including licence holders, with be undertaken over the coming fishing seasons.

Review of TRL quota unit allocation to the Traditional Inhabitant sector

9. The Management Plan requires the PZJA to review the allocation of quota units to the Traditional Inhabitant (TIB) sector within two years of the Management Plan commencement (30 November 2020). At the commencement of the quota system on 1 December 2019, the TSRA will hold quota units on behalf of the Traditional Inhabitant sector.
10. Separate to the allocation review to be undertaken by the PZJA, the TSRA is working with stakeholders to establish an independent, non-profit entity to manage community-owned commercial fishery assets under the Fisheries Regional Ownership Framework project (FROF project). TSRA is working to have the entity established by 1 July 2020.
11. Without excluding other options, in undertaking the review the PZJA may consider the following options in accordance with s17(2) of the Management Plan:
    a. allocating quota units to a non-government legal entity that represents Traditional Inhabitants;
    b. allocating quota units to individual Traditional Inhabitants directly; and
    c. a combination of the options above.
12. The PZJA has a policy and procedural framework for the allocation of fishing concessions – FMP 2 (**Attachment 2.3d**). The policy, among other things, states that the recommended basis of allocation will be developed at arms-length from PZJA agencies. The policy approach is to establish and seek advice from an independent allocation advisory panel (IAAP). An IAAP process was convened to inform the PZJA on the allocation of TRL quota units to non-traditional (TVH) licence holders.
13. The intention of using an IAAP process is to ensure and assure stakeholders that their views and issues are being properly heard by independent experts that do not have preconceptions about the end outcome.
14. An IAAP would be required to consult widely with stakeholders and seek necessary expert advice. Subject to approval by the PZJA, the IAAP would be required to release its draft report for public comment.
15. At its meeting on 19 November 2019 the PZJA agreed in principle that the review of allocation be undertaken by an IAAP, in accordance with the PZJA's FMP 2 and directed the PZJA Standing Committee to provide draft Terms of Reference (ToR) for an IAAP, including its membership and process to the PZJA by April 2020 so that PZJA can confirm this in principle decision. The PZJA also agreed to commence the allocation review following the completion of the TSRA's FROF project, anticipated by 30 June 2020.
16. It will be necessary to ensure the IAAP is set up to appropriately assess the Torres Strait context as well as remain independent. Specific issues that the ToR will need to consider include composition (including the most appropriate means to ensure that detailed advice

is available from native title and community interests), and method of consultation. The ToR will also need to specify the specific allocation questions that PZJA would like answered, including the basis for allocation to potentially different stakeholder groups (i.e. such as existing full-time and part-time commercial fishers, compared to casual/lifestyle fishers).

17. Unlike allocation models based on the allocation of entitlements to individual persons, a future allocation may be to an entity that holds quota on behalf of individuals. Such an entity may require regulatory oversight to:

    a. protect the intent of the allocation;

    b. ensure consistency with the PZJA's acknowledgment and support for the aspirations of 100 per cent ownership of Torres Strait fisheries by Torres Strait Islander and Aboriginal Traditional Owners;

    c. ensure, if relevant consistency with relevant PZJA licensing policies such as unlimited entry for Traditional Inhabitants;

    d. ensure Traditional Inhabitant interests are protected by ensuring affected persons have adequate rights of legal appeal; and

    e. ensure consistency with the *Torres Strait Fisheries Act 1984*.

18. In making its recent decision the PZJA also agreed that the IAAP appointed to undertake the TRL review, also consider and recommend an allocation model for the allocation of quota units to Traditional Inhabitants under the *Torres Strait Finfish Fishery Management Plan 2013* using the same basis provided for under s17(2) of the Management Plan.

Developmental Permits

19. At its meeting on 1 April 2019, the PZJA agreed to commence a review of how Developmental Permits are used for training purposes in all Torres Strait Fisheries. AFMA wrote to all Torres Strait fisheries licence holders on 8 April 2019 advising of this decision.

20. The TSRA is leading the review. The PZJA agreed it will not consider any further applications for training under Developmental Permits until new arrangements are established, following the review.

21. At its meeting on 8 October the PZJA agreed to release a draft policy for public comment. TSRA are now making preparations for the public consultation process.

Re-assignment of tenders

22. AFMA took over Torres Strait fisheries licensing services from the Queensland Department of Agriculture and Fisheries on 1 July 2015. Following this, AFMA (as the licensing delegate) has received applications to reassign tenders from one TVH primary/tender licence package to another – with both packages being held by the same holder. AFMA first approved an application for the reassignment of tenders for the 2016-17 fishing season. AFMA tabled a paper for further consideration of this matter at TRLWG 6 (25-26 July 2017). However, this item was not considered due to the early closure of the meeting (lack of quorum).

23. The approvals are inconsistent with the general understanding of PZJA licensing policy as described within the 'Guide to management arrangements for Torres Strait Fisheries, June 2004' (the Guide). The Guide states that: "*If a licence is part of primary vessel tender boat package, all other licences of the primary vessel and tender boat packages should also be transferred; they cannot be split up and attached to a number of vessels working separately*".

24. In making the decisions to allow for the reassignment of tenders from one TVH primary/tender licence package to another where both packages were held by the same holder, AFMA took into account the following:

    a. the reassignment would not result in an increase in the number of TVH fishing licences or capacity but rather a reduction of TVH fleet size - the primary boat, and in some

cases the tenders, of the licence package from which a tender/s was transferred were not permitted to be used during the term of the reassignment. For the coming 2019-20 fishing season, two TVH primary and one tender boat licences will be not be in use. The maximum number of tenders operating on the relevant licences is four;

b. the decisions only applied to licences held by the same licence holder. The reassignment would lapse if any of the relevant primary/tender licence packages were transferred to another licence holder;

c. the decisions only applied for the nominated fishing season (i.e. temporary);

d. the reassignment would not result in an increase in primary boat lengths above that specified under the PZJA boat replacement policy for the TRL Fishery;

e. the reassignment would not result in the maximum number of tenders (seven) on a TVH primary/tender licence package being exceeded – the maximum number of tenders associated with a primary boat following the reassignments has been four;

f. the decisions are consistent with the objectives of the Act, in particular to manage commercial fisheries for optimum utilisation - by allowing the applicant to structure their operation to suite their business plan (increase efficiency).

25. These applications are considered on a case by case basis and subject to review. The Working Group will be considering future management priorities at this meeting under Agenda Item 7. AFMA expects this discussion will include initial planning for how and when a review of this and other PZJA licencing and management arrangements in the TRL Fishery might be conducted.

Compliance outcomes for the 2018-19 fishing season

26. AFMA took over the Torres Strait Fisheries Domestic Compliance Program on 1 July 2018 from the Queensland Fishing and Boating Patrol. To increase capacity in this area, AFMA has since recruited a third officer to assist with the increase in work load in delivering both domestic and foreign compliance functions. Darwin and Canberra based officers have also assisted with targeted operations as required.

27. AFMA fisheries officers, with the support of the Australian Border Force, Royal Australian Navy, Queensland Water Police and the Torres Strait Rangers, have delivered the following during July – November 2019:

    a. conducted 7 at-sea patrols with 31 boats inspected;

    b. 25 ports / freight hubs visits;

    c. 28 fish receiver premises inspected within the Torres Strait Protected Zone and adjacent areas;

    d. monitored catch reporting and seafood movements through the Torres Strait on a regular basis. In the course of doing so, catches not landed to a fish receiver prior to shipment and taken by unlicensed fishermen have been identified. A number of consignments have either been detained pending further investigation and / or seized where evidence supports such an action.

28. A number of formal warnings were issued where appropriate for relatively minor breaches. Two matters were referred to the Commonwealth Director of Public Prosecutions (CDPP) for consideration, with a further two current matters are pending.

29. In addition, AFMA have also conducted a number of stakeholder / community / one on one meetings aimed at increasing education and awareness of compliance related issues and foster voluntary compliance with fisheries regulations.

30. To better target priority risks in Torres Strait fisheries, AFMA have established a specialised multi-disciplinary Compliance Risk Management Team (CRMT). Priority risks include quota evasion and failure to report interaction/retention of protected or prohibited species.

31. 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 2019-20 financial year (FY) and performance in the 2018-19 FY.

Sea surface temperatures

32. Sea surface temperatures (SSTs) are currently below the coral bleaching threshold. The Australian Institute of Marine Science (AIMS) monitors sea surface temperatures to identify the risk of bleaching events. Data and reports can be accessed on the AIMS website at https://weather.aims.gov.au/#/overview

33. Since 1970 the SST in the Coral Sea has consistently been above the long term average (data from 1900 to 2017).

34. The El Nino event from 2015-2016 was more intense than previous events in recent history. The impacts to the TRL Fishery include increased mortality of cage-held lobsters and increasing coral mortality that may result in a reduction of suitable habitat. The influences on the larval phases of TRL are poorly understood.

35. SST information is also monitored by some fishers. If there is a spike in temperature the TRL held in cages or tanks will be monitored more closely (2 to 3 times a day) and they will be tailed or frozen whole if they are weak or not a suitable grade for live product.

Legislative amendments update

36. As per previous updates, AFMA is continuing to progress draft amendments to the *Torres Strait Fisheries Act 1984* (the Act) and *Torres Strait Fisheries Regulations 1985* (the Regulations) as resources and priorities permit. The purpose of the amendments is to provide improvements to the efficiency and effectiveness of fisheries administration in the Torres Strait. In the past 12 months, AFMA have experienced delays to the project due to the Federal Election, competing Australian Government legislative priorities and limited internal resources.

37. Details of the proposed amendments have been provided in previous meeting papers. At its meeting on 8 October the PZJA agreed to further amendments to the Act and Regulations. A complete list of the proposed amendments is provided at **Attachment 2.3e**.

Strategic assessment update

38. On 20 December 2017, the TRL Fishery was declared by the then Delegate of the Minister for the Environment and Energy, Ilse Kiessling, as an approved Wildlife Trade Operation (WTO) under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) until 18 December 2020.

39. Approval under the EPBC Act is:

    a. necessary to legally export commercially wild caught seafood from Australia; and

    b. subject to conditions which require ongoing work by the PZJA.

40. At the time of the last the approval, 4 conditions were applied to the TRL Fishery. A summary of these conditions and an update on the relevant management actions is outlined the table below:

WTO Condition	Update
Operation of the Torres Strait Tropical Rock Lobster Fishery will be carried out in accordance with management arrangements in force under the *Torres Strait Fisheries Act 1984*.	The PZJA managed the TRL Fishery in accordance with management arrangements in force under the *Torres Strait Fisheries Act 1984*.

The Torres Strait Protected Zone Joint Authority to 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.	AFMA provided regular updates to the Department of the Environment and Energy during 2018 and 2019, concerning the implementation of the Management Plan.
The Torres Strait Protected Zone Joint Authority to produce and present reports to the Department of the Environment and Energy annually as per Appendix B of the Guidelines for the Ecologically Sustainable Management of Fisheries - 2nd Edition.	AFMA is preparing a report to the Department of the Environment and Energy as per requirements and will submit this by the end of 2019.
The Torres Strait Protected Zone Joint Authority to implement a strategy to manage the risks of overfishing and localised depletion in the fishery. This may include data collection and analysis protocols to manage risks, triggers and/or limits for managing harvest, and should also account for all sources of stock mortality, including commercial, recreational, Traditional and illegal harvest.	The Harvest Strategy for the TRL Fishery was adopted by the PZJA at its meeting held on 19 November 2019. The Harvest Strategy sets out the objectives for the TRL Fishery, how the Fishery is to be monitored, what data should be collected, and rules for determining a recommended biological catch (RBC) and the global TAC each fishing season, including accounting for all sources of stock mortality.

Independent review of the EPBC Act

41. The second independent review of the EPBC Act has been commissioned as part of a requirement that the EPBC Act is reviewed at least once every ten years. The review is being undertaken by Professor Graeme Samuel. To support the review a discussion paper has been developed and released for public comment outlining 26 questions for stakeholders to answer to inform the review. Submissions on this review are due by 14 February 2020 ahead of exploration of reform options and a draft report being produced by June 2020. More information is available at: www.epbcactreview.environment.gov.au

ABARES fishery status report

42. 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 stocks and the economic status of fisheries managed, or jointly managed, by the Australian Government (Commonwealth fisheries).

43. The ABARES Fishery Status Reports 2019 (covering the performance of fisheries in 2018) was released in September 2019. 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.

44. In summary, the TRL Fishery has been assessed for the 2018 period as follows:

Status	2017		2018		Comments
Biological status	**Fishing mortality**	**Biomass**	**Fishing mortality**	**Biomass**	
Tropical rock lobster (*Panulirus ornatus*)	Not subject to overfishing	Not overfished	Not subject to overfishing	Not overfished	Closure of the fishery in 2018 restricted fishing mortality levels to $F_{TARG.}$ Spawning stock biomass in 2018 was above the limit reference point but below the target reference point. Spawning stock biomass is expected to increase in 2019 and fluctuate widely around the target.
Economic status	Net economic returns in the fishery are uncertain, although positive economic improvements may have occurred in the 2017–18 fishing season as a result of gross value of production increasing faster than effort.				

45. ABARES fishery status reports can be accessed on the ABARES website at: https://www.agriculture.gov.au/abares/research-topics/fisheries/fishery-status

Australian National Audit Office (ANAO) audit

46. On 29 May 2019, the ANAO tabled its report on the performance audit of the coordination arrangements of Australian Government agencies operating in the Torres Strait. The audit examined whether Australian Government agencies operating in the Torres Strait have appropriate governance arrangements to support the coordination of their activities; and the coordination arrangements are effective in supporting Australian Government activities in the Torres Strait.

47. Australian Government agencies subject to the audit included AFMA, the Department of Agriculture and Water Resources, the Department of Foreign Affairs and Trade, the Department of Home Affairs and the TSRA.

48. Overall, the report concludes that "the coordination arrangements of key Australian Government entities operating in the Torres Strait are largely effective in supporting Australian Government activities".

49. Two AFMA recommendations were made, specifying that AFMA work with the TSRA and QDAF to;

    a. finalise the PZJA annual reports for the 2015-16, 2016-17 and 2017-18 financial years and implement a process to ensure that future annual reports are published in a timely manner; and

    b. keep the PZJA website up to date.

50. A more detailed summary of the ANAO outcomes relevant for AFMA is provided at **Attachment 2.3f**.

51. The full audit report can be found on the ANAO website at: https://www.anao.gov.au/work/performance-audit/coordination-arrangements-australian-government-entities-operating-torres-strait

US Import Restrictions

52. Provisions under the US *Marine Mammal Protection Act 1972* (MMPA) will require harvesting nations importing seafood into the US to meet minimum standards for fisheries management with regard to interactions with marine mammals when it comes into force on 1 January 2022.

53. The DAWR has been coordinating submissions to the US National Marine Fisheries Service (NMFS), on behalf of all Australian fisheries exporting to the US, highlighting the level of recorded interactions and regulatory measures to prevent and monitor interactions with marine mammals.

54. Information provided by export countries will be used by the US to classify fisheries as either 'exempt' or 'export' fisheries under the US rule. Fisheries will be classified 'exempt' where the US determines there is a remote likelihood of, or no known incidental mortality and serious injury of marine mammals in the course of commercial fishing operations. Australia is seeking 'exempt' status. If Australian fisheries are classified as 'export' fisheries, Australia will seek to demonstrate that marine mammal mitigation measures are comparable to that of the US.

QDAF UPDATE

55. On 1 September 2019, QDAF introduced a range of changes to their fisheries regulations. Key changes for harvest fisheries included:

    a. Aligning the southern and northern recreational possession limit for TRL to 5 for all Queensland waters.

    b. Hammerhead sharks and white teatfish are now a no-take species for recreational fishers.

    c. Sea cucumber and tropical rock lobster are 2 of 9 identified priority black-market species and therefore have a two times possession limit enforced for boats.

    d. Vessel tracking requirements will apply to all commercial fishing vessels (primaries & tenders) from 1 January 2020. Harvest symbols included are A1, A2, B1, D, J1 and R.

    e. Land based commercial harvest fishing licence operations must display a sign.

56. Further details are provided in **Attachment 2.3g** and on the QDAF website at https://www.daf.qld.gov.au/business-priorities/fisheries/sustainable/sustainable-fisheries-strategy/fisheries-reforms

57. A second round of regulatory changes are proposed to be implemented in late 2019. Proposed changes that will affect the Queensland East Coast TRL Fishery include:

    a. Change of commercial harvest fishing licences to commercial fishing boat licences.

    b. Requirement for 1 boat mark to be allocated to one commercial fishing boat licence.

    c. Replace existing nominee requirements with a commercial fisher licence (CFL to be issued at no cost for the first 12 months).

    d. Amend the payment of commercial fishing fees from 'in arrears' to 'in advance'.

    e. Primary vessel length = Up to 25m.

    f. Tender vessel length = Up to 10m.

    g. Maximum number of tender vessels to use = Up to 8.

    h. Fisheries legislation to remove provisions regarding tender attendance rules to primary vessels and therefore default to AMSA rules.

    i. Separation of fishing authority and quota allocations.

    j. Standardisation of quota reporting requirements for all quota managed fisheries.

Australian Government
Australian Fisheries Management Authority

REF:DOC19/25972

15 October 2019

Dear TRL Fishery Licence Holder

Torres Strait Tropical Rock Lobster Fishery Management Plan

I am writing to inform you that, on 16 September 2019, Senator the Hon Jonathon Duniam, Assistant Minister for Forestry and Fisheries, allocated quota units in the Torres Strait Tropical Rock Lobster Fishery (TRL Fishery) in accordance with the *Torres Strait Fisheries (Quotas for Tropical Rock Lobster (Kaiar)) Management Plan 2018* (the Plan). In making this decision, Assistant Minister Duniam has allocated:

- 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.

Further details on quota unit holdings can be found in the Torres Strait Public Licence Register on the PZJA website at www.pzja.gov.au

From 1 December 2019, the start of the next fishing season, the TRL Fishery will operate under a quota management system. In addition to prescribing the quota allocation process, the Plan allows for the Commonwealth Minister to determine a total allowable catch (TAC) before the start of each fishing season (and increase the TAC subject to catch sharing arrangements with PNG) and for quota units to be traded, either for a single fishing season or permanently. The Plan also provides a formula for calculating the kilogram value of a quota unit.

A copy of the Plan and the Guide to the Plan, as well as links to information about quota management systems, can be found on the PZJA website at www.pzja.gov.au

AFMA will write to all TRL Fishery licence holders before the start of the next fishing season to provide more information concerning the TAC and moon-tide hookah closures.

If you have any questions regarding the Plan, or matters relating to the TRL Fishery, please contact the AFMA Thursday Island office on 07 4069 1990 or FisheriesTI@afma.gov.au. If you would like to be informed of future management arrangements by email or SMS, please contact the AFMA Thursday Island office to update your contact details.

Yours sincerely

Selina Stoute
Manager, Torres Strait Fisheries

Canberra
PO Box 7051
Canberra ACT 2610
P 02 6225 5555
F 02 6225 5500

Darwin
PO Box 131
Darwin NT 0801
P 08 8943 0333
F 08 8942 2897

Thursday Island
PO Box 376
Thursday Island QLD 4875
P 07 4069 1990
F 07 4069 1277

Lakes Entrance
PO Box 408
Lakes Entrance VIC 3909
P:0447 019 916

Australian Government
Australian Fisheries Management Authority

File reference: DOC19/30851

22 November 2019

Dear Torres Strait Tropical Rock Lobster Fishery licence holder

Management Arrangements for the 2019-20 Fishing Season

The 2019-20 fishing season for the Torres Strait Tropical Rock Lobster Fishery (TRL Fishery) will commence on 1 December 2019. This letter details some key management arrangements that will apply this season.

Total Allowable Catch

On 19 November 2019, Senator the Hon. Jonathon Duniam 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 2019-20 fishing season. This was agreed as an interim TAC by the Protected Zone Joint Authority (PZJA) at their meeting on 19 November 2019 and will apply for the fishing season commencing 1 December 2019. It is expected that the TAC will be increased once the outcomes of the scientific assessment process and the TAC sharing arrangements under the treaty between Australia and Papua New Guinea (PNG) have been taken into account. Any increase in the TAC is expected to be determined by the end of February 2020.

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.

<table>
<tr><th>TRL Fishery sector</th><th>TAC (kilograms)</th><th>Number of quota units</th><th>Value of each quota unit (kilograms)</th><th>Available catch per sector (kilograms)</th></tr>
<tr><td>Traditional Inhabitant Boat (TIB) licence holders</td><td rowspan="2">200,000</td><td>662,016*</td><td rowspan="2">0.200</td><td>132,403.2</td></tr>
<tr><td>Transferable Vessel Holder (TVH) licence holders</td><td>337,981</td><td>67,596.2</td></tr>
</table>

* Held by the Torres Strait Regional Authority (TSRA).

Harvest Strategy for the TRL Fishery

The TRL Harvest Strategy was adopted by the PZJA at their meeting on 19 November 2019 and sets out the objectives for the Fishery, how the Fishery will be monitored, what data should

Canberra
PO Box 7051
Canberra ACT 2610
P 02 6225 5555
F 02 6225 5500

Darwin
PO Box 131
Darwin NT 0801
P 08 8943 0333
F 08 8942 2897

Thursday Island
PO Box 376
Thursday Island QLD 4875
P 07 4069 1990
F 07 4069 1277

Lakes Entrance
PO Box 408
Lakes Entrance VIC 3909
P:0447 019 916

be collected, and rules for the determination of a global TAC each season. The Harvest Strategy will be used in the 2019-20 fishing season to determine the global TAC for the Fishery.

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 2019-20 fishing season, is provided in **Enclosure A** to this letter.

Moon-Tide Hookah Closures

At their meeting held on 26 November 2018, the PZJA reaffirmed existing management controls currently applied to the TRL Fishery, to be implemented under the *Torres Strait Fisheries (Tropical Rock Lobster) Management Instrument 2018* (the Instrument) and licence conditions. This includes periodic closures to the use of hookah gear for three days either side of the full or new moon each month based on the largest difference between high and low tides.

For the purpose of subsection 13(2) of the Instrument, 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 2019-20 fishing season during the moon-tide hookah closure periods shown in the calendar (dated 13 November 2019) provided in **Enclosure B** to this letter. The first scheduled moon-tide hookah closure period starts on 6 February 2020.

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

As always, licence holders should familiarise themselves with all management arrangements that apply in the TRL Fishery prior to the commencement of fishing. Further information can be found on the PZJA website at www.pzja.gov.au or by contacting AFMA.

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 Additional information regarding management arrangements for the Torres Strait Tropical Rock Lobster Fishery 2019-20 fishing season

B TRL Fishery moon-tide hookah closures for the 2019-20 fishing season (dated 13 November 2019)

Enclosure A

Additional information regarding management arrangements for the Torres Strait Tropical Rock Lobster Fishery 2019-20 fishing season

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How much can I catch?

The 2019-20 fishing season for the Torres Strait Tropical Rock Lobster Fishery (TRL Fishery) will open from 1 December 2019 until 30 September 2020, or until available quota units have been caught.

If you are fishing under a TIB licence

- 662,016 quota units, with a value of **132,403.2 kilograms** of TRL is available to be caught by Traditional Inhabitant Boat (TIB) licence holders. This is an **interim amount only** and it is expected that the TAC will be increased once the outcomes of the scientific assessment process and the TAC sharing arrangements under the treaty between Australia and Papua New Guinea (PNG) have been taken into account. AFMA will write to all TRL Fishery licence holders when this happens.
- When this amount has been caught, TIB licence holders will no longer be permitted to fish commercially in the TRL Fishery (unless the total allowable catch (TAC) has been increased – see above).
- TIB licence holders will be provided with a notice by the Commonwealth Minister for Fisheries when this occurs.
- The mandatory Fish Receiver System (catch disposal records) will be used to account for catches by TIB licence holders against the TIB sector's quota holdings (held by the Torres Strait Regional Authority (TSRA) in trust).
- If a TRL is tailed, a weight conversion factor of 2.677 will be applied. This means that if an individual lands 1 kilogram of tailed TRL, 2.677 kilograms of TRL will be deducted from the uncaught quota amount.
- AFMA will monitor the catches of TIB licence holders against the TIB sector's quota holdings, and provide regular catch reports throughout the season to TRL Fishery licence holders on the remaining catch that is available to be taken. These reports will be made available on the Protected Zone Joint Authority (PZJA) website at www.pzja.gov.au and also sent to TRL Fishery licence holders by email and SMS where licence holders have these details registered with AFMA.
- Licence holders will also be able to check the catches of the TIB sector against the TIB sector's quota holdings at any stage by contacting the AFMA Thursday Island office on 07 4069 1990 or FisheriesTI@afma.gov.au.

If you are fishing under a TVH licence

- 337,981 quota units, with a value of **67,596.2 kilograms** of TRL, have been allocated to individual Transferable Vessel Holder (TVH) licence holders. These quota units are only available to be fished by the individual that holds them. This is an **interim amount only** and it is expected that the TAC will be increased once the outcomes of the scientific assessment process and the TAC sharing arrangements under the treaty between Australia and PNG have been taken into account. AFMA will write to all TRL Fishery licence holders when this happens.
- Prior to the start of each fishing season, each TVH licence holder will receive an extract of the Register detailing the number and value of the quota units held by the individual.
- When all the quota units (including any leased units) held by a TVH licence holder have been caught, the licence holder will no longer be permitted to fish commercially in the TRL Fishery.
- It is the responsibility of each TVH licence holder to monitor their catches against the quota units that they hold.
- The Fish Receiver System (catch disposal records) will be used to account for TVH licence holders' catches against their quota unit holdings.
- If a TRL is tailed, a weight conversion factor of 2.677 will be applied. This means that if an individual lands 1 kilogram of tailed TRL, 2.677 kilograms of TRL will be deducted from the individual's uncaught quota amount.
- AFMA will provide regular catch reports detailing the total catch by the TVH sector (not individual catches). These reports will be made available on the PZJA website at www.pzja.gov.au and also sent to TRL Fishery licence holders by email and SMS where licence holders have these details registered with AFMA.
- TVH licence holders will also be able to check their quota holdings at any stage throughout the season by registering for GOFish, AFMA's e-licensing system. Licence holders can do this by contacting the AFMA Licensing team on 02 6225 5555 or licensing@afma.gov.au.

What is a Harvest Strategy?

The Harvest Strategy for the TRL Fishery was adopted by the PZJA at their meeting held on 19 November 2019, and will be used to determine the global TAC for the 2019-20 and future fishing seasons.

The Harvest Strategy sets out the objectives for the TRL Fishery, how the Fishery is to be monitored, what data should be collected, and rules for determining a recommended biological catch (RBC) and the global TAC each fishing season. Having a harvest strategy in place provides transparency for stakeholders (fishers, traditional owners, communities, scientists and managers) about how the Fishery will be managed into the future.

More information on harvest strategies for Torres Strait fisheries, including the TRL Fishery, can be found on the PZJA website at www.pzja.gov.au.

What is a TAC and how is it set?

The figure below provides an explanation of how the TAC for the TRL Fishery is set prior to the start of each fishing season and increased to the final amount.

TRL Fishery survey conducted by CSIRO (in November)

The survey estimates the total number of tropical rock lobster (TRL or kaiar) in the water

⇩

Australian TRL Fishery opens on 1 December under a 200,000 kg Australian TAC

A TAC (total allowable catch) of 200,000 kilograms is set for the Australian TRL Fishery, in the interim, until catch sharing arrangements for the season can be agreed between Australia and PNG

⇩

TRL Resource Assessment Group (TRLRAG) provides advice on a RBC

A RBC (recommended biological catch) is the total amount of kaiar that can be sustainably taken out of the water, in the area of the Torres Strait Protected Zone, by all fishers (commercial, traditional, recreational) each season, while leaving enough in the water to breed for future seasons

⇩

TRL Working Group provides advice on a global TAC

A global TAC is the total amount of kaiar that can be sustainably taken out of the water, in the area of the Torres Strait Protected Zone, by both Australian and PNG commercial fishers each season

⇩

Global TAC endorsed by the Protected Zone Joint Authority (PZJA)

⇩

Australia and PNG agree on the global TAC and how it is to be shared, including cross-endorsement

Global TAC to be shared between Australia and PNG as per the terms of the Torres Strait Treaty

⇩

Australian TAC is increased

The TAC for the Australian TRL Fishery is increased from the initial amount to the final amount, which is equal to Australia's share of the global TAC as agreed between Australia and PNG

How does quota work?

On 16 September 2019, 999,997 quota units were granted under the *Torres Strait Fisheries (Quotas for Tropical Rock Lobster (Kaiar)) Management Plan 2018* (the Management Plan):

- 662,016 quota units (or 66.20%) were allocated to the TSRA comprising:
  - 562,000 to hold for the benefit of the TIB sector; and
  - 100,016 for the TVH licences it holds.
- 337,981 quota units (or 33.79%) were allocated to the remaining TVH principal licence holders.

The total number of quota units is fixed and will not change from fishing season to fishing season. However the amount of catch that may be taken against each quota unit will change as the TAC changes each fishing season.

Once a TAC is determined, the amount that each quota is worth will be calculated. This is done by dividing the TAC (in kilograms) by the total number of quota units (999,997). The result of this calculation is the weight value in kilograms of unprocessed TRL that can be taken for each quota unit held.

For example, if the TAC was 500,000 kilograms, then:

Quota unit value	*= TAC ÷ total number of quota units*
	= 500,000 kilograms ÷ 999,997
	= 0.500 kilograms

There are enough quota units to allow the trading of either small or large amounts of quota. The table provided in the covering letter shows the TAC for the 2019-20 fishing season, the value of each quota unit and available catch for each sector.

A Guide to the Management Plan, as well as links to information about quota management systems, can be found on the PZJA website at www.pzja.gov.au.

How do Australia and PNG share TRL?

The *Torres Strait Treaty* recognises the rights of both Australia and PNG to commercial fisheries in the area of the Torres Strait Protected Zone (TSPZ). The TSPZ is an area in the Torres Strait that includes both Australian and PNG waters. These rights include the right of Australia and PNG to fish in the waters of the other country. This practice is known as cross-endorsement and involves both countries nominating an agreed number of commercial fishing boats to fish an agreed share of the TAC. This share is usually 25% of the other country's TAC apportionment, unless otherwise agreed.

With regards to the commercial catch of TRL, each year Australia and PNG:

- Agree on the global TAC and how it is to be apportioned between Australian and PNG waters.
    - Generally, it is agreed that 85% of the global TAC is to be taken in Australian waters and 15% of the global TAC is to be taken in PNG waters. This is based on the agreed distribution of TRL in the area of the TSPZ.

For example, if the global TAC was 500,000 kilograms, then:

Australia's apportionment of the global TAC	*= 85% of the global TAC*
	= 85% of 500,000 kilograms
	= 0.85 x 500,000 kilograms
	= 425,000 kilograms
PNG's apportionment of the global TAC	*= 15% of the global TAC*
	= 15% of 500,000 kilograms

= 0.15 x 500,000 kilograms

= 75,000 kilograms

- Agree on cross-endorsement allocations and preferential entitlement.
    - Under Article 23(4), each country is entitled to fish for 25% of the other country's TAC apportionment in the waters of the other country, unless otherwise agreed.
    - Under Article 25 of the Treaty, where Australia and/or PNG does not itself propose to take all the TAC to which it is entitled, either in its own area of waters or that of the other country, the other country will have preferential entitlement to that share. This must be agreed between Australia and PNG.

For example, if the global TAC was 500,000 kilograms, then:

Australia's cross-endorsement allocation in PNG waters	*= 25% of PNG's 15% share of the global TAC* *= 25% of 75,000 kilograms* *= 0.25 x 75,000 kilograms* ***= 18,750 kilograms***
PNG's cross-endorsement allocation in Australian waters	*= 25% of Australia's 85% share of the global TAC* *= 25% of 425,000 kilograms* *= 0.25 x 425,000 kilograms* ***= 106,250 kilograms***

At their meeting held on 19 November 2019, the PZJA agreed that, subject to further consultation with stakeholders, the preferred arrangement for utilising Australia's cross-endorsement allocation within PNG's waters is to not seek cross-endorsement but rather pursue a preferential entitlement arrangement under Article 25 of the Treaty. In effect this means, Australia will seek to take a proportion of PNG's cross-endorsement allocation within Australian waters equivalent to Australia's cross-endorsement allocation in PNG's waters. Conversely, PNG would be entitled to take Australia's cross-endorsement catch allocation in PNG's waters. Under such an arrangement, Australia's cross-endorsement allocation would be shared across all Australian licence holders in both sectors of the TRL Fishery.

Initial advice regarding the future utilisation of Australia's cross-endorsement allocation within PNG's waters will be sought from the PZJA TRL Working Group meeting to be held on 12 December 2019. Broader consultation with stakeholders, including licence holders, with be undertaken over the coming fishing seasons.

Enclosure B

Australian Government | TSRA www.tsra.gov.au | Australian Government Department of Agriculture | Australian Government Australian Fisheries Management Authority | Queensland Government | TORRES STRAIT PZJA PROTECTED ZONE JOINT AUTHORITY

Torres Strait Tropical Rock Lobster Fishery Moon-Tide Hookah Closures for the 2019-20 Fishing Season* (13 November 2019)

Dec-19	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue
	1	2	3	4	5	6	7	8	9	10	11	○ 12	13	14	15	16	17	18	19	20	21	22	23	24	25	●	27	28	29	30	31
Jan-20	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri
	1	2	3	4	5	6	7	8	9	10	○ 11	12	13	14	15	16	17	18	19	20	21	22	23	24	●	26	27	28	29	30	31
Feb-20	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat		
	1	2	3	4	5	6	7	8	○ 9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	●	25	26	27	28	29		
Mar-20	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue
	1	2	3	4	5	6	7	8	9	○ 10	11	12	13	14	15	16	17	18	19	20	21	22	23	●	25	26	27	28	29	30	31
Apr-20	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	
	1	2	3	4	5	6	7	○ 8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	●	24	25	26	27	28	29	30	
May-20	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun
	1	2	3	4	5	6	○ 7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	●	24	25	26	27	28	29	30	31
Jun-20	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	
	1	2	3	4	5	○ 6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	●	22	23	24	25	26	27	28	29	30	
Jul-20	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri
	1	2	3	4	○ 5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	●	22	23	24	25	26	27	28	29	30	31
Aug-20	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon
	1	2	3	○ 4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	●	20	21	22	23	24	25	26	27	28	29	30	31
Sep-20	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	
	1	○ 2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	●	18	19	20	21	22	23	24	25	26	27	28	29	30	
Oct-20	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1	○ 2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	●	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Nov-20	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	
	○ 1	2	3	4	5	6	7	8	9	10	11	12	13	14	●	16	17	18	19	20	21	22	23	24	25	26	27	28	29	○ 30	

* The 2019-20 fishing season runs from 1 December 2019 through to 30 September 2020.

KEY

- ● New Moon
- ○ Full Moon
- Fishery closure (commercial fishing not permitted)
- Hookah closure (use of hookah gear not permitted)
- Moon-tide hookah closure (use of hookah gear not permitted)

Attachment 2.3c

Expected timeline for finalising a total allowable catch (TAC) for the Australian Torres Strait Tropical Rock Lobster Fishery (TRL Fishery)

Key:

Scientific assessment and advice
PNG-Australia agreement
Administrative step for Australia

Steps	Description	Indicative timeline
Agree timeline and process	AFMA CEO and PNG NFA Director General to meet to agree on process for agreement on catch sharing arrangements for the Torres Strait Tropical Rock Lobster Fishery (TRL Fishery) for the coming fishing season.	10 October 2019
PNG and Australian catch and effort data compiled	Australian and PNG catch and effort data are compiled[1].	By 31 October 2019
Pre-season scientific survey	Survey data are collected and used to update TRL survey abundance indices used to calculate a recommended biological catch (RBC)[2]. Survey must be conducted in November to provide comparable results overtime and the most accurate estimate of annual lobster recruitment into the fishery.	10-23 November 2019
Australian start of season TAC determined	Minister to determine a 200 tonnes start of season[3] TAC for the Australian TRL Fishery for the 2019-20 fishing season, as per section 13 of the *Torres Strait Fisheries (Quotas for Tropical Rock LOobster (Kaiar)) Management Plan 2018* (the Plan)[4]. Start of season TAC based on advice received from TRLRAG and TRLWG in October-November 2018. TAC to apply to Australian TRL Fishery only.	19 November 2019

[1] These data are provided to CSIRO to update catch per unit effort indices used to calculate a recommended biological catch for the coming fishing season.
[2] A RBC is the total amount of TRL that can be sustainably taken out of the water by all fishers (commercial, traditional, recreational) each season, while leaving enough in the water to breed.
[3] The Australian TRL Fishery fishing season runs from 1 December each year to 30 September the following year.
[4] The Plan is accessible online at https://www.legislation.gov.au/Details/F2018L01645

RBC calculation	CSIRO to use empirical Harvest Control Rule (eHCR) to calculate a RBC. Every three years (starting in 2019), CSIRO to update and run the stock assessment model to evaluate the performance of the eHCR. Preliminary stock assessment results are usually available within 4-5 weeks of the pre-season scientific survey.	Late November through to early December 2019
TRL Resource Assessment Group (TRLRAG) and TRL Working Group (TRLWG) advice[5]	TRLRAG to review the survey results, CPUE analyses and application of the eHCR. Advice provided on a final RBC. TRLWG to review TRLRAG advice. Advice provided on a final global TAC[6]. Every three years (starting in 2019), TRLRAG and TRLWG to consider preliminary results of stock assessment. Advice provided on finalising the assessment.	10-12 December 2019
PZJA agreement to final global TAC	PZJA to review TRLRAG and TRLWG advice and agree to final global TAC.	January 2020 (date of PZJA meeting to be confirmed)
Agree final global TAC, shares of the TAC, cross-endorsement apportionments and any preferential entitlements	AFMA CEO and PNG NFA Director General to meet to agree, as per the terms of the Torres Strait Treaty, on: - a final global TAC as per article 23(2); - shares of the final global TAC as per article 22(1) (e.g. 15%:85% split); - cross-endorsement apportionments as per articles 23(4) and 25; - preferential entitlement to any unfished cross-endorsement apportionments as per article 25. An exchange of letters is required to formalise the agreement.	By 31 January 2020
Australian final TAC determined	Minister to determine a final TAC for the Australian TRL Fishery for the 2019-20 fishing season, as per section 14 of the Plan. TAC to apply to Australian TRL Fishery only.	By 29 February 2020

[5] Officers from PNG NFA are invited to attend all PZJA advisory forums.
[6] A global TAC is the total amount of TRL that can be sustainably taken out of the water by both Australian and PNG commercial fishers each season.

TRLRAG advice	Every three years (starting in 2019), TRLRAG to review the final stock assessment results. Advice provided on the need to review the eHCR and conduct a stock assessment in subsequent years, as per Harvest Strategy rules.	February/March 2020 (date of TRLRAG meeting to be confirmed)
If relevant, submit any formal requests for cross-endorsement	PNG and/or Australia to provide formal request to the other Party seeking cross-endorsement pursuant to article 26 of the Torres Strait Treaty. Request to include: - a copy of the licence/s for which a Treaty endorsement is sought[7]; - a copy of any licence conditions in force for the licence/s; - boat particulars; - details for payment of applicable fees. It will take approximately 6 weeks for Australia to complete the domestic processes to issue a Treaty endorsement/s[8].	By 31 March 2020

[7] For PNG licence/s, each licence needs to be current at the time of the formal request, valid for the period for which a Treaty endorsement is sought and have the same details as that written in the formal request, and valid in PNG for the same fishery as it is proposed to operate in Australian waters.
[8] Australia's domestic process include requirements to undertake native title notification pursuant to sub-sections 24HA(2) and (7) of the Commonwealth *Native Title Act 1993*, which takes a minimum of 1 month, and to seek approvals to issue a Treaty endorsement/s.

PROTECTED ZONE JOINT AUTHORITY

FISHERIES MANAGEMENT PAPER No. 2

(PZJA FMP No.2)

GUIDELINES FOR THE FORMATION OF ALLOCATION ADVISORY PANELS FOR THE ALLOCATION OF FISHING CONCESSIONS IN TORRES STRAIT PROTECTED ZONE JOINT AUTHORITY FISHERIES WHERE FISHERIES MANAGEMENT ARRANGEMENTS CHANGE SIGNIFICANTLY

April 2006

Prepared by the Australian Fisheries Management Authority
on behalf of the Protected Zone Joint Authority

Contents

1. Purpose

This Draft Fisheries Management Paper sets out the Torres Strait Protected Zone Joint Authority (PZJA) policy and a procedural framework for the allocation of fishing concessions where a decision has been taken to significantly change the basis of management arrangements in existing fisheries.

For example, when a move is made from:

1. a non transferable input control system to a transferable unitised input control system; or
2. an input control system to an output control system (individual transferable quota).

This draft paper does not apply to development of fisheries management arrangements for new fisheries. Separate arrangements will be utilised in that instance.

2. Introduction

The PZJA is responsible for monitoring the condition of designated fisheries within the Torres Strait Protected Zone (TSPZ) and for the formulation of policies and plans for their management. The PZJA has regard to the rights and obligations conferred on Australia by the Torres Strait Treaty, in particular the protection of the traditional way of life and livelihood of the traditional inhabitants, including their traditional fishing.

The PZJA is established under the Torres Strait Fisheries Act 1984 (the Act).

The purpose of this draft paper is to provide policy guidance and procedural frameworks for the allocation of fishing concessions where fishery management arrangements are proposed to be changed.

3 The PZJA's approach

3.1 The legislative objectives

The objectives to be pursued in the administration of the Act include:

1. To have regard to the rights and obligations conferred on Australia by the Torres Strait Treaty and in particular pay regard to the traditional way of life and livelihood of traditional inhabitants, including their rights in relation to traditional fishing.

Other objectives to be pursued by the PZJA are implied under the Act and by other commonwealth Acts and international treaties to which Australia is a signatory and include but are not limited to the following:

2. Keeping constantly under consideration the condition of the fishery;
3. Formulating policies and plans for the good management of the fishery; and
4. For the purposes of the management of the fishery:
    a. Exercising the powers conferred it under Part V of the Act
    b. Co-operating and consulting with other authorities (including Joint Authorities established under the *Fisheries Act* 1952 or the *Fisheries Management Act* 1991) in matters of common concern.

3.2 The Torres Strait Treaty objectives

The common objectives of the Torres Strait Treaty with regards to commercial fisheries are as follows:

1. The commercial utilisation of fisheries in the TSPZ are not to prejudice achievements outlined in the Treaty with regard to traditional fishing.
2. Treaty Parties shall cooperate in the conservation, management and optimum utilisation of Protected Zone commercial fisheries.
3. Treaty Parties shall, where appropriate, negotiate subsidiary conservation and management arrangements in respect of any individual Protected Zone commercial fishery.
4. Treaty Parties shall share the allowable catch of the Protected Zone commercial fisheries in accordance with provisions outlined in Article 23, 24 and 25 in the Treaty.

3.3 The objectives established by PZJA specialist working group

In February 2005, a specialist group consisting of senior officials from PZJA Agencies was formed, to determine options for resolving the issue of resource allocation in the TRL and Finfish Fisheries. The group recognised four principle stakeholder groups as having legitimate access to fisheries resources in Australia's jurisdiction of the TSPZ.

- Traditional fishers of the Torres Strait and PNG;
- Papua New Guinea commercial fishers;
- Traditional Inhabitant commercial (community) fishers; and
- Non-Traditional Inhabitant commercial fishers.

A set of principles were adopted by the specialist group to account for the intentions of the Treaty and the Act. The principles establish a hierarchy for assessing the relative merits of resource allocation options. The principles in order of importance are:

1. Protection of the fishery resource;
2. Protection of the traditional way of life and livelihood of Traditional Inhabitants;
3. Enhancing economic and employment opportunities for Traditional Inhabitants; and
4. Enhancing economic and employment opportunities for non-Traditional Inhabitants, and in a more general sense enhancing economic and employment opportunities within the Torres Strait region.

3.4 Changes to fisheries management arrangements

The PZJA may deem it necessary to implement new management arrangements for PZJA Fisheries for the effective pursuit of objectives outlined in the Torres Strait Treaty and relevant legislation. Management changes are also driven by external processes, such as the mandatory accreditation of all fisheries under the *Environment Protection and Biodiversity Conservation Act 1999.* Changes may include movement in the level of input controls, including sustainability reductions made over a given time frame. Similarly, the PZJA may determine it to be necessary to move to either unitised input controls or output controls (quota management systems).

4. Allocation of fishing concessions

The fishing concessions that exist in a fishery at the time that management arrangements are proposed to change, are the only concessions that will be taken into account under any allocation that may be required by the move from one management regime to another.

It should be recognised that, in pursuing the Torres Strait Treaty and legislative objectives relevant to the PZJA, there will be instances where it is not possible to design an allocation formula that will have absolutely no impact on the relative economic position of individual operators.

From a legal, ethical and fisheries management perspective, the PZJA will explicitly endeavour to minimise any adverse differential economic impacts on individual operators. A body of legal case history in relation to allocation of fishing concessions has been established both in Australia and overseas which demonstrates that allocations of fishing concession resulting in a significant and differential economic impact on individual operators (which cannot be balanced against fisheries management objectives) not in the best interest of any of the parties nor the fishery and are clearly challengeable.

Therefore, the PZJA's approach to allocation of fishing concessions is based on the premise that, in making any management changes, the PZJA will ensure that:

1. such changes are consistent with and support the pursuit of the Torres Strait Treaty and legislative objectives relevant to the PZJA; and
2. any differential economic impacts of allocations on individual fishing concession holders are minimised unless there are reasons, justifiable with respect to the Torres Strait Treaty and legislative objectives relevant to the PZJA, that dictate otherwise.

4.1 Appeals Against Allocation

The AAP will provide advice to the PZJA for decision. The PZJA will consider the advice supplied by the AAP in making decision's relevant to allocation of fishing concessions.

Affected persons wishing to appeal decisions made by the PZJA should do so under a Administrative Decisions Judicial Review (ADJR) as established under the Administrative Decisions (Judicial Review) Act 1977.

4.1.1 Statutory Management Plans

If decisions are made through Statutory Management Plans, then under section 15A(13) of the Torres Strait Fisheries Act 1984 and the Administrative Appeals Tribunal Act 1975, affected persons may appeal such decisions through the Administrative Appeals Tribunal (AAT).

5 Independent Allocation Advisory Panel

Experience provided by the Australian Fisheries Management Authority (AFMA) suggests that operators will have greater confidence in allocation outcomes where they result from an independent assessment of the fishery and individual circumstances. A central principle in the development of a fair and credible allocation system is that it has been based on an independent assessment. In order to achieve this, the recommended basis of allocation will be developed at arms length from PZJA Agencies and the PZJA.

In relation to PZJA fisheries, an independent Allocation Advisory Panel (AAP) will be established to provide advice to the PZJA on the catch ratio between commercial sectors within a defined fishery, or between defined fisheries (intersectoral allocation); and/or the most appropriate allocation system within a defined fishery, or between defined fisheries (intersectoral allocation); and/or in any other appropriate circumstances.

The AAP would be established under s40(7) of the Act which provides scope for the PZJA to establish advisory committees, consisting of such persons as it thinks fit, to provide information and advice to the PZJA. The AAP is advisory in nature, in much the same manner as the Torres Strait Fisheries Management Advisory Committee (TSFMAC) and relevant Fisheries Working Group's (FWG's). Any decisions in relation to allocation are made by the PZJA in accordance with its responsibilities under the Act. To facilitate this process, the Australian Government Department of Agriculture Fisheries and Forestry (DAFF) will provide administrative support to the AAP. PZJA Agencies will provide information and briefing material to the AAP as requested/required by the AAP.

5.1 Membership

An AAP will comprise from one to three members. The actual number of members will be determined by the PZJA on a case-by-case basis depending on the issues to be addressed, consideration of the breadth of expertise which is both being sought and is available, and the cost-effectiveness of the process. Members will be engaged under s40(7) of the Act.

PZJA Agencies will seek nominations for membership of the AAP from appropriately qualified persons. Nominations will be considered by the PZJA when they determine membership of an AAP.

A member or members may be a retired judge, or other qualified member of the legal profession with experience in administrative law, and/or an economist and/or an independent member of the fishing industry who is not associated with the fishery in relation to which the allocation process is being undertaken, and/or a fisheries scientist. Where it is determined that a panel should comprise two or more persons one of those persons will be a Presiding Member. Unless otherwise specified by the PZJA, the Presiding Member will be a retired judge or other qualified member of the legal profession.

Some of the information so provided to AAP members will be provided as “commercial in confidence” and members of the AAP must consent to follow accepted rules of confidentiality.

5.1.1 Traditional Inhabitant representation (observer)

As requested by the TSRA, the PZJA will consider the addition of one extra member to an AAP to act as an observer on behalf of the Torres Strait Traditional Inhabitants. In such case, the Traditional Inhabitant observer will act as an advisor to AAP members on relevant indigenous issues, but will not share in the production of recommendations for the PZJA.

The Traditional Inhabitant observer will be bound by the same confidentiality agreements that apply to other AAP members.

5.2 Terms of reference

Specific terms of reference will be established for each AAP formed by the PZJA. In general an AAP will advise the PZJA on:

1. The most appropriate basis for allocation of fishing concessions in a fishery or between fisheries (intersectoral allocation), in accordance with this Draft Fisheries Management Paper; and is
2. To identify and include in that allocation system any exceptional circumstance which the AAP considers should be taken into account.

In undertaking these tasks, the AAP will be required to:

1. Consult with relevant parties and any person/s or organisations with appropriate knowledge or experience;
2. Identify the data necessary to support the allocation system determined in terms of reference 1 and 2 and the most cost effective and appropriate methods of collection and verification of that data;
3. Explain and justify the recommended allocation system to the PZJA stakeholders;
4. Provide advice to PZJA agency officers appearing as witnesses before tribunals or courts in any challenge to the recommended allocation system if implemented;
5. Maintain full records of all activities undertaken by the panel; and
6. Ensure all information provided to the panel is publicly available.

5.3 Brief

To enable the AAP to consider allocation in or across a particular fishery/s, PZJA Agencies will provide the AAP with a brief which includes, but is not limited to:

1. this Fisheries Management Paper
2. any other policy papers relevant to the allocation being considered;
3. factual details of the fishery/s;
4. factual details of existing/historical management arrangements in the fishery/s;
5. factual details of existing fishing concessions; and
6. factual details of any past commitments made (whether by press release, correspondence or other written communication).

5.4 AAP Process

5.4.1 Consultation

A key component of determining the most appropriate allocation system in a particular fishery or fisheries are the consultative processes which are undertaken with operators, Traditional Inhabitants, and others with an interest in the fishery/s. Whilst the level and actual process of consultation may vary according to the fishery or specific circumstances, as a general rule the AAP will consult widely with relevant parties and any person/s or organisations with appropriate knowledge, experience or expertise as appropriate.

Where necessary, the AAP may obtain advice or input from relevant legal, economic or statistical experts, provided the costs are available in the AAP budget or have been agreed to by the PZJA.

5.4.2 Reporting requirements

The PZJA will establish an agreed timeframe by which the AAP is to have identified an appropriate allocation system for the fishery for which a change in management arrangements is proposed. The AAP will provide draft, and subsequently final, advice to the PZJA on a preferred allocation system in accordance with that agreed timetable.

The PZJA will consider the draft advice (and provide any comments to the AAP on that advice) within an agreed timeframe of receiving the draft.

5.4.3 Administrative support

DAFF will provide administrative support to the AAP as necessary. If requested, PZJA Agencies will provide assistance to the AAP in generating alternative allocation outcomes.

5.4.3 Funding

In deciding to form an AAP for a specific purpose, the PZJA will also consider the level of funding required for the AAP to meet its Terms of Reference. The PZJA will provide the agreed budget to the Presiding Member when the AAP is formed. Due to cost sharing issues, any variances to the AAP budget will require PZJA consideration.

Attachment 2.3e

Proposed amendments to the *Torres Strait Fisheries Act 1984* and *Torres Strait Fisheries Regulations 1985*

Amendment	Status as at 25 November 2019
Proposed amendments to the *Torres Strait Fisheries Act 1984* (the Act)	
Capacity to require catch reporting across all licence holders	Policy approval granted by PZJA, further policy approval to be sought before drafting can commence.
Capacity to provide electronic licensing and monitoring to licence holders	
Capacity to delegate the powers to grant and vary scientific and development permits	
Capacity to simplify the renewal of fishing licences	
Capacity to delegate powers to contracted service providers	
Provide for the grant of a licence without specifying a boat in the licence*	
Provide for a class of licence that authorises the taking of fish as well as the processing and carrying of fish taken with the use of another boat*	
Impose logbook requirements via the determination of a legislative instrument, exercisable by a delegate of the PZJA*	
Proposed amendments to the *Torres Strait Fisheries Regulations 1985* (the Regulations)	
Provide simplified legislative authority for the collection* and disclosure of information, to be exercised by a person exercising powers or performing functions under the Act	Drafting has commenced, further drafting required.
Implementation of Fisheries Infringement Notices	
Allow licences (fish receivers, carrier and processing, fishing without boat) to be granted for up to five years duration*	
Update provisions concerning the detention of illegal foreign fishers to be brought in line with analogous provisions of the *Migration Regulations 1994**	
Prescribe a condition that all licence holders must comply with any relevant plan of management*	

*Additional proposed amendment approved by the PZJA at its meeting on 8 October 2019.

Australian Government
Australian Fisheries Management Authority

Coordination Arrangements of Australian Government Entities Operating in Torres Strait

Published 29 May 2019

Australian National Audit Office
Auditor-General Report No. 41 2018-19
Performance Audit

https://www.anao.gov.au/work/performance-audit/coordination-arrangements-australian-government-entities-operating-torres-strait

Summary of ANAO outcomes for AFMA

Background

In 2018, the Australian National Audit Office (ANAO) conducted a performance audit on the coordination arrangements of Australian Government Entities Operating in the Torres Strait. The audit examined whether Australian Government agencies operating in the Torres Strait have appropriate governance arrangements to support the coordination of their activities, and that the coordination arrangements are effective in supporting Australian Government activities in the Torres Strait.

The audit examined the coordination arrangements of five Australian Government entities operating in the Torres Strait including the Torres Strait Regional Authority (TSRA), the Department of Foreign Affairs and Trade (DFAT), the Department of Agriculture and Water Resources (DAWR), the Department of Home Affairs, represented by the Australian Border Force (ABF) and the Australian Fisheries Management Authority (AFMA). This document provides a brief summary of key ANAO outcomes relevant for AFMA.

Rationale for undertaking the audit

Australia recognises the Torres Strait region as a sensitive and important zone because:

- the scattered islands represent stepping stones between PNG and Australia and is often referred to as 'the closest thing Australia has to a land border'. The close distance of PNG has immigration, customs and biosecurity implications;
- the region supports critical fisheries habitats and ecosystem resources; and
- the region is an international shipping route with difficult waters.

In 2010, a Senate Inquiry into Torres Strait by the Foreign Affairs, Defence and Trade Reference Committee documented key issues associated with health, biosecurity, law and order and border protection, relating primarily to the shared border with PNG and the operation of the Treaty. The committee's report stressed the importance of achieving effective whole-of-government cooperation and coordination between government entities.

Overall Audit Conclusions

1. The report concludes that the coordination arrangements of key Australian Government entities operating in Torres Strait are largely effective in supporting Australian Government activities.
2. The business rules are effective for the implementation of biosecurity and fisheries legislation, and support the application of the Treaty provisions and the coordination of activities in Torres Strait. The business rules are not fully effective for the implementation of immigration and customs legislation in

the context of the Treaty. This impacts on the capacity of entities to coordinate their activities and to develop a shared understanding of immigration and customs rules applicable in the region.

3. The governance structures and joint activities are largely effective to support cross-entity coordination. However, key policy decisions made by the Torres Strait Joint Advisory Council (JAC) are not adequately documented, and the risks associated with the impacts of a changing strategic and operational environment on the Treaty operation have not been analysed. The Protected Zone Joint Authority (PZJA) annual reports and website are not up-to-date.
4. The key systems and assets support the coordination of Australian Government entities' operations in Torres Strait. An important project to improve telecommunications in Torres Strait is progressing.

AFMA Specific Conclusions

Business Rules

The business rules, combined with the legislation, applying to fisheries in Torres Strait are comprehensive and fit-for-purpose, but some key governance documents are not up-to-date.

Governance Structures and Joint Activities

Through the PZJA, the consultative framework is largely effective to support and coordinate the decision making process of the range of entities involved in Torres Strait fisheries. Some of the actions agreed following the 2009 review of the PZJA's administrative arrangements are still to be completed, and the PZJA's annual reports and website are not up-to-date.

System and assets

No specific comments relating to the management of fisheries in the Torres Strait.

Recommendations for AFMA

The audit recommends the Australian Fisheries Management Authority work with the Protected Zone Joint Authority's other member entities, the Torres Strait Regional Authority and Queensland Department of Agriculture and Fisheries, to:

a) finalise the Protected Zone Joint Authority annual reports for the 2015–16, 2016–17 and 2017–18 financial years and implement a process to ensure that future annual reports are published in a timely manner; and

b) keep the Authority's website up-to-date.

Additionally, the audit recommended that DFAT establish and maintain a central register of policy decisions made by the Torres Strait Joint Advisory Council (JAC) and ensure that the register is accessible to stakeholders, including Australian Government entities, operating in Torres Strait.

As a member of the JAC, the AFMA Executive has agreed to the publication of JAC outcomes on the DFAT website.

Summary audit response from AFMA

On 11 April 2019, the AFMA CEO provided the following response to the Auditor-General for Australia:

AFMA has extensive responsibilities in managing Commonwealth fisheries resources in the Torres Strait and works to deliver on these in cooperation with a number of Commonwealth and other agencies.

AFMA has considered the proposed audit report and accepts that timely finalisation of Protected Zone Joint Authority annual reports and regular updating of the Authority's website will enable stakeholders to be better informed about fisheries management issues and actions. Together with other PZJA member agencies, AFMA will also continue to work towards further integration and coordination of fisheries in the Torres Strait.

Audit Findings relevant for AFMA

Table 1. Summary of audit findings under each area examined relevant for AFMA.

Area Examined	Summary Conclusion	Audit Findings
Business Rules	The business rules, combined with the legislation, applying to fisheries in Torres Strait are comprehensive and fit-for-purpose, but some key governance documents are not up-to-date.	While a range of business rules exist, some of them were developed a number of years ago (in one instance, 2004), and it is difficult to establish whether the documents are up-to-date, due to the absence of a version history and date of next review. For example, a number of changes to the consultative structure of the PZJA have occurred since *Fisheries Management Paper No. 1*, which plays a key role in the administration of the Torres Strait fisheries, was endorsed in 2008. The Standing Committee, which has been presiding over and providing recommendations to the PZJA since 2010, is not included in prescribed arrangements set out in *Fisheries Management Paper No 1*. A revised Paper was developed by AFMA in 2015, but was not endorsed by the PZJA. **AFMA should review its guidance documents to verify that they are up-to-date, and include the document version history and date of next review.** The large body of documents that supports the regulation of fisheries, in particular fisheries management instruments and notices, also guides the work of entities involved in Torres Strait fisheries, including fishers. Over the years, a large number of these documents have been issued, with, in most cases, the most recent revoking a previous one. The PZJA website includes a list of the notices and instruments, however the list available as at March 2019 had not been updated since October 2013, and included legislative instruments that are no longer current. For example, *Fisheries Management Instrument No. 15* dated March 2017 revokes *Fisheries Management Notice No. 64* dated December 2002 and prohibits the taking, processing or carrying of sea cucumber in the area of the Torres Strait Sea Cucumber Fishery. However *Fisheries Management Notice No. 64* is still accessible from the PZJA website and marked as 'current'. **AFMA, as the Commonwealth entity responsible for the day-to-day administration of the PZJA, should ensure that the list of the current fisheries management notices and instruments effective in Torres Strait on the PZJA website is up-to-date.** Up-to-date information would assist stakeholders, such as fishers and communities, to operate more effectively in Torres Strait.
Governance Structures and Joint Activities	Through the PZJA, the consultative framework is largely effective to support and coordinate the decision	In 2008 the PZJA participating entities commissioned a review of the PZJA administrative arrangements. The *Review of Torres Strait Protected Zone Joint Authority Fisheries Administration Arrangements* was completed in 2009 and concluded that the PZJA was unnecessarily process driven,

Area Examined	Summary Conclusion	Audit Findings
	making process of the range of entities involved in Torres Strait fisheries. Some of the actions agreed following the 2009 review of the PZJA's administrative arrangements are still to be completed, and the PZJA's annual reports and website are not up-to-date.	with an insufficient focus on achieving outcomes. The review made 17 recommendations, from which the PZJA developed seven actions to be implemented (see appendix A). The 2009 review noted that achieving 'an integrated and coordinated approach to the management of fisheries in Torres Strait is quite a challenge'. While the majority of actions have been completed, several items were still in progress as at March 2019: • The TSRA to be responsible for managing the sustainable take of turtle and dugong by traditional inhabitants (Action 1a): AFMA advised that this action was in progress, and legislative change, subject to cross-jurisdictional agreement, was required. • AFMA to be delegated with day-to-day operational decisions consistent with the *Torres Strait Fisheries Act 1984* (Action 3b): while delegations to the AFMA CEO are in place, AFMA advised it has chosen not to exercise these delegations in all instances, to ensure decisions are supported by the PZJA. For example, the setting of total allowable catch limits under licence conditions is still approved by the PZJA. • Terms of reference were drafted in 2015 but not endorsed as at March 2019 (Action 4). As documented at paragraph 2.38, the PZJA Standing Committee is not included in prescribed arrangements set out in *Fisheries Management Paper No 1*. AFMA advised it will continue to seek Standing Committee agreement to Terms of Reference during 2019. • Action 5, which aimed at achieving improved administrative processes and communication between PZJA committees and working groups, is still in progress. While meetings (face to face or via teleconference) are conducted regularly, improvements are still needed to the PZJA decision-making process and to provide longer lead times for consideration of meeting documents. • AFMA to progress legislative amendments to the Torres Strait Fisheries Act that further streamline management arrangements (Action 7): AFMA advised that a suite of legislative amendments had been agreed by the PZJA in May 2017 but had yet to be approved by the Minister for Agriculture and Water Resources before introduction to Parliament. Given this parliamentary delay, AFMA advised that the Standing Committee had developed a further tranche of proposed legislative amendments for consideration by the PZJA soon after the Federal election in 2019. **Timely publication of the PZJA annual reports and updating of the PZJA website** Under the Torres Strait Fisheries Act, the PZJA is required to present an annual report to the

Area Examined	Summary Conclusion	Audit Findings
		Australian Parliament as soon as practicable after 30 June each year. The annual report must document the activities of the PZJA and on the condition of the fisheries. In 2014 and 2015, the Senate Rural and Regional Affairs and Transport Legislation Committee noted the time taken between the end of the financial year and the date that the PZJA provided its report to Parliament. On both occasions the Committee encouraged the PZJA to provide reports in a more timely fashion.
Systems and assets	No AFMA specific comments	

Appendix A

Table 2. Agreed actions by the PZJA following the 2009 review.

Action	Description
1. One management agency	a) The TSRA to be responsible for managing the sustainable take of turtle and dugong by traditional inhabitants. b) One agency responsible for the day-to-day administration of Torres Strait commercial fisheries. AFMA to undertake this role in consultation with PZJA agencies. c) AFMA and Fisheries Queensland to work out the timing and resources for the transfer of licensing and compliance functions to AFMA.
2. Consultation	A revised consultation model to be employed that improves the level of consultation with Torres Strait Islanders at the community level.
3. Decision making and delegations	a) The PZJA to retain (not delegate) the decision making capacity for strategic matters such as new legislation or legislative amendments (including management plans), resource allocation decisions, determining harvest strategies and significant policy amendments. b) AFMA to be delegated with day to day operational decisions consistent with the Torres Strait Fisheries Act 1984. c) AFMA to report annually to the PZJA on delegated responsibilities.
4. Standing Committee	Terms of reference to be developed for the PZJA Standing Committee.
5. PZJA	a) AFMA to provide secretarial services to PZJA. b) The PZJA to meet a minimum of twice every three years.
6. Bi-lateral arrangements with PNG	a) AFMA to be responsible for maintaining bi-lateral relationships with PNG National Fisheries Authority and for organising the annual catch sharing and formal bi-lateral meeting. b) PNG to be invited to attend the annual PZJA meeting as an observer.
7. Long-term	c) Review whether Queensland retains a role in the PZJA including the implications of any withdrawal. d) AFMA to progress legislative amendments to the Torres Strait Fisheries Act that further streamline management arrangements.

Source: Richard Stevens, *Review of Torres Strait Protected Zone Joint Authority Fisheries Administration Arrangements*, Discussion Paper, 22 June 2009.

Changes to fishing rules in Queensland

September 2019

Fish for the future

Queensland's new fisheries regulations start 1 September 2019. A number of changes have been made to recreational, charter and commercial fishing rules to ensure we have fish for the future.

Please note: Queensland Boating and Fisheries Patrol will not immediately issue fines for non-compliance with these changes. Over the next few months the focus will be on education and awareness. Our website, recreational fishing app and recreational fishing guides are being updated to reflect the new rules.

Changes to fishing rules for all sectors

Size limits

- Pearl perch minimum legal size limit increased from 35 cm to 38 cm
- King threadfin minimum legal size limit increased from 60 cm to 65 cm on the east coast
- Single minimum legal size limit of 60 cm for Mary River cod and Murray cod, and Murray cod maximum size limit of 110 cm removed
- Clarified in the regulations that the size limit for giant queenfish in the Gulf of Carpentaria applies to all fishers

Closures

- New seasonal closure for snapper and pearl perch – 15 July to 15 August each year
- New closed waters that prohibit take of black jewfish within 200 m from the Hay Point and Dalrymple Bay coal terminals
- Standardised start and end times for the majority of fishery closures – midnight to midnight

Other

- Mulloway and scaly jewfish must be kept whole while on board a vessel
- Black jewfish will become a no-take species for all sectors when the total allowable commercial catch is reached

Changes to recreational fishing rules

Possession limits

- Mud crab possession limit reduced from 10 to 7
- Boat limits for nine priority black-market species will be two times the possession limit – mud crab, prawns, snapper, black jewfish, barramundi, shark, Spanish mackerel, sea cucumber and tropical rock lobster (these boat limits do not apply to charter fishers)
- Pearl perch possession limit reduced from 5 to 4
- Tropical rocklobster possession limit of 5 applies in all Queensland waters
- Blue swimmer crab possession limit reduced from no limit to 20
- Mollusc and gastropod (including pipis) possession limit reduced from 50 to 30

- General possession limit of 20 introduced for all species without a prescribed possession limit (excluding some bait species)
- No possession limit for the following bait species – southern herring, common hardyhead, Australian sardine, Australian anchovy, silver biddy, saltwater yabby, soldier crab and non-regulated worms (e.g. mangrove worms)
- Possession limit of 50 introduced for certain bait species – mullet (excluding diamondscale, sea and freshwater mullet), cuttlefish or squid (excluding tiger squid), smooth-clawed rock crab and yellowtail pike
- Hammerhead shark and white teatfish are now no-take species
- Oyster possession limit clarified in the regulations – a person must eat oysters (excluding pearl oysters) on the spot where they are taken (pearl oysters can be taken away from the site but they must be the correct size)
- Australian bass possession limit in stocked impoundments increased from 2 to 5
- Clarified in the regulations that a possession limit of 50 applies to the Cribb Island worm (formerly known as blood worm)
- Mary River cod possession limit of 1 in stocked impoundments expanded to include Wyaralong Dam, Ewen Maddock Dam, Caboolture River Weir, Robina Lakes, Lake Kurwongbah, Enoggera Reservoir and Lake Manchester

Closures

- Tinana Creek and its tributaries upstream of Teddington Weir wall closed to all forms of fishing
- Murray cod seasonal closure changed to 1 August to 31 October each year
- New waters closed to line fishing (or possession of a fishing line) from 1 August to 31 October in the following locations:
  - Coomera River (upstream of defined boundary)
  - Albert River (upstream of defined boundary)
  - Running Creek
  - Christmas Creek
  - Stanley River (upstream of defined boundary)
  - Mary River (upstream of defined boundary, excluding Baroon Pocket Dam, Borumba Dam and Lake MacDonald)

Gear requirements

- Recreational crab apparatus and freshwater traps must now be marked with the surname and address of the person **using** the apparatus

Changes to charter fishing rules

- Offshore charter fishers now permitted to use trot lines to take spanner crabs
- Snapper and pearl perch extended in-possession limit removed

Changes to commercial fishing rules

Trawl

- New management regions established in the East Coast Trawl Fishery (replacing the existing Northern and Southern Regional Waters):
  - Southern Inshore Trawl Region
  - Southern Offshore Trawl Region
  - Central Trawl Region
  - Northern Trawl Region
- Extended winter no-take of scallop by a month to 1 May and 30 November in the Southern Inshore and Southern Offshore trawl regions
- Introduced a scallop effort cap in the Southern Inshore Trawl Region of 118 635 units (if effort reaches the cap between 1 December and 24 April scallop will become no take)

- Introduced strip closures to protect small prawns in the Southern Offshore Trawl Region between 2 November and 1 March in the following areas:
  - Stradbroke Island
  - Caloundra to Moreton Island
  - Fraser Island

Spanner crab

- Spanner crab dilly maximum limit increased from 45 to 75 if 2 crew are on board (all boats may carry up to 10 extra dillies on board to replace lost/damaged dillies during a trip)
- Spanner crab fishery quota year adjusted to run from 1 July to 30 June each year
- Number of C2 fishery symbols limited to those currently in existence (consistent with limited entry in all other Queensland fisheries)

Snapper and pearl perch

- Total allowable commercial catch limits established for snapper (42 tonnes) and pearl perch (15 tonnes)
- Take of snapper using commercial net gear is now prohibited
- Snapper and pearl perch must be kept whole while on board a vessel

Vessel tracking

- Vessel tracking requirements amended to apply to all commercial fishing vessels (not including charter) from 1 January 2020 – fisheries that require vessel tracking from 1 January 2020 are D, A1, A2, R, B1, J1, M2, T5, T6, T7, T8 and T9

Licensing

- Limited entry nature of commercial fisheries clarified in the regulations
- Payment of commercial fishing fees amended from ‘in arrears’ to ‘in advance’ – no changes to fees as part of this administrative change (it will be just like paying your car or boat registration)
- Clarified the purposes for which a General Fisheries Permit may be issued in the regulations.
- A tender vessel must be nominated as the primary vessel against a commercial fishing boat licence before the vessel can used (i.e. tender operating solely) in any fishery
- All commercial fishers must display details of their commercial fishing boat licence or commercial harvest fishing licence on a sign adjacent to their land-based commercial fishing operation
- A person applying for a commercial fisher licence must be at least 18 years of age and possess knowledge of fisheries legislation to the extent it applies to commercial fisheries

Other

- Clarified in the regulations that commercial fishers digging for bloodworms must put any disturbed or removed seagrass in an upright position back in the same location

Please note: As part of the fisheries reform process, further regulatory changes are expected to be considered before the end of the year.

More information

For more information on the changes, visit **fisheries.qld.gov.au** or call **13 25 23**.

TROPICAL ROCK LOBSTER WORKING GROUP (TRLWG)	MEETING 10 12 December 2019
UPDATES FROM MEMBERS PNG National Fisheries Authority	Agenda Item 2.4 For noting

RECOMMENDATIONS

1. That the Working Group **NOTE** the update to be provided by the PNG National Fisheries Authority (NFA).

BACKGROUND

2. A verbal report will be provided under this item subject to the availability of NFA officers.

TROPICAL ROCK LOBSTER WORKING GROUP (TRLWG)	MEETING 10 12 December 2019
UPDATES FROM MEMBERS Native Title	Agenda Item 2.5 For noting

RECOMMENDATIONS

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

BACKGROUND

2. 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*.
3. Traditional Owners and Native Title representative bodies have an important role in managing Torres Strait fisheries. It is important therefore that the Working Group keep informed on any relevant Native Title issues arising.
4. AFMA has extended an invitation to Malu Lamar to attend this meeting as an observer and is investigating longer term arrangements for representation in consultation with PZJA agencies.

TROPICAL ROCK LOBSTER WORKING GROUP (TRLWG)	MEETING 10 12 December 2019
CATCH AND EFFORT SUMMARY FOR THE 2018-19 FISHING SEASON	Agenda Item 3 For noting

RECOMMENDATIONS

1. That the Working Group **NOTE** the reported landed catch for the Australian Torres Strait Tropical Rock Lobster Fishery (TRL Fishery) and PNG TRL Fishery for the 2018-19 fishing season provided at **Attachments 3a-3b**.

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 2018-19 fishing season is 415,835 kilograms. All reported catches are from inside the Torres Strait Protected Zone (TSPZ) and Australia's declared outside but near area.
4. This equates to 84.03 per cent of Australia's 494,850 kilogram total allowable catch (TAC) for the 2018-19 fishing season. This catch data is sourced from the Torres Strait Fisheries Catch Disposal Record (TDB02) and covers the Traditional Inhabitant Boat (TIB) and Transferable Vessel Holder (TVH) sectors.
5. A summary of the reported landed catch for the Australian TRL Fishery is provided at **Attachment 3a**. An infographic showing the final catch sharing agreement between Australia and PNG is shown at **Attachment 3b**.

PNG TRL Fishery catch

6. 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.
7. PNG National Fisheries Authority (NFA) has do date reported landed catches for the PNG TRL Fishery for 1 January through to 31 August 2019. NFA is expected to provide updated catch figures.
8. The reported PNG landed catch as at 31 August 2019 is 86,560 kilograms inside the TSPZ. A further 32,923 kilograms was reported from outside the TSPZ. AFMA is seeking confirmation from PNG NFA on the location of these catches deemed outside of the TSPZ, including clarification of whether PNG has declared an 'outside but near' area under the Torres Strait Treaty. Under the Treaty (Article 1(1)(h)), areas declared by either Australia or PNG as 'outside but near' are considered to be part of a Protected Zone commercial fishery.
9. The catch inside the TSPZ equates to 90.03 per cent of PNG's 96,150 kilogram TAC for 2019, with 4 months remaining in the PNG season.
10. A summary of the reported landed catch for the PNG TRL Fishery as at 31 August 2019 is provided at **Attachment 3a**.

Total reported commercial catch for the TRL stock

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

Area	Total (tonnes)
Australian TRL Fishery	415.84
PNG TRL Fishery - catches inside the TSPZ as at 31 August 2019	86.56
PNG TRL Fishery - catches outside the TSPZ as at 31 August 2019	32.92
Total	**535.32**

Table 1. Reported landed catch (kilograms whole weight) of Tropical Rock Lobster (TRL) for the Australian Torres Strait TRL Fishery by month for the 2018-19 fishing season. Source: Torres Strait Fisheries Catch Disposal Record (TDB02) as at 19 November 2019.

Month	Reported catch (kg) for Traditional Inhabitant Boat (TIB) licence holders	Reported catch (kg) for Transferable Vessel Holder (TVH) licence holders	Total reported catch (kg)
Dec-18	23,938	23,178[#]	**80,947[#]**
Jan-19	14,695		
Feb-19	19,137		
Mar-19	52,184	28,082	**80,266**
Apr-19	37,781	6,635	**44,416**
May-19	31,716	29,515	**61,232**
Jun-19	28,345	19,081	**47,426**
Jul-19	24,228	27,094	**51,322**
Aug-19	18,801	12,746	**31,548**
Sep-19	8,920	9,759	**18,086**
Total reported catch (kg)	**259,744**	**156,091**	**415,835**
Reported catch as a per cent of the TAC*	**79.33**	**93.24**	**84.03**

[#] In accordance with AFMA's Information Disclosure policy (*Fisheries Management Paper 12*), catches by month have been aggregated for December 2018 through to February 2019, as less than 5 boats operated in the Transferable Vessel Holder (TVH) sector in each December 2018 and January 2019.

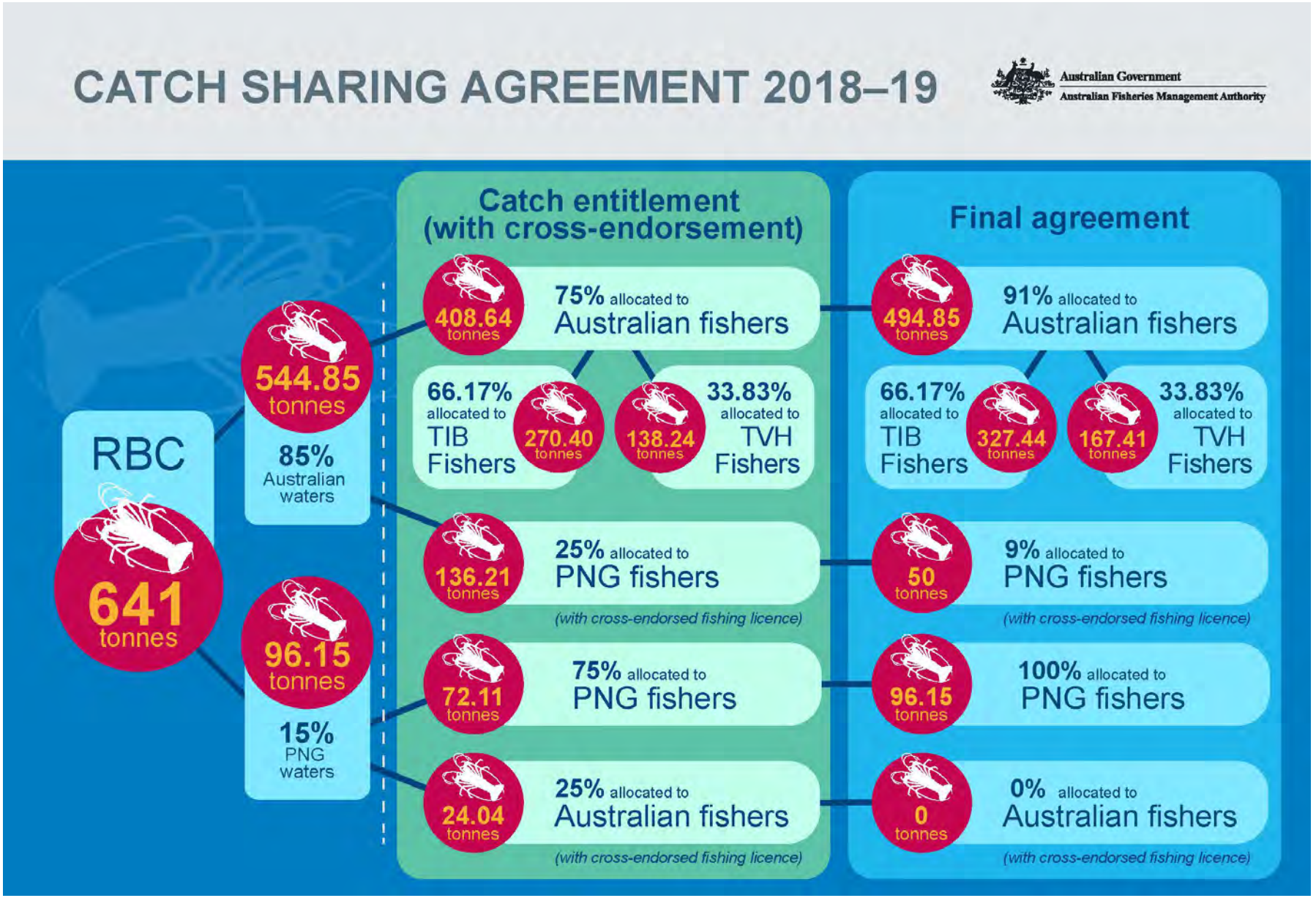
* The final total allowable catch (TAC) for the Australian Torres Strait Tropical Rock Lobster Fishery for the 2018-19 fishing season was 494,850 kilograms. Interim sectoral catch shares were calculated based on the agreed splits under the *Torres Strait Fisheries (Tropical Rock Lobster) Management Instrument 2018*. Based in the final TAC, these shares were 327,442 kilograms for the Traditional Inhabitant Boat (TIB) sector and 167,407 kilograms for the TVH sector.

Table 2. Reported landed catch (kilograms whole weight) of TRL for the Papua New Guinea (PNG) TRL Fishery (inside the area of the Torres Strait Protected Zone) by month for 2019. Source: PNG National Fisheries Authority (NFA) as at 1 November 2019.

Month	Tail weight (conversion factor of 2.677 applied) (kg)	Whole weight (kg)	Total reported catch (kg)
Jan-19	5,831	214	**6,045**
Feb-19	7,746	1,039	**8,785**
Mar-19	16,104	1,790	**17,895**
Apr-19	3,786	264	**4,050**
May-19	20,498	730	**21,227**
Jun-19	10,781	1,773	**12,553**
Jul-19	5,085	2,592	**7,676**
Aug-19	5,660	2,668	**8,328**
Total reported catch (kg)	**75,491**	**11,069**	**86,560**

Table 3. Reported landed catch (kilograms whole weight) of TRL for the PNG TRL Fishery (outside the area of the Torres Strait Protected Zone) by month for 2019. Source: PNG NFA as at 1 November 2019.

Month	Tail weight (conversion factor of 2.677 applied) (kg)	Whole weight (kg)	Total reported catch (kg)
Jan-19	6,186	288	**6,474**
Feb-19	3,664	981	**4,645**
Mar-19	3,866	634	**4,500**
Apr-19	132		**132**
May-19	838		**838**
Jun-19	4,604	1,476	**6,079**
Jul-19	3,936	669	**4,604**
Aug-19	5,255	395	**5,650**
Total reported catch (kg)	**28,480**	**4,443**	**32,923**


CATCH SHARING AGREEMENT 2018–19
Australian Government
Australian Fisheries Management Authority
RBC
641 tonnes
544.85 tonnes
85% Australian waters
96.15 tonnes
15% PNG waters
Catch entitlement (with cross-endorsement)
408.64 tonnes
75% allocated to Australian fishers
66.17% allocated to TIB Fishers
270.40 tonnes
138.24 tonnes
33.83% allocated to TVH Fishers
136.21 tonnes
25% allocated to PNG fishers
(with cross-endorsed fishing licence)
72.11 tonnes
75% allocated to PNG fishers
24.04 tonnes
25% allocated to Australian fishers
(with cross-endorsed fishing licence)
Final agreement
494.85 tonnes
91% allocated to Australian fishers
66.17% allocated to TIB Fishers
327.44 tonnes
167.41 tonnes
33.83% allocated to TVH Fishers
50 tonnes
9% allocated to PNG fishers
(with cross-endorsed fishing licence)
96.15 tonnes
100% allocated to PNG fishers
0 tonnes
0% allocated to Australian fishers
(with cross-endorsed fishing licence)

TROPICAL ROCK LOBSTER WORKING GROUP (TRLWG)	MEETING 10 12 December 2019
TOTAL ALLOWABLE CATCH	Agenda Item 4 For discussion and advice

RECOMMENDATIONS

1. The Working Group:
    a. **NOTE** on 19 November 2019, Senator the Hon. Jonathon Duniam determined a TAC of 200,000 kilograms of TRL in the Australian waters of the TRL Fishery for the 2019-20 fishing season. It is expected that the TAC will be increased once the outcomes of the scientific assessment process and the TAC sharing arrangements under the Treaty between Australia and Papua New Guinea (PNG) have been taken into account;
    b. **NOTE** at its meeting on 19 November 2019, the Protected Zone Joint Authority (PZJA) agreed to adopt the final Harvest Strategy for the TRL Fishery (**Attachment 4a**);
    c. **DISCUSS** and **PROVIDE ADVICE** on a global total allowable catch (TAC) for the Torres Strait Protected Zone (TSPZ) Tropical Rock Lobster Fishery (TRL Fishery) for the 2019-20 fishing season, taking into consideration:
        i. the advice from the TRL Resource Assessment Group (TRLRAG) on the recommended biological catch (RBC) for the TSPZ TRL Fishery for the 2019-20 fishing season based on the application of the empirical harvest control rule (eHCR) – the TRLRAG advice and additional supporting information to be presented by the TRLRAG Chair and TRLRAG CSIRO Scientific Member at the meeting;
        ii. to date, based on previous TRLRAG advice, other sources of mortality (e.g. traditional and recreational catch of TRL), have not been deducted from the RBC when recommending a global TAC.

KEY ISSUES

2. The Working Group is asked to provide advice on a global TAC for the TSPZ TRL Fishery for the 2019-20 fishing season[1].

Interim TAC

3. At its meeting on 19 November 2019, consistent with previous advice from the TRLRAG and TRL Working Group (TRLWG), the PZJA agreed for the Australian TRL Fishery to have an interim TAC of 200,000 kilograms (unprocessed weight) of TRL for the 2019-20 fishing season. Noting this, the Minister subsequently determined the TAC under section 13 of the *Torres Strait Fisheries (Quotas for Tropical Rock Lobster (Kaiar)) Management Plan 2018* (the Management Plan).
4. It is expected that the TAC will be increased once the outcomes of the scientific assessment process and the TAC sharing arrangements under the Treaty between Australia and PNG have been taken into account. Any increase in the TAC is expected to be determined by the

[1] The Australian TRL Fishery fishing season runs from 1 December through to 30 September the following year. The PNG TRL Fishery fishing season runs from 1 January through to 31 December each year.

end of February 2020. Further details on the expected timeline is provided at **Attachment 4b**.

Final Harvest Strategy

5. At its meeting on 19 November 2019, following consideration of the outcomes of public consultation and advice from the TRLRAG and TRLWG, the PZJA agreed to adopt the final Harvest Strategy for the TRL Fishery (**Attachment 4a**).

6. Previously the TRL Fishery was operating under an interim Harvest Strategy. The key differences between the interim and final Harvest strategy are the use of an eHCR to estimate a RBC annually, with the stock assessment model to be updated every three years (rather than annually) to assess the status of the TRL stock and evaluate the performance of the eHCR. The final Harvest Strategy also details a number of decision rules that are designed to maintain the stock at the agreed target reference point.

7. The eHCR uses the pre-season survey 1+ and 0+ indices, both standardised catch per unit effort (CPUE) indices (TVH and TIB), applies the natural logarithms of the slopes of the five most recent years' data and includes an upper catch limit of 1,000 tonnes. The relative weightings of the eHCR indices are 70% pre-season survey 1+ index, 10% pre-season survey 0+ index, 10% TIB sector standardised CPUE and 10% TVH sector standardised CPUE. The eHCR includes a maximum catch limit of 1000 tonnes.

8. Further explanation regarding the design of the eHCR is provided at **Attachments 4c-4d**. CSIRO have also developed an eHCR RBC calculator to assist stakeholders in understanding how the eHCR works (**Attachment 4e**).

TRLRAG RBC advice

9. The RBC for the TSPZ TRL Fishery for the 2019-20 fishing season was calculated by applying the eHCR. CSIRO will present the findings of this work at the TRLRAG meeting held on 10-11 December 2019 (TRLRAG 27). This will include consideration of catch from the 2018-19 fishing season, the standardised catch-per-unit-effort (CPUE) indices for both the TIB and TVH sectors and results of the November 2019 pre-season survey. Taking this into account, the TRLRAG will be asked to provide advice on a RBC.

10. CSIRO will also present a preliminary stock assessment update at this meeting. The stock assessment determines the TRL stock status relative to reference levels and, in doing so, the performance of the eHCR. This three-year cycle commenced in 2019. The TRLRAG will be asked to review the preliminary stock assessment update and where relevant provide advice on the findings, including any need for revision of the eHCR.

11. The TRLRAG advice on these two items as well as additional supporting information will be presented by the TRLRAG Chair and TRLRAG CSIRO Scientific Member at the meeting.

Other sources of mortality and global TAC

12. When setting a TAC, generally all sources of fishing mortality (catch) are taken into account and, if needed, a discount is applied to the RBC. This generally means the TAC equates to the RBC for the species minus expected catches that will be taken outside of the fishery (e.g. recreational and traditional catches). This is consistent with the principles of the *Commonwealth Fisheries Harvest Strategy Policy: Framework for applying an evidence-based approach to setting harvest levels in Commonwealth fisheries (June 2018)*.

13. To date estimates of catches taken outside of the TRL Fishery (recreational, charter, subsistence) have not be deducted from the RBC when providing advice on the TAC each fishing season.

14. At the TRLRAG meeting held on 2-3 August 2016 (TRLRAG 18), the TRLRAG:

    a. noted advice from the Independent Scientific Member that if unaccounted fishing mortality, for example catches taken in other sectors, recreational or traditional, remains constant and at low levels, there would be limited impact on the stock assessment if the catches were not included in the model. However, if unaccounted

fishing mortality were to increase significantly this may impact on the performance of the stock assessment;

b. agreed that overall catches are likely to be relatively low, although some industry members considered recreational catches to be increasing;

c. noted currently there was no reliable estimate of recreational or traditional take of TRL but that future Queensland Government recreational fishing surveys may provide some data;

d. noting the likely low level of overall catch and the lack of accurate data, recommended that traditional and recreational catches not be estimated in the stock assessment model or when setting the TAC at this time.

15. This advice was re-affirmed at the TRLRAG meeting held on 4-5 April 2017 (TRLRAG 20). At this meeting, scientific members advised that:

a. there needs to be a time series of data or an estimate of historical catch to indicate if catch has increased or decreased over time;

b. if recreational and traditional catch has remained constant over time then it may not be worthwhile including in the assessment because it is unlikely to adjust the RBC estimate;

c. it is important to understand if catches are a lot bigger than assumed as that could impact the stock assessment; and

d. recreational and traditional catch data are often expensive to collect because this requires surveys to be conducted periodically, therefore it may not be affordable to collect this information.

16. The Working Group is being asked to provide advice on a global TAC for the TSPZ TRL Fishery for the 2019-20 fishing season. This is to include consideration of whether to deduct other sources of mortality from the RBC, noting previous advice of the TRLRAG on this matter.

BACKGROUND

TAC setting process

17. The quota management system (including the TAC determination arrangements) under the Management Plan comes into effect for the first fishing season following the finalisation of the allocation process prescribed under Part 3 of the Plan. The allocation process was completed on 16 September 2019. The next fishing season commences on 1 December 2019.

18. Under subsection 13 of the Plan, the Minister must determine a TAC for the TRL Fishery prior to the start of a fishing season. In making a TAC determination, the Minister must:

a. consult with any advisory committee that the PZJA has established under subsection 40(7) of the Torres Strait Fisheries Act 1984, to provide advice relating to the TRL Fishery; and

b. have regard to Australia's obligations under the Torres Strait Treaty.

19. Under section 13 the Minister may also consider the views of any person with an interest in the TRL Fishery or the ecologically sustainable use of the TRL Fishery and take into account the amount of TRL taken in the TRL Fishery as a result of other fishing, such as traditional fishing or recreational fishing.

20. Subsection 14 provides for the Minister to determine an increase to the TAC for a fishing season. Subsections 8-11 prescribe how a TAC is to be administered, including the issuing of a notice when the TAC for the Traditional Inhabitant sector has been reached.

21. Further background on the TAC setting process, how catch is shared between Australia and PNG, and how each sector's catches will be managed for the 2019-20 fishing season is provided in **Attachment 4f**.

Interim TAC

22. At its meeting on 18-19 October 2018, the TRLRAG advised that the start of season catch limit should cover 1 December through to the end of February, and be based on the maximum annual catch amount for the period 2005-2018, being 200 tonnes. This is to minimise the risk that the limit could artificially constrain fishing effort, particularly in a year of high TRL abundance.

23. The TRLRAG further advised that if needed, an additional 100 tonnes be added to the start of season catch limit amount, to account for catches from PNG.

24. It was further agreed that the start of season catch limit be overridden in seasons where the TRL stock abundance is exceptionally low and the final RBC is likely to fall below the start of season catch limit or where overridden by the Harvest Strategy decision rules. In such cases, the use of the start of season catch limit should not be used in subsequent seasons until reviewed by the TRLRAG.

25. The TRLWG supported the above approach at their meeting on 8 November 2018.

Development of the Harvest Strategy

26. The draft Harvest Strategy was developed in close consultation with the TRLRAG and TRL Working Group (TRLWG) at meetings held since 2016. The release of the draft Harvest Strategy for public consultation was supported by both the TRLRAG and TRLWG (meetings held on 5 February 2019 and 19-20 February 2019, respectively).

27. At its meeting on 1 April 2019, the PZJA agreed to release the draft Harvest Strategy for the TRL Fishery for public consultation for a period of 8 weeks. Submissions were able to be made by in writing, over the phone and at community meetings. The period for submissions closed on 31 May 2019.

28. The TRLRAG and TRLWG were provided an opportunity to consider the outcomes of public consultation out-of-session from 16 September to 9 October 2019.

29. At its meeting on 19 November 2019, following consideration of the outcomes of public consultation and advice from the TRLRAG and TRLWG, the PZJA agreed to adopt the final Harvest Strategy for the TRL Fishery.

Australian Government
Australian Fisheries Management Authority

Torres Strait Tropical Rock Lobster Fishery Harvest Strategy

November 2019

Box 7051, Canberra Business Centre, ACT 2610 / Ph (02) 6225 5555 / Fax (02) 6225 5500 / AFMA Direct 1300 723 621 afma.gov.au

This harvest strategy is based on outcomes from the Commonwealth Scientific and Industrial Research Organisation (CSIRO) Oceans and Atmosphere Division project, *Torres Strait Tropical Rock Lobster (TRL) fishery surveys, stock assessment, harvest control rules and RBC*. The project was funded by the Australian Fisheries Management Authority (AFMA).

AFMA Project No. 2016/0822.

Project Authors: Éva Plagányi (Principal Investigator), Darren Dennis, Roy Deng, Robert Campbell, Trevor Hutton, Mark Tonks

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CONTENTS

GLOSSARY

Types of reference points:

Reference Point	Description
Metarule	A rule that describes how the RBCs obtained from an assessment should be adjusted in calculating a recommended TAC
Target	The desired state of the stock or fishery (for example, MEY or B_{TARG})[1]
Limit	The level of an indicator (such as biomass or fishing mortality) beyond which the risk to the stock is regarded as unacceptably high[1]
MEY	The sustainable catch or effort level for a commercial fishery that allows net economic returns to be maximised. In this context, maximised equates to the largest positive difference between total revenue and total cost of fishing[1]
MSY	The maximum average annual catch that can be removed from a stock over an indefinite period under prevailing environmental conditions[1]

Notation:

Notation	Description
B	Spawning biomass - the total weight of all adult (reproductively mature) fish in a population[1]
B_0	The unfished spawning biomass (determined from an appropriate reference point)
F	Fishing mortality rate
B_{LIM}	Biomass limit reference point - the point beyond which the risk to the stock is regarded as unacceptably high[1]
B_{TARG}	Biomass target reference point - the desired biomass of the stock[1]

Other acronyms:

Acronym	Description
CPUE	Catch per unit effort
eHCR	Empirical Harvest Control Rule
HCR	Harvest Control Rule - pre-determined rules that control fishing activity according to the biological and economic conditions of the fishery (as defined by monitoring or assessment). Also called 'decision rules'. HCR are a key element of a harvest strategy[1]
HSP	*Commonwealth Fisheries Harvest Strategy Policy: Framework for applying an evidence-based approach to setting harvest levels in Commonwealth fisheries* (June 2018)
HS	Torres Strait Tropical Rock Lobster Fishery Harvest Strategy
PZJA	Protected Zone Joint Authority

[1] Definition sourced from the *Commonwealth Fisheries Harvest Strategy Policy: Framework for applying an evidence-based approach to setting harvest levels in Commonwealth fisheries* (June 2018)

MSE	Management Strategy Evaluation - a procedure whereby alternative management strategies are tested and compared using simulations of stock and fishery dynamics[1]
RBC	Recommended Biological Catch
TRLRAG	Protected Zone Joint Authority Tropical Rock Lobster Resource Assessment Group
TRLWG	Protected Zone Joint Authority Tropical Rock Lobster Working Group
TAC	Total Allowable Catch- the annual catch limit set for a stock, species or species group. Used to control fishing mortality within a fishery[1]
Tiered approach	A framework that uses different control rules to cater for different levels of uncertainty about a stock
TIB	Traditional inhabitant boat
TVH	Transferrable vessel holder
TRL	Tropical Rock Lobster
TSPZ	Torres Strait Protected Zone

OVERVIEW

The Torres Strait Tropical Rock Lobster Fishery (the Fishery) Harvest Strategy (HS) sets out the management actions needed to achieve the agreed Fishery objectives. The HS describes the performance indicators used for monitoring the condition of the stock, the fishery-independent survey and stock assessment procedures and the rules applied to determine the recommended biological catch (RBC) and the total allowable catch (TAC) each fishing season.

The HS uses a single tier approach with an empirical harvest control rule (eHCR) that is used to determine a RBC. The eHCR uses the pre-season survey index of abundance of juvenile (1+) and newly recruited (0+) Tropical Rock Lobster (TRL) and the catch per unit effort (CPUE) indices for the traditional inhabitant boat (TIB) and transferrable vessel holder (TVH) fishing sectors. The eHCR has been extensively tested using Management Strategy Evaluation (MSE) (Plagányi *et al.* 2018). The RBC is the best available scientific advice on what the total fishing mortality (landings from all sectors and discards) should be for the stock. The RBC is used to negotiate Australia-Papua New Guinea catch sharing and recommend TACs (an enforced limit on total catches).

The HS meets the requirements of the *Commonwealth Fisheries Harvest Strategy Policy: Framework for applying an evidence-based approach to setting harvest levels in Commonwealth fisheries* (June 2018) *(*HSP) by applying a precautionary approach to the reference points and measures to be implemented in accordance with the reference points. This is reflected in the use of proxy reference points that are more precautionary than those specified in the HSP. The eHCR is designed to decrease exploitation rate as the stock size decreases below the target reference point. The HS uses a biomass target reference point equal to recent levels (2005-2015) that take account of the fact that the resource is shared and important for the traditional way of life and livelihood of traditional inhabitants and is biologically and economically acceptable. The HS proxies are B_{LIM} is 32% of B_0, B_{TARG} is 65% of B_0.

Further work for the HS will include the development of a tiered approach. The tiered approach applies different types of control rules to cater for different amounts of data available and to account for changes to uncertainty on stock status. A tiered approach adopts increased levels of precaution that correspond to increasing levels of uncertainty about the stock status, in order to maintain the same level of risk across the different tiers.

The status of the stock and how it is tracking against the HS, is reported to the Tropical Rock Lobster Resource Assessment Group (RAG), Tropical Rock Lobster Working Group (TRLWG) and the Protected Zone Joint Authority (PZJA). The stock assessment is conducted periodically to evaluate stock status relative to reference levels and, in doing so, performance of the eHCR. The stock assessment includes considerations of the catch rates in current and previous fishing seasons, how the catches compare to the RBCs, stock status indicators in relation to the reference points and an RBC for the upcoming fishing season.

1 BACKGROUND

This Torres Strait Tropical Rock Lobster Fishery (the Fishery) Harvest Strategy (HS) has been developed in accordance with the *Commonwealth Fisheries Harvest Strategy Policy: Framework for applying an evidence-based approach to setting harvest levels in Commonwealth fisheries* (June 2018) (HSP) and consistent with objectives of the *Torres Strait Fisheries Act 1984* (the Act).

The Fishery HS takes into account key fishery specific attributes including:

a) there is potential for large, unpredictable inter-annual variations in availability and abundance of Tropical Rock Lobster (TRL);

b) TRL is a shared resource important for the traditional way of life and livelihood of traditional inhabitants, commercial and recreational sectors (Tropical Rock Lobster Resource Assessment Group (TRLRAG) 20, 4-5 April 2017); and

c) advice from the TRLRAG industry members to maintain stock abundance at recent levels (2005-2015) (TRLRAG 17, 31 March 2016).

1.1 COMMONWEALTH FISHERIES HARVEST STRATEGY POLICY

The objective of the HSP is the ecologically sustainable and profitable use of Australia's Commonwealth commercial fisheries resources (where ecological sustainability takes priority) - through implementation of harvest strategies.

To pursue this objective the Australian Government will implement harvest strategies that:

a) ensure exploitation of fisheries resources and related activities are conducted in a manner consistent with the principles of ecologically sustainable development, including the exercise of the precautionary principle

b) maximise net economic returns to the Australian community from management of Australian fisheries - always in the context of maintaining commercial fish stocks at sustainable levels

c) maintain key commercial fish stocks, on average, at the required target biomass to produce maximum economic yield from the fishery

d) maintain all commercial fish stocks, including byproduct, above a biomass limit where the risk to the stock is regarded as unacceptable (B_{LIM}), at least 90 per cent of the time

e) ensure fishing is conducted in a manner that does not lead to overfishing - where overfishing of a stock is identified, action will be taken immediately to cease overfishing

f) minimise discarding of commercial species as much as possible

g) are consistent with the *Environment Protection and Biodiversity Conservation Act 1999* and the *Guidelines for the Ecologically Sustainable Management of Fisheries*.

For fisheries that are managed jointly by an international organisation or arrangement, the HSP does not prescribe management arrangements. This includes management arrangements for commercial and traditional fishing in the Torres Strait Protected Zone (TSPZ), which are governed by provisions of the Torres Strait Treaty and the *Torres Strait Fisheries Act 1984*. However, it does articulate the government's preferred approach.

The HSP provides for the use of proxy settings for reference points to cater for different levels of information available and unique fishery circumstances. This balance between prescription and flexibility encourages the development of innovative and cost effective strategies to meet key policy objectives. Proxies, including those that exceed the minimum standards, must be demonstrated to be compliant with the HSP objective.

With a harvest strategy in place, fishery managers and stakeholders are able to operate with pre-defined rules, management decisions are more transparent, and there are likely fewer unanticipated outcomes necessitating hasty management responses. However, due to the inherently natural variability of TRL abundance there may be a need for significant changes in recommended catch on an annual basis.

1.2 DEVELOPMENT OF THE TRL HARVEST STRATEGY

The HS has been developed in consultation with the TRLRAG (meeting no. 17 on 31 March 2016; meeting no. 18 on 2-3 August 2016; meeting no. 19 on 13 December 2016; meeting no. 20 on 4-5 April 2017; meeting no. 22 on 27-28 March 2018; meeting no. 24 on 18-19 October 2018; and meeting no. 25 on 11-12 December 2018; out of session 16 September-9 October 2019) and TRLWG (meeting no. 6 on 25-26 July 2017; meeting no. 9 on 19-20 February 2019; out of session 16 September-9 October 2019). This HS replaces the interim HS developed for the Fishery in 2008.

2 TRL FISHERY HARVEST STRATEGY

2.1 SCOPE

This HS applies to the whole Fishery and it takes into account catch sharing arrangements between Australia and Papua New Guinea (PNG).

The HS outlines the control rules used to develop advice on the recommended biological catch (RBC) and to recommend total allowable catches (TACs) (an enforced limit on total catches). The HS sets the criteria that pre-agreed management decisions will be based on in order to achieve the HS objectives.

Over time the HS may be amended to use a tiered approach to cater for different amounts of data available and different types of assessments (for example mid-season surveys and annual assessments). Underpinning a tiered HS is increased levels of precaution with increasing levels of uncertainty about the stock status. Each tier has its own harvest control rule (HCR) and associated rules that are used to determine a RBC.

2.2 OBJECTIVES

The operational objectives of the HS are to:

a) Maintain the stock at (on average), or return to, a target biomass point B_{TARG} equal to recent levels (2005-2015) that take account of the fact that the resource is shared and important for the traditional way of life and livelihood of traditional inhabitants and is biologically and economically acceptable.

    - The agreed B_{TARG} is more precautionary than the default proxy B_{MEY} (biomass at maximum economic yield) level as outlined in the HSP.

b) Maintain the stock above the limit biomass level (B_{LIM}), or an appropriate proxy, at least 90 per cent of the time.

    - The agreed B_{LIM} is more precautionary than the default proxy HSP B_{LIM}.

c) Implement rebuilding strategies, if the spawning stock biomass is assessed to fall below B_{LIM} in two successive years.

2.3 RECOMMENDING TACs FROM RBCs

The RBC is the recommended total catch of TRL (both retained and discarded) that can be taken by all sectors within the TSPZ and waters declared as areas outside but near to the TSPZ, including Australian and PNG fishers. The HSP states that when setting the TAC for the next fishing season the HS should take into account all sources of fishing mortality.

The HS does not include catches taken by non-commercial fishing sectors, for example traditional, recreational or research catches. The TRLRAG recommended at meeting no. 18 on 2-3 August 2016 that non-commercial catches not be estimated in the stock assessment model or when setting the TAC at this time, noting the likely low level of overall catch and

the lack of accurate data. However, if unaccounted fishing mortality were to increase significantly this may impact on the performance of the stock assessment. The HS may be updated in the future to account for changing circumstances in the Fishery, the review provisions are described in **Section 2.13**.

2.4 MONITORING

Biological data for the Fishery are monitored by a range of methods listed below. Currently there is no ongoing monitoring strategy in place to collect economic information.

Fishery independent surveys

A key component of the monitoring program is the fishery-independent survey which provides a time-series of relative abundance indices for TRL. 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 transition to quota management and setting of a TAC. Pre-season surveys also provide indices of recently-settled (age 0+) lobsters, which may become useful under quota management as they allow forecasting of stock one year in advance and are used in the eHCR.

Catch and effort information

Fishers in the transferrable vessel holder (TVH) sector are required to record catch and effort information in the Torres Strait Tropical Rock Lobster Daily Fishing Log (TRL04). The following data are recorded for each TVH fishing operation: the port and date of departure and return, fishing area, fishing method, hours fished and the weight (whole or tails) of TRL retained. Fishers in both the TVH and traditional inhabitant boat (TIB) sectors are required to record catch information in the Torres Strait Fisheries Catch Disposal Record (TDB02). The provision of effort information under the TDB02 is voluntary. Some processors previously (2014-2016) reported aggregate TIB catch information directly to AFMA predominantly through the Torres Strait Seafood Buyers and Processors Docket Book (TDB01).

2.5 INTEGRATED STOCK ASSESSMENT MODEL

The stock assessment model (termed the 'Integrated Model') (Plagányi *et al.* 2009) was developed in 2009 and is an Age-Structured Production Model, or Statistical Catch-at-Age Analysis (SCAA) (e.g. Fournier and Archibald 1982). It is a widely used approach for providing RBC advice and the associated uncertainties.

The model integrates all available information into a single framework to assess resource status and provide a RBC. The model addresses all of the concerns highlighted in a review of the previous stock assessment approach (Bentley 2006, Ye *et al*. 2006, 2007). The model

is fitted to the mid-season and pre-season survey data and TIB and TVH catch per unit effort (CPUE) data. The growth relationships used in the model were revised from the previous stock assessment model (Ye *et al*. 2006) to ensure that the modelled individual mass at age more closely resembled field measurements. The model has been used as an Operating Model in a Management Strategy Evaluation (MSE) framework to support the management of the Fishery (Plagányi *et al.* 2012, 2013, 2018).

The stock assessment model is non-spatial and assumes (conservatively) that the Torres Strait Tropical Rock Lobster Fishery stock is independent of the Queensland East Coast Tropical Rock Lobster Fishery stock. A spatial version of the model has been developed as part of an earlier MSE project, and can be used to investigate plausible linkages between these stocks (Plagányi *et al*. 2012, 2013).

The model includes three age-classes only (0+, 1+ and 2+ age lobsters) as it is assumed that lobsters migrate out of the Torres Strait in October each year. Torres Strait TRL emigrate in spring (September-November) and breed during the subsequent summer (November-February) (MacFarlane and Moore 1986; Moore and Macfarlane 1984). A Beverton-Holt stock-recruitment relationship is used (Beverton and Holt 1957), allowing for annual fluctuation about the average value predicted by the recruitment curve. The model is fitted to the available abundance indices by maximising the likelihood function. Quasi-Newton minimisation is used to minimise the total negative log-likelihood function (using the package AD Model Builder™) (Fournier *et al*. 2012).

2.6 EMPIRICAL HARVEST CONTROL RULE

The empirical harvest control rule (eHCR) recommended by the TRLRAG uses the pre-season survey 1+ and 0+ indices, both standardised CPUE indices (TVH and TIB), applies the natural logarithms of the slopes of the five most recent years' data and the average catch over the past five years, with an upper catch limit of 1,000 t. The relative weightings of the eHCR indices are 70 per cent pre-season survey 1+ index, 10 per cent pre-season survey 0+ index, 10 per cent TIB sector standardised CPUE and 10 per cent TVH sector standardised CPUE.

The basic formula is:

$$RBC_{y+1} = wt\_s1 \cdot \left(1 + s_y^{presurv,1}\right) \cdot \bar{C}_{y-4,y} + wt\_s2 \cdot \left(1 + s_y^{presurv,0}\right) \cdot \bar{C}_{y-4,y}$$
$$+ wt\_c1 \cdot \left(1 + s_y^{CPUE,TVH}\right) \cdot \bar{C}_{y-4,y} + wt\_c2 \cdot \left(1 + s_y^{CPUE,TIB}\right) \cdot \bar{C}_{y-4,y}$$

Or if RBC_{y+1} > 1000t, TAC_{y+1} = 1000.

Where:

$\bar{C}_{y-4,y}$ is the average achieved catch during the past 5 years, including the current year i.e. from year *y*-4 to year *y*,

$s_y^{presurv,1}$ is the slope of the logarithms of the preseason survey 1+ abundance index, based on the 5 most recent values;

$s_y^{presurv,0}$ is the slope of the logarithms of the preseason survey 0+ abundance index, based on the 5 most recent values;

$s_y^{CPUE,TVH}, s_y^{CPUE,TIB}$ is the slope of the logarithms of the TVH and TIB CPUE abundance index, based on the 5 most recent values;

wt_s1, wt_s2, wt_c1, wt_c2 are tuning parameters that assign relative weight to the preseason 1+ (wt_s1) and 0+ (wt_s2) survey trends compared with the CPUE TVH (wt_c1) and TIB (wt_c2) trends.

2.7 REFERENCE POINTS

The HS reference points are:

a) The unfished biomass B_0 is the model-estimate of spawning stock biomass in 1973 (start of the Fishery). $B_0 = B_{1973}$.

b) The target biomass B_{TARG} is the spawning biomass level equal to recent levels (2005-2015) that take account of the fact that the resource is shared and important for the traditional way of life and livelihood of traditional inhabitants and is biologically and economically acceptable. B_{TARG} is the proxy for B_{MEY}, $B_{TARG} = 0.65\ B_0$.

   - The agreed B_{TARG} is more precautionary than the default proxy B_{MEY} (biomass at maximum economic yield) level as outlined in the HSP. The TRLRAG noted a B_{TARG} higher that the HSP default was considered important for the Fishery because: 1) the stock is a shared resource that is particularly important for traditional fishing; 2) the stock has high variability; and, 3) all industry members recommended the HS maintain the stock around the relatively high current levels (TRLRAG meeting no. 17, 31 March 2016 and meeting no. 18, 2-3 August 2016).

c) The limit biomass B_{LIM} is the spawning biomass level below which the risk to the stock is unacceptably high and the stock is defined as 'overfished'. B_{LIM} is agreed to be half of B_{TARG}, $B_{LIM} = 0.32\ B_0$.

   - The agreed B_{LIM} is more precautionary than the default proxy HSP B_{LIM}.

d) If the limit reference point (B_{LIM}) is triggered in two successive years then the Fishery is closed.

e) The target fishing mortality rate F_{TARG} is the estimated level of fishing mortality rate that maintains the spawning biomass around B_{TARG}. $F_{TARG} = 0.15$.

- F_{TARG} = 0.15 is the target fishing mortality rate that corresponds to an optimal level in terms of economic, biological and social considerations (TRLRAG meeting no. 18, 2-3 August 2016).

Rational for reference points

The HSP recognises that each stock/species/fishery will require an approach tailored to the fishery circumstances, including species characteristics. The HSP identifies that the selection of reference points within harvest strategies need to be realistic with respect to the scale or nature of the fishery and the resources available to manage it. Reference points should be set at levels appropriate to the biology of the species and the proper functioning of the broader marine ecosystem. Further, stocks that fall below B_{LIM} will be subject to the recovery measures stipulated in the HSP. A number of adaptive management approaches may be used to deal with this, such as pre-season surveys to provide estimates of abundance to which the eHCR is applied.

The Fishery is characterised by a highly variable stock where majority of the catch (since 2001 due to the introduction of a minimum size limit) is from a single cohort. The stock assessment model and MSE testing have identified the target biomass should be set between 65 and 80 per cent of the unfished biomass to account for the importance of the stock for the traditional way of life and livelihood of traditional inhabitants and to achieve biological and economic objectives. The HS's higher average target biomass level, compared to the default HSP target of 0.48 per cent of unfished biomass, reduces the risk of recruitment being compromised.

The unfished biomass (B_0) is calculated within the stock assessment model, the value of unfished biomass and target biomass have therefore varied over time in response to annual data updates and model parameter settings and estimates. Estimates of unfished biomass and target biomass are particularly sensitive to changes to parameter *h*, which determines the steepness of the stock-recruit relationship, and the input parameter that controls the level of stock-recruit variability.

Independent of variability to the unfished biomass value, the target fishing mortality rate F_{TARG} = 0.15 is applied to maintain the spawning biomass around the biomass target reference point (B_{TARG}), which is the average level over the past two decades. This is assumed to be a proxy for B_{MEY} because stakeholders agreed that this target level corresponded to an optimal level in terms of economic, biological and social considerations (TRLRAG meeting no. 18, 2-3 August 2016).

The biomass limit reference point (B_{LIM}) is 32 per cent of unfished biomass. The higher limit reference point, compared to the HSP proxy of 20 per cent of unfished biomass, is supported by recommendations of similar limit reference points for other highly variable species such as forage fish (Pikitch *et al.* 2012). Due to the changing values of unfished biomass and target biomass the value of the limit reference point, taken as half the target reference point, has previously varied between 32 and 40 per cent of unfished biomass.

Recent MSE testing identified that a limit reference point of 40 per cent unfished biomass is too conservative, it would result in the limit reference point being breached more frequently and add unnecessary precaution to the HS. The TRLRAG agreed to set the limit reference

point at 32 per cent of unfished biomass with the condition that if the stock falls below the limit reference point in two successive years it triggers a Fishery closure. The eHCR is more precautionary than the HSP criterion to 'maintain all commercial fish stocks, including byproduct, above a biomass limit where the risk to the stock is regarded as unacceptable (B_{LIM}), at least 90 per cent of the time'. The HSP provides for the designation of a limit reference point above the proxy (B_{20}) where this has been estimated or is deemed appropriate.

2.8 eHCR AND STOCK ASSESSMENT CYCLE

The eHCR and stock assessment cycle is as follows:

- The eHCR is run in November each year to provide a RBC by 1 December for the following fishing season.
- A stock assessment is run on a three year cycle by March, unless the stock assessment is triggered by a decision rule **(Section 2.10)**. The stock assessment determines the Fishery stock status and evaluates the performance of the eHCR and identifies if any revisions to the eHCR are required.
- If the eHCR needs to be revised, the stock assessment is conducted annually to estimate the RBC until the revised eHCR is agreed.

2.9 DATA SUMMARY

The annual data summary reviews the nominal and standardised 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.

2.10 DECISION RULES

The decision rules for the HS are:

Maximum catch limit

- The eHCR includes a maximum catch limit of 1000 t. Once the HS is implemented the cap will be reviewed after three years using MSE testing with the updated stock assessment model.

Pre-season survey trigger

- 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.

Biomass limit reference point triggered

- If the pre-season survey trigger is triggered in the first year, a stock assessment update must be conducted in March.
    - If after the first year the stock is assessed below the biomass limit reference point, it is optional to conduct a mid-season survey, the pre-season survey must continue annually.
- If the pre-season survey trigger is triggered two years in a row, a stock assessment must be conducted in December (of the second year).

Fishery closure rules

- If the stock assessment determines the stock to be below the biomass limit reference point in two successive years, the Fishery will be closed to commercial fishing.
    - MSE testing of the eHCR has shown that it is extremely unlikely (<1%) for the Fishery to be closed based on its current performance (Plagányi *et al.* 2018).

Re-opening the Fishery

- Following closure of the Fishery, fishery-independent mid-season and pre-season surveys are mandatory. The Fishery can only be re-opened when a stock assessment determines the Fishery to be above the biomass limit reference point **(Attachment A, Figure 5)**.

Based on the decision rules, there are four alternative possible scenarios **(Section 2.11)** that may occur under the application of the eHCR. Graphic representations of the four scenarios are provided in **Attachment A**.

2.11 DECISION RULE SCENARIOS

Scenario 1 – Pre-season survey trigger not triggered and the eHCR does not require revision

- The pre-season survey trigger is not triggered.
- The eHCR RBCs appear to remain within ranges tested by MSE.
- The updated stock assessment does not indicate any need for revision of the eHCR.
- Application of the eHCR continues unchanged.
- A graphic representation of Scenario 1 is provided in **Attachment A, Figure 1**.

Scenario 2 – Pre-season survey trigger not triggered, eHCR and stock assessment require revision

- The pre-season survey trigger is not triggered.

- The eHCR RBCs appear to remain within ranges tested by MSE.
- The updated stock assessment indicates the eHCR recommended RBCs are outside the revised ranges tested by MSE, indicating that the eHCR should be revised.
- Annual RBCs need to be set using annual stock assessments until a revised eHCR has been agreed, after which the revised eHCR is applied.

A graphic representation of Scenario 2 is provided in **Attachment A, Figure 2**.

Scenario 3– Pre-season survey trigger is triggered, eHCR is reviewed by stock assessment and the biomass limit reference point is not breached

- The pre-season survey trigger is triggered in one year.
- A stock assessment update (March) is required to confirm if the biomass limit reference point has been breached. This assessment update determines that the biomass limit reference point has not been breached.
- If the biomass limit reference point is breached once, discussions will be held on preventative measures to reduce the risk of closure.
- The eHCR RBC is applied and consideration is given to revising the eHCR to prevent future incorrect indications that the biomass limit reference point may have been breached.
- The stock assessment continues on a three year cycle, unless triggered to occur by a decision rule.
- A graphic representation of Scenario 3 is provided in **Attachment A, Figure 3**.

Scenario 4 – Pre-season survey trigger is triggered, stock assessment confirms the biomass limit reference point is breached

- The pre-season survey trigger is triggered in one year.
- A stock assessment update (March) is required to confirm if the biomass limit reference point has been breached. This assessment update determines that the biomass limit reference point has been breached.
- The pre-season survey trigger is triggered for a second successive year.
- A second stock assessment update (December) is required to confirm whether the biomass limit reference point has been breached a second time. This assessment update determines that the biomass limit reference point has been breached a second time.
- The commercial fishery is closed until an assessment update confirms that the stock has recovered to above the biomass limit reference point.
    - If the Fishery is closed to commercial fishing, discussions are held on future management arrangements.

  - Fishery-independent mid-season and pre-season surveys are mandatory and conducted on an annual basis. The Fishery will only re-open when the Fishery is assessed to be above the biomass limit reference point by the stock assessment.
  - The eHCR must be revised before being re-implemented to reduce the risk of the Fishery breaching the biomass limit reference point and for the eHCR to incorporate rebuilding requirements.

- A graphic representation of Scenario 4 is provided in **Attachment A, Figure 4**.

2.12 GOVERNANCE

The status of the Fishery and how it is tracking against the HS is reported to the TRLRAG, TRLWG and the PZJA as part of the yearly RBC and TAC setting process.

2.13 REVIEW

Harvest strategies are to be reviewed every five years. However, it may be necessary to amend harvest strategies earlier if:

- a marked change in stocks targeted occurs, leading to a change in which stocks are categorised as key commercial
- new information substantially changes understanding of the fishery, leading to revised estimates of indicators relative to reference points
- external drivers have unexpectedly increased the risk to a fishery and fish stocks, including environmental or climate drivers that have substantially altered the productivity characteristics (growth or recruitment) of the stock
- performance indicators show that harvest strategies are not working effectively, and that the intent of the HSP is not being met.

Early review may be triggered when either:

- harvest strategies are implemented without formal testing or evaluation using methods such as MSE
- MSE testing did not take adequate account of the changes in risk factors subsequently observed, or
- subsequent estimates of the performance indicators used in the HCR are biased or uncertain to the extent that application of the control rule using these indicators fails to appropriately adjust fishing pressure.

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Torres Strait Tropical Rock Lobster Fishery – alternative annual Harvest Control Rule application scenarios

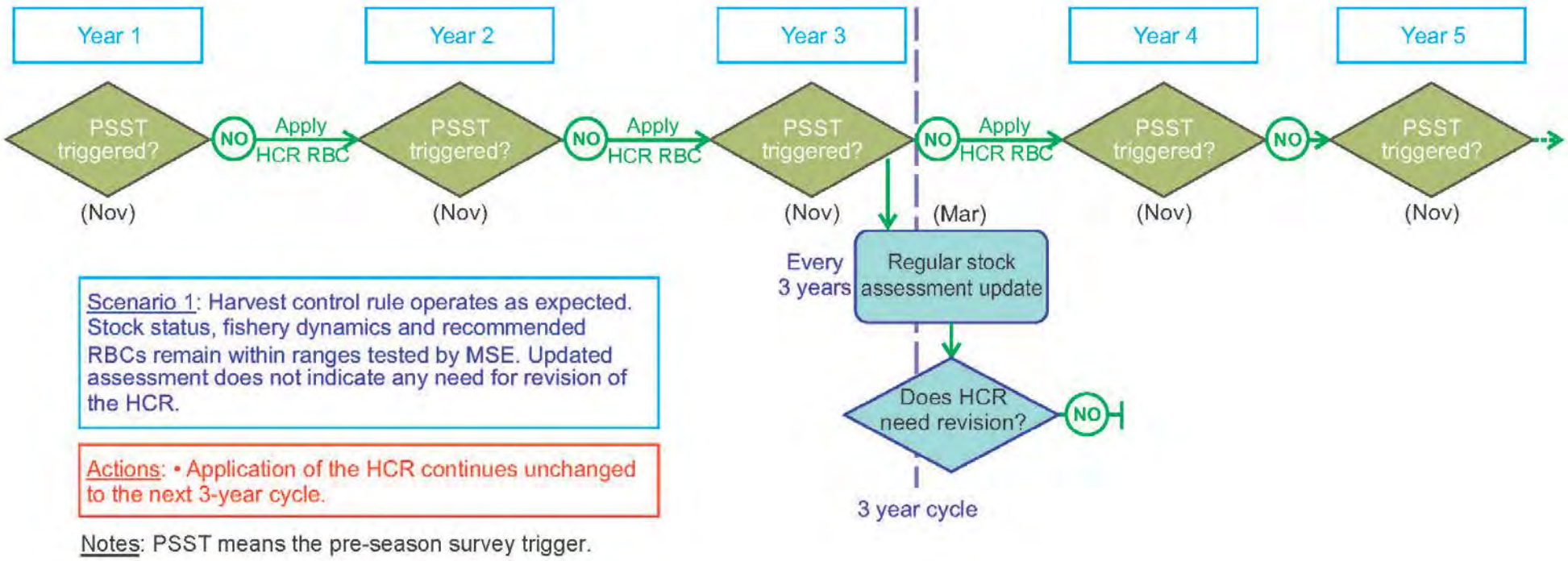


Figure 1. Torres Strait Tropical Rock Lobster Fishery decision rule scenario 1.

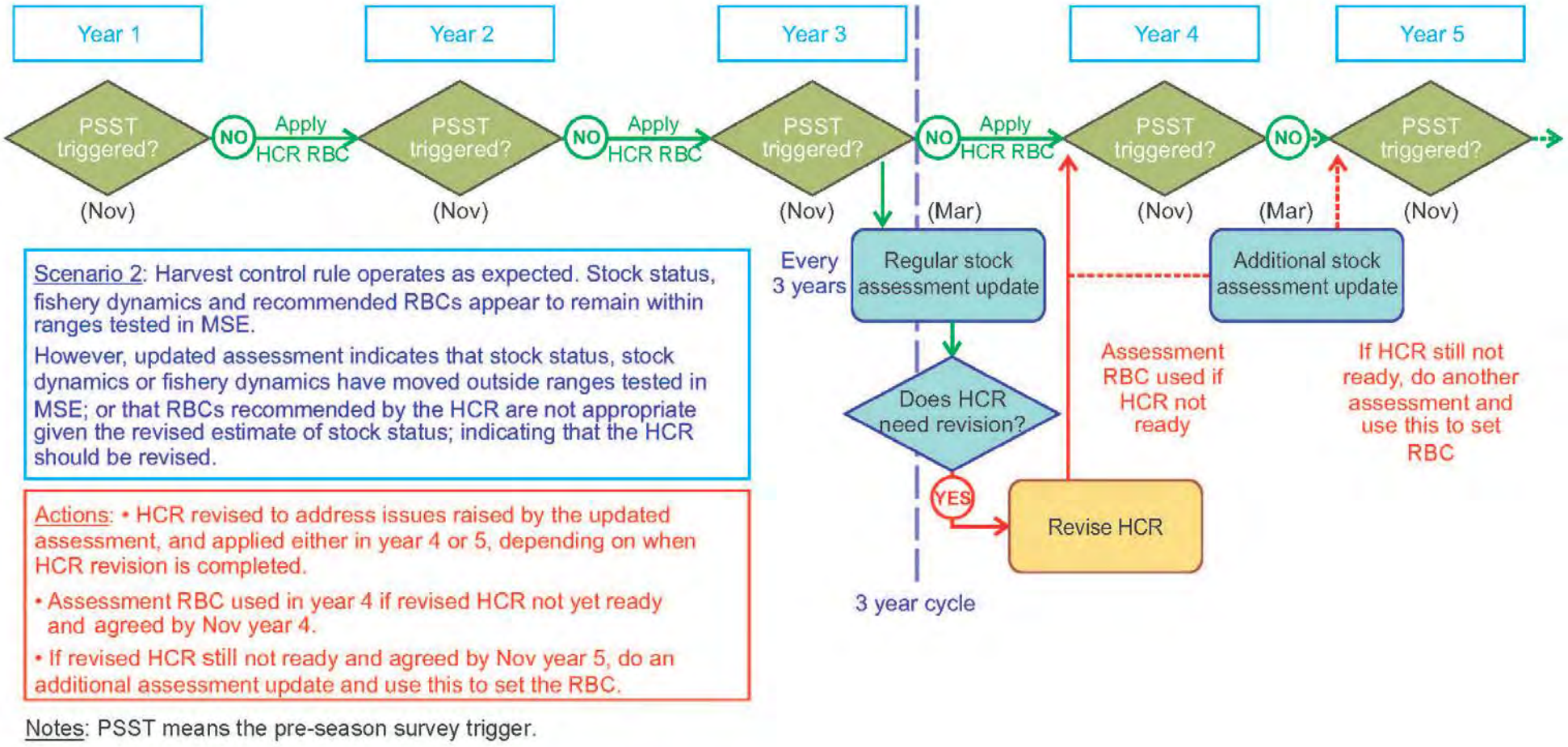


Figure 2. Torres Strait Tropical Rock Lobster Fishery decision rule scenario 2.

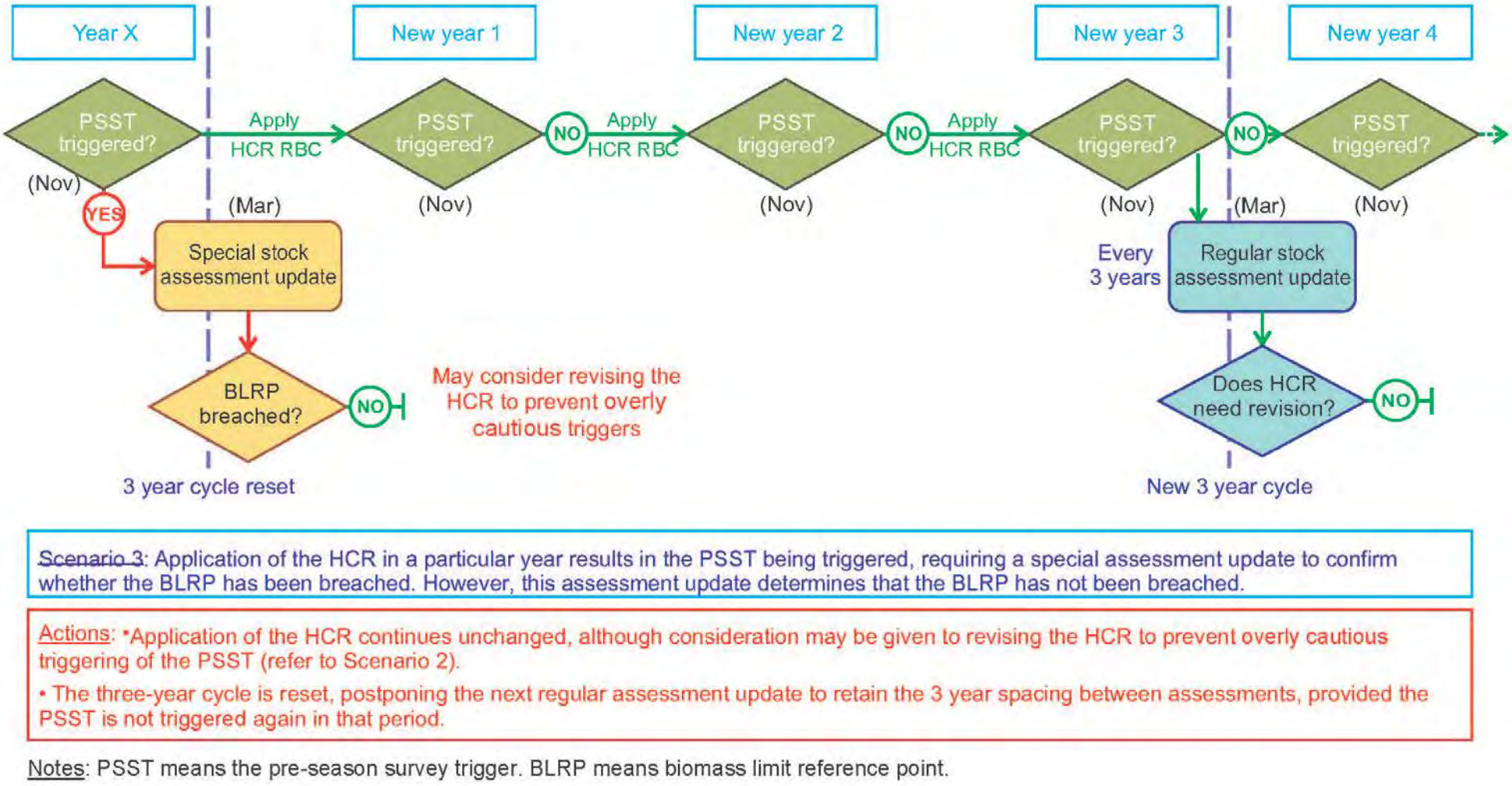
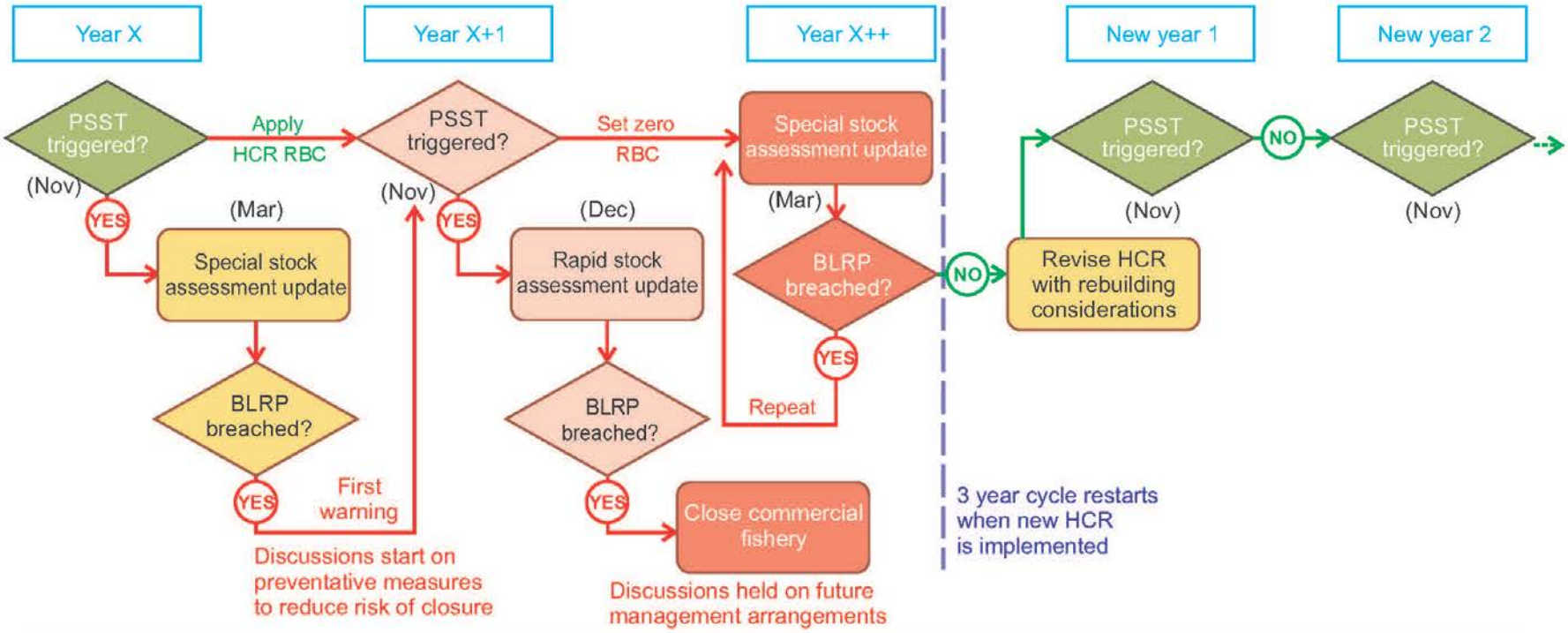


Figure 3. Torres Strait Tropical Rock Lobster Fishery decision rule scenario 3.



Scenario 4: Application of the HCR in a particular year results in the PSST being triggered, requiring a special assessment update to confirm whether the BLRP has been breached. Special assessment update confirms that the BLRP has indeed been breached.

Application of the HCR the following year results in the PSST being triggered for the second successive year, requiring a second rapid assessment update to confirm whether the BLRP has been breached a second time. Assessment update confirms that the BLRP has been breached again.

The commercial fishery is closed until an assessment update confirms that the stock has recovered to above the BLRP.

Actions: • When it has been confirmed that the BLRP has been breached the first time, discussions will be held on preventative measures to reduce the risk of closure.

• If it is confirmed that the BLRP has been breached for a second year and that the commercial fishery must be closed, discussions will be held on future management arrangements to reduce the risk of future closures.

• If the fishery is closed, annual assessments will be done until an assessment update confirms that the stock has recovered to above the BLRP.

• Before being re-implemented, the HCR will be revised to reduce the risk of breaching the BLRP in future and to incorporate rebuilding requirements.

Notes: PSST means the pre-season survey trigger. BLRP means biomass limit reference point.

Figure 4. Torres Strait Tropical Rock Lobster Fishery decision rule scenario 4.

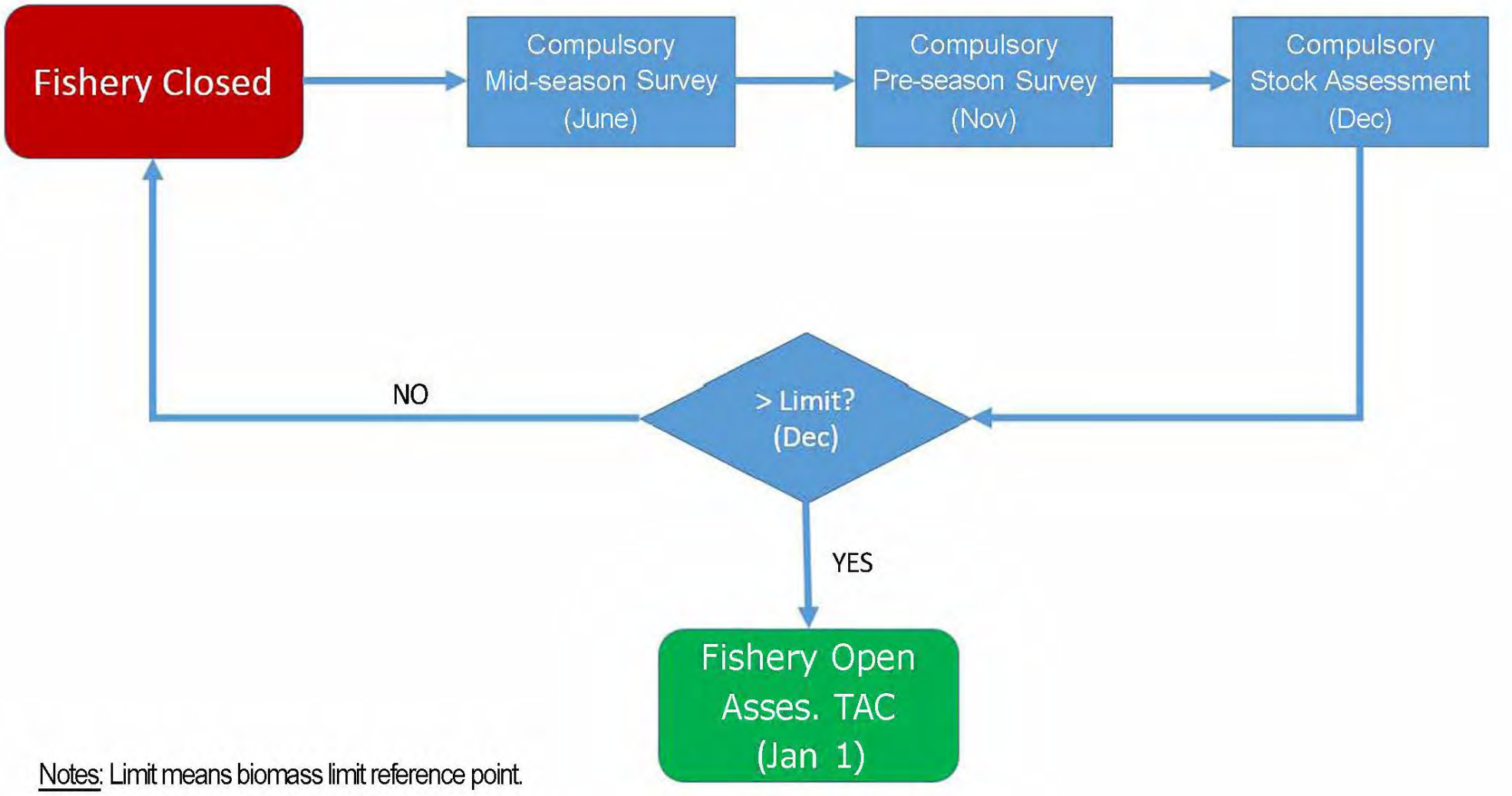


Figure 5. Torres Strait Tropical Rock Lobster Fishery closure and re-opening rule.

Attachment 4b

Expected timeline for finalising a total allowable catch (TAC) for the Australian Torres Strait Tropical Rock Lobster Fishery (TRL Fishery)

Key:

Scientific assessment and advice
PNG-Australia agreement
Administrative step for Australia

Steps	Description	Indicative timeline
Agree timeline and process	AFMA CEO and PNG NFA Director General to meet to agree on process for agreement on catch sharing arrangements for the Torres Strait Tropical Rock Lobster Fishery (TRL Fishery) for the coming fishing season.	10 October 2019
PNG and Australian catch and effort data compiled	Australian and PNG catch and effort data are compiled[1].	By 31 October 2019
Pre-season scientific survey	Survey data are collected and used to update TRL survey abundance indices used to calculate a recommended biological catch (RBC)[2]. Survey must be conducted in November to provide comparable results overtime and the most accurate estimate of annual lobster recruitment into the fishery.	10-23 November 2019
Australian start of season TAC determined	Minister to determine a 200 tonnes start of season[3] TAC for the Australian TRL Fishery for the 2019-20 fishing season, as per section 13 of the *Torres Strait Fisheries (Quotas for Tropical Rock LOobster (Kaiar)) Management Plan 2018* (the Plan)[4]. Start of season TAC based on advice received from TRLRAG and TRLWG in October-November 2018. TAC to apply to Australian TRL Fishery only.	19 November 2019

[1] These data are provided to CSIRO to update catch per unit effort indices used to calculate a recommended biological catch for the coming fishing season.
[2] A RBC is the total amount of TRL that can be sustainably taken out of the water by all fishers (commercial, traditional, recreational) each season, while leaving enough in the water to breed.
[3] The Australian TRL Fishery fishing season runs from 1 December each year to 30 September the following year.
[4] The Plan is accessible online at https://www.legislation.gov.au/Details/F2018L01645

RBC calculation	CSIRO to use empirical Harvest Control Rule (eHCR) to calculate a RBC. Every three years (starting in 2019), CSIRO to update and run the stock assessment model to evaluate the performance of the eHCR. Preliminary stock assessment results are usually available within 4-5 weeks of the pre-season scientific survey.	Late November through to early December 2019
TRL Resource Assessment Group (TRLRAG) and TRL Working Group (TRLWG) advice[5]	TRLRAG to review the survey results, CPUE analyses and application of the eHCR. Advice provided on a final RBC. TRLWG to review TRLRAG advice. Advice provided on a final global TAC[6]. Every three years (starting in 2019), TRLRAG and TRLWG to consider preliminary results of stock assessment. Advice provided on finalising the assessment.	10-12 December 2019
PZJA agreement to final global TAC	PZJA to review TRLRAG and TRLWG advice and agree to final global TAC.	January 2020 (date of PZJA meeting to be confirmed)
Agree final global TAC, shares of the TAC, cross-endorsement apportionments and any preferential entitlements	AFMA CEO and PNG NFA Director General to meet to agree, as per the terms of the Torres Strait Treaty, on: - a final global TAC as per article 23(2); - shares of the final global TAC as per article 22(1) (e.g. 15%:85% split); - cross-endorsement apportionments as per articles 23(4) and 25; - preferential entitlement to any unfished cross-endorsement apportionments as per article 25. An exchange of letters is required to formalise the agreement.	By 31 January 2020
Australian final TAC determined	Minister to determine a final TAC for the Australian TRL Fishery for the 2019-20 fishing season, as per section 14 of the Plan. TAC to apply to Australian TRL Fishery only.	By 29 February 2020

[5] Officers from PNG NFA are invited to attend all PZJA advisory forums.
[6] A global TAC is the total amount of TRL that can be sustainably taken out of the water by both Australian and PNG commercial fishers each season.

TRLRAG advice	Every three years (starting in 2019), TRLRAG to review the final stock assessment results. Advice provided on the need to review the eHCR and conduct a stock assessment in subsequent years, as per Harvest Strategy rules.	February/March 2020 (date of TRLRAG meeting to be confirmed)
If relevant, submit any formal requests for cross-endorsement	PNG and/or Australia to provide formal request to the other Party seeking cross-endorsement pursuant to article 26 of the Torres Strait Treaty. Request to include: - a copy of the licence/s for which a Treaty endorsement is sought[7]; - a copy of any licence conditions in force for the licence/s; - boat particulars; - details for payment of applicable fees. It will take approximately 6 weeks for Australia to complete the domestic processes to issue a Treaty endorsement/s[8].	By 31 March 2020

[7] For PNG licence/s, each licence needs to be current at the time of the formal request, valid for the period for which a Treaty endorsement is sought and have the same details as that written in the formal request, and valid in PNG for the same fishery as it is proposed to operate in Australian waters.
[8] Australia's domestic process include requirements to undertake native title notification pursuant to sub-sections 24HA(2) and (7) of the Commonwealth *Native Title Act 1993*, which takes a minimum of 1 month, and to seek approvals to issue a Treaty endorsement/s.

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Attachment 4c

research paper

Evaluating an empirical harvest control rule for the Torres Strait *Panulirus ornatus* tropical rock lobster fishery

[1] *CSIRO Oceans and Atmosphere, Queensland BioSciences Precinct (QBP), St Lucia, Brisbane, Queensland, 4072, Australia.*

[2] *CSIRO Oceans and Atmosphere, Aspendale, Victoria, 3195, Australia.*

* *Corresponding author email: <eva.plaganyi-lloyd@csiro.au>.*

Éva Plagányi [1]*
Roy Aijun Deng [1]
Robert A Campbell [2]
Darren Dennis [1]
Trevor Hutton [1]
Michael Haywood [1]
Mark Tonks [1]

ABSTRACT.—The Torres Strait tropical rock lobster, *Panulirus ornatus* (Fabricius, 1798), fishery is a culturally and economically important fishery. The Australian Commonwealth has an obligation under the Torres Strait Treaty to protect the traditional way of life and livelihood of Traditional Inhabitants, as well as promote employment opportunities for them. Management of the fishery is complicated by the high natural recruitment variability, and diving surveys have been used for the past 28 yrs to monitor changes in the size of the recruiting population. Here, we describe development of an empirical harvest control rule (eHCR) to achieve defined biological, economic and sociocultural objectives for the lobster fishery. A key principle is that fishery managers, fishers, and key stakeholders utilize pre–agreed upon and pretested rules to adjust management recommendations given updates of data. The performance of eHCR alternative candidates is evaluated using four alternative operating models, with 200 stochastic replicates each and 800 total simulations, accounting for observation error and implementation uncertainty. The eHCR adjusts recommended biological catches relative to a recent average, based predominantly on the logarithm of the slopes of recent trends in the preseason recruiting lobster, with lower weighting accorded to trends in recently-settled lobster and catch per unit effort (CPUE) from two fishing sectors. In addition, a maximum catch limit of 1000 t is set. The eHCR formula thus uses recent trends in survey and CPUE information to implement rapid, but precautionary, short-term adjustments needed to effectively manage a highly variable fishery.

11th International Conference and Workshop on Lobster Biology & Management · Portland, Maine 4–9 June, 2017

Guest Editors:
Kari Lavalli, Richard Wahle
Guest Section Editor:
Burton Shank

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Geographically situated between Papua New Guinea and northern Australia (Fig. 1), the Torres Strait provides fishing grounds for indigenous peoples from both nations and is a prime example of indigenous participation in commercial fishing and management thereof (e.g., Durette 2007). Traditionally, Torres Strait Islanders and Papua New Guineans have relied on the tropical rock lobster, *Panulirus ornatus* (Fabricius, 1798), for subsistence and cultural uses, and it is currently the region's economically most important fishery. The fishery is comprised of three sectors: two in Australian waters and a third in Papua New Guinea (PNG). In Australia, the two main Torres Strait fishing sectors are the Traditional Inhabitant Boat (TIB) licence holders, who typically conduct day trips harvesting lobster from dinghies only (TSRA 2009), and the Transferable Vessel (licence) Holders (TVH) sector consisting mostly of nonindigenous-owned commercial vessels (a mothership with tenders/dinghies). There is considerable heterogeneity within the Australian indigenous sector and between the Australian indigenous, nonindigenous, and Papua New Guinea sectors in terms of the way they fish and the associated economics (van Putten et al. 2013a,b, Hutton et al. 2016). Social objectives are stated explicitly as part of a treaty between Australia and Papua New Guinea: "… acknowledg[ing] and protect[ing] the traditional way of life and livelihood of the traditional inhabitants including their traditional fishing and free movement" (*see* https://www.legislation.gov.au/Details/C2016C00677).

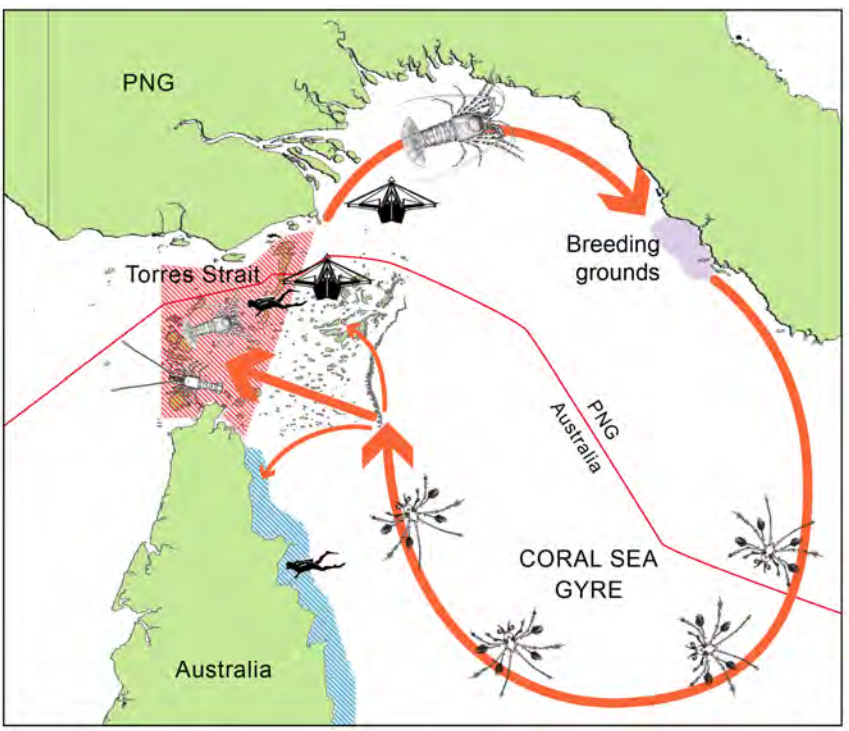

Figure 1. Map showing location of Torres Strait dive fishery (red shading) between Australia and Papua New Guinea (PNG) and migratory route of *Panulirus ornatus* eastwards to breeding grounds, with larvae then transported via currents and settling back in Torres Strait after approximately 6 mo, with some mixing with the Queensland East Coast dive fishery (blue hatching). Trawler icons show historical areas of operation.

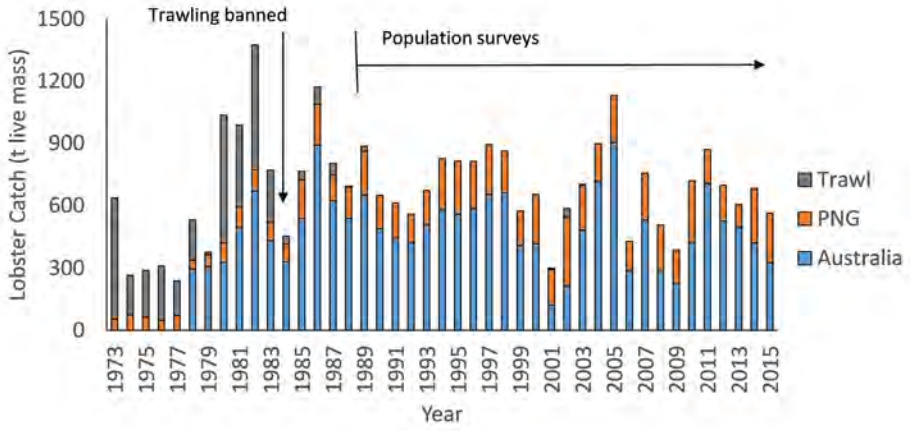

Figure 2. Annual commercial *Panulirus ornatus* catch taken by the Australian (AUSDIVE) and Papua New Guinea (PNGDIVE) dive sectors and historically by trawling.

As it is a shared stock, within Australia it is managed by the Commonwealth. The same species is also fished to the south of Torres Strait, off Queensland's east coast, but is separately managed by the Queensland State Government (Fig. 1). A trawl ban was implemented in 1984 to protect aggregations of lobsters undergoing breeding migrations (Ye and Dennis 2009) and has resulted in development of a nonindustrial fishery that is accessible to fishers throughout Torres Strait. Unlike most other lobster fisheries, *P. ornatus* do not enter baited traps and hence the fishery is predominantly a dive-based (free dive or hookah) fishery. In line with China's emergence as an important market for live lobsters during the past decade, most lobsters are now caught live for export to China (Plagányi et al. 2018). The average annual total catch from 2005 to 2014 was 680 t (Fig. 2).

Management recommendations for the past 28 yrs have been underpinned by scientific surveys of the lobster population and targeted ecological research (Ye et al. 2005, Dennis et al. 2015) (Fig. 3). The surveys are regarded by some as high cost relative to the gross value of production (GVP) of the fishery. However a recent study using tropical rock lobster as an example, Dennis et al. (2015) showed that including one or more fishery-independent surveys annually returned a positive net present value over a 20-yr timeframe, even when randomly varying biomass within the observed historical range, and accounting for increasing survey costs, lower gross margins, and lower lobster prices.

The survey and stock assessment methods have been developed through consultation with indigenous fishers and their representative bodies, in addition to federal and state fisheries managers, independent scientists, nonindigenous fisher representatives, and flow-on business stakeholders. Representatives from these groups, and particularly the Tropical Rock Lobster Resource Assessment Group (TRLRAG), have made significant contributions to the development of the fishery-independent surveys, commercial catch and effort monitoring, and the integrated fishery model through consultative meetings. The fishery provides a successful example of the integration of western science and traditional fisheries management (Plagányi et al. 2013).

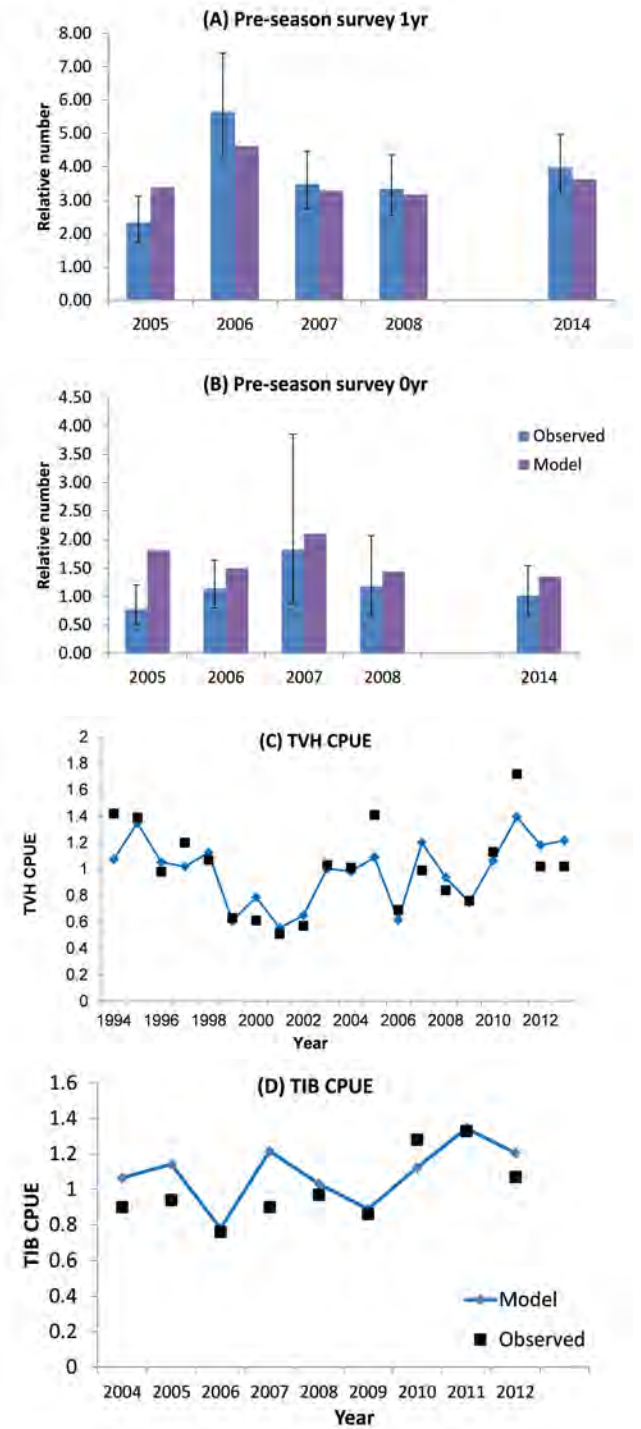

Figure 3. Reference case model fits to indices of abundance, including the primary indicator (Preseason 1yr survey relative abundance and survey standard deviation) used in the harvest control rule described in this paper, together with secondary indicators, namely the Preseason 0yr survey relative abundance and standardized CPUE from the TVH and TIB rock lobster fishery sectors.

Considerable historical research has focused on understanding the biology and ecology of *P. ornatus*. Benchmark surveys played a valuable role in defining population distribution and abundance (Pitcher et al. 1992). Extensive tagging studies (approximately 20,000 tags) were conducted in Torres Strait and Queensland waters and recaptures showed the 550 km breeding migration that starts in August and September, from Torres Strait to the eastern part of the Gulf of Papua, as well as clear separation of the Torres Strait and Queensland subpopulations (Moore and Macfarlane 1984, Skewes et al. 1997, Dennis et al. 2001). As a result of the complex life history comprising a 6-mo larval life (Fig. 1), the stock is naturally highly variable and the fishery focuses largely on a single 2-yr old age-class only. A recommended biological catch (RBC) needs to be set annually in such a way as to ensure biological and economic sustainability consistent with the principles of the Australian Commonwealth Harvest Strategy, as well as the tropical rock lobster fisheries and Protected Zone Joint Authority (PZJA) objectives. For this reason, an annual preseason survey of 1-yr old recruits is conducted as close to the start of the fishing season as possible (November) to inform on the likely biomass of the fishable cohort the next year. Previously, this information together with all other sources of information and data for the fishery were input to an integrated stock assessment model that was used to set the RBC (Plagányi et al. 2015). However, there is insufficient time following the preseason survey for the relevant management groups to review the stock assessment update annually, and hence an alternative approach has been recommended.

The new approach uses an empirical (data-based) harvest control rule (eHCR) that can be rapidly applied to provide a RBC once the catch, survey indices, and other data inputs (catch per unit effort, or CPUE) become available. The eHCR is a central component of a new harvest strategy that is under development for this fishery. Australia's Commonwealth Harvest Strategy Policy defines harvest strategies as "a framework that specifies the predetermined management actions in a fishery necessary to achieve the agreed ecological, economic and/or social management objectives" (Rayns 2007). A key principle is that fishery managers, fishers, and key stakeholders utilize preagreed (and preferably pretested) rules to adjust management recommendations given updates of data and/or model outputs (HSP) (http://www.agriculture.gov.au/fisheries/domestic/harvest_strategy_policy).

Simulation models are increasingly being used to evaluate alternative management approaches or harvest control rules, to identify the potential for trade-offs among fisheries management objectives, using the approach of management strategy evaluation (MSE) (Smith et al. 2007, Pascoe et al. 2016). MSE approaches can serve as formal risk assessment methods, given their focus on the identification and modelling of uncertainties, as well as in balancing different representations of resource dynamics (Sainsbury et al. 2000, Plagányi 2016). This includes consideration of the implications—for both the resource and its stakeholders—of alternative combinations of monitoring data, analytical procedures, and decision rules (Sainsbury et al. 2000, Rademeyer et al. 2007, Smith et al. 2007). It provides indicators on whether different objectives can be reconciled and whether the outcomes are robust to inherent uncertainties in the inputs and assumptions on which decisions are based by identifying and evaluating trade-offs in performance across a range of management objectives (Cooke 1999).

MSE (Butterworth and Punt 1999, Smith et al. 2007, Dankel and Edwards 2016) has been used to evaluate approaches for setting total allowable catches (TACs) for several rock lobster resources, including in Australia (Punt and Hobday 2009, Punt et al. 2012), New Zealand (Starr et al. 1997), and South Africa (Johnston and Butterworth 2005). In Australia, the decision rule (or harvest control rule) for southern rock lobster in South Australia's southern zone is based on changes in catch rates, with the aim of maintaining constant exploitation rates.

Here, we describe the use of MSE to evaluate alternative candidate eHCRs for the Torres Strait *P. ornatus* fishery, and describe the preferred choice that was made by stakeholders.

Methods

The Torres Strait *P. ornatus* fishery is managed as a single stock and hence the assessment and management includes information from each of the three sectors: Australian TIB and TVH, and the PNG sector, which has a one-third share in the fishery. The stock comprises mainly three age classes, recently-settled (6 mo old, termed *0yr*), recruiting (average 1.5 years old, termed *1yr*), and fished (average 2.5 years old, termed *2yr*). The basic steps to evaluate the eHCRs are consistent with the best practice guidelines outlined by Punt et al. (2016).

The eHCR has been developed in close consultation with stakeholders at a number of meetings, including resource assessment groups (RAGs), fishery working groups, and dedicated communication workshops. Consistent with the partnership approach to managing other Commonwealth managed fisheries in Australia, the RAG includes a chair, Australian Fisheries Management Authority manager, stock assessment and fisheries biology scientists, an independent scientist, a conservation member, and several industry representatives (including key processors), plus a Torres Strait Regional Authority and community leader representatives (Smith et al. 1999). In the case of Torres Strait, representatives from Papua New Guinea are also members, and local fishers are invited to attend as observers, such that meetings typically include 20–30 people. Effective communication is considered a high priority and methods include use of graphic recording to summarize key considerations in the process, as illustrated in Figure 4.

The Operating Model.—The stock assessment model of Plagányi et al. (2015) is used as the operating model OM (Online Appendix 1), and hence assumed to represent reality in terms of the underlying lobster population dynamics. The age-structured stock assessment model is a form of statistical catch-at-age analysis (e.g., Fournier and Archibald 1982) that fits to all available fishery-independent (surveys from 1989) and fishery-dependent data (*see* Online Appendix 1). The model was implemented using AD Model Builder which uses quasi-Newton automatic differentiation for statistical inference (Fournier et al. 2012).

Based on previous assessments, key uncertainties, and sensitivities identified included choice of the stock-recruitment steepness parameter h, inclusion or not of an assumption of hyperstability for the two sectors (TIB, TVH) CPUE data, and alternative recruitment assumptions. No CPUE data were available for the PNG sector. A Beverton-Holt stock-recruitment relationship is used to estimate the number of

Figure 4. Graphic recording of key advantages and elements of a harvest strategy as discussed with stakeholders at one of the workshops. Artwork by S Pillans (http://www.drsuepillans.com), reproduced with permission.

recruits R_y at the start of year y, allowing for annual fluctuation in the deterministic relationship:

$$R_y = \frac{\alpha B^{sp}_{y-1}}{\beta + B^{sp}_{y-1}} e^{(\gamma_y - (\sigma_R)^2/2)} \quad \text{(Eq. 1)}$$

where B^{sp}_y is the spawning biomass at the start of year y, parameters α, β are based on the pre-exploitation equilibrium spawning biomass K^{sp}, and the "steepness," h, of the stock-recruitment relationship - h represents the proportion of the virgin recruitment that is realized at a spawning biomass level of 20% of the virgin spawning biomass (Francis 1992):

$$\beta = \frac{(K^{sp})(1 - 5h0.2)}{5h - 1} \quad \text{(Eq. 2)}$$

and

$$\alpha = \frac{\beta + (K^{sp})}{SPR_{virg}} \quad \text{(Eq. 3)}$$

where

$$SPR_{virg} = w_3^{st} N_3^{virg} \quad \text{(Eq. 4)}$$

with

$$N_1^{virg} = 1 \quad \text{(Eq. 5)}$$

$$N_a^{virg} = N_{a-1}^{virg} e^{-M_{a-1}} \quad \text{for} \quad 2 < a \leq m \quad \text{(Eq. 6)}$$

where w_3^{st} is the mass of lobsters of age 3 (i.e., in December during the spawning season), and m is the maximum age considered (taken to be 3).

Parameter γ_y reflects fluctuations around the expected recruitment for year y, which is assumed to be normally distributed with standard deviation σ_R (Online Appendix 1). The residuals are treated as estimable parameters in the model fitting process.

A hyperstable relationship was assumed between the CPUE relative abundance index for each sector f and the exploitable biomass as follows:

$$\left(\frac{\hat{C}}{E}\right)_y^f = q_f \left(B_y^{ex}\right)^{hyps^f} \quad \text{(Eq. 7)}$$

where $hyps^f$, the hyperstability parameter per sector f, was set as described below. Pascoe et al. (2013) estimated a vessel level production function for the TIB and TVH fleet, which included an estimate of the stock as one of the explanatory variables. From this, a hyperstability parameter estimate of around 0.5 was found for both fleets. For the TVH fleet, however, an interaction term between stock and fishing effort (dory days) was also significant, and increased this parameter value when both stock and effort were above the average level over the period 2004–2010. The study also found a strong economic incentive for the TVH vessels to increase their individual effort if less constrained. Given changes in restrictions on dory numbers and the improvement in stock size, it is expected that the relevant hyperstability parameter estimate for the TVH fleet would now be >0.5. Hence, 0.75 was assumed in the stock assessment model, and a no-hyperstability sensitivity analysis is also included.

A reference set (Rademeyer et al. 2007) comprising four different operating models (OMs; *see* tables and figure in Online Appendix 1) was constructed to include a sufficiently representative range of potential estimates of current population status and productivity. The choice of OMs was based on key uncertainties identified over the past few years during the annual stock assessment reviews that also included stakeholder inputs (Plagányi et al. 2012, 2015, Pascoe et al. 2013). These encompass uncertainty as to the stock-recruitment parameter h (*see* Online Appendix 1) and recruitment levels, as well as the hyperstability parameters as discussed above:

OM1: Based on stock assessment model with h = 0.7; and hyperstability (*hyps*) parameters for CPUE TVH and TIB sectors set at *hyps1* = 0.75 and *hyps2* = 0.5 respectively;

OM2: More conservative steepness parameter h = 0.5 of the stock-recruitment function (and with *hyps1* = 0.75; *hyps2* = 0.5);

OM3: No hyperstability assumed (linear index) i.e., *hyps1* = 1; *hyps2* = 1 (and with h = 0.7);

OM4: As in OM1, but testing sensitivity to more negative recruitment scenarios with possible autocorrelation. This is implemented by randomly (10% probability of this occurring in any year) forcing recruitment to be three-quarters of the level from Equation 1 in that particular year (Recruitment(year2)), and generating a random autocorrelation parameter ρ, where ρ determines the extent to which the recruitment in the second year is similar to that in the previous year, i.e., Recruitment (year 2)* = ρ × Recruitment(year1) + (1 − ρ) × Recruitment(year2).

Each of the four OMs was fitted over the historical period 1973–2015 (Online Appendix 1), and then used to do 20-yr forward projection. All model results are integrated across these four alternative models, with equal weight accorded to each, and 200 replicates of each OM, yielding a total of 800 projection scenarios over which results are integrated. The OMs are all assumed to be plausible alternative representations of the system and to reflect key uncertainties, hence they are accorded the same weight rather than Akaike information criterion weighting, for example, in line with recommendations by Punt et al. (2016). Best practice guidelines are also followed in dividing the trials into "reference" and "robustness" sets (Rademeyer et al. 2007, Punt et al. 2016) as described further below.

Future Projections.—"Future data" in the form of survey indices of abundance (Preseason 0yr, 1yr) and sector-specific CPUE series (TIB and TVH) are required by the eHCR to compute a RBC for each of the years in the projection period for each candidate rule tested. These abundance indices (CPUE and surveys) are generated from the OM, assuming the same error structures as in the past (*see* Online Appendix 1). For the CPUE data, additional sources of variation were accounted for by increasing the standard deviation estimates to 0.4. This is also because when computing the RBC for year $y + 1$, CPUE data are assumed to be available for year y, but as these indices are based on all data available at the end of October, there may be an additional error if there is a delay in some of the data being submitted and analyzed in time for that year's analyses. The future CPUE data series are generated from model estimates for exploitable biomass and catchability coefficients.

Future survey data are generated from model estimates of preseason (November) survey biomass. Log-normal error variance includes the survey sampling variance with the standard deviation set equal to the average historical values of 0.18 and 0.35, respectively, for the 1yr and 0yr indices. For the RBC for year $y + 1$, such data are available for year y.

Simulating RBCs and Actual Catches.—The total RBC is divided in fixed proportions p_f among the various sectors f, with the following values used for the sector allocations: TIB: 38%, TVH: 29%, PNG: 33%. We include in this model implementation uncertainty, which is defined as the difference between the model RBC and the actual catch that is taken in a year. Sources of implementation uncertainty can include unreported catches, discarded catches, or lower than expected catches due to capacity constraints and sociocultural drivers (van Putten et al. 2013a). It was considered important to include implementation uncertainty for a number of reasons: (1) observed substantial differences between the actual catches and the nominal TAC over the past decade (during which time a proposed move to output controls has been trialed), as well as in the performance of the three sectors relative to their

nominal allocation (the RBC was not strictly binding as the system was under an input control system); (2) challenges in ensuring that under a quota management system, each of the three sectors (TIB, TVH, PNG) will effectively monitor catches during the fishing season and ensure that fishing stops when the limit is reached; (3) uncertainty as to possible discard mortalities under quota management, which may be exacerbated during anomalously warm periods due to higher associated mortality rates of captured lobsters (the fishery is predominantly for live animals that are held in relatively high densities in sea cages that may suffer from reduced water circulation, are close to the surface and as such, may be vulnerable to overheating or reduced oxygen during periods of low water movement and high temperatures); (4) whether decision makers accept or change the scientifically-based RBC recommendation (no precedent for this scenario); (5) potential (unknown) catches of tropical rock lobster from other sources; and (6) unknown future changes in fishing operations.

The relationship between the RBC for year y (RBC_y) and the actual catch in year y (C_y), given proportional allocations p_f per sector, is modelled using the formula:

$$C_y = \sum_{f=1}^{3} p_f RBC_y \times e^{\varepsilon_y^f}, \quad \varepsilon_y^f \quad \text{from} \quad N(0;\sigma_f^2) \qquad \text{(Eq. 8)}$$

where catch is the total from the three sectors and a value for σ_f for each sector was selected based on comparison with past observations over the period 2006–2015. Different implementation error magnitudes are set using σ_{TIB} (0.06), σ_{TVH} (0.04), and σ_{PNG} (0.1). These values can be adjusted, for example, to simulate scenarios in which different sectors reduce the difference between total catch and the allocated catch based on the RBC. Sensitivity to alternative values of σ_f was also investigated.

Candidate eHCRs Considered.—We focused on empirical approaches for the reasons elaborated above. Hence, the HCRs tested were "model-free" (sensu Rademeyer et al. 2007), increasing or decreasing the RBC in response to the magnitude of recent trends in CPUE and survey estimates.

A range of alternatives was tested that included different combinations of all available indices of abundance, including options that accorded zero weight to some abundance series (Table 1). Four different kinds of HCRs were tested as follows:

(1) Constant Catch: a range of alternative values, including a fixed average, were tested and are briefly discussed given some stakeholders expressed a preference for using a fixed annual catch.
(2) Slope: Based on a simple fixed slope parameter applied to the preseason survey indices—this option is not described further as it performed poorly relative to the options below.
(3) Regression: Based on the slope of a regression line that is fitted each year to the past n (n = 5 was the preferred choice following testing using n = 3 and n = 6) survey data points, and similarly for CPUE where included, and multiplied by either a fixed average historical catch or a moving average of the previous 5 years' catch.
(4) Log regression: As above, except that the slope is computed based on the natural logarithm of the survey and CPUE indices in an attempt to decrease interannual variability.

Table 1. Summary of empirical harvest control rule (eHCR) final set of candidates, showing range of alternative weightings used in testing candidate eHCRs assigning different weighting to the four available indices of abundance, and ranging from using the key survey 1-yr index (Pre1) only through to using only fishery-dependent catch per unit effort (CPUE) data. Results are shown for the subset labelled revised HCR. TVH = transferable vessel holders, TIB = traditional inhabitant boat.

Candidate HCR	Description	Indicator (all Catch_ave_5yrs unless indicated)			
Name	with Ln(slopes last 5 yrs) unless indicated	Pre1	Pre0	CPUE_TVH	CPUE_TIB
Primary indicator only	Weighting on single indicator (Pre1)	1.00	0.00	0.00	0.00
Fishery-dependent only	Equal weighting of fleet indicators only	0.00	0.00	0.50	0.50
Revised HCR					
eHCR1	Weighting factor on all indicators	0.60	0.10	0.15	0.15
eHCR2[1]	Weighting factor on all indicators	0.60	0.10	0.15	0.15
eHCR3	Weighting factor on all indicators	0.60	0.30	0.05	0.05
eHCR4[1]	Weighting factor on all indicators	0.60	0.30	0.05	0.05
eHCR5	Weighting factor on all indicators	0.80	0.10	0.05	0.05
eHCR6	Weighting factor on all indicators	0.70	0.20	0.05	0.05
eHCR7	Weighting factor on all indicators	0.70	0.10	0.10	0.10
eHCR8	Weighting factor on all indicators	0.50	0.10	0.20	0.20
eHCR9[2]	Weighting factor on all indicators	0.41	0.21	0.19	0.19
eHCR10[3]	Weighting factor on all indicators	0.60	0.10	0.15	0.15
eHCR11[4]	Weighting factor on all indicators	0.60	0.10	0.15	0.15
eHCR12	Constant catch 700				

[1] No log of slope - variability higher

[2] Inverse of sigma

[3] Catch_ave = 665 t

[4] Hockey Rule; Surv_lim = 0.8; Surv_trig = 1.25

In all these cases, an additional option was included to cap the maximum catch (1000 t in base-case). The basic form of the HCR for Options (3) and (4) uses the preseason survey 1yr and 0yr indices, both sector CPUE indices, with or without natural logarithms of the slopes, an upper catch limit, and using weightings as shown in Table 1 was as follows:

$$TAC_{y+1} = wt\_s1 \cdot (1 + s_y^{presurv,1}) \cdot \overline{C}_{y-4,y} + wt\_s2 \cdot (1 + s_y^{presurv,0}) \cdot \overline{C}_{y-4,y} + wt\_c1 \cdot (1 + s_y^{CPUE,TVH}) \cdot \overline{C}_{y-4,y} + wt\_c2 \cdot (1 + s_y^{CPUE,TIB}) \cdot \overline{C}_{y-4,y} \quad \text{(Eq. 9)}$$

or if $TAC_{y+1} > 1000$ t, $TAC_{y+1} = 1000$,

where

$\overline{C}_{y-4,y}$ is the average achieved catch during the past 5 years, including the current year; i.e., from year $y - 4$ to year y,

$S_y^{presurv,1}$ is the slope of the (logarithms of the) preseason survey 1yr abundance index, based on the 5 most recent values;

$S_y^{presurv,0}$ is the slope of the (logarithms of the) preseason survey 0yr abundance index, based on the 5 most recent values;

$S_y^{CPUE,TVH}$, $S_y^{CPUE,TIB}$ is the slope of the (logarithms of the) TVH and TIB CPUE abundance index, based on the 5 most recent values;

wt_s1, wt_s2, wt_c1, and *wt_c2* are tuning parameters that assign relative weight to the preseason 1yr (*wt_s1*) and 0yr (*wt_s2*) survey trends compared with the CPUE TVH (*wt_c1*) and TIB (*wt_c2*) trends, with some key alternatives considered as summarized in Table 1. A "hockey-stick" rule (eHCR11; *see* Table 1 for information on this and other candidates) was also tested, with the example shown applying eHCR1 whenever the 1yr survey index was above the threshold value of 1.25, but with RBC set to 0 if the 1yr survey index fell below limit reference level of 0.8, and the RBC set as a linearly decreasing proportion of the value computed using eHCR1 for survey values between the limit and threshold values.

Management Objectives.—The management objectives identified for the tropical rock lobster fishery are as follows:

- maintain the stock at (on average), or return to, a target biomass point (B_{TARG}) equal to recent levels (2005–2015) that take account of the fact that the resource is shared and important for the traditional way of life and livelihood of traditional inhabitants, and is at a level that is biologically and economically acceptable;
- maintain stocks above the limit biomass level (B_{LIM}), or an appropriate proxy (selected as half the B_{TARG} level), at least 90% of the time;
- implement rebuilding strategies, if the spawning stock biomass is assessed to fall below B_{LIM} in two successive years.

Candidate HCRs were evaluated as to their ability to maintain the resource as fluctuating about the target level and to ensure that they do not pose unacceptable risk to the spawning biomass. Quantifying the risk to the resource under alternative HCRs assists in the final selection of a HCR, which meets the objectives of low risk of depleting the spawning biomass, as well as ensuring that potential economic gains are not lost due to an overly conservative approach. Projected future catch rates for the TVH and TIB sectors were used as a proxy for economic performance, and an additional consideration related to the inter-annual variability in catch. Stakeholders also expressed a preference for an upper limit to be set on the total annual catch to reduce biological risk.

Performance Statistics.—Projections were conducted over 20 yrs and 200 replicates of each of the four OMs, i.e., a total of 800 simulations. The same set of random numbers were used in testing all HCR candidates. In each case, the median and 75th and 25th percentiles of all key outputs were computed, and the range of values also shown for the full projection period given that there is a lot of inter-annual variability in stock biomass. Examples of individual trajectories (worm plots) are also presented. These are randomly drawn individual catch, spawning biomass, and CPUE trajectories, which are examples of plausible future outcomes, noting that the median projections shown are not representative of any individual plausible outcome. The following performance statistics were computed for each candidate harvest control rule (HCR):

- $B^{sp}_{2034}/B^{sp}_{1973}$: the expected median spawning biomass at the end of the projection period, and for all years *y*, relative to the starting (1973) level (used as a proxy for carrying capacity, *K*).

- $B^{sp}_{2034}/B^{sp}_{unfished}$: the expected median spawning biomass at the end of the projection period, and for all years *y*, relative to the comparable no-fishing level (i.e., biomass at the end of the 20-yr projection period when assuming zero future fishing, yielding a dynamic rather than equilibrium reference point as is considered more suitable for highly variable stocks).
- Risk of depletion: number of times in 20-yr forward projection that biomass decreased below a reference point, expressed as proportion (e.g., 1/20 = 0.05) of all individual runs with projected biomass: (1) below the limit reference point (LRP), where $B_{LIM} = 0.32K$; and (2) below precautionary level $0.48K$.
- Average catch: $\overline{C} = \frac{1}{20}\sum C_y$ over 2015 to 2034.
- Average Annual Variability (AAV) of Catch $\frac{1}{20}\sum \frac{|C_y - C_{y-1}|}{C_{y-1}}$.
- Projected future CPUE for comparison with historical observations for the TVH (1994–2013) and TIB (2004–2012) sectors (*see* Fig. 3)
- Projected average fishing mortality.

Tuning and Designing HCR with Stakeholder Input.—A large number of alternative HCRs were trialed and the resultant trade-offs presented to stakeholders to select a preferred HCR (e.g., trade-off to ensure high average annual catch but low risk of depletion of lobster population). Tuning parameters included: weighting of preseason data vs TIB CPUE, TVH CPUE; number of years to compute slope over as applied to trends in abundance indices; catch multipliers in the decision rule; and the form of slope regression (e.g., using logarithm of indices). Alternatives were also investigated to impose constraints on the extent the RBC can vary, or setting the maximum and minimum values. The results from testing a wide range of alternative candidate HCRs are not repeated here and instead this paper focuses on the final subset (*see* Table 1) used to obtain consensus from stakeholders on choice of the final eHCR.

Robustness Tests.—As recommended by Cooke (1999) and Rademeyer et al. (2007), the reference set reflects the current best representation of the resource dynamics and associated uncertainties, but a further, broader set of robustness tests is also considered to further ensure that the final choice of eHCR is robust to a full range of uncertainties. As the tropical rock lobster fishery has never been closed and has been maintained at a relatively high average biomass level, it is important to minimize the risk of fishery closure given this would have large socioeconomic impacts. The final set of HCRs were thus subjected to a number of sensitivity and robustness tests to see how well they would perform under more severe conditions, and the risk of closure was used as a key statistic to distinguish the performance of alternative candidate HCRs. The following final robustness tests are presented here (*see* Table 2 for sensitivity tests, here called *Sens*):

(1) higher implementation error, particularly for PNG given unexpectedly large trawling catches were reported in 2014 (Sens1);
(2) several scenarios with increases or decreases in future catchability, such as might arise due to changes in fishing efficiency under quota management, or environmental influences, such as sand incursions changing the distribution and availability of lobsters, but not necessarily total abundance (Sens2–4);

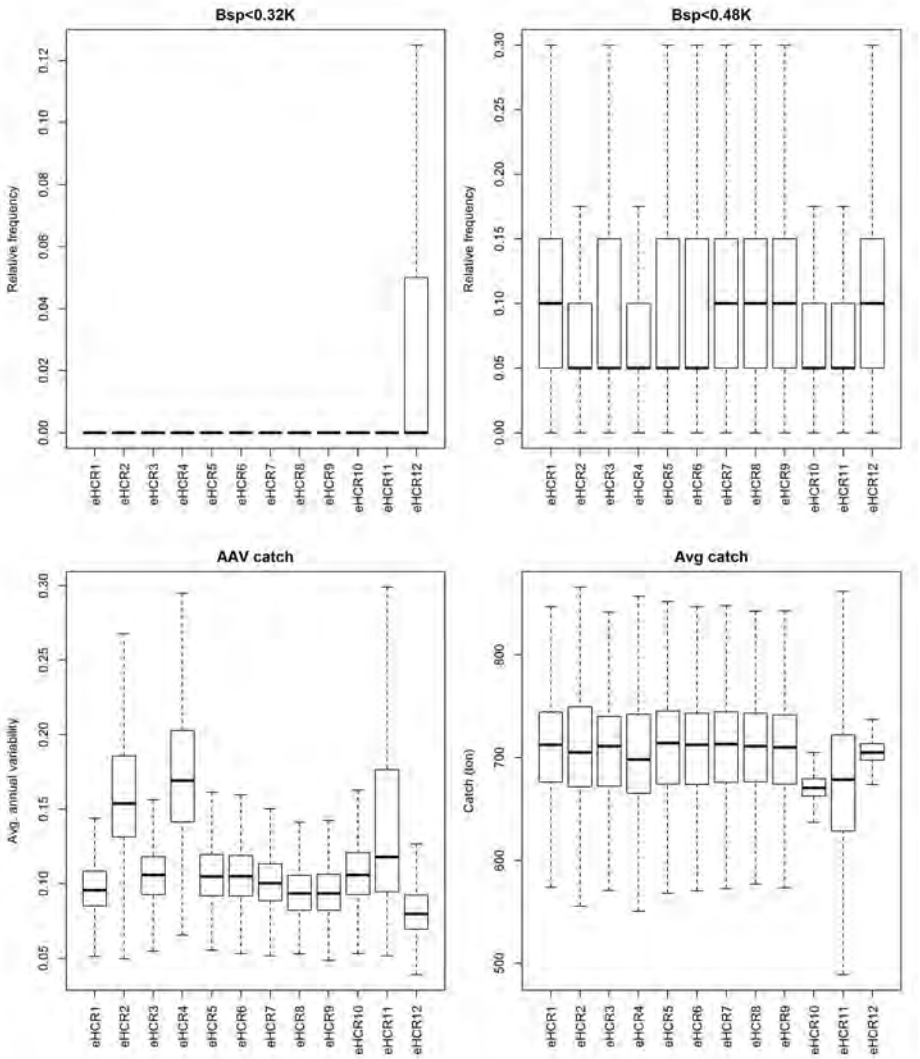

Figure 5. Comparison of some key performance statistics for final set of eHCRs. Plots show the probability of depletion below each of two reference levels, B_{LIM} = 0.32K and precautionary level 0.48K limit reference point, together the Average Annual Variability (AAV) of catch, and total annual catch (t). The central line shows the median, the box the 75th and 25th percentiles and the whiskers represent the full range of projected values excluding outliers.

(3) several negative recruitment scenarios to see how well the eHCR might perform if there are unexpected low recruitment events in the future, such as due to environmental influences (Sens5–8);
(4) periodic large increases in natural mortality rates of the lobsters, such as could occur in anomalously warm years, as has been the actual case recently (Sens9).
(5) an increasing trend in the future mortality rate of large 2yr lobsters due to environmental impacts associated with climate change (Sens10).

In addition, the robustness tests above were repeated using a constant catch scenario, with annual catch equal to 680t (average of last 10 years), as this option was

Table 2. Summary of robustness tests to ensure that the final choice of empirical harvest control rule is robust to a full range of uncertainties. PNG = Papua New Guinea.

Sensitivity test	Description	Details
Sens1	Higher implementation error	PNG implementation error = 0.3
Sens2	Sustained increase in catchability and Sens1	Catchability (q) is 1.2*q for all future years
Sens3	Catchability decrease	20% probability that catchability is 0.6q in any 1 year; e.g., sand incursion
Sens4	Catchability increase and survey observation error	20% probability that catchability is 1.3q in any 1 year and variance doubled for preseason survey
Sens5	Poor recruitment periodically	20% probability that recruitment halved compared to expected level
Sens6	Less frequent very poor recruitment event	10% probability that recruitment one-third compared to expected level
Sens7	Less frequent poor recruitment	10% probability that recruitment half compared to expected level
Sens8	Less frequent poor recruitment and includes mortality	10% probability that recruitment half compared to expected level and mortality increase 20%
Sens9	Infrequent large increase in mortality	10% probability that mortality increases by 50% in any one year
Sens10	Increase in mortality of spawning lobsters	One-third increase in future mortality rate of 2+ lobsters

preferred by some stakeholders. A final scenario was calibrated to have the same overall risk to the resource and fishery as eHCR7, but with a fixed annual catch (eHCR12).

Results

For each HCR, there are a large number of performance statistics output for consideration by stakeholders. For all statistics, values shown are the median of the 800 replicates, together with the 75th and 25th percentiles (i.e., the rectangles encompass 50% of all outcomes for box and whisker plots), as well as the range of values excluding outliers (Fig. 5).

The constant catch option (eHCR12) had a much higher risk of the stock falling below the limit biomass reference level of 32% of K (Fig. 5) than any of the adaptive options. Preliminary testing ruled in favor of basing the HCR on an average of the last 5 yrs' data in preference to 3 or 6 yrs (for indices of abundance) or a fixed average catch (Plagányi et al. 2016). Preliminary testing also found relatively poor performance in terms of the risk-catch tradeoff if only fishery-dependent CPUE data were used, compared with HCRs including survey data catch (Plagányi et al. 2016).

There were several examples of HCRs (e.g., eHCR1, eHCR5, eHCR6) that yielded high average catch for low risk across a range of alternative weightings accorded to the survey and CPUE information (Table 1, Fig. 5). Stakeholders preferred the HCR candidates that used the log of the slope because it reduced catch variability compared with candidates not based on the log of the slope, such as eHCR2 and eHCR4 in Figure 5. The candidate eHCR11 that used a hockey-stick type rule to adjust catches was also considered to result in overly variable catches corresponding to a relatively poor median catch (Fig. 5).

The TRLRAG reviewed the performance of a range of HCRs, and gradually reduced the set for final consideration based on considerations, such as yielding an

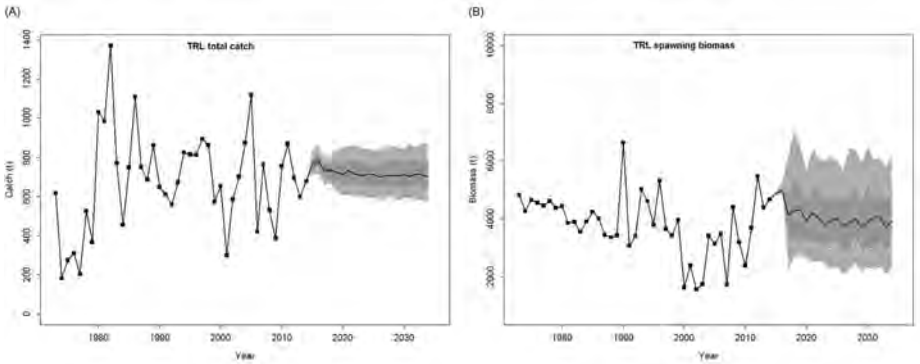

Figure 6. Distributions (solid line: median, 50% intervals: dark shaded area, 80% intervals: light shaded area) of future projected (A) spawning biomass, and (B) total catch (t) for tropical rock lobster compared with historic values and when using the final eHCR (eHCR7).

average catch that was too low compared to other strategies for the same overall risk (e.g., eHCR10), strategies that were too risky in terms of risk of depletion of the resource, or risk of closure of the fishery (e.g., eHCR12), as well as being too variable (e.g., eHCR11).

The final set of HCRs performed similarly; specifically eHCR1, eHCR5, and eHCR6. The TRLRAG discussed the relative advantages and disadvantages of according more or less weight to the four different abundance indices, acknowledging

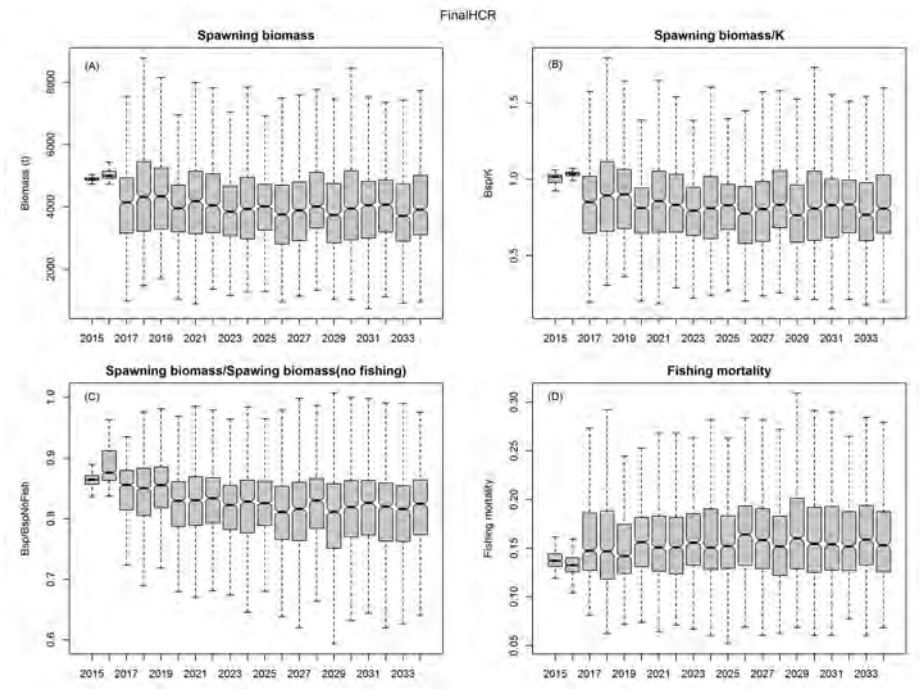

Figure 7. Summary of future projected spawning biomass, depletion proportion relative to carrying capacity *K*, depletion relative to comparable no-fishing level and fishing mortality for TRL when using the final eHCR (eHCR7). The central line shows the median, the box the 75th and 25th percentiles and the whiskers represent the full range of projected values excluding outliers.

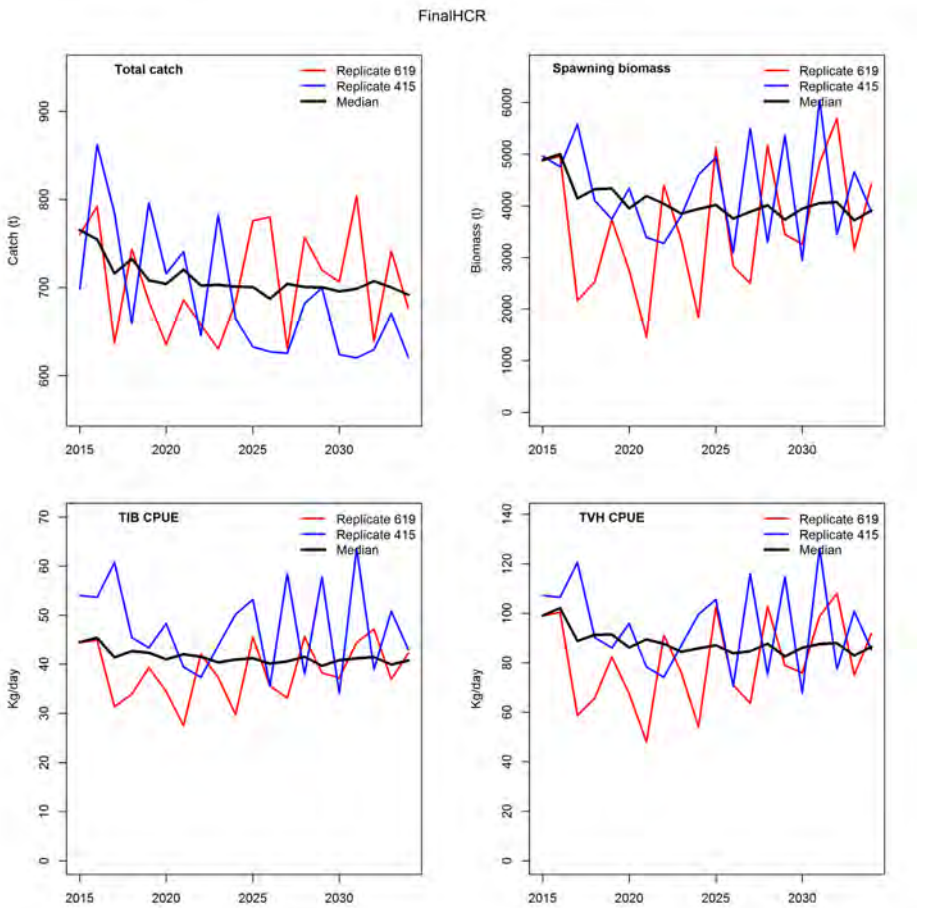

Figure 8. Worm plots showing two randomly selected individual trajectories compared with the median values of total catch and spawning biomass (top panels) and projected CPUE for the two sectors TIB and TVH (bottom panels).

that the preseason 1yr index provided the most reliable and most direct indication of how many lobsters would be available to be fished the following year. On the other hand, it was noted that these data are derived from a survey that is conducted only once a year, whereas the CPUE data indexes the overall abundance throughout the fishing year, and by both sectors. The CPUE index provides a measure of the spawning biomass, rather than next year's fishable biomass, but including it in the HCR means that the rule will take account of likely future changes in recruitment, and hence enable proactive adjustments in the setting of RBC's. Similarly, the preseason 0yr index is equivalent to the "puerulus index" used in several lobster fisheries, and similarly provides an early heads up of likely future stock levels. Several stakeholders felt that it would be advantageous to include a portfolio of abundance indices (both to spread the risk and utilize all available information) in the final HCR. The final HCR selected by the TRLRAG, eHCR7, accords equal weights of 10% to each of the two CPUE series, as well as preseason 0yr index, and a larger weight of 70% to the preseason 1yr index.

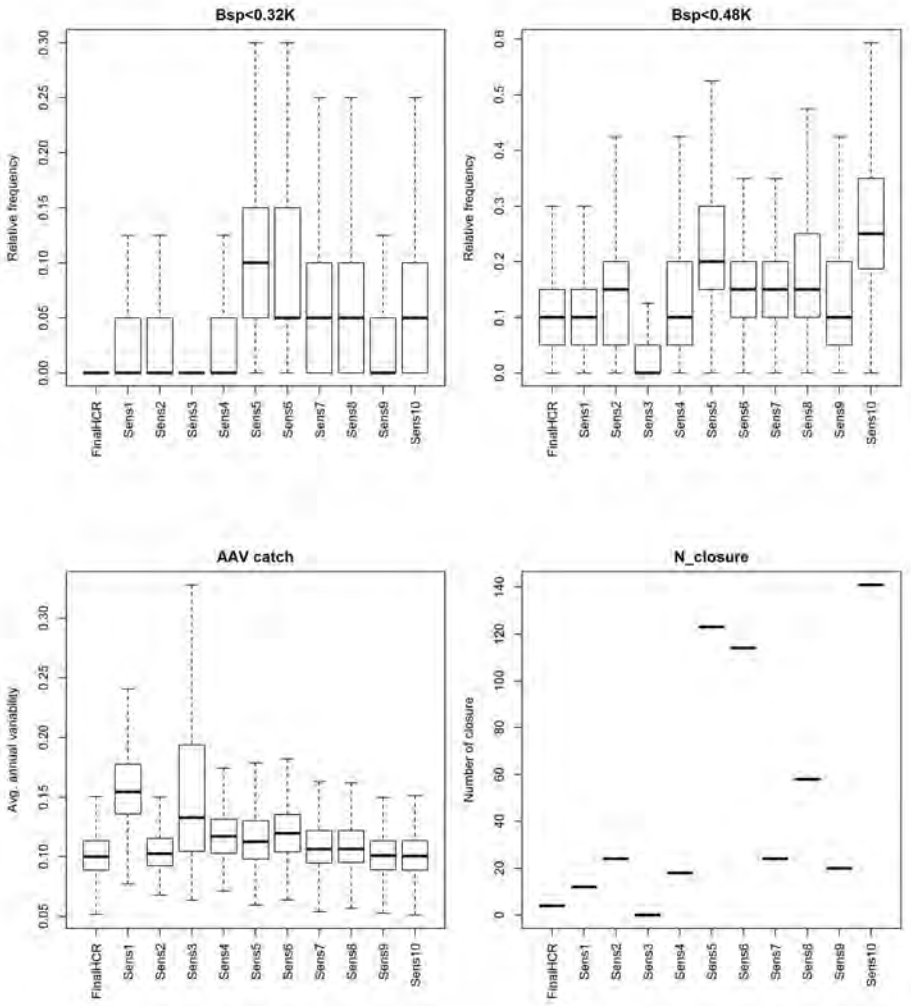

Figure 9. Selected performance statistics for final set of sensitivity tests. Plots show the probability of depletion below each of two reference levels, $B_{LIM} = 0.32K$ and precautionary level $0.48K$ limit reference point, together the average annual variability (AAV) of catch, and relative number of fishery closures triggered in the simulations. The central line shows the median, the box the 75th and 25th percentiles and the whiskers represent the full range of projected values excluding outliers.

In addition, several stakeholders felt that it was important to include an upper limit for the RBC. The possibility of using limits such as 800 t was considered, but it was shown that this may be unnecessarily low and may lead to the average catch declining over time, and testing showed that an upper limit of 1000 t avoided these problems.

The final selected eHCR rule is as follows, and uses the preseason survey 1yr and 0yr indices, both CPUE indices, taking natural logarithms of the slopes, an upper catch limit, and using weightings as follows:

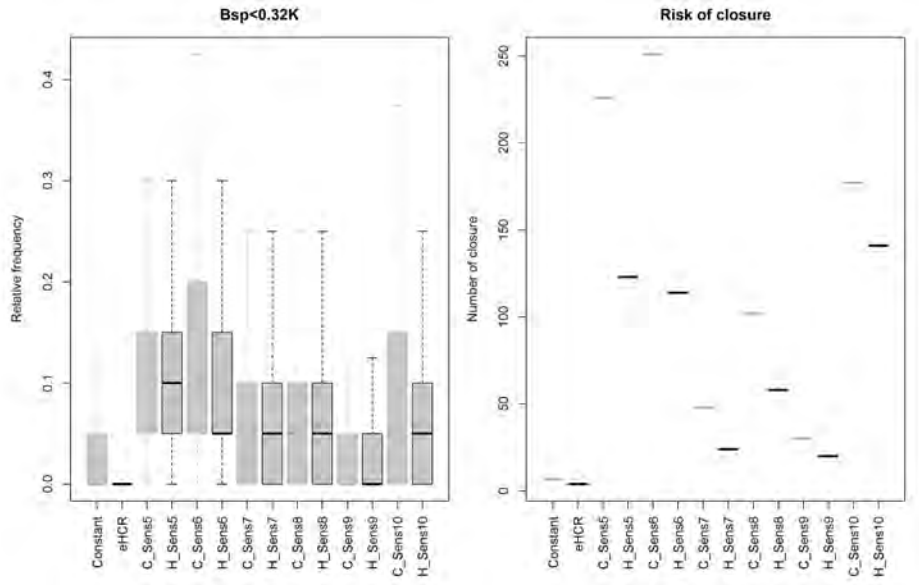

Figure 10. Comparison between final eHCR (H) and constant catch (C) set at 680t performance statistics using final set of robustness tests Sens5 to Sens10, and showing performance in terms of risk of dropping below the limit reference point (0.32K) and relative risk of a fishery closure (from 800 simulations). The central line shows the median, the box the 75th and 25th percentiles and the whiskers represent the full range of projected values excluding outliers.

$$RBC_{y+1} = \left[0.7 \cdot \left(1 + s_y^{presurv,1}\right) + 0.1 \cdot \left[\left(1 + s_y^{presurv,0}\right) + \left(1 + s_y^{CPUE,TVH}\right) + \left(1 + s_y^{CPUE,TIB}\right)\right]\right] \cdot \overline{C}_{y-4,y}$$

or if RBC_{y+1} > 1000t, RBC_{y+1} = 1000. (Eq. 10)

The performance of the final eHCR in terms of two key measures, namely projected spawning biomass and total catch, is illustrated in Figure 6. The plot shows the distribution of potential future outcomes relative to the historical observed catches and spawning biomass as estimated by the stock assessment model (*see* Online Appendix 1). Projected medians and associated ranges remained close to target levels for spawning biomass relative to the starting (1973) level, as well as relative to the comparable no-fishing level, and projected fishing mortality (after applying implementation errors) fluctuated around the target level (Fig. 7).

Focusing on median values can give a false idea of the extent of inter-annual variability that may be observed in future catch and CPUE because the median does not represent an actual trajectory. Hence examples of individual worm plots (Fig. 8) were also presented to stakeholders.

Under the final set of sensitivity tests (Table 2), the median risk of depletion associated with the eHCR remained at or below the reference level of 10% and the catch variability increased by a maximum of 50% (Fig. 9), suggesting the eHCR will perform satisfactorily even if there are unexpected and unusual situations that arise in the future. The model suggested a moderate increase in risk under a scenario with a large sustained increase in catchability (Sens2; Fig. 9) that remains undetected over time, which means a model will most likely overestimate resource biomass and as a consequence catches and fishing mortality will be too high.

As this fishery is largely recruit driven, changes in recruitment can be expected to have a large impact on the stock and fishable biomass. The poor recruitment sensitivities (Table 2, Fig. 9) result in a slight decline in average spawning biomass over time, and an increase in the risk of depletion (although not >10%), but the eHCR brings catches down in response, so as to reduce risk to the resource. Similarly, if there are occasional increases in natural mortality rate, catches are decreased and the overall risk to the resource remains low. If there is a sustained increase in the mortality of the large lobsters (Sens10), this results in a drop in the average spawning biomass and increase in the risk of depletion below the LRP, as well as an increased risk of closure of the fishery (Fig. 9), even given the decline in catches. However, the risk to the resource is acceptable (median risk of biomass dropping below the LRP ≤ 10%) even under this extreme scenario, which provides support as to the robustness of the eHCR.

Figure 10 compares the performance of the final eHCR and a constant catch scenario (680 t) under the last five of the above sensitivity tests. The constant catch scenario consistently results in higher risk to the resource (Fig. 10) and the risk of closure is approximately doubled.

Discussion

The tropical rock lobster fishery is transitioning from using a traditional stock assessment approach to a formal harvest strategy framework consisting of three elements: monitoring, stock assessment, and control rules. The latter harvest control rules specify what management actions should be taken in response to assessment information about the stock (Rayns 2007). Previously in this fishery, a stock assessment model was used annually to analyze fishery data, and assess current status and productivity of the resource as a basis for setting a RBC (Plagányi et al. 2015). The new approach involves using a formula for providing the RBC, based on prespecified data inputs. The harvest control rule is empirical, as it uses the data directly, e.g., recent upward or downward trends in abundance indices are used directly as feedback and hence the RBC changes in the same direction.

Empirical harvest control rules are now implemented in a number of fisheries globally, including for a number of lobster fisheries: Australia's southern rock lobster, *Jasus edwardsii* (Hutton, 1875), fishery (Punt et al. 2012), South African rock lobster, *Jasus lalandii* (H. Milne-Edwards, 1837) (Johnston and Butterworth 2005), New Zealand rock lobster, *J. edwardsii* (Bentley et al. 2005, Miller and Breen 2010), and the Tristan da Cunha lobster, *Jasus paulensis* (Heller, 1862), fishery (Johnston and Butterworth 2013). Examples of other fisheries include South African hake, *Merluccius* species (Rademeyer et al. 2008), anchovy, *Engraulis encrasicolus* (Linnaeus, 1758), and sardine, *Sardinops sagax* (Jenyns, 1842) (de Moor et al. 2011), and groundfish, *Anoplopoma fimbria* (Pallas, 1814), fisheries in British Columbia (Cox and Kronlund 2008). The eHCR for Australia's southern lobster is based on the catch rate for the most recent year and hence reacts quickly to changes in catch rates (Punt et al. 2012). To avoid high levels of interannual catch variability that can arise from such approaches, other lobster fisheries, such as for the South African west coast lobster fishery (Johnston and Butterworth 2005) and Tristan da Cunha lobster fishery (Johnston and Butterworth 2013), base decisions on average catch rates over a number of preceding years. Trying to track signals in the data rather than "noise"

is similarly the motivation for the use of recent averages in the tropical rock lobster eHCR. In addition, taking the natural logarithm was preferred because this has the effect of dampening some of the interannual variability and hence ensuring that the RBC responds to medium-term changes in resource trends rather than bouncing up or down more erratically due to potentially large interannual changes in observed CPUE.

The tropical rock lobster stakeholders also expressed a preference to use a portfolio approach drawing on information from several data sources, including survey and CPUE data, albeit with more weight accorded to the most direct and accurate index, the 1yr survey index, compared with the prerecruit 0yr index and the CPUE indices. The latter reflect the abundance of the large 2yr lobsters, the survivors of which mostly migrate out of the Torres Strait to breed such that only a very small proportion remain available to be fished in future (Dennis et al. 1992), but their spawning biomass index is an important consideration in terms of ensuring the future sustainability of the stock. There are examples of other harvest control rules that use a combination of CPUE and fishery-independent survey information (e.g., Rademeyer et al. 2008), as well as prerecruit (puerulus) indices (Bentley et al. 2005). The tropical rock lobster eHCR rule is relatively data-rich compared with that applied to other lobster fisheries, as the rule uses information from all the sources mentioned above. Harvest control rules may also include additional metrics, such as size compositions and somatic growth rate (Johnston and Butterworth 2005, Plagányi et al. 2007), and these may be considered in future work.

Empirical HCRs are considered a defensible approach given that they have been shown to perform almost as well as model-based approaches (Rademeyer et al. 2007, Punt et al. 2012, 2016, Geromont and Butterworth 2015, Punt et al. 2016). Both model-based and empirical harvest control rules typically include free parameters that can be adjusted to tune their performance to achieve desired optimal tradeoffs between performance statistics. Empirical harvest strategies have demonstrated the ability to achieve objectives, such as reversing a decline in a population (Geromont and Butterworth 2015). However, they can suffer from a lack of information about the exact level of the resource, and hence additional analyses are required to determine what the status of the resource is relative to specified reference levels (Rademeyer et al. 2007). Some approaches use a "target"-based rule whereby TAC adjustments are based on the magnitude of the difference between the recent CPUE and a target value (Johnston and Butterworth 2013). Compared with model-based harvest control rules, Rademeyer et al. (2007) and Butterworth (2008a) suggest that empirical approaches can be easier to test and are often more easily understandable by stakeholders.

The eHCR has been extensively tested by simulation to provide appropriate tradeoffs, taking into account a range of uncertainties and using methods that are now well established internationally (Dankel and Edwards 2016). The greatest advantages to adopting an eHCR approach are that: (1) it can be applied quickly and easily to set a RBC in time for the start of the new fishing season; (2) it provides a transparent and easily understandable tool for stakeholders (e.g., the effect on the RBC of negative or positive decreases/increases in stock abundance indices can be readily seen, and a spreadsheet example is provided to stakeholders for this purpose); (3) it provides a sound basis for setting RBCs without compromising resource status; (4) it properly addresses concerns about scientific uncertainty through simulation testing

to ensure that feedback secures reasonably robust performance across a range of plausible alternative resource dynamics; and (5) when tested using the MSE process, it empowers stakeholders by allowing them to transparently assess tradeoffs between key performance measures and select the most favorable option taking into account a range of biological, economic, social, and cultural considerations (Butterworth and Punt 1999, Butterworth 2007, Plagányi et al. 2007, Rademeyer et al. 2007).

Smith et al. (1999) and Butterworth et al. (2010) underscore that MSE approaches fail at the implementation level in the absence of stakeholder participation and acceptance. Stakeholder participation not only improves buy-in (Smith et al. 2008), but can make important contributions, such as helping develop co-management, addressing policy and process conflicts, and motivating for testing practical data-based methods (Cox and Kronlund 2008). To effectively engage industry, performance statistics need to be understandable and adequately capture the management objectives (Punt et al. 2016). For stakeholders that are new to the concepts of eHCRs, it is important to first explain the motivation for the approach and the complex underlying concepts to genuinely engage with stakeholders. For this reason, we used a range of communication methods, including graphical recording, which proved highly effective in capturing key points from discussion sessions in a visually appealing and easily understandable format (Fig. 4). A series of these graphics assisted stakeholders in understanding the process from data gathering through to choice of RBC and evaluation of associated tradeoffs, and hence making valuable contributions to each step. Our study is a rare example of participation by indigenous stakeholders (in this instance from two countries), together with nonindigenous stakeholders, to collaboratively decide on the best assessment, monitoring, and harvest control rules to implement in the fishery. Similar approaches are currently being developed for the region's other major fisheries, namely bêche-de-mer (sea cucumber, including the genera *Holothuria, Thelenota, Stichopus,* and *Actinopyga*) and finfish (*Plectropomus* spp. and Scombridae).

Harvest control rules are often complemented by "exceptional circumstances" clauses to account for unexpected events (Butterworth 2008b); for example, sizeable "walkouts" of South African west coast lobsters emerging onto beaches in response to low-oxygen events, greatly increasing the stock's mortality rate (Johnston and Butterworth 2005, Plagányi et al. 2007). The tropical rock lobster eHCR specifies that a stock assessment will be conducted every 3 yrs to rigorously assess stock status and productivity, and check that the eHCR is working as it is supposed to. As a stock assessment is only scheduled for every third year, action may not be taken quickly enough if the spawning biomass drops to very low levels, and hence an additional precaution has been built into the harvest strategy. Based on analysis of the historical preseason and mid-year survey indices, a preseason 1yr survey trigger point of 1.25 (average number of lobsters per survey transect and lower than any historically observed values) has been set, such that if this lower limit is triggered in any year, then the required action is that a stock assessment be conducted in the following year. This is similar to what is done in some other fisheries, such as decision rules for some of the New Zealand substocks, whereby a stock assessment is mandated if CPUE decreases below a specified base level (Bentley et al. 2005). If the stock assessment suggests that the spawning stock biomass is above the LRP, then the process continues as previously. However, if spawning biomass is assessed as below the LRP, then a stock assessment is again triggered in the following year. If the second stock

assessment suggests the stock is above the LRP, then the process again continues as previously, but if the spawning biomass is below LRP (i.e., two consecutive years with spawning biomass below LRP), then the fishery is closed and appropriate action (e.g., implementing surveys, analyzing size structure and environmental information) is put in place. In general, the eHCR is therefore applied every year unless the LRP is triggered in two consecutive years.

Ongoing work is exploring the implications of including additional survey information, as well as the possibility of some data not being available to inform the eHCR. This will usefully inform the settings for a tiered harvest strategy approach that accounts for the different risk-catch-cost tradeoffs of different stock assessment and monitoring options (Dichmont et al. 2016). For example, if no data are available to inform on trends in the stock, then the RBC needs to be set at a lower level such as the 360 t recommended above based on calibration to the same level of risk as the adaptive eHCR. The draft harvest strategy for tropical rock lobster is currently in review and needs to be approved by the PZJA before it can formally be implemented; however, as indicated herein, much progress has been made in supporting the evaluation of alternative harvest control rules in the fishery with full stakeholder inclusion.

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NON-TECHNICAL SUMMARY

Torres Strait Tropical Rock Lobster (TRL) Fishery

Harvest Control Rule (HCR) development and evaluation

CSIRO/AFMA

January 2017

Éva Plagányi, Darren Dennis, Roy Deng, Robert Campbell, Trevor Hutton, Mark Tonks, Mick Haywood

CSIRO

Australian Government
Australian Fisheries Management Authority

This non-technical summary has been developed to assist stakeholders in understanding the draft Harvest Strategy under development for the Torres Strait Tropical Rock Lobster Fishery

Community Summary: Proposed Harvest Strategy for Kaiar

We want to make sure that there will always be lots of kaiar in Torres Strait by managing the TRL fishery effectively into the future. This is because kaiar are very important economically as well as culturally. Researchers, fishers and managers together agree on what number of kaiar can be caught each year to keep the population healthy and the fishery performing well (called target reference points). They also agree on the low population numbers that cause concern and should be avoided (called limit reference points). These numbers will be very important for use in the TRL harvest strategy as described below.

As we all know kaiar numbers go up and down from one year to the next because of natural changes in the environment. In good years we can catch more, but in bad years we need to catch less. We have some good indicators that provide information on how many kaiar there are and how many should be caught.

Firstly fisher catches – if a fisher catches more kaiar each day than in most years, it means there are lots of large kaiar in the population. This also means there should be lots of kaiar left to breed and release eggs. But if there are fewer kaiar being caught each day than in most years, it means there are fewer kaiar left to breed and less should be caught.

Secondly science surveys – surveys have been run by CSIRO for the past 28 years (since 1989) to work out how many kaiar there are on the fishing grounds. The surveys are now run in November (called pre-season surveys) because this is close to the start of the fishing season. If there are lots of kaiar counted on the survey, there should be good numbers in the fishery and it is safe to catch lots of kaiar. If few kaiar are counted, it means that the next year will be a bad year for kaiar and catches should be smaller.

If the fishery catch was set at the same number each year (fixed), then we would have to make sure that the catch wasn't too high in a bad year. This means a fixed total catch would need to be very small. A better strategy is

to change the total catch that is allowed every year up or down depending on the actual number of kaiar available. This is possible because of the information we have from fisher catches and science surveys.

At the moment we use a complex computer model with the catch and survey information to work out how many kaiar can be caught. However, we can also work these numbers out using a Harvest Control Rule (HCR), which is much simpler and takes less time to calculate. Scientific testing suggests that a HCR should work well for the kaiar fishery into the future.

Researchers, fishers and managers also agreed to some extra rules to use with the HCR. Because the fishery is so important the largest catch that would be allowed is 1000 t. Very low survey numbers would be worrying and it was agreed that the computer model would be used in these years to make sure the HCR is working well. It was also agreed that the computer model would be used every three years in any case; as a double check on how many kaiar we think there are in the population.

Of course it is very important for management of the fishery that good information is collected on catches and that good science surveys are done. If more information can be collected and better surveys are done, then it is possible to improve management and increase catches.

The information below gives more details of the harvest strategy and the harvest control rules and staff at AFMA Thursday Island and CSIRO Brisbane will be happy to answer any other questions you may have.

CSIRO engaging with the Torres Strait TRL community to discuss the science of the Kaiar Fishery, on Thursday Island in November 2016

TRL Harvest Strategy

Background Information

The Torres Strait tropical rock lobster (TRL) fishery is moving from input controls to output controls which involves the setting of Total Allowable Catch (TAC) levels. The stock is naturally highly variable due to variable numbers of recruits (1+ lobsters) each year, and the fishers catch essentially a single age-class (2+) only. This age-class then leaves Torres Strait to breed. Hence, a TAC needs to be set annually in such a way as to ensure biological and economic sustainability consistent with the principles of the Australian Commonwealth Harvest Strategy as well as the TRL fisheries and PZJA objectives. For this reason, it is important to conduct an annual pre-season survey of 1+ recruits as close to the start of the fishing season as possible (November) to inform on the likely size of the fishable stock the next year. Previously, this information together with all other sources of information and data for the fishery were input to an integrated stock assessment model that was used to set the TAC. As an input control system is currently in place an indicative TAC is set (a "dummy" TAC). However, there is not enough time after the pre-season survey for the TRLRAG to review an updated stock assessment; thus an alternative new approach has been recommended. In addition, the TRLRAG identified potential cost savings by only conducting an assessment every three years rather than annually, and replacing this with an approach as described below. There were also additional benefits identified in reducing the frequency of running the full stock assessment model, mainly by allowing additional time to update and improve the model in the intervening years.

The TRL fishery is the most important commercial fishery to Torres Strait Islanders and provides significant financial independence for island communities in the region. The fishery is based almost entirely on one species *Panulirus ornatus*; the ornate rock lobster.

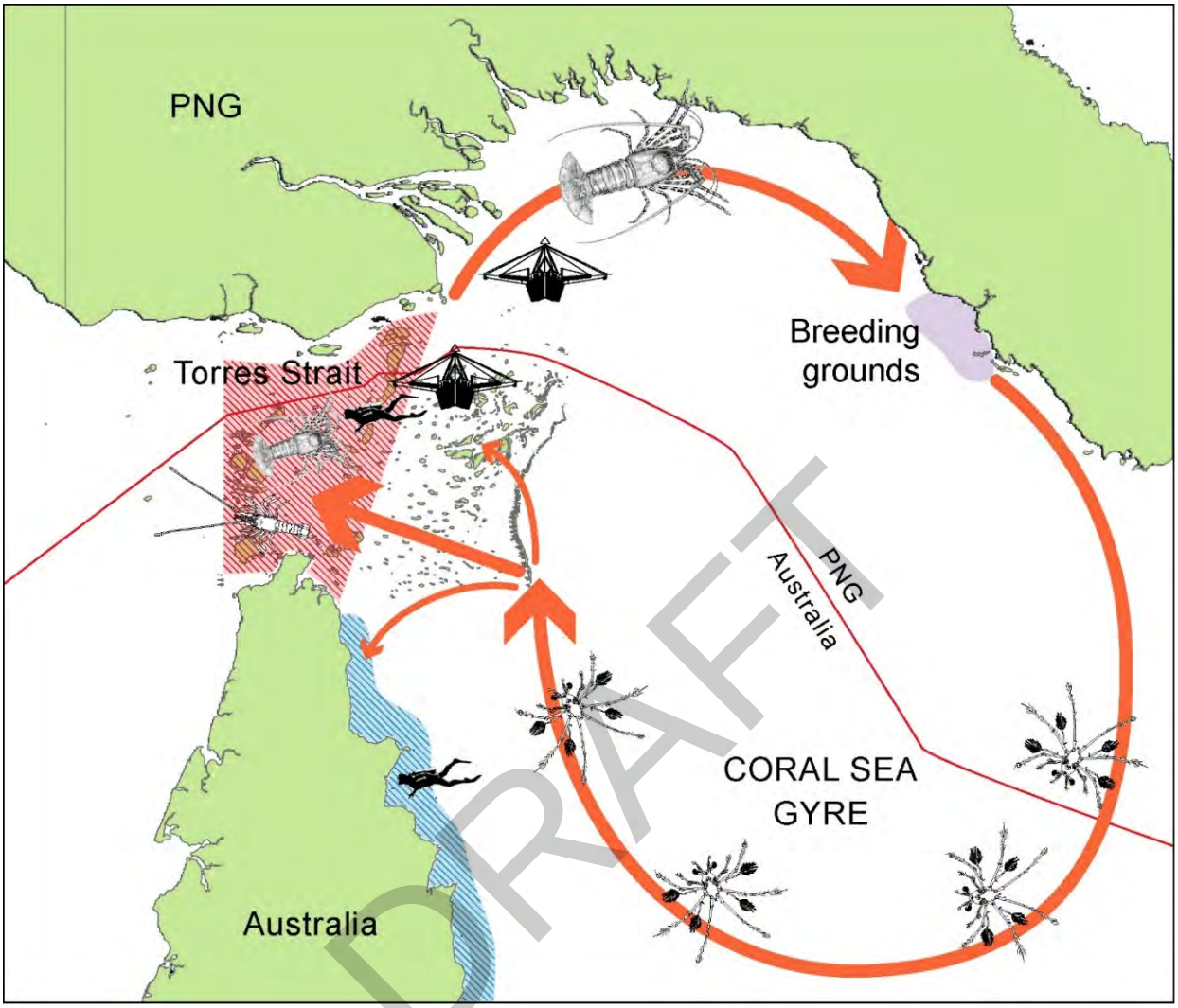
The TRL fishery is managed by the Protected Zone Joint Authority (PZJA), made up of representatives from the Australian and Queensland governments. The authority is guided by the Torres Strait Treaty (February 1985) between Australia and Papua New Guinea, which defines the fishery boundaries and catch sharing arrangements.

Research on the TRL fishery is important to ensure that enough lobsters escape to breed each year to replenish future populations. At the same time research is important to ensure that the catch of the fishery is big enough to support the livelihood of Torres Strait Islanders without impacting the traditional way of life.

Tropical rock lobsters from Torres Strait are very adventurous animals. To breed, they undertake long marches often as far as the Gulf of Papua towards Yule Island where they congregate to spawn (as shown on the map below). This journey, several hundreds of kilometres long, is exhausting and most of them will die after releasing the next generation of lobsters. Other known breeding areas include the outer barrier reef and lobsters probably spawn anywhere around the northern Coral Sea.

The tiny lobster larvae are called phyllosomes and don’t look anything like adult lobsters. Also unlike their parents, phyllosomes live at the surface of the ocean (pelagic) rather than on the seabed (benthic). They drift with ocean currents in the Coral Sea. And the Coral Sea Gyre distributes them

clockwise throughout the year around the Coral Sea, as shown in the map below.

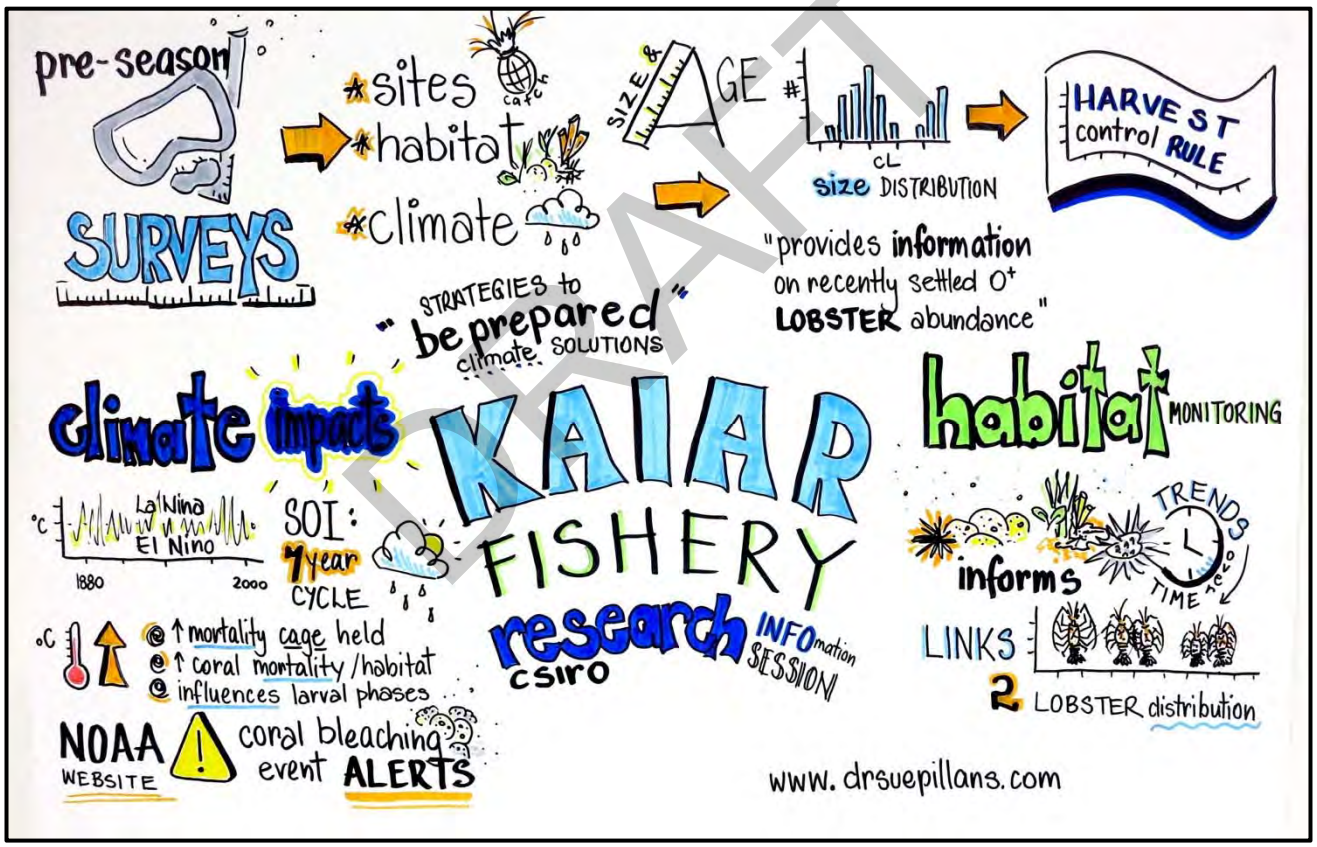


The ocean currents transport the lobster larvae from the breeding grounds back to Torres Strait. In winter some of the lobster larvae make it to Torres Strait and undergo one final dramatic change into a puerulus. The puerulus stage looks like a tiny transparent lobster and it begins the benthic phase of life.

The tiny lobsters must find suitable tight-fitting shelters on the seabed as they are easy prey for fish. They grow rapidly and by the time they are 2 years old most are larger than the legal minimum size (90 mm carapace length). These sub-adult lobsters then spend another 9-10 months in Torres Strait and are the basis of the TRL fishery. In August/September

each year lobsters approaching 3 years of age migrate out of Torres Strait and move to the breeding grounds to complete the life cycle.

It is not possible to count lobsters in all areas in Torres Strait so CSIRO scientists divided the fishery into several regions and selected sites at random in each region. The regions, also known as sampling stratums, are shown in the map below. The number of sites surveyed in each region depends on the size of the region and available habitat. The map shows the locations of the 375 sites sampled in the full-scale 2002 survey. A smaller sub-set of these sites has been sampled each year since then to provide information on the numbers of lobsters in the fishery and the weight of lobsters available to be fished.

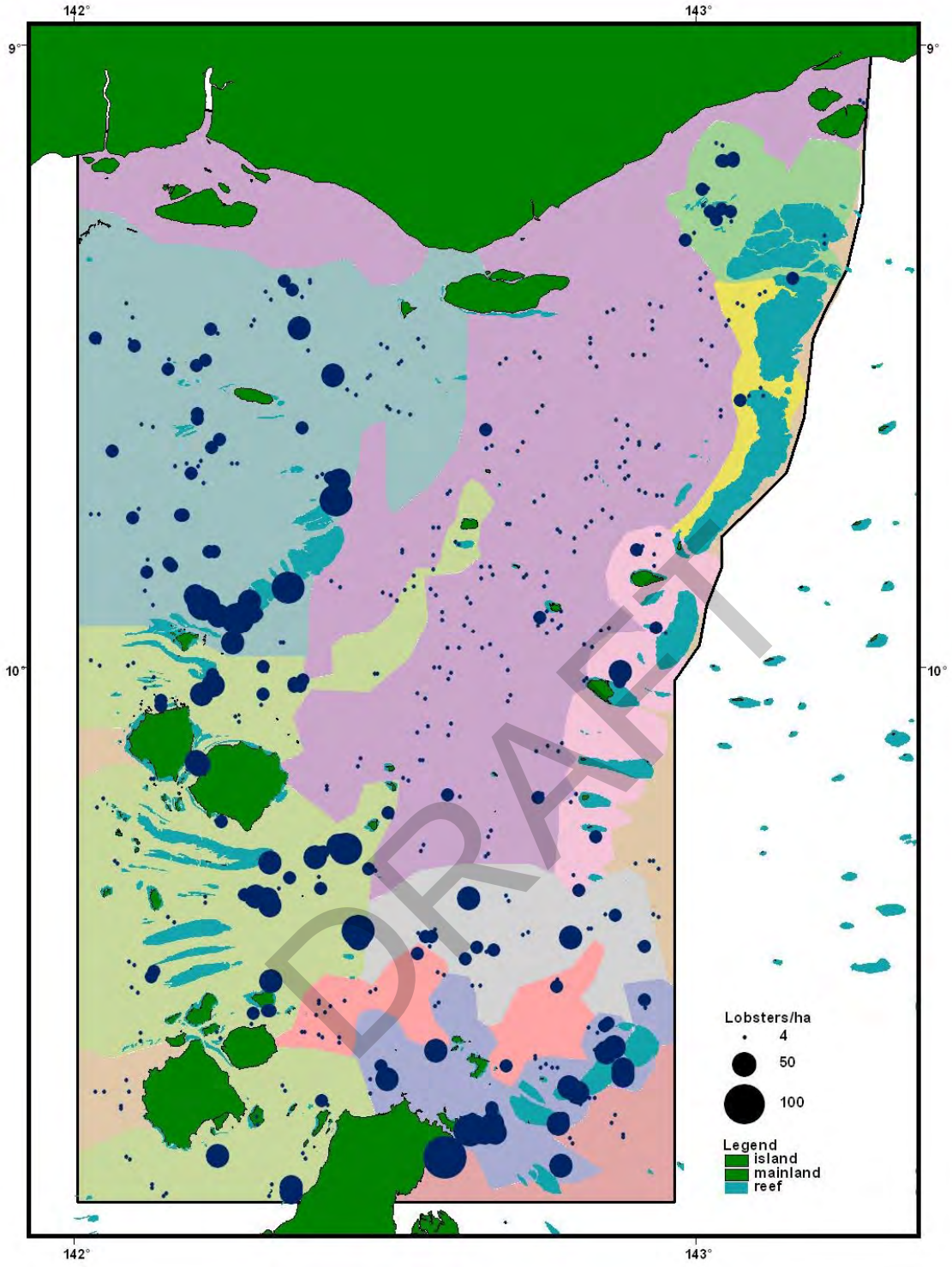


Visual story of the Kaiar Fishery CSIRO research information session held with the TRL community on Thursday Island in November 2016 explaining the fisheries science (Graphic by Dr Sue Pillans, www.drsuepillans.com)

Harvest Control Rule

The new approach to setting sustainable catches uses an empirical (data-based) Harvest Control Rule (eHCR) that can be rapidly applied to provide a Recommended Biological catch (RBC) once the catch, survey indices and other data inputs (CPUE or Catch-Per-Unit-Effort) become available. The eHCR is a central component of the Harvest Strategy, defined as "a framework that specifies the pre-determined management actions in a fishery necessary to achieve the agreed ecological, economic and/or social management objectives." A key principle is that fishery managers, fishers and key stakeholders utilise pre-agreed (and preferably pre-tested) rules as to how to adjust management recommendations given updates of data and/or model outputs (http://www.agriculture.gov.au/fisheries/domestic/harvest_strategy_policy).

The eHCR selected by the TRLRAG (August 2016), from a number of alternative candidates that were evaluated, is a formula that outputs a RBC in December for the following year. This formula is the multiple of the average catch over the last 5 years and a statistic which measures the relative performance of the fishery based on the following 5 data inputs: (1) Pre-season recruiting lobster (1+) standardised relative numbers; (2) Pre-season recently-settled lobster (0+) standardised relative numbers; (3) nominal CPUE (TIB sector) and (4) standardised CPUE (TVH sector) (using data available up until end of October); and (5) total catch (TIB,TVH,PNG) (using data available up until end of October. This eHCR implies that if the performance of the fishery is improving then the RBC will increase while if the performance of the fishery is decreasing then the RBC will also decrease. Over the long-term this eHCR should maintain the stock around the target biomass level.



Different weightings are applied to the four abundance indices included in the relative performance statistic used in the eHCR, based on extensive testing to compare performance of alternative weightings and also on considerations of the information content and reliability of each series, as well as a preference expressed by the stakeholders to use a portfolio approach in determining the RBC. The pre-season 1+ index is the most

reliable and direct in terms of indexing the biomass of lobsters that will be available to be caught in the next fishing season, and hence this index is assigned the highest weighting of 70%. The pre-season 0+ index provides an early indication of the following year's recruitment, whereas the CPUE indices reflect the abundance of the large 2+ lobsters, the survivors of which will migrate out of the Torres Strait to spawning grounds to the East, and hence they index spawning biomass which is an important consideration in terms of ensuring the future sustainability of the stock. Each of these three secondary indices (Survey 0+ and CPUE (TIB and TVH)) are assigned a weighting of 10% in the eHCR formula.

Visual story of the Kaiar Fishery CSIRO research information session held with the TRL community on Thursday Island in November 2016 explaining the science of the Harvest Control Rule (HCR) (Graphic by Dr Sue Pillans, www.drsuepillans.com)

Simulation testing showed that the best approach is to use the slope of the trends in the secondary indices over the last five years' data (after first taking the natural logarithm of the data) for each of the abundance indices. This allows the RBC to be based on medium term trends in abundance, rather than on just the current abundance. Using the last five years' data gave the best performance in terms of a number of key statistics that were used to compare the performance of alternative candidate rules. Key performance statistics considered by the TRLRAG included those related to resource status (spawning biomass level, and levels relative to target reference levels), average annual catch (averaged over 20 years), average annual variability in catch, as well as risk to the fishery and risk of closure of the fishery. The eHCR candidate that included taking the natural logarithm was preferred because this has the effect of dampening some of the inter-annual variability and hence ensuring that the RBC responds to medium-term changes in resource trends rather than bouncing up or down very erratically. Similarly, a number of alternative options were explored that used the trend fitted to different numbers of

years of historical abundance indices, but using the trend based on the past 5 years was shown to perform best.

The preferred eHCR therefore outputs a RBC based on the slopes of the regression lines fitted to the pre-season survey and CPUE indices, with different weightings applied to the different data sources (70% pre-season 1+; 10% pre-season 0+; 10% CPUE_TIB; 10% CPUE_TVH), and the overall resultant trend multiplied by the average of the last 5 years' catch. In essence, this will output annual catches with an average similar to the average of recent catches, but the actual value each year will be scaled up or down based on the resource status. For example if the abundance indices suggest the resource is increasing, the RBC will be increased and conversely, so as to ensure that the stock is not overfished in years when recruitment naturally fluctuates to low levels. Stakeholders also selected an additional rule to cap the total catch at 1000 t in the (unlikely) event that the eHCR outputs a RBC that exceeds this tonnage.

Forecast TAC

Consistent with previous approaches, a Forecast TAC is generated each year to provide a heads-up of the likely RBC for year y+2, in case this is useful for planning purposes. The Forecast value uses the pre-season 0+ data only, and is scaled (using a multiplier of 0.85) so that on average the value is 100t less than the final TAC, as the TRLRAG previously agreed that the Forecast should be set lower than the final TAC because of greater uncertainty in predicting more than one year ahead, and also because it would be preferable to increase rather than decrease any preliminary RBC value. Simulation testing suggested that the Forecast performs reasonably in predicting future fishable biomass, and that with increased survey effort (to improve the precision of the 0+ abundance index), the

precision and reliability of both the Forecast and RBC (which also uses the 0+ index) could be improved.

Stock Assessment of Resource Status

The eHCR will be applied annually to set a RBC that takes into account recent trends in resource abundance indices, but it does not provide information as to the current stock size, for example relative to important reference levels such as the target biomass level (65% of the comparable unfished biomass) and limit reference point (LRP) (32% of the comparable unfished biomass). The eHCR is tuned so that on average the stock will fluctuate around the target biomass level and avoid the limit biomass level, but to accurately assess resource status, it is necessary to do a stock assessment. A stock assessment will thus be conducted every three years to rigorously assess stock status and productivity, and check that the eHCR is working as it is supposed to. A stock assessment is also necessary to evaluate whether the spawning stock biomass drops below the LRP because if the LRP is triggered in two successive years, then the fishery is closed.

Fishery Closure Rule

As a stock assessment is only scheduled for every third year, this means that action may not be taken quickly enough if the spawning biomass drops to very low levels (which may be due to either fishery or environmental conditions), and hence an additional precaution has been built into the Harvest Strategy. Based on analysis of the historical pre-season and mid-year survey indices, a pre-season 1+ survey trigger point of 1.25 (average number of lobsters per survey transect and lower than any historically observed values) has been set, such that if this lower limit is triggered in any year, then the required action is that a stock assessment be conducted in the following year. If the stock assessment suggests that the spawning stock biomass is above the LRP, then the process continues as previously. However, if spawning biomass is assessed as below the LRP, then a stock assessment is again triggered in the following year. If the second stock assessment suggests the stock is above the LRP, then the

process again continues as previously, but if the spawning biomass is below LRP (i.e. two consecutive years with spawning biomass below LRP), then the fishery is closed and appropriate action (e.g. implementing surveys, analysing size structure and environmental information) is put in place to rebuild the stock. In general, the eHCR is therefore applied every year unless the LRP is triggered in two consecutive years, or there are exceptional circumstances. Exceptional circumstances include situations where the new data collected indicate that the resource has moved outside the range for which the eHCR has been tested, or environmental conditions have an impact on the stock that is similarly outside the bounds of what the eHCR has been tested as robust to. An examples would be an extreme weather event resulting in a very low stock.

Harvest Control Rule Testing

The eHCR is a relatively simple formula for calculating the recommended biological catch each year. However, it is important to understand that although simple it has been rigorously and extensively tested using historical information and simulations of likely outcomes. Hence it has a solid foundation based on the wealth of historical data and information for the fishery. To test the performance (in terms of meeting pre-specified objectives) and robustness (i.e. ensuring it doesn't fall over if the stock or fishers behave or change in certain ways) of the eHCR, we use as the so-called operating model, the 2015 integrated stock assessment model that integrates all historical information (catch records since 1973, mid-year survey data from 1989-2014, Benchmark surveys, pre-season survey data (2005-2009; 2014-2015), catch-at-age information, size composition information). In addition, rather than using the single best-case stock assessment model, we use four versions of the model that include alternative parametrisations related to the stock-recruitment assumptions (more conservative steepness parameter; sporadic poorer auto-correlated recruitment) and the form of the assumed relationship between stock biomass and CPUE (hyperstability parameter settings). We project each model forward 20 years, generating random future recruitment scenarios

that are based on what has been observed in the past, as well as future survey "data" and CPUE that are assumed collected with observation errors similar to what has been observed in the past. We test how well each alternative candidate eHCR performs by testing it using 200 replicates of each of the four operating models (i.e. 800 future scenarios). We also account for implementation uncertainty which describes the difference between the RBC allocation to each sector (not considered in this study which focuses only on the total RBC) and the actual catch of each sector. The implementation errors assumed for each sector in the testing are similar to past observed differences between "dummy" TAC allocations and actual catches, and hence are greatest for the PNG sector, followed by TIB and TVH sectors.

CSIRO picturing the Kaiar Fishery with the TRL community on Thursday Island in November 2016

A large number of alternative types of eHCR rules using different combinations of data inputs were trialled to inform selection of the final rule. There is no one single correct answer in this process of Management Strategy Evaluation (MSE) testing. Rather, selection of a final eHCR is made by comparing trade-offs across a range of different performance statistics (e.g. the trade-off between a rule that sets a very high catch is that it likely results in high risk to a resource) and also that it performs satisfactorily in meeting pre-specified objectives (such as the target biomass level). In addition, the performance of the eHCR needs to be tested using sensitivity and robustness tests, to see whether it still performs satisfactorily even if there are moderate changes in the stock, environment, fisher behaviour, surveys and other aspects of the fishery. For example, sensitivity tests were done assuming higher implementation errors, survey observation errors, future changes in catchability (which might be linked to improvements in efficiency, changes in fishing practices or environmental drivers making lobsters harder to find and catch) as well as future poor recruitment events or increases in the natural mortality rate.

HCR Selected by TRLRAG

The eHCR selected by the TRLRAG performed reasonably across a broad range of sensitivity scenarios, suggesting that it is a reasonably robust method that will respond appropriately to unforeseen future changes to adjust stock size upwards or downwards as necessary, in such a way as to substantially reduce the risk of overfishing or underfishing (i.e. not optimally utilising the resource). This is illustrated by comparing the performance with a constant catch strategy (with catch set at 680 t or alternatively, the average of the past 10 years' catch). Results highlight that such a constant catch strategy poses an unacceptably high risk to the resource and importantly a substantially higher risk of invoking a closure of the fishery in the future, compared to the adaptive eHCR presented above, which adjusts catches in line with stock fluctuations. It is worth noting that previous TAC estimates were as low as 470 t; hence a constant catch may result in overfishing by 200 t in low stock years. Simulations

suggest that to achieve the same level of risk as the adaptive eHCR being proposed, the constant catch would need to be set at a low total of 360 t, which is approximately half the average catch that could be achieved using an adaptive eHCR.

Data quality requirements

The eHCR relies critically on the provision of high quality data that are provided before pre-specified deadlines. The Australian Harvest Strategy Policy allows for tiered approaches which cater for different levels of certainty about a stock. It is well recognized that increased levels of precaution are necessary as levels of uncertainty about stock status increase (e.g. if there are fewer data to inform on stock status). Hence catch or exploitation levels can be adjusted on the basis of keeping the risk approximately constant across the tiers, such that catch and exploitation rates will decrease as tier levels increase. Future work will quantify what the penalties or bonuses are that should be applied in a tier system that accounts for differences from year to year in the amount and quality of data that are available to inform the setting of a RBC. Simulations are being used to compute how much additional catch could be taken, for the same level of risk, if additional surveys (such as re-implementing a mid-

year survey or extending the pre-season 0+ survey) are conducted. On the other hand, a penalty, determined by again calibrating to the same level of risk, needs to be applied to the RBC if the quality or quantity of survey other data are degraded in a particular year. As above, if there are no survey data, then a low constant catch of 360 t could be set, and if there are no data at all (i.e. no surveys, CPUE or reliable catch), then the fishery should be closed.

Adopting an eHCR approach means that it is imperative that data are collected reliably and timeously each year in order to manage the stock effectively.

Summary

In summary, the TRLRAG are proposing that the basis for setting a TAC be changed from a traditional approach to a Harvest Control Rule approach, such as is now implemented in a number of fisheries globally, including for Australia's southern rock lobster fishery. Previously, a stock assessment model was used annually to analyse fishery data and assess current status and productivity of the resource. A "best assessment" then provided the RBC and a reference-point hockey-stick HCR informed the TAC recommendation and management action. The new approach involves using a formula for providing the RBC, based on pre-specified data inputs, and therefore for setting the TAC. The formula or harvest control rule (also called a decision rule) is empirical, as it uses the data directly e.g. recent upward or downward trends in abundance indices are used directly as feedback and hence the TAC changes in the same direction. In addition, a full stock assessment using the integrated fishery model will be conducted every third year.

The eHCR has been extensively tested by simulation to provide appropriate trade-offs, taking into account a range of uncertainties and using methods that are now well established internationally and recognised as state-of-the-art approaches to successfully and optimally managing fisheries. The greatest advantages to adopting a HCR approach are that (1) it can be applied quickly and easily to set a TAC in time for the start of the new fishing

season; (2) it provides a transparent and easily understandable tool for stakeholders (e.g. the effect on the RBC of negative or positive decreases/increases in stock abundance indices can be readily seen, and a spreadsheet example is provided to stakeholders for this purpose); (3) it provides a sound basis for setting TACs without compromising resource status; (4) it properly addresses concerns about scientific uncertainty through simulation testing to ensure that feedback secures reasonably robust performance across a range of plausible alternative resource dynamics; and (5) it empowers stakeholders by allowing them to transparently assess trade-offs between key performance measures and select the most favourable option taking into account a range of biological, economic, social and cultural considerations. Another advantage of a HCR is: (6) it uses pre-agreed rules for management of the fishery thus allowing management to be pro-active instead of re-active.

Summary explanation of TRL Harvest Control Rules

RULE 1: Total Allowable Catch is equal to a base amount which is increased or decreased each year depending on an index of lobster in the Pre-season Survey *and* depending on whether trends in Catch per Unit of Effort in each fleet have increased or decreased.

The base amount is the average of the last 5 years of total catch and the rule is that the base amount must be increased or decreased according to the Pre-season Survey and fleet catch rates in order to meet the objective of sustainable management of Torres Strait marine stocks.

RULE 2: If the Pre-season Survey index falls below a value (1.25); that is lower than the lowest recorded index value then the stock assessment will be undertaken for the next year; else

RULE 3: The stock assessment is undertaken every 3 years to check if the stock is meeting the Target Reference Point and not falling below the Limit Reference Point; and

RULE 4: If the stock falls below the Limit Reference Point for two consecutive years as determined by the stock assessments in those two years then Total Allowable Catch will be the minimum (zero).

RULE 5: Finally, the maximum Total Allowable Catch is equal to 1000 tonnes if **RULE 1** ever evokes a higher value.

Additional info: Target Reference Point is equal to 65% of the pristine total biomass.

Limit Reference Point is equal to 32% of the unfished total biomass.

Rules based on using a fixed (average) catch pose high risk for variable stocks such as TRL.

Contact: Dr Éva Plagányi, CSIRO Oceans & Atmosphere, Brisbane, QLD 4102

Email: eva.plaganyi-lloyd@csiro.au. Tel. 07 38335955

Australian Government
Australian Fisheries Management Authority

File reference: DOC19/30851

22 November 2019

Dear Torres Strait Tropical Rock Lobster Fishery licence holder

Management Arrangements for the 2019-20 Fishing Season

The 2019-20 fishing season for the Torres Strait Tropical Rock Lobster Fishery (TRL Fishery) will commence on 1 December 2019. This letter details some key management arrangements that will apply this season.

Total Allowable Catch

On 19 November 2019, Senator the Hon. Jonathon Duniam 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 2019-20 fishing season. This was agreed as an interim TAC by the Protected Zone Joint Authority (PZJA) at their meeting on 19 November 2019 and will apply for the fishing season commencing 1 December 2019. It is expected that the TAC will be increased once the outcomes of the scientific assessment process and the TAC sharing arrangements under the treaty between Australia and Papua New Guinea (PNG) have been taken into account. Any increase in the TAC is expected to be determined by the end of February 2020.

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*	0.200	**132,403.2**
Transferable Vessel Holder (TVH) licence holders		337,981		**67,596.2**

* Held by the Torres Strait Regional Authority (TSRA).

Harvest Strategy for the TRL Fishery

The TRL Harvest Strategy was adopted by the PZJA at their meeting on 19 November 2019 and sets out the objectives for the Fishery, how the Fishery will be monitored, what data should

Canberra
PO Box 7051
Canberra ACT 2610
P 02 6225 5555
F 02 6225 5500

Darwin
PO Box 131
Darwin NT 0801
P 08 8943 0333
F 08 8942 2897

Thursday Island
PO Box 376
Thursday Island QLD 4875
P 07 4069 1990
F 07 4069 1277

Lakes Entrance
PO Box 408
Lakes Entrance VIC 3909
P:0447 019 916

be collected, and rules for the determination of a global TAC each season. The Harvest Strategy will be used in the 2019-20 fishing season to determine the global TAC for the Fishery.

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 2019-20 fishing season, is provided in **Enclosure A** to this letter.

Moon-Tide Hookah Closures

At their meeting held on 26 November 2018, the PZJA reaffirmed existing management controls currently applied to the TRL Fishery, to be implemented under the *Torres Strait Fisheries (Tropical Rock Lobster) Management Instrument 2018* (the Instrument) and licence conditions. This includes periodic closures to the use of hookah gear for three days either side of the full or new moon each month based on the largest difference between high and low tides.

For the purpose of subsection 13(2) of the Instrument, 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 2019-20 fishing season during the moon-tide hookah closure periods shown in the calendar (dated 13 November 2019) provided in **Enclosure B** to this letter. The first scheduled moon-tide hookah closure period starts on 6 February 2020.

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

As always, licence holders should familiarise themselves with all management arrangements that apply in the TRL Fishery prior to the commencement of fishing. Further information can be found on the PZJA website at www.pzja.gov.au or by contacting AFMA.

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 Additional information regarding management arrangements for the Torres Strait Tropical Rock Lobster Fishery 2019-20 fishing season

B TRL Fishery moon-tide hookah closures for the 2019-20 fishing season (dated 13 November 2019)

Enclosure A

Additional information regarding management arrangements for the Torres Strait Tropical Rock Lobster Fishery 2019-20 fishing season

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How much can I catch?

The 2019-20 fishing season for the Torres Strait Tropical Rock Lobster Fishery (TRL Fishery) will open from 1 December 2019 until 30 September 2020, or until available quota units have been caught.

If you are fishing under a TIB licence

- 662,016 quota units, with a value of **132,403.2 kilograms** of TRL is available to be caught by Traditional Inhabitant Boat (TIB) licence holders. This is an **interim amount only** and it is expected that the TAC will be increased once the outcomes of the scientific assessment process and the TAC sharing arrangements under the treaty between Australia and Papua New Guinea (PNG) have been taken into account. AFMA will write to all TRL Fishery licence holders when this happens.
- When this amount has been caught, TIB licence holders will no longer be permitted to fish commercially in the TRL Fishery (unless the total allowable catch (TAC) has been increased – see above).
- TIB licence holders will be provided with a notice by the Commonwealth Minister for Fisheries when this occurs.
- The mandatory Fish Receiver System (catch disposal records) will be used to account for catches by TIB licence holders against the TIB sector's quota holdings (held by the Torres Strait Regional Authority (TSRA) in trust).
- If a TRL is tailed, a weight conversion factor of 2.677 will be applied. This means that if an individual lands 1 kilogram of tailed TRL, 2.677 kilograms of TRL will be deducted from the uncaught quota amount.
- AFMA will monitor the catches of TIB licence holders against the TIB sector's quota holdings, and provide regular catch reports throughout the season to TRL Fishery licence holders on the remaining catch that is available to be taken. These reports will be made available on the Protected Zone Joint Authority (PZJA) website at www.pzja.gov.au and also sent to TRL Fishery licence holders by email and SMS where licence holders have these details registered with AFMA.
- Licence holders will also be able to check the catches of the TIB sector against the TIB sector's quota holdings at any stage by contacting the AFMA Thursday Island office on 07 4069 1990 or FisheriesTI@afma.gov.au.

If you are fishing under a TVH licence

- 337,981 quota units, with a value of **67,596.2 kilograms** of TRL, have been allocated to individual Transferable Vessel Holder (TVH) licence holders. These quota units are only available to be fished by the individual that holds them. This is an **interim amount only** and it is expected that the TAC will be increased once the outcomes of the scientific assessment process and the TAC sharing arrangements under the treaty between Australia and PNG have been taken into account. AFMA will write to all TRL Fishery licence holders when this happens.
- Prior to the start of each fishing season, each TVH licence holder will receive an extract of the Register detailing the number and value of the quota units held by the individual.
- When all the quota units (including any leased units) held by a TVH licence holder have been caught, the licence holder will no longer be permitted to fish commercially in the TRL Fishery.
- It is the responsibility of each TVH licence holder to monitor their catches against the quota units that they hold.
- The Fish Receiver System (catch disposal records) will be used to account for TVH licence holders' catches against their quota unit holdings.
- If a TRL is tailed, a weight conversion factor of 2.677 will be applied. This means that if an individual lands 1 kilogram of tailed TRL, 2.677 kilograms of TRL will be deducted from the individual's uncaught quota amount.
- AFMA will provide regular catch reports detailing the total catch by the TVH sector (not individual catches). These reports will be made available on the PZJA website at www.pzja.gov.au and also sent to TRL Fishery licence holders by email and SMS where licence holders have these details registered with AFMA.
- TVH licence holders will also be able to check their quota holdings at any stage throughout the season by registering for GOFish, AFMA's e-licensing system. Licence holders can do this by contacting the AFMA Licensing team on 02 6225 5555 or licensing@afma.gov.au.

What is a Harvest Strategy?

The Harvest Strategy for the TRL Fishery was adopted by the PZJA at their meeting held on 19 November 2019, and will be used to determine the global TAC for the 2019-20 and future fishing seasons.

The Harvest Strategy sets out the objectives for the TRL Fishery, how the Fishery is to be monitored, what data should be collected, and rules for determining a recommended biological catch (RBC) and the global TAC each fishing season. Having a harvest strategy in place provides transparency for stakeholders (fishers, traditional owners, communities, scientists and managers) about how the Fishery will be managed into the future.

More information on harvest strategies for Torres Strait fisheries, including the TRL Fishery, can be found on the PZJA website at www.pzja.gov.au.

What is a TAC and how is it set?

The figure below provides an explanation of how the TAC for the TRL Fishery is set prior to the start of each fishing season and increased to the final amount.

TRL Fishery survey conducted by CSIRO (in November)

The survey estimates the total number of tropical rock lobster (TRL or kaiar) in the water

⇩

Australian TRL Fishery opens on 1 December under a 200,000 kg Australian TAC

A TAC (total allowable catch) of 200,000 kilograms is set for the Australian TRL Fishery, in the interim, until catch sharing arrangements for the season can be agreed between Australia and PNG

⇩

TRL Resource Assessment Group (TRLRAG) provides advice on a RBC

A RBC (recommended biological catch) is the total amount of kaiar that can be sustainably taken out of the water, in the area of the Torres Strait Protected Zone, by all fishers (commercial, traditional, recreational) each season, while leaving enough in the water to breed for future seasons

⇩

TRL Working Group provides advice on a global TAC

A global TAC is the total amount of kaiar that can be sustainably taken out of the water, in the area of the Torres Strait Protected Zone, by both Australian and PNG commercial fishers each season

⇩

Global TAC endorsed by the Protected Zone Joint Authority (PZJA)

⇩

Australia and PNG agree on the global TAC and how it is to be shared, including cross-endorsement

Global TAC to be shared between Australia and PNG as per the terms of the Torres Strait Treaty

⇩

Australian TAC is increased

The TAC for the Australian TRL Fishery is increased from the initial amount to the final amount, which is equal to Australia's share of the global TAC as agreed between Australia and PNG

How does quota work?

On 16 September 2019, 999,997 quota units were granted under the *Torres Strait Fisheries (Quotas for Tropical Rock Lobster (Kaiar)) Management Plan 2018* (the Management Plan):

- 662,016 quota units (or 66.20%) were allocated to the TSRA comprising:
  - 562,000 to hold for the benefit of the TIB sector; and
  - 100,016 for the TVH licences it holds.
- 337,981 quota units (or 33.79%) were allocated to the remaining TVH principal licence holders.

The total number of quota units is fixed and will not change from fishing season to fishing season. However the amount of catch that may be taken against each quota unit will change as the TAC changes each fishing season.

Once a TAC is determined, the amount that each quota is worth will be calculated. This is done by dividing the TAC (in kilograms) by the total number of quota units (999,997). The result of this calculation is the weight value in kilograms of unprocessed TRL that can be taken for each quota unit held.

For example, if the TAC was 500,000 kilograms, then:

Quota unit value *= TAC ÷ total number of quota units*

= 500,000 kilograms ÷ 999,997

= 0.500 kilograms

There are enough quota units to allow the trading of either small or large amounts of quota. The table provided in the covering letter shows the TAC for the 2019-20 fishing season, the value of each quota unit and available catch for each sector.

A Guide to the Management Plan, as well as links to information about quota management systems, can be found on the PZJA website at www.pzja.gov.au.

How do Australia and PNG share TRL?

The *Torres Strait Treaty* recognises the rights of both Australia and PNG to commercial fisheries in the area of the Torres Strait Protected Zone (TSPZ). The TSPZ is an area in the Torres Strait that includes both Australian and PNG waters. These rights include the right of Australia and PNG to fish in the waters of the other country. This practice is known as cross-endorsement and involves both countries nominating an agreed number of commercial fishing boats to fish an agreed share of the TAC. This share is usually 25% of the other country's TAC apportionment, unless otherwise agreed.

With regards to the commercial catch of TRL, each year Australia and PNG:

- Agree on the global TAC and how it is to be apportioned between Australian and PNG waters.
    - Generally, it is agreed that 85% of the global TAC is to be taken in Australian waters and 15% of the global TAC is to be taken in PNG waters. This is based on the agreed distribution of TRL in the area of the TSPZ.

For example, if the global TAC was 500,000 kilograms, then:

Australia's apportionment of the global TAC	*= 85% of the global TAC*
	= 85% of 500,000 kilograms
	= 0.85 x 500,000 kilograms
	= 425,000 kilograms
PNG's apportionment of the global TAC	*= 15% of the global TAC*
	= 15% of 500,000 kilograms

= 0.15 x 500,000 kilograms

= 75,000 kilograms

- Agree on cross-endorsement allocations and preferential entitlement.
    - Under Article 23(4), each country is entitled to fish for 25% of the other country's TAC apportionment in the waters of the other country, unless otherwise agreed.
    - Under Article 25 of the Treaty, where Australia and/or PNG does not itself propose to take all the TAC to which it is entitled, either in its own area of waters or that of the other country, the other country will have preferential entitlement to that share. This must be agreed between Australia and PNG.

For example, if the global TAC was 500,000 kilograms, then:

Australia's cross-endorsement allocation in PNG waters	*= 25% of PNG's 15% share of the global TAC* *= 25% of 75,000 kilograms* *= 0.25 x 75,000 kilograms* ***= 18,750 kilograms***
PNG's cross-endorsement allocation in Australian waters	*= 25% of Australia's 85% share of the global TAC* *= 25% of 425,000 kilograms* *= 0.25 x 425,000 kilograms* ***= 106,250 kilograms***

At their meeting held on 19 November 2019, the PZJA agreed that, subject to further consultation with stakeholders, the preferred arrangement for utilising Australia's cross-endorsement allocation within PNG's waters is to not seek cross-endorsement but rather pursue a preferential entitlement arrangement under Article 25 of the Treaty. In effect this means, Australia will seek to take a proportion of PNG's cross-endorsement allocation within Australian waters equivalent to Australia's cross-endorsement allocation in PNG's waters. Conversely, PNG would be entitled to take Australia's cross-endorsement catch allocation in PNG's waters. Under such an arrangement, Australia's cross-endorsement allocation would be shared across all Australian licence holders in both sectors of the TRL Fishery.

Initial advice regarding the future utilisation of Australia's cross-endorsement allocation within PNG's waters will be sought from the PZJA TRL Working Group meeting to be held on 12 December 2019. Broader consultation with stakeholders, including licence holders, with be undertaken over the coming fishing seasons.

Enclosure B

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Torres Strait Tropical Rock Lobster Fishery Moon-Tide Hookah Closures for the 2019-20 Fishing Season* (13 November 2019)

Dec-19	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue
	1	2	3	4	5	6	7	8	9	10	11	○ 12	13	14	15	16	17	18	19	20	21	22	23	24	25	●	27	28	29	30	31
Jan-20	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri
	1	2	3	4	5	6	7	8	9	10	○ 11	12	13	14	15	16	17	18	19	20	21	22	23	24	●	26	27	28	29	30	31
Feb-20	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat		
	1	2	3	4	5	6	7	8	○ 9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	●	25	26	27	28	29		
Mar-20	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue
	1	2	3	4	5	6	7	8	9	○ 10	11	12	13	14	15	16	17	18	19	20	21	22	23	●	25	26	27	28	29	30	31
Apr-20	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	
	1	2	3	4	5	6	7	○ 8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	●	24	25	26	27	28	29	30	
May-20	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun
	1	2	3	4	5	6	○ 7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	●	24	25	26	27	28	29	30	31
Jun-20	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	
	1	2	3	4	5	○ 6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	●	22	23	24	25	26	27	28	29	30	
Jul-20	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri
	1	2	3	4	○ 5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	●	22	23	24	25	26	27	28	29	30	31
Aug-20	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon
	1	2	3	○ 4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	●	20	21	22	23	24	25	26	27	28	29	30	31
Sep-20	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	
	1	○ 2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	●	18	19	20	21	22	23	24	25	26	27	28	29	30	
Oct-20	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1	○ 2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	●	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Nov-20	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	
	○ 1	2	3	4	5	6	7	8	9	10	11	12	13	14	●	16	17	18	19	20	21	22	23	24	25	26	27	28	29	○ 30	

* The 2019-20 fishing season runs from 1 December 2019 through to 30 September 2020.

KEY

- ● New Moon
- ○ Full Moon
- Fishery closure (commercial fishing not permitted)
- Hookah closure (use of hookah gear not permitted)
- Moon-tide hookah closure (use of hookah gear not permitted)

TROPICAL ROCK LOBSTER WORKING GROUP (TRLWG)	MEETING 10 12 December 2019
CATCH SHARING WITH PNG	Agenda Item 5 For discussion and advice

RECOMMENDATIONS

1. That the Working Group **PROVIDE ADVICE** regarding the future utilisation of Australia's cross-endorsement allocation for tropical rock lobster (TRL) within Papua New Guinea's (PNG) waters in the area of the Torres Strait Protected Zone (TSPZ).

KEY ISSUES

Arrangements for future fishing seasons

2. The Torres Strait Treaty recognises the rights of both Australia and PNG to commercial fisheries in the area of the TSPZ. These rights include the right of Australia and PNG to fish in the waters of the other country. This practice is known as cross-endorsement and involves Australia and/or PNG nominating an agreed number of commercial fishing boats to fish an agreed share of the TAC. This share is usually 25% of the other country's TAC apportionment, unless otherwise agreed.
3. With regards to the commercial catch of TRL, each year Australia and PNG:
    a. Agree on the global TAC and how it is to be apportioned between Australian and PNG waters.
        i. Generally, it is agreed that 85% of the global TAC is to be taken in Australian waters and 15% of the global TAC is to be taken in PNG waters. This is based on the agreed distribution of TRL in the area of the TSPZ.
    b. Agree on cross-endorsement allocations and preferential entitlement.
        i. Under Article 23(4), each country is entitled to fish for 25% of the other country's TAC apportionment in the waters of the other country, unless otherwise agreed.
        ii. Under Article 25 of the Treaty, where Australia and/or PNG does not itself propose to take all the TAC to which it is entitled, either in its own area of waters or that of the other country, the other country will have preferential entitlement to that share. This must be agreed between Australia and PNG.
4. For illustrative purposes, a diagram showing the agreement for the 2018-19 fishing season is shown at **Attachment 5a**.
5. At their meeting held on 19 November 2019, the PZJA agreed that, subject to further consultation with stakeholders, the preferred arrangement for utilising Australia's cross-endorsement allocation within PNG's waters is to not seek cross-endorsement but rather pursue a preferential entitlement arrangement under Article 25 of the Treaty. In effect this means, Australia will seek to take a proportion of PNG's cross-endorsement allocation within Australian waters equivalent to Australia's cross-endorsement allocation in PNG's waters. Conversely, PNG would be entitled to take Australia's cross-endorsement catch allocation in PNG's waters. Under such an arrangement, Australia's cross-endorsement allocation would be shared across all Australian licence holders in both sectors of the TRL Fishery.
6. Supporting applications for cross-endorsement of Australian vessels to fish in PNG waters may present opportunities for individual operators but presents a number of challenges at

the fishery level. At the fishery level it is likely that the proposed approach would minimise overall both administrative and business costs, avoiding additional licencing, compliance and fishing costs (with having to travel further, noting some communities are closer to PNG waters than others).

7. Australia's allocation in PNG waters is relatively small (25% of 15% of the global TAC – for the 2018-19 fishing season this equated to 24 tonnes). Compared to PNG who currently only have seven TRL commercial fishing licence packages, there are well over 300 fishing licences in the Australian TRL Fishery. One issue therefore is being able to provide equitable opportunity to access cross-endorsement across licence holders without encouraging over investment (over capitalisation) and providing cost-effective and efficient administration, compliance and monitoring. Working in partnership with the PNG National Fisheries Authority (NFA), AFMA must also be mindful of the burden imposed on PNG NFA through possible cross-endorsement scenarios.
8. Should access to Australia's cross-endorsement allocation in PNG waters be sought, cross-endorsement licences would be subject to the conditions placed on them by the PNG NFA. Additional monitoring and enforcement resources may be required depending on the number of cross-endorsed boats operating. In supporting Australian applications for cross-endorsement AFMA would also need to review and consider monitoring and enforcement arrangements for Australian boats transiting between Australian and PNG waters. Having VMS on all boats (primaries, tenders and dinghies) for example may form a minimum requirement noting VMS is a cost-effective tool for monitoring boat movements.
9. Having regard for issues raised above and others raised by members at the meeting the Working Group is asked to provide advice regarding the future utilisation of Australia's cross-endorsement allocation for TRL within PNG's waters in the area of the TSPZ.
10. Following the provision of advice by the Working Group, broader consultation with stakeholders, including licence holders, with be undertaken over the coming fishing seasons.

Arrangements for the 2019-20 fishing season

11. AFMA and the PNG NFA met on 10 October 2019 to agree on a process for finalising catch sharing arrangements for the 2019-20 fishing season. AFMA and the PNG NFA will meet again in January 2020, to agree on the global TAC and catch sharing arrangements for the 2019-20 fishing season. Australia's final TAC will equate to Australia's share of the global TAC, as agreed with PNG. Further details on the expected timeline is provided at **Attachment 4b**.

BACKGROUND

12. The jurisdiction and management framework for commercial and traditional fishing in the Torres Strait is governed by the provisions of the Torres Strait Treaty, ratified in 1985, between Australia and PNG. The Treaty describes an area in the Torres Strait known as the TSPZ. The TSPZ consists of areas in which Australia and PNG have jurisdiction over certain non-sedentary and sedentary marine species. Articles 20-28 of the Treaty set out a framework to guide both countries in providing for the management, conservation and sharing of fisheries resources, and inspection and enforcement in the TSPZ.
13. The Treaty recognises the rights of both countries to the commercial fisheries of the TSPZ. This recognition is implemented through cooperative management and catch sharing provisions of Articles 22-23 of the Treaty. Since the Treaty was ratified, Australia and PNG have entered into formal arrangements under Article 22 of the Treaty to cooperatively manage six fisheries, hereinafter referred to as 'Article 22 fisheries'. These are the commercial fisheries for prawns, TRL, Spanish mackerel, pearl shell, and traditional fisheries for turtles and dugong. Australia and PNG have agreed to share the allowable

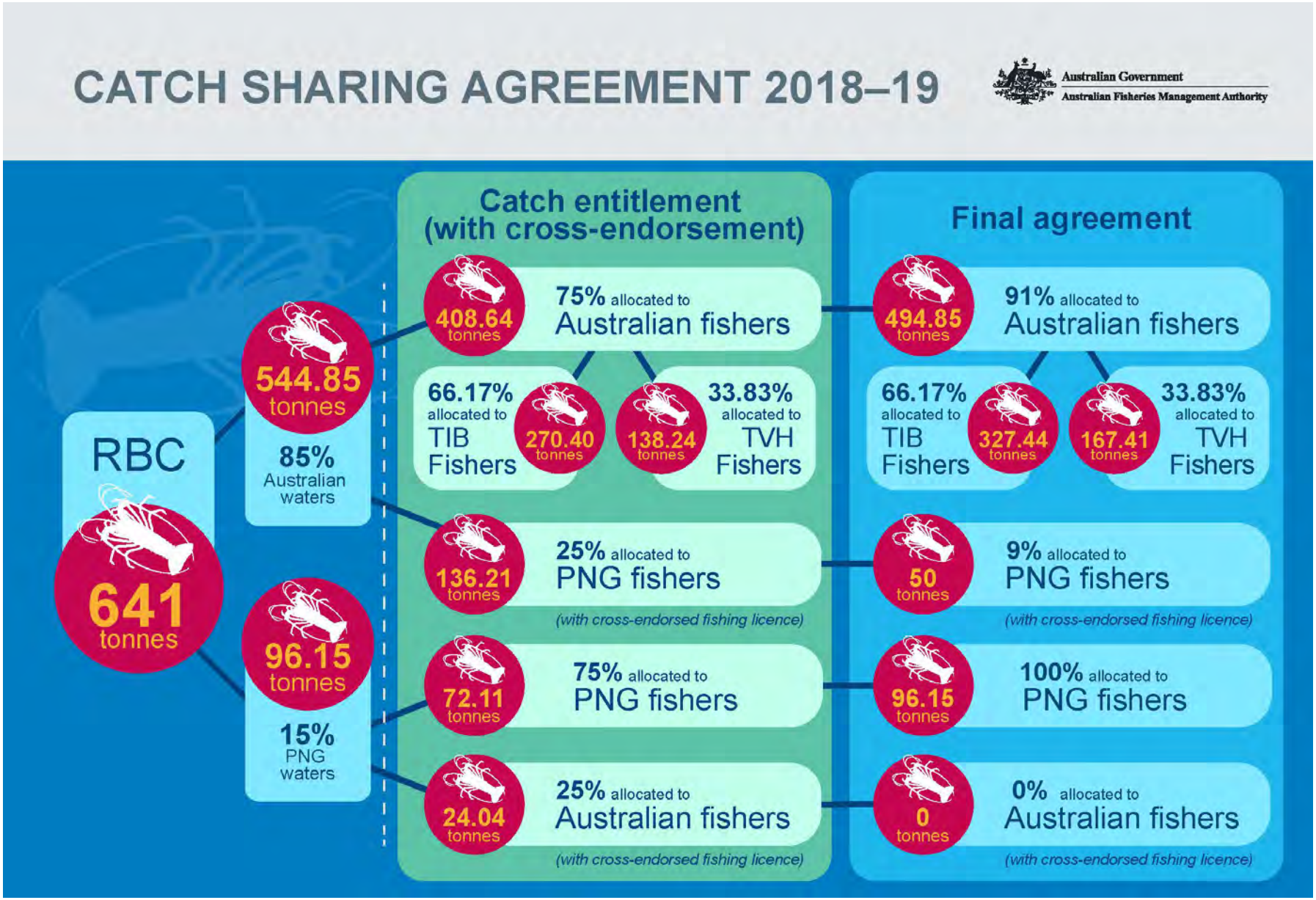
catch for Article 22 fisheries in accordance with the formula provided under Article 23(4) or as otherwise agreed under other provisions of the Treaty.

14. For TRL, catch sharing under the Treaty is undertaken in two tiers as detailed in the figure below. For other Article 22 fisheries, the formula under Article 23(4) generally applies.

Tier 1
Article 22(1) of the Torres Strait Treaty Australia 85% : PNG 15% Based on agreed stock distribution.

Tier 2
Article 23(4) of the Torres Strait Treaty Each Party is entitled to 25% of the catch share in the other Party's jurisdiction. This may be accessed by each Party through cross-endorsement. Under Article 25, Parties can agree to transfer all or part of a given catch share to the other Party (preferential entitlement).

15. There has been a small number of Australian and PNG operators that have expressed an interest in applying for a cross-endorsement licence in the last few fishing seasons. Australia last issued a cross-endorsement licence to PNG operators in the 2014-15 fishing season and has not accessed cross-endorsement allocations for any fishery in PNG waters since the early 2000s.


CATCH SHARING AGREEMENT 2018–19
Australian Government
Australian Fisheries Management Authority
RBC
641 tonnes
544.85 tonnes
85% Australian waters
96.15 tonnes
15% PNG waters
Catch entitlement (with cross-endorsement)
408.64 tonnes
75% allocated to Australian fishers
66.17% allocated to TIB Fishers
270.40 tonnes
138.24 tonnes
33.83% allocated to TVH Fishers
136.21 tonnes
25% allocated to PNG fishers
(with cross-endorsed fishing licence)
72.11 tonnes
75% allocated to PNG fishers
24.04 tonnes
25% allocated to Australian fishers
(with cross-endorsed fishing licence)
Final agreement
494.85 tonnes
91% allocated to Australian fishers
66.17% allocated to TIB Fishers
327.44 tonnes
167.41 tonnes
33.83% allocated to TVH Fishers
50 tonnes
9% allocated to PNG fishers
(with cross-endorsed fishing licence)
96.15 tonnes
100% allocated to PNG fishers
0 tonnes
0% allocated to Australian fishers
(with cross-endorsed fishing licence)

TROPICAL ROCK LOBSTER WORKING GROUP (TRLWG)	MEETING 10 12 December 2019
FIVE-YEAR RESEARCH PLAN	Agenda Item 6 For discussion and advice

RECOMMENDATIONS

1. That the Working Group:
    a. **DISCUSS** and **PROVIDE ADVICE** on the research priorities identified in the Rolling Five-Year Research Plan for 2020/21 to 2024/25 for the Torres Strait Tropical Rock Lobster Fishery (the Research Plan) (summary provided at **Attachment 6a**, full Research Plan provided at **Attachment 6b**), taking into consideration:
        i. comments provided by TRL Resource Assessment Group (TRLRAG) and Working Group members out-of-session in September 2019 (**Attachment 6c**);
        ii. the advice from the TRLRAG on this item at its meeting held on 10-11 December 2019 – the TRLRAG advice will be presented by the TRLRAG Chair at the meeting.
    b. **NOTE**, that pre-proposals and full proposals for funding in the 2020/21 financial year will not be due until early February and May 2020, respectively. Research pre-proposals relevant to the TRL Fishery will be provided to the TRLRAG and Working Group for out-of-session consideration and comment following this.

KEY ISSUES

Rolling five year research plan for the TRL Fishery

2. Under the Torres Strait Scientific Advisory Committee's (TSSAC) *Torres Strait Fisheries Strategic Research Plan 2018-2023* (SRP), each PZJA RAG and Working Group is tasked with identifying research priorities for their respective fisheries and updating their rolling five year fishery research plans by September each year.
3. On 16 September 2019, AFMA sought the advice of TRLRAG and Working Group members out-of-session of research priorities identified in the draft Research Plan. It was noted that due to the funding of multi-year projects, approximately $365,000 of a possible $411,000 of TSSAC research funds for the 2020/21 financial year has been committed, leaving approximately $45,000 for any urgent tactical research projects during the 2020/21 financial year.
4. TSSAC recently met on 25 November 2019 to discuss projects that could be funded from this remaining funding. The Research Plan was considered at this meeting. An update on the outcomes of this meeting will be provided by the AFMA member at the meeting.
5. Out-of-session comments on the draft Research Plan included proposed changes to the prioritisation of existing research priorities as well as the identification of new research priorities (**Attachments 6c**).
6. The Working Group is asked to provide advice on further changes to the Research Plan (summary provided at **Attachment 6a**, full Research Plan provided at **Attachment 6b**).
7. If new research priorities are identified, each will need to be categorised into one of three research themes under the SRP (**Attachment 6d**). There are several strategies under each theme and suggested ideas to help the Working Group to think about the sorts of projects which may go under these themes and strategies.

Research cycle for funding in the 2020/2021 financial year

8. TSSAC recently met on 25 November 2019 to agree on priorities for the TSSACs call for research for funding in the 2020/2021 financial year. An update on the outcomes of this meeting will be provided by the AFMA member at the meeting.
9. It is expected that the TSSAC call for research will be made in early December, which will involve the publication of scopes and a call for pre-proposals.
10. Pre-proposals and full proposals for funding in the 2020/21 financial year will not be due until early February and May 2020, respectively. Research pre-proposals relevant to the TRL Fishery will be provided to the TRLRAG and Working Group for out-of-session consideration and comment following this.
11. Further details on the annual research cycle is provided at **Attachment 6e** for information.

BACKGROUND

Rolling five year research plan for the TRL Fishery

12. Each year the TSSAC seeks input from each fishery advisory body (RAG, MAC or WG) to identify research priorities projected over the next five years. Rolling five-year research plans are to be developed for each Torres Strait fishery in conjunction with the TSSAC Five-year Strategic Research Plan (SRP) with a focus on the three research themes and associated strategies within the SRP.
13. Each fishery's research plan will be assessed by the TSSAC using a set of criteria, and used to produce an Annual Research Statement covering all Torres Strait fisheries.
14. The TSSAC then develop scopes for the highest ranking projects in order to publish its annual call for research proposals. There are likely to be more scopes that funding will provide for so TSSAC can consider a number of proposals before deciding where to commit funding.
15. Fishery research plans are to be reviewed and updated annually by the relevant PZJA consultative committee to ensure the plans maintain a five year projection for priority research. Priorities may also change during the review if needed.

Summary of research priorities

Note: Blue shading indicates a project that has been funded. For full details refer to the Rolling Five-Year Research Plan for 2020/21 to 2024/25 for the Torres Strait Tropical Rock Lobster Fishery at **Attachment 6b**.

Proposed project	Objectives and component tasks	Priority	Timing + costing
Fishery surveys, stock assessment, harvest control rules and recommended biological catch (RBC)	➢ Monitor ongoing changes in the fishery and update or develop fishery performance indicators as required. ➢ Recommend a recommended biological catch (RBC) annually for each season. ➢ Every third year update and implement the long-term stock assessment. ➢ Conduct a pre- season survey in November each year, including seabed habitat monitoring. ➢ Continue development of a harvest strategy for the TRL Fishery including an empirical harvest control rule. ➢ Facilitate data sharing with PNG. ➢ Development of a tiered harvest strategy for the TRL Fishery.	Essential (1)	Funded under AFMA Research Project 2019/0825 until 2021/22
Ecological risk assessment (ERA)	➢ Conduct an update to the 2007 ERA for the TRL Fishery.	Essential (1)	Identified for potential assessment under AFMA Research Project until 2020/21
Improvement of data collection	➢ Improved monitoring of commercial catch and effort in all sectors of the fishery. ➢ Estimate of non- commercial take of TRL. ➢ Alternative monitoring techniques of effort, for example GPS tracking.	Essential (1)	Funding for sub-group meetings to be sourced from RAG budget until 2020/21
Science peer review	➢ Consistent with best practice Guidelines for quality assurance of Australian fisheries research and science information (the Guidelines), a peer review be conducted of the TRL Fishery survey design, stock assessment and draft Harvest Strategy.	Essential (1)	Identified for potential funding in 2021/22. Indicative costing identified ($60-80k)
Understanding connectivity, environmental drivers and adaptation strategies	➢ Understanding of migration of different age classes of lobsters between, and within, jurisdictions (e.g. PNG, QLD East Coast and Torres Strait). ➢ Understanding of recruitment connectivity between, and within, jurisdictions, including key areas of larval release within each jurisdiction. ➢ Management implications of movement and recruitment connectivity between, and within, jurisdictions.	Essential (2)	No timing or costing identified
Understanding changes to fishing power through time	➢ Understanding changes in fishing behaviour and power over time (e.g. changes to the size of engines, use of GPS, gear, areas fished, time fished, experience of divers), to inform the standardisation of CPUE data.	Desirable (2)	No timing or costing identified
Understanding fishing behaviour	➢ Understanding the drivers and incentives in determining fishing behaviour in all sectors. ➢ Understanding fishing behaviour under output controls: the impact of ITQs or competitive quota on the fishery (including social impacts); the extent and impact of discard mortality; the effect of changing market preferences on fishing behaviour under output controls; the extent of value adding e.g. moving to live product, targeting different sizes; the extent of high grading under output controls.	Desirable (3)	No timing or costing identified
Mid-year survey	➢ Conduct mid- year survey, as required under the Harvest Strategy for the TRL Fishery.	Only if triggered under the Harvest Strategy, priority = essential (1)	To be conducted only if triggered under the Harvest Strategy Indicative costing identified ($110,000 with in-kind contribution from CSIRO)

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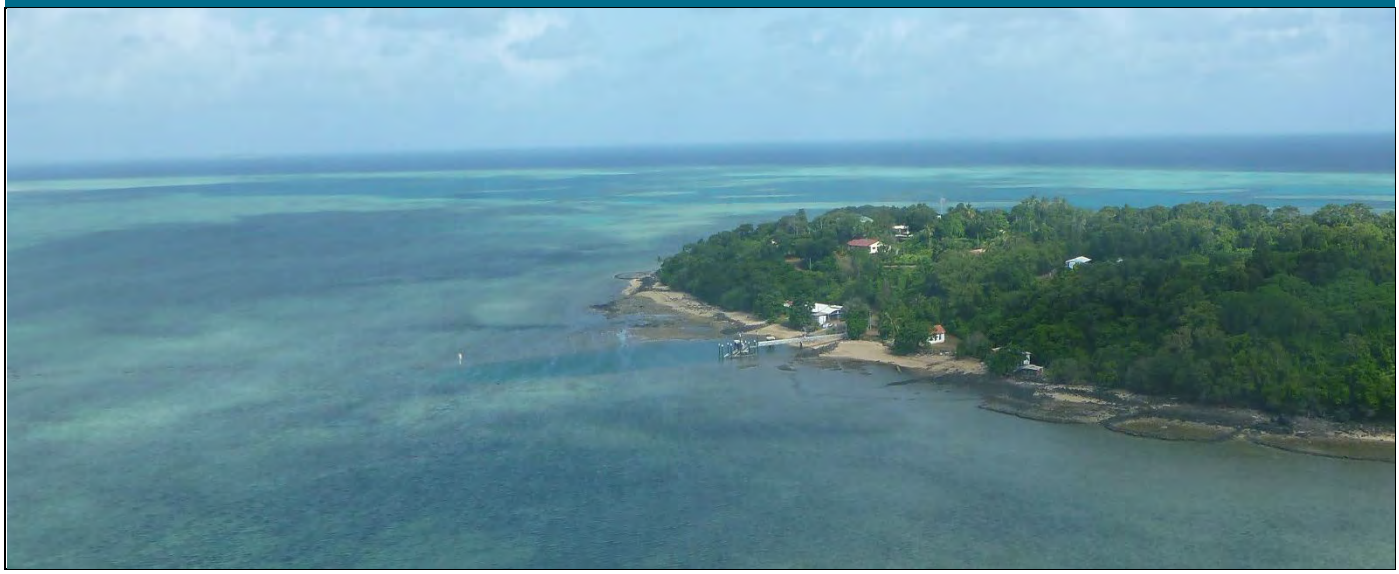
Rolling Five Year Research Plan 2020/21-2024/25

Torres Strait Tropical Rock Lobster Fishery



Compiled by AFMA

October 2019

ABOUT THIS PLAN

The Torres Strait Scientific Advisory Committee (TSSAC) seeks input from each fishery advisory body (Resource Assessment Group (RAG), Management Advisory Committee (MAC) or Working Group (WG)) to identify research priorities over five year periods from 2020/2021 to 2024/25. This template is to be used by the relevant advisory body to complete their five-year plan. The plans are to be developed in conjunction with the TSSAC Five-year Strategic Research Plan (SRP) with a focus on the three research themes and associated strategies within the SRP.

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

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

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

RESEARCH PRIORITIES

Table 1. Five year Torres Strait Tropical Rock Lobster Fishery research plan for 2020/21 to 2024/25.

Note: Blue shading indicates a project that has been funded.

Proposed Project	Objectives and component tasks	Year project to be carried out and indicative cost*						Other funding bodies[1]	Evaluation		
		2020/21	2021/22	2022/23	2023/24	2024/25	Notes on project timings		Priority essential / desirable	Priority ranking (1-5 – 1 being highest priority)	Theme
Fishery surveys, stock assessment, harvest control rules and recommended biological catch (RBC)	➢ Monitor ongoing changes in the fishery and update or develop fishery performance indicators as required. ➢ Recommend a recommended biological catch (RBC) annually for each season. ➢ Every third year update and implement the long-term stock assessment. ➢ Conduct a pre- season survey in November each year, including seabed habitat monitoring. ➢ Continue development of a harvest strategy for the TRL Fishery including an empirical harvest control rule. ➢ Facilitate data sharing with PNG. ➢ Development of a tiered harvest strategy for the TRL Fishery.	319,335 (funded under AFMA Research Project 2019/ 0825)	290,824 (funded under AFMA Research Project 2019/ 0825)	240,000 (not yet funded)	240,000 (not yet funded)	240,000 (not yet funded)	Nil	AFMA CSIRO PNG NFA Industry	Essential	1	1
Ecological risk assessment (ERA)	➢ Conduct an update to the 2007 ERA for the TRL Fishery.	20,400 (identified for potential assessment under broader AFMA Research Project)	0	0	0	0	Assessment dependent on remaining funding once high priority fisheries have been assessed	AFMA CSIRO	Essential	1	1

Improvement of data collection	➢ Improved monitoring of commercial catch and effort in all sectors of the fishery. ➢ Estimate of non-commercial take of TRL. ➢ Alternative monitoring techniques of effort, for example GPS tracking.	20,000	0	0	0	0	Sub-group of the RAG to progress alongside upcoming RAG meetings – funding for sub-group meetings to be sourced from RAG budget	AFMA PNG NFA	Essential	1	1,3
Science peer review	➢ Consistent with best practice Guidelines for quality assurance of Australian fisheries research and science information (the Guidelines), a peer review be conducted of the TRL Fishery survey design, stock assessment and draft Harvest Strategy.	0	60,000-80,000 (dependent on final scope)	0	0	0	Terms of reference to be developed and considered by the TRLRAG in 2019/20	AFMA	Essential	1	1
Understanding connectivity, environmental drivers and adaptation strategies	➢ Understanding of migration of different age classes of lobsters between, and within, jurisdictions (e.g. PNG, QLD East Coast and Torres Strait). ➢ Understanding of recruitment connectivity between, and within, jurisdictions, including key areas of larval release within each jurisdiction. ➢ Management implications of movement and recruitment connectivity between, and within, jurisdictions.	0	TBA	TBA	TBA	TBA	Nil	AFMA PNG NFA CSIRO	Essential	2	1
Understanding changes to fishing power through time	➢ Understanding changes in fishing behaviour and power over time (e.g. changes to the size of engines, use of GPS, gear, areas fished, time fished, experience of divers), to inform the standardisation of CPUE data.	0	TBA	TBA	TBA	TBA	Sub-group of the RAG to progress once progress on improving data collection has been made – funding for sub-group meetings to be sourced	AFMA CSIRO	Desirable	2	1

							from RAG budget				
Understanding fishing behaviour	➢ Understanding the drivers and incentives in determining fishing behaviour in all sectors. ➢ Understanding fishing behaviour under output controls: the impact of ITQs or competitive quota on the fishery (including social impacts); the extent and impact of discard mortality; the effect of changing market preferences on fishing behaviour under output controls; the extent of value adding e.g. moving to live product, targeting different sizes; the extent of high grading under output controls.	0	TBA	TBA	TBA	TBA	Timing of project to be considered once a Management Plan has been fully implemented in the TRL Fishery	AFMA	Desirable	3	1
Mid-year survey Note: unless triggered under the Harvest Strategy for the TRL Fishery, this project is not a priority for the TRL Fishery.	➢ Conduct mid- year survey, as required under the Harvest Strategy for the TRL Fishery.	0	0	0	0	0	To be conducted only if requirement to undertake a mid-year survey is triggered under the Harvest Strategy – indicative cost $110,000 with in-kind contribution from CSIRO	AFMA CSIRO PNG NFA Industry	Only if triggered under the Harvest Strategy, priority = essential	Only if triggered under the Harvest Strategy, priority ranking = 1	1

Australian Government

Australian Fisheries Management Authority

Torres Strait Tropical Rock Lobster Resource Assessment Group and Working Group

Out-of-session items – September-October 2019

Member comments

Box 7051, Canberra Business Centre, ACT 2610 / Ph (02) 6225 5555 / Fax (02) 6225 5500 / AFMA Direct 1300 723 621 afma.gov.au

Comments from Tropical Rock Lobster Resource Assessment Group (TRLRAG) members

Member	Member comments on item 1 – Outcomes of the draft TRL Harvest Strategy consultation - for consideration and advice	Member comments on item 2 – Rolling Five Year Research Plan 2020/21 to 2024/25 - for consideration and advice
Dr Ian Knuckey - Chair	**No recommendation** No comments provided, not applicable in role as Chair.	**No changes identified** No comments provided, not applicable in role as Chair.
Danielle Stewart - QDAF Member*	**No recommendation** No comments provided.	**No changes identified** No comments provided.
Allison Runck - TSRA Member*	**Supports the draft Harvest Strategy being finalised and provided to the PZJA for consideration** We support the TRL Harvest Strategy progressing to the PZJA for adoption, noting this has been under development for some time and has involved extensive consideration by the TRLRAG and TRLWG.	**Changes identified** The mid-year survey and science peer review are both actually desirable (not essential). The current management framework is based around the pre-season survey only, and the HS now sets-out the situation in which a mid-season survey is required/essential. The group may need to consider what is the appropriate action to take if it becomes apparent a mid-year survey is essential, and if this aligns with TSSAC/PZJA funding timelines or would need to be considered through a separate process? From previous discussions of the RAG I understand there has already been strong peer review of the survey design and stock assessment methods - it is still unclear to me the purpose of further science peer review and it probably requires more discussion from the groups about the value of this. We think 'understanding fishing behaviour' will become of much higher importance/desirability over the next funding round, but will be interesting to discuss the best timing of this based on upcoming meetings reflecting on behaviour or CPUE from this season.
Dr Andrew Penney - Scientific Member	**Supports the draft Harvest Strategy being finalised and provided to the PZJA for consideration** Nothing to add, covered in previous TRLRAG meetings.	**No changes identified** Nothing to add, covered in previous TRLRAG meetings.
Dr Eva Plaganyi - Scientific Member	**No recommendation**	**No changes identified**

Member	Member comments on item 1 – Outcomes of the draft TRL Harvest Strategy consultation - for consideration and advice	Member comments on item 2 – Rolling Five Year Research Plan 2020/21 to 2024/25 - for consideration and advice
	No comments provided, noting the conflict of interest as the principal investigator responsible for the delivery of the Harvest Strategy development project.	No comments provided, noting the conflict of interest as a possible applicant for research funding.
Aaron Tom - Traditional Inhabitant Industry Member (Gudumalulgal)*	**Supports the draft Harvest Strategy being finalised and provided to the PZJA for consideration** Supports the draft Harvest Strategy going to the PZJA, noting that it has been developed in consultation with TRLRAG and TRLWG members and CSIRO over a number of years. Does not support changing the target or limit reference points.	**No changes identified**
Les Pitt - Traditional Inhabitant Industry Member (Kemer Kemer Meriam)*	**Supports the draft Harvest Strategy being finalised and provided to the PZJA for consideration** Does not have any comments or concerns with the outcomes of the draft Harvest Strategy consultation. Does not propose any changes to the draft Harvest Strategy.	**Changes identified** Supports the peer review of the survey design and if warranted the addition of extra survey sites. Encourages the exploration of how surveys can be expanded and greater involvement of industry in the delivery of surveys.
James Ahmat - Traditional Inhabitant Industry Member (Maluialgal)*	**No recommendation** Unable to be contacted.	**No changes identified** Unable to be contacted.
Harry Nona - Traditional Inhabitant Industry Member (Kaiwalagal)	**No recommendation** As a new member, has not been involved in the development of the draft Harvest Strategy to date and so is not comfortable providing comments.	**No changes identified** As a new member, is not comfortable providing comments.
James Billy - Traditional Inhabitant Industry Member (Kulkalgal)	**No recommendation** Unable to be contacted.	**No changes identified** Unable to be contacted.
Brett Arlidge - Industry Member	**Supports the draft Harvest Strategy being finalised and provided to the PZJA for consideration** The Harvest Strategy and HCR have been discussed at length and the essentials agreed by all stakeholders.	**No changes identified** Nothing to add.

Member	Member comments on item 1 – Outcomes of the draft TRL Harvest Strategy consultation - for consideration and advice	Member comments on item 2 – Rolling Five Year Research Plan 2020/21 to 2024/25 - for consideration and advice
Dr Ray Moore - Industry Member	**Supports the draft Harvest Strategy being finalised and provided to the PZJA for consideration** From the public comments received there are no issues that require changes to the TRL Harvest Strategy. Most concerns relate to management issues and ensuring that the data collected accurately represents the fishery status. I have made some comments on these above. This does not affect the actual Harvest Strategy, which I think should be finalised and forwarded to the PZJA for consideration. Full comments provided at **Attachment 1**.	**Changes identified** I am happy with the plan as it stands. I add the following comments: Stock connectivity - We have done very little new research into TRL in recent years and as the fishery has developed we now need some more information. We have done some work on spawning stock and recruitment, mainly by the study of larval advection. This should be continued, along with research on the E Coast to determine major areas of larval release. This will help us to understand the connectivity between E Coast, Torres Strait and the Gulf of Papua. But also of major importance is the movement of juvenile lobsters within TS and between other jurisdictions and TS. The Harvest strategy depends on the pre-season survey getting it right. Taking the 2017 survey we see: i. There were almost no 0+ in TS. However in the 2018 survey there were good stocks of 1+ distributed throughout TS. So were the 0+ in other areas of TS and later redistributed as 1+,or did the 1+ move in from another jurisdiction ? ii. There were very poor 1+ stocks in the 2017 pre-season survey resulting in a very low RBC. However some good catches were made by fishermen. Again could this disparity be due to the movement of lobsters from areas not surveyed. This research I think is really important to better understand lobster movement, which in turn should help us fine tune the survey to obtain more reliable stock predictions.

*Also a member of the Tropical Rock Lobster Working Group.

Comments from Tropical Rock Lobster Working Group (TRLWG) members

Member	Member comments on item 1 – Outcomes of the draft TRL Harvest Strategy consultation - for consideration and advice	Member comments on item 2 – Rolling Five Year Research Plan 2020/21 to 2024/25 - for consideration and advice
John Glaister - Chair	**No recommendation** No comments provided, not applicable in role as Chair.	**No changes identified** No comments provided, not applicable in role as Chair.
Danielle Stewart - QDAF Member*	**No recommendation** No comments provided.	**No changes identified** No comments provided.
Allison Runck - TSRA Member*	**Supports the draft Harvest Strategy being finalised and provided to the PZJA for consideration** See TRLRAG comments.	**Changes identified** See TRLRAG comments.
Darren Dennis - Scientific Member	**Supports the draft Harvest Strategy being finalised and provided to the PZJA for consideration** The two responses received have been addressed well by AFMA and I concur with the reviews provided. The eHCR was comprehensively tested by CSIRO using almost 30 years of concurrent survey and catch data and was shown to result in very conservative fishing effort levels into the future. There are of course unknowns (primarily major habitat and stock distribution changes, and PNG catch), but the HCR does account for low stocks and subsequent management responses. The concern that survey sites do not cover all fished areas is only relevant if there is a major change in habitat and subsequent stock distribution in the future. Further, CSIRO have recorded several such events in the past (e.g. 1993 seagrass dieback) and the survey abundance indices have proven reliable against concurrent catch and CPUE indices. Re: survey design and survey sites: The sampling design used throughout the surveys, initiated in 1989, has been consistent and relatively unchanged. At several peer reviews of this design including: 4 international lobster conferences, over 30 peer reviewed papers, at national	**Changes identified** The limited research budget has resulted in only tactical projects being funded, which is not surprising and is logical. Nevertheless, the funded research projects also included implicit strategic studies - such as habitat monitoring, influence of abiotic factors on stocks and climate change outcomes (bleaching etc) - which value add to the research investment. Re: spawning stocks and stock connectivity. This area of research remains largely unaddressed due to the geographic extent of the TRL life cycle and the subsequent cost of research to address the information gaps. The relative contributions of the Yule Island and QLD east coast breeding populations are not well understood, but given the conservative harvest strategies adopted in both the EC and Torres Strait fisheries these populations are well protected. Further, breeding area closures are only effective if there are enough TRL allowed to escape the fishery to breed. Re: social indicators for the TRL fishery. Quota management in Australia has invariably resulted in investment opportunities for private interests. This means actual fishers operate under a third party licence and often

Member	Member comments on item 1 – Outcomes of the draft TRL Harvest Strategy consultation - for consideration and advice	Member comments on item 2 – Rolling Five Year Research Plan 2020/21 to 2024/25 - for consideration and advice
	conferences and independent scientific review, the value of this consistency/standardisation has been stressed. Very few Australian fisheries have such a valuable >30 year fishery-independent time series. Hence, any additional survey sites added should not be at the expense of the established survey design.	separate quota. Given the TIB sector is allocated the largest portion of the TAC this situation should not greatly impact the TRL fishery, and in fact should result in greater participation by TIB fishers now that the TVH sector is effectively capped. However, monitoring of the social impacts of QMS for the TRL fishery is now critical to ensure these positive outcomes are realised. In the first instance the number of TIB licences should see an increase. Previous research also showed obvious typologies in the TIB sector (namely commercial fishers, supplemental fishers and "weekend warriors"). The ratio of these typologies should be monitored to allow the TIB sector to review outcomes of quota management and address their desired outcomes.
Sevaly Sen - Scientific Member	**Supports the draft Harvest Strategy being finalised and provided to the PZJA for consideration** Agree with the recommendations that the draft HS should be finalised and sent to PZJA for consideration.	**Changes identified** My only comment is that it would be good to consider more research in the plan under strategy 2 a - in particular Models for managing/administering Traditional Inhabitant quota.
Aaron Tom - Traditional Inhabitant Industry Member (Gudumalulgal)*	**Supports the draft Harvest Strategy being finalised and provided to the PZJA for consideration** See TRLRAG comments.	**No changes identified**
Les Pitt - Traditional Inhabitant Industry Member (Kemer Kemer Meriam)*	**Supports the draft Harvest Strategy being finalised and provided to the PZJA for consideration** See TRLRAG comments.	**Changes identified** See TRLRAG comments.
James Ahmat - Traditional Inhabitant Industry Member (Maluialgal)*	**No recommendation** Unable to be contacted.	**No changes identified** Unable to be contacted.
Mark David - Traditional Inhabitant	**No recommendation** No comments provided.	**No changes identified** No comments provided.

Member	Member comments on item 1 – Outcomes of the draft TRL Harvest Strategy consultation - for consideration and advice	Member comments on item 2 – Rolling Five Year Research Plan 2020/21 to 2024/25 - for consideration and advice
Industry Member (Kulkalgal)		
Patrick Mills - Traditional Inhabitant Industry Member (Kaiwalagal)	**Does not support the draft Harvest Strategy** Traditional Inhabitants have not been sufficiently consulted in developing the draft Harvest Strategy. In addition, Traditional Inhabitants are not sufficiently involved in negotiations with PNG concerning the sharing of the TAC each season, in particular who has the right to access cross endorsement allocations under the Treaty, including any that are un-utilised by PNG.	**No changes identified**
Jerome Kalwij - Industry Member	**No recommendation** As a new member, has not been involved in the development of the draft Harvest Strategy to date and so is not comfortable providing comments.	**No changes identified** Supports research to inform the management of the TRL Fishery.
Trent Butcher - Industry Member	**No recommendation** As a new member, has not been involved in the development of the draft Harvest Strategy to date and so is not comfortable providing comments.	**No changes identified** Suggests accuracy of the pre-season survey could be improved.
Mark Dean - Industry Member	**Supports the draft Harvest Strategy being finalised and provided to the PZJA for consideration** Would like to see TAC set as close to start of season as possible. Need to be clearer when TACs are set as to the stage of agreement with PNG and whether further increases should be expected. Would like to see review of input controls as soon as possible.	**No changes identified**

*Also a member of the Tropical Rock Lobster Resource Assessment Group.

Full response from Dr Ray Moore concerning item 1 – Outcomes of the draft TRL Harvest Strategy consultation

Cape York Land Council

a) Agree with AFMA, the suggested figures are not realistic.

b) and c) Agree with AFMA, not relevant to the TS Harvest Strategy.

Ken McKenzie

a) The fishery is very variable, 1984 was a very poor year, 2011 had excellent stocks and 2019 has been quite good. Certainly the fishery has become more competitive but I don't think there has been a continuing decline over the years.

b) Ken's point is that too much emphasis has been placed on the TS spawning stock when the bulk of the recruitment comes from other spawning grounds other than the Gulf of Papua.

For example, spawning grounds on the East Coast. This is relevant to the harvest strategy in that why maintain the spawning mass at 0.65Bo if this biomass is providing only a small % of the recruitment.

Ken is correct in that there is not a good spawning/ stock recruitment relationship for the TS population that spawns in the Gulf of Papua. The research indicates that perhaps an average of about 15% of TS larval recruitment comes directly from the GOP. The other 85% would come from other spawning areas, of which the E Coast would have to be very significant. However the larvae from the GOP spawning are dispersed over an extensive area. Certainly a large % of the recruitment for the E Coast would come from the GOP.

So although a successful spawning in the GOP may not manifest in a good larval recruitment in TS the same year ,this spawning will restock other areas which in turn will restock TS in future spawning's. For this reason it is necessary to maintain the TS spawning stock at a high level.

We do need to ensure that all our hard work in maintaining a healthy spawning stock is not just supporting a trawl fishery during the spawning migration.

c) Ken's point that it is critical that the survey accurately predicts the recruiting stocks is very valid. 80% of the data used for the HCR estimate comes from this single survey. We have to maintain the randomness of site selection so that surveys are comparable with the 30 years of data. As we gain more knowledge of 0+ settlement and 1+ movement from outside of the survey area, we should be able to fine-tune the survey. The Harvest Strategy uses the survey as the major data for estimating the RBC. This has been extensively reviewed and accepted.

With regard to Ken's comment of Whyborn reef being on the E Coast: in fact 7 of the 77 sites surveyed are on the E Coast. There are 2 considerations here:

i) This SE area is extensively fished by TS fishermen and the catch landed as TS catch.
ii) This SE area, including the E Coast south to the cross shelf transect green zone, usually has good stocks of 1+ lobsters. My personal observations over the years suggest that there is possibly a significant movement of 1+ from this area into TS. This would occur after the pre-season survey such that this movement would not be recorded in the assessment.

So whether on the E.Coast or not, we need to maintain our sampling in this area.

d) I agree that CPUE in this fishery is not an accurate indicator of stock abundance. It is difficult to standardise because of the variable ability between operators and the general increase in efficiency, that still continues. It is important that managers pick up changes in fishing practice as soon as possible and adjust CPUE accordingly. With the changes to enforced TAC in 2019 the TVH CPUE would have changed due to

i) Taking larger lobsters only, because of higher prices and limited quota.
ii) Not tailing but discarding weak, damaged and soft shelled lobsters.

So that CPUE for the same stock density would be diminished in 2019 compared with previous years. This would not apply to the TIB CPUE as they were on an Olympic quota.

The Harvest Strategy assessment relies 10% on TVH and 10% TIB CPUE, averaged over 5 years. This has been reviewed and accepted, and there is no reason at this stage to alter it.

Community visits

There were no concerns to comment on.

Torres Strait fisheries strategic research themes, strategies and research activities

Theme 1: Protecting the Torres Strait marine environment for the benefit of Traditional Inhabitants	
Aim: Effective management of fishery stocks based on understanding species and their biology and ecological dependencies so it can support Traditional Inhabitant social and economic needs.	
Strategy 1a - Fishery stocks, biology and marine environment	Possible research activities under this theme may include: a. Stock assessment and fishery harvest strategies for key commercial species. b. Ecological risk assessments and management strategies for fisheries. c. Minimising marine debris in the Torres Strait. d. Addressing the effects of climate change on Torres Strait fisheries through adaptation pathways for management, the fishing industry and communities. e. Incorporating Traditional Ecological Knowledge into fisheries management. f. Methods for estimating traditional and recreational catch to improve fisheries sustainability.
Strategy 1b – Catch sharing with Papua New Guinea	Possible research activities under this theme may include: a. Status of commercial stocks and catches by all sectors within PNG jurisdiction of the TSPZ. b. Good cross-jurisdictional fisheries management through better monitoring and use of technology.
Theme 2: Social and Economic Benefits	
Aim: Increase social and economic benefits to Traditional Inhabitants from Torres Strait Fisheries.	
Strategy 2a - Promoting social benefits and economic development in the Torres Strait, including employment opportunities for Traditional Inhabitants	Possible research activities under this theme may include: a. Models for managing/administering Traditional Inhabitant quota b. Understanding what influences participation in commercial fishing by Traditional Inhabitants. c. Understanding the role and contribution of women in fisheries. d. Capacity building for the governance of industry representative bodies e. Methods for valuing social outcomes for participation in Torres Strait fisheries. f. Identifying opportunities and take-up strategies to increase economic benefits from Torres Strait fisheries.
Theme 3: Technology and Innovation	
Aim: To have policies and technology that promote economic, environmental and social benefits from the fishing sector.	
Strategy 3a – Develop technology to support the management of Torres Strait fisheries.	Possible research activities under this theme may include: a. Electronic reporting and monitoring in the Torres Strait, including for small craft. b. Technologies or systems that support more efficient and effective fisheries management and fishing industry operations.

TSSAC annual research cycle

	TSSAC Process
February	Research providers submit pre-proposals for assessment, which meet the scopes provided by TSSAC in November. EOIs submitted are circulated to fisheries managers/ RAGs & MACs for comment; Fisheries Managers, RAGs/MACs identify any additional research priorities for potential FRDC funding.
March	TSSAC meets via teleconference to assess pre-proposals and Management/RAG/MAC comments. Applicants notified of TSSAC comments on their pre-proposals and asked to develop the consultation package (for review by AFMA by end of March) for use during full proposal development.
April	Researchers to complete full proposal (6 weeks total with consultation period)
May	Late May/ early June. TSSAC meet face to face to review full proposals and endorse final applications, or suggest necessary changes before endorsement. Applicants advised of the TSSAC's final evaluation.
June	
July **(START)**	TSSAC confirm the research budget for the new financial year (it doesn't generally change from year to year - $410 000). New contracts and variations for essential research projects prepared and put in place, confirming forward budgets. RAGs, WGs and MACs to identify THEIR PRIORITY RESEARCH NEEDS for funding in the next financial year by updating their *five year rolling fisheries research plan*. This should be framed around strategies in the 5 year strategic research plan. Provide to TSSAC EO by end August.
August	RAGs/MACs submit their five year rolling fishery research plan to the TSSAC Executive Officer, currently lisa.cocking@afma.gov.au, by end August.
September	TSSAC EO drafts the TSSAC Annual Research Statement (ARS) with each fisheries priorities for the current year.
October	TSSAC meets (face to face or via teleconference) to finalise the PZJA ARS and agree on priorities for the TSSACs call for applications in November. AFMA develop scopes for the priority research projects and send to TSSAC out of session for consideration.
November	The annual research call opens in November. Scopes sent to researchers seeking pre-proposals.

TROPICAL ROCK LOBSTER WORKING GROUP (TRLWG)	MEETING 10 12 December 2019
FUTURE MANAGEMENT PRIORITIES	Agenda Item 7 For discussion and advice

RECOMMENDATIONS

1. That the Working Group:
   a. **NOTE** that at its meeting on 26 November 2018 the Protected Zone Joint Authority (PZJA) reaffirmed existing management controls currently applied to the Torres Strait Tropical Rock Lobster Fishery (TRL Fishery).
      i. TRL Fishery licence holders were notified at the time, that a review of existing PZJA licencing policies and management arrangements, including input controls, will be conducted periodically after the quota management system under the *Torres Strait Fisheries (Quotas for Tropical Rock Lobster (Kaiar)) Management Plan 2018* (the Management Plan) is operational.
   i. **DISCUSS** and **PROVIDE ADVICE** regarding a review of management controls currently applied to the TRL Fishery and other management priorities.

KEY ISSUES

2. During 2019, the PZJA delivered on a number of management priorities for the TRL Fishery:
   a. implementation of the Management Plan, including the formal allocation of quota units, setting of a total allowable catch (TAC) and strategic assessment under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act);
   b. finalisation of the draft Harvest Strategy for the TRL Fishery, including a call for public comments, further consideration by the TRLRAG and Working Group, adoption by the Protected Zone Joint Authority (PZJA) through to application for the first time at this meeting;
3. Additionally AFMA commenced a process to improve fishery dependent data collection and analyses for the TRL Fishery, including ongoing implementation of the fish receiver system (FRS) and the first meeting of the TRLRAG Data Sub-Group.
4. Advice is sought from the Working Group on management priorities for the TRL Fishery for progression in 2020, in particular a review of management controls currently applied to the TRL Fishery.
5. Over the last few years, industry (both TIB and TVH) have expressed their desire to see a review of certain of management controls currently applied to the TRL Fishery.
6. At its meeting on 26 November 2018, the PZJA reaffirmed existing management controls currently applied to the TRL Fishery. TRL Fishery licence holders were notified at the time, that a review of existing PZJA licencing policies and management arrangements, including input controls, will be conducted periodically after the quota management system under the Management Plan is operational (**Attachment 7a**).
7. At its meeting on 11-12 December 2018, the TRLRAG recommendation that given the immediate changes that will apply as the fishery moves to a quota management system, all current input controls remain in place for the 2018-19 fishing season before a review (or change) of input controls takes place.
8. Input controls are restrictions put on the ability of fishers to catch fish. Most commonly these are restrictions on the number and size of boats, the amount of time boats are allowed to

fish, the areas in which boats are allowed to fish, and the amount, type, or size of gear that can be used. By contrast, output controls are direct limits on the amount of fish coming out of a fishery (e.g. TACs). Fishery resources are limited and if fishing is not controlled, history has shown it will increase until the fishery becomes economically unviable or the stock collapses. Output controls are generally regarded as good mechanisms to control the total catch in single species, high value fisheries which are targeted using a single gear type (such as abalone and lobster). However, even with strong output controls, some input controls may still be required to ensure a range of management objectives are met (e.g. gear controls to minimise impacts on habitats and the environment and/or to meet other social objectives).

9. As the understanding of fish stocks and fisheries management techniques have improved, many fisheries across the globe, including around Australia, have undergone the transition from input to output controls. However, in making such a transition it has been important that the proposed removal of controls is scrutinised closely to ensure management objectives will continue to be met, and all potential impacts considered.

10. In recent TRLRAG and Working Group meetings, members have identified a range of changes management controls currently applied to the TRL Fishery (**Table 1**).

Table 1: Proposed changes to management controls currently applied to the TRL Fishery.

Meeting	Description of proposal	Current status
TRLRAG 14 (25-26 August 2015)	**TRLRAG recommendation:** AFMA to review the effectiveness of certain TIB licensing arrangements (in its 2016 licencing review) including: TIB licenses should share a common expiry date; and licences to last for longer than the current 12 month period.	Last considered at TRLWG 4 (27-28 August 2015). The TRLWG recommended AFMA review the licencing dates and period for TIB and TVH sector licences as part of AFMA's 2016 administrative review of licencing processes – low priority. AFMA have scoped the implementation of a common expiry date for licences in the TRL Fishery, however administrative resources are not currently available to progress this matter further. The PZJA has approved the development of draft amendments to the *Torres Strait Fisheries Regulations 1985* to provide for all licences to be issued for 5 years.
TRLRAG 14 (25-26 August 2015)	**Industry proposal:** Amend the existing closed season (October-November) to allow fishers for free-dive and lamp fish all season.	Considered at TRLWG 4 (27-28 August 2015), which noted the advice from TRLRAG 14 (meeting record refers) and recommended if the closure is to be removed, this change should be reviewed one year after its implementation. Considered at TRLWG 5 (5-6 April 2016). Industry members raised concerns and recommended the current two month closure for free-dive and lamp fishing be opened to TIB tender vessels only and the Working Group to consider limiting lamp fishing to the TIB sector only at its next meeting. A TIB industry observer advised they required further time to consult with other TIB primary vessel

		operators before agreeing to the option of limiting fishing to TIB tenders only while TVH industry members advised they also required further time to consider the recommendations. The TRLWG agreed for the following agenda items to be considered at the next TRLWG meeting: a) proposed 12 month season for free-dive and lamp fishing for TIB sector tender vessels only and b) proposal to permit lamp fishing from TIB vessels only. Last proposed for discussion at TRLWG 6 (25-26 July 2017). However, this item was not considered due to the early closure of the meeting (lack of quorum).
TRLWG 4 (27-28 August 2015)	**TRLWG recommendation:** Boat Replacement Policy review, including the option for primary vessels limited to 9.9 m presently being increased to 13.9 m – high priority post management plan implementation.	Consistent with the recommendation of TRLWG 4 (27-28 August 2015), this item has not been progressed since that meeting. TRLWG 4 identified this item as a high priority following the implementation of the Management Plan.
TRLWG 4 (27-28 August 2015)	**TRLWG recommendation:** Review arrangements for Master Fisherman Licences – medium priority post management plan implementation.	Consistent with the recommendation of TRLWG 4 (27-28 August 2015), this item has not been progressed since that meeting. TRLWG 4 identified this item as a medium priority following the implementation of the Management Plan.
TRLWG 4 (27-28 August 2015)	**TRLWG recommendation:** Review the option for TIB primary vessels to be endorsed to carry any TIB registered tender at any time as part of AFMA's 2016 administrative review of licencing processes – medium priority.	Strengthened requirements for tender boats to operate in conjunction with the corresponding primary boat proposed for discussion at TRLWG 6 (25-26 July 2017). This was prompted by industry concerns raised with AFMA. However, this item was not considered due to the early closure of the meeting (lack of quorum). Proposal for TIB primary vessels to be endorsed to carry any TIB registered tender last considered at TRLWG 9 (19 February 2019). The TRLWG recommended a proposal be developed for PZJA consideration regarding this matter.
TRLWG 4 (27-28 August 2015)	**TRLWG recommendation:** Review fishing season dates to align with international markets – high priority post	Amendment of the fishing season dates to enable the effective implementation of the Management Plan was considered at TRLRAG 24 (18-19 October 2019). No recommendation was made to change the fishing season for this purpose.

	management plan implementation.	
TRLWG 4 (27-28 August 2015)	**TRLWG recommendation:** Review how/if the use of tow cages undermines boat Primary boat length restrictions – high priority post management plan implementation.	Consistent with the recommendation of TRLWG 4 (27-28 August 2015), this item has not been progressed since that meeting. TRLWG 4 identified this item as a high priority following the implementation of the Management Plan.
TRLWG 4 (27-28 August 2015)	**Industry proposal:** Removal of the current condition on TIB licences that boats must be operated only by Traditional Inhabitants.	Last proposed for discussion at TRLWG 6 (25-26 July 2017). However, this item was not considered due to the early closure of the meeting (lack of quorum). Other Working Groups (Finfish Working Group on 16-17 March 2017 and Hand Collectables Working Group on 27 June 2017) have recommended further stakeholder consultation.
TRLWG 5 (5-6 April 2016)	**Industry proposal:** Permit lamp fishing from TIB vessels only.	TRLWG 5 agreed for the following agenda items to be considered at the next TRLWG meeting: a) proposed 12 month season for free-dive and lamp fishing for TIB sector tender vessels only and b) proposal to permit lamp fishing from TIB vessels only. Last proposed for discussion at TRLWG 6 (25-26 July 2017). However, this item was not considered due to the early closure of the meeting (lack of quorum).
TRLWG 6 (25-26 July 2017)	**Industry proposal:** Amend method for the setting of moon-tide hookah closures to occur each year on the three days either side of the full moon to coincide with the moult cycle which results in higher post-catch mortality. Allowing fishing to occur during the new moon (when lobsters generally have a hard carapace) would reduce the volume of caught lobsters that are damaged and subsequently tailed.	Proposed for discussion at TRLWG 6 (25-26 July 2017). However, this item was not considered due to the early closure of the meeting (lack of quorum). Considered at TRLWG 8 (8 November 2018), which agreed to maintain the current methodology for determining the moon-tide hookah closures at this time.
TRLWG 6 (25-26 July 2017)	**AFMA proposal prompted by industry concerns:** Strengthened requirements for tender boats to operate in	Last proposed for discussion at TRLWG 6 (25-26 July 2017). However, this item was not considered due to the early closure of the meeting (lack of quorum). Proposal for TIB primary vessels to be endorsed to carry any TIB registered

	conjunction with the corresponding primary boat.	tender last considered at TRLWG 9 (19 February 2019). The TRLWG recommended a proposal be developed for PZJA consideration regarding this matter.
TRLWG 6 (25-26 July 2017)	**AFMA proposal prompted by licensing applications:** Provide for the temporarily transfer of tender boats to operate in conjunction with another primary boat held by the same licence holder.	Last proposed for discussion at TRLWG 6 (25-26 July 2017). However, this item was not considered due to the early closure of the meeting (lack of quorum). Further background on this matter is provided under **Agenda Item 2.3**.
TRLWG 6 (25-26 July 2017)	**AFMA proposal prompted by licensing applications:** Grant of new carrier-only boat licenses to non-traditional inhabitants only for vessels that are not licenced to fish.	Last proposed for discussion at TRLWG 6 (25-26 July 2017). However, this item was not considered due to the early closure of the meeting (lack of quorum). Other Working Groups (Finfish Working Group on 16-17 March 2017 and Hand Collectables Working Group on 27 June 2017) have recommended further stakeholder consultation or were not supportive.
TRLWG 9 (19 February 2019)	**TRLWG recommendation:** Requirements concerning the possession and use of hookah gear around hookah closure periods be considered further at the next meeting of the Working Group. It was also recommended that industry submit proposals for changes to these requirements to AFMA for consideration at this meeting, noting that requirements need to be cost-effective and enforceable.	For discussion at this meeting.
TRLRAG Data Sub-Group (18 June 2019)	**TRLRAG Data Sub-Group recommendation:** To improve spatial data used in the assessment and management of the TRL Fishery, VMS units on all tenders and dinghies should be considered.	TRLRAG Data Sub-Group outcomes will be considered by TRLRAG at its meeting on 10-11 December 2019.
Out-of-session 2019	**Industry proposal:** At its meeting held on 19 February 2019, the Working Group recommended that in preparation for the next	For discussion at this meeting.

	meeting, members are to identify management measures for review and objectives (social, economic, biological) against which any proposed changes can be assessed. One submission has been received from members (**Attachment 7b**), which proposes moon-tide hookah closures be removed for the 2019-20 fishing season onwards and the Working Group consider the matter of input controls in general now that TRL Fishery is operating under output controls.	

11. To assist in discussions, a summary of management controls currently applied to the TRL Fishery is provided at **Attachment 7c**. A management history summary, describing the evolution of management controls over the period the TRL Fishery has been operational, is also provided at **Attachment 7d**.

12. As detailed in **Attachment 7c**, the PZJA uses a number of mechanisms to implement management controls in the TRL Fishery, including the:

    a. *Torres Strait Fisheries Act 1985* and *Torres Strait Fisheries Regulations 1985*;

    b. the Management Plan;

    c. *Torres Strait Fisheries (Tropical Rock Lobster) Management Instrument 2018*;

    d. licence conditions; and

    e. policies (in particular the Guide to Management Arrangements for Torres Strait Fisheries, June 2004).

13. The complexity/ease involved in amending a management control depends on the mechanism being used. Further, some amendments will have a clear rationale and impacts, whereas, others may be less clear and require further consideration and consultation.

14. Given the possible scope of proposed changes, AFMA suggests that a review of TRL Fishery management controls be progressed in a staged manner. The Working Group is asked to consider the process outlined below and provide advice accordingly.

Review step	Timeline
Scope Defining the scope of proposed changes that will be considered from the start of the process will provide for a more ordered and timely process. The scope of this review could be limited to TRL Fishery specific management controls, or broader Torres Strait fisheries regulations e.g. licensing requirements.	For discussion and advice at this meeting
Objectives The objectives of the proposed changes are used to assess the benefits and impacts of proposals. These objectives will need to align with those under section 8 of the *Torres Strait Fisheries Act 1984* (the Act):	For discussion and advice at this meeting

In the administration of this Act, regard shall be had to the rights and obligations conferred on Australia by the Torres Strait Treaty and in particular to the following management priorities: *(a) to acknowledge and protect the traditional way of life and livelihood of traditional inhabitants, including their rights in relation to traditional fishing;* *(b) to protect and preserve the marine environment and indigenous fauna and flora in and in the vicinity of the Protected Zone;* *(c) to adopt conservation measures necessary for the conservation of a species in such a way as to minimise any restrictive effects of the measures on traditional fishing;* *(d) to administer the provisions of Part 5 of the Torres Strait Treaty (relating to commercial fisheries) so as not to prejudice the achievement of the purposes of Part 4 of the Torres Strait Treaty in regard to traditional fishing;* *(e) to manage commercial fisheries for optimum utilisation;* *(f) to share the allowable catch of relevant Protected Zone commercial fisheries with Papua New Guinea in accordance with the Torres Strait Treaty;* *(g) to have regard, in developing and implementing licensing policy, to the desirability of promoting economic development in the Torres Strait area and employment opportunities for traditional inhabitants.* In 2005–06, the TRL Working Group recommended objectives concerning the management of the TRL Fishery which were adopted by the PZJA – these are detailed in **Attachment 7e**. Consistent with the objectives under the Act, some objectives for proposed changes to TRL Fishery management controls may be to: - protect the rights of Traditional Inhabitants in relation to traditional fishing; - minimise any restrictive effects of TRL Fishery management controls on traditional fishing; - pursue the operational objectives contained in the Harvest Strategy for the TRL Fishery; - support the participation and employment of Traditional Inhabitants in the TRL Fishery; - maximise utilisation and value of the TRL Fishery resource; - provide for efficient and effective management.	
Consideration of proposals TRL Working Group to have an initial discussion of proposed changes and recommend those for further development, assessment and consultation.	For discussion and advice at this meeting
Assessment of benefits and impacts To promote sound management outcomes, any proposed change should be supported by an objective assessment of its expected benefits and impacts against a clear set of evaluation criteria (e.g. biological, economic, social and	For discussion and advice at this meeting

management), including identification of who is likely to be affected and how those benefits and impacts are likely to be distributed. This could be either qualitative or quantitative assessment. For example, a previous quantitative MSE study was undertaken which compiled a range of TRL Fishery data to assess how the introduction of various allocation models may impact on industry[1]. This assessment should also identify the costs associated with implementation. Examples of criteria/performance indicators used in past qualitative and quantitative assessments[1] include: - Social/cultural – equity of access, race to fish, participation rates, part-time vs. full-time fisher participation, new entrants, sense of self-determination, changes to 'ailan kastom', conflict between communities, conflict between individuals and families, traditional fishing rights. - Biological – stock status, risk to resource, spatial distribution of fishing. - Economic – total catch, value of fishery, market prices, operating costs, employment, access for duration of season. - Management – complexity, enforceability, impact on fishery monitoring regime (e.g. does it impact on the data series). The criteria/performance indicators selected should be linked back to the objectives being pursued. Also, in the selection of criteria and assessment itself, it is important to understand that previous studies have indicated that there are marked financial, economic, social and cultural differences between the TIB and TVH sectors of the TRL Fishery[1]. This assessment should be considered by the TRLRAG and TRL Working Group prior to release for broader public consultation. PZJA consideration may also be required prior to broader public consultation.	
Public consultation Opportunity for broader stakeholder comment on proposed changes. Stakeholders would include relevant Torres Strait fisheries licence holders, Native Title bodies and claimants, the Papua New Guinea National Fisheries Authority, the Australian and Papua New Guinea Co-chairs of the Traditional Inhabitants Meeting (TIM) under the Torres Strait Treaty, the Department of Agriculture and the Department of Environment and Energy. This step would usually be undertaken over an 8 week period. A public consultation package would be distributed to stakeholders by mail, email, SMS, PZJA website, social media and during industry meetings held at each island community across the Torres Strait and Northern Peninsula Area as well as in Cairns. Submissions to be made in writing, over the phone and at industry meetings. Depending on the nature of the proposal/s, formal Native Title notification under the *Native Title Act 1993* may also be required. TRLRAG and TRL Working Group to consider the outcomes of the public consultation process and provide further advice as appropriate.	8-12 weeks

[1] Plagányi, É, Deng, R, Dennis, D, Hutton, T, Pascoe, S, van Putten, I & Skewes, T In prep., An Integrated Management Strategy Evaluation (MSE) for the Torres Strait tropical rock lobster *Panulirus ornatus* fishery, CSIRO/AFMA Final Project Report. AFMA Project Number: 2009/839.

Implementation After taking into consideration outcomes of consultation and the advice of the TRLRAG and TRL Working Group, PZJA to consider and, if appropriate, approve the proposed change/s. Implementation to take place after this. Depending on the change, this may entail amendments to legislative instruments, licence conditions or policy.	1-18 months depending on the mechanism involved
Post-implementation monitoring Actual impacts of the change/s to be monitored by the TRLRAG and TRL Working Group.	0-5 years

BACKGROUND

15. In addition to the above, AFMA is also working to progress a number of other management priorities over the coming year – please see below.

Data improvement

16. The FRS became mandatory for all Torres Strait Fisheries, excluding the Torres Strait Prawn Fishery, on 1 December 2017. Since its inception, AFMA have received good catch and effort information. This information is more comprehensive and timely than that received under the previous voluntary arrangements and has been used to support better decision making about how fisheries are managed, including setting and monitoring TACs.

17. In the first half of 2020, AFMA will again visit all communities across the Torres Strait and Northern Peninsula Area (NPA), to provide ongoing support and education concerning the FRS.

18. During the course of meetings held during 2018, the TRLRAG agreed that catch and effort data (and the indicators derived from these data e.g. CPUE) are fundamental to understanding the dynamics of the TRL stock, performance of the TRL Fishery as well as a key input in the formulation of TACs. The TRLRAG recommended a sub-group of the RAG be established to examine and recommend improvements to be made to the collection and analysis of catch and effort data for the TRL Fishery.

19. The TRLRAG Data Sub-Group first met on 18 June 2019 and are tentatively scheduled to meet again at the end of March 2020. A report from the Sub-Group will be considered at the TRLRAG meeting on 10-11 December 2019, and an update will be provided at this meeting on next steps.

Tiered harvest strategy approach

20. The amount and quality of data and surveys available to inform assessments of the TRL Fishery stock has varied over time, and stakeholders have requested flexibility to increase or decrease the frequency and intensity of fishery independent surveys in the future. A tiered approach would provide for different harvest control rules to be applied when formulating a TAC each fishing season depending on the types of available information.

21. Work will continue in 2020 to develop a tiered harvest strategy approach that accounts for different risk-catch-cost trade-offs of different stock assessment and monitoring options for the fishery, pre-tested using MSE.

Legislative amendments

22. AFMA is continuing to progress draft amendments to the *Torres Strait Fisheries Act 1984* (the Act) and *Torres Strait Fisheries Regulations 1985* (the Regulations) as resources and priorities permit. The purpose of the amendments is to provide improvements to the efficiency and effectiveness of fisheries administration in the Torres Strait. In the past 12 months, AFMA have experienced delays to the project due to the Federal Election, competing Australian Government legislative priorities and limited internal resources.

23. Details of the proposed amendments have been provided in previous meeting papers. At its meeting on 8 October the PZJA agreed to further amendments to the Act and Regulations. A complete list of the proposed amendments is provided under **Agenda Item 2.3**.
24. Noting the likely timeline for the progressing amendments to the Act, AFMA aims to dedicate some time next year working across fisheries on options for promoting and supporting TIB fishers to complete daily fishing logbooks on a voluntary basis. AFMA will seek member's views on how best this may be approached.

Australian Government
Australian Fisheries Management Authority

28 November 2018

Dear Torres Strait Tropical Rock Lobster Fishery licence holder

Introduction of the Tropical Rock Lobster Fishery Management Plan and Key Management Arrangements for the 2018/19 Fishing Season

I am writing to inform you that on 26 November 2018, having considered outcomes of consultation, the Protected Zone Joint Authority (PZJA) decided to determine the *Torres Strait Fisheries (Quotas for Tropical Rock Lobster (Kaiar)) Management Plan 2018* (the Management Plan) and to amend the *Torres Strait Fisheries (Tropical Rock Lobster) Management Instrument 2018* (the Instrument).

The Management Plan and amendments to the Instrument will come into force for the 2018/19 fishing season starting on 1 December 2018.

These decisions mean that, unless delayed by legal appeals, a quota management system will be fully operational in the Torres Strait Tropical Rock Lobster Fishery (TRL Fishery) for the 2019/20 fishing season. A review of existing PZJA licencing policies and management arrangements, including input controls, will be conducted periodically after the quota management system is operational.

Please find enclosed copies of the Management Plan and amending Instrument along with a supporting guide describing how the Management Plan will work. Further information can also be found on the PZJA website at www.pzja.gov.au.

Management Arrangements for the 2018/19 fishing season (in line with the Instrument)

The 2018/19 fishing season for the TRL Fishery will commence on 1 December 2018. In the interim, as the TRL Fishery undergoes the transition to a fully operational Management Plan, some key management arrangements that will apply this season are as follows.

Sectoral split

Separate total allowable catch {TAC) shares will be implemented on an interim basis for the Traditional Inhabitant and Transferable Vessel Holder (TVH) sectors:

- **Traditional Inhabitant sector** - will be able to take a 66.17 per cent share of the TAC. This will be exclusively available to all Traditional Inhabitant Boat (TIB) licence

Canberra
PO Box 7051
Canberra Business Centre ACT 2610
P 02 6225 5555 F 02 6225 5500

Dc:rwin
PO Box 131
Darwin NT 0801
P 08 8943 0333 F 08 8942 2897

Thursday Island
POBox376
Thursday Island QLD 4875
P 07 4069 1990 F 07 4069 1277

holders. If all of this catch is taken by TIB licence holders before the end of the fishing season, a notice will be issued requiring fishing by this sector to cease.

- **TVH sector-the** remaining 33.83 per cent of the TAC will be individually apportioned to TVH licence holders, via licence conditions, in accordance with individual provisional allocation notices dated 1 October 2007. The TVH licence holders will be able to trade within the sector. Once TVH licence holders have exhausted their individual portion, including any leased quota, they will be required to cease fishing. Each TVH licence holder will receive a letter outlining the licence condition setting their portion of the TAC. This portion may not reflect the allocation of quota under the Management Plan, which will be subject to a catch verification and appeals process.

Interim and final TACs

In order to give effect to the sectoral split, the PZJA further agreed to open the 2018/19 fishing season with an interim TAC of 200 tonnes. This decision is based on advice received from the TRL Resource Assessment Group and TRL Working Group, which advised that an interim TAC derived from the maximum annual catch amount over the years 2005-2018 for the period 1 December and end of February should be implemented.

This means that, from the opening of the 2018/19 fishing season:

- **Traditional Inhabitant sector** - can take a combined total of 132.34 tonnes of TRL.

- **TVH sector** - can take the amount of TRL specified in their individual licence conditions. The total amount that can be taken by the TVH sector will not be more than 33.83 per cent of the TAC.

The interim TAC will apply until a final TAC for the 2018/19 fishing season can be agreed. A final TAC is expected to be decided in early March 2019 and will follow the consideration of the updated stock assessment to be undertaken by CSIRO (including the results of the November 2018 pre-season survey), consultation with the TRL Resource Assessment Group and TRL Working Group and having regard to Australia's obligations under the Torres Strait Treaty.

Moon-Tide Hookah Closures

On 26 November 2018, the PZJA reaffirmed existing management controls currently applied to the TRL Fishery, to be implemented under the Instrument and licence conditions. This includes periodic closures to the use of hookah gear for three days either side of the full or new moon each month based on the largest difference between high and low waters.

In this letter, for the purpose of subsection 13(2) of the Instrument, 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 2018/19 fishing season during the moon-tide hookah closure periods shown in the enclosed calendar (dated 28 November 2018). The first scheduled moon-tide hookah closure period starts on 17 February 2018.

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

This letter only covers some of the key management arrangements that will apply this season. Licence holders should familiarise themselves with all management arrangements that apply in the TRL Fishery prior to the commencement of fishing. Further information can be found on the PZJA website at www.pzja.gov.au or by contacting AFMA.

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

Anna Willock
Acting Chief Executive Officer

Attachments

A Guide to the *Torres Strait Fisheries (Quotas for Tropical Rock Lobster (Kaiar)) Management Plan 2018*
B Explanatory statement for the *Torres Strait Fisheries (Quotas for Tropical Rock Lobster (Kaiar)) Management Plan 2018*
C *Torres Strait Fisheries (Quotas for Tropical Rock Lobster (Kaiar)) Management Plan 2018*
D Explanatory statement for the *Torres Strait Fisheries Amendment (Tropical Rock Lobster) Management Instrument 2018*
E *Torres Strait Fisheries Amendment (Tropical Rock Lobster) Management Instrument 2018*
F Moon-tide hookah closure calendar for the 2018/19 fishing season (dated 28 November 2018)

Cc.inberra
PO Box7051
Canberra Business Centre ACT 2610
P 02 6225 5555 F 02 6225 5500

Darwin
PO Box 131
Darwin NT 0801
> 08 8943 0333 F 08 8942 2897

Thursday Island
POBox376
Thursday Island OLD 4875
P 07 4069 1990 F 07 4069 1277

Attachment 7b

To: **Mr John Glaister**

Chairperson,

Torres TRL Working Group

cc: Ms Selina Stoute

Torres Strait Manager

AFMA

Date: *25/11/2019*

Re: Proposed Additions to TRL Working Group Meeting Agenda

Dear John,

This letter is provided by Commercial Industry Torres TRL Working Group Representatives Trent Butcher and Mark Dean.

Given the recent formal introduction of Torres TRL Fishery Management by output control, we request that the matter of remaining input controls and interim arrangements in the TRL Fishery be included in the TRL Working Group Agenda for discussion at the upcoming meeting.

This request has the support of all commercial TVH operators remaining in the Torres TRL Fishery. These stakeholders hold a total of 9 TVH Torres TRL Licences and have recently been allocated ITQs in the Fishery. These ITQs comprise 33.798 % of the Torres Australian jurisdiction TRL TAC.

We note that on November 22nd 2019, a letter from AFMA CEO Wez Norris was sent to all TRL Fishery Licence holders regarding Management arrangements for the upcoming 2019-2020 season. This letter, prior to the upcoming consultative meetings and without any discussion with stakeholders, announces the TRL Management arrangements for 2019-2020, including for the hookah season commencing February 1st 2020.

We have an issue with this unconsulted, unilateral announcement. Particularly in relation to the re-introduction of a temporary interim arrangement (Monthly Moon Closures), which has no scientific justification in what is now an output-controlled fishery.

In fact, we wish to point out that the continued imposition of extra interim arrangements and archaic input controls in the Torres TRL Fishery after it has been converted to output controls conflicts directly with AFMA's stated policy and direction in Commonwealth Fisheries Australia wide. Why should Torres TRL be treated differently?

We <u>do not support</u> this and request that these matters be raised at the upcoming Working Group Meeting as two separate Agenda Items.

1. The Working Group consider the reintroduction of 7day monthly hookah closures in the 2019 – 2020 Torres TRL Fishing season. For Decision.

2. The Working Group consider the matter of Input Controls in general now that Torres TRL is an Output Controlled Fishery. For Discussion.

Thank you for considering this letter.

We look forward to a positive outcome in this matter and a successful 2019/2020 Torres TRL season for all stakeholders, TIB, TVH and PNG alike.

Yours sincerely,

Mark Dean

TRL Working Group Industry Member

Trent Butcher

TRL Working Group Industry Member

Summary of Torres Strait Tropical Rock Lobster Fishery (TRL Fishery) management arrangements

The 'Act' means the *Torres Strait Fisheries Act 1984*

The 'Regulations' means the *Torres Strait Fisheries Regulations 1985*

The 'TRL Fishery Management Plan' means the *Torres Strait Fisheries (Quotas for Tropical Rock Lobster (Kaiar)) Management Plan 2018*

The 'TRL Fishery Instrument' means the *Torres Strait Fisheries (Tropical Rock Lobster) Management Instrument 2018*

The 'Policy' means the *A Guide to Management Arrangements for Torres Strait Fisheries, June 2004*

Management measure	Traditional Inhabitant (TIB) Sector	Non-Traditional Inhabitant (TVH) Sector	What instrument is used to impose the measure
Requirement to hold a licence	Yes	Yes	Act, TRL Fishery Instrument and TRL Fishery Management Plan
Requirement to hold unused quota units for a fishing season when taking TRL	Yes (TSRA holds TIB sector quota units in trust)	Yes	TRL Fishery Management Plan
Tender/dinghy number restrictions	No[2]	Yes (maximum 7)	For the TVH sector, result of limited entry policy
Catch reporting	Yes (TDB02 only)	Yes (TRL04 and TDB02)	Act, Regulations and licence conditions
Weight conversion factor for processed TRL (2.677)	Yes	Yes	TRL Fishery Management Plan
Fishery closure (1 October – 30 November)	Yes	Yes	TRL Fishery Instrument

[2] Policy removed in 2014. Tender numbers are now constrained by vessel survey standards.

Hookah closure (1 December – 31 January)	Yes	Yes	TRL Fishery Instrument
Total allowable catch for each fishing season	Yes	Yes	TRL Fishery Management Plan
Periodic moon-tide hookah closures	Yes	Yes	TRL Fishery Instrument
Size restrictions, minimum tail size of 115 mm or minimum carapace length of 90 mm	Yes	Yes	TRL Fishery Instrument
Prohibition on using underwater propulsion, or any kind of equipment that provides for breathing underwater, excluding hookah gear	Yes	Yes	TRL Fishery Instrument
Collection only by hand, spear, scoop net or other implement held in the person's hand at all times	Yes	Yes	TRL Fishery Instrument
Prohibition on carrying meat removed from the shell	Yes	Yes	TRL Fishery Instrument
Prohibition on carrying diving equipment at night	Yes	Yes	TRL Fishery Instrument
A Master Fisherman's licence must be held by person in charge of the boat	No (issued upon request)	Yes	Policy
A processor/carrier licence is required to carry or process TRL at sea	Yes	Yes	TRL Fishery Instrument
Vessel Monitoring System (VMS) for primary and carrier vessels	Yes	Yes	Licence conditions
Crewing restrictions	Yes (the boat may only be owned and operated by Traditional Inhabitants)	No	Licence conditions

Boat length restrictions and boat replacement policy[3]	Yes (maximum 20 m)	Yes (maximum 18 m)	Policy, licence conditions and *Torres Strait Fisheries Management Notice No. 47* (maximum 20 m)

[3]
- boats up to six metres may be replaced by another boat up to six metres;
- boats greater than six metres and less than or equal to ten metres may be replaced by a boat up to and including 10 metres;
- boats greater than ten metres and less than or equal to 14 metres may be replaced by a boat up to and including 14 metres; and
- boats greater than 14 metres may be replaced by another boat of equal length. The maximum size for fishing boats is 20 metres.

Timeline of key events in the Torres Strait Tropical Rock Lobster Fishery[1]

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*

Date	Description	Source
1960	Commercial fishing for TRL by the non-Traditional Inhabitant sector began in the Torres Strait	i
Dec-1978	Torres Strait Treaty signed	ii
Feb-1985	Torres Strait Treaty entered into force, *Torres Strait Fisheries Act 1984* and *Torres Strait Fisheries Regulations 1985* commenced and the PZJA is established	iii
Feb-1985	Under FMN 1: • Method restrictions introduced - only diving, collection by hand and use of spear permitted	iii
Jul-1985	Under FMN 9 (replaced FMN 1): • Method restrictions amended – only diving, collection by hand and use of spear permitted between 15 Jul-31 Oct	iii
Jan-1986	Introduction of prohibition on prawn trawlers taking TRL during the annual migration period (1 Jul-31 Oct) - in place until 1987	iv

[1] This is a draft document and is to be updated as key events happen. Additional work is planned to update this document to reference key licensing changes that have affected access to the TRL Fishery.

Jun-1986	Under FMN 12 (replaced FMN 9): • Method restrictions amended – only diving, collection by hand and use of spear permitted between 1 Jul-31 Oct only	iii
Mar-1988	Under FMN 19: • Introduction of prohibition on the take, processing or carrying of TRL by boats with a prawn endorsement	iii
Jun-1988	Under FMN 22: • Minimum size limit introduced - 100 mm tail length	iii
Oct-1988	Under FMN 24 (replaced FMN 12): • 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	iii
Aug-1989	Under FMN 31 (replaced FMN 24): • No substantive changes to FMN 24	iii
1989	Fishery independent surveys commence in the TRL Fishery	v
Oct-1990	Under FMN 34 (replaced FMN 22): • No substantive changes to FMN 22	iii
Jun-1992	Mabo High Court decision	vi
Oct-1993	Under FMN 38 (replaced FMN 31): • 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	iii
Dec-1993	*Native Title Act 1993* commences	iii
1994	Noted under LN 8: • Tropical Rock Lobster Logbook TRL02 implemented – voluntary, records frozen tails only	iii

1994	Torres Strait Regional Authority established under the *Aboriginal and Torres Strait Islander Commission Act 1989*	iii
Jul-1995	Under FMN 42 (amended FMN 38): • No substantive changes to FMN 38	iii
Mar-1997	Under FMN 44 (amended FMN 38): • 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	iii
May-1997	Under LN 8: • Tropical Rock Lobster Logbook TRL03 implemented – both TRL02 and TRL03 mandatory for boats with freezing capacity, records both live and frozen tails	iii
Apr-1998	Under FMN 48 (replaced FMN 34): • Minimum size limits amended - 80 mm carapace length, 100 mm tail length	iii
Apr-2000	Traditional Inhabitant Boat (TIB) licence introduced	vii
Nov-2001	Under FMN 58 (replaced FMN 38, 42, 44, 48): • 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 • 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	iii
2002	*Torres Strait Fisheries Act 1984* is amended to make the Torres Strait Regional Authority Chairperson a member of the Protected Zone Joint Authority	iii
Nov-2002	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 – arrangement in place until 2011.	viii
Dec-2002	Under FMN 62: • Introduction of prohibition of processing or carrying TRL meat removed from the shell on a boat. Exemption provided for traditional fishing	iii

Dec-2003	Cap on Traditional Inhabitant licences for boats greater than 6 m with a TRL Fishery endorsement – in place until 2006	ix
Late 2003	Torres Strait Seafood Buyers and Processors Docket Book (TDB01) implemented – voluntary	vii
Jun-2003	Under the *Torres Strait Fisheries Logbook Instrument No. 1*: • Tropical Rock Lobster Logbook TRL04 implemented – mandatory for all non-Traditional Inhabitant operators	iii
Jan-2005	Moon-tide hookah closures 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	x
Jul-2005	PZJA agreed to implement a plan of management	xi
2006	Notional total allowable catches implemented	xii
Mar-2006	Under FMN 73 (replaced FMN 58, 62): • 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	iii
Sep-2006	Under FMN 80 (replaced FMN 73): • 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	iii
Jun-2007	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	xiii

	stakeholders on the data used to establish the historical catch ratios of the Community and non-community sectors'	
Apr-2008	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.	xiv
2008	TRL tail to whole weight conversion ratio (2.677) implemented	xii
2009	Interim Harvest Strategy implemented for the TRL Fishery	xii
Mar-2010	Torres Strait coral bleaching event	xv
Aug-2011	Under FMI 9 (replaced FMN 80): • 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	iii
Apr-2012	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	xvi
7-Aug-2013	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	vi
2014	The Protected Zone Joint Authority acknowledges and supports the aspiration of Torres Strait Communities to own 100% of commercial Fisheries in the Australian area of the Torres Strait Protected Zone	xvii
May-2014	Malu Lamar is appointed as the Registered Native Title Body Corporate for the Sea Claim Area Part A.	xviii
Mar-2016	Torres Strait coral bleaching and sea cage mortality event	xv
Oct-2016 to Oct-2017	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	xix
Jul-2017	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.	xx

Dec-2017	Torres Strait Fisheries Catch Disposal Record (TDB02) implemented – mandatory for all Torres Strait licence holders	xx
10-Apr-2018	Additional moon-tide hookah closures introduced covering all new and full moon periods for the remainder of the 2017-18 fishing season.	xxi
27-Apr-2018	Prohibition on the carriage and use of hookah gear for the remainder of the 2017-18 fishing season.	xxi
29-Jun-2018	Federal Court of Australia order to revoke prohibition on the carriage and use of hookah gear – reverted to additional moon-tide hookah closures.	xxi
20-Jul-2018	Under the Instrument (replaced FMI 9): • 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) • 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	xxi
31-Jul-2018	TRL Fishery closed for the remainder of the 2017-18 fishing season due to total allowable catch being reached.	xxi
1-Dec-2018	Management Plan commenced	iii
1-Dec-2018	Under the Instrument (amendment to Jul-2018 Instrument): • 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	iii

	• 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	Quota units allocated under the Management Plan: • 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	[xxi]
19-Nov-2019	PZJA adopts final Harvest Strategy for the TRL Fishery	[xxi]
1-Dec-2019	TRL Fishery commences operation under a quota management system as per the Management Plan	[iii]

[i] History of Torres Strait Commercial Fisheries accessible on the Torres Strait Regional Authority (TSRA) website at www.tsra.gov.au
[ii] Accessible on the Department of Foreign Affairs and Trade (DFAT) website at https://dfat.gov.au
[iii] Accessible on the Federal Register of Legislation (FRL) website at www.legislation.gov.au
[iv] Records for Protected Zone Joint Authority (PZJA) meetings and out-of-session decisions for 1986-87, accessible by contacting the PZJA Executive Officer
[v] PZJA annual report for 1989/90, accessible by contacting the PZJA Executive Officer
[vi] Accessible on the High Court of Australia website at www.hcourt.gov.au
[vii] *A Guide to Management Arrangements for Torres Strait Fisheries* (June 2004), accessible on the PZJA website at www.pzja.gov.au
[viii] Records for PZJA meetings and out-of-session decisions for 2002-2011. PZJA decision records from 2009 onwards are accessible on the PZJA website at www.pzja.gov.au. PZJA decision records prior to 2009 are accessible by contacting the PZJA Executive Officer
[ix] Records for PZJA meetings and out-of-session decisions for 2003-2006, accessible by contacting the PZJA Executive Officer
[x] Records for PZJA meetings and out-of-session decisions for 2005-2019. PZJA decision records from 2009 onwards are accessible on the PZJA website at www.pzja.gov.au. PZJA decision records prior to 2009 are accessible by contacting the PZJA Executive Officer
[xi] PZJA Meeting 18 record, accessible by contacting the PZJA Executive Officer
[xii] TRLRAG meeting records for 2006-2019. TRLRAG meeting records from 2013 onwards are accessible on the PZJA website at www.pzja.gov.au. TRLRAG meeting records prior to 2013 are accessible by contacting the TRLRAG Executive Officer
[xiii] PZJA Meeting 21 record, accessible by contacting the PZJA Executive Officer
[xiv] PZJA Meeting 22 record, accessible by contacting the PZJA Executive Officer
[xv] Personal communication with Darren Dennis
[xvi] TRLWG Meeting 6 papers (Agenda Item 4.1), accessible on the PZJA website at www.pzja.gov.au
[xvii] PZJA Meeting 23 record, accessible on the PZJA website at www.pzja.gov.au

[xviii] Accessible on the Office of the Registrar for Indigenous Corporations website at www.oric.gov.au

[xix] *Torres Strait Fisheries (Tropical Rock Lobster) Management Instrument 2018*, accessible on the Federal Register of Legislation (FRL) website at www.legislation.gov.au

[xx] Accessible on the PZJA website at www.pzja.gov.au

[xxi] Accessible on the PZJA website at https://www.pzja.gov.au/the-fisheries/torres-strait-tropical-rock-lobster-fishery

Excerpt from the Torres Strait Tropical Rock Lobster Fishery – Five Year Business Plan (December 2010)[4]

In 2005–06, the Tropical Rock Lobster Working Group recommended new management objectives which were adopted by the Protected Zone Joint Authority (PZJA) These objectives are:

a. to maintain the spawning stock at levels that meet or exceed that required to produce the maximum sustainable yield;

b. in accordance with the TS Treaty, to protect the traditional way of life and livelihood of Traditional Inhabitants, particularly in relation to their traditional fishing for TRL;

c. to provide for the optimal utilisation, co-operative management with Queensland and PNG and for catch sharing with PNG;

d. to monitor interactions between the prawn and lobster fisheries;

e. to maintain appropriate controls on fishing gear allowed in the fishery so as to minimise impacts on the environment;

f. to promote economic development in the TS area with an emphasis on providing the framework for commercial opportunities for Traditional Inhabitants and to ensure that the opportunities available to all stakeholders are socially and culturally appropriate for the TS and the wider Queensland and Australian community; and

g. to optimise the value of the fishery.

Expansion in the fishery is limited to Traditional Inhabitants so as to maximise their opportunities.

The PZJA has imposed licensing provisions to prevent the growth of the non-Islander sector, both in terms of fishing capacity (boat replacement policy) and the containment of licence numbers. There is also a ban on trawlers taking lobster to prevent pressure on the lobster resource from the prawn trawling fleet.

[4] Torres Strait Tropical Rock Lobster Fishery - Five Year Business Plan, Marsden Jacob Associates 2010, accessible at https://www.pzja.gov.au/sites/default/files/content/uploads/2011/12/Final-Report-TRL-year-business-plan-MJA-20-Dec-20101.pdf?acsf_files_redirect

TROPICAL ROCK LOBSTER WORKING GROUP (TRLWG)	MEETING 10 12 December 2019
OTHER BUSINESS	Agenda Item 8 For discussion

RECOMMENDATIONS

1. That the Working Group **NOMINATE** any further business for discussion.

TROPICAL ROCK LOBSTER WORKING GROUP (TRLWG)	MEETING 10 12 December 2019
DATE AND VENUE FOR NEXT MEETING	Agenda Item 9 For discussion and advice

RECOMMENDATIONS

1. That the Working Group **NOMINATE** a date and a venue for the next meeting noting proposed meeting dates in the table below alongside key agenda items.

Date	Key agenda items
3 April 2020	- An additional meeting may be required should the preliminary results stock assessment update indicate the need for revision of the empirical Harvest Control Rule (eHCR) under the final Harvest Strategy – advice from TRLRAG 27 (10-11 December 2019) regarding this matter will be provided under **Agenda Item 4**.
To be discussed	- An additional meeting may be proposed pending advice provided at this meeting regarding future management priorities (**Agenda Item 7**)
17 December 2020	- Consider advice of the TRL Resource Assessment Group (TRLRAG) regarding: o Results of the November 2020 pre-season survey o CPUE analyses for the 2019-20 fishing season o recommended biological catch (RBC) for the 2021-22 fishing season - Provide advice regarding a total allowable catch (TAC) for the 2021-22 fishing season - Provide advice regarding future management priorities