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.

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 9 19-20 February 2019
PRELIMINARIES Welcome and apologies	Agenda Item 1.1 For noting

RECOMMENDATIONS

1. That the Working Group **NOTE**:
   a. Mr John Pollock will be Acting Chairperson for this meeting;
   b. an opening prayer;
   c. an acknowledgement of Traditional Owners;
   d. the Acting Chairperson's welcome address;
   e. the welcome for a new member, James Ahmat (Industry Member and Traditional Inhabitant Maluialgal); and
   f. apologies received from members unable to attend.

BACKGROUND

2. Apologies have been received from:
   a. Sandy Morison (Chairperson);
   b. Danielle Stewart (QDAF Member);
   c. Sevaly Sen (Fishery Economist Member); and
   d. Maluwap Nona on behalf of Malu Lamar (Torres Strait Islanders) Corporation RNTBC.

TROPICAL ROCK LOBSTER WORKING GROUP (TRLWG)	MEETING 9 19-20 February 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 1 February 2019. No suggestions for changes were received. Updates to the agenda were made after this to reflect revised meeting times and venues.

TROPICAL ROCK LOBSTER WORKING GROUP (TRLWG)	MEETING 9 19-20 February 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 (**Attachment 1.3a**);
   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 (**Attachment 1.3b**).
3. Working Group members are asked to confirm the standing list of declared interests (**Attachment 1.3a**) 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 Pollock	Acting Chair	No pecuniary or other interest in the Tropical Rock Lobster Fishery or any other Torres Strait fisheries.
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	Nil. Member of other RAGs and research consultant.
Sevaly Sen	Fisheries Economist Member	Not applicable, will not be in attendance.
Aaron Tom	Industry Member	Traditional Inhabitant Gudumalulgal and TIB licence holder.
Mark David	Industry Member	Traditional Inhabitant Kulkalgal and TIB licence holder.
Les Pitt	Industry Member	Traditional Inhabitant Kemer Kemer Meriam, TIB licence holder and runs an independent freezer facility on Erub Island.
James Ahmat	Industry Member	Traditional Inhabitant Maluialgal and TIB licence holder.
Mark Dean	Industry Member	Industry representative and TVH operator.
Daniel Takai	Industry Member	Pearl Island Seafoods, Tanala Seafoods and TIB licence holder.
Brett Arlidge	Industry Member	General Manager MG Kailis Pty Ltd. MG Kailis Pty Ltd is a owner of 5 TVH licences.
Natalie Couchman	Executive Officer	Nil.
Observers		
Joseph Posu	PNG National Fisheries Authority (NFA)	To be advised.
Jerry Stephen	TSRA Deputy Chair, TSRA Member for Ugar and TSRA Portfolio Member for Fisheries	TIB licence holder and Native Title holder.

PROTECTED ZONE JOINT AUTHORITY

FISHERIES MANAGEMENT PAPER No. 1

(PZJA FMP No.1)

MANAGEMENT ADVISORY COMMITTEES, SCIENTIFIC ADVISORY COMMITTEES, WORKING GROUPS AND RESOURCE ASSESSMENT GROUPS

MAY 2008

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

CONTENTS

LIST OF ATTACHMENTS

1. ACRONYMNS/DEFINITIONS

For the purposes of this document:

AFMA	Australian Fisheries Management Authority
DAFF	Department of Agriculture, Fisheries and Forestry
EO	Executive Officer
FMP	Fisheries Management Paper
MAC	Management Advisory Committee
PNG	Papua New Guinea
PZJA	Protected Zone Joint Authority
QDPI&F	Queensland Department of Primary Industries and Fisheries
RAG	Resource Assessment Group (including Stock Assessment Group, species Assessment Group or any scientific group).
SAC	Scientific Advisory Committee
TSFMAC	Torres Strait Fisheries Management Advisory Committee
TSPMAC	Torres Strait Prawn Management Advisory Committee
TSPZ	Torres Strait Protected Zone
TSRA	Torres Strait Regional Authority
WG	Working Group

2. PURPOSE

This Fisheries Management Paper sets out the Torres Strait Projected Zone Joint Authority's (PZJA) policy for the operation and administration of Management Advisory Committees (MACs), Scientific Advisory Committees (SACs), Working Groups (WGs) and Resource Assessment Groups (RAGs) or other associated consultative groups.

This paper also outlines key decision making processes associated with the delivery of advice in the pursuit of the Protected Zone Joint Authority's (PZJA) legislative objectives. This includes the interactive processes, respective roles and responsibilities between the PZJA, MACs, SACs, WGs and RAGs.

3. INTRODUCTION

Sections 40(7-8) of the *Torres Strait Fisheries Act 1984* (the Act) provide for the establishment of advisory committees "….to provide information and advice to the Protected Zone Joint Authority on scientific, economic and technical matters related to any fishery."

In the Australian area of jurisdiction, traditional fishing and the commercial fisheries are managed by the Torres Strait Protected Zone Joint Authority (PZJA). The PZJA, established under the *Torres Strait Fisheries Act 1984* (the Act), comprises the Federal and State (Queensland) Ministers responsible for fisheries, and the Chair of the Torres Strait Regional Authority (TSRA). The PZJA is responsible for managing fisheries in the Torres Strait Protected Zone (TSPZ). The PZJA has delegated day-to-day management of the fisheries to the Australian Fisheries Management Authority (AFMA) and compliance and licensing in the fisheries to the Queensland Department of Primary Industries and Fisheries (QDPI&F) under a cost sharing arrangement. Five of the fisheries currently being managed are known as Article 22 fisheries and are jointly

managed by PNG and Australia. The two countries share the catches of Article 22 commercial fisheries according to formulae set out in the Torres Strait Treaty.

The PZJA agencies include AFMA, the Queensland Department of Primary Industries and Fisheries (QDPI&F), the Torres Strait Regional Authority (TSRA) and the Department of Agriculture, Fisheries and Forestry (DAFF). Recreational fishing is still managed under Queensland law.

The PZJA is responsible for monitoring the condition of the designated fisheries 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.

4. CONSULTATIVE STRUCTURE

The consultative structure for Torres Strait fisheries incorporates Australian Traditional Inhabitant commercial and traditional fishers, non-Traditional Inhabitant commercial fishers, Australian and Queensland Government officials, and technical experts.

The PZJA may be advised by Management Advisory Committees (MAC), Scientific Advisory Committees (SAC), and Resource Assessment Groups (RAG) on issues associated with TSPZ fisheries (Figure 1).

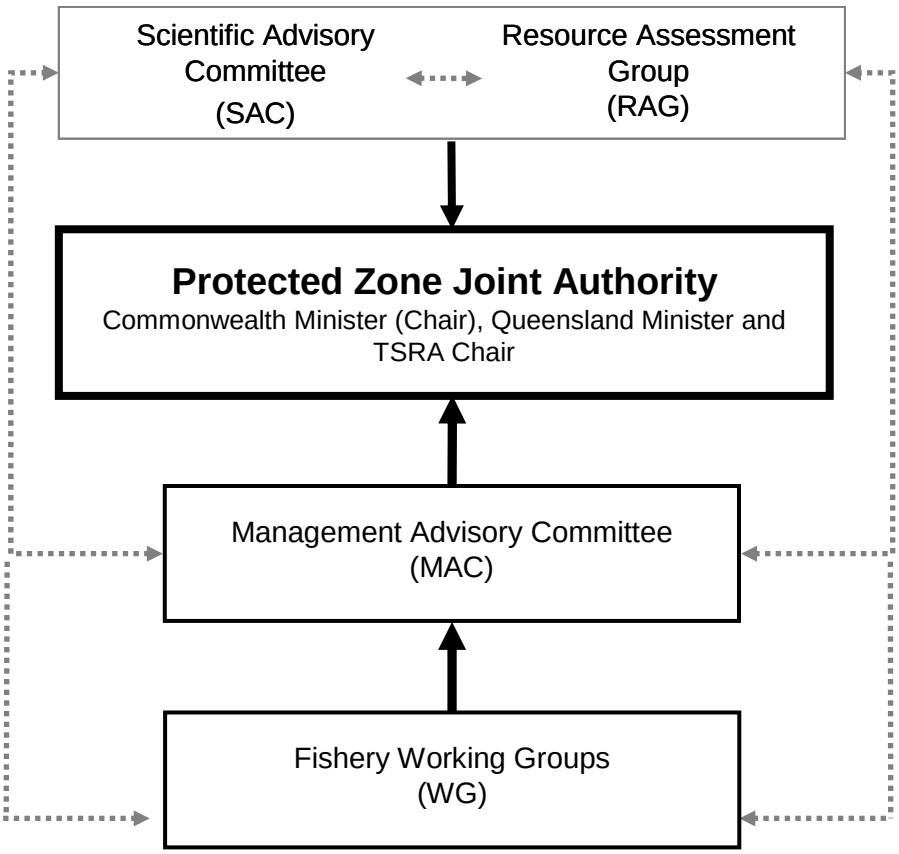

Figure 1. The consultative structure of the Torres Strait Protected Zone Joint Authority (PZJA). Solid lines and dashed lines indicate primary and secondary lines of communication respectively.

Consultation and communication can be difficult across all islands of the Torres Strait, but are important elements in the effective management of the region's fisheries. The consultative committees are, therefore, complemented by meetings between fisheries officers and fishermen in communities around the Torres Strait. These meetings are occasionally supplemented by fisheries programs broadcast on Radio Torres Strait and articles/advertisements in the Torres News.

While the Committee's and Groups outlined in Figure 1 are the main means of the PZJA obtaining advice and information, it is not the only means. The PZJA may seek advice and views from others with relevant expertise or interest. This includes PZJA Agencies, other government agencies, independent consultants, operators in fisheries more broadly and representatives of the broader community.

Key principles that should be observed in relation to the respective committees/groups within the PZJAs decision-making framework are:

i. All committees/groups are advisory rather than decision-making;
ii. Committees/groups should provide expert advice that best pursues PZJAs legislative and policy objectives;
iii. The PZJA seeks, through its consultative processes, to obtain best quality information and advice;
iv. The PZJA will make decisions based on the best advice (and information) available at the time;
v. Committees/groups should have defined roles and there should be minimum overlap in responsibilities; and
vi. Advice and reporting should be a transparent and open process.

4.1 Role and functions of a Management Advisory Committee (MAC)

Management Advisory Committees (MAC) are the principal source of advice for the PZJA on fishery-specific management issues in all Torres Strait fisheries. A MAC and its working group/s have specific functions that support the decision making process.

A MAC advises the PZJA on fishery objectives, strategies, reference points, risk profiles and management arrangements for achieving fishery-specific goals. For the PZJA to be able to make decisions based upon MAC advice, the PZJA has to be confident that a MAC has put in place rigorous processes to determine the best package of measures in pursuit of the PZJA's objectives. Good governance and business efficiency demand that the PZJA is normally able to approve MAC advice without delving into MAC business details, or needing to seek clarification from a MAC.

The role of a MAC is to advise the PZJA on management issues for the fisheries managed under the Act. It provides the forum where issues relating to the fisheries are discussed, problems identified and possible solutions developed. The outcome of these deliberations determines the recommendations a MAC will make to the PZJA concerning the management of relevant fisheries.

All MAC members must be aware of the PZJAs legislative objectives and functions (as contained in Attachment A) and of the continuing need to take these into account in their deliberations.

4.2 Role and functions of a Scientific Advisory Committee (SAC)

A Scientific Advisory Committee's (SAC) main role is to advise the PZJA on the strategic directions, priorities and funding for research relevant to meeting information needs and objectives of the PZJA and its relevant consultative bodies.

The committee normally provides a review process for research conducted by research providers to ensure that milestones are met and that the research outcomes represent good value for money. The committee may also be called upon to make its own assessments of fisheries data and comment on stock assessment advice. The committee may also solicit external review when the questions asked fall outside the committee's area of expertise.

A SAC may also provide advice to the MACs, WGs, and RAGs on scientific and research issues in the Torres Strait Protected Zone (TSPZ).

4.3 Role and functions of Working Groups (WG)

To assist in the operations of a MAC, Working Groups (WG) have been established to provide advice on particular matters relevant to individual fisheries. The task of a WG is to discuss, negotiate and debate issues relevant to individual fisheries. In order to be manageable and cost effective, WGs will be no larger than is necessary to ensure the appropriate blend of knowledge and expertise is available to provide the required advice to a MAC.

Ordinarily the WGs deal with the fishery specific issues, including the specification of management objectives, research priorities for the particular fishery, management issues and strategies, and compliance issues. In addition to these tasks the WGs deal with a range of ad hoc issues. These are reported to a MAC and/or SAC as appropriate.

4.4 Role and functions of a Resource Assessment Group (RAG)

The main role of Resource Assessment Groups (RAG) is to provide advice on the status of fish stocks, sub-stocks, species (target and non-target species) and on the impact of fishing on the marine environment. Advice provided by a RAG should address biological, economic and wider ecological factors impacting on the fishery.

RAGs should also evaluate alternative harvest options proposed by the relevant fishery WG and/or MAC. This includes advising on the impact over time of different harvest strategies (for example, the time required for a particular fish stock to reach a reference point), stock depletion or recovery rates, the confidence levels of the fishery assessments, and risks to the attainment of approved fishery objectives.

A RAG reports to the PZJA. It also informs relevant SACs, MACs or WGs of work on stock assessments in progress or potential issues, but is not restricted by them. This ensures that the potential conflict of interest generated by the assessment roles of RAGs and the management advisory roles of other consultative bodies does not impact on the quality of advice provided to the PZJA. A MAC (including its WGs) and associated RAG are likely to have some common membership, therefore it is essential that members' roles be recognised and differentiated by the respective chairs.

5. TERMS OF REFERENCE

5.1 Management Advisory Committees and Working Groups

The following terms of reference are to be utilised by Management Advisory Committees (MAC) and Working Groups (WG) as operating guidelines.

1. To provide a forum for the discussion of matters relevant to the management of Torres Strait fisheries and to act as a medium for the flow of information between all stakeholders;
2. To provide advice and make recommendations to the PZJA (in the case of a MAC) or MAC (in the case of a WG) with respect to:
    i. the management of the fishery;
    ii. the development of fishery management plans;
    iii. ongoing measures required to manage the fishery in accordance with the provisions of management plans; and
    iv. amendments to management plans as required;
3. To provide advice and make recommendations to the PZJA (in the case of a MAC) or MAC (in the case of a WG) on research priorities and projects for the fishery. MACs and WGs are to ensure that processes are in place for industry and other interested stakeholders to receive advice from researchers in a form that will be easily understood by the audience;
4. To establish sub-committees as required ensuring that the range of management issues is given proper attention;
5. To liaise with PZJA Agency staff and provide assistance as necessary to ensure approved management measures are implemented; and
6. To undertake additional functions on behalf of the PZJA as determined by the Authority.

5.2 Scientific Advisory Committee (SAC)

The following terms of reference are to be utilised by a Scientific Advisory Committee (SAC) as operating guidelines.

1. Identify and document research gaps, needs and priorities for fisheries in the Torres Strait;
2. Provide a forum for expert consideration of scientific issues referred to the SAC by a MAC;
3. Provide a forum for detailed consideration of scientific issues raised by WGs and relevant stakeholder representative bodies and advise WGs and relevant stakeholders on the feasibility and merits of suggested research;
4. Develop and update a strategic plan for Torres Strait Fisheries research;
5. Solicit and review research proposals in line with the strategic plan and recommend proposals for implementation to the AFMA Research Committee (ARC) and/or other relevant funding organisations;
6. Provide other advice to the MACs on matters consistent with SAC functions;
7. Review research / consultancies, stock assessments, and other reports and outputs relevant to Torres Strait fisheries and advise the appropriate MAC and WG, on their technical merit;
8. Advise the MACs and WGs on the management implications identified by the research projects or the SACs own assessment of fisheries data;
9. Convene Fisheries Assessment workshops as appropriate to review and address assessment needs for Torres Strait fisheries and recommend research priorities for future assessments;

10. Provide advice to research providers and the MACs on appropriate mechanisms and protocols for engaging research providers in the Torres Strait fisheries;
11. Provide advice on effective delivery of research results to stakeholders; and
12. Provide advice on a range of issues including stock assessment advice.

5.3 Resource Assessment Groups (RAG)

A Resource Assessment Groups' (RAG) Terms-of-Reference (TOR) should be tailored according to their specific fishery requirements. However, general TOR for RAGs are:

1. Analyse, assess, and report on the fishery status against agreed reference points, including target and non-target stocks, impacts on the marine environment from fishing, and the economic efficiency with which stocks are fished;
2. Identify improvements and refinements to assessment methodology;
3. Evaluate alternative harvest strategies or TAC settings. This includes providing advice on confidence limits or risk levels associated with particular management/harvest strategies;
4. Assist the relevant MAC and/or the WG to develop, test, and refine sustainability reference points and performance indicators for the fishery. Advise on stock status and trends relative to these reference points and indicators;
5. Identify and document fishery assessment and monitoring gaps, needs and priorities. These should be communicated to the SAC so that they can be incorporated in the Torres Strait strategic research plan;
6. Provide advice and recommendations to the SAC on issues consistent with RAG functions;
7. Facilitate peer review of assessment outputs;
8. Facilitate/drive a collaborative stock assessment with adjacent jurisdictions;
9. Maintain awareness of current issues by promoting close links with the MACs, SACs and any other Torres Strait RAGs; and
10. Liaise with other researchers, experts and key industry members.

6. Cost Recovery

Under the existing Australian Government cost-recovery policy, MACs and their subcommittees (WGs) are funded largely by industry levies as their functions are attributable to industry as the principal beneficiary.

In Torres Strait, only the costs of the prawn fishery are attributed to Industry and recovered at the present time. It should be noted however that the PZJA agreed in principle that cost recovery should extend to other Torres Strait fisheries in line with AFMAs Cost Recovery Impact Statement (CRIS). A policy on the cost recovery is being developed for the PZJAs consideration.

7. OPERATIONAL GUIDELINES

7.1 Membership Composition

The PZJA or delegate has final responsibility for determining the actual membership of MACs, SACs, WGs and RAGs and will consider membership in relation to the needs of the Torres Strait Fisheries.

7.1.1 Management Advisory Committee (MAC)

The minimum requirements for MAC membership are as follows:

- 1 x Chair;
- 1 x Executive Officer;
- 2 x Staff members from AFMA;
- 2 x Staff members from QDPI&F;
- 1 x Scientific member;
- 6 x Traditional Inhabitant members*;
- 5 x Non-Traditional Inhabitant Industry members[#];
- 1 x TSRA support member.

* The exact number of Traditional Inhabitant members may vary for each MAC as determined by the PZJA or delegate depending upon the needs of the fisheries (e.g. TSFMAC = 6 rotational from 24 communities; TSPMAC = 3).

[#] The composition of Non-Traditional Inhabitant Industry Members may vary for each MAC as determined by the PZJA or delegate depending upon the needs of the fisheries covered by the MAC (e.g. TSFMAC = 4 x Fishing licence holders, 1 x Industry processor; TSPMAC = 4 x Fishing licence holders, 1 x Industry processor).

7.1.2 Scientific Advisory Committee (SAC)

In view of the special circumstances of the Torres Strait, especially in relation to the multiple jurisdictional arrangements for management and the provisions for economic development favouring Torres Strait Islanders in the Torres Strait Treaty (1985) and the Torres Strait Fisheries Act (1984), the Torres Strait Scientific Advisory Committee (SAC) should reflect a balance between stakeholder representation and research expertise. The SAC might be expected to have a greater representative function than other AFMA Scientific Committees. Accordingly, minimum requirements for a SAC membership are as follows:

- 1 x Chair;
- 1 x Executive Officer;
- 1 x Staff member from AFMA;
- 1 x Staff member from QDPI&F;
- 4x Scientists*;
- 1 x Independent industry member;
- 1 x Community Fisher Representative nominated by the TSRA;
- 1 x Papua New Guinea Representative.

*The exact number of Scientific members may vary for each SAC as determined by the PZJA or delegate depending upon the needs of the committee.

Other experts included on a register of experts maintained by AFMA may be called to attend specific SAC meetings based on their specific areas of expertise as required.

7.1.3 Working Group (WG)

The minimum requirements for WG membership are as follows:

- 1 x Chair;
- 1 x Executive Officer;
- 1 x Staff member from AFMA;
- 1 x Staff member from QDPI&F;

- 1 x Scientific member;
- 6 x Traditional fishing members*;
- 3 x Non-Traditional Inhabitant Industry members#;
- 1 x TSRA support member.

* The exact number of Traditional Inhabitant members may vary for each WG as determined by the PZJA or delegate depending upon the needs of the fishery.

The composition of Non-Traditional Inhabitant Industry Members may vary for each WG as determined by the PZJA or delegate depending upon the needs of the fishery.

7.1.4 Resource Assessment Group (RAG)

A stock assessment that engenders a strong management response may bring the RAG into conflict with sectors of industry or attract political attention. Therefore, members of the RAG must be credible, expert and impartial in undertaking their assessments.

The minimum requirements for RAG membership are as follows:
- 1 x Chair;
- 1 x Executive Officer;
- 1 x Staff member from AFMA;
- 1 x Staff member from QDPI&F;
- 1 x Traditional fishing member;
- 1 x Non-Traditional Inhabitant Industry member;
- 1 x Scientific member;
- 1 x Independent Scientific member;
- 1 x Conservation member;
- 1 x PNG NFA member;
- 1 x TSRA support member.

7.2 Term of appointment

The PZJA or delegate makes all appointments to MACs, SAC, WGs and RAGs, with Members generally appointed for terms of up to three years. In order to ensure continuity, Members will not normally be appointed for a period of less than two years. Subsequent re-appointment may be permitted.

8. Responsibilities and obligations of Members

8.1 Responsibilities of Members

Being appointed to a PZJA consultative committee or group brings with it a number of important responsibilities. Specifically, members must be prepared to meet the following requirements:
- they must be able to put views clearly and concisely and be prepared to negotiate to achieve acceptable outcomes and compromises where necessary;
- they must act in the best interests of the fisheries as a whole, rather than as an advocate for any particular organisation, interest group or regional concern;
- they must be prepared to observe confidentiality and exercise tact and discretion when dealing with sensitive issues;

- they must contribute to discussion in an objective and impartial manner and avoid pursuing personal agendas or self-interest;
- they must be prepared to make the necessary commitment of time to ensure that they are fully across matters which are the subject of consideration by the committee;
- Industry Members must not have commercial interests in the same company as other members on the same MAC, SAC, WG or RAG;
- Industry members must have the wider industry's confidence and authority to undertake their functions as a MAC, SAC, WG or RAG member. They must also be prepared to consult with members of industry through port-level associations, regional associations and peak industry bodies as necessary; and
- Traditional inhabitant members must have the community's confidence and authority to undertake their functions as a MAC, SAC, WG or RAG member. They must also be prepared to consult with members of community through local associations and meetings as necessary.

8.2 Reaching consensus

A co-operative approach to MAC, SAC, WG and RAG discussions is essential. While this does not mean that there won't be disagreements from time to time, it does mean that agreement is ultimately to be reached through reasoned discussion, consultation and negotiation having regard to what is best for the fishery.

A MAC, SAC, WG or RAG should reach agreement through consensus and not use voting as a mechanism for achieving outcomes. Where agreement cannot be reached, members are encouraged to reconsider the issue and seek further information if necessary before making their recommendation. If a deadlock cannot be avoided, the views of members and general discussion should be well documented in the minutes of the meeting and highlighted in recommendations that are put before the PZJA (in the case of a MAC, RAG or the SAC) or MAC (in the case of a WG). MACs and WGs are the best means to achieve agreement on management issues. Ownership of the formal process by its members is vital to successful fisheries management.

8.3 Disclosure of interests

8.3.1 Types of interests

MAC, SAC, WG and RAG members are appointed to provide input based on their knowledge and expertise and as a consequence, it is inevitable that members may face potential or direct conflicts of interest. There may be a conflict of interest where a member:

- has a material personal interest, including a direct or indirect financial or economic interest, in a matter being considered, or about to be considered, by the MAC, SAC, WG or RAG; and
- the interest could conflict with the proper performance of the member's duties in relation to the consideration of the matter.

There may often be a level of general conflict simply because members come from areas of the industry that may be affected as a result of a recommendation. For example, industry members may be participants in the fishery, TSRA members may represent the geographical region under discussion or scientific members may face a conflict related to a research proposal. To assist in identifying areas of potential conflict, a MAC, SAC, WG or RAG may consider it appropriate to maintain registers of members' interests that could possibly lead to conflicts.

Of greater concern is the specific conflict created where a member is in a position to derive direct benefit from a MAC, SAC, WG or RAG recommendation if it is subsequently implemented. In either case, members should recognise the potential for conflict to occur and its possible impact on the operations of the Committee/Group.

8.3.2 Declaring an interest

When a MAC, SAC, WG or RAG member recognises that a real or potential conflict of interest exists, the conflict must be disclosed as soon as possible to other members. Where this relates to an issue on the agenda of a meeting this disclosure can normally wait until that meeting, but where the conflict relates to decisions already made, members must be informed immediately. If there is any doubt, a specific conflict of interest and its nature should be declared and recognised in the discussions of the meeting and recorded in the minutes of the meeting.

8.3.3 Dealing with an interest

To facilitate the smooth operation of meetings, it is suggested that conflicts of interest are dealt with at the start of each meeting. Members receive agenda and associated papers prior to the meeting and should be able to make disclosures of potential conflicts of interest and their nature (including, for example, the type and quantity of fishing concessions held by industry members) at the commencement of meetings.

Where it is determined that a direct conflict of interest exists, the MAC, SAC, WG or RAG may allow the member to continue to participate in the discussions relating to the matter but not in any decision making process. The member or the Committee/Group may also determine that, having made his/her contribution to the discussions, the member should retire from the meeting for the remainder of discussions on that issue.
As a guide, members with a direct conflict of interest should only be excluded from decision making if the matter being considered only affects the individual member rather than all persons involved in the fishery.

Finally, the Chair must ensure that the minutes of the meeting show the disclosure of interest, reflect the meeting's subsequent decision(s) and demonstrate that these are put into effect at the appropriate point in the meeting. If members become aware of a potential conflict of interest during the course of the meeting, they must immediately disclose the conflict of interest and the members present must consider how best to deal with the disclosure at that point.

8.4 Other Obligations of Members

Members must:

- act in good faith in the best interests of the PZJA;
- act honestly and exercise a reasonable degree of care and diligence in the discharge of their duties; and
- not make improper use of inside information to gain an advantage for themselves or someone else or cause harm to the Authority or to another person.

Members must not use their position, or information obtained as a member of a MAC, SAC, WG or RAG, dishonestly or with the intention of directly or indirectly gaining an advantage for themselves or someone else, or with the intention of causing harm to the PZJA or to another person.

8.5 Personal and professional behaviour

MAC, SAC, WG or RAG members should perform all duties associated with their positions diligently, impartially, conscientiously, in a civil manner and to the best of their ability.

In the performance of their duties they should:

- act in such a way, at meetings, in the field and at official functions that will be held in a high regard by the community and by industry;
- treat other members and stakeholders with courtesy and sensitivity; and
- not take, or seek to take, improper advantage of official information gained in the course of their membership.

8.5.1 Fairness and equity

MAC, SAC, WG and RAG members are not permitted to discriminate against or harass any colleague, client or member of the public, particularly on the basis of:

- Race;
- Religion;
- Gender;
- Political or union affiliation;
- Sexual preference;
- Political opinion;
- Marital status;
- Pregnancy;
- Social origin;
- Criminal record;
- Age; or
- Physical, intellectual or mental disability or impairment.

Behaviour, which is shown to be discriminatory, or which constitutes harassment will not be tolerated and may result in the members' appointment to MACs, SACs, WGs and/or RAGs being terminated by the PZJA or delegate.

8.5.2 Public comment

Public comment includes public speaking engagements, comments on radio and television and expressing views in letters to newspapers or in books, journals or notices or where it might be expected that the publication or circulation of the comment would spread to the community at large.

Whilst MAC, SAC, WG and RAG members, as members of the community, have the right to make public comment and to enter into public debate on political and social issues, there are some circumstances in which public comment is inappropriate. These circumstances would be where there is an implication that the public comment, although made in a private capacity, is in some way an official comment of a MAC, SAC, WG or RAG. Members should avoid making private statements about matters relating to a MAC, SAC, WG or RAG unless it is made clear that they are speaking as a private citizen.

9. Confidentiality and Non-Disclosure

9.1 General

Material made available to Members is generally public information. In some instances, members will have access to information that is confidential; however members will be advised accordingly. Members must not publish or communicate to any unauthorised person any fact or document which comes to their knowledge, or possession by virtue of being a MAC, SAC, WG or RAG member.

9.2 Resource Assessment Groups (RAG)

Members of RAGs may sometimes require access to confidential fishery catch and effort data and will have access to draft reports, materials or working papers that are unready or not intended for wider circulation.

The Chair should warn members when matters of a confidential nature are tabled, and ensure that discussion documents are not used for any purpose not related to the business of the RAG. Exceptions should only occur with the written consent of the RAG Chair. However, all members are obliged to maintain standards of confidentiality and non-disclosure relating to data. Note that industry members, non-government organisation personnel (NGO), and other fishery stakeholders may not be given access to confidential data.

Scientific members who are custodians of data for the purposes of analyses must apply best practice to ensure security, confidentiality, and non-disclosure of the data. This includes prevention of loss, theft, corruption and unapproved duplication. Data received from AFMA for the purposes analyses will be subject to the conditions set forth in the contract between the research provider and AFMA. Similar arrangements may exist between other data providers and research providers using data provided by the other party.

It is the responsibility of the Chair to ensure that data contained in all public documents, assessment reports or other publications is aggregated sufficiently to preserve commercial confidentiality and privacy.

10. Role and appointment procedures for Members

On behalf of the PZJA, AFMA administers the overall appointment process. The PZJA or delegate, however, makes the appointments. Nominations for Members are sought from both individuals and associations.

10.1 The Chair

10.1.1 Role

The Chair of a MAC, SAC, WG or RAG plays a key role in ensuring effective and thorough discussion of factors affecting the performance of a particular fishery (e.g. implementation of ecological sustainable development factors, and impacts of management strategies on, the particular fishery) and is the primary communication link between the MAC/SAC/WG/RAG and the PZJA. Accordingly, the Chair must:

- Be independent of commercial or other interests with the particular fishery/fisheries, including industry association(s);

- Have a demonstrated capacity to chair meetings, including a sound understanding of the meeting procedures and practices necessary for the efficient conduct of meetings (including the rules of debate);
- Have an ability to identify strategic goals and objectives and facilitate their achievement through the MAC, SAC, WG or RAG process;
- Have a demonstrated capacity to communicate clearly and concisely to a wide cross-section of people, particularly with respect to acting as the MAC, SAC, WG or RAG spokesperson and representing MAC, SAC, WG or RAG views to the PZJA, industry, Government, the media and the general community in a balanced and rational manner;
- have an understanding of industry and public policy;
- preferably, have some fisheries (or resource management) experience; and
- not be a staff member of the PZJA Agencies, although this is allowed for SACs, WGs and RAGs.

An explanation of the procedural matters relating to the conduct of MAC, SAC, WG and RAG meetings, including the requirement to give notice of a meeting and to circulate papers, is provided at Attachment C.

The roles and responsibilities of a Chair include:

- Ensuring members are aware of their responsibilities under this PZJA FMP No. 1;
- Ensuring members remain aware of and consider the PZJAs legislative objectives in the deliberations of the MAC, SAC, WG or RAG;
- Ensure the timely availability of agenda papers before meetings and the preparation and circulation of minutes and Chair's Summaries after meetings;
- Formally communicating meeting outcomes, recommendations and matters for information to the PZJA (in the case of a MAC, RAG or SAC Chair) or to a MAC (in the case of the WG Chairs) for consideration and to the industry for information. In undertaking this function, the Chair will be assisted by the Executive Officer;
- Summarising outcomes for each agenda item at the end of the discussion for each item and at the end of the meeting. This will assist in the reporting of the outcomes after each meeting;
- Ensuring that meeting minutes, letters and other correspondence to the PZJA Chair (in the case of a MAC, RAG or SAC) or a MAC Chair (in the case of a WG) clearly and accurately describe MAC, SAC, WG or RAG recommendations and alternative options when an agreed position has not been reached; and
- Ensuring that minutes and other material arising from meeting deliberations clearly and accurately describe MAC, SAC, WG or RAG recommendations, including dissenting views where they are expressed.

Chairs are not to allow members who are absent from meetings to have separate notes or views attached to minutes. Absentee members may convey views in writing to the MAC, SAC, WG or RAG prior to the meeting.

10.1.2 Selection/Appointment Procedure

Whenever there is a vacancy in the office of MAC, SAC, WG or RAG Chair, whether created by the resignation of an existing Chair or the expiration of the term of appointment of an existing Chair, a shortlist of nominees considered to have the necessary attributes to fill the vacant position may be drawn from applications for the position or from a *Register of Interest maintained by AFMA*. A selection panel including representatives from the PZJA Agencies will review the nominee's relevant skills and experience and may interview nominees before candidates are submitted to the PZJA or delegate for consideration and approval.

On behalf of the PZJA, AFMA maintains a *Register of Interest* of suitably qualified persons interested in being appointed to the position of Chair of a MAC, SAC, WG or RAG. From time to time AFMA may advertise nationally for nominations to this Register.

10.1.3 Acting Chair

The PZJA or delegate may appoint a person to act as the Chair of a MAC, SAC, WG or RAG during:

- a vacancy in the office of Chair (whether or not an appointment has previously been made to the office); or
- any period, when the Chair is absent from duty or from Australia or is, for any other reason, unable to perform the duties of the office.

A person appointed to act during a vacancy must not continue to do so for more than 12 months.

10.2 Protected Zone Joint Authority (PZJA) Agency Members

10.2.1 Roles

The role of an AFMA and QDPI&F member of a MAC, SAC, WG or RAG is to:

- participate in general discussion;
- contribute fisheries management expertise to deliberations;
- provide advice on relevant Government policy and the process required for policy development and change;
- ensure that the MAC, SAC, WG or RAG is aware of, and fully understands, PZJA policy and obligations under its governing legislation; and
- seek and provide additional information on Government policy as necessary.

The views expressed and the policies advocated by AFMA and QDPI&F members are to be considered those of their relevant organisations.

The role of the TSRA member of a MAC, SAC, WG or RAG is to:

- assist and support the traditional inhabitant members and provide fisheries expertise.

10.2.2 Selection/Appointment Procedure

AFMA, QDPI&F and TSRA will nominate officers to a MAC, SAC, RAG and WG at the organisations' discretion.

10.3 Industry Members

10.3.1 Role

The role of an industry member of a MAC, SAC, WG or RAG is to:

- contribute knowledge and experience relevant to the particular fishery and the fishing industry generally;
- contribute fisheries expertise to achieve the best management of the fishery; and
- regularly report to and liaise with other operators in the fishery on the MAC, SAC, WG or RAG activities, including the issues being dealt with and the possible solutions being considered.

10.3.2 Selection/Appointment Procedure

The PZJA considers the selection of the industry members to a MAC, SAC, WG or RAG to be critical to the success of the Committee/Group. These individuals must have

the capacity to put views clearly and concisely and be prepared to negotiate to achieve acceptable compromises when necessary. Industry members should not have commercial interests in the same company as another member/s of the same committee or group. Above all, they must have credibility within the industry and the ability to address issues with the best interests of the fisheries in mind.

Industry members will normally be appointed through the following process:

- all operators in the fishery will be invited to nominate for consideration for appointment as a MAC, SAC, WG or RAG industry member. Relevant industry organisations will also be informed to allow them to canvass within their membership for nominations;
- interested operators will be required to complete a nomination form which is included with the invitation to nominate. This form sets out the nominee's personal details and provides space for nominees to outline the particular skills and expertise they can bring to the MAC, SAC, WG or RAG. Industry organisations can provide statements of support to individuals who nominate themselves; and
- an Assessment and Ranking Panel (the Panel) will be formed to consider nominations and make recommendations to the PZJA or delegate. The Panel will usually comprise the MAC, SAC, WG or RAG Chair, PZJA agency representatives and an industry member of standing in the fishery. The Executive Officer of the MAC, SAC, WG or RAG will act as secretariat to the Panel.

To facilitate the short listing process, the Panel may interview potential appointees, either in person or by telephone. Where candidates are well known to agencies and in the interests of cost-effectiveness, the requirement to conduct interviews may be waived.

The PZJA or delegate will determine industry member appointments on the advice of the Panel.

In considering each nomination, the Panel assesses whether the applicant is a fit and proper person for the purposes of MAC, SAC, WG or RAG membership. If the Panel identifies any issue that is likely to adversely effect:

- the applicant's ability to perform his/her role as an industry member;
- the PZJAs credibility; or
- the applicant's credibility with industry or other stakeholders.

The Panel may advise the PZJA or delegate that the applicant is unsuitable for appointment to the MAC, SAC, WG or RAG. The Panel may also consider that an applicant is not a fit and proper person if the applicant has been convicted of a fisheries offence and if the Panel believes that the conviction may compromise either the PZJA, or the applicant's credibility, or the applicant's ability to perform his/her duties as a member of a MAC, SAC, WG or RAG.

While the PZJA or delegate may consult with industry organisations in the selection of industry members, once appointed, industry members are required to act in accordance with the duties and obligations of MAC, SAC, WG and RAG members as set out in this paper. This means their contribution must be in the best interests of the fishery, rather than as an advocate of the industry sector that nominated them. Industry members are not representatives of particular sectors or interest groups.

10.4 Scientific Member

10.4.1 Role

A Scientific member of a MAC, SAC, WG or RAG should be independent of commercial interests in the fishery. The role of the scientific member is to:

- contribute impartial scientific and/or economic expertise to MAC, SAC, WG or RAG deliberations; and
- provide advice to the MAC, SAC, WG or RAG on the latest scientific or economic developments of relevance to the fishery.

10.4.2 Selection/Appointment Procedure

The scientific member will be appointed on the basis of his/her scientific or economic qualifications, experience and expertise, knowledge of the fishery and the species being managed and therefore must:

- be a person of seniority and standing in the scientific community;
- have experience in liaising with the major Commonwealth and State fisheries research organisations at the highest level; and
- not have, or be employed by an entity with or representing entities with, commercial interests in the fishery.

Scientific members will normally be appointed through the following process:

- relevant research agencies will be invited to submit nominations for membership on a MAC, SAC, WG or RAG. Nominations may also be sought from appropriate individuals; or
- Calls for applications for the position as scientific members on the TSSAC will be advertise nationally by AFMA.

A selection panel that may include the MAC or Working Group Chair will review and may interview applicants from a shortlist of candidates prior to submission of a preferred candidate to the PZJA Board for consideration and approval.
The PZJA or delegate will determine scientific member appointments after considering nominations and any other information sought or obtained in relation to the nomination.

10.5 Traditional Inhabitant Members

10.5.1 Role

The role of the Traditional Inhabitant Members and traditional fishing representatives is to:

- contribute knowledge of fisheries and communities to a MAC, SAC, WG or RAG;
- contribute fisheries expertise to achieve the best management of the fishery;
- regularly report to and liaise with other traditional inhabitants in the community on MAC, SAC, WG or RAG activities, including the issues being dealt with and the possible solutions being considered; and
- consult with members of community through local associations and meetings as necessary.

10.5.2 Selection/Appointment Procedure

The TSRA runs an open process to seek members for their community fishers group. Accordingly nomination traditional inhabitant members and the TSRA support member will be sought from the TSRA. AFMA as the agency administering the MACs, SACs, WGs and RAGs appointment process will liaise with the TSRA when member appointments are required.

10.6 Conservation Member - Optional

The PZJA or delegate may appoint a conservation member to a MAC, SAC, WG or RAG if appropriate.

10.6.1 Role

The role of the conservation member is to:

- Contribute ecological knowledge and expertise to MAC, SAC, WG or RAG deliberations;
- Advise the MAC, SAC, WG or RAG on environmental or conservation developments of relevance to the particular fishery; and
- Advise on any implications that MAC, SAC, WG or RAG deliberations and recommendations may have in relation to ecological considerations.

10.6.2 Selection/Appointment procedure

Appointment of conservation members will be done by the PZJA or delegate. Conservation members will be selected on the basis of their ability to fulfill the role outlined above.

Conservation members are not appointed as representatives of a particular sector/s or interest group/s and, once appointed, must act in the best interest of the fishery.

10.7 Other Members

According to the changing needs of the Torres Strait Fisheries, the PZJA or delegate may appoint other persons to a MAC, SAC, WG or RAG as a member, including persons from the general community. On appointment, these members will have the same rights, and be subject to the same obligations and responsibilities, as other members as set out in this FMP.

11. Termination or resignation – Chair and Members

11.1 Termination of appointment

The PZJA or delegate may terminate the appointment of the Chair or any other MAC, SAC, WG or RAG member for:

- misbehaviour or physical or mental incapacity;
- misconduct or non-performance; or
- inefficiency or incompetence.

Misconduct includes, non-observance of confidentiality (e.g. disclosure of data, results or other materials prior to an agreement to circulate, conflict of interest, misleading or misinforming, and making fraudulent travel or expense claims).

Non-performance includes excessive unexplained absences from meetings, repeated non-performance of assigned tasks or failure to participate in discussions in an objective, impartial and constructive manner.

The PZJA has determined that any action by a Chair or member that demonstrates unwillingness or inability to comply with their obligations and responsibilities may constitute misbehaviour and/or inefficiency. As such, non-compliance with the obligations and responsibilities as outlined in this FMP are grounds for termination of appointment.

In addition, any action by a member which results in his/her conviction for a fisheries or related offence during the term of his/her appointment may be considered as misbehaviour and could constitute grounds for termination of appointment.

Appointment may also be terminated if:

- the Chair or member becomes bankrupt, applies to take the benefit of any law for the relief of bankrupt or insolvent debtors, compounds with his/her creditors of makes an assignment of his or her remuneration for their benefit; or
- the Chair or member has a direct or indirect pecuniary interest in a matter being considered, or about to be considered, and the interest could conflict with the proper performance of the member's duties in relation to consideration of the matter, and he/she fails to disclose the nature of the interest at a meeting of a MAC SAC, WG or RAG; or
- the Chair is absent, except with the leave of the PZJA, from two consecutive meetings of a MAC, SAC, WG or RAG; or
- a Member is absent, except with the leave of the Chair, from two consecutive meetings of a MAC, SAC, WG or RAG.

Termination of appointment under this section will take effect when:

- the member has been warned by the MAC, SAC, WG or RAG Chair, or the PZJA Chair in a case of MAC, SAC, WG or RAG Chair non-compliance, that:
  - they have not complied with one or more of their obligations or responsibilities, and
  - the non-compliance is unacceptable, and
- the PZJA Chair or delegate is satisfied the member has a case to answer of non-compliance with their obligations or responsibilities warranting termination of appointment; and
- the PZJA Chair or delegate has asked the member in writing to show cause why their appointment should not be terminated; and
- after at least 14 days have elapsed, the PZJA or delegate has considered the matter, including any response by the member, and made a decision on the member's continuation in their position.

Cancellation of membership may be appealed. The PZJA or delegate will consider any appeals. These appeals must be addressed to the PZJA Chair and lodged, in writing, within 21 days after receiving notice to stand down.

11.2 Resignation

11.2.1 Chair

A Chair may resign from a MAC, SAC, WG or RAG before the term of his/her appointment has expired by forwarding a signed notice of resignation to the PZJA Chair or delegate with a copy to the relevant Executive Officer (EO).

11.2.2 Members

A member may resign from the MAC, SAC, WG or RAG before the term of his/her appointment has expired by forwarding a signed notice of resignation to the MAC, SAC, WG or RAG Chair with a copy to the relevant EO.

12. Other participants

12.1 Permanent Observers

The PZJA or delegate may also appoint other persons who can be expected to make a meaningful contribution to a MAC, SAC, WG or RAG as a permanent observer. Permanent observers are required to participate in discussions in accordance with the obligations and responsibilities set out under this FMP.

Appointment of permanent observers is generally viewed as a transitionary phase which might be prompted by a requirement for additional expertise and balance which cannot be accommodated within the existing MAC, SAC, WG or RAG due to limitations on the number of members. Accordingly, the PZJAs preferred approach is that there be a general move towards appointing permanent observers as full members where appropriate.

As with members, the contribution of permanent observers to the MAC, SAC, WG or RAG discussions and deliberations will be recorded in the minutes of the meeting. While permanent observer contributions will be recorded in the minutes, in the unlikely event that consensus in the MAC, SAC, WG or RAG cannot be reached, only members' views will be included in recommendations put before the PZJA.

The appointment processes for permanent observers will generally mirror those undertaken for MAC, SAC, WG or RAG members – nominations will be sought in the same way as for members and proposed permanent observers will be required to complete a declaration form before being appointed to the MAC, SAC, WG or RAG. There is nothing to prevent the appointment of a permanent observer covering an area of interest for which a member has been appointed.

As for MAC, SAC, WG and RAG members, a permanent observer may resign from the MAC, SAC, WG or RAG before the term of his/her appointment has expired. A resigning permanent observer must give signed notice of resignation to the PZJA Chair or delegate with a copy to the MAC, SAC, WG or RAG Chair. The appointment of a permanent observer may be terminated on the same grounds as any other member.

12.2 Casual Observers

Casual observers are generally welcome to attend MAC, SAC, WG and RAG meetings. Individuals should seek the agreement of the MAC, SAC, WG or RAG Chair to attend a meeting as a casual observer for a particular agenda item or items – either to provide additional advice and expertise which may be required for that meeting or to observe the proceedings of the MAC, SAC, WG or RAG. This is done via contacting the MAC, SAC, WG or RAG Executive Officer.

Attendance by casual observers is to be on the basis that the presence of the casual observer does not inhibit or disrupt formal members from freely contributing to discussions and decisions. Casual observers must follow any directions made by the MAC, SAC, WG or RAG Chair.

Casual Observers are not formally appointed to a MAC, SAC, WG or RAG and do not participate in the decision-making processes.

Papua New Guinea representatives may be granted observer status on any Torres Strait MAC, SAC, WG or RAG. This is an important opportunity to engage PNG in the management of these stocks.

13. Executive Officers (EO)

13.1 Role of Executive Officers

The role of the Executive Officer (EO) is to provide all the necessary secretariat services to ensure smooth operation of a MAC, SAC, WG or RAG. In performing this role, the EO liaises with, and reports to the MAC, SAC, WG or RAG Chair.

13.2 Duties of Executive Officers

While there may be some variation in the duties undertaken by external and internal Executive Officers (EO), in consultation with the Chair they are generally responsible for:

- making arrangements (including booking venues and catering) for meetings of the MAC, SAC, WG or RAG;
- preparing and circulating meeting notices, agendas and agenda papers to members, ensuring a final agenda and papers are provided to the Chair and members at least **10 working days** prior to all meetings of the MAC, SAC, WG or RAG;
- ensuring a Chair's Summary of the MAC, SAC, WG or RAG meeting is prepared and cleared within **five working days** following the meeting;
- ensuring the Chair's Summary is made available to all operators and others with an interest in Torres Strait fisheries (or in the case of a WG or RAG the relevant individual Torres Strait fishery) as soon as practicable following the MAC, SAC, WG or RAG meeting but no later than **10 working days** after the meeting;
- preparing the draft minutes and action sheets from each meeting and submitting them to the Chair for comment and approval within **14 working days** and distributing them to members within **21 working days** after the meeting;
- maintaining files, correspondence lists and follow-up action arising lists relating to the MAC, SAC, WG or RAG business; and
- ensuring that there is positive two way communication between the MAC, SAC, WG or RAG and the participants in the fishery/fisheries and that decisions or recommendations made by the MAC, SAC, WG or RAG and the reasons for them, are well publicised.

In addition, the EO is available to the MAC, SAC, WG or RAG as a resource to conduct research and investigations into matters affecting Torres Strait fisheries. These may, or may not, be directly related to the management of the fisheries. The EO may also be required to undertake surveys of operators in the fishery so that the MAC, SAC, WG or RAG has a better understanding of industry views on major issues under consideration.

The duties of the EO will be determined in consultation with the MAC, SAC, WG or RAG Chair and in the case of an external EO, will be specified in the relevant employment contract or letter or appointment.

13.3 Selection/Appointment Procedure

The Executive Officer (EO) is appointed by AFMA on behalf of the PZJA, not by the MAC, SAC, WG or RAG. An EO may be either internal or external to the PZJA Agencies.

An EO will generally be a person who is involved in the management of the particular fishery and who will undertake the EO role as part of his/her normal duties as a PZJA Agency employee.

14. Meetings

The procedures to be followed for MAC, SAC, WG and RAG meetings are set out in Attachment C.

15. Communication

15.1 General Communication and Liaison Issues

The Chair and members of a MAC, SAC, WG or RAG are expected to develop effective two way communication with the PZJA and any individuals or organisations that have an interest or are engaged in Torres Strait Fisheries, including PZJA Agencies.

The MAC, SAC, WG and RAG Chair and EO carry the major responsibility for communicating with industry and ensuring the flow of information between industry and the PZJA. However the PZJA and Agencies also have a role to play in the communication process.

15.2 Publication and distribution of MAC, SAC, WG and RAG papers

All MAC, SAC, WG and RAG papers are considered to be public documents unless they contain items of specific commercial confidentiality. As such, the PZJA has agreed that MAC, SAC, WG and RAG agendas, agenda papers (other than commercial-in-confidence) and Chair's Summaries should be made available to all stakeholders to facilitate the flow of information between the PZJA, MACs, SACs, WGs and RAGs and those with an interest in Torres Strait Fisheries.

The preferred means for making such information available is via the PZJA website, rather than providing printed copies of papers to individual fishing concession holders or other stakeholders. In accordance with the Government's Online Strategy, it is the PZJAs intention to publish MAC, SAC, WG and RAG papers on the website at the same time they are printed and made available in hard copy. This will mean that papers will be available on the website before they are considered at the MAC, SAC, WG or RAG meeting.

15.3 Reporting

All MAC, SAC, WG and RAG members are responsible for regularly reporting to their stakeholders on MAC, SAC, WG and RAG activities, the issues and possible solutions

under consideration. The MAC, SAC, WG and RAG Chair's Summary report of meetings is available to assist in this process.

The PZJA expects the MACs, SACs and RAGs to keep it informed about what is happening in Torres Strait fisheries, to develop views on issues affecting the fishery and to recommend changes to make management of the fishery more effective. In making recommendations directly to the PZJA, multiple recommendations from MACs, RAGs and SACs are acceptable for particular issues if considered necessary.

In turn, MACs, RAGs and SACs can expect the PZJA to communicate its decisions and the reasons for them to a MAC, RAG or SAC through the PZJA and MAC, RAG and SAC Chairs.

It is expected that each consultative committee or group report discussions through meeting reports, technical working papers and/or fishery assessment reports. The reporting process should not become onerous and should attempt to balance the reporting costs with the benefits achieved through the process.

i. Meeting reports are minutes or the record of a meeting;
ii. Technical working papers are reports tabled and considered during meetings. These are important resources that underpin an overall assessment of the fishery. Technical working papers may not become public documents, but do need to be retained and archived. These documents should be series numbered identifying the Committee or Assessment Group involved, the year produced and the meeting when they were considered. Copies must be provided to the relevant Committee Secretariat for lodgement in the AFMA research library; and
iii. Assessment reports are PZJA publications that are produced annually or periodically, and provide an assessment of the fishery. These assessment reports should generally adopt a standard reporting format for fishery assessment reports. The reports should carry an AFMA and PZJA logo, be series numbered and be made available for public circulation to stakeholders. Copies must be provided to the relevant Committee Secretariat for lodgement in the AFMA research library.

15.3.1 Chair's summary

The PZJA expects the Chair's of a MAC, RAG and SAC to provide it with a formal report (MAC, RAG or SAC Chair's Summary) after each MAC, RAG and SAC meeting. The Chairs of WGs are required to submit a similar report to the relevant MAC Chair.

It is important that the Chair summarises outcomes for each agenda item after the discussion on that item has concluded and at the end of the meeting to aid in reporting outcomes after meetings. The Chair is to be diligent in ensuring that meeting minutes, letters and other correspondence to the PZJA, MAC, RAG or SAC Chair, clearly and accurately describe MAC, SAC, WG or RAG recommendations and alternative options when an agreed position has not been reached.

15.3.2 Self Assessment

All MACs, SACs, WGs and RAGs are to conduct a self-assessment of their performance at least once a year against the following performance indicators set by the PZJA, reporting the outcome to the PZJA:

1. The performance of the MAC, SAC, WG or RAG as a forum for the discussion of matters relevant to the management of the fishery;

2. Ability of the MAC, SAC, WG or RAG to provide advice and make recommendations to the PZJA (or MAC) as appropriate with respect to the management of the fishery;
3. Ability of the MAC, SAC, WG or RAG to provide advice and make recommendations to the PZJA (or MAC) as appropriate on research priorities and projects for Torres Strait fisheries;
4. Standard of liaison by MACs, RAGs or SACs with the PZJA, or by WGs with MACs to ensure that the range of management issues is given the proper attention;
5. Quality of meeting papers;
6. Quality of Chair's performance;
7. Quality of Executive Officer's support services;
8. Quality of PZJA Agency Members' performance;
9. Level of confidence that the MACs, RAGs or SACs views and recommendations are conveyed effectively to the PZJA, or that WGs views are conveyed to MACs; and
10. Rating the dynamics of the MAC, SAC, WG or RAG when in session over the last year.

16. Financial Management

16.1 Fishery Budgets

All MACs and WGs will be asked to provide comment on the draft annual budget for the fishery for consideration by the PZJA.

The draft budget will show the cost of managing Torres Strait fisheries, including surveillance, logbook collection and processing and general administration costs. It will also include the cost of MAC meetings and other specific activities or projects that have been commissioned by MACs.

Comments received from MACs and WGs will be considered by the PZJA Agencies. Once approved by the Agencies, the budget will be used by the PZJA as the basis for determining levies payable by those in the fisheries.

16.2 Annual work planning and budget preparation for RAGs

RAG members may be required to assist in developing an annual, costed work plan for the RAG. The relevant WG and MAC should be consulted and provide comment on whether the budgeted work plan best meets the assessment needs for the fishery. The PZJA may be required to approve the annual work plans and accompanying budgets. The Chair of a RAG may obtain advice on this from the relevant line agency members and if required obtain an application proforma from AFMAs research administrator.

It is the responsibility of a RAG chair to ensure that annual work plans are developed and that applications for funding, where required, are submitted in an accurate and timely fashion.

16.3 Travel Expenses of Members

The policy concerning the travel allowances to MAC and SAC meetings for members and other participants, and to WG and RAG meetings for members is contained in Attachment D.

16.4 Remuneration for inter-sessional work

It is expected that a significant amount of MAC, SAC, WG or RAG work will be conducted between formal meetings. The PZJA will consider claims for reimbursement of such inter-sessional work where it can be demonstrated that a member's contribution to MAC, SAC, WG or RAG inter-sessional work is outside the normal business of the member's agency providing the services. This is a matter for consideration by the PZJA when determining budgets. Remuneration provision for inter-sessional work will be specified in member contracts at the time of appointment where appropriate.

Claims for inter-sessional work benefiting a MAC, SAC, WG or RAG should be budgeted, and reasonable. Remuneration can be claimed by lodgment of a tax invoice with AFMA and should be supported by a documentary record of the actual staff time inputs to MAC, SAC, WG or RAG work. AFMA, on behalf of the PZJA, reserves the right to inspect such records, before approving payment of claims for inter-sessional work.

16.5 Remuneration for Chairs and SAC/RAG Scientific Members

The PZJA accepts that the duties of Chairs and SAC/RAG scientific members require high-level skills and carry obligation and responsibility. In order to attract and retain suitable people, remuneration for these duties may be considered. The level of remuneration is not fixed, but may be negotiated between AFMA and the chairperson/scientific members. Approved Chair/scientific member remuneration will be specified in the relevant contract at the time of appointment.

16.6 Consultancies

In order to accomplish work plans MACs, SACs, WGs or RAGs may, from time to time, require the specialist skills or services of people not already members of the MAC, SAC, WG or RAG. In these instances and for specific defined tasks, the chairperson may engage consultants. Work plans must anticipate these needs and budgets need to provide for any consultancy fees to be paid.

Consultants should be engaged under an AFMA contract. Preparation of such a contract is the responsibility of the AFMA Research Manager in consultation with the MAC, SAC, WG or RAG chairperson. (For further information on contracts refer to the AFMA Research Manager).

17. Consultative Committees

The PZJA may establish committees, other than a MAC, SAC, WG or RAG to assist it in the performance of its functions.

ATTACHMENT A

Legislative Objectives and Functions

Governing and guiding the PZJAs fisheries related activities are the legislative objectives contained under the provisions of sections 8 and 34 of the *Torres Strait Fisheries Act 1984*.

8 Objectives to be pursued

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.

34 Functions of Joint Authority under this Act

Where there is in force an arrangement under this Part under which the Protected Zone Joint Authority has the management of a fishery and the fishery is to be managed in accordance with the law of the Commonwealth, the Protected Zone Joint Authority has the functions of:

(a) keeping constantly under consideration the condition of the fishery;
(b) formulating policies and plans for the good management of the fishery; and
(c) for the purposes of the management of the fishery:
    (i) exercising the powers conferred on it by this Part; and
    (ii) 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.

ATTACHMENT B

EXAMPLE ONLY – NOT FOR USE

Chair
Protected Zone Joint Authority
C/- Communications and Planning Section
Australian Fisheries Management Authority
PO Box 7051
Canberra Business Centre ACT 2610

Dear Chair

I refer to my proposed appointment as the …….. ……. Member/Permanent Observer on the ……MAC/SAC/WG/RAG.

In compliance with the PZJAs requirements prior to appointment to this position, I advise that:

(i) I have read, and understand, PZJAs Fisheries Management Paper covering MACs, SAC, WGs and RAGs; and
(ii) I understand that, if my appointment is confirmed, I must disclose any relevant conflict of interest during the course of all MAC/SAC/WG/RAG meetings at which I am present.

I also give my assurance that I will endeavour to participate in discussion in an objective and impartial manner and that I will serve the best interests of the above mentioned MAC/SAC/WG/RAG and of the fisheries, and hold up the PZJAs legislative objective.

Yours sincerely

Signature ……

Name (please print) ……

Mailing Address ……...

Daytime Telephone No.……

Mobile Telephone No. ……

Daytime Fax No. ……

Email Address ……

Date ……

ATTACHMENT C

Procedural Matters

The Torres Strait MACs, SACs, WGs and RAGs will operate in accordance with the following procedures:

1. Notice of a meeting

Except in exceptional circumstances, notice of a meeting shall be forwarded by the Executive Officer to all members no less than **20 working days** prior to a meeting being held. The notice shall call for agenda items and stipulate:

- the date of the meeting
- the time the meeting will commence
- the venue for the meeting
- the proposed business to be dealt.

The notice shall be sent to every member of the MAC, SAC, WG or RAG whether they are able to attend the meeting or not. The issue of a notice of the meeting to all members before the meeting is held is necessary for the meeting to be correctly constituted.

Full use of the PZJA web page should be made to assist in the communication of papers and other relevant information concerning the MAC, SAC, WG or RAG.

2. Quorum

A quorum is the minimum number of persons who need to be present to constitute a valid meeting. If a meeting is not properly constituted, it cannot conduct business in a valid manner. For resolutions of a meeting to be valid the number of Members necessary to form the quorum must be present throughout the meeting.

A sensible size for a quorum is a sufficient number of members to conduct business with an adequate spread of responsibility, experience and representation. In the case of MACs, SACs, WGs and RAGs, the number shall be two-thirds of the members.

3. Agenda

An agenda is more than a list of items or a guide to matters to be dealt with at a meeting. It provides a program to aid consideration of each item and allow the business of the MAC, SAC, WG or RAG to proceed in a logical, orderly and timely manner. It also provides a basis on which to write the minutes of the meeting.

Members are encouraged to provide input to the development of the draft agenda. Where significant business is proposed by a member, the agenda item supporting papers must be submitted to the EO by the member no less than **15 working days** before the meeting and be accompanied by a brief explanatory note setting out the main points to be considered. Otherwise, special items can only be submitted with the concurrence of the Chair.

All MAC, SAC, WG and RAG papers are to be considered public documents unless they contain items of specific commercial confidentiality.

Irrespective of the time frames specified in this section, it is the responsibility of the MAC, SAC, WG or RAG Chair to ensure the timely availability of agenda and other papers to all members prior to meetings.

The EO shall prepare the agenda in consultation with the Chair which is to be sent out to MAC, SAC, WG or RAG members, with papers and other information **10 working days** prior to the meeting. Papers are also to be sent to the AFMA Web Administrator (webadmin@afma.gov.au) at least 10 working days prior to the meeting to allow posting on the PZJA website.

The agenda should have items listed in the following order:

- **Chair's Opening Remarks**

  Provides the Chair with an opportunity to make any opening remarks to set the tone of the meeting, welcome any visitors etc.

- **Review and adoption of the agenda**

  Provides an opportunity for members to review the agenda and either confirm its adoption or make any necessary adjustments.

- **Declaration of Interests**

  This gives members an opportunity to declare any interest/s they may have in relation to the matters being considered by the MAC, SAC, WG or RAG. Interests may be declared in relation to a specific agenda item or items or be of a standing nature.

- **Apologies**

- **Minutes of the Previous Meeting on (date)**

  This gives those present the opportunity to be satisfied about the correctness of those minutes as a record of the proceedings of that meeting. It also serves as a reminder of decisions made by, and progress reported at, the last meeting and thus of matters which remain pending, decisions still to be made and developments about which reports should be forthcoming.

- **Outcomes of the meeting of the PZJA on (date)**

  The outcomes of the most recent meeting of the PZJA will be reported.

- **Business Arising from the Minutes**

  While the immediate consideration of any business that arises from the minutes of the previous meeting is normal, it may be appropriate for some issues to be

dealt with as individual items later in the agenda.

- **Routine Items**

  Regular business which comes before the MAC, SAC, WG or RAG (such as correspondence etc.) should be dealt with at an early stage in the meeting to enable such items to be dealt with expeditiously, but without undue haste. Reports of the SACs, WGs and RAGs and of each individual fishery will be discussed at this point during a MAC meeting.

- **Business Items to be Dealt With**

  The order in which business is dealt with at a meeting needs to take account of business items arising from the previous meeting and the possible effects on later agenda items. Business items should be structured logically and the sequence of items should not be changed unless to achieve some worthwhile benefit and then only after adequate consideration.

- **Other Business**

  This item provides for the consideration, if only in a preliminary way, of any unexpected or fresh and important business; it also enables up-to-date information on matters of passing interest to be reported and noted at the time rather than wait for the next meeting. As a general rule, items under this agenda heading should not go beyond the scope of the notice for the meeting. At this point the date of the next meeting is discussed.

4. Attendance of Casual Observers

Casual observers are welcome to attend MAC, SAC, WG and RAG meetings. Casual observers may participate at the discretion of the Chair where he or she deems it consistent with the efficient and effective operations of the MAC, SAC, WG or RAG. Casual observers must respect the need for orderly management of the business before the MAC/SAC/WG/RAG and the rights of others in the meeting. Casual observers must follow any directions made by the Chair.

5. Rules of Debate

Rules of debate have no legal authority and it is not necessary to apply such rules at a meeting. However, adherence to conventional rules of debate provides a Chair and others with confidence that a meeting will be conducted in an orderly fashion, with good manners and common decency.

In the case of MAC, SAC, WG and RAG meetings, it is unlikely that the rules of debate will need to be enforced. Rather, issues should be discussed in a co-operative, informal and consultative manner with resolutions being normally arrived at through consensus. At the same time, it is important for members to appreciate that the business of a meeting will be expedited by their personal observance of the general rules of debate and their support for the maintenance of order.

6. The Minutes

Once a MAC, SAC, WG or RAG meeting is completed, the Chair is responsible for formally communicating the outcomes of the meeting, including recommendations and matters for information, to the PZJA Chair (in the case of a MAC or SAC) or to the MAC Chair (in the case of WGs or RAGs) for consideration and to the industry for information. It is a function of the EO to assist the Chair in preparing the minutes of the meeting as well as the Chair's Summary.

Minutes may be defined as the official, permanent, written record of the business transacted at a meeting. They should be accurate, concise and articulate, being free from ambiguity or uncertainty. Where there is, by necessity, substantial and significant detail covered in the MAC, SAC, WG or RAG meeting, the minutes need to reflect this level of detail.

As a general rule, minutes should be expressed in words, phrases and sentences which are free from errors of grammar and syntax. They should preferably be without clichés, jargon, fashionable words or unnecessary detail.

The minutes need to include:

- day and date of meeting
- place of meeting
- names of those present
- apologies
- reference to the minutes of the previous meeting and the signing of them as a correct record of the proceedings of that meeting by the Chair
- record of agenda items discussed, including agreements reached, action required, and the MACs, SACs, WGs or RAGs decision/s in regard to any declared conflict/s of interest
- date and time for the next meeting
- time the meeting closed

Draft minutes are to be written up and submitted to the Chair for comment and approval within **14 working days**, and distributed to members within **21 working days** after the meeting. Minutes are also to be sent electronically to the AFMA Web Administrator (webadmin@afma.gov.au) for posting on the PZJA website.

MAC, SAC, WG or RAG Chairs must not allow members who are absent from meetings to have separate notes or views attached to minutes, however absentee members may convey views in writing to the MAC, SAC, WG or RAG prior to the meeting.

ATTACHMENT D

TRAVEL EXPENSES

Members of travelling on MAC, SAC, WG or RAG business will be paid travel expenses reasonably incurred in connection with RAG business. Normally, this is reimbursement of airfares at the economy class rate, reimbursement of receipted expenditure for accommodation costs, meals and incidental expenses in accordance with AFMAs (as a PZJA Agency) staff travel policy.

To claim reimbursement for expenses incurred while on MAC, SAC, WG or RAG business, members must provide AFMA with a tax invoice with any relevant supporting documentation such as airline tickets, receipts for accommodation, meals, taxis and parking vouchers etc.

No allowance is payable if there is not an overnight stay. However, members may claim reimbursement of any meal expenses incurred by them during the day of a MAC, SAC, WG or RAG meeting not involving an overnight stay. Claims for reimbursement must be accompanied by a valid receipt or tax invoice and approval is at the discretion of PZJA Agency staff.

If a Member would like payment of travel costs to be made to their employer or business, then they must either submit a tax invoice from their employer or business or enter into a signed Recipient Created Tax Invoice (RCTI) agreement with AFMA. An RCTI agreement form can be obtained from AFMAs Finance Manager.

All flights to MAC, SAC, WG and RAG meetings should be booked through AFMAs travel provider. The cost of the flight will be charged directly to AFMA.

Members of a MAC, SAC, WG or RAG who are employed by a Commonwealth or State organisation that has their own discounted travel arrangements, may book flights through their own system. AFMA will reimburse their employer on submission of a valid tax invoice.

The claim form for travel expenses is attached.

Australian Government
Australian Fisheries Management Authority

CLAIM FOR EXPENSES AND ALLOWANCES FOR OFFICIAL ATTENDANCE AT A COMMITTEE (MAC, SAC) OR GROUP (WG or RAG) MEETING

DETAILS OF MEMBER

Name…… ABN*…… Phone No……..

Address…… Fax No……

DETAILS OF MEETING

Name of Committee/Group……	Meeting place……
Meeting date……	Meeting time……

DETAILS OF TRAVEL

Start: Place…… Time…….. Date……

End: Place…… Time…….. Date……

Was this travel by the most direct route? Yes ☐ No ☐

If no, please provide comments ……

……

Method of travel: ☐ Plane (go to section A)
☐ Vehicle (go to section B)

Section A - DETAILS OF FLIGHT (attach tax invoice*)

Outward: Date…….. Depart…… Arrive……..
Return: Date…….. Depart…… Arrive……..

Are you claiming reimbursement for total cost of the airline ticket?

Yes ☐ No ☐ Comments …… .

……

Section B - DETAILS OF VEHICLE

Distance travelled by direct route ……..km Engine size……..cc

Section C - DETAILS OF EXPENSES (attach tax invoices*)

Taxi $……..Parking $……..Other $……

SIGNED ……..INVOICE DATE……

ATTENDANCE VERIFIED ……

(AFMA use only)

	No.	$
Complete days		
Less meals provided		
Travel allowance payable (6410)		
Cost of ticket *		$
Deductions		
Net cost (6420)		
Rate…….c/km (6430)		$
Expenses *		$
TOTAL PAYABLE $		

THE TOTAL PAYABLE INCLUDES GST

COST CENTRE ……..TOTAL PAYABLE APPROVED BY……

*Official MAC/WG/RAG/SAC members do not need to provide an ABN. Costs should be entered including GST, where applicable. AFMA can recover GST on reimbursements where an original tax invoice is attached. If the member's business is paid then the member must provide the business' ABN. AFMA can recover the GST from payments to those members only if they have signed an RCTI agreement or provide their own tax invoice

TROPICAL ROCK LOBSTER WORKING GROUP (TRLWG)	MEETING 9 19-20 February 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 8 November 2018 (**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 8 held on 8 November 2018 was provided out of session for comment on 23 November 2018. No comments were received. The record was finalised out of session following the closure of the comment period. The final meeting record is provided at **Attachment 1.4b**.

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	**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. A PNG NFA officer will be attending this meeting and will advise.

Attachment 1.4a

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.

Torres Strait Tropical Rock Lobster Working Group Meeting 8

Meeting Record

8 November 2018

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

Contents

Meeting participants

Members

Name	Position	Declaration of interest
Alexander Morison	Chair	No pecuniary or other interest in the Tropical Rock Lobster Fishery or any other Torres Strait fisheries Fisheries Consultant. Chair of SERAG and SharkRAG. Scientific member on SEMAC. Contracted by government departments, non-government agencies and companies for a range of fishery related matters including research and MSC assessments of AFMA managed and other fisheries (by SCS Global Services)
Georgia Langdon	AFMA Executive Officer	Nil
Selina Stoute	AFMA member	Nil
Mark Anderson	TSRA member (Fisheries Programme Manager)	Nil. TSRA holds multiple TVH TRL fishing licences on behalf of Torres Strait Communities but does not benefit from them
Danielle Stewart	Queensland Department of Agriculture and Fisheries (QDAF) member	Nil. Manager of Queensland harvest fisheries.
Darren Dennis	Scientific member	Nil. Member of other RAGs and research consultant
Mark David	Industry member	Traditional Inhabitant Kulkalgal and TIB licence holder
Mark Dean	Industry member	Industry representative and TVH operator
Terrence Whap	Industry member	Nil. Traditional Inhabitant Maluialgal and Traditional Owner. Does not hold a TIB licence
Les Pitt	Industry member	Nil. Traditional Inhabitant Kemer Kemer Meriam

Name	Position	Declaration of interest
Phillip Ketchell	Industry member	Nil. Traditional Inhabitant Kaiwalagal and Traditional Owner. TIB licence holder.
Aaron Tom	Industry member	Nil. Traditional Inhabitant Maluilalgal and TIB licence holder
Brett Arlidge	Industry member	General Manager MG Kailis Pty Ltd. MG Kailis Pty Ltd is a holder of TVH licences
Daniel Takai	Industry observer	Director/Manager of Island Seafoods, Tanala Seafoods and TIB licence holder of a primary vessel.

Observers

Name	Position	Declaration of interest
Jerry Stephen	TSRA Deputy Chair, TSRA Member for Ugar and TSRA Portfolio Member for Fisheries	TIB licence holder and Traditional Owner
Phil Hughes	Industry observer	TVH licence holder

1 Preliminaries

1.1 Meeting preliminaries

1. Mr Terence Whap opened the meeting in prayer at 8.30 am on Thursday 8 November 2018 at the TSRA Boardroom.

2. The Chair welcomed attendees to the 8th meeting of the Torres Strait Tropical Rock Lobster Working Group (TRLWG8). The Chair acknowledged the Traditional Owners of the land on which the meeting was held and paid respect to Elders past and present.

3. Each of the meeting participants briefly introduced themselves. Attendees at the Working Group are detailed in the meeting participant tables at the start of this meeting record.

4. Apologies were received from Sevaly Sen (Economic member) and Maluwap Nona (Malu Lamar (Torres Strait Islanders) Corporation RNTBC), and Ian Liviko (PNG National Fisheries Authority (NFA) Invited Participant).

1.2 Adoption of agenda

5. The draft agenda was adopted without change (**Attachment A**). However, to allow sufficient time to discuss the key agenda items (4,5, 6 and 7), the Working Group agreed that any agenda items for noting, were to be taken as read and only discussed at the request of members.

1.3 Declaration of interests

6. The Chair stated that as outlined in PZJA Fisheries Management Paper No. 1 (FMP1), all members of the Working Group must declare all real or potential conflicts of interest in Torres Strait TRL Fishery at the commencement of the meeting.

7. Declarations of interests were provided by each meeting participant. These are detailed in the meeting participant tables at the start of this meeting record.

8. The Working Group agreed that all meeting participants were able to be present during each agenda item discussion.

9. The Chair noted that the Working Group is a consultative forum of the PZJA that provides advice on the management of the TRL Fishery. The Working Group is not a decision making body.

1.4 Action items from previous meetings

10. The Working Group noted the report provided by the AFMA member advising of the status of actions arising from previous TRLWG meetings (see below).

#	Meeting	Action	Status
1.	TRLWG5 held on 5-6 April 2016	TRLRAG to provide advice on any findings relating to the impacts of changing the season start date to provide industry with a longer TAC notice period.	**Complete** This action item was considered at TRLRAG meeting 24 held from 18-19 October 2018. Summary of advice provided for consideration under Agenda Item 4.
2.	TRLWG6 held on 25-26 July 2017	Malu Lamar (RNTBC) to provide AFMA with a written proposal for any further proposed amendments to the *Torres Strait Fisheries Act 1984*.	**Incomplete – to be removed** The Working Group agreed to remove this action from the list as it cannot be actioned by the Working Group.
3.	TRLWG6 held on 25-26 July 2017	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.	**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'*, will be provided with these meeting papers for reference. This report has not been sent to members previously. This report will also be made available on the PZJA website. The Working Group agreed to amend this status to 'ongoing' as this work is still being continued by the RAG. A summary will be presented back to the Working Group when completed. **Complete – QLD TAC** The QDAF member provided further information to the RAG at its meeting on 27-28 March 2018. The QDAF *Policy relating to individual catch entitlement in the Queensland Tropical Rock Lobster Fishery* provided which summaries that the QLD TAC is based on 90% of the average MSY estimates for the stock. The latest assessment estimates MSY at between 191 tonnes and 242 tonnes.

1.5 Out of session correspondence

11. The Working Group noted the summary of out of session correspondence relative to the TRLWG.

2 Updates from members

2.1 Industry, Economic & Scientific

12. The Working Group noted updates provided by Industry members and observers on the recent performance and key issues affecting the TRL Fishery:
    a. Several industry members from both TIB and TVH sectors expressed concern about when the TAC for next season will be determined. The uncertainty leading in to the next season is making it difficult to plan businesses.
    b. The Working Group noted advice from the AFMA member that preliminary RAG advice on a Recommended Biological Catch (RBC) is expected in mid-December following the November pre-season lobster survey. After being considered by the RAG again in early 2019, a final TAC recommendation is expected in March.
    c. AFMA is looking to better align the TAC setting process with the season start date. This issue is expected to be discussed in detail under Agenda Item 6.
    d. An industry member advised that early closure of the fishery, based on further calculations equated to leaving $13 million of income in the water of which more than half would have been used in the Torres Strait. Only 43 % of fishing season was fished and if extrapolated the catch rates for the season the Fishery would have yielded 17.5 million.
    e. An industry member reflected that group representing the TIB sector took action this year that wasn't supported. TIB fishers wanted to see the season open for longer, with continued data collection and slowing of fishing effort. It is important for the Working Group to ensure the TIB sector can maintain fishing throughout the fishing season. Free-diving is one way.
    f. An industry member advised that TIB fishers are generally frustrated from the early closure this season, they have no capital to spend on boats and families. The member queried whether the Fishery could set aside 50 tonnes for free diving in the event the TAC is reached so that TIB fishers could continue to fish. It was later recommended by an industry observer that such an allowance could be provided given the level of uncertainty around the RBC (100 tonne estimate variation) and the conservative nature of the harvest strategy.
    g. The AFMA member advised that measures introduced this season were intended to enable fishing to occur for a longer period by free diving. This decision however was successfully overturned by a challenge in the Federal Court by Malu Lamar. The Court found that AFMA made a procedural error but its finding did not turn on the merit of the original decision by AFMA. The AFMA member further advised that whilst a harvest strategy could provide a 'free-dive catch allowance' such an allowance would need to be taken from the RBC and not be additional. The agreed harvest strategy approach is for the RBC to be taken from the median RBC estimate. To change the approach intermittently would undermine the performance of the harvest strategy in meeting its objectives overtime. The AFMA member further noted that under the quota management system the TIB sector may work to agree on specific harvest strategies approaches to apply to the TIB catch allocation.
    h. The Scientific Member advised the Working Group that the harvest strategy is underpinned by very good science that has been extensively reviewed. For this

season the pre and mid-year surveys corroborated each other and there was a lot of heavy fishing particularly at the start. TRL stocks naturally fluctuate, their distribution across the fishery is highly variable and catches have been less this season than in the past (e.g. 2001). The benchmark survey is about mapping habitat and not lobster distribution variability. 2+ abundance overtime is tracked well by CPUE. The member further noted that uncertainty in the available catch and RBC has always existed (for 30years), and it is no different now. This could be minimised through improved 0+ estimates. It has long been suggested that industry consider supplementing the surveys to simply give an idea of the distribution of 0+ across the fishery.

2.2 Government Agencies

13. The Working Group noted a brief overview of management updates relevant to the TRL fishery provided by the AFMA member, most notably that since the TRLRAG held on 18-19 October 2018, AFMA received notification from the Papua New Guinean National Fisheries Authority regarding the closure of the PNG TRL fishery as of 19 October 2018 through till 31 March 2019.

14. An industry member queried whether the closure applied to the entire fishery or for the use of hookah gear only.

Action 1

AFMA to clarify with PNG NFA if the PNG TRL Closure was for the entire fishery or for hookah fishing only.

15. The Working Group noted an update provided by the TSRA member regarding TSRA activities relevant to the TRL Fishery:
    a. The TSRA Board is continuing to develop its 100 per cent ownership roadmap;
    b. The Fisheries Regional Ownership Framework project is progressing. Phase 1 of the project is now complete, where the mandate to develop an independent fisheries entity to hold fisheries assets was agreed upon. Phase 2 is underway, with a consultant undertaking a desktop literature review of other fisheries entity models around the world, and Australia. This review will generate an options paper, for consideration by the Board, and broad community consultation on such options being undertaken in 2019. The Board is aiming to have an entity established by 2020.
    c. TSRA convened a fisheries Summit in August 2018 with round 110 participants comprising representatives from PBCs, Fisher Associations and fishers from across all Torres Strait Communities. The summit agreed three resolutions and provided the mandate to move forward with the management plan for 2018/19 season.
16. The Working Group noted an update provided by the QDAF member regarding QDAF activities relevant to the management of the East Coast TRL Fishery:
    a. The TRL fishery on the east coast is currently closed, at 82 per cent of the static 195 tonne Total Allowable Catch (TAC).
    b. The season is permanently closed from 1 October till 31 December each year, recommencing on 1 January.

c. It is a limited entry fishery (18 licences), however, there is an option for regional communities, outside of the fishing industry to enter the fishery with access a 5 tonne catch limit through an Indigenous Fishing Permit for up to three years.
d. The policy relating to IFPs and the process for applying is currently under review, as part of the Sustainable Fisheries Strategy.

17. An industry member commented that the review process should consider allowing current TIB licence holders to also fish in the East Coast TRL fishery by cross jurisdiction endorsement.

18. The TSRA member noted that under the TSRA Economic Development Program, there is assistance for TIB fishers in developing a business plan to obtain an Indigenous Fishing Permit for the East Coast Fishery, or to support any fisheries business proposal in the Torres Strait. The support is not provided by a TSRA officer but rather a business mentor consultant.

2.3 PNG NFA update

19. An update from PNG NFA was not available as the Invited Participant was not in attendance.

2.4 Native Title

20. An update on Native Title matters was not provided as the Malu Lamar representative was not in attendance.

3 Report from TRLRAG 24 held on 18-19 October 2018

21. The Working Group noted a brief summary of the key outcomes of TRLRAG 24 held on 18-19 October 2018, provided by the AFMA member acknowledging that the meeting record of the RAG is not yet finalised.
    a. The RAG agreed to proceed with the 2018 pre-season survey, with an additional 6 sites from the mid-year survey.
    b. The RAG recommended an independent review be conducted of the TRL survey design. A draft terms of reference is to be developed by the Chair for consideration at the first RAG meeting in 2019.
    c. The RAG recommended a sub-group of the RAG be established to examine and recommend improvements to be made to the collection and analysis of catch and effort data for the TRL Fishery.

4 Proposed management plan

22. The Working Group was asked to discuss and provide advice on the proposed drafting changes to the *Torres Strait Fishery (Quotas for Tropical Rock Lobster (Kaiar)) Management Plan 2018* (the draft Plan).

23. At the commencement of the discussion, the latest revision of the Plan was not available. The Working Group noted that members would be better placed to provide advice on the proposed revision if members could review the final draft plan with the revisions included. With AFMA's support the Working Group agreed to consider the proposed revisions as detailed in the papers at the meeting and for members to provide any further

comment out of session by close of business, Monday 19 November noting advice from AFMA that the revised draft plan would be available later in the day.

24. Copies of the Plan were made available to the Working Group in hard copy and electronic form at the end of the discussion.

Process update and outline of the quota management framework

25. The Working Group noted an overview from the AFMA member on the management plan process and broad elements of the proposed revised draft:
    a. The Protected Zone Joint Authority (PZJA) agreed to reaffirm its previous decision to determine a *Torres Strait Fishery (Quotas for Tropical Rock Lobster (Kaiar)) Management Plan* by 1 December 2018.
    b. AFMA has been working with the Office of Parliamentary Council to finalise a draft Plan for PZJA's consideration.
    c. The PZJA is tentatively scheduled to meet on 26 November 2018 and will consider all submissions on the draft Plan, the proposed revisions and any advice from the Working Group.
    d. A range of revisions are being proposed to the draft Plan to improve the clarity and effectiveness of provisions of the draft Plan. Some of these revisions address comments received during the 2016 public consultation.
    e. The draft Plan will principally provide for the following:
        - Creation and allocation of TRL quota units to Transferrable Vessel Holder (TVH) licence holders (as individual transferable quotas (ITQs));
        - Setting a TAC prior to the start of each fishing season;
        - Trading of quota units (permanent and seasonal);
        - Cancellation or suspension of quota units in relation to a serious breach of the law; and
        - Establishment and maintenance of a quota unit register.

    f. Once the plan is determined and registered the plan is in force however the quota system is not operational. The quota unit allocation process must first be completed which may take 291 days or longer subject to appeals (as detailed in 4p of the Agenda Item, page 257). During this time the transitional provisions of the plan allow for the Fishery to be managed under existing arrangements (not the management plan). The quota system will commence at the start of first fishing season following the allocation of quota units.

    g. The AFMA member confirmed in response to questions raised that:
        - Quota units will not be attached to specific fishing licences rather they are held by a person or entity. A person may hold quota or a fishing licence separately. To fish in the Fishery however the person must either hold both quota and fishing licence or, if the person is a traditional inhabitant, they must hold a TIB licence and TSRA must have uncaught quota;

        - Quota may be 'subleased'. Meaning a person who holds quota because of a temporary transfer, may temporarily transfer that quota;

        - A person may not temporarily transfer caught quota units;

- Foreign ownership of quota units is permissible. Having regard for Australia's Foreign Investment Policy, significant consultation with a number of government agencies would be required to depart from this approach. Industry members raised general concern with foreign ownership from potentially reducing beach prices to being an impediment to achieving 100 percent Traditional Inhabitant ownership of access rights. Other industry members didn't want to limit foreign ownership opportunities as a means to generate investment;

- There are no prior-reporting conditions planned. AFMA moved away from prior reporting with the introduction of VMS and other monitoring techniques;

- Quota decrementation will not be automatic through electronic reporting however this may occur in the future in line with e-reporting initiatives in the Commonwealth. AFMA is undertaking an internal IT review which may guide future e-reporting programs in the Torres Strait; and

- All landed product must be recorded by a fish receiver regardless of whether or not the product is subsequently discarded. Fish Receiver CDRs will be used for quota decrementation noting an accurate weight is recorded rather than an at-sea estimate.

26. The Working Group noted the importance of understanding discard rates at sea for the purposes of the stock assessment and monitoring overall fishing mortality against the TAC. The Working Group **recommended** that discard reporting and estimation be considered by the RAG (possibly by the RAG data subgroup).

27. Industry members (TIB and TVH) confirmed their strong support for maintaining limited entry on TVH licences. Some industry members also reiterated the importance of input controls in managing on-water competition between TVH and TIB operators when TIB dinghy based fishers are restricted in the areas they are able to access within the Fishery.

28. In response to a questions raised on the likely market value of quota compared to the current market value of TVH licences (e.g. would it triple), one industry member advised that they did not expect the prices to surge in the same way as other fisheries such as the Western Australian Rock Lobster Fishery which is based on pot fishing. The Torres Strait fishery is more labour intensive and prices will be regulated by the commercial reality of the operating costs (the price to catch a fish). The industry member thought values for quota used in the Moana report were too high.

Proposed revisions to the 2016 exposure draft plan

29. The Working Group noted the explanation given by the AFMA member of each proposed revision to the 2016 exposure draft plan as outlined in Agenda Item 4, Attachment 4a, Table 1.

30. In relation to first right of refusal, the AFMA member advised that AFMA was proposing to include a check box in the TVH licence permanent transfer form indicating whether to not the transferor has informed the TSRA of the proposed transfer. The AFMA member further advised that this is designed to serve the same purpose as a first right of refusal provision. That being to raise market awareness that TSRA may be a position to purchase further TVH licences and quota.

Note: all discussion related to the proposed sectoral catch shares is reported under Agenda Item 5.

5 Proposed sectoral catch shares

31. The Working Group noted an overview of the proposed sectoral catch shares provided by the AFMA member:
    a. Amendments to the *Torres Strait Fisheries (Tropical Rock Lobster) Management Instrument 2018* are required to enable the implementation of sectoral catch shares between the TIB and TVH sectors of the TRL fishery for the 2018/19 fishing season.
    b. The Plan will not give immediate effect to the sectoral allocation during the 2018/19 fishing season as the allocation process involves several administrative steps and is dependent on any appeals.
    c. Enforcing the sectoral catch share in the 2018/19 fishing season will provide greater fishing access certainty for both the TIB and TVH sectors whilst the allocation process for TVH licences progresses.
    d. The Instrument provides the ability to close each sector once each respective TAC has been reached. It also provides some flexibility for the TSRA, if another TVH licence is purchased during the year, the sectoral catch shares can be adjusted accordingly.
    e. The Instrument will not apply after the 2018/19 season.

32. TVH industry members queried why the quota allocation process needs to take so long under the management plan and seemingly repeat the allocation process already completed in 2007. TVH industry members advised that licence holders already had an opportunity to contest their 2007 allocation and licences have since traded based on those allocations. Preferably the allocations could be completed much more expediently (e.g. by March 2019) so that the intended quota system under the management plan can be delivered rather than going through the proposed sectorial split arrangement.

33. AFMA advised that while the allocation process proposed under the plan may be lengthy, it is intended to afford TVH licence holders with natural justice. The process is consistent with the advice outlined to TVH licence holders on their provisional allocations in 2007.

34. TVH industry members expressed strong concern that a competitive TAC for the TVH sector will encourage a race to fish (therefore potentially undermining returns), is unfair, inconsistent with the arrangements expected under the management plan and inconsistent with the objectives of the Act (ie the object to manage for optimum utilisation).

35. Whilst the TVH members supported the sectoral split they advised that the transitional arrangements should mirror the expected quota system as far as possible. Their strong preference therefore was for the 2007 provisional allocations to be applied for the 2018/19 fishing season with the ability to transfer catch between licences, rather than the current proposal to apply the sectoral split and a competitive TAC within each sector. The TVH industry members would be able to accept this arrangement for a season while the quota allocation process is undertaken.

36. TVH industry members further reiterated that a lack of certainty around the next seasons' TAC and the TVH allocation process has significant implications for employment, crewing, business operations and profitability.

37. TVH industry members questioned if there was an alternative process, such as signing a waiver, to support the 2007 provisional allocations. The Chair suggested the TVH sector could informally implement their provisional allocations within the sector.

38. One industry member expressed concern that with a sectoral split in place, but without individual catch allocations for the TVH, there will still be local commercial pressure on the TIB sector, with regards to access to TRL in certain areas, particularly when hookah is permitted.

39. The TSRA member advised the Working Group that during each of the community consultations to date since the Fisheries Summit, there has been overwhelming support for a sectoral split, and an orderly transition as possible to maximise opportunities for both sectors. The member added that it has always been the view that the TIB sector will not impose any control on how the TVH sector share their catch allocation.

40. The AFMA member noted that the sectoral catch shares are a step towards greater certainty for industry compared with status quo management arrangements, particularly if faced with another low RBC. The AFMA member noted that the proposal to implement sectoral catch shares is subject to public consultation and that TVH licence holders are encouraged to make a submission outlining their proposal. The AFMA member further noted that the PZJA would likely want to understand whether the position was unanimous across all TVH licence holders.

41. The Working Group unanimously **supported** the implementation of sectoral catch shares as a temporary measure for the next fishing season. All TVH members and observers, and most TIB industry members and observers were supportive of the TVH sector having provisional quota allocations in the 2018/19 fishing season.

42. One TIB industry member preferred that the both sectors be managed under a single competitive TAC while the quota allocation process takes place under the plan.

6 Better aligning the TAC setting process with the fishing season

43. The Working Group noted the timing of the pre-season TRL survey and stock assessment and decision making process means a TAC based on the latest survey results cannot be determined before the current season start date (1 December). Under

the proposed management plan a TAC must be determined before the season commences.

44. The Working Group considered and **supported** the approach recommended by the RAG for a:
    a. start of season catch limit of 200 tonnes be determined prior to 1 December each year covering the period 1 December through to the end of February, at which point a final TAC will be able to be determined; and

    b. provision for the start of the season catch limit to be overridden and reduced 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 be overridden by the Harvest Strategy decision rules. In such cases, the use of the start of season catch limit should not be used in subsequent seasons until reviewed by the RAG.

45. One industry member advised that it was very important that the TIB sector is able to fish in December to support families and communities during that period (Christmas, children are returning from boarding school). For this reason the season start date should remain unchanged to ensure the season will be open at the time.

46. The Working Group noted that the 200 tonnes would be allocated between sectors proportionately as determined by the sectoral catch shares (TIB 66.17% and TVH 33.83%).

47. An industry member queried who would get prosecuted if an Olympic TAC was overcaught. The Working Group noted the AFMA member advice that once fishers had been advised that the TAC had been reached or that fishing was to cease on a certain date, individual fishers would be in breach of their licence conditions if they continued to fish after that notice was issued. The industry member considered that this scenario provides more support to the pursuit of TVH provisional allocation in the 2018/19 season to avoid the risk of overcatching the TAC.

7 Management arrangements for the 2018/19 fishing season

48. The Working Group was asked to provide advice on whether any changes should be made to existing management arrangements for the TRL fishery for the 2018/19 fishing season including the proposed moon-tide hookah closures provided in Attachment 7a.

49. The AFMA member recommended that management arrangements remain unchanged for the coming season and only be reconsidered if:
    - the PZJA does not determine the Plan by 1 December and sectoral catch shares are not implemented; and

    - the preliminary RBC is at a low level similar to the RBC for this season.

50. The Working Group noted that under the above scenario it would reconvene early next year to revisit management arrangements for the 2018/19 season.

51. The Working Group further noted that under quota management existing input controls are to remain in place but be reviewed periodically.

52. The Working Group noted the proposal by some in industry for moon-tide closures to coincide with the new moon and lobster moult cycles to reduce mortality rates and the volume of damaged and tailed lobsters. The Working Group however agreed to maintain the current methodology for determining the moon-tide hookah closures at this time (as set out in the Agenda paper - based on the biggest difference high and low water tides).

53. An industry observer expressed frustration over the 2017/18 fishing season, stating that free-diving and lamp fishing should have been permitted to continue. The AFMA member noted that the prohibition put in place on the use of hookah this season was intended to extend the fishing season however the decision was successfully challenged by Malu Lamar in the Federal court and decision was over turned.

54. A Traditional Inhabitant industry member expressed support for two moon-tide closures per month, however this was not supported by other Working Group members.

55. The Working Group **recommended** that management arrangements for the 2018/19 season remain as status quo**,** including the moon-tide closures detailed 7a and **noted** that arrangements would be periodically reviewed following the implementation of quota management.

8 Draft Five Year Research Plan for 2019/20 to 2022/23

56. The AFMA member provided a brief overview of the intent of the Rolling Five Year TRL Fishery Research Plan for 2019/20 – 2022/23 to inform the Torres Strait Scientific Advisory Committee's (TSSAC) annual call for research funding proposals.

57. The Working Group noted that:
    a. TRLRAG considered the draft research plan at their meeting held on 18-19 October 2018 and identified seven research priorities, five essential items, three of which are ranked with high (1) priority and two as secondary priorities, and two desirable items ranked 2 and 3 in priority (**see Agenda Item 8, Attachment 8a**).
    b. All research priorities have been identified under the TSSAC Strategic Research Plan Theme 1; Strategy 1a.

58. The Chair queried whether the Improvements to Data Collection and Understanding connectivity, environmental drivers and adaptation strategies projects are essential compared to the first four projects. The Chair also noted that the Working Group may consider broader research priorities compared with the focus of the RAG.

59. One industry member expressed support for the research project number 6 Understanding connectivity, environmental drivers and adaptation strategies, stating that it will be important to understand the effects of climate change on low RBCs in the fishery.

60. The TSRA member queried if research project number 8 on understanding fisher behaviour should be commenced during the 2018/19 fishing season and elevated in priority, rather than waiting for the Plan to be implemented. The Scientific member advised that the Management Strategy Evaluation (MSE) undertaken by CSIRO for the Fishery already provides good baseline data. One industry member advised that it may take up to five years for behaviour to adapt to quota management. It was noted by the Working Group such research is likely to inform monitoring, the evaluation of existing managements arrangement such as input controls, as well as social and economic indicators.

61. The Scientific member advised that better understanding 0+ lobster abundance is useful for stock assessments. Simple data points such as GPS positions and number of 0+ lobsters present would assist in understanding the distribution of 0+. The Working Group **recommended** that the TRLRAG considering the merit and options for improving the index of 0+ lobster abundance, through logbooks or other means. The Working Group noted that this would may be relevant to the RAG data sub-committee.

62. The Working Group **agreed to support** the RAG advice on proposed research projects and priority rankings, noting that as an annual process, the list can be reviewed next year. The Working Group noted that more time may be available next year to consider strategic research needs.

9 Other Business

63. No other business was discussed.

10 Date and venue for next meeting

64. The Working Group agreed to tentatively schedule the next TRLWG meeting in early 2019 during the moon-tide closure 17-23 February, to be confirmed.

65. The Chair thanked the meeting participants for their contributions throughout the day. The meeting was closed in prayer by Mr Terence Whap at 3.30pm.

Attachment A

8th MEETING OF THE PZJA TORRES STRAIT TROPICAL ROCK LOBSTER WORKING GROUP (TRLWG8)

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

Thursday 8 November 2018 – 8:30 AM – 5:30 PM

DRAFT AGENDA

1 PRELIMINARIES

1.1 Welcome and apologies

The Chair will welcome members and observers to the 8th 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, economic and scientific members

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

2.2 Government agencies

The WGG will be invited to note updates from AFMA, TSRA and QDAF on matters concerning the Torres Strait TRL Fishery. AFMA will provide a summary of management arrangements for the 2017/18 fishing season, including the outcomes of the Federal Court case.

2.3 PNG National Fisheries Authority

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

2.4 Native Title

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

3 REPORT FROM TRLRAG HELD ON 18-19 OCTOBER 2018

The WG will be invited to note the outcomes of the TRLRAG meeting held on 18-19 October 2018.

4 PROPOSED MANAGEMENT PLAN

The WG will be invited to consider the process for adoption of a proposed Management Plan, including the role of the WG.

5 PROPOSED SECTORAL CATCH SHARES

The WG will be invited to consider the proposed amendments to the *Torres Strait Fisheries (Tropical Rock Lobster) Management Instrument 2018* to enable the implementation of sectoral catch shares in the Torres Strait TRL Fishery for the 2018/19 fishing season.

6 BETTER ALIGNING THE TAC SETTING PROCESS WITH THE FISHING SEASON

The WG will be invited to consider a proposal to better align the TAC setting process with the fishing season under the proposed Management Plan.

7 MANAGEMENT ARRANGEMENTS FOR THE 2018/19 FISHING SEASON

The WG will be invited to consider management arrangements for the 2018/19 fishing season, including proposed moon-tide hookah closures.

8 DRAFT FIVE-YEAR RESEARCH PLAN FOR 2019/20 TO 2022/23

The WG will be invited to consider the new research planning framework for Torres Strait fisheries and research priorities for the Torres Strait TRL Fishery.

9 OTHER BUSINESS

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

10 DATE AND VENUE FOR NEXT MEETING

The WG will be invited to consider the date and venue for the next meeting.

TROPICAL ROCK LOBSTER WORKING GROUP (TRLWG)	MEETING 9 19-20 February 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 8 November 2018.

BACKGROUND

2. The following correspondence was circulated out-of-session since the last TRLWG meeting held on 8 November 2018. Copies of this correspondence can be requested at any time from the TRLWG Executive Officer.

Date	Item
8 November 2018	AFMA circulated a copy of the exposure draft of the proposed quota management plan for the Torres Strait Tropical Rock Lobster Fishery (TRL Fishery), with comments due out of session by close of business 19 November 2018.
18 November 2018	AFMA circulated a reminder to Members regarding comments on the exposure draft of the proposed quota management plan for the TRL Fishery, due by close of business 19 November 2018.
23 November 2018	AFMA circulated the draft meeting record for the TRLWG 8 meeting held on 8 November 2018, to Members for comment.
27 November 2018	AFMA circulated a communique from the Protected Zone Joint Authority (PZJA), concerning decisions to determine a quota management plan for the TRL Fishery and to apply sectoral catch shares for the 2018/19 fishing season, to members for information.
7 January 2019	AFMA sought availability of members for a meeting of the TRLWG to be held from 19-20 February 2019 on Thursday Island.
7 January 2019	AFMA circulated an email from Ian Cartwright, Torres Strait Scientific Advisory Committee (TSSAC) Chair regarding the annual call for research for 2019/20, to Members for information.
1 February 2019	AFMA circulated the draft agenda for the TRLWG meeting to be held from 19-20 February 2019 on Thursday Island, to Members for comment.
11 February 2019	AFMA circulated research pre-proposals, to Members for comment.

TROPICAL ROCK LOBSTER WORKING GROUP (TRLWG)	MEETING 9 19-20 February 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.

TROPICAL ROCK LOBSTER WORKING GROUP (TRLWG)	MEETING 9 19-20 February 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 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 9 19-20 February 2019
UPDATES FROM MEMBERS Government agencies	Agenda Item 2.3 For noting

RECOMMENDATIONS

1. That the Working Group:
   a. **NOTE** the update provided by AFMA, including:
      i. Summary of management arrangements for the 2018/19 fishing;
      ii. PNG-Australia catch sharing arrangements;
      iii. Research proposals for the 2019-20 financial year;
      iv. Catch summary for the 2017/18 and 2018/19 fishing seasons, to date;
      v. Sea surface temperatures;
      vi. Implementation of the Fish Receiver System (FRS);
      vii. Industry liaison visit to the AFMA Canberra Office;
      viii. Membership of Protected Zone Joint Authority (PZJA) consultative forums; and
      ix. ANAO audit.
   b. **NOTE** a verbal update will be provided by the QDAF and TSRA.

AFMA UPDATE

Summary of management arrangements for the 2018/19 fishing season

2. On 26 November 2018, having considered outcomes of consultation, the 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 came into force for the 2018/19 fishing season starting on 1 December 2018.
3. These decisions mean that, unless delayed by legal appeals, a quota management system will be fully operational in the 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.
4. As the TRL Fishery undergoes the transition to a fully operational Management Plan, some key management arrangements that will apply in the 2018/19 season are detailed below. Further details on the implementation of the Management Plan are provided for discussion under **Agenda Item 5**.

Sectoral split

5. Separate total allowable catch (TAC) shares will be implemented on an interim basis for the Traditional Inhabitant and Transferable Vessel Holder (TVH) sectors:
   a. 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 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.

b. 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

6. In order to give effect to the sectoral split, the PZJA 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.
7. This means that, from the opening of the 2018/19 fishing season:
   a. Traditional Inhabitant sector – can take a combined total of 132.34 tonnes of TRL.
   b. 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. Based on an interim TAC of 200 tonnes the TVH can take a combined total of 67.66 tonnes of TRL.
8. The interim TAC will apply until a final TAC for the 2018/19 fishing season can be agreed. Further details on the proposed process and timeframes for finalisation of the RBC and an Australian TAC are provided for discussion under **Agenda Item 3**.

Moon-Tide Hookah Closures

9. The PZJA also 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.
10. 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 calendar (dated 28 November 2018) provided at **Attachment 2.3a**. The first scheduled moon-tide hookah closure period started on 17 February 2018.
11. 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.

PNG-Australia catch sharing arrangements

12. The AFMA Chief Executive Officer, Anna Willock, met with the PNG National Fisheries Authority Managing Director, Mr John Kasu, on 17 January 2019 to discuss preliminary catch sharing arrangements, as per the terms of the Torres Strait Treaty, for the 2018/19 fishing season for the Torres Strait Protected Zone TRL Fishery. Both agencies will meet again following this TRLWG meeting to agree on final catch sharing arrangements, prior to a decision being sought from the PZJA on a final TAC for the 2018/19 fishing season for the Australian TRL Fishery. The Australian TAC equates to Australia's share of the final recommended biological catch (RBC). Further details on the proposed process and timeframes for finalisation of the RBC and an Australian TAC are provided for discussion under **Agenda Item 3**.
13. The PNG National Fisheries Authority Managing Director, Mr John Kasu, will also be visiting Canberra in February 2019 to discuss broader fisheries issues with Australian counterparts.
14. Further, Australia-PNG bilateral meetings to discuss matters concerning the Torres Strait Treaty will be held on Thursday Island from 4-7 March 2019.

Research proposals for the 2019-20 financial year

15. The Torres Strait Scientific Advisory Committee (TSSAC) is a PZJA advisory body that that guides fisheries related research priorities, and assesses proposals for Torres Strait fisheries related research each year.

16. The TSSAC met on 5-6 December 2018 to consider fishery-specific research priorities identified by individual fisheries Resource Assessment Groups (RAGs), Working Groups and Management Advisory Committees (MACs). The TRL Fishery Rolling Five Year Research Plan for 2019/20-2022/23 was considered at this meeting. Seven scopes were subsequently developed (below table).

Fishery	Scopes
All Torres Strait fisheries	1. Climate variability and change relevant to key fisheries resources in the Torres Strait — a scoping study.
	2. Measuring non-commercial fishing (indigenous subsistence fishing and recreational fishing) in the Torres Strait in order to improve fisheries management and promote sustainable livelihoods.
Tropical Rock Lobster Fishery	3. Fishery independent survey, stock assessment, Harvest Strategy and Recommended Biological Catch calculation for the Torres Strait Tropical Rock Lobster Fishery.
Hand Collectables Fisheries	4. Torres Strait Sea Cucumber Stock Status Survey.
Finfish Fishery	5. Management Strategy Evaluation of Torres Strait Finfish Harvest Strategy
	6. Enhancing biological data inputs to Torres Strait Spanish mackerel stock assessment.
	7. Scoping for Spanish mackerel stock assessment – Torres Strait Scientific Advisory Committee.

17. On 21 December 2018, TSSAC made an annual public call for research applications to address the research priorities identified for potential funding in the 2019-20 financial year. The final scopes can be found at: www.pzja.gov.au/resources/research. The call for research was also advertised in NRM jobs.

18. Research funding is assessed in two stages by the TSSAC, through pre-proposals, then successful applications will be asked to submit full proposals. Further details on the process are provided at **Attachment 2.3b**. Applicants are asked to use the fishery-specific project scopes as a guide when developing their pre-proposals to meet the identified need for the project.

19. Pre-proposals are due 5 February 2019. The PZJA will seek RAG and Working Group comments on pre-proposals, out of session, by 15 February 2019 before consideration by the TSSAC at its March 2019 meeting.

20. Applicants will be advised in late March 2019 whether a full proposal should be submitted. Full proposals will be due by 12 April 2019. The full proposal process has changed and now includes a pre-consultation process with traditional inhabitants.

21. There will also be 2 ERAs (BDM and TRL) funded through the 2019-20 budget which will not be a part of the call for research, as they are required to support fisheries export approvals, and will be completed by the CSIRO under an existing agreement. Finally, a

Torres Strait Prawn Fishery project and the TRL peer review will be considered for funding, however these projects will be directly sourced from specific researchers due to their low cost and specialist service.

Catch summary for the 2017/18 and 2018/19 fishing seasons

22. As reported through the mandatory FRS, implemented on 1 December 2017, the reported landed catch for the Australian Torres Strait TRL Fishery for the 2018/19 fishing season to date, is 39,623 kg.

23. This equates to 19.81 per cent of the 200 tonne interim TAC for the TRL Fishery. 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.

24. This is the first season that sectoral catch shares have been implemented across the Australian TRL Fishery following the determination of the *Torres Strait Fisheries (Quotas for Tropical Rock Lobster (Kaiar)) Management Plan 2018* (the Management Plan).

25. Further details, including final catch totals from the 2017/18 fishing season, are provided at **Attachment 2.3c**.

26. The PNG TRL Fishery opened 1 December 2018, with the use of hookah gear prohibited in the waters of Western Province and Torres Strait effective until 31 March 2019. To date, AFMA has not received any catch reports on the PNG TRL Fishery from PNG NFA.

Sea surface temperatures

27. Sea surface temperatures (SSTs) are currently below the coral bleaching threshold (as determined by AIMS). The Australian Institute of Marine Science (AIMS) monitors sea surface temperatures to identify the risk of bleaching events. Reports can be accessed on the AIMS website at https://www.aims.gov.au/docs/research/climate-change/coral-bleaching/predicting-events.html.

28. Since 1970 the SST in the Coral Sea has consistently been above the long term average (data from 1900 to 2017). The El Nino event from 2015/16 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.

29. SST information is also monitored by some fishers. If there is a spike in temperature fishers have previously advised that 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. AFMA, through AIMS, will continue to monitor SSTs this season and advise Torres Strait fishers as appropriate.

Implementation of the Fish Receiver System

30. The Fish Receiver System (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.

31. 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 a PZJA forum Traditional Inhabitant member accompany the visits.

32. AFMA is also preparing to provide public monthly catch updates for all Torres Strait Fisheries, via the AFMA and PZJA websites, to assist industry in monitoring catch against TACs. These reports will also assist in the monitoring of interim sectoral split arrangements for the TRL Fishery for 2018/19 fishing season.

Industry Liaison Visit to AFMA Canberra Office

33. On Wednesday 14 November 2018, AFMA Officers hosted PZJA Tropical Rock Lobster Working Group Member, Mr Mark David, at their Canberra head office. The trip included Mr David meeting with AFMA CEO Dr James Findlay as well as meeting with many different AFMA teams and functions including compliance, vessel monitoring, bycatch & discards, scientific observers and licensing, Mr David was also able to visit the Maritime Border Command facility where all border surveillance assets for Australia are co-ordinated. AFMA is looking to opportunistically extend these liaison visits to Canberra as developmental opportunities for other PZJA representatives subject to the availability of funding.

Membership of PZJA consultative forums

34. At the 2018 Torres Strait Fisheries Summit held on 30 August 2018, nominations were sought for Traditional Inhabitant members on PZJA consultative forums. Taking these nominations into consideration, Traditional Inhabitant members have been appointed for a three year term commencing 1 January 2019 and ending 31 December 2021.

35. The TSRA will convene a workshop with all newly appointed members to provide information about the consultative forums and the roles and responsibilities of members. Ongoing capacity training for members will also be made available by the TSRA.

36. The appointment terms of other members on PZJA consultative forums, excluding the Finfish RAG, expire on 28 February 2019. AFMA will seek to have these members' appointments extended until later in 2019, to allow time for a new appointment process to be completed. All members on PZJA consultative forums, and the general public, will be advised of this process once details have been finalised.

Australian National Audit Office (ANAO) performance audit

37. The ANAO is currently undertaking a performance audit of the coordination arrangements of Australian Government agencies operating in the Torres Strait. The audit will examine 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.

38. The audit was open for contribution until 30 September 2018 with a report due to be tabled in June 2019. Australian Government agencies subject to the audit include AFMA, the Department of Agriculture and Water Resources, the Department of Foreign Affairs and Trade, the Department of Home Affairs and the TSRA.

39. Further information on the audit can be accessed on the ANAO website at: https://www.anao.gov.au/work/performance-audit/coordination-arrangements-australian-government-entities-operating-torres-strait

Torres Strait Tropical Rock Lobster Fishery Moon-Tide Hookah Closures for the 2018/19 Fishing Season* (as at 28 November 2018)

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

* The 2018/19 fishing season runs from 1 December 2018 through to 30 September 2019

KEY

● **New moon**

○ **Full moon**

Fishery closed

Hookah closure (use of hookah gear not permitted)

Moon-tide hookah closure (use of hookah gear not permitted)

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.

Catch summary for the 2017/18 and 2018/19 fishing seasons

Table 1. Reported landed catch (kg 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 8 February 2019.

Month	Reported catch (kg) for all licence holders*
Dec-18	26,438.28
Jan-19	13,185.17
Feb-19	-*
Total reported catch (kg)*	**39,623.45**
Reported catch as a per cent (%) of the 200 tonne interim TAC~	**19.81%**

Notes:

* The reported catch figures are sourced from catch disposal records (TDB02). There may be some outstanding records. The reported catch figures do not include any unreported catch. Under AFMA's Information Disclosure Policy (**Attachment 2.3d**), information on catch by sector (i.e. TIB and TVH sectors) and catch for the month of February 2019 has not been provided as some of this information is from less than five boats. The Policy does allow more detailed fishing information to be disclosed where the information has or will be used to guide fishery management decisions (for example; research or information supporting the implementation of harvest strategies, Stock Recovery Plans, stock-based management measures). AFMA will provide public monthly catch updates from February 2019, via the AFMA and PZJA websites, to assist industry in monitoring catch against interim sectoral split arrangements for the 2018/19 fishing season.

~ The interim total allowable catch (TAC) for the Australian Torres Strait TRL Fishery for the 2018/19 fishing season is 200,000 kg until a final TAC can be agreed. Under sectoral catch shares, this equates to 132,340 kg for the Traditional Inhabitant Boat (TIB) sector and 67,660 kg for the Transferable Vessel Holder (TVH) sector, which is allocated to each licence holder as specified in their individual licence conditions.

Table 2. Reported landed catch (kg whole weight) of TRL for the Australian Torres Strait TRL Fishery by month for the 2017/18 fishing season. Source: Torres Strait Fisheries Catch Disposal Record (TDB02) as at 8 February 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-17	15,077.98	33.72	15,111.70
Jan-18	13,119.23		13,119.23
Feb-18	20,936.83	42,415.36	63,352.19
Mar-18	19,095.97	28,605.83	47,701.79
Apr-18	17,063.75	23,381.14	40,444.88
May-18	10,130.47	3,110.28	13,240.75
Jun-18	10,832.57	2,966.17	13,798.75
Jul-18	20,812.78	33,557.31	54,370.09
Total reported catch (kg)*	**127,069.57**	**134,069.81**	**261,139.38**
Reported catch as a per cent (%) of the TAC~	**50.00%**	**52.75%**	**102.75%**
Reported catch as a per cent (%) of total reported catch	**48.66%**	**51.34%**	**100.00%**

Notes:

* The reported catch figures are sourced from catch disposal records (TDB02). The reported catch figures do not include any unreported catch.

^ The reported catch figures for Transferable Vessel Holder (TVH) licence holders includes catch taken under licences held by the Torres Strait Regional Authority (TSRA).

~ The total allowable catch (TAC) for the Australian Torres Strait TRL Fishery for the 2017-18 fishing season was 254,150kg. The 2017-18 fishing season ran from 1 December 2017 to 30 July 2018.

Australian Government
Australian Fisheries Management Authority

Fisheries management paper 12

INFORMATION DISCLOSURE

MAY 2014

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Document Change History

Revision Date	Version Number	Document Changes
21 May 2014	1.1	Minor changes to make the Policy consistent with changes to the *Privacy Act.* These include changes to Clause 2 relating to the definition of personal information and inserting new clauses for 6.1.2a) and b)

1. Purpose

This document sets out the Australia Fishery Management Authority's (AFMA) policy and procedures for disclosing information it collects.

2. Definitions

For the purposes of this policy ***"personal information"*** has the same meaning as in the *Privacy Act 1988* which is, "*information or an opinion about an identified individual, or an individual who is reasonably identifiable:*
(a) whether the information or opinion is true or not; and
(b) whether the information or opinion is recorded in a material form or not.".

As under the *Privacy Act*, it does not include information that is already (properly) in the public domain.

3. Background

3.1 Need

In performing its functions, AFMA *collects* a range of information. Information collected by AFMA is official information which is held on behalf of the Australian community. This does not mean that all of the information collected by AFMA may be *disclosed*. No information collected by AFMA can be disclosed, unless this would be in accordance with one of AFMA's functions or powers. Further, much of the information collected by AFMA is provided by holders of Commonwealth fishing concessions and can contain both personal information and information that has commercial value.

Therefore in deciding whether to disclose information it has collected, AFMA must ensure that:

- it acts consistently with the *Fisheries Administration Act 1991* (FA Act) and *Fisheries Management Act 1991* (FM Act);
- it acts consistently with the *Privacy Act 1988,* the purpose of which is to protect the privacy of personal information; and
- where personal or commercially valuable information is provided, measures are in place, as appropriate, to protect the information.

This policy establishes a decision making framework to ensure that decisions to disclose information are, consistent, legally sound and that proper account is taken of all relevant considerations.

3.2 AFMA's ability to disclose information it has collected

AFMA's legislation provides AFMA with both broad and specific authority to disclose information in the exercise of its powers and performance of its functions.

A number of AFMA's functions and powers *specifically* authorise the disclosure of information. For example:

FA Act: paragraph 7(1)(g) - AFMA may consult and exchange information with State, Territory and overseas bodies having functions similar to AFMA's functions;

paragraph 7(1)(gb) - AFMA may disclose, *as authorised* under s7(4), information (including personal information) relating to:

(a) possible breaches of laws of Australia or of a foreign country;

(b) the control and protection of Australia's borders;

(c) the administration and management of fisheries or marine environments; or

(d) research or monitoring conducted, or proposed to be conducted, into fisheries or marine environments.

Disclosure under paragraph 7(1)(gb) is authorized if done in accordance with the FA Act, the FM Act, the *Torres Strait Fisheries Act 1984*, or regulations made under one of those Acts.

FM Act: section 167 - AFMA may publish or make available, in any way it thinks fit, statistics compiled from logbooks or other sources.

section 108B - The Minister may disclose (or authorise a prescribed agency to disclose on the Minister's behalf) information relating to fishing activities that may involve a breach of the laws of Australia or a foreign country to the government of a foreign country or the other specified bodies.

section 167B - AFMA may disclose VMS information to Customs.

AFMA may also disclose information in performing its other functions, where disclosure is necessary for the performance of those functions. This broader authority is conferred by FA Act s8, which provides that AFMA "may do all things that are necessary or convenient to be done for, or in connection with, the performance of its functions". For example, a central function of AFMA is to "devise management regimes in relation to Australian fisheries" (FA Act s7(1)(a)). In performing this function, it is necessary to disclose information AFMA has collected to external bodies (such as research providers or Independent Allocation Advisory Panels) to conduct research on AFMA's behalf.

In performing its functions, AFMA is required to pursue its objectives (in FM Act s3, and FA Act s6). Therefore, a decision to disclose information must be consistent with pursuit of those objectives. In addition to the objectives of implementing efficient and cost-effective fisheries management on behalf of the Commonwealth (FA Act paragraph 6(a)) and ensuring that the exploitation of fisheries resources are conducted in a manner consistent with the principles of ESD (FA Act paragraph 6(b)), these objectives include ensuring accountability to the fishing industry and to the Australian community in AFMA's management of fisheries resources (FA Act paragraph 6(d)).

4. Objective

To guide AFMA decisions to disclose information in accordance with its functions and powers, including powers specified in regulations made for the purposes of section 7(4) of the FA Act.

5. Scope

This policy applies to all AFMA decisions to disclose information already collected by AFMA, as well as information to be collected in the future.

6. Policy guidelines and procedures

6.1 Guidelines

6.1.1 AFMA will only disclose information it collects where it is:

a) authorised by a provision of the FA Act or the FM Act that specifically authorises the disclosure of information (e.g. paragraphs 7(1)(g), (ga) and (gb) of the FA Act); or

b) is otherwise required to perform a function where disclosure of information is not specifically authorised (FA Act section 8).

Note: The FA Act and FM Act provide that in performing its functions AFMA must pursue its objectives set out in FA Act s6 and FM Act s3.

6.1.2 In deciding whether to disclose *personal* information, AFMA will ensure the decision to do so is consistent with the *Privacy Act 1988*. This means that AFMA will not disclose personal information to a person, body or agency unless:

a) the individual concerned would reasonably expect that AFMA would disclose the information for a purpose other than the purpose for which it was collected and, if the information is sensitive information, it is directly related to the primary purpose for which the information was collected.; or

b) the individual concerned would reasonably expect that AFMA would disclose the information for a purpose other than the purpose for which it was collected and, if the information is not sensitive information, it is related to the primary purpose for which the information was collected: or

c) the individual concerned has consented to the disclosure; or

d) AFMA believes on reasonable grounds that the disclosure is necessary to prevent or lessen a serious and imminent threat to life or health of the individual concerned or of another person; or

e) the disclosure is required or authorised by or under law; or

f) the disclosure is reasonably necessary for the enforcement of the criminal law or of a law imposing a pecuniary penalty, or for the protection of the public revenue.

6.1.3 To provide accountability to the fishing industry and Australian community in AFMA's management of fisheries resources, AFMA may publicly disclose the following fishing information for all fisheries, so far as it is consistent with Australia's obligations under international law:

a) total fishing season catch and effort statistics for each species[1] aggregated by fishing method, sector and/or fishery;

b) the total area of waters fished within a season by fishery, sector and/or method, reported at a minimum spatial resolution of one degree square. This does not include catch or effort information where the data represents less than five vessels; or

c) any other catch and effort information, including spatial information, where the information represents data from five or more vessels.

[1] Includes: target, byproduct, bycatch and Threatened, Endangered or Protected species

6.1.4 AFMA may publicly disclose more detailed fishing information than that outlined in (6.1.3) where:

a) the information has or will be used to guide fishery management decisions (for example; research or information supporting the implementation of harvest strategies, Stock Recovery Plans, stock-based management measures); or

b) it is used to ensure that Australia meets its obligations under international law (for example, disclosure to Regional Fishery Management Organisations).

6.2 Procedures for disclosing information that is not available in public domain

6.2.1 Where information concerns the activities of individual operators that may have commercial value (in that the disclosure of the information may diminish the value of the information to the person who provided it to AFMA), AFMA will, as far as possible, having regard to the purpose of the disclosure, provide information in a form that will protect information.

a) For example, the information may be provided in an aggregated form.

6.2.2 All decisions to disclose information will be made by officers who have been authorised to do so by the CEO (including, if required, under an instrument of delegation).

6.2.3 Where it has been requested to provide information, AFMA will make inquiries of the requesting person, body or agency, as appropriate, in order to be satisfied that the request correctly identifies the particular information relevant to the purpose of the request, and does not capture information that is not necessary for that purpose. AFMA will also make reasonable enquiries before releasing any information to ensure that sufficient controls exist for managing any information received.

6.2.4 AFMA will enter into a Memorandum of Understanding (MOU), covering the basis on which information will be provided, with agencies to which AFMA provides information on a reoccurring basis. Such MOUs will require that:

a) the confidentiality of any information provided by AFMA will be maintained and the information will be properly protected; and

b) information provided by AFMA will not be disclosed outside the agency without AFMA's prior consent.

6.2.5 Where information is provided to a person or agency with which an MOU governing the provision of the information is not in place, the information will only be provided subject to conditions that protect the information. At a minimum, the conditions will include the following, that the information:

a) will only be used for the purpose for which it is provided;

b) will only be disclosed to those persons and/or agencies with a 'need to know', as part of their duties;

c) will not be disclosed to a third party without AFMA's prior consent.

6.2.6 AFMA will keep a record of the disclosure. The record will include the data that was disclosed, to whom and for what purpose.

6.3 Cost recovery

AFMA will recover costs associated with disclosing information in accordance with the Australian Government's Cost Recovery Policy.

7. Review

This policy will be reviewed at a minimum period of five years, or as required, from its commencement.

TROPICAL ROCK LOBSTER WORKING GROUP (TRLWG)	MEETING 9 19-20 February 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.

PNG catch update

Catch data as at 18 February 2019

Table 1. Reported catch of Tropical Rock Lobster (TRL) for the PNG TRL Fishery taken from within and outside the Torres Strait Protected Zone (TSPZ) for the 2018 fishing season (1 January 2018 - 31 December 2018). Source: PNG National Fisheries Authority.

Area	Total tail weight (kg)	Tail weight converted to whole weight (kg) (conversion factor 2.667)^	Live weight (kg)	Total harvested (kg)*	Difference from preliminary data submitted in 2018
PNG jurisdiction within TSPZ	26,327.03	70,214.19	15,075.00	85,289.19	+18,927.30
PNG jurisdiction outside of TSPZ	21,717.37	57,920.23	12,744.55	70,664.78	+68,361.83
TOTALS	**48,044.40**	**128,134.42**	**27,819.55**	**155,953.97**	**+87,289.13**

Notes:

^ A conversion factor of 2.667 has been applied to convert tail to whole weight. The agreed conversion factor is 2.677. Applying the agreed conversion factor the total tailed weight taken is as follows: Within PNG jurisdiction within TSPZ 70 477.46kgs and outside TSPZ 58 137.40kgs

* The TAC for the PNG TRL Fishery from within the TSPZ for the 2018/19 fishing season was 44,850 kg.

Catch data as at 21 September 2018

Table 2. Reported catch of TRL for the PNG TRL Fishery taken from within the TSPZ for the period 1 January 2018 to 21 September 2018. Source: PNG National Fisheries Authority.

Month	Reported catch (kg) of frozen tails (converted to whole weight)*^	Reported catch (kg) of live TRL (whole weight)*	Total reported catch (kg)*
Jan-18	4,858.58	1,320.00	**6,178.58**
Feb-18	10,067.87	1,980.00	**12,047.87**
Mar-18	2,125.87	0.00	**2,125.87**
Apr-18	9,538.15	2,640.00	**12,178.15**
May-18	5,841.37	1,980.00	**7,821.37**
Jun-18	5,528.00	1,320.00	**6,848.00**
Jul-18	7,621.43	2,640.00	**10,261.43**
Aug-18	5,705.62	3,195.00	**8,900.62**
Total reported catch (kg)*	**51,286.89**	**15,075.00**	**66,361.89**

Notes:

* Reported catch is from the area of the Torres Strait Protected Zone only.

^ A conversion factor of 2.667 has been applied to convert tail to whole weight. The agreed conversion factor is 2.677.

Table 3. Reported catch of TRL for the PNG TRL Fishery taken from outside of the TSPZ for the period 1 January 2018 to 21 September 2018. Source: PNG National Fisheries Authority.

Month	Reported catch (kg) of tails*^~
Jan-18	129.62
Feb-18	33.60
Mar-18	69.61
Apr-18	270.70
May-18	1,354.04
Jun-18	429.39
Jul-18	0.00
Aug-18	16.00
Total reported catch (kg)*~	**2,302.95**

Notes:

* Reported catch is from outside of the area of the Torres Strait Protected Zone only.

^ A conversion factor of 2.677 has been applied to convert tail to whole weight. The agreed conversion factor is 2.677.

TROPICAL ROCK LOBSTER WORKING GROUP (TRLWG)	MEETING 9 19-20 February 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 9 19-20 February 2019
TOTAL ALLOWABLE CATCH FOR THE 2018/19 FISHING SEASON	Agenda Item 3 For discussion and advice

RECOMMENDATIONS

1. The Working Group **DISCUSS** and **PROVIDE ADVICE** on a final total allowable catch (TAC) for the Protected Zone Tropical Rock Lobster Fishery (TRL Fishery) for the 2018/19 fishing season, noting that:
   a. an interim TAC of 200 tonnes is currently in effect for the Australian TRL Fishery until a final TAC for the 2018/19 fishing season can be agreed;
   b. the final advice from the Tropical Rock Lobster Resource Assessment Group (TRLRAG) at their meeting held on 5 February 2019, for a recommended biological catch (RBC) of 641 tonnes for the TRL Fishery for the 2018/19 fishing season. The RBC covers the Protected Zone (Australia and Papua New Guinea (PNG)). Australian and PNG catch shares are subject to the terms of the Torres Strait Treaty;
   c. the RBC is based on interim harvest strategy for the TRL Fishery; and
   d. to date, based on TRLRAG advice, other sources of mortality (for example traditional and recreational catches), have not been deducted from the RBC when recommending a TAC.

KEY ISSUES

2. The Working Group is being asked to provide advice on the total allowable catch (TAC) for the TRL Fishery for the 2018/19 fishing season. For the Australian TRL Fishery, the fishing season commences on 1 December each year through to 30 September the following year.

Interim TAC

3. 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, 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.
4. This means that whilst operating under the interim TAC, the:
   a. Traditional Inhabitant (TIB) sector can take a combined total of 132.34 tonnes of TRL; and
   b. Non-Traditional Inhabitant (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. Based on an interim TAC of 200 tonnes the TVH sector can take a combined total of 67.66 tonnes of TRL.
5. The interim TAC will apply until a final TAC for the 2018/19 fishing season can be agreed.

TRLRAG RBC advice

6. The RBC for the TRL Fishery for the 2018/19 fishing season was calculated using the integrated fishery stock assessment model and interim harvest strategy (refer to Background for further details on the interim harvest strategy).

7. A preliminary stock assessment update was presented at the TRLRAG meeting held on 11-12 December 2018 (TRLRAG 25). The stock assessment update incorporated the results of the 2018 mid-year and pre-season surveys, historical survey data as well as catch and effort information from the Traditional Inhabitant (TIB) and non-Traditional Inhabitant (TVH) sectors, TRL biological information and environmental information.

8. 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). The TRLRAG agreed that the 2017 0+ index should be down-weighted appropriately rather than be excluded entirely. The down-weighting was to be undertaken using an appropriate statistical methodology. CSIRO undertook to complete this work for consideration at the next TRLRAG meeting. Given the need to complete this work prior to finalisation of the stock assessment, the RAG noted that the final RBC would likely lie somewhere between 533 and 637 tonnes. The meeting record for TRLRAG 25 is provided at **Attachment 3a** for reference.

9. 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.

10. On this basis, the RAG recommended a final RBC of 641 tonnes. 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.

11. Further details on the additional analyses and RBC calculations are detailed in a report on the final stock assessment, *Torres Strait rock lobster (TRL) 2018 stock assessment: AFMA Project 2016/0822* (**Attachment 3b**). The meeting record for TRLRAG 26 was still being drafted at the time these meeting papers were prepared. A draft meeting record will be provided as a late paper prior to this meeting if available.

Other sources of mortality

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 (for example, recreational and traditional catches). This is consistent with the principles of the *Commonwealth Harvest Strategy Policy and Guidelines 2007*.

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.

Catch sharing arrangements under the Torres Strait Treaty

16. Based on the advice of the TRLRAG for an RBC of 641,000 kg, catch shares and cross endorsement catch allocations under the Torres Strait Treaty are shown in the below table – these are subject to consideration and agreement between Australia and PNG.

Jurisdiction	Total allocation (kg)	Allocation to PNG vessels (kg)	Allocation to AU vessels (kg)
Australian jurisdiction	544,850 (85%*)	136,212.5 (25%)#	408,637.5 (75%)
PNG jurisdiction	96,150 (15%*)	72,112.5 (75%)	24,037.5 (25%)#
Total	**641,000**	**208,325**	**432,675**

* Based on the agreed distribution of TRL stocks in the TSPZ TRL Fishery between Australian and PNG waters.

Under 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 of the Torres Strait Treaty, Parties can agree to transfer all or part of a given catch share to the other Party. For example, should Parties choose not to exercise their 25% catch share entitlement.

17. Over the last few seasons, a small number of Australian (2-3) and PNG operators have expressed an interest in seeking access to cross-endorsement catch allocations. 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.

18. AFMA will continue to work with stakeholders, including PZJA consultative forums, industry, various Australian Government agencies and the PNG National Fisheries Authority (NFA), regarding administrative processes and future access to cross-endorsement catch allocations. A key issue for consideration, particularly following the implementation of a quota management system under the Management Plan for the TRL Fishery, is how access to cross-endorsement allocations should be shared between Australian operators.

19. Following the this Working Group meeting, AFMA will seek final agreement on catch sharing arrangements, including cross endorsement, for the TRL Fishery for the 2018/19 fishing season. Further details on the process for seeking agreement on catch sharing arrangements this season is provided in **Attachment 3c**. A diagram showing the application of the formula under the Torres Strait Treaty to the RBC for last season (the 2017/18 fishing season) is provided at **Attachment 3d** for reference.

BACKGROUND

20. Since 2006 and in preparation for implementing a quota management system (which includes an enforceable TAC) a notional RBC has been advised by the TRLRAG and Working Group and has been used to agree catch sharing arrangements with PNG. Australia's catch share of the RBC became the notional TAC for the Australian TRL Fishery.

21. The RBC covers the Protected Zone (both Australia and PNG) and is currently calculated by applying the interim harvest strategy to the results of the stock assessment. The stock assessment takes into account the results of the 2018 mid-year and pre-season surveys, historical survey data as well as catch and effort information from the TIB and TVH sectors, TRL biological information and environmental information. The interim harvest strategy is based on the following reference points:

    a. target reference point of $B_{0.65}$. The RAG agreed to a target biomass reference point of 65 per cent of the unfished biomass (B_0) to be the proxy for B_{MEY}. The target biomass was set as the average biomass level over the past 20 years, this corresponded to an $F_{TARG} = 0.15 year^{-1}$; and

    b. limit reference point of $B_{0.4}$. The estimation of unfished biomass (B_0) has varied and the estimated target spawning biomass level (B_{TARG}) has also varied between 65 and 80 per cent of unfished biomass. The biomass limit reference point was set at half of the upper limit of the target reference point (80 per cent of unfished biomass) therefore $B_{LIM} = 0.4$.

22. A draft Harvest Strategy using an empirical harvest control rule (eHCR) has not been agreed by the PZJA and therefore does not currently apply. The process to finalise the draft Harvest Strategy will be considered under **Agenda Item 4**.

23. The Australian TAC is Australia's catch share of the RBC, as agreed with PNG. In July 2018, during the 2017/18 fishing season, the *Torres Strait Fisheries (Tropical Rock Lobster) Management Instrument 2018* (the Instrument) was made to enable the closure of the TRL Fishery by the CEO of AFMA in circumstances where commercial catch of TRL is likely to exceed the Australian TAC before the end of a fishing season. These amendments were made due to a low RBC and likelihood that catches would exceed the Australian catch share of the RBC that season.

24. In November 2018, the Instrument was amended to implement separate TAC shares for the TIB and TVH sectors for the 2018/19 fishing season, specifically:

    a. a global (competitive) TAC for the TIB sector. The Instrument enables the closure of the TRL Fishery for the TIB sector by the CEO of AFMA in circumstances where commercial catch from this sector is likely to exceed the sector's TAC; and

    b. individual allocation of the TAC for the TVH sector (based on the 2007 preliminary allocation notices) via a licence condition for the 2018/19 season while a permanent allocation process is completed in line with the *Torres Strait Fisheries (Quotas for Tropical Rock Lobster (Kaiar)) Management Plan 2018* (the Management Plan). The licence condition requires each licence holder to cease fishing once they have exhausted their individual allocation.

25. Once the allocation process under the Management Plan has been finalised, the Australian TAC will be set under the Management Plan each fishing season.

Catch sharing under the Torres Strait Treaty

26. Catch sharing under the Treaty is done in two tiers as detailed in the below figure.

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).

Torres Strait Tropical Rock Lobster Resource Assessment Group Meeting 25

Meeting Record

11-12 December 2018

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

Contents

Meeting participants

Members

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

Name	Position	Declaration of interest
		Owner. Does not hold a TIB licence.
Daniel Takai+	Industry member	Pearl Island Seafoods, Tanala Seafoods, TIB licence holder and lessee of TSRA TVH licence in 2017/18 fishing season.
Brett Arlidge	Industry member	General Manager MG Kailis Pty Ltd. MG Kailis Pty Ltd is a holder of 5 TVH licences.

Observers

Name	Position	Declaration of interest
Joseph Posu	PNG National Fisheries Authority (NFA)	Nil.
Mark Tonks	Scientific observer	Project staff for AFMA funded TRL research projects
Jerry Stephen	TSRA Deputy Chair, TSRA Member for Ugar and TSRA Portfolio Member for Fisheries	TIB licence holder and Native Title holder.
Trent Butcher	Industry observer	TVH licence holder.
Suzannah Salam^	Industry observer	Torres Straits Seafood Pty Ltd, TIB licence holder and lessee of TSRA TVH licence in 2017/18 fishing season.
Nathan Binjuda	Industry observer	Traditional inhabitant crew on TVH operated vessel
Allison Runck	TSRA observer	Nil.
Medina David	TSRA observer	Nil.

Notes:

Departed the meeting at 3.30pm on Tuesday 11 December

* Arrived after morning tea ~ 11am on Tuesday 11 Dec and left again at 3.30pm to attend the Fisheries Stakeholder meeting with Assistant Minister Colbeck. Did not attend on Wednesday 12 December.

^ Attended the full day on Tuesday 11 December. Arrived at 9.40am on Wednesday 12 December.

+ Departed the meeting between 2-3pm on Tuesday 11 December

1 Preliminaries

1.1 Apologies

1. The meeting was opened in prayer at 9 am on Tuesday 11 December 2018.
2. The Chair welcomed attendees to the 25th meeting of the Torres Strait Tropical Rock Lobster Resource Assessment Group (TRLRAG 25). The Chair acknowledged the Traditional Owners of the land on which the meeting was held and paid respect to Elders past and present.
3. Attendees at the RAG are detailed in the meeting participant tables at the start of this meeting record.
4. Apologies were received from Mark David (Industry Member and Traditional Inhabitant Kulkalgal), Dr Ray Moore (Industry Member).

1.2 Adoption of agenda

5. The draft agenda was adopted (**Attachment B**).

1.3 Declaration of interests

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

1.4 Action items from previous meetings

7. The RAG noted the status of actions arising from previous TRLRAG, and where relevant, TRL Working Group (TRLWG) meetings (**Attachment C**).
8. The RAG noted that the final meeting record for TRLRAG 24 held on 18-19 October 2018 was finalised out of session.

1.5 Out-of-session correspondence

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

2 Updates from members

2.1 Industry and scientific

10. The RAG noted updates provided by industry and scientific members, and observers on the performance of the TRL Fishery during 2017/18 and at the very start of the 2018/19 season (only two weeks in) and raised the following:
    a) A Transferable Vessel Holder (TVH) industry member advised that since the start of the 2018/19 season prices have been good due to the low supply of lobsters in the previous season. The start of the 2019 season was so far showing lots of small size lobsters, and not a lot of larger lobsters. Similar results are also being seen with smaller tails from Papua New Guinea (PNG).
    b) Local catch rates (around Thursday Island) are down, however anecdotal reports indicate that Warrior Reef and the central islands are doing well.

c) A Traditional Inhabitant member advised that during the first week of the season, free divers were surprised by the abundance of 0+ and 1+ lobsters in the east which are not normally observed in Kemer Kemer Meriam waters.

d) Other TI members advised that more 1+ lobsters are being observed around home reefs in the western and top western islands, compared to last season where fishers were working further afield. It is usually around 1 January when the larger lobsters come back in to the fishing grounds.

e) A TVH industry observer also reported lots of small lobsters are around. He added that although the lobster stocks is looking strong, warmer water temperatures are having an impact on captured lobsters in cages.

f) An industry buyer advised that the ratio of 1+ lobsters, to larger sizes (2+) is about 60/40 with lots of positive reports from fishers that the lobsters are around. Prices are looking good with no oversupply, and it is expected to remain that way until February when hookah diving commences. Due to an earlier than usual Chinese New Year, the hookah divers will miss out on the higher Chinese New Year prices.

g) Another TVH industry member also advised that frozen whole lobsters will often get a better return for fishers than tails, however the frozen whole market is limited and has been flooded before. Currently there is not a huge demand for whole frozen lobsters unlike 4-5 years ago, however prices are slightly higher. An industry buyer added that the market prefers smaller whole frozen lobsters. It was also noted that there is currently no field on the TRL daily fishing logs to record whole frozen lobsters.

11. The RAG noted that no additional scientific updates were required as all relevant topics were to be covered under other agenda items.

2.2 Government

12. The RAG noted an update provided by the AFMA member regarding management initiatives relevant to the TRL Fishery:

TRL Management Plan and Sectoral Split

a) 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).

b) The Management Plan and amendments to the Instrument came into force for the 2018/19 fishing season starting on 1 December 2018.

c) Unless delayed by legal appeals, a quota management system will be fully operational in the 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.

d) During 2018/19, separate total allowable catch (TAC) shares will be implemented on an interim basis; 66.17 per cent under an Olympic TAC for the TIB sector and 33.83 per cent share under provisional quota allocations for the TVH sector.

Interim and final TACs

e) 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 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.

f) AFMA will be working closely with PNG NFA over the coming months to finalise negotiations on how the Recommended Biological Catch (RBC) is shared between Australia and PNG in line with obligations under the *Torres Strait Treaty*.

Moon-tide Hookah Closures

g) The PZJA also 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 tide levels.

h) AFMA will be looking to review the current input controls in the TRL fishery to better understand if they are still required as management tools in the fishery once it is fully transitioned to a quota management system.

13. The RAG discussed:

a) Whether tidal flows and currents have been considered when calculating moon-tide closures as current flow rates (as distinct from tidal height differences) have a significant impact on the ability to dive for TRL. Noting the variability in tides across the Torres Strait region, the AFMA member advised that the moon-tide hookah closures are calculated using the Bureau of Meteorology tide charts from Thursday Island. The RAG advised that the Thursday Island charts should be continued to be used.

b) An industry member advised that the TIB sector will continue to advocate for moon-tide hookah closures to remain in place and agreed that strong currents are an important factor influencing TIB fishing effort.

c) In considering the RAGs advice to the TRL Working Group about who will discuss any changes to input controls, a scientific member advised that any changes to input controls will have an impact on Catch per Unit Effort (CPUE) index used in both the assessment and empirical harvest control rule (eHCR). If moon-tide hookah closures, or other input controls, are removed the RAG will need to consider the impacts on CPUE and how these impacts will be adjusted for in future analyses. If the closures are to change, it was suggested that a staggered or transitional approach would be beneficial to try and understand any potential impacts on fishery trends over time.

d) The CSIRO scientific member agreed and advised caution when considering any management arrangements that will impact abundance indices in the fishery noting that fishery data trends will also be impacted by the wholesale change to a quota system. Economic implications should also be considered for the fishery, as well as those for the data and stock assessment.

14. **The RAG agreed that the potential removal of any input controls should be addressed with caution. Given the immediate changes that will apply as the fishery moves to a quota management system, the RAG recommended that all current input controls remain in place for the 2018/19 season before a review (or change) of input controls takes place.**

15. The RAG also discussed:

a) A concern raised regarding the carriage of hookah apparatus on board during a hookah closure. Some industry members queried if at the end of a moon-tide hookah closure, where an operator still has capacity to fish the remainder of their quota using free dive only, if they must still return to port to unload their hookah gear. Some industry members feel this creates an economic disadvantage for their operations. The AFMA member advised that the AFMA compliance team are looking at ways to effectively enforce this rule without being completely unpractical and economically disadvantageous for operators. They stressed that at under present rules, the requirement is for hookah apparatus to be removed during moon-tide hookah closures if an operator is to continue fishing;

b) Concerns with how catches will be tracked against the quota system during 2018/19 if the catch reporting system is not implemented in real time. The AFMA member advised that the primary responsibility lies with TVH operators to keep track of and report what they have caught against the allowable weight provided as a condition on each licence. AFMA will use Catch Disposal Records (CDRs) to verify catches against each TVH operator's allocation. This will be a manual process initially. It is expected that the fishery will move to the Commonwealth system known as GoFish which allows operators to log in online and view their quota balance for the season.

16. The AFMA member also advised that AFMA (through the Australian Institute of Marine Science – AIMS) is monitoring increased water temperatures and the potential impact on TRL stocks. Industry operators were advised to consider their stocking densities of TRL in cages as a precaution during periods of warmer water temperatures. Overstocking may lead to unacceptable quality or mortality rates in conditions during periods of raised water temperatures.
17. The RAG noted an update provided by the QDAF member regarding the East Coast TRL fishery:
    a) QDAF have held a series of TRL Fishery Working Group meetings since the last RAG to progress the development of a TRL Harvest Strategy.
    b) A similar logbook issue was raised in Queensland with regards to whole frozen lobster. QDAF are looking to address this with the rollout of electronic logbooks next year as the data is not being effectively captured on paper logs.
18. The RAG discussed the following key points:
    a) The RAG data subcommittee should learn more about the QDAF e-logs program, to ensure Torres Strait and Queensland TRL datasets remain compatible.
    b) Electronic logbook reporting is being rolled out in the Commonwealth, however changes need to be made to *Torres Strait Fisheries Act 1984* (the Act) before it can be considered in the Torres Strait TRL fishery.
    c) Concerns around data confidentiality in the Fish Receiver System (FRS) when reporting on areas fished. The AFMA member advised that the *Torres Strait Fisheries Act (1984)* currently constrains how spatial data can be collected and so the provision of such data is only voluntary on CDRs. These constraints are also being addressed through legislative amendments to the Act. Any legislative amendments (including mandatory TIB logbook reporting or electronic logs) will take a number of years to achieve as the amendment process is lengthy.
19. The RAG agreed that although legislative changes are a lengthy process, the RAG data subcommittee should start considering the data needs of the fishery moving forward.
20. The RAG noted an update provided by the TSRA member regarding TSRA activities relevant to the management of the TRL Fishery:
    a) New Traditional Inhabitant members were elected at the 2018 Fisheries Summit, with three new members joining the TRL RAG, and three members outgoing.
    b) The TSRA member thanked the outgoing Traditional Inhabitant Members Mr Terrence Whap, Mr Mark David and Mr Phil Ketchell for their contributions to the RAG over the past three years.
    c) The TSRA will be holding an induction program for all incoming and ongoing PZJA forum members in early 2019.

Action

The TRL RAG Chair to provide the TSRA with a copy of expected behaviours of RAG members to assist with the induction program for incoming PZJA forum members.

21. The RAG also noted and discussed the following:

    a) The TSRA is progressing the development of an independent entity that will hold fisheries assets on behalf of traditional inhabitants. The TSRA member advised that a shortlist of model options will be considered.

    b) Based on extensive community consultation advice, the TSRA will not be considering the leasing of any further TVH licences leasing during 2019. The TSRA member advised that the lease arrangements for the 2017/18 season were made before advice was received of a low RBC. Industry expressed the belief that fishing effort had increased through the TSRA's leasing of licences, however the licences were leased by TIB operators already active in the fishery.

2.3 PNG NFA

22. The RAG noted an update from the PNG NFA member regarding management of the PNG TRL Fishery:

    a) The PNG fishery remains closed to hookah diving and is scheduled to re-open in April 2019. The fishery was closed with resistance from the artisanal sector.

    b) Management are looking to implement other appropriate management measures as the early fishery closure was not anticipated.

    c) PNG is hoping for a higher RBC in 2019 to meet market demand.

23. In response to a question from CSIRO about the size of lobsters observed in the fishery, the PNG NFA member advised that this is a key area the NFA is trying to address through the collection of length frequency data. Both CSIRO and the PNG NFA member agreed to continue discussions on data PNG may be able to provide to feed into the current TRL stock assessment.

2.4 Native Title

24. No updated was provided as a Malu Lamar representative was not in attendance.

3 Preliminary Results of the November 2018 Pre-Season Survey

25. The RAG considered a presentation provided by Dr Mark Tonks, CSIRO Scientific observer detailing the preliminary results of the November 2018 pre-season survey:

    a) Dive surveys were conducted between 11-22 November 2018 aboard the *"Wild Blue"* and CSIRO dive tender. The surveys were undertaken by four divers, Mark Tonks, Nicole Murphy, Kinam Salee and Steve Edgar with the experience of 23 TRL surveys combined.

    b) Dive surveys were conducted at 82 sites consisting of 77 repeat pre-season sites and 5 additional sites in the northwest. Photo transects were also completed at 7 sites to monitor coral bleaching.

    c) The pre-season TRL surveys provide indices of abundance for recruiting age lobsters (age 1+) and recently-settled lobsters (age 0+), abundance indices by stratum (region) and length-frequency and sex ratios. Most older lobsters (age 2+) have migrated and those that remain are mostly male.

1+ pre-season index

    d) The 2018 1+ pre-season index is above average and approximately 3 times the 2017 survey index. The pre-season 1+ counts per site indicated good recruitment throughout the fishery, but higher counts along the western side. This differs from the 2017 pre-season site counts, which were higher in the south-east and low in most other regions.

e) The survey also indicated good recruitment across all strata particularly in the northwest region (Mabuiag and Buru). Buru had a high standard error due to high count variability between sites. In 2018, Mabuiag and Buru recorded their highest indices over the last 9 surveys.

0+ pre-season index

f) Although less well estimated, the 2018 0+ index was three times the 2017 0+ index however this was not significantly different from the 2006, 2007, 2015 and 2016 indices.

g) 0+ age counts were indicative of typical settlement mostly on the western side of the survey area. 2018 0+ counts were not dissimilar to 2016, but there was fewer 0+ in the south west, and more in the north west. All 2018 0+ counts were significantly better than in 2017.

h) Abundance indices by stratum showed Mabuiag significantly higher than the other stratum. The 2018 0+ indices showed similar regional recruitment trends compared to previous surveys.

2018 pre-season size and sex ratio

i) The modal size of age 1+ has increased compared to recent years.

j) 2018 length frequency trends were similar to 2005 and the sampled sex ratio was almost 1:1, which is as expected.

26. The RAG discussed:

a) The key stratum in the survey are not mapped or selected based specifically on where commercial catches are made. They stem from the original benchmark survey that collected habitat data across the Torres Strait. Survey sites were then randomly selected from areas of habitat known to support lobster populations. The RAG also noted that the strata used in the survey, differ from those collected through the TRL04 logbook and TDB02 CDR. The CSIRO scientific member advised that these strata can be better cross-mapped as improvements are made to the collection of spatial data (lats and longs) through logbooks and CDRs.

b) The Chair noted an issue with the presentation of industry-provided length frequency data analysis which indicated a consistent peak over the years at a certain length. The RAG considered that this was likely due to how a conversion factor is applied to catch weight data to convert it to length.

Action

CSIRO to investigate the reasons for the consistent peak in the length frequency distribution and determine if it is related to conversion factors from the catch weight data provided by MG Kailis.

c) An industry observer expressed concern as to why there are more dive sites around Warrior Reef compared to others where greater lobster production is observed. The CSIRO scientific member reiterated that the original benchmark survey contained hundreds of sites. Following this, the first pre-season survey had 140 sites which were selected from the original benchmark survey. The sites have since been reduced to just 77 but ensuring they remain representative. Other sites were removed due to logistical constraints. For example, some deep sites were removed due to more stringent CSIRO diving requirements. In reducing the number of sites in the survey, some trade-offs around precision were considered by the RAG.

d) The CSIRO Scientific member advised that the survey has been scaled down over recent years in order to reduce costs however this was done with consideration of the potential loss of precision. The original sites were based on habitat, and were reduced in a way to ensure the survey would still give a reliable estimate of recruiting biomass.

27. The RAG was asked to consider whether to include the additional 5 sites from the 2018 surveys in the calculation of the abundance indices:

    a) The RAG noted that the additional 5 sites were added to the 2018 surveys to answer specific questions around the distribution of the stock in that particular year. Such ad-hoc modifications, if they are ongoing, may undermine the representativeness of surveys over time.

    b) The independent scientific member noted that should the re-inclusion of sites (back to 140) be proposed, this must be undertaken the same way they were removed, in a statistical and planned method. With no additional resources available to increase the number of survey sites, continuity in the data into the future must be considered.

Action

CSIRO to calculate the cost of increasing the number of pre-season survey sites from the current 77 sites back to 140 for RAG industry members to consider.

    c) **The RAG agreed that the additional 5 sites from the 2018 surveys should not be included in the calculation of the survey indices.**

28. The RAG noted that analyses pertaining to the catch and effort data from the 2017/18 season, including the standardised CPUE indices, were presented at TRLRAG 24 held on 18-19 October 2018. No further analysis has been undertaken since that time.

4 Stock Assessment Update and RBC

29. The RAG considered a presentation provided by Dr Eva Plaganyi, CSIRO Scientific member detailing the preliminary results of the 2018 stock assessment update:

    a) Summary of life cycle and assessment – The pre-season survey provides a rough indication of how many 0+ lobsters have settled in the region. It also provides a good estimate of how many 1+ recruits will be available to be fished in the coming season (next year). The 2+ lobsters are fished before females migrate out of the Torres Strait to breed between August and September each year. The fishery-dependent CPUE data provides an index of 2+ abundance.

    b) Assessment basics – The number of 0+ settled lobsters is compared with the spawning biomass to inform the stock recruitment relationship. This relationship is highly variable but a low spawning biomass has a higher probability of poor recruitment. The pre-season survey is then used to estimate how many lobsters will be available to be caught in the coming season. The stock assessment model calculates how many of these lobsters can be caught while ensuring the spawning biomass is kept close to the target level (0.65_{SB}). The model applies a fixed target proportion of 0.15 unless the spawning biomass is lower than the reference point.

    c) Summary of model – the stock assessment uses an Age Structured Production Model (ASPM) which corresponds to a Statistical Catch-at-Age Analysis (SCAA) as the data fitted includes catch-at-age information. This is a widely used approach for providing TAC advice. The output of the assessment is a Recommended Biological Catch (RBC) with confidence intervals each year. It is an integrated assessment that takes into account all available sources of information. This includes:

        i. Pre-season survey data (9 years with a gap in the time series);

        ii. Mid-year survey data 1989-2014; 2018;

        iii. Catch statistics from all sectors in the Torres Strait;

iv. Length frequency data (Australia and PNG);

v. CPUE data from TVH sector;

vi. CPUE data from TIB sector; and,

vii. Historical information.

30. The PNG NFA member noted that some PNG catches from recent months are still outstanding and that there had not been any trawling effort in the Gulf of Papua in the past season. Noting that the PNG season does not normally close until 1 December, the RAG agreed that the timelines for assessment need to be considered if data concerning catches from the PNG sector are delayed.

Action

Considering assessment timelines, PNG NFA to provide CSIRO with a best estimate of PNG catches by mid-November. CSIRO to liaise closely with PNG regarding reporting timeframes and provision of catch data. In parallel, the RAG data sub-group to examine ways to adjust the stock assessment model to account for delayed catch data from PNG.

d) TVH CPUE – the model incorporates six different standardised CPUE series. There is little difference between these series. The RAG requested the data sub-group have further discussions as to the best series to use. The reference case CPUE series currently used in the assessment is 'Int-1'.

Action

That the TRL RAG data subcommittee discuss which TVH CPUE series are the best to use within the model.

e) TIB CPUE – 4 different standardised CPUE series are used for the TIB sector. The RAG agreed to use the 'Seller' series as the reference case as the remaining three standardisations are impacted by the issue of area caught vs area landed. This issue is to be discussed further by the RAG data sub-group.

f) Model 'Reference Case' Specifications

i. Fixed steepness h=0.7

ii. Fixed hyperstability parameters for each CPUE series (TVH 0.75; TIB 0.5)

iii. Mid-year survey index – after applying mixture model to separate age classes

iv. Pre-season survey index – use as Reference MYO (mid-year only) series and same series as in November 2017 without the additional 5 sites added

v. CPUE TVH – Int-1 standardised series (and Int-3)

vi. CPUE TIB – Seller standardised series

g) Key sensitivities –

i. fix steepness h=0.6 and try to estimate h

ii. fix CPUE hyperstability parameters (TVH 1; CPUE TIB 1); try to estimate hyperstability parameters

iii. pre-season survey index – use the additional 5 sites added; test other series particularly excluding Buru which provides a lower standard error for 1+ index; downweight pre-season 0+ (2017)

iv. CPUE TVH – Int-3 standardised series; nominal

v. CPUE TIB – Seller&A standardised series; nominal

31. The RAG noted that each CPUE series has an associated variance to which the model weights each accordingly. The 1+ index is the most reliable indicator of biomass and the key input to the model with the greatest weight, however the model considers all corroborating information.

32. In the current assessment update, a significant data conflict exists between the November 2017 0+ index (which was very low relative to historical) and the 2018 1+ index (which was closer to average). Given the good confidence in the survey observations of 1+ lobsters, CSIRO explored the impacts of the anomalous 2017 0+ index on the model. The stock assessment model is sensitive to the inclusion or exclusion (or down-weighting) of the 2017 0+ index. To inform the discussion on how the anomalous 0+ index should be treated, CSIRO presented some alternative hypotheses to explain the data conflict (**Attachment D**, Table 1).

33. The RAG agreed that Hypotheses 4 was the most plausible explanation. It is known that lobster settlement changes from year to year however if it were to change radically, this is unlikely to be detected in the survey. The 0+ counts will always be more uncertain than the 1+ counts, given the cryptic nature of 0+ lobsters; even if there is a variable distribution of 1+ lobsters, the survey can still capture this, however if for example, all 0+ settled up in the north west or somewhere outside the survey sites this may not be captured in the fishery-wide survey counts.

34. Previously, the RAG has agreed that the 0+ index contains valuable information and is a key input in to stock assessment. With the exception of 2017, the 0+ index has generally been consistent with the following year's 1+ index. The independent scientific member agreed that anecdotal industry reports reaffirm that perhaps the survey did not accurately capture the 0+ lobster counts due a change in distribution or some other factors. Industry observers provided anecdotal reports of significant numbers 0+ lobsters observed in the fishery last season. The CSIRO scientific member agreed that, given the sound evidence of a reasonable 2018 1+ index, there must have been 2017 0+ lobsters in the fishery that were not evident in the survey index.

35. When examining the model versus observed pre-season index, there is a conflict between the 2017 0+ and 2018 1+ indices. To demonstrate the impact this conflict can have on the assessment, CSIRO undertook a comparison of the stock assessment model fit to the pre-season survey index when; (A) fitting to the 2017 0+ index, versus (B) excluding the 2017 0+ index. Under scenario (A), the model fits to the lower end of the confidence intervals and greatly overestimates the 0+ index relative to the observed. Under scenario (B), the model allows the 0+ index in 2017 to be freely estimated which produces a much higher predication as needed to improve the fit to the higher 1+ numbers observed in 2018 (**Attachment E**, Figure 1).

36. Similarly, when comparing the mid-year survey index of abundance (**Attachment E**, Figure 2) and the model versus observed survey catch-at-age proportions (**Attachment E**, Figure 3) the assessment achieves a much better fit when the 2017 0+ is excluded.

37. <u>Results of the Reference Case</u>

    a) The reference case model fits well to both previous benchmark surveys, and the 1+ and 2+ relative abundances from mid-year surveys.

    b) Stock recruitment residuals are average, however the results are higher when the 2017 0+ is down-weighted.

    c) Spawning biomass has declined in recent years but the RBC for the 2018/19 season will enable the spawning stock biomass to increase back towards the target.

    d) Fishing mortality estimates also indicate that the spawning stock biomass was low and supports the 2018 decision to limit catches.

    e) Hyperstability parameters are fixed within the reference case model. The TIB CPUE series has a far more hyperstable index than the TVH CPUE series. This is largely due to the TVH fleet being more mobile and therefore more efficient at maintaining higher catch rates. When estimating the hyperstability parameters the model CPUE index is lower than the model observed.

38. In considering how to treat the anomalous 2017 0+ index in the assessment, the RAG considered and discussed the following key points:

a) Given that the model fits the 0+ index reasonably well throughout the time series, except for 2017, it provides support to down-weight but not exclude the single 2017 0+ data point;

b) The mid-year survey validates down-weighting or excluding the 0+ index and supports the results of the 2018 pre-season survey;

c) The 2017 0+ index falls outside of the normal distribution which is statistically possible, although rare;

d) Caution should be exercised around selecting a down-weighting value on the 0+ index simply because it provides a more favourable 1+ index;

e) The 2017 0+ index is a result of the 2016 spawning stock biomass which experienced an anomalous year in terms of poor environmental conditions including high water temperatures. Oceanographic modelling will improve our understanding of such conditions on the abundance of the stock;

f) Excluding the 0+ index entirely would impact the eHCR as the harvest control rule incorporates the 0+ index. However, with a stock assessment scheduled every three years under the draft Harvest Strategy, continuing with one anomalous data point should not impact the overall function of the eHCR.

39. **There is evidence to suggest the 2017 0+ index may be anomalous. The RAG agreed that the 0+ series should be down-weighted appropriately rather than be excluded entirely. The down-weighting should be undertaken using an appropriate statistical methodology and not be applied arbitrarily. CSIRO undertook to complete this work prior to the next meeting.**

40. Recommended Biological Catch – although the RAG agreed on how to treat the 2017 0+ index, the CSRIO scientific member presented a range of RBC values depending on how the 2017 0+ index may be treated (e.g. excluded or down-weighted by doubling the variance).

    a) When the 2017 0+ index is included, the reference case model provides an RBC value of 533 tonnes.

    b) When the 2017 0+ variance is doubled as a means of down-weighting this point, the reference case model provides an RBC value of 637 tonnes.

41. **Given the RAG advice to apply a statistically calculated down-weighting to the 2017 0+ index, the RAG noted that the final RBC would likely lie somewhere between 533 and 637 tonnes. A final RBC value will not be available until the February 2019 TRL RAG meeting.**

42. The RAG also noted advice from the AFMA member that once a final RBC value is available, Australia and PNG will need to have discussions as to how the RBC is shared between the two countries under the *Torres Strait Treaty*. The initial split is 85 per cent to Australia, and 15 per cent to PNG, based on the agreed distribution of the stock. Each country then has a right to access 25% of the other country's share in that country's waters through cross-endorsement. Discussions on this arrangement are scheduled to commence in January 2019.

43. Environmental Correlates – Although not formally included in the current reference case model, the RAG considered some preliminary results on how environmental correlates may impact the stock assessment:

    a) The predictions are for temperature increases under the current emission scenario for Australia. Although not expected for several decades, once temperatures in Torres Strait consistently exceed 30 degrees Celsius, the impacts on the TRL fishy may be significant. Most marine animals including TRL have thermal tolerances with optimal conditions,

however once conditions are above the thermal tolerance, negative impacts on the population increase markedly.

b) The climate-linked model indicates that spawning biomass is trending downwards more significantly than the non-climate linked model which also changes the historic depletion statistics.

c) Under the climate-linked model, some additional growth variability can be explained. When understanding historical trends, some can be explained by sea surface temperatures (SST).

44. The RAG acknowledged that under a climate-linked model, if a significant impact is detected, this can have implications for reference points and how that impacts the stock assessments that underpin the Harvest Strategy and eHCR. Other reference points such as fished versus unfished biomass may need to be considered in future.

45. **Noting that understanding climate effects is a high research priority for the TRL fishery, the RAG agreed that further consideration of the impacts of SST on the fishery is important and that CSIRO should continue to explore this.**

5 Revision of Draft Harvest Strategy and Control Rules

Empirical Harvest Control Rule (eHCR)

46. The RAG considered a presentation provided by Dr Eva Plaganyi, CSIRO Scientific member detailing the results of testing of alternative empirical harvest control rules for the Torres Strait TRL fishery.

47. At the last RAG meeting held on 18-19 October 2018, members recommended that in light of the 2017/18 season, the number of years to be averaged in the eHCR index and decision rule triggers be revisited at the next meeting of the RAG prior to finalising the Harvest Strategy. The eHCR is designed to adjust the RBC relative to a recent average, based predominantly on the logarithm of the slopes of recent trends of four key indicators; the pre-season recruiting lobster (1+) weighted at 70%, with lower weighting accorded to trends in recently-settled lobster (0+) and CPUEs from the TIB and TVH fishing sectors (each 10%).

48. Key performance statistics also previously considered by the RAG included spawning biomass level, and levels relative to target reference levels, average annual catch (over 20 years), and average annual variability in catch as well as risk to the fishery and risk of closure of the fishery. Other eHCR candidates have previously been considered in terms of how well each rule performed with regard to the fishery objectives, however the RAG agreed the eHCR that performed the best also dampened inter-annual variability when applied based on trends from the past 5 years.

49. For comparative purposes, the CSIRO scientific member provided the results from re-testing the rule using the alternative 3-year slope average, as well as a 3-year slope average in combination with catch averaged over 3 years, rather than 5.

50. The RAG noted the following results of key statistics performance under each alternative eHCR (compared to the status quo) (**Attachment F**, Figure 4):

a) Under each eHCR, there is no risk to the spawning biomass falling below the limit reference point (Bsp<0.32K);

b) the risk of the spawning biomass falling below the precautionary limit reference point of 0.48K across each eHCR however the range of variance for both the 3-year alternative eHCR is considerably higher;

c) when considering average annual variability (AAV), the status quo 5-year eHCR performs best, with the lowest median AAV; and

d) when considering average catch, the median catch under the status quo 5-year eHCR is higher compared to the alternative 3-year candidates.

e) The use of a 3-year slope in combination with a 3-year catch average did not perform satisfactorily as biomass declines over time, however the alternative 3-year rule with 5-year average catch performed reasonably.

f) When comparing RBC outputs using available data in 2018, the 5-year slope eHCR yields an RBC of 500 tonnes, and the 3-year slope eHCR yields an RBC of 693 tonnes.

51. The RAG acknowledged that the key trade-off using an alternative 3-year eHCR results in much greater catch variability between years, i.e. the RBC may be much higher, or lower in any year. However, under the status quo 5-year eHCR, this variability is dampened to a greater extent.

52. **In consideration of the comparative results presented, the RAG agreed to not change the current eHCR and continue the use of the 5-year slope rule. Given this advice, the RAG also agreed that additional sensitivity analyses on the alternative eHCRs were no longer required.**

Harvest Strategy Decision Rules

53. The RAG considered the decision rule triggers under the draft Harvest Strategy. At the last RAG meeting, members discussed that given the experience during the 2017/18 season, the mid-year survey trigger may not align with the current expectations or management of the fishery.

54. The RAG noted the following key points:

a) If in any year the pre-season survey 1+ index is less than or equal to 1.25, a stock assessment is triggered;

b) If the eHCR limit reference point is triggered in the first year, a stock assessment update must be conducted in March;

c) If after the first year the stock is assessed below the biomass limit reference point, it is optional to conduct a mid-year survey noting that the pre-season survey must continue annually.

d) If the stock assessment determines the stock to be below the biomass limit reference point in two successive years, the TRL fishery will be closed to commercial fishing. Although unlikely, this circumstance could also result from other variables such as increased water temperatures, not just fishing mortality.

e) The current 1.25 trigger limit is based on historical lows in the 1+ index and although never breached, the 2017/18 1+ index was the lowest it had been within the series.

55. The CPUE index is a proxy measure for spawning biomass and so understanding trends in this index, particularly downward trends is important in planning management actions.

56. The CSIRO scientific member noted the importance of having pre-agreed actions in place if the trigger limit is breached which must also be considered with regard to resourcing availability for subsequent action. A more conservative trigger limit would provide an earlier indication that abundance may be in decline and to better understand what might be happening to the stock.

57. The RAG discussed that industry's reaction to the low RBC in the 2017/18 season and management changes to control catch that season, may suggest a more precautionary trigger is required. In light of this, the RAG considered two options for setting a higher trigger limit: 1) a biological trigger limit related to a biomass index; or 2) a TAC-based trigger limit. The RAG noted that using a TAC-based trigger limit may trigger a stock assessment more frequently which can have cost implications. It would also be affected by mechanisms (averaging) that dampened TAC changes, thereby masking underlying changes in biomass. The RAG also discussed concerns about modifying the trigger simply to satisfy economic objectives.

58. It was noted however, that with the determination of the TRL Management Plan the concerns expressed by industry the previous season under a low RBC would be less of an issue now that sectoral catch shares are in place. These concerns may also be addressed once variability in TACs is dampened under the 5-year eHCR.

59. It was also noted that the trigger and the Harvest Strategy can always be reviewed if considered to not be working effectively.

60. **Noting the sectoral catch shares in the fishery which may now alleviate previous concerns relating to the availability of TRL in a low TAC scenario; and the need to monitor the stock spawning biomass to inform RBCs, the RAG agreed to maintain the 1.25 trigger limit as a biological indicator to trigger an extraordinary stock assessment rather than an economics based trigger (e.g. TAC-based limit).**

6 Other Business

61. In response to an action item arising from the RAG, the CSIRO scientific member presented the preliminary key findings of the National Environmental Science Program (NESP) project assessing the influence of the Fly River runoff in the Torres Strait region. The RAG noted the following key points:

    a) The area of the Fly River influence is largely limited to the northern Torres Strait

    b) Habitats located north of Masig Island, as far east as Bramble Cay and at least as far west as Boigu Island are located in higher potential risk areas of exposure to brackish and turbid waters and associated contaminants from or derived from the Fly River.

    c) The assessment of trace metals in sediment and water across the region identified relatively low concentrations overall, with comparatively higher concentrations in the norther Torres Strait, and around Saibai and Boigu Islands in particular.

    d) The environmental and public health implications of this influence are still not well understood. While the impacts on TRL in particular are assumed to be low, the bioaccumulation risk for species such as turtles and dugong is much higher.

    e) While this movement of water from the Fly River is a historic pattern, the estimated 40 per cent increase in sediment discharge associated with the operation of Ok Tedi mine is likely to have changed the characteristics of sediment and contaminant concentrations in this region.

    f) Under certain flow conditions, water can travel as far as the Torres Strait. Flow patters can be variable depending on currents and trade winds. Further, increased turbidity will still be seen in the Torres Strait during monsoon seasons due to the resuspension of sediments in the water column.

    g) It is unclear how the high concentrations of dissolved copper in benthic sediments around Saibai Island are impacting the area relative to deemed safe levels.

62. The RAG expressed a strong interest in further understanding the impacts on Torres Strait fisheries, particularly on larval production and survivability through testing tissue samples from TRL, mud crabs and sea cucumbers. A TVH industry member from MG Kailis offered to provide testing of frozen TRL tails for trace metal analysis.

Action

MG Kailis to submit tissue samples from frozen TRL tails for trace metal analysis to better understand the impacts of dissolved contaminants from the Fly River run off on important fisheries species in the Torres Strait.

63. While the results of the study are preliminary, the CSIRO scientific member agreed to circulate the full report to members when it becomes available.

Action
CSIRO to circulate the final report from the Fly River study to all RAG members once available.

7 Date and venue for next meeting

64. The next TRL RAG meeting is tentatively scheduled for the week beginning 4 February 2019, with exact dates to be confirmed out of session.

65. The Chair thanked Mr Terence Whap, Mr Mark David and Mr Phil Ketchell as all outgoing RAG members for their time and contributions to the RAG over the past three years. Their input to the fisheries management process was constructive and highly valued.

66. The meeting was closed in prayer at 10:50am on Wednesday 12 December 2018.

Declaration of interests

Dr Ian Knuckey – October 2018

Positions:

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

Current projects:

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

25th MEETING OF THE PZJA TORRES STRAIT TROPICAL ROCK LOBSTER RESOURCE ASSESSMENT GROUP (TRLRAG 25)

Tuesday 11 December 2018 (9:00 AM – 5:00 PM)

Wednesday 12 December 2018 (8:30 AM – 11:00 AM)

TSRA Boardroom

Level 1 Torres Strait Haus

46 Victoria Parade, Thursday Island

ADOPTED AGENDA

1 PRELIMINARIES

1.1 Welcome and apologies

The Chair will welcome members and observers to the 25th meeting of the RAG.

1.2 Adoption of agenda

The RAG will be invited to adopt the draft agenda.

1.3 Declaration of interests

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

1.4 Action items from previous meetings

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

1.5 Out-of-session correspondence

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

2 UPDATES FROM MEMBERS

2.1 Industry 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 RAG will be invited to note updates from AFMA, TSRA and QDAF on matters concerning the Torres Strait TRL Fishery. AFMA will provide a summary of management arrangements for the 2018/19 fishing season.

2.4 PNG National Fisheries Authority

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

2.5 Native Title

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

3 PRELIMINARY RESULTS OF THE NOVEMBER 2018 PRE-SEASON SURVEY

The RAG will be invited to consider the preliminary results of the November 2018 pre-season survey.

4 STOCK ASSESSMENT UPDATE AND RBC

The RAG will be invited to consider the preliminary results of the integrated stock assessment. Preliminary estimates of the 2019/20 RBC will be provided based on the integrated stock assessment. Preliminary estimates of the 2019/20 RBC will also be provided based on the current empirical harvest control rule (eHCR), but will for noting as the Harvest Strategy has not been agreed by the PZJA.

5 REVISION OF DRAFT HARVEST STRATEGY AND CONTROL RULES

At their last meeting, the RAG recommended that some of the conditions and decision rule triggers in the harvest strategy be revisited prior to finalising the Harvest Strategy. This included consideration of the number of years to be averaged across in the eHCR index.

6 OTHER BUSINESS

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

7 DATE AND VENUE FOR NEXT MEETING

The next RAG meeting is proposed for February 2019.

Action items from previous TRLRAG meetings

#	Action Item	Meeting	Responsible Agency/ies	Due Date	Status
1.	AFMA to review the effectiveness of certain TIB licensing arrangements (in its 2016 licencing review) including: • TIB licenses should share a common expiry date • licences to last for longer than the current 12 month period.	TRLRAG14 (25-26 August 2015)	AFMA	2017	**Ongoing** AFMA has begun undertaking a review of licensing of Torres Strait Fisheries, this issue will be considered as part of this review. At present however, AFMA resources are focused on progressing the proposed legislative amendments as a matter of priority. Further work on this item will be progressed in the 2019/20 financial year. • Administrative arrangements can be made to provide for licences held by the same person to expire on the same day. This change can be progressed when resources allow. • The *Torres Strait Fisheries Regulations 1985* currently provide for TIB and TVH licences to be issued for up to 5 years. Administrative arrangements can be progressed when resources allow.
2.	AFMA and CSIRO prepare a timeline of key events that have occurred in the Torres Strait Tropical Rock Lobster Fishery (e.g. licence buy backs, weather events and regulation changes) and provide a paper to TRLRAG.	TRLRAG14 (25-26 August 2015)	AFMA CSIRO	TRLRAG17 (31 March 2016)	**Ongoing** AFMA to complete further work. This has been difficult to action ahead of other priorities for the TRL Fishery.
3.	AFMA to liaise with Mr Pitt and Malu Lamar to provide agreed traditional names for the area around Erub.	TRLRAG23 (15 May 2018)	AFMA		**Ongoing** Further discussions needed to finalise this action. A map developed by the TSRA's Land and Sea Management Unit in consultation with PBCs, has recently been developed. A copy of this map has been provided to CSIRO and is provided at **Attachment 1.4c** for information.
4.	South Fly River studies to be provided for consideration at the next TRL and Finfish RAG meetings.	TRLRAG23 (15 May 2018)	AFMA	TRLRAG24 (18-19 October 2018)	**Ongoing**

#	Action Item	Meeting	Responsible Agency/ies	Due Date	Status
					A report detailing the findings of these studies is currently being finalised and will be provided once available, expected just prior to TRLRAG25.
5.	With regards to future TIB catch and effort analyses, CSIRO to explore the use of boat marks to improve location fished data extracted from the TDB02 CDR.	TRLRAG24 (18-19 October 2018)	CSIRO	2019	**Ongoing** To be examined when the next analyses are undertaken.
6.	Circulate copies of the Dao et al 2015 and Rothlisberg et al 1994 papers to the RAG for information.	TRLRAG24 (18-19 October 2018)	AFMA	TRLRAG25	**Completed** Papers provided at **Attachments 1.4d-e** for information.
7.	CSIRO to provide information on a recent review of the survey design to the RAG for information.	TRLRAG24 (18-19 October 2018)	CSIRO	TRLRAG25	**Ongoing** A review of the Torres Strait TRL Fishery survey design by the U.S. National Park Service is not yet finalised for distribution. A copy will be provided to the RAG once finalised. Provided at **Attachments 1.4f-i** for information are published peer-reviewed papers relating to the Torres Strait TRL Fishery survey design.
8.	RAG members to provide comments on the CSIRO TRL age class poster. CSIRO to include a better image of the 2+ lobster on the poster	TRLRAG24 (18-19 October 2018)	RAG CSIRO	2019	**Ongoing** Comments to be provided out-of-session and poster to be finalised in 2019.
9.	AFMA to prepare some explanatory material and a diagram explaining the start of season catch limit.	TRLRAG24 (18-19 October 2018)	AFMA	TRLRAG25	**Completed** Diagram provided at **Attachment 1.4j** developed and distributed to interested stakeholders. Further explanation was provided to all TRL Fishery licence holders prior to the start of the 2018/19 fishing season.

Table 1. Consideration of alternative hypotheses to explain the low 2017 0+ survey index compared with the 2018 1+ survey index. ***Source: TRLRAG25 Agenda paper 4a – Plagányi E et al. (2018) Preliminary summary regarding 2018 assessment of Torres Strait tropical lobster TRL stock. Summary Report for TRLRAG Dec 2018.***

	Alternative Hypotheses	Does it explain low 0+ in Nov 2017?	Does it explain 1+ size distrib^{n} in June 2018?	Notes and evidence	Plausibility
1	The 2017 0+ index was negatively biased due to observational error	No	no	There was some concern that as 2017 was the first year without a "gold standard" (GS) diver participating in the survey with considerable experience detecting the small 0+ age class, this may have biased the index negatively. However a statistical comparison of historical performance between GS and Other teams showed that whereas the GS teams generally found slightly more 0+, there was no significant difference between the results, and evidence of rapid learning. Even if the maximum likely bias is applied to the 0+ index, it does not increase it sufficiently to explain the 2018 1+ abundance.	low
2	The 2017 0+ index was low because of the timing of settlement	maybe	maybe	As lobsters spawn over a period of a few months, there is also approximately 3 months variability in terms of when they settle. In addition, the anomalous environmental conditions in 2016 (influencing the spawners producing the 2017 0+ cohort) could easily have influenced the timing of spawning and successful transport and settlement of pueruli. If settlement occurred earlier than usual, then this could explain relatively larger 1+ observed during 2018, but it means the 0+ would have been easier to observe during the 2017 survey. On the other hand, if settlement occurred later, then this explains the reduced numbers during the survey, but not the larger sizes of 1+ during 2018 (but it's possible that this was a result of a combination of timing of settlement and change in growth rate as below).	medium
3	Faster growth due to higher temperatures in 2017-2018 and/or reduced density dependence	no	yes	TRL growth is known to increase with increasing SST (Skewes et al. 1997) and there is evidence to suggest that the 2016 high temperatures had an influence on the stock, but there is less	high
4	The 2017 0+ index was low because the distribution of settling recruits changed substantially	yes	yes	The recent anomalous environmental conditions would have had an influence on local Torres Strait currents, as well as sand and habitat distribution and quality which could have influenced the spatial pattern of puerulus settlement. There is some evidence from the 2017 preseason survey 0+ spatial distribution data that the pattern differed to that observed in previous years e.g. lower than usual density in TI_Bridge stratum. The highest densities of 0+ were in the South-East and Mabuiag strata, so it's possible that relatively more settlement may have occurred to the north-west to the extent that the index wasn't as comparable as in previous years. Previous research (Skewes et al. 1997) showed that there are differences in growth rate	very high

Alternative Hypotheses	Does it explain low 0+ in Nov 2017?	Does it explain 1+ size distrib^{n} in June 2018?	Notes and evidence	Plausibility
			between the four zones (NW, SW, Central, SE), with lobsters being larger in the NW, and this may have contributed to the larger average size of this 1+ cohort (see Tonks et al. 2018).	

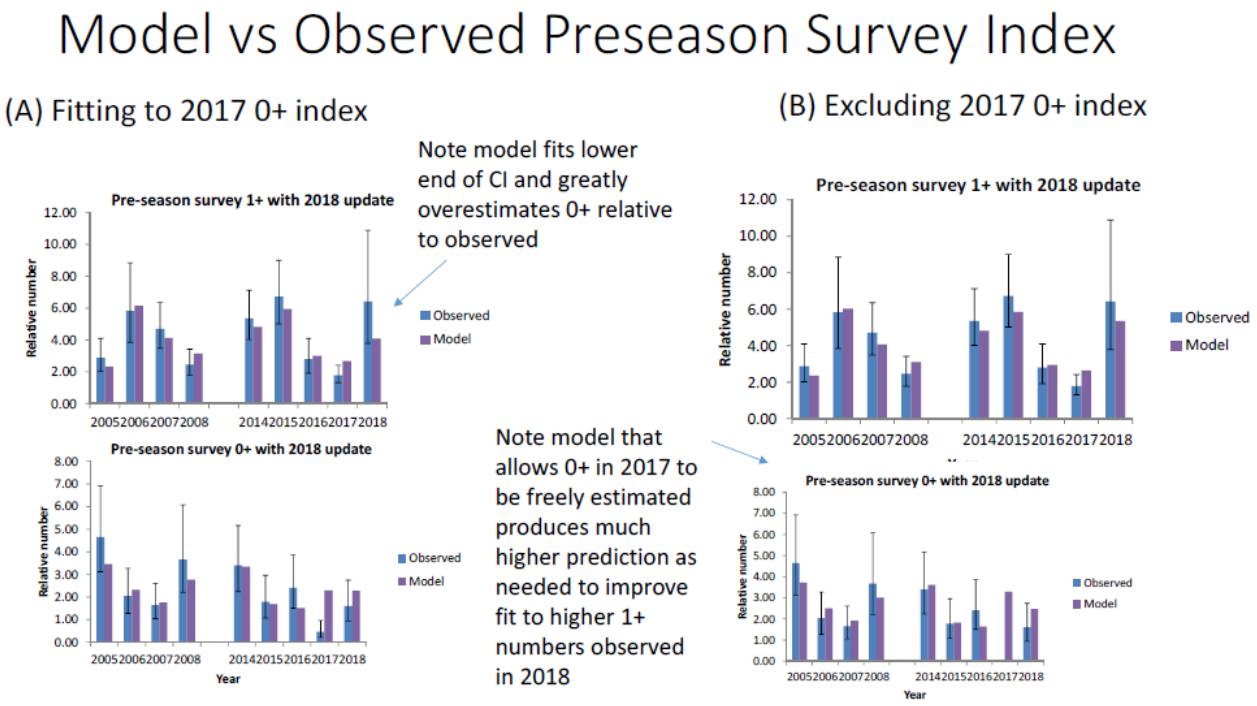

Figure 1. Comparison of stock assessment model fit to pre-season survey index when (A) including versus (B) excluding (for illustrative purposes) the 2017 0+ index.

Source: TRLRAG25 Agenda paper 4a – Plagányi E et al. (2018) Preliminary summary regarding 2018 assessment of Torres Strait tropical lobster TRL stock. Summary Report for TRLRAG Dec 2018.

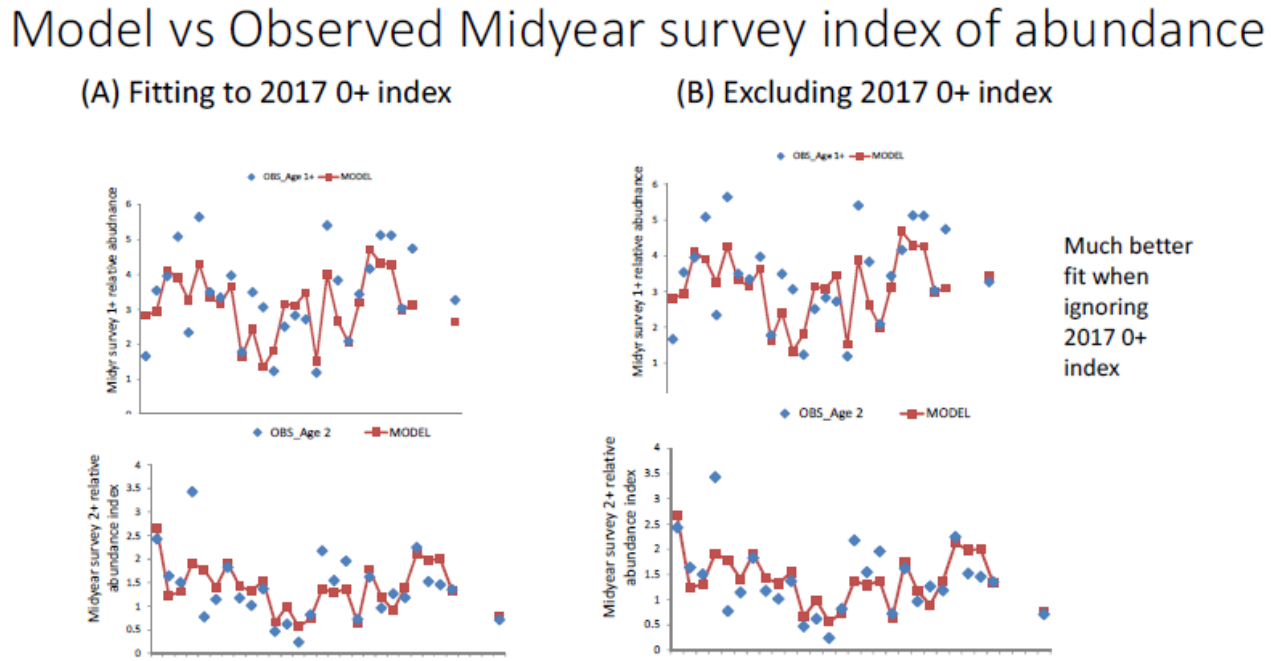

Figure 2. Comparison of stock assessment model fit to Midyear survey index when (A) included versus (B) excluding (for illustrative purposes) the 2017 0+ index.

Source: TRLRAG25 Agenda paper 4a – Plagányi E et al. (2018) Preliminary summary regarding 2018 assessment of Torres Strait tropical lobster TRL stock. Summary Report for TRLRAG Dec 2018.

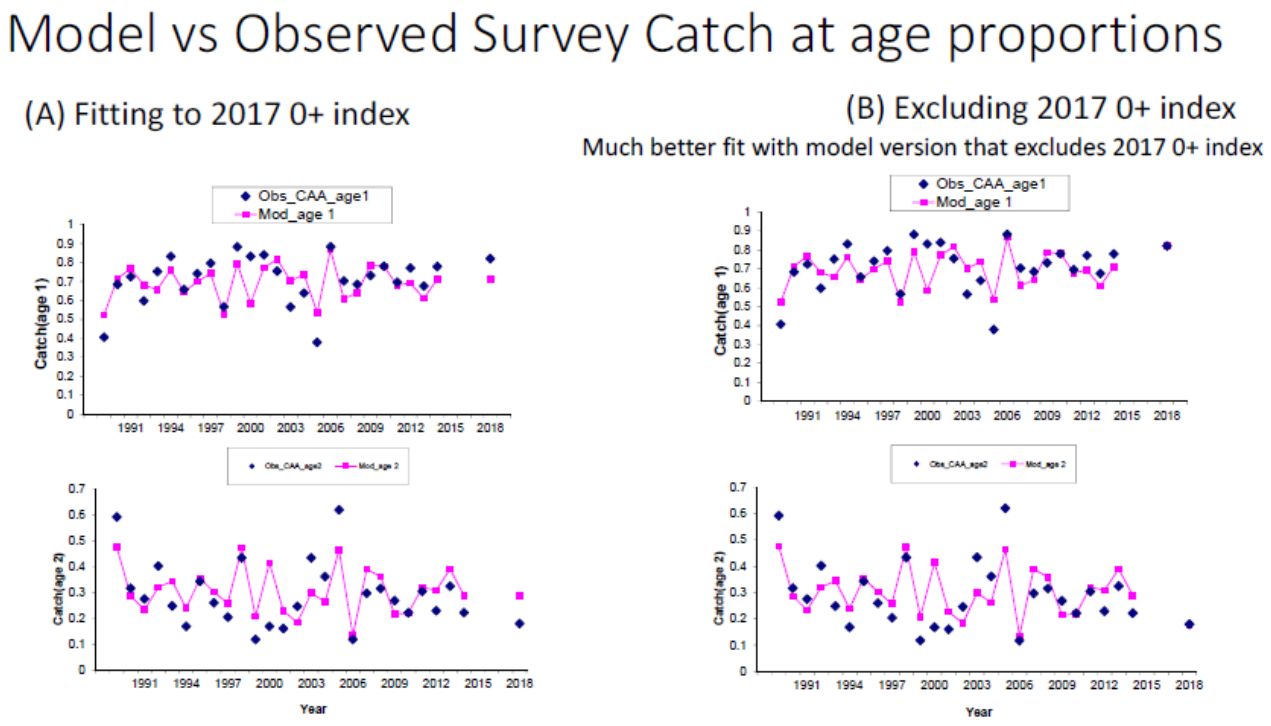

Figure 3. Comparison of stock assessment model fit to Survey Catch-at-Age information when (A) including versus (B) excluding (for illustrative purposes) the 2017 0+ index.

Source: TRLRAG25 Agenda paper 4a – Plagányi E et al. (2018) Preliminary summary regarding 2018 assessment of Torres Strait tropical lobster TRL stock. Summary Report for TRLRAG Dec 2018.

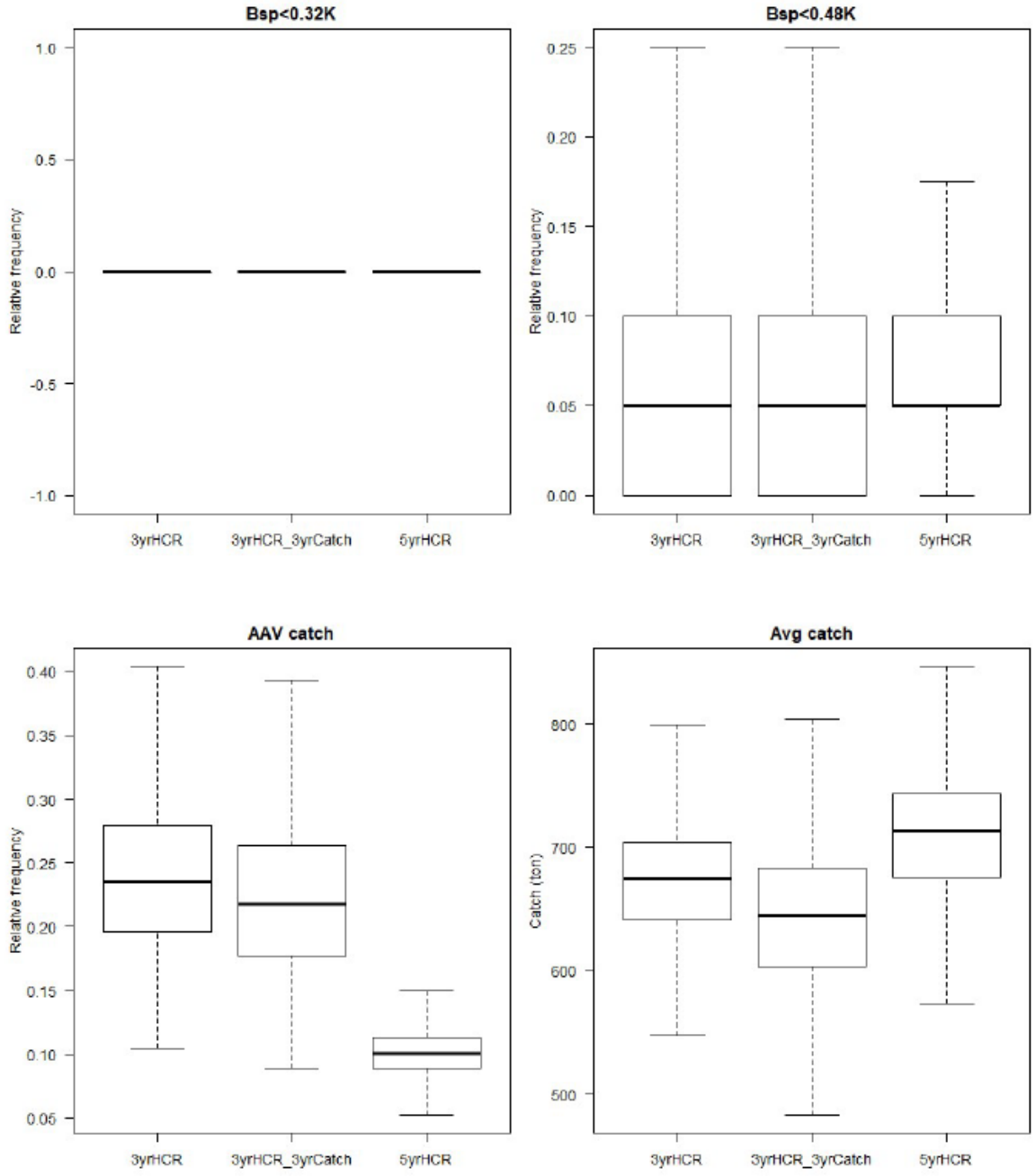

Figure 4. Comparison of some key performance statistics for final set of eHCRs. Plots show probability of depletion below each of two reference levels, B_{LIM} = 0.32K and precautionary level 0.48K limit reference point, together the Average Annual Variability (AAC) of catch, and ottal annual catch (t). The central lines shows the median, the box the 75th and 25th percentiles and the whiskers represent the full range of porojected values exlcluding outliers.

Source: TRLRAG25 Agenda paper 5c – Plagányi E et al. (2018) Testing an alternative empirical harvest control rule for the Torres Strait Panulirus ornatus tropical rock lobster fishery.

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Torres Strait rock lobster (TRL) 2018 stock assessment

AFMA Project 2016/0822

Éva Plagányi, Rob Campbell, Mark Tonks, Judy Upston, Roy Deng, Nicole Murphy, Kinam Salee, Steve Edgar

February 2019

Australian Fisheries Management Authority

DRAFT REPORT FOR TRLRAG, FEBRUARY 2019

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Acknowledgments

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Non-technical summary

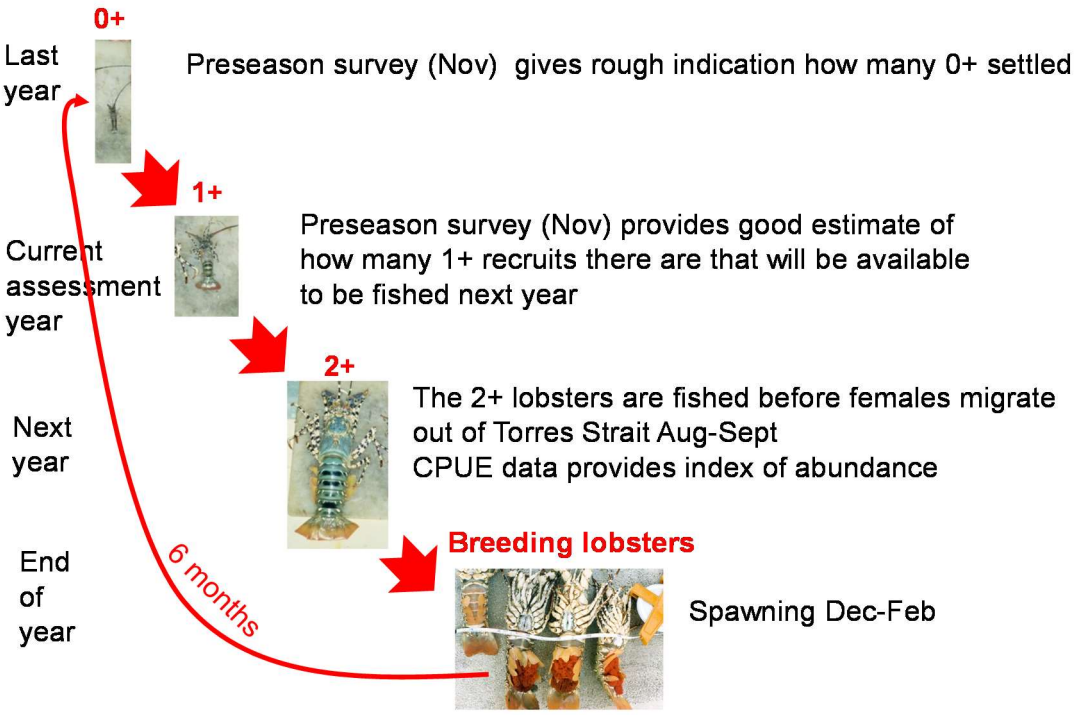
The TRL integrated stock assessment model was again used to inform an RBC for the 2019 fishing season. The TRLRAG agreed that if the fishery transitions to using an empirical Harvest Control Rule (eHCR) (see Plaganyi et al. 2018) to inform the Recommended Biological Catch (RBC), then the stock assessment would only need to be conducted every three years. However until such time as this is formally adopted, the stock assessment model is being used to inform the RBC.

The full details of the stock assessment model are provided in this report. A schematic summary of the model and inputs used to inform on trends in the abundance of the different age classes is given at the end of this summary. The data updates include the latest (Nov 2018) pre-season survey results, the catch total for 2018, and revisions and updates to the commercial CPUE (TVH & TIB) data series. The Reference case model presented here is fitted to the TVH CPUE Main Effects Int1 option and the standardised Seller CPUE TIB series.

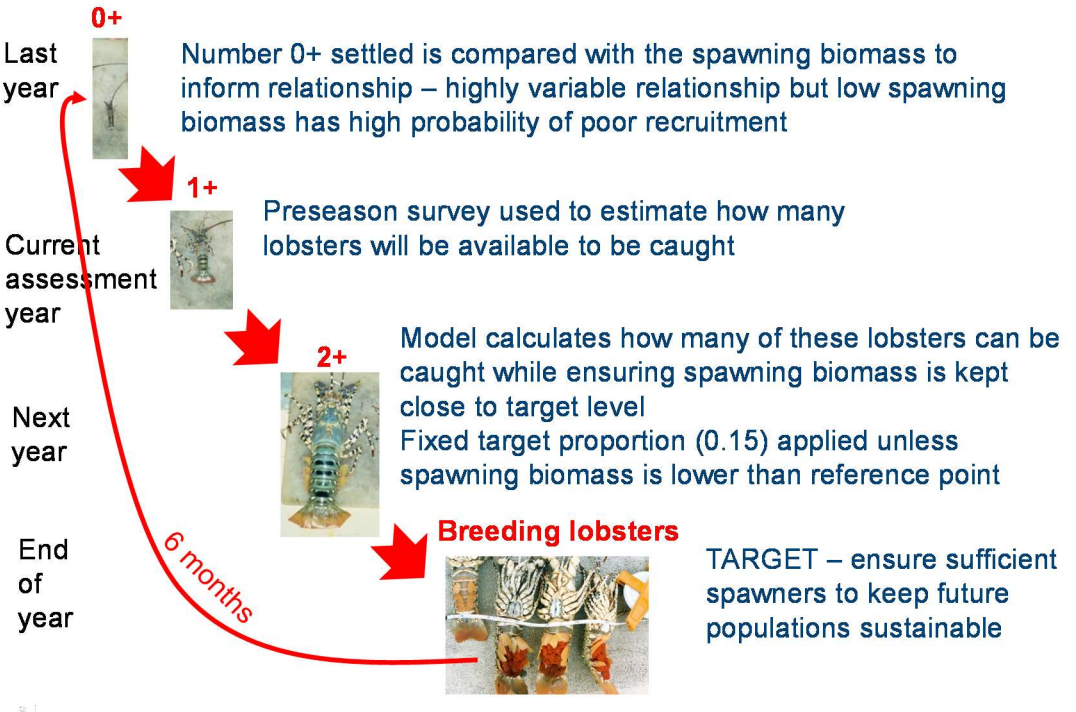
The model predictions for the 2019 fishing season are considerably more optimistic than was the case for the 2018 fishing season because the 2018 preseason survey 1+ index, was slightly above the average level. At the December 2018 meeting it was noted that there was a conflict among the input abundance data in the model, the 2017 0+ survey observation which was notably less than the average and the corresponding 2018 1+ index (i.e. the numbers of 0+ animals that survived the year), and that the survey was not fitting the 1+ index satisfactorily. Whilst we cannot rule out variation in 2017 0+ pre-season survey observations due to fewer sample sites in recent years (77 c.f. > 150 historically), comparable 0+ counts for 2014 and 2015 (yet fewer sites surveyed in 2015) suggest that other processes are also contributing to changes of the magnitude seen in 2017. The model was fitted to the preseason survey index based on midyear sites only. There was agreement that the 2017 0+ observation was likely due to process error for reasons outlined in an earlier document. This means that in addition to the estimated input survey CVs (error in the survey observations), there is additional unmodelled variation in the observation process, such as changes in catchability over time (for a survey this is equivalent to how “observable” the animals are), or environmental changes influencing recruitment of 0+ lobsters (e.g. where and when they settle). Additional work was therefore done to determine the most defensible approach for resolving the conflict in the model, with these analyses outlined in detail in accompanying papers. Based on the updated analyses, the stock assessment model was updated and this report summarises the updated results as a basis for informing management.

Note that some updates to the catch data for 2018 were also made and this has been included in the updated assessment, noting that it is likely that only a small quantity of the Australian total catch records for 2018 are still outstanding. There may also be a small under-estimate of total catches from PNG but this should not have a major effect on the current model outputs.

Summary of Life Cycle and Assessment



Assessment Basics



1. Updated Assessment of the Tropical Rock Lobster (*Panulirus ornatus*) Fishery in Torres Strait following November 2018 Preseason survey

1.1 Summary

This document summarises the post-Nov 2018 preseason survey update of the integrated stock assessment model presented at the December 2018 TRLRAG, with subsequent updated conducted for the February 2019 TRLRAG. The TRLRAG agreed that if the fishery transitions to using an empirical Harvest Control Rule (eHCR) to inform the Recommended Biological Catch (RBC), then the stock assessment would only need to be conducted every three years. However until such time as this is formally adopted, the stock assessment model is being used to inform the RBC for the tropical rock lobster *Panulirus ornatus*.

The data updates include the latest (Nov 2018) pre-season survey results, the catch total for 2018 including revisions which became available since the December 2018 RAG meeting and revisions and updates to the commercial CPUE (TVH & TIB) data series. The full details of the stock assessment model are provided in this report.

The model predictions for 2019 are much more optimistic than the previous season because they are based mostly on the preseason survey 1+ index, which is appreciably higher than the previous year when it was the lowest of the series to date. Note that the model results presented here are fitted to the preseason survey index based on midyear sites only. A number of alternative sensitivity tests were presented at the December 2018 RAG meeting and are not repeated here.

The model fit to the 2018 1+ Preseason survey data was not considered satisfactory, largely due to a conflict with the 0+ index for 2017. However the TRLRAG agreed that the 0+ index is likely to have been subject to substantial process error and thus not strictly comparable with other values because of anomalous changes that year in environmental factors in turn changing population processes such as where and when juveniles settle. Additional work was therefore done to determine the most defensible approach for resolving the conflict in the model, with these analyses outlined in detail in accompanying papers. Additional analyses were also done to test for the effect of other factors (such as dive team composition and current strength) that may have influenced the index and these analyses are also described in accompanying papers. Based on the updated analyses, the stock assessment model was updated and this report summarises the updated results as a basis for informing management.

The model reasonably fits the recent CPUE series for both sectors, although the observed 2018 CPUE for both sector is slightly higher than the expected values, even after accounting for hyperstability. This is not surprising given the detailed analyses as described in papers discussed by the TRLRAG in 2018 (when fishing was capped for the first time at a low TAC amount of 299t) and the TRLRAG has recommended that a data meeting be held to further assess any changes in the

fishing patterns and technological methods (fishing power) used. Results presented at the December 2018 RAG also suggested the model fit could be improved by estimating rather than fixing the CPUE hyperstability parameters in the model. As before, the model is unable to satisfactorily fit the 2015 CPUE data for TIB and TVH sectors. The potential reasons for this are discussed in more detail in Plagányi et al. (2015a,b). It is highly plausible that anomalous environmental changes have caused a change in catchability in 2015, but there is also likely to have been an impact of changes in lobster habitat on their survival and productivity, but there are no data available to assist in separating the effect of changes in catchability and survival on the overall catches for 2015 (noting that the total catch was higher than initially expected due to trawling catches). The model assumes constant annual natural mortality, and hence cannot straightforwardly model the change in catchability and/or survival without additional information, and hence the Reference Case model has not included any *ad hoc* adjustments, but these have been further investigated via sensitivity analyses (not presented in detail in this document).

The Reference case model presented here is fitted to the TVH CPUE Main Effects Int1 option and the standardised Seller CPUE TIB series. There isn't much difference between the alternative CPUE standardisations except for recent differences between the Main and Seller series for TIB.

The December 2018 RAG advice was " to apply a statistically calculated down-weighting to the 2017 0+ index, the RAG noted that the final RBC would likely lie somewhere between 533 and 637 tonnes. A final RBC value will not be available until the February 2019 TRL RAG meeting" and a revised Reference case to be developed "using an appropriate statistical methodology" (TRLRAG25 Meeting Minutes). This document has therefore selected a revised Reference Case that includes estimation of Additional Variance for all 0+ survey observations. This document presents full results for this illustrative case as well as summary results for other variants, with the final choice of model version to be used to inform the RBC to be finalised at the forthcoming TRLRAG meeting, and hence note that the final RBC may differ from the revised reference case value presented here.

The revised reference case model suggests a RBC (2019) of 641t [90% CI 426-857t]. Using the revised reference case, the stock is currently estimated to be at 46% of the pristine (1973) spawning biomass level (K). Previous analyses forewarned that the 2018 spawning biomass may be lower than average and provides support for the management decisions taken in 2018 to limit catches so that sufficient lobsters would remain for spawning purposes and subsequent recruitment to the fishery in 3 years' time. Fortunately the good 1+ numbers observed in the most recent survey means that the model spawning biomass projection for the following year is once again much more positive. The very large inter-annual variability in the stock has long been recognised. Hence it is entirely plausible that the current lobster stock have been boosted by good recruitment, however we suggest ongoing monitoring of 2019 catch and the next survey observations will be prudent.

1.2 Introduction

A new stock assessment model (termed the "Integrated Model") (Plagányi *et al.* 2009) was developed in 2009 for the following reasons:

- the new model facilitates the move to a quota management system, in that it integrates all available information into a single framework to output a RBC;
- the new model addresses all of the concerns highlighted in a review of the previous stock assessment approach (Bentley 2006, Ye et al. 2006, 2007);
- the new model incorporates the Pre-Season survey data as well as CPUE data available from the TVH sector;
- the growth relationships used in the model were revised;
- the new model is of a form that could be used as an Operating Model in a Management Strategy Evaluation (MSE) framework, given that the need for a MSE to support the management of the TRL fishery was identified by the TRL RAG.

In addition, in response to review comments in 2012, the following changes are also implemented:

- there is no lower limit on the sigma parameter associated with fitting to the catch at age information;
- the fitting to the commercial catch-at-age information ignores the years when there are no true data;
- given there are catch-at-age data for the pre-1989 period, recruitment residuals are estimated for all years from 1985.

The model outputs a single RBC (with Confidence Interval) for each year, which is an integrated estimate that takes into account all available sources of information. The Integrated Model is a widely used approach for providing TAC advice with associated uncertainties. More formally, it is a Statistical Catch-at-Age Analysis (SCAA) (e.g. Fournier and Archibald 1982). This paper summarises the revised 2018 model assessment using the 2018 pre-season survey data.

The revised Reference Case includes the following specifications (see Plagányi et al. 2010):

- fitting to the CPUE data assuming a hyperstable relationship (with hyperstability parameter 0.75), and setting a lower bound of 0.15 (value selected by TRLRAG in 2013) to the variance associated with the CPUE data because it is less reliable than the survey data;
- increasing the stock recruit variance parameter from 0.3 to 0.5 to capture larger fluctuations in recruitment;
- estimating a different selectivity for the 1973-1988 period;
- using as the new Reference spawning biomass level the annual biomass of mature lobsters on 1 November each year i.e. at the start of the annual migration period;
- estimating the 2018 recruitment residual;
- the use of historic information to permit estimation of a large recruitment event that is known to have occurred in 1988, the year before the long-term surveys commenced. This is an important development as if this good recruitment is not accounted for in the model, the model tries to reconcile the subsequent dynamics by over-estimating the pristine stock size.

At the December 2018 TRLRAG meeting, there was agreement to use the following specifications in the Reference Case model.

a) Fixed steepness h=0.7

b) Fixed hyperstability parameters for each CPUE series (TVH 0.75; TIB 0.5)
c) Mid-year survey index – after applying mixture model to separate age classes
d) Pre-season survey index – use as Reference MYO (mid-year only) series and same series as in November 2017 without the additional 5 sites added
e) CPUE TVH – Int-1 standardised series (and Int-3)
f) CPUE TIB – Seller standardised series

The model fit to the 2018 1+ Preseason survey data was not considered satisfactory, largely due to a conflict with the 0+ index for 2017. However the TRLRAG agreed that the 0+ index is likely to have been subject to substantial process error and thus not strictly comparable with other values because of anomalous changes that year in environmental factors in turn changing population processes such as where and when juveniles settle. Additional work was therefore done to determine the most defensible approach for resolving the conflict in the model, with these analyses outlined in detail in accompanying papers. Additional analyses were also done to test for the effect of other factors (such as dive team composition and current strength) that may have influenced the index and these analyses are also described in accompanying papers. Based on the updated analyses, the stock assessment model was updated and this report summarises the updated results as a basis for informing management.

1.3 Objectives

This document describes an update of the TRL stock assessment model using the results of the preseason survey conducted in November 2018 and applying an objective statistically-justifiable approach for resolving the conflict between the 2017 0+ and 2018 1+ survey observations.

1.4 Methods

The model details are given in Appendix A of this document. A summary of the input catch data is shown in Table 1-1. Lobster catches (tonnes whole weight) landed in different jurisdictions from 1973 to 2018. Catches comprised of both whole animals and tails have been converted into units of whole mass using the conversion ratio of 1kg tail=2.677 kg live. The historical mid-year survey data are shown in Table 1-2. The latest November 2018 Pre-season survey (Fig. 1-3) is included in the model. The commercial catch-at-age data have been updated and the revised series is shown in Table 1-4.

The model uses the latest revised historical catch estimates. As previously, the trawl catch has been separated from the other catches because of differences in the selectivity / targeting of the trawling sector which was focused predominantly on migrating 2+ lobsters. This is important because in the early years the trawling catch comprised 35 – 90% of the total TRL catch (Table 1-1). If recent trawling catches continue, then the model will need to similarly account for these separately to the total catch.

The TVH CPUE data input series have been revised and updated for the period 1989-2018 and TIB for 2004-2018 (Campbell *et al.* 2018a,b).

The model is fitted to additional historical information as described in Plagányi et al. (2010). An adjustment has been made to the model to allow use of a separate selectivity function to be applied to the period 1973 to 1988, prior to the introduction of a MLS of 100mm TL in July 1988. The model already accounts for the subsequent size limit change to 115mm in 2002. Background information on the above specifications is given in Plagányi et al. (2010) and this document.

The relationship between stock abundance and CPUE was explored, and found to be better represented by a hyperstable relationship, than the assumption that CPUE is proportional to stock abundance (see e.g. Harley *et al.* 2001). Based on additional sensitivity tests that were conducted, the Reference case model therefore uses a power curve with a hyperstability shape parameter of 0.75. This suggests that CPUE remains high while stock abundance declines. This is consistent also with results from considering an ecometric production function approach (Pascoe et al. 2013). In addition, the MSE and production function analyses (Pascoe et al. 2013, Plagányi et al. 2012, 2013) suggested that the TIB CPUE relationship was characterized by a greater degree of hyperstability, and hence the Reference case model uses a power curve with a hyperstability shape parameter of 0.5, and sensitivity to alternative choices of this value were tested but don't have a large effect on model outputs.

Table 1-1. Lobster catches (tonnes whole weight) landed in different jurisdictions from 1973 to 2018. Catches comprised of both whole animals and tails have been converted into units of whole mass using the conversion ratio of 1kg tail=2.677 kg live.

SEASON	TIB	TVH	AUS_DIVERS	AUS_TRAWL	AUS-TOTAL	PNG_DIVERS	YULE_DIVERS	PNG-DIVERS TOTAL	PNG_TRAWL	PNG-TOTAL	TS_TOTAL
1973			0	0	0	54	19	73	562.2	635.2	635.2
1974			0	0	0	75	83	158	107.1	265.1	265.1
1975			0	0	0	62	13	75	214.2	289.2	289.2
1976			0	0	0	48	0	48	262.3	310.3	310.3
1977			0	0	0	72	35	107	131.2	238.2	238.2
1978			296.1	0	296.1	43	3	46	187.4	233.4	529.5
1979			308.5	0	308.5	56	13	69	0	69	377.5
1980			328.4	21	349.4	94	3	97	588.9	685.9	1035.3
1981			495.1	131	626.1	96	3	99	262.3	361.3	987.4
1982			669.2	201	870.2	102	3	105	398.9	503.9	1374.1
1983			432.9	139	571.9	86	0	86	112.4	198.4	770.3
1984			330.9	8	338.9	86	0	86	29.4	115.4	454.3
1985			537.4	24	561.4	187	16	203	0	203	764.4
1986			890.6	21	911.6	198	62	260	0	260	1171.6
1987			622	0	622	128	54	182	0	182	804.0
1988			537.4	0	537.4	150.0	5	155.0	0.0	155.0	692.4
1989			651.0	0	651.0	211.0	24	235.0	0.0	235.0	886.0
1990			490.1	0	490.1	158.0	0	158.0	0.0	158.0	648.1
1991			444.100	0	444.100	168.0	0	168.0	0.0	168.0	612.1
1992			423.200	0	423.200	134.0	0	134.0	0.0	134.0	557.2
1993			505.700	0	505.700	166.0	0	166.0	0.0	166.0	671.7
1994		120.061	577.800	0	577.800	247.0	0	247.0	0.0	247.0	824.8
1995		87.022	556.900	0	556.900	257.0	0	257.0	0.0	257.0	813.9
1996		210.872	584.100	0	584.100	228.0	0	228.0	0.0	228.0	812.1
1997		271.449	653.100	0	653.100	241.0	0	241.0	0.0	241.0	894.1
1998		351.396	661.400	0	661.400	201.0	0	201.0	0.0	201.0	862.4
1999		93.563	409.600	0	409.600	163.0	0	163.0	0.0	163.0	572.6
2000		132.374	418.000	0	418.000	235.0	0	235.0	0.0	235.0	653.0
2001	52.000	79.968	131.968	0	131.968	173.0	0	173.0	5.4	178.4	310.4
2002	68.000	147.178	215.178	0	215.178	327.0	0	327.0	42.8	369.8	585.0
2003	123.000	358.799	481.799	0	481.799	211.0	0	211.0	5.4	216.4	698.2
2004	210.381	481.082	691.463	0	691.463	182.0	0	182.0	0.0	182.0	873.5
2005	367.615	549.935	917.550	0	917.550	228.0	0	228.0	0.0	228.0	1145.6
2006	140.451	135.473	275.924	0	275.924	142.0	0	142.0	0.0	142.0	417.9
2007	268.688	268.596	537.284	0	537.284	228.0	0	228.0	0.0	228.0	765.3
2008	185.666	100.437	286.103	0	286.103	221.0	0	221.0	0.0	221.0	507.1
2009	147.813	91.060	238.873	0	238.873	161.4	0	161.4	0.0	161.4	400.3
2010	140.039	282.614	422.653	0	422.653	292.8	0	292.8	0.0	292.8	715.5
2011	199.060	503.534	702.594	0	702.594	165.0	0	165.0	0.0	165.0	867.6
2012	142.380	370.483	512.863	0	512.863	173.7	0	173.7	0.0	173.7	686.6
2013	138.439	361.661	500.100	0	500.100	108.3	0	108.3	0.0	108.3	608.4
2014	196.827	273.214	470.041	0	470.041	151.4	0	151.4	109.8	261.2	731.2
2015	204.659	152.710	357.369	0	357.369	235.7	0	235.7	0.0	235.7	593.1
2016	264.725	243.010	507.735	0	507.735	248.0	0	248.0	0.0	248.0	755.8
2017	117.891	149.738	267.629	0	267.629	113.0	0	113.0	0.0	113.0	380.7
2018	127.010	134.100	261.110	0	261.110	66.6	0	66.6	0.0	66.6	327.7

Table 1-2. Mid-year survey data summary for the period 1989-2014 and 2018. Indices reflect abundance.

Year	Annual	Transects	Age0	SE0	Age1	SE1	Age2	SE2
89	1989	40			1.663	0.243	2.427	0.305
90	1990	40			3.543	0.787	1.643	0.279
91	1991	40			3.953	0.542	1.502	0.343
92	1992	40			5.083	0.765	3.430	0.670
93	1993	37			2.343	0.490	0.774	0.328
94	1994	40			5.644	1.624	1.143	0.304
95	1995	40			3.497	0.591	1.825	0.944
96	1996	40			3.346	0.560	1.175	0.387
97	1997	40			3.970	0.673	1.018	0.248
98	1998	40			1.780	0.431	1.366	0.359
99	1999	40			3.493	0.894	0.467	0.242
00	2000	40			3.063	1.188	0.619	0.224
01	2001	40			1.235	0.246	0.236	0.093
02	2002	73			2.511	0.352	0.819	0.310
03	2003	43			2.829	0.521	2.175	0.640
04	2004	72			2.720	0.411	1.542	0.429
05	2005	71			1.194	0.181	1.957	0.686
06	2006	73	0.231	0.144	5.406	0.933	0.720	0.336
07	2007	70	0.011	0.008	3.833	1.100	1.621	0.536
08	2008	72	0.069	0.048	2.090	0.281	0.964	0.353
09	2009	68	0.034	0.025	3.438	0.523	1.263	0.373
10	2010	67	0.000	0.000	4.165	0.610	1.183	0.300
11	2011	65	0.000	0.000	5.124	0.812	2.243	0.466
12	2012	70	0.000	0.000	5.120	0.907	1.521	0.378
13	2013	66	0.000	0.000	3.024	0.556	1.455	0.454
14	2014	67	0.000	0.000	4.744	0.950	1.351	0.320
15								
16								
17								
18	2018	68	0.094	0.041	3.267	0.666	0.715	0.130

Table 1-3. Pre-season survey index (Midyear-Only (MYO) Sites – see Campbell et al. 2018) for the period 2005-2008 and 2014-2018. Indices reflect relative abundance.

							All-82			All-82			All-82	
Annual	Region	N-Stratum	Area	Fraction	Transects	Age0	Age0	SE0	Age1	Age1	SE1	Age2	Age2	SE2
2005	Total	7	5571500	1.000	71	4.644	4.758	0.946	2.877	2.863	0.519	0.263	0.260	0.097
2006	Total	7	5571500	1.000	74	2.045	2.188	0.49	5.831	5.783	1.243	0.031	0.031	0.024
2007	Total	7	5571500	1.000	75	1.65	1.495	0.384	4.711	4.592	0.723	0.182	0.178	0.095
2008	Total	7	5571500	1.000	76	3.666	3.527	0.947	2.463	2.473	0.409	0.034	0.034	0.020
2014	Total	7	5571500	1.000	75	3.399	3.243	0.725	5.354	5.215	0.782	0.090	0.090	0.031
2015	Total	7	5571500	1.000	73	1.783	1.783	0.46	6.724	6.724	1.005	0.242	0.242	0.092
2016	Total	7	5571500	1.000	73	2.411	2.411	0.579	2.798	2.798	0.542	0.194	0.194	0.072
2017	Total	7	5571500	1.000	74	0.468	0.468	0.174	1.784	1.784	0.277	0.049	0.049	0.028
2018	Total	7	5571500	1.000	76	1.607	1.675	0.437	6.425	5.884	1.729	0.070	0.098	0.038
					Mean	2.408	2.394	0.571	4.330	4.235	0.803	0.128	0.131	0.055

Table 1-4. Summary of commercial catch at age information from 1989 to 2018.

Year	Percentage 1+	Percentage of 2+
1989	5.98	94.02
1990	11.33	88.67
1991	25.39	74.61
1992	25.16	74.84
1993	21.29	78.71
1994	26.38	73.62
1995	23.92	76.08
1996	26.47	73.53
1997	28.63	71.37
1998	16.15	83.85
1999	31.25	68.75
2000	10.79	89.21
2001	1.21	98.79
2002	2.93	97.07
2003	3.13	96.87
2004	2.54	97.46
2005	1.19	98.81
2006	6.79	93.21
2007	1.48	98.52
2008	5.37	94.63
2009	0.71	99.29
2010	6.75	93.25
2011	0.90	99.10
2012	7.20	92.80
2013	5.88	94.12
2014	1.96	98.04
2015	1.72	98.28
2016	1.53	98.47
2017	1.41	98.59
2018	1.25	98.75

1.5 Results

Observation and Process Error in the Torres Strait tropical lobster TRL stock 0+ survey index

Initial model runs were problematic as very low additional variance was estimated for some years but not others, and this also resulted in large associated C.V.s due to the small parameter estimates. A lower bound of 0.05 was set for estimation of the additional variance to improve model estimation. The model estimated 8 additional variance parameters resulting in an 8.44 improvement in the log likelihood, which is statistically significant ($p<0.05$) using log-likelihood ratio test for which the corresponding critical chi-square value is 7.75 (Table 1-5).

The model additional variance parameters could not be reliably estimated for 2005, 2008 and 2016, and the estimates for years 2006 – 2015 hit the lower bound so were not well estimated either (Table 1-5). However the model estimated a large additional variance (0.43) for the 2017 survey 0+ observation with very high precision (C.V. = 0.005). This is consistent with the a priori expectation that the 2017 0+ survey would have the greatest amount of process error (see Table 1 in Plaganyi et al. 2018). For similar reasons, it was also hypothesized that the 2016 0+ survey would have large associated process error.

The 2017 additional variance estimate was considerably larger than the survey variance of 0.08. These results were very similar to the additional variance estimates obtained using the model version with the GLM-standardized 0+ series and associated standard errors instead (Table 1-5). It is not surprising that the 2008 0+ estimate has a high associated C.V. because there was no preseason survey conducted in 2009, and hence no directly comparable 1+ preseason index, but the model is also fitted to a 2009 midyear survey 1+ observation.

Table 1-5. Summary of model-estimated additional variance parameters.

	(b) Model version with AV but not GLM0					(d) Model with AV and GLM0				
	parameter	S.E.	C.V.	90% CI		parameter	S.E.	C.V.	90% CI	
2005	0.112	2.283	20.344	0.000	0.534	0.105	0.220	2.098	0.000	0.468
2006	0.050	0.025	0.503	0.048	0.052	0.050	0.000	0.003	0.050	0.050
2007	0.050	0.004	0.076	0.050	0.050	0.050	0.000	0.007	0.049	0.051
2008	0.051	0.621	12.285	0.000	0.102	0.050	0.000	0.006	0.050	0.050
2014	0.050	0.050	0.999	0.046	0.054	0.050	0.001	0.011	0.049	0.051
2015	0.050	0.016	0.313	0.049	0.051	0.050	0.000	0.004	0.050	0.050
2016	0.256	1.779	6.958	0.000	1.004	0.123	0.272	2.205	0.000	0.571
2017	0.430	0.002	0.005	0.429	0.431	0.430	0.002	0.004	0.427	0.433

Previously the model fit to the 0+ survey index was not satisfactory and estimation of additional variance parameters significantly improved the fit to both the 0+ and 1+ preseason survey indices. This resulted in a much more satisfactory fit to 1+ 2018 observation which was considered important as it is the key predictor of the following year's fished biomass.

Given the problems in trying to estimate all 8 additional variance (A.V.) parameters, two illustrative models runs are also shown in Table 1-6 with first scenario (scenario e in Table 1-7b) a single common 0+ survey additional variance parameter estimated for all years (except 2018) and second (scenario f in Table 1-7b) an additional variance parameter only estimated for 2017. The former scenario is not recommended as an approach though because there are a priori reasons provided as to why process error can be expected to vary inter-annually. The second scenario is also not ideal as it singles out a single year rather than applying an approach consistently, but is useful for comparison purposes. Neither of these two scenarios were preferred compared with the Model version 1 when using the AIC model selection criterion.

Table 1-6. Summary of model-estimated additional variance parameter when estimating a single value only.

	parameter	S.E.	C.V.	90% C.I	
Single common A.V.	0.357	0.250	0.698	-0.053	0.768
A.V. for 2017 only	3.444	5.011	1.455	-4.799	11.686

Given the issues with the estimated A.V. parameters hitting the lower bound, the lower bound was decreased to a very small number and the model refitted as shown in Table 1-7b scenario (g). Using the AIC model; selection criterion, scenario (g) is the preferred model. The A.V. parameter estimates and associated C.V.s are shown in Table 1-7. Once again the largest process error is estimated for the 2017 0+ observation with a very small associated standard error. The model fit to both the 0+ and 1+ index is highly significantly better than the base model version 1 (Table 1-8).

Table 1-7. Summary of model-estimated additional variance parameters for final model versions, including Revised Reference Case and version with GLM0.

Base model with Add Var estimated with no bounds					
	parameter	S.E.	C.V.	90% C.I	
2005	0.118	0.250	2.124	-0.326	0.584
2006	0.001	0.003	3.227	0.000	0.000
2007	0.001	0.001	0.982	0.000	0.000
2008	0.020	0.157	8.003	-0.257	0.316
2014	0.001	0.008	5.807	-0.001	0.001
2015	0.001	0.001	0.641	0.000	0.000
2016	0.258	0.432	1.672	-0.628	1.237
2017	0.450	0.009	0.019	-4.119	10.190
GLM0 with Add Var estimated with no bounds					
	parameter	S.E.	C.V.	90% C.I	
2005	0.11	0.217	1.913	-0.243	0.470
2006	0.00	0.000	0.279	0.001	0.001
2007	0.00	0.000	0.284	0.001	0.001
2008	0.00	0.000	0.286	0.001	0.001
2014	0.00	0.000	0.060	0.001	0.001
2015	0.00	0.000	0.038	0.001	0.001
2016	0.13	0.265	2.042	-0.306	0.565
2017	0.45	0.001	0.002	0.448	0.452

The Final set of runs used the GLM standardized 0+ index as described in Campbell et al. (2019). The analysis of Campbell et al. (2019) accounts for a range of factors which may influence the survey index, and as some of these factors are environmental variables, the standardized series implicitly accounts for part of the process error. For this reason, the base GLM0 scenario (scenario (c) in Table 1-7a) does not also include estimation of additional variance. Although this scenario is not directly comparable using AIC to the Model version 1 scenario because they use different data inputs, the use of the GLM0 series is seen to substantially improve the fit to the 0+ and 1+ preseason survey indices. This is partly because the GLM0 series estimates a substantially larger C.V. associated with the 2017 0+ observation. When the GLM0 scenario was run in conjunction with estimation of 8 additional variance parameters, these scenarios (d and h) were not preferred (using AIC) relative to the base GLM0 scenario. The base GLM0 (c) is therefore the preferred model using the GLM0 index. Overall the results are fairly similar to the non-GLM with A.V. estimated preferred scenario (g) which provides further confidence in terms of using model (g) as the basis for developing management advice.

Model fits

The fits of the Model to all available data sources are shown in Figure 1-1 to Figure 1-9. The results are shown primarily for the TRLRAG Revised Reference Case, with additional results presented at the previous TRLRAG and to be presented at the forthcoming TRLRAG. The starting number of lobsters is estimated and Figure 1-1 compares the benchmark survey (Ye et al. 2004) observed total lobster abundances in 1989 and 2002 with the corresponding model estimates. The Integrated model is fitted to the survey midyear index of abundance (in terms of total numbers of 1+ and 2+ lobsters) (Figure 1-2.). The poor fit for the year (2014) of the series was because of a conflict with the more reliable and lower estimate that same year based on the Preseason survey. The observed and model-predicted proportions in each age class are compared in Fig. 1-3.

The model fits to the catch at age data are adequate (Figure 6-4). The variability in the lobster age groups is well captured and the model reflects the post-2001 (increased size limit) decrease in the relative proportion of 1+ lobsters that are caught.

There were nine data points available from the Pre-season survey for the TRLRAG Revised Reference Case, and the model was fitted to data on both 0+ and 1+ abundance, with a close fit evident for the 1+ (Figure 1-5). The fit is better for the 1+ age group than the 0+ age group, but incorporation of the latter assists in strengthening prediction of future lobster abundance, even given the fairly large uncertainty associated with these estimates. The model doesn't fit the 2017 0+ index as the variability associated with this value is high and the model likelihood contribution is weighted by the inverse of the variance (see Appendix A). The Revised Reference Case incorporates a large additional variance associated with the 2017 0+ observation which allows the model to fit the 2018 1+ index reasonably.

Comparisons between CPUE data from the TVH sector (in kg per tender-day from 1994 to 2018) and corresponding model-predicted estimates are shown in Figure 1-6a (when fixing the lower bound of sigma at 0.15). Similarly, Figure 1-6b shows the fit to the standardised CPUE TIB data as described in Chapter 4. The Reference Case assumes a hyperstable relationship between biomass and CPUE (TVH) as follows:

$$\left(\frac{C}{E}\right)_y^{TVH} = q_{TVH}\left(B_y^{ex}\right)^{0.75}$$

And similarly for the TIB CPUE data:

$$\left(\frac{C}{E}\right)_y^{TIB} = q_{TIB}\left(B_y^{ex}\right)^{0.5}$$

Comparison between historic data and model estimates of the proportions of 1+ and 2+ lobsters in the catch is shown in Figure 1-7. The fit in the early years is reasonably good, with the later deviations in the fit partly a result of a slight conflict between these data and the catch at age data.

The fitted stock-recruit relationship from the Reference-case model version is shown in Figure 1-8, and the stock-recruit residuals are shown in Figure 1-9., from which it is clear that recruitment has been high over the recent period but has declined substantially during the past two years. There is

considerable variation about the stock-recruit curve (as is expected), but nonetheless there is some support for an underlying stock-recruit relationship.

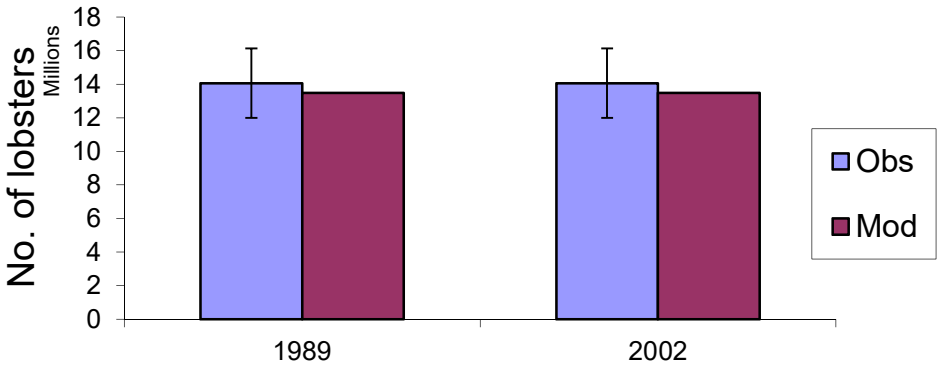
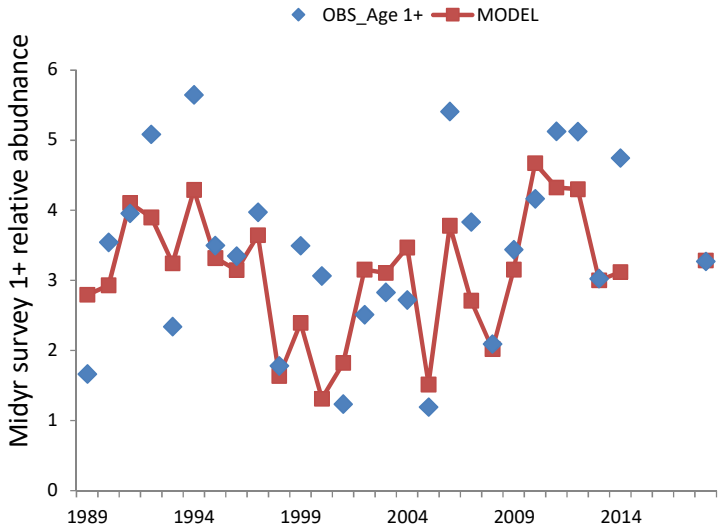
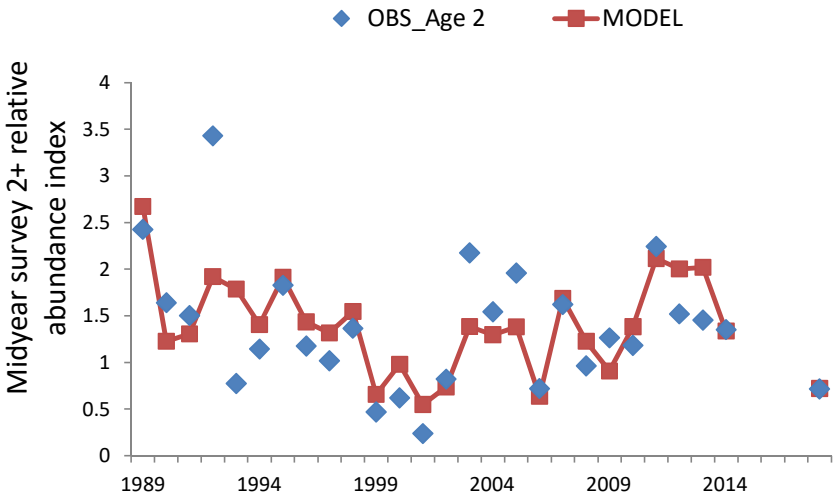


Figure 1-1. Comparison of benchmark survey observed lobster total abundance (with standard errors) and corresponding Revised Reference Case model-estimates of abundance.





Fit shown when combining total numbers from survey

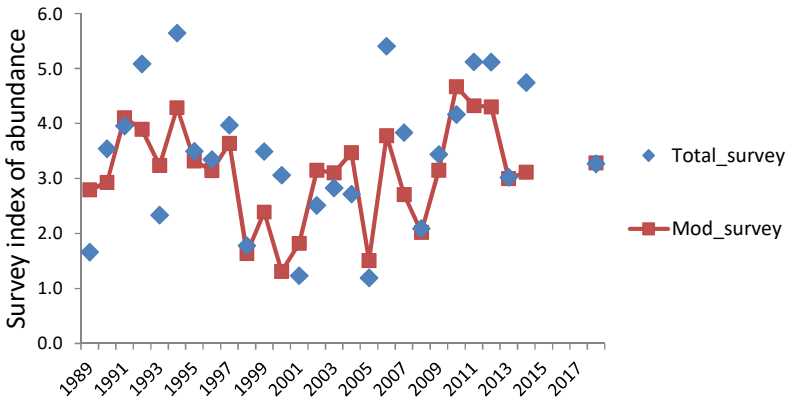
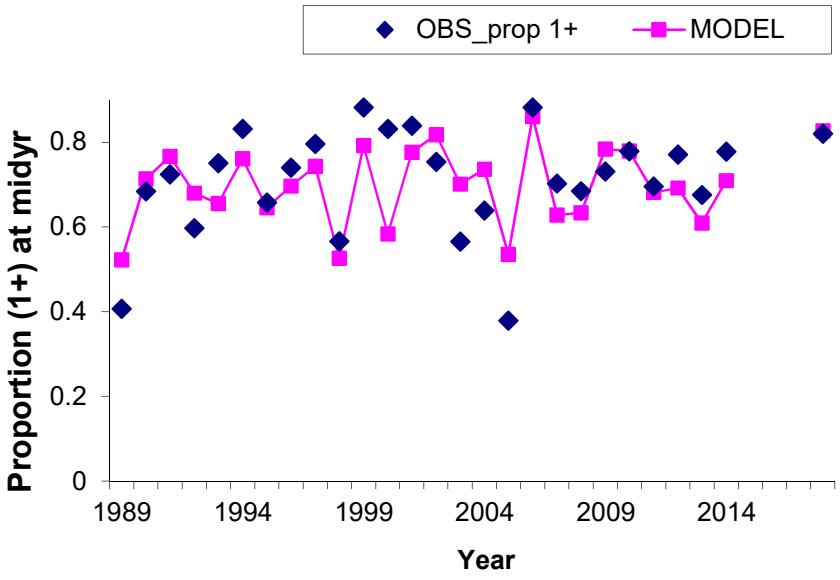


Figure 1-2. Comparison between survey midyear index of abundance (in terms of total numbers of 1+ and 2+ lobsters) compared with the corresponding model-estimated values for TRLRAG Revised Reference Case.



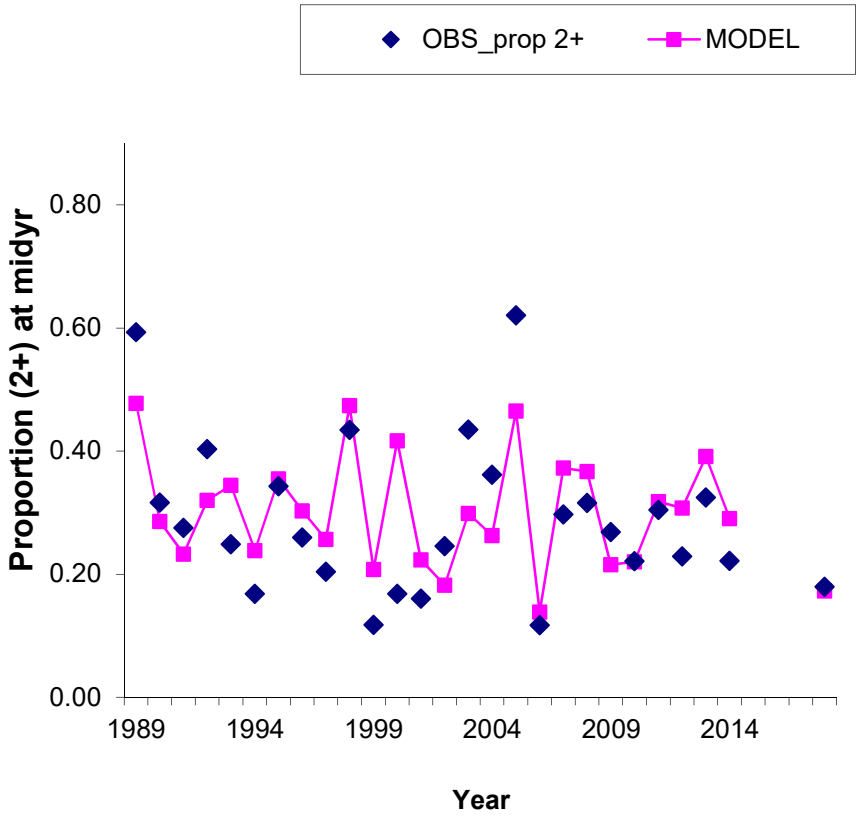


Figure 1-3. Comparison between observed and model-predicted proportions of 1+ and 2+ lobsters in the midyear survey.

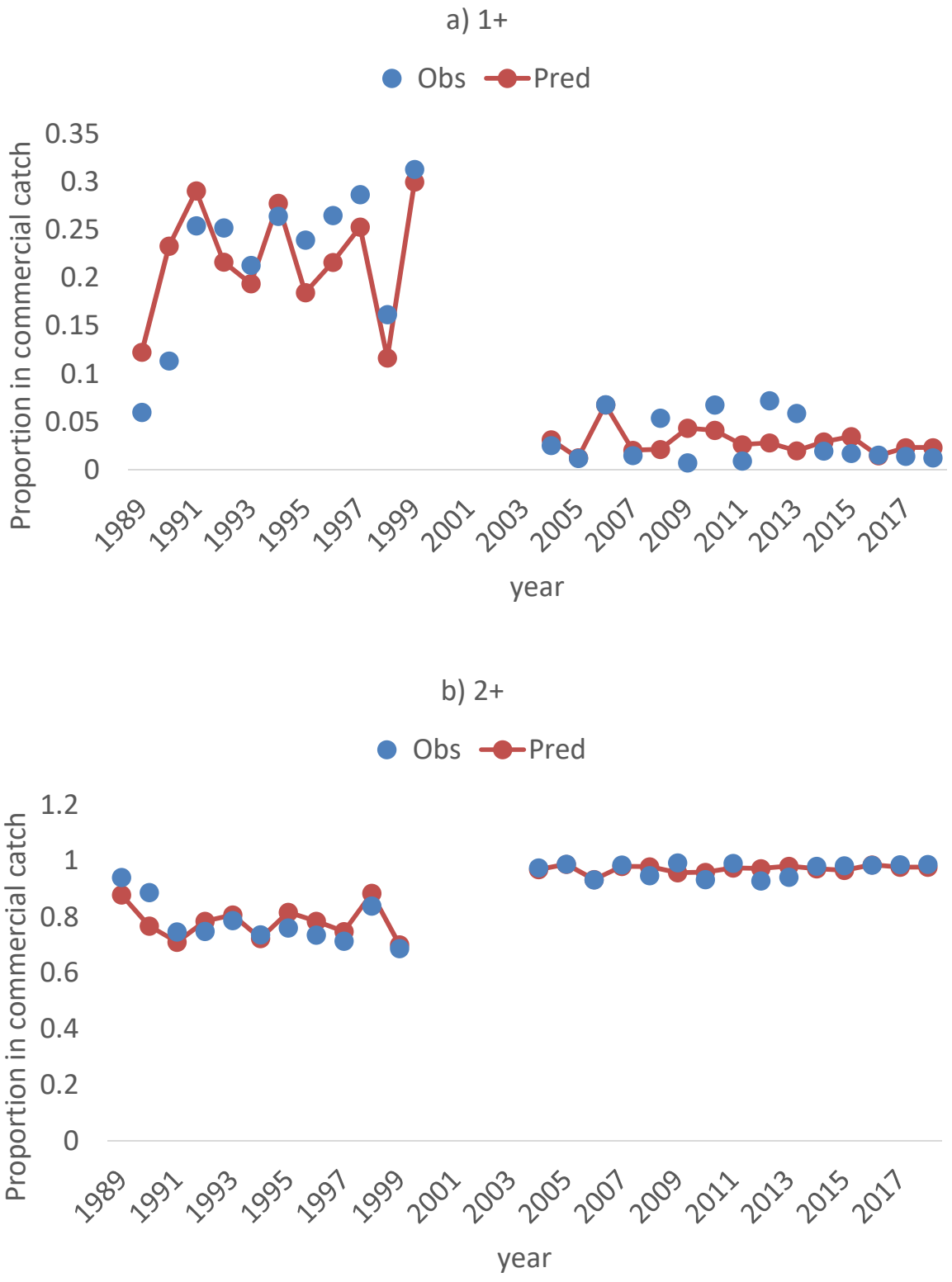
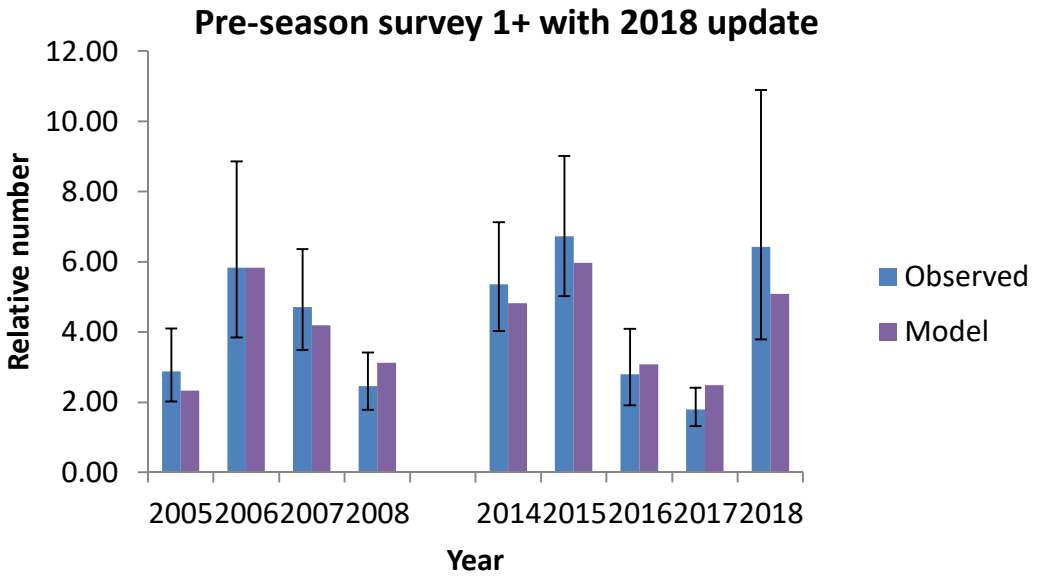


Figure 1-4. Comparison between available commercial catch-at-age data and corresponding model-predicted estimates.

(A)



(B)

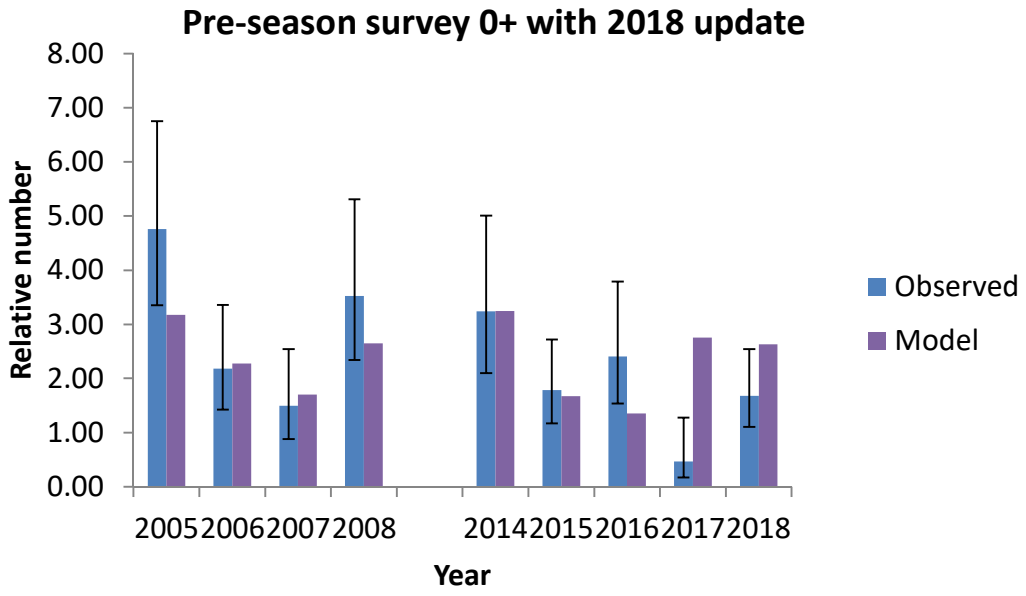
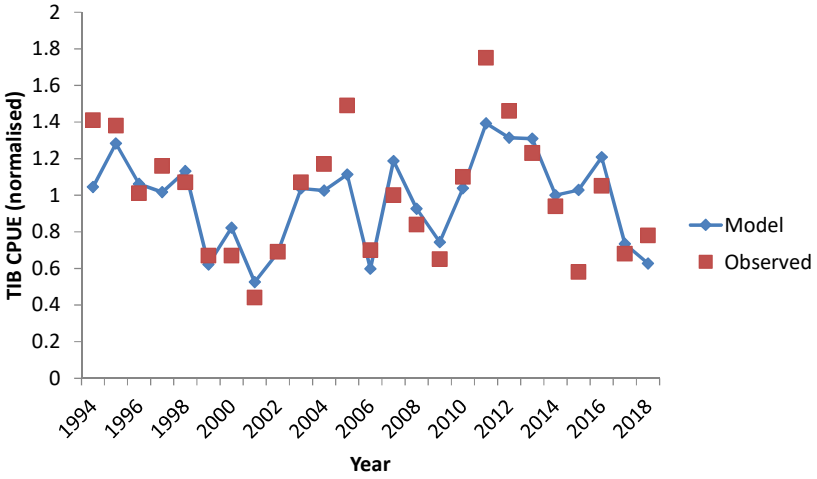


Figure 1-5. Comparison between observed Pre-season survey data (expressed in terms of number * 104) and corresponding (A) 1+ and (B) 0+ model-predicted estimates for TRLRAG Revised Reference Case which incorporates estimation of Additional Variance associated with each of the 0+ observations.

a) FIT TO TVH CPUE (sigma lower bound = 0.15); MAIN EFFECTS Int1 MODEL



b) FIT TO TIB CPUE (sigma lower bound = 0.15); TIB Seller Model

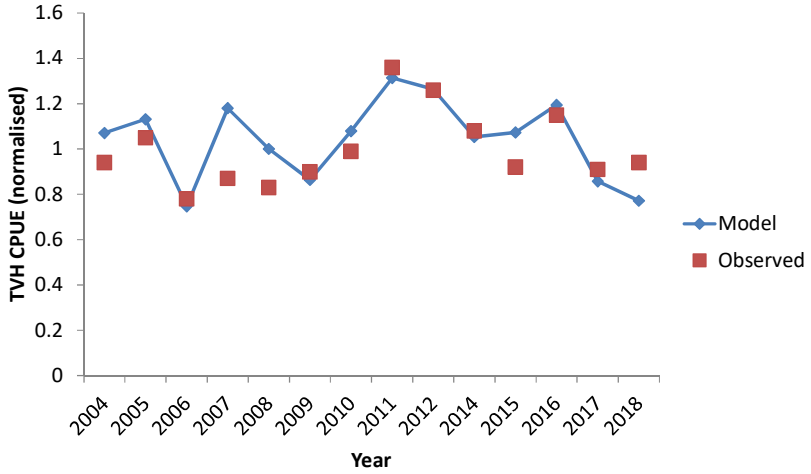


Figure 1-6. Comparison between CPUE data and corresponding model-predicted estimates. The plots are respectively a) Revised reference-Case fit to CPUE standardised estimates from the TVH sector with lower bound for sigma set at 0.15, b) fit to TIB CPUE standardized estimates available from 2004-2018. A hyperstable relationship is assumed (with power shape parameter 0.75 and 0.5 respectively) between CPUE and exploitable biomass for the TVH and TIB sectors.

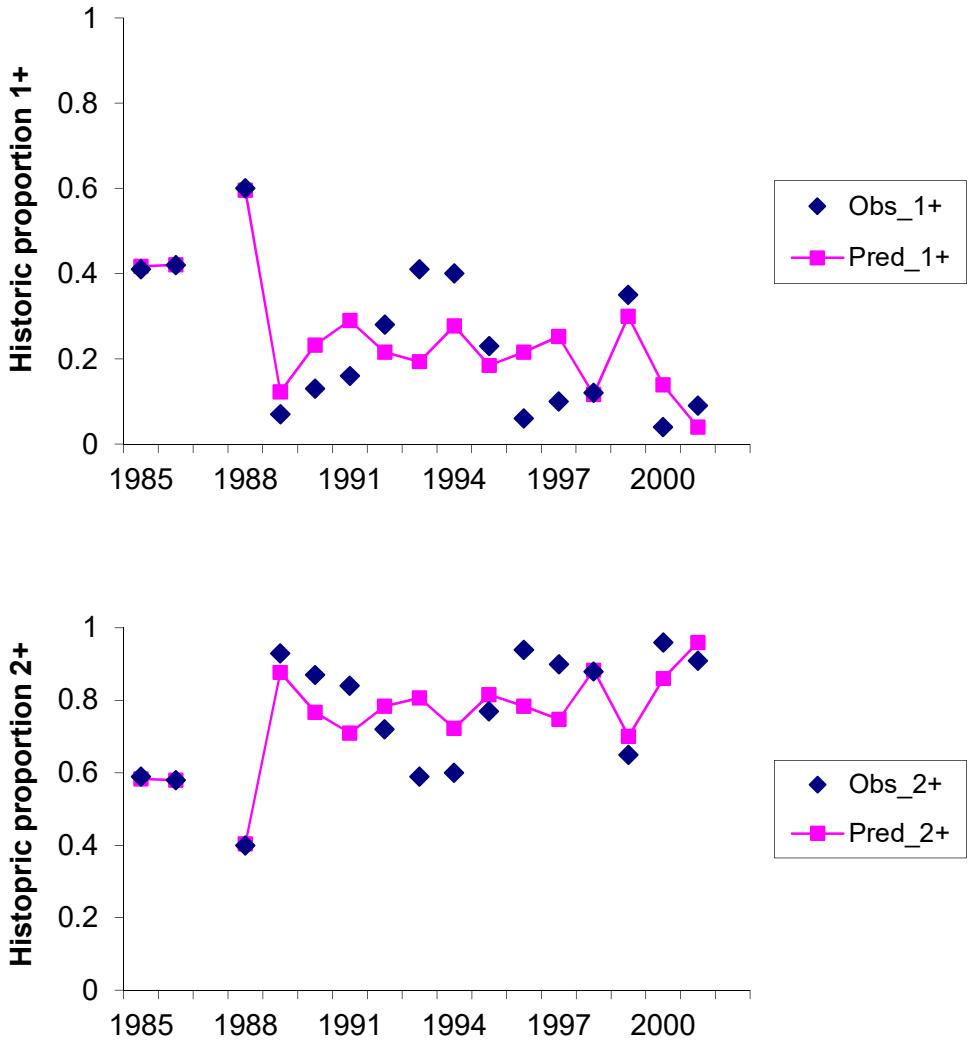


Figure 1-7. Comparison between historic data and model estimates of the proportions of 1+ and 2+ lobsters in the catch.

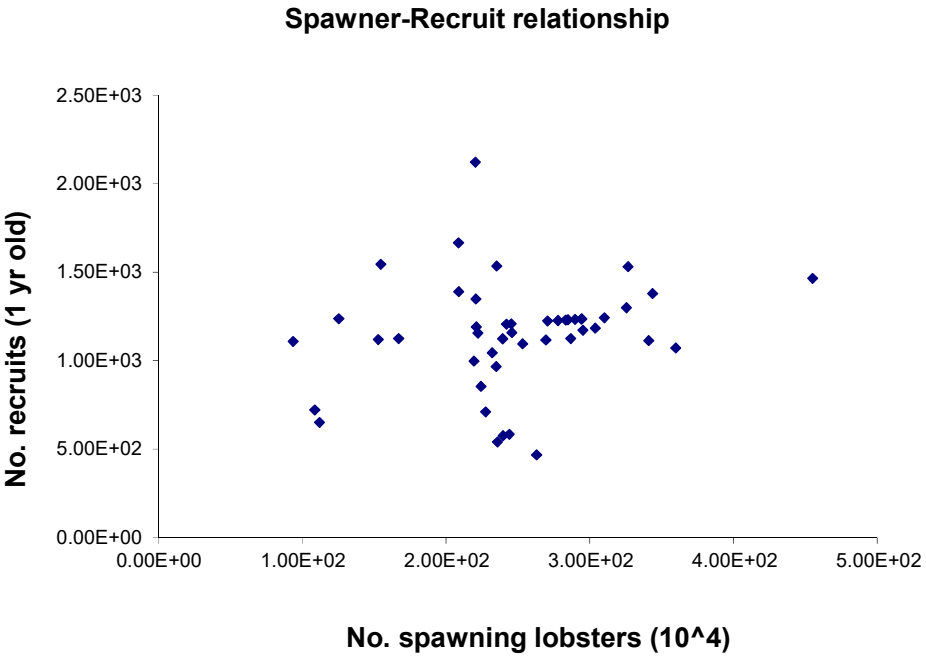


Figure 1-8. Integrated model stock recruitment relationship showing relative number of recruits R as a function of the spawning biomass Bsp for Revised Reference Case.

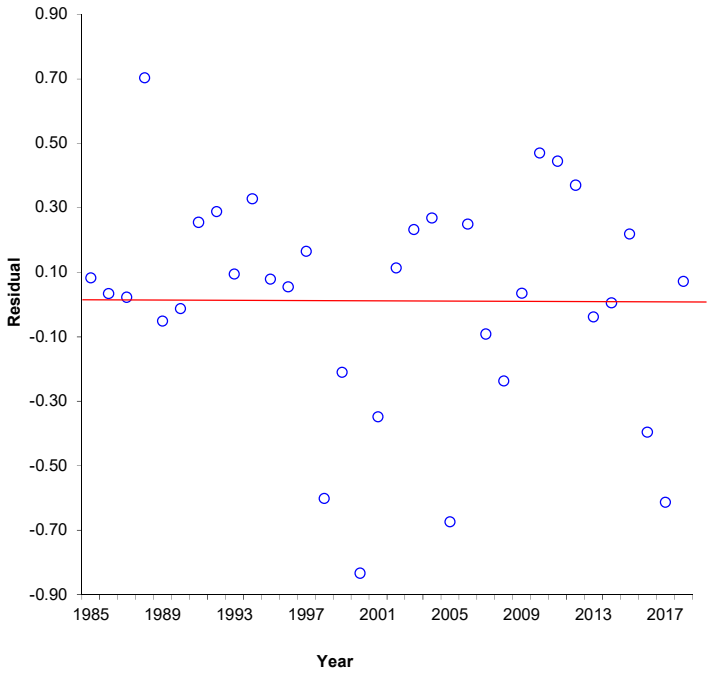


Figure 1-9. Plot of stock-recruit residuals, where recruits are defined as 1+ lobsters. Note the low 2017 residual compared with the roughly average 2018 residual

Estimates of model parameters

A full set of model parameter estimates, depletion statistics and likelihood contributions for the TRLRAG Revised Reference Case including 2018 Pre-season survey and a range of alternative model versions is shown in Table 1-8. In all cases the 90% Hessian-based Confidence Intervals (CI) are given alongside. The Revised Reference model estimates a total of 47 parameters, namely the starting biomass $B(1973)^{sp}$, natural mortality *M*, 1+ selectivity for the 1973-1988, 1989-2001 and post-2002 periods, 34 stock-recruit residuals and 8 additional variance parameters. The steepness parameter *h* could not be precisely estimated as the confidence interval associated with the previous estimate is very wide hence steepness *h* is fixed in the Reference Case at 0.7, based on the median of a fisheries database (Myers et al. 1995). However sensitivities to this are also tested given previous assessments suggesting *h* may be lower. The natural mortality estimate of 0.69 [90% C.I. 0.57 – 0.82] year^{-1} is reasonably estimated.

Full selectivity of the 2+ age class is assumed given they are the target of the fishery and are assumed caught before the end of September, before they migrate out the Torres Straits. Selectivity of 1+ lobsters is substantially less because they are usually only susceptible to fishing after September and not all individuals will have attained the minimum legal size by that time. The selectivity coefficient for age 1+ lobsters was 0.42 for 1973-1988, 0.17 for the period of 1989-2001 and 0.02 for the remaining years. As expected, the decrease in selectivity during the recent time period is a consequence of a change in management measures having been introduced in 2002, which included an increase in the minimum legal size (to 115 mm tail length), a 4-month extension of the hookah ban (October to January) and a 2-month fishing closure (October-November) (Ye et al. 2006).

Following from the above, the level of fishing mortality on age 1+ lobsters is expected to be substantially less than that on age 2+ lobsters (Figure 1-10.), with a decreasing trend evident following the implementation of the new management measures in 2002. The fishing mortality rate for age 2+ lobsters ranged from 0.09 year^{-1} to 0.27 year^{-1} (Figure 1-10.), with a historic average (from 1989) of 0.15 year^{-1}. The target fishing mortality rate is 0.15 year^{-1}. The 2018 catch of 299t was assessed to have been at the target fishing mortality rate (0.15) which suggests that the management decision to limit catches at this low level in 2018 was appropriate.

The fishing mortality estimates above refer to the combined estimate when lumping all TRL catches in the Torres Straits, except the trawling sector (Australian and PNG combined) catches. The latter are assumed to target 2+ lobsters only and were substantial in the early years (1973 – 1984) Figure 1-11., with small catches taken during the period (2001-2003) and zero values for all other years, except for some recent reports that are under discussion by the TRLRAG.

A summary of previous RBC and TACs is shown in Table 1-10.

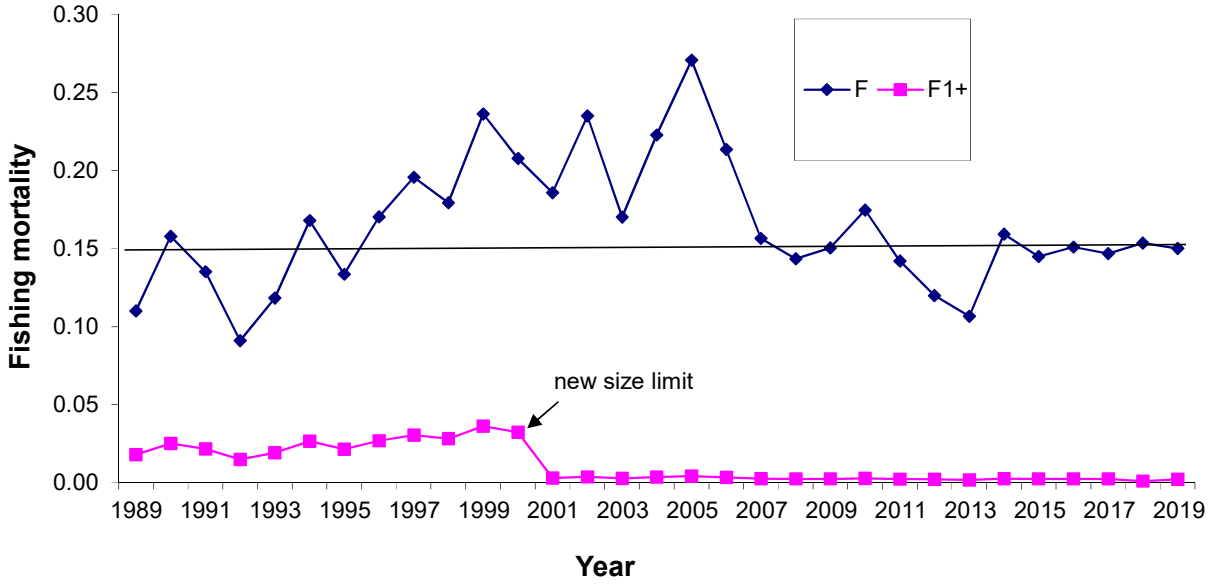


Figure 1-10. Model-estimated fishing mortality trends for 1+ (F 1+star) and 2+ (F 2+ star) lobsters. The 2002 change in size limit is highlighted and the 2019 fishing mortality set equal to the target value of 0.15.

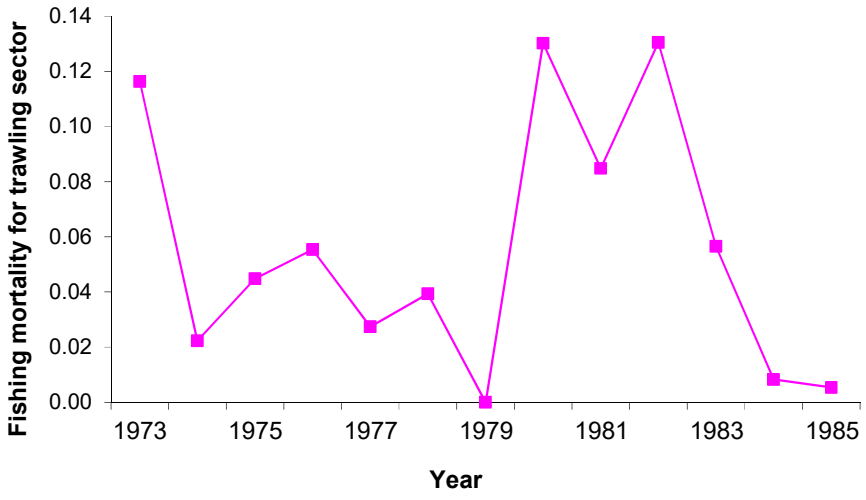


Figure 1-11. Model-estimated trawling sector fishing mortality trends for the early period of the fishery from 1973 - 1985.

Table 1-8. Summary of model parameter estimates for the Revised Reference Case and model variants as described in the text.

	(a) Model version 1			(2) Model not fitting Preseason 0+ index			(b) Additonal Variance (AV) Pars estimated			(c) Model with GLM0		
Parameter	**Parameter**	**Value**	**90% CI**	**Parameter**	**Value**	**90% CI**	**Parameter**	**Value**	**90% CI**	**Parameter**	**Value**	**90% CI**
B(1973)^{sp} (tons)	4326	3095	5556	4551	3243	5859	4459	3182	5735	4332	3108	5557
M	0.69	0.57	0.82	0.69	0.57	0.82	0.69	0.57	0.82	0.69	0.57	0.82
h	fixed 0.7			fixed 0.7			fixed 0.7			fixed 0.7		
Sel (age 1+) 1973-1988	0.42	0.23	0.60	0.42	0.23	0.61	0.42	0.23	0.61	0.42	0.23	0.60
Sel (age 1+) 1989-2001	0.17	0.15	0.19	0.17	0.15	0.19	0.17	0.15	0.19	0.17	0.15	0.19
Sel (age 1+) post2002	0.02	0.01	0.03	0.02	0.01	0.03	0.02	0.01	0.03	0.02	0.01	0.03
Recruitment residuals (1985-2018)	34 parameters				34 parameters			34 parameters			34 parameters	
Model estimates and depletion statistics												
B(2018)^{sp} (tons)	2204	1451	2958	1953	1251	2654	1994	1275	2713	2140	1408	2873
RBC(2019) model	533	359	708	691	457	925	645	429	862	601	402	801
RBCforecast(2020) model	600	435	765	625	451	799	614	444	785	600	436	764
Current Depletion (Nov) *B(2018)^{sp} / B(1973)sp*	0.52	0.38	0.66	0.44	0.31	0.56	0.46	0.32	0.59	0.51	1407.71	2872.69
Bexp(2018) (tons)	2518	1782	3255	2295	1604	2986	2329	1623	3035	2465	1747	3182
No. parameters estimated	39			39			47			39		
'-lnL:overall	**-182.113**			-187.39			-190.550			-189.807		
AIC	**-286.226**			-296.780			-287.100			-301.614		
Likelihood contributions		**Sigma**	**q**		Sigma	q		Sigma	q		Sigma	q
'-lnL:CAA	-65.87	0.05		-65.93	0.05		-65.92	0.05		-65.90	0.05	
'-lnL:CAAsurv	-20.35	input from data		-20.64	input from data		-20.53	input from data		-20.33	input from data	
-lnL:CAA historic	-21.99	0.13		-21.97	0.13		-21.97	0.13		-21.97	0.13	
-lnL:Survey Index 1+	-19.56	input from data	3.937E-07	-19.13	input from data	3.931E-07	-19.53	input from data	3.940E-07	-19.85	input from data	3.928E-07
-lnL:Survey Index 2+	-15.38	input from data	4.089E-07	-15.66	input from data	4.125E-07	-15.57	input from data	4.126E-07	-15.58	input from data	4.101E-07
-lnL:Survey benchmark	-3.13	input from data		-3.13	input from data		-3.13	input from data		-3.13	input from data	
'-lnL:PRESEASON	-7.97	input from data	8.033E-07	-10.54	input from data	8.101E-07	-10.14	input from data	8.113E-07	-8.43	input from data	8.121E-07
-lnL:PRESEASON 0+	2.68	input from data	2.214E-07	1.62	input from data	2.036E-07	-3.37	input from data	2.221E-07	-3.86	input from data	9.896E-08
-lnL:CPUE (TVH)	-21.48	0.26	0.0019	-21.12	0.27	0.0019	-21.22	0.26	0.0019	-21.61	0.26	0.0019
-lnL:CPUE (TIB)	-16.71	0.18	0.0162	-16.92	0.18	0.0163	-16.78	0.18	0.0163	-16.79	0.18	0.0162
'-lnL:RecRes	7.63	0.50	(input sigma 0.5)	7.64	0.50	input sigma 0.5	7.61	0.50	nput sigma 0.5	7.64	0.50	input sigma 0.5

Table 1-8 (b) continued

	(a) Model version 1			(d) Model with Add Var estimated & GLM0			(e) Single Preseas0 AV estimate			(f) Single Preseas0 AV for 2017 only		
Parameter	**Parameter**	**Value**	**90% CI**	**Parameter**	**Value**	**90% CI**	**Parameter**	**Value**	**90% CI**	**Parameter**	**Value**	**90% CI**
B(1973)^{sp} (tons)	4326	3095	5556	4482	3200	5763	4687	3332	6043	4558	3243	5872
M	0.69	0.57	0.82	0.69	0.57	0.82	0.69	0.57	0.81	0.69	0.56	0.82
h	fixed 0.7			fixed 0.7			fixed 0.7			fixed 0.7		
Sel (age 1+) 1973-1988	0.42	0.23	0.60	0.42	0.23	0.61	0.43	0.24	0.62	0.42	0.23	0.62
Sel (age 1+) 1989-2001	0.17	0.15	0.19	0.17	0.15	0.19	0.17	0.15	0.19	0.17	0.15	0.19
Sel (age 1+) post2002	0.02	0.01	0.03	0.02	0.01	0.03	0.02	0.01	0.03	0.02	0.01	0.03
Recruitment residuals (1985-2018)		34 parameters			34 parameters			34 parameters			34 parameters	
Model estimates and depletion statistics												
B(2018)^{sp} (tons)	2204	1451	2958	2016	1287	2746	1815	1087	2542	2066	1284	2848
RBC(2019) model	533	359	708	656	436	876	676	443	908	712	469	956
RBCforecast(2020) model	600	435	765	618	447	789	628	448	808	610	437	782
Current Depletion (Nov) *B(2018)^{sp} / B(1973)sp*	0.52	0.38	0.66	0.46	0.32	0.59	0.39	0.26	0.52	0.46	0.32	0.60
Bexp(2018) (tons)	2518	1782	3255	2352	1636	3068	2165	1448	2882	2411	1642	3180
No. parameters estimated	39			47			40			40		
'-lnL:overall	**-182.113**			-191.912			-179.980			-183.491		
AIC	**-286.226**			-289.824			-279.960			-286.982		
Likelihood contributions		**Sigma**	**q**		Sigma	q		Sigma	q		Sigma	q
'-lnL:CAA	-65.87	0.05		-65.93	0.05		-66.00	0.04		-65.93	0.05	
'-lnL:CAAsurv	-20.35	input from data		-20.54	input from data		-20.55	input from data		-20.23	nput from data	
-lnL:CAA historic	-21.99	0.13		-21.98	0.13		-21.74	0.13		-21.73	0.13	
-lnL:Survey Index 1+	-19.56	input from data	3.937E-07	-19.35	input from data	3.936E-07	-25.78	input from data	3.789E-07	-25.91	nput from data	3.785E-07
-lnL:Survey Index 2+	-15.38	input from data	4.089E-07	-15.66	input from data	4.122E-07	-13.94	input from data	3.971E-07	-13.90	nput from data	3.961E-07
-lnL:Survey benchmark	-3.13	input from data		-3.13	input from data		-3.14	input from data		-3.14	nput from data	
'-lnL:PRESEASON	-7.97	input from data	8.033E-07	-9.77	input from data	8.137E-07	-11.79	input from data	7.193E-07	-10.85	nput from data	7.243E-07
-lnL:PRESEASON 0+	2.68	input from data	2.214E-07	-4.72	input from data	9.499E-08	-0.19	input from data	1.645E-07	-4.79	nput from data	2.225E-07
-lnL:CPUE (TVH)	-21.48	0.26	0.0019	-21.42	0.26	0.0019	-8.40	0.44	0.4116	-8.42	0.44	0.4117
-lnL:CPUE (TIB)	-16.71	0.18	0.0162	-17.00	0.18	0.0163	-16.31	0.19	0.4329	-16.31	0.19	0.4328
'-lnL:RecRes	7.63	0.50	(input sigma 0.5)	7.57	0.50	(input sigma 0	7.84	0.50	(input sigma 0.5)	7.72	0.50	nput sigma 0.5

Table 1-8 (c) continued

	(a) Model version 1			(g) AV Pars estimated no lower bound			(h) GLM0 & AV estimated no lower bou		
Parameter	**Parameter**	**Value**	**90% CI**	**Parameter**	**Value**	**90% CI**	**Parameter**	**Value**	**90% CI**
B(1973)^{sp} (tons)	4326	3095	5556	4439	3168	5710	4472	3194	5750
M	0.69	0.57	0.82	0.69	0.57	0.82	0.69	0.57	0.82
h	fixed 0.7			fixed 0.7			fixed 0.7		
Sel (age 1+) 1973-1988	0.42	0.23	0.60	0.42	0.24	0.61	0.42	0.23	0.61
Sel (age 1+) 1989-2001	0.17	0.15	0.19	0.17	0.15	0.19	0.17	0.15	0.19
Sel (age 1+) post2002	0.02	0.01	0.03	0.02	0.01	0.03	0.02	0.01	0.03
Recruitment residuals (1985-2018)	34 parameters			34 parameters			34 parameters		
Model estimates and depletion statistics									
B(2018)^{sp} (tons)	2204	1451	2958	1969	1260	2678	2013	1286	2740
RBC(2019) model	533	359	708	641	426	857	656	436	876
RBCforecast(2020) model	600	435	765	612	442	781	618	447	788
Current Depletion (Nov)									
B(2018)^{sp} / B(1973)sp	0.52	0.38	0.66	0.45	0.32	0.59	0.46	0.32	0.59
Bexp(2018) (tons)	2518	1782	3255	2304	1607	3000	2349	1635	3062
No. parameters estimated	39			47			47		
'-lnL:overall	**-182.113**			-191.779			-193.558		
AIC	**-286.226**			-289.558			-293.116		
Likelihood contributions		**Sigma**	**q**		Sigma	q		Sigma	q
'-lnL:CAA	-65.87	0.05		-65.79	0.05		-65.91	0.05	
'-lnL:CAAsurv	-20.35	input from data		-20.48	nput from data		-20.48	nput from data	
-lnL:CAA historic	-21.99	0.13		-21.98	0.13		-21.98	0.13	
-lnL:Survey Index 1+	-19.56	input from data	3.937E-07	-19.07	nput from dat	3.964E-07	-19.22	nput from dat	3.936E-07
-lnL:Survey Index 2+	-15.38	input from data	4.089E-07	-15.84	nput from dat	4.153E-07	-15.66	nput from dat	4.120E-07
-lnL:Survey benchmark	-3.13	input from data		-3.12	nput from data		-3.13	nput from data	
'-lnL:PRESEASON	-7.97	input from data	8.033E-07	-10.19	nput from dat	8.200E-07	-9.53	nput from dat	8.190E-07
-lnL:PRESEASON 0+	2.68	input from data	2.214E-07	-4.65	nput from dat	2.223E-07	-6.50	nput from dat	9.579E-08
-lnL:CPUE (TVH)	-21.48	0.26	0.0019	-21.65	0.26	0.0019	-21.62	0.26	0.0019
-lnL:CPUE (TIB)	-16.71	0.18	0.0162	-16.80	0.18	0.0163	-17.11	0.18	0.0163
'-lnL:RecRes	7.63	0.50	(input sigma 0.5)	7.79	0.50	input sigma 0.5	7.58	0.50	nput sigma 0.

Table 1-9. Summary of model parameter estimates for the Revised Reference Case and additional sensitivities (see text for details).

	(g) AV Pars estimated no lower bound			(i) Estimate hyperstability			(j) Change steepness h		
Parameter	**Parameter**	**Value**	**90% CI**	**Parameter**	**Value**	**90% CI**	**Parameter**	**Value**	**90% CI**
B(1973)^{sp} (tons)	4439	3168	5710	4464	3179	5748	4603	3260	5945
M	0.69	0.57	0.82	0.69	0.57	0.82	0.69	0.57	0.82
h	fixed 0.7			fixed 0.7			**fixed 0.6**		
hyps(TVH)	fixed 0.75			**0.75**	**0.55**	**0.95**	fixed		
hyps(TIB)	fixed 0.5			**0.27**	**0.13**	**0.42**	fixed		
Sel (age 1+) 1973-1988	0.42	0.24	0.61	0.42	0.23	0.61	0.42	0.23	0.60
Sel (age 1+) 1989-2001	0.17	0.15	0.19	0.17	0.15	0.19	0.17	0.15	0.19
Sel (age 1+) post2002	0.02	0.00	0.03	0.02	0.00	0.03	0.02	0.00	0.03
Recruitment residuals (1985-2018)		**34 parameters**			34 parameters			34 parameters	
Model estimates and depletion statistics									
B(2018)^{sp} (tons)	1969	1260	2678	1878	1171	2584	1881	1174	2588
RBC(2019) model	641	426	857	648	430	867	648	430	866
RBCforecast(2020) model	612	442	781	612	441	783	590	423	758
Current Depletion (Nov) *B(2018)^{sp} / B(1973)sp*	0.45	1259.81	2678.39	0.43	0.29	0.56	4533.00	3047.48	6018.52
Bexp(2018) (tons)	2304	1607	3000	2215	1521	2909	2218	1524	2912
No. parameters estimated	47			49			47		
'-lnL:overall	-191.779			-194.582			-194.613		
AIC	-289.558			-291.164			-295.226		
Likelihood contributions		Sigma	q		Sigma	q		Sigma	q
'-lnL:CAA	-65.79	0.05		-65.84	0.05		-65.84	0.05	
'-lnL:CAAsurv	-20.48	input from data		-20.44	input from data		-20.43	input from data	
-lnL:CAA historic	-21.98	0.13		-21.92	0.13		-21.91	0.13	
-lnL:Survey Index 1+	-19.07	input from data	3.964E-07	-20.47	input from data	3.919E-07	-20.57	input from data	3.917E-07
-lnL:Survey Index 2+	-15.84	input from data	4.153E-07	-15.62	input from data	4.105E-07	-15.55	input from data	4.099E-07
-lnL:Survey benchmark	-3.12	input from data		-3.13	input from data		-3.13	input from data	
'-lnL:PRESEASON	-10.19	input from data	8.200E-07	-11.07	input from data	8.101E-07	-11.07	input from data	8.100E-07
-lnL:PRESEASON 0+	-4.65	input from data	2.223E-07	-4.72	input from data	2.199E-07	-4.82	input from data	2.210E-07
-lnL:CPUE (TVH)	-21.65	0.26	0.0019	-20.70	0.27	0.0020	-20.65	0.27	0.0019
-lnL:CPUE (TIB)	-16.80	0.18	0.0163	-18.81	0.16	0.1036	-18.79	0.16	0.1045
'-lnL:RecRes	7.79	0.50	(input sigma 0.5)	8.13	0.50	(input sigma 0.5	8.14	0.50	(input sigma 0.

Table 1-10. Summary of TRLRAG Reference Case RBC.

TAC/Catch (t)	2014	2015	2016	2017	2018	2019
Forecast TAC (90% CI)	767 (518-1016)	751 (556-945)	719 (515-923)	677 (489-866)	758 (546-970)	531 (383-678)
Preliminary TAC (90% CI)	616 (294-938)	894 (571-1217) TIB: 328 t TVH: 251 t PNG: 285 t	704 (510-897) Aug 2015 Dec 2015 update	495 (315-676) TIB: 188 t TVH: 144 t PNG: 163 t	299 (196-401) TIB: 136 t TVH: 64 t PNG: 99 t	[533 – 637t] 641t
Final TAC	616	Mar 2015 (revision with preseason survey = 769t)	796	495t	299t	
Catch	682t	562t	572t	368t	328t	

Model trajectories

The model-predicted numbers of 1+ and 2+ lobsters for the entire model period are shown in Figure 1-12. There is considerable inter-annual variability in stock size, with the extent of the variability consistent with that observed from field studies.

The lobster spawning biomass (t) trajectory is given in Figure 1-13. The stock is currently estimated to be at 46% of the pristine (1973) spawning biomass level but is expected to fluctuate widely about the average target spawning biomass level, and to increase in 2019.

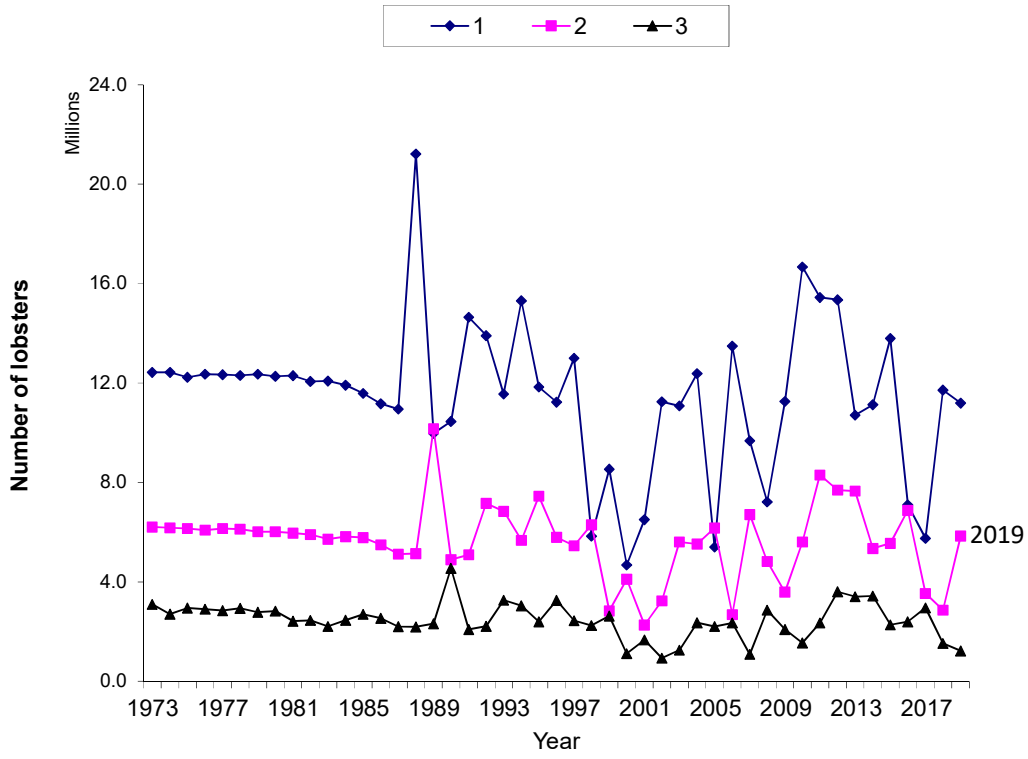


Figure 1-12. Model trajectories of the annual numbers of lobsters in each age class at the start of each of years 1973 to 2016. The increased variability from 1985 onwards is because the model estimates stock recruit residuals for years from 1985 to 2016.

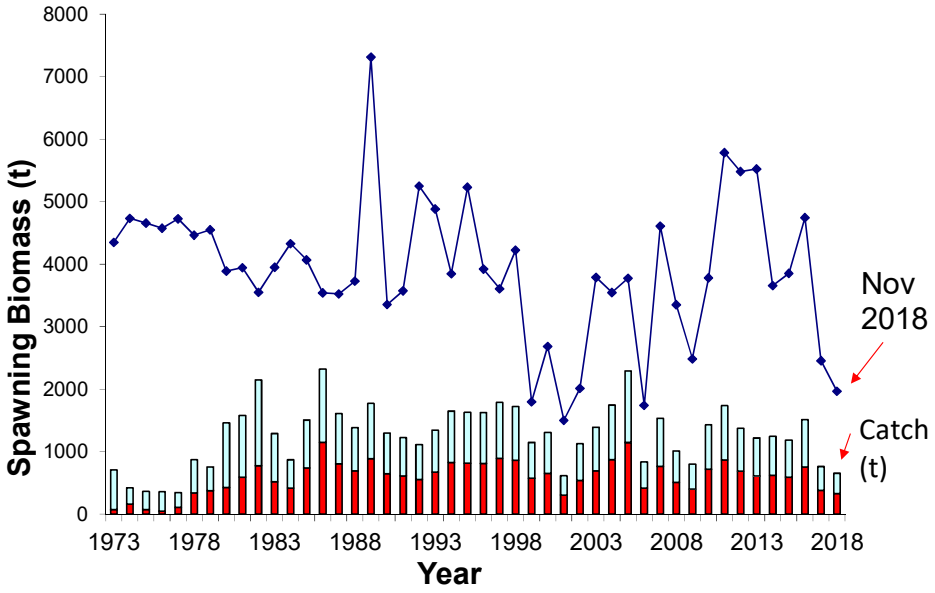


Figure 1-13. Model trajectories of the lobster spawning biomass (t) over the model period shown together with annual catches by the trawling and other sectors combined.

The model-predicted spawning biomass trajectory is shown in Figure 1-14.**Error! Reference source not found.**. The November 2018 spawning biomass for the TRLRAG Revised Reference Case is estimated to be 1969 t [1260; 2678] (Table 1-7). Fig. 1-15 shows the model-predicted commercially available (also termed exploitable) lobster biomass, computed as the sum of all 1+ and 2+ lobsters which are “available” to be caught each year. The current 2018 estimate is 2304t [1607; 3000], but this is predicted to increase in 2019 (Fig. 1-15).

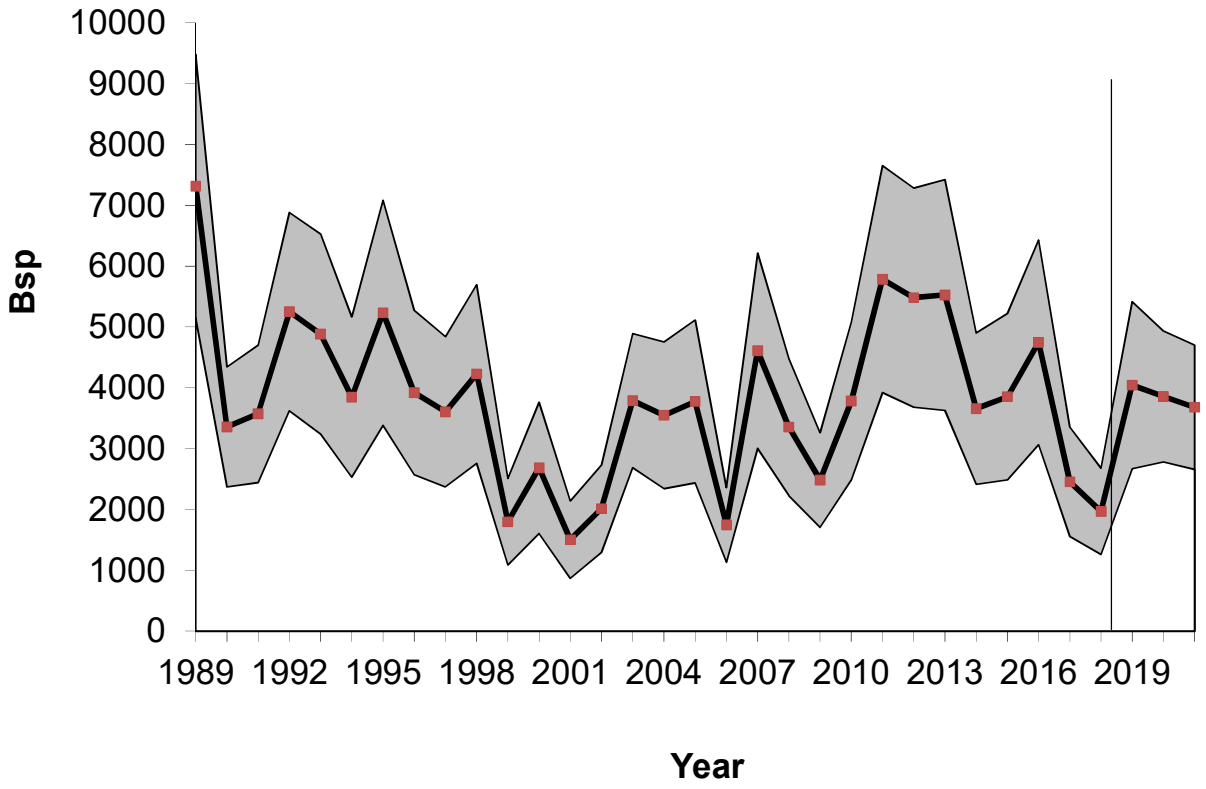


Figure 1-14. Model-predicted lobster November spawning biomass trajectory shown together with Hessian-based 90% confidence intervals for revised Reference Case model. The vertical line indicates the separation between historic and predicted estimates.

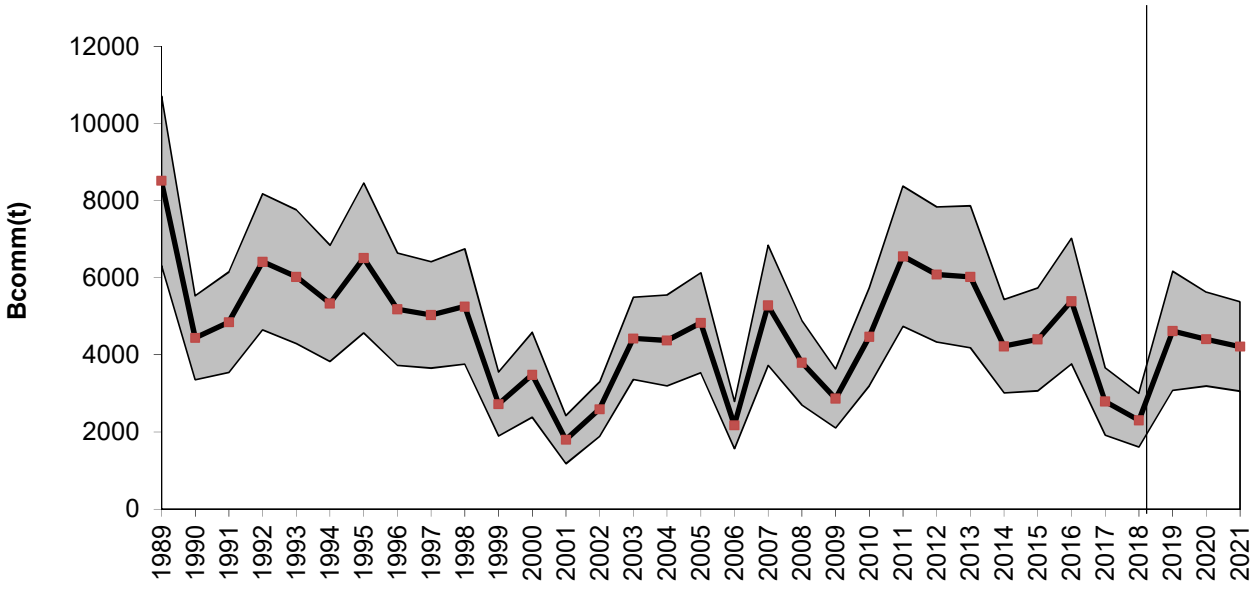


Figure 1-15. Model-predicted commercially available (also termed exploitable) lobster biomass (Bcomm), which is the sum of all 1+ and 2+ lobsters which are "available" to be caught each year. The shaded area shows the Hessian-based 90% confidence intervals. The vertical line indicates the separation between historic and predicted estimates.

Sensitivity Tests

The robustness of model results were tested across a number of important sensitivity tests, including the following which were presented at the TRLRAG December 2018 meeting:

- Fix steepness h=0.6 and try estimate
- Fix hyperstability pars CPUE (TVH 1) (TIB 1); try estimate
- Preseason survey index –
    - use the additional 5 sites added;
    - test other series particularly excluding Buru which gives lower standard error (SE) for 1+ index
    - Downweight Pre0+ (2017)
- CPUE TVH – Int3 standardised series; nominal
- CPUE TIB – Seller&A standardised series ; nominal

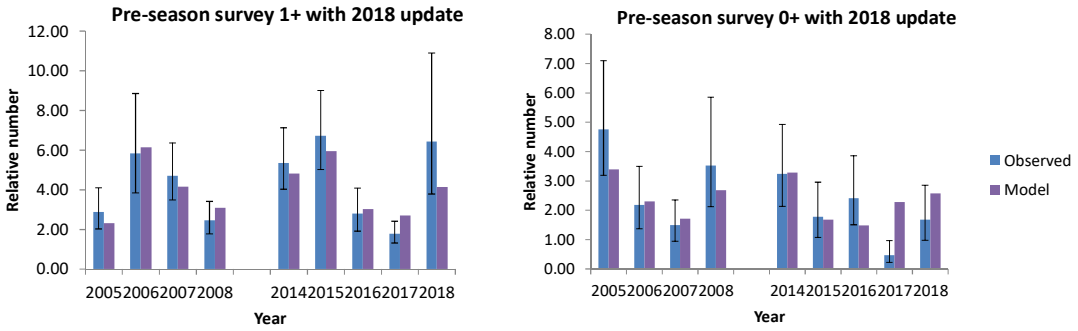
This report focuses on alternative methods tested to account for changes to the survey 0+ observation and process error. Full results are presented in Tables 1-8a-c, and illustrative changes in the fit to the survey data are shown below in Fig. 1-16. As previously, revised model runs are compared with a scenario that uses the 0+ preseason survey index without modification (Model 1 - (a) in Table 1-8) as well as a scenario in which these data are excluded (Model 2 Table 1-8) as a means of bounding the range of plausible alternatives. As expected, the latter model fits the preseason 1+ index very well but the fit to the 0+ data is very poor (note the likelihood contribution from comparing with the 0+ series is shown for illustrative purposes, but is not included in calculation of the total likelihood for this scenario).

The change in the model results was fairly consistent when introducing alternative analyses to address the model conflict. Decreasing the lower bound of the estimated additional variance parameters has a negligible impact on the estimate of RBC(2019) - 645 vs 641 for models (b&g) and no change (656) for models (d&h) - and all four results are relatively similar (within 2%). On the other hand the GLM0 only model has an RBC of 601 which is 6% lower than model (g). All are higher than the base model (a) estimate of 533.

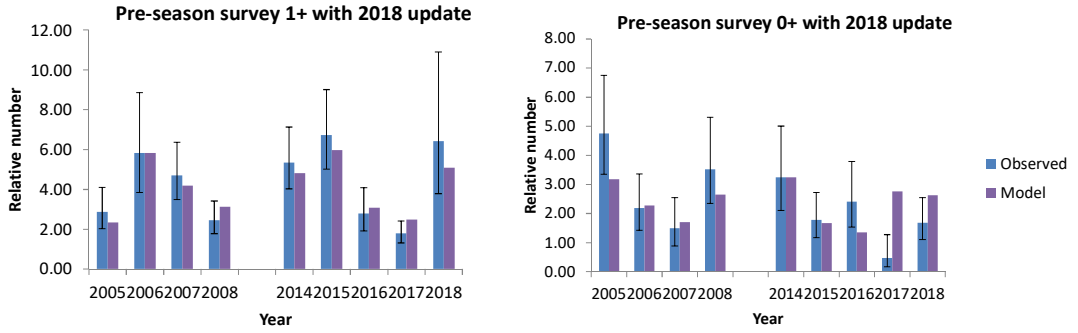
Based on the earlier set of sensitivity analyses, a couple of additional sensitivity analyses were run using the revised Reference Case Model. Estimating (instead of fixing) the hyperstability parameters for the TIB and TVH CPUE series had only a small effect on model results (Table 1-9, Fig. 1-17), although the estimated value for the TIB series was lower than currently used. Both parameters were reasonably estimated in the model and the version with these parameters estimated had an improved AIC but the difference was less than 2. This will therefore be investigated further in future work, and before changes are made it is recommended that the data subgroup first review any recommendations for changing the input CPUE series.

Decreasing the stock-recruitment steepness parameter *h* from 0.7 to 0.6 resulted in a small improvement in the likelihood and AIC values (Table 1-9), and there was some support for a lower steepness value, which is being investigated further in ongoing work.

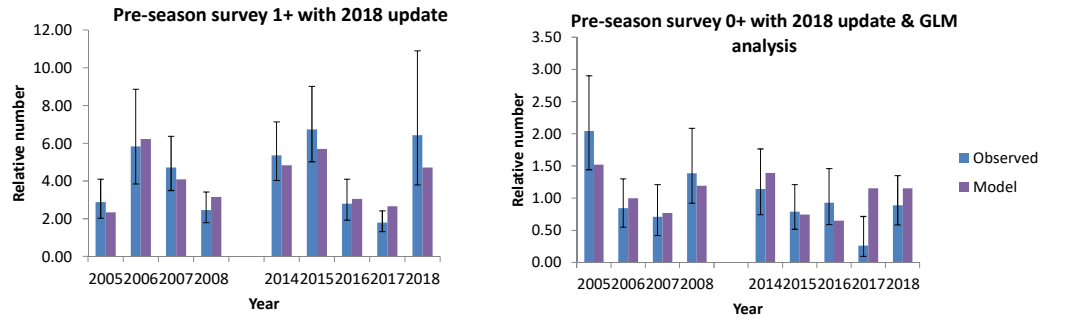
(A) Model (a) without Additional Variance (A.V.) added or GLM0



(B) Model (g) with Additional Variance (A.V.) added



(C) Model (c) with GLM0 but no A.V.



(D) Model (h) with GLM0 and A.V.

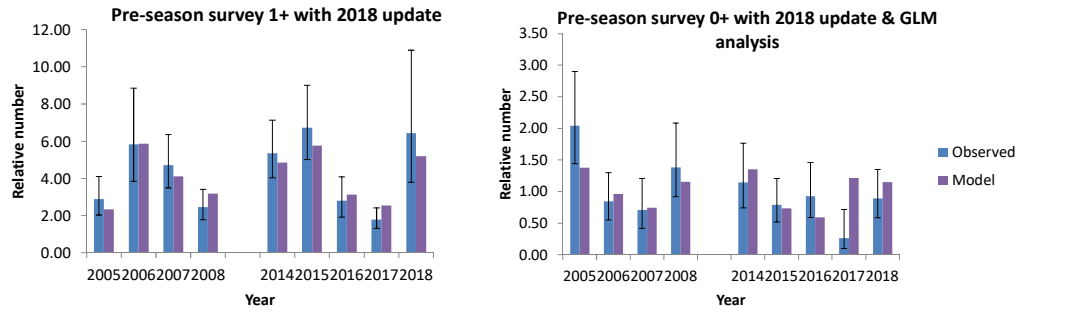
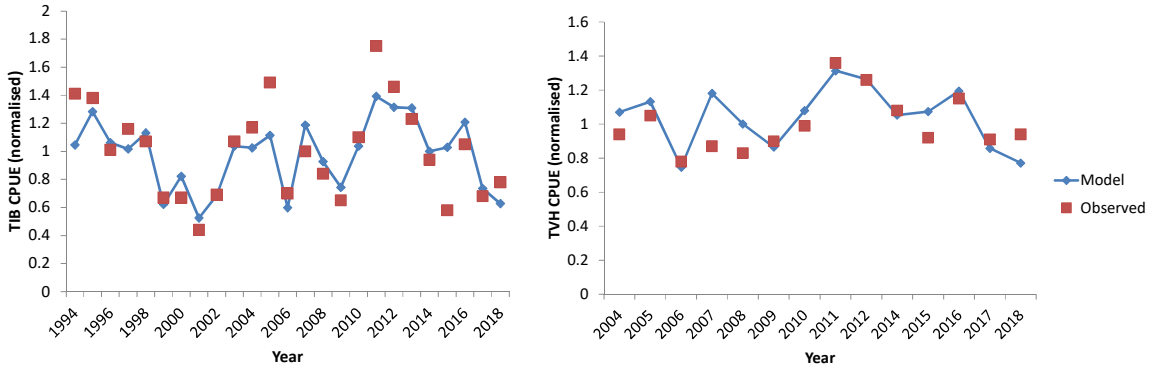


Figure 1-16. Comparison of model fits to preseason survey 0+ and 1+ index using (A) Model version 1 with no Additional Variance (A.V.) estimated versus (B) Revised Reference Case model (g) with A.V. estimated, as well as alternative (C) GLM-standardised 0+ index used and (D) GLM0 and A.V. estimated.

(A) Revised Reference Case (model (g) FIT TO TVH CPUE and TIB CPUE data with fixed hyperstability parameters



(B) Sensitivity analysis when estimating hyperstability parameters

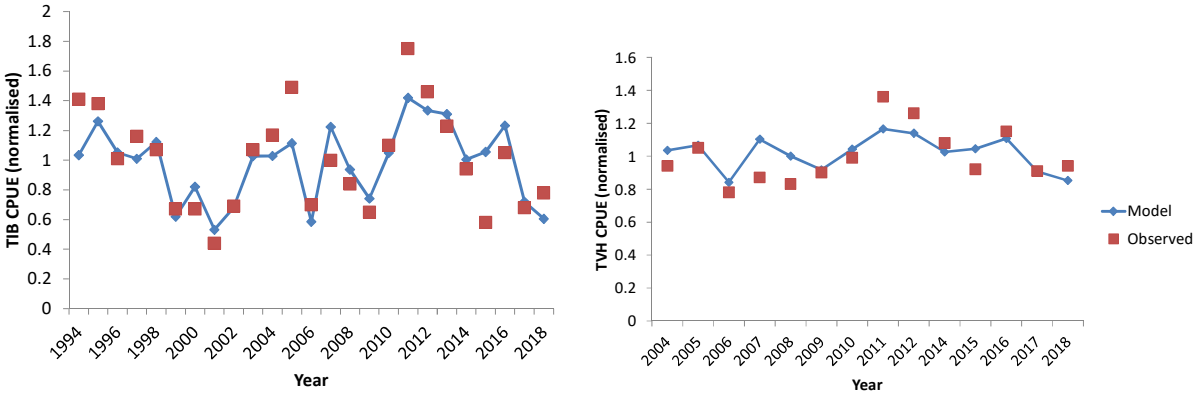


Figure 1-17. Comparison of model fits to CPUE standardised series using (A) Revised Reference Case model (g) and (b) model with hyperstability parameters estimated

1.6 Discussion

The revised and updated model adequately fits the available data and integrates all available information to output a RBC value as required for management. The use of a single model facilitates understanding of the way in which data inputs translate into an assessment of the status and productivity of the resource and hence an associated RBC estimate. Moreover, parameter estimates and resource trajectories are presented together with confidence intervals to illustrate the extent of uncertainty associated with model predictions.

An important assumption of the current and previous assessments is that the Torres Strait rock lobster resource is a closed population, but this is clearly not the case given they migrate eastwards out the Torres Straits (Moore and MacFarlane 1984, Skewes et al. 1994). It is not known to what extent mixing occurs with the eastern component of the stock, and hence whether these two stock components should rather be treated as a single stock in computing a spawning stock biomass. This aspect has been investigated during a related MSE project as well as in ongoing work.

The inherent variability of environmental influences in relatively short-lived highly variable stocks such as TRL confounds both the accuracy and precision of optimal sustainable yield estimates for the following year. As more and better surveys are added, it becomes possible to set less conservative TACs.

The TRLRAG is currently considering adopting a pre-tested harvest control rule that is based on the results of the pre-season survey and other data inputs to set the RBC, rather than annually running the stock assessment (Plaganyi et al. 2018). The advantage of the latter approach is that it can be simulation tested and the harvest control rules agreed beforehand by all stakeholders, so that the TAC updating process is quick and efficient as is necessary given the short time between the pre-season survey completion (plus time for analysis of the data), and the opening of the fishing season.

Following the advice from the December 2018 RAG to apply a statistically calculated down-weighting to the 2017 0+ index, this document has therefore selected a revised Reference Case that includes estimation of Additional Variance for all 0+ survey observations. This document presents full results for this illustrative case as well as summary results for other variants, with the final choice of model version to be used to inform the RBC to be finalised at the forthcoming TRLRAG meeting, and hence note that the final RBC may differ from the revised reference case value presented here.

The revised reference case model suggests a RBC (2019) of 641t [90% CI 426-857t]. Using the revised reference case, the stock is currently estimated to be at 46% of the pristine (1973) spawning biomass level (K). Previous analyses forewarned that the 2018 spawning biomass may be lower than average and provides support for the management decisions taken in 2018 to limit catches so that sufficient lobsters would remain for spawning purposes and subsequent recruitment to the fishery in 3 years' time. Fortunately the good 1+ numbers observed in the most recent survey means that the model spawning biomass projection for the following year is once again much more positive. The very large inter-annual variability in the stock has long been recognised. Hence it is entirely plausible that the current lobster stock have been boosted by good

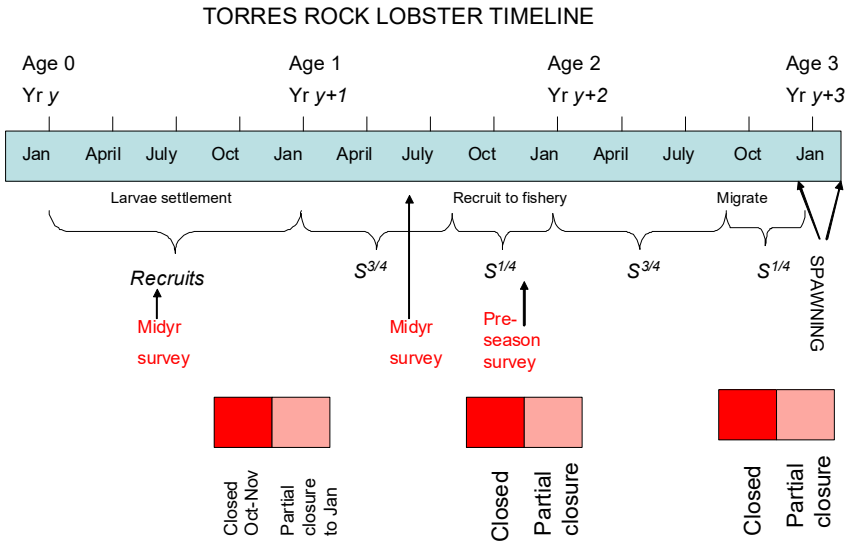
recruitment, however we suggest ongoing monitoring of 2019 catch and the next survey observations will be prudent.

Appendix A Stock Assessment Model Equations

A.1 Stock Assessment Equations

Introduction

Torres Strait rock lobsters emigrate in spring and breed during the subsequent summer (November-February) (Moore and MacFarlane, 1984; MacFarlane and Moore, 1986). Therefore, the number of age 2+ lobsters at the middle of the breeding season (December) should represent the size of the spawning stock (Apx Figure A-1). A schematic summary timeline underlying the Integrated model is presented in Apx Figure A-1. To simplify computations, the new model assumes catches, migration and spawning occur at discrete times, with quarterly updates to the dynamics of each age class. Catches of 2+ individuals are assumed taken as a pulse at midyear, with individuals migrating out of the Torres Straits at the end of the third quarter, and a spawning biomass being computed at the end of the year. Catches of 1+ lobsters are assumed taken at the end of the third quarter, when a proportion of this age class have grown large enough to be available to fishers.



Apx Figure A-1. Summary timeline for Torres Strait Rock Lobster model.

P. ornatus is an unusually fast growing lobster and hence analyses are expected to be sensitive to changes in assumption regarding growth rate (length vs age) and mass-at-length. Previous modelling studies used the Trendall et al. (1988) relationship:

$$CL_m = 177\left(1 - e^{-0.386(m/12 - 0.411)}\right)$$

where *CL* is carapace length (mm) and *m* is age in months for aspects of the computations. However, after converting length to mass using the morphometric relationship:

TOTWT=0.00258*(CL^2.76014)

the Trendall et al (1988) relationship translates into average individual masses that are less than the observed average mass of lobsters caught in the fishery. The Integrated model thus uses the Phillips et al. (1992) male growth relationship:

$$CL = L_{\infty}\left(1 - e^{-kt}\right)$$

where $L_{\infty} = 165.957 \quad mm$;

$\kappa = -0.0012$; and

t is age in DAYS.

The integrated model

An age-structured model of the Torres Rock Lobster population dynamics is developed and fitted to the available abundance indices by maximising the likelihood function. The model equations and the general specifications of the model are described below, followed by details of the contributions to the log-likelihood function from the different sources of data available. Quasi-Newton minimization is used to minimize the total negative log-likelihood function (the package AD Model BuilderTM (Fournier et al. 2012) is used for this purpose.

Lobster population dynamics

Numbers-at-age

The resource dynamics are modelled by the following set of population dynamics equations:

$$N_{y+1,1} = R_{y+1} \qquad 1$$

$$N_{y+1,a+1} = \left(N_{y,a}\, e^{-3M_a/4} - C_{y,a}\right) e^{-M_a/4} \qquad \text{for a=1} \qquad 2$$

$$N_{y+1,a+1} = \left(N_{y,a}\, e^{-M_a/2} - C_{y,a}\right) e^{-M_a/2} \qquad \text{for a=2} \qquad 3$$

where

$N_{y,a}$ is the number of lobsters of age a at the start of year y (which refers to a calendar year),

R_y is the recruitment (number of 1-year-old lobsters) at the start of year y,

M_a denotes the natural mortality rate on lobsters of age a, and

$C_{y,a}$ is the predicted number of lobsters of age a caught in year y

These equations simply state that for a closed population, with no immigration and emigration, the only sources of loss are natural mortality (predation, disease, etc.) and fishing mortality (catch). They reflect Pope's form of the catch equation (Pope, 1972) (the catches are assumed to be taken as a pulse at midyear for the 2+ class and at the start of the third quarter for the 1+ class) rather than the more customary Baranov form (Baranov, 1918) (for which catches are incorporated under the assumption of steady continuous fishing mortality). Pope's form has been used in order to simplify computations.

Recruitment

The number of recruits (i.e. new 1-year old lobsters – it is simpler to work with 1- rather than 0-year old lobsters as recruits) at the start of year y is assumed to be related to the spawning stock size (i.e. the biomass of mature lobsters) by a Beverton-Holt stock-recruitment relationship (Beverton and Holt, 1957), allowing for annual fluctuation about the deterministic relationship:

$$R_y = \frac{\alpha B_{y-1}^{sp}}{\beta + \left(B_{y-1}^{sp}\right)^{\gamma}} e^{(\varsigma_y - (\sigma_R)^2/2)} \qquad 4$$

where

α, β and γ are spawning biomass-recruitment relationship parameters (note that cases with γ > 1 lead to recruitment which reaches a maximum at a certain spawning biomass, and thereafter declines towards zero, and thus have the capability of mimicking a Ricker-type relationship),

ς_y reflects fluctuation about the expected recruitment for year y, which is assumed to be normally distributed with standard deviation σ_R (which is input in the applications considered here); these residuals are treated as estimable parameters in the model fitting process. Estimating the stock-recruitment residuals is made possible by the availability of catch-at-age data, which give some indication of the age-structure of the population.

B_y^{sp} is the spawning biomass at the start of year y, computed as:

$$B_y^{sp} = w_3^{st} \cdot N_{y,3} \qquad 5$$

where

w_3^{st} is the mass of lobsters of age 3 (i.e. in December during the spawning season).

In order to work with estimable parameters that are more meaningful biologically, the stock-recruitment relationship is re-parameterised in terms of the pre-exploitation equilibrium spawning biomass, K^{sp}, and the "steepness", h, of the stock-recruitment relationship, which is the proportion of the virgin recruitment that is realized at a spawning biomass level of 20% of the virgin spawning biomass:

$$\beta = \frac{\left(K^{sp}\right)^{\gamma}\left(1 - 5h0.2^{\gamma}\right)}{5h - 1} \qquad 6$$

and

$$\alpha = \frac{\beta + \left(K^{sp}\right)^{\gamma}}{SPR_{virg}} \qquad 7$$

where

$$SPR_{virg} = w_3^{st} N_3^{virg} \qquad 8$$

with

$$N_1^{virg} = 1 \qquad (9)$$

$$N_a^{virg} = N_{a-1}^{virg} e^{-M_{a-1}} \quad \text{for} \quad 2 < a \leq m \qquad (10)$$

where

m is the maximum age considered (taken to be 3).

Total catch and catches-at-age

The catch by mass in year *y* is given by:

$$C_y = w_1^{land} N_{y,1} e^{-3M_a/4} S_{y,1} F_y^{1+} + w_2^{mid} N_{y,2} e^{-M_a/2} S_{y,2} F_y^{2+} \qquad (11)$$

where

w_a^{land} denotes the mass of lobsters of age *a* that are landed at the end of the third quarter,

w_a^{mid} denotes the mid-year mass of lobsters of age *a*,

$S_{y,a}$ is the commercial selectivity (i.e. vulnerability to fishing gear) at age *a* for year *y*; and

F_y is the fished proportion (of the 1+ and 2+ classes) of a fully selected age class.

The model estimate of the exploitable ("available") component of biomass is calculated by converting the numbers-at-age into mass-at-age (using the individual weights of the 1+ lobsters assumed landed at the end of the third quarter, and the 2+ lobsters assumed landed at midyear):

$$B_y^{ex,1+} = w_1^{land} S_{y,1} N_{y,1} e^{-3M_a/4} \qquad (12)$$

$$B_y^{ex,2+} = w_2^{mid} S_{y,2} N_{y,2} e^{-M_a/2} \qquad (13)$$

and hence:

$$B_y^{ex} = B_y^{ex,1+} + B_y^{ex,2+} \qquad (14)$$

The 2010 model version computes the catch by mass separately for the trawling sector, which is assumed to target 2+ lobsters only. The exploitable component of biomass for this sector is thus based on Equation (13) only and assumes full selectivity of the 2+ age group.

The model estimates of the midyear numbers of lobsters are:

$$N_y^{mid} = N_{y,1} e^{-M_1/2} + \left(N_{y,2}\, e^{-M_2/2} - C_{y,2} \right) \qquad (15)$$

i.e.

$$N_{y,1}^{mid} = N_{y,1} e^{-M_1/2} \qquad (16)$$

$$N_{y,2}^{mid} = N_{y,2}\, e^{-M_2/2} - C_{y,2} \qquad (17)$$

Similarly, the model estimate of numbers for comparison with the Pre-Season November survey are as follows:

$$N_{y,1}^{pre} = \left(N_{y,1} e^{-3M_1/4} - C_{y,1} \right) e^{-M_1/6} \qquad (18)$$

$$N^{pre}_{y,2} = N^{mid}_{y,2}\, e^{-5M_2/12} \quad (19)$$

The proportion of the 1+ and 2+ age classes harvested each year (F^{1+}_y) are given respectively by:

$$F^{1+}_y = C^{1+}_y / B^{exp,1+}_y \quad (20)$$

$$F^{2+}_y = C^{2+}_y / B^{exp,2+}_y \quad (21)$$

where C^{1+}_y and C^{2+}_y are the catch by mass in year *y* for age classes 1 and 2, such that:

$$C^{1+}_y = p_{y,1+} C_y \quad (22)$$

and

$$C^{2+}_y = (1 - p_{y,1+}) C_y \quad (23)$$

with $p_{y,1+}$ representing the 1+ proportion of the total catch.

Given different fishing proportions for the two age classes, the numbers-at-age removed each year from each age class can be computed from:

$$C_{y,1} = S_{y,1} F^{1+}_y N_{y,1} e^{-3M_a/4} \quad \text{for } a = 1\text{, and} \quad (24)$$

$$C_{y,2} = S_{y,2} F^{2+}_y N_{y,2} e^{-M_a/2} \quad \text{for } a = 2 \quad (25)$$

The fully selected fishing proportion (*F*) is related to the annual fishing mortality rate (*F**) as follows:

$$1 - F = e^{-F^*} \quad (26)$$

Initial conditions

Although some exploitation occurred before the first year for which data are available for the lobster stock, this is considered relatively minor and hence the stock is assumed to be at its pre-exploitation biomass level in the starting year and hence the fraction (θ) is fixed at one in the analysis described here:

$$B^{sp}_{y_0} = \theta \cdot K^{sp} \quad (27)$$

with the starting age structure:

$$N_{y_0,a} = R_{start} N_{start,a} \quad \text{for } 1 \le a \le m \quad (28)$$

where

$$N_{start,1} = 1 \quad (29)$$

$$N_{start,a} = N_{start,a-1} e^{-M_{a-1}} \quad \text{for } 2 \le a \le m-1 \quad (30)$$

The (penalised) likelihood function

Model parameters are estimated by fitting to survey abundance indices, commercial and survey catch-at-age data as well as standardised CPUE data in some cases. A penalty function is included

to permit estimation of residuals about the stock-recruitment function. Contributions by each of these to the negative of the log-likelihood (- ℓnL) are as follows.

Survey abundance data

The same methodology is applied for the midyear and pre-season surveys, except that for the former there are indices for both the total 1+ and 2+ numbers, whereas for the pre-season the fit is only to the 1+ lobsters as most of the older lobsters will have migrated out of the region by November. The likelihood is calculated assuming that the observed midyear (and pre-season) survey abundance index is log-normally distributed about its expected value:

$$I_y^i = \hat{I}_y^i \exp\left(\varepsilon_y^i\right) \quad \text{or} \quad \varepsilon_y^i = \ell n\left(I_y^i\right) - \ell n\left(\hat{I}_y^i\right) \qquad 31$$

where

I_y^i is the scaled survey abundance index for year *y* and series *i*,

$\hat{I}_y^i = \hat{q}_s \hat{N}_y^{survey}$ is the corresponding model estimate, where $\hat{N}_y^{survey}$ is the model estimate of midyear numbers, given by equation 16 and 17 for the midyear survey, and for the pre-season survey it is given by equation 18.

$\hat{q}_s$ is the constant of proportionality (catchability) for the survey, and

ε_y^i from $N\left(0, \left(\sigma_y^i\right)^2\right)$.

The contribution of the survey data to the negative of the log-likelihood function (after removal of constants) is then given by:

$$-\ell n\, L^{Surv} = \sum_i \sum_y \left[\ell n\left(\sigma_y^i\right) + \left(\varepsilon_y^i\right)^2 / 2\left(\sigma_y^i\right)^2\right] \qquad 32$$

where $\left(\sigma_y^s\right)^2 = \ln\left(1 + \left(CV_y\right)^2\right)$ and the coefficient of variation (CV_y) of the resource abundance estimate for year *y* is input.

The survey catchability coefficient $\hat{q}_s$ is estimated by its maximum likelihood value:

$$\ell n\, \hat{q}_s = 1/n_i \sum_y \left(\ln I_y^i - \ln N_y^{ex}\right) \qquad 33$$

Commercial catches-at-age

The contribution of the catch-at-age data to the negative of the log-likelihood function under the assumption of an "adjusted" lognormal error distribution is given by:

$$-\ell n L^{CAA} = \sum_y \sum_a \left[\ell n\left(\sigma_{com} / \sqrt{p_{y,a}}\right) + p_{y,a}\left(\ell n\, p_{y,a} - \ell n\, \hat{p}_{y,a}\right)^2 / 2\left(\sigma_{com}\right)^2\right] \qquad 34$$

where

$p_{y,a} = C_{y,a} / \sum_{a'} C_{y,a'}$ is the observed proportion of lobsters caught in year y that are of age a,

$\hat{p}_{y,a} = \hat{C}_{y,a} / \sum_{a'} \hat{C}_{y,a'}$ is the model-predicted proportion of lobsters caught in year y that are of age a, where

$$\hat{C}_{y,1} = N_{y,1}\, e^{-3M_a/4}\, S_{y,1}\, F_y^{1+} \qquad 35$$

$$\hat{C}_{y,2} = N_{y,2}\, e^{-M_a/2}\, S_{y,2}\, F_y^{2+} \qquad 36$$

and

σ_{com} is the standard deviation associated with the catch-at-age data, which is estimated in the fitting procedure by:

$$\hat{\sigma}_{com} = \sqrt{\sum_y \sum_a \left(\ell n\, p_{y,a} - \ell n\, \hat{p}_{y,a}\right)^2 / \sum_y \sum_a 1} \qquad 37$$

The same approach is applied when fitting to the historic catch proportion data.

Survey catches-at-age

The survey catches-at-age are incorporated into the negative of the log-likelihood in an analogous manner to the commercial catches-at-age, assuming an adjusted log-normal error distribution (equation 25) where:

$p_{y,a} = C^{surv}_{y,a} / \sum_{a'} C^{surv}_{y,a'}$ is the observed proportion of lobsters of age a in year y,

$\hat{p}_{y,a}$ is the expected proportion of lobsters of age a in year y in the survey, given by:

$$\hat{p}_{y,a} = N_{y,a} \Big/ \sum_{a'=1}^{2} N_{y,a} \qquad 38$$

Benchmark Survey Estimates of Absolute Abundance

The absolute abundance of lobsters is estimated by fitting to data from two benchmark midyear surveys. The total 2002 population estimate, together with 95% confidence interval, was T_{89} = 9.0 (±1.9) million lobsters, and for 1989, T_{89} = 14.0 (±2.9) million lobsters (Pitcher et al. 1992). The 2+ year class was estimated at 1.77 (±0.38) million in 2002, and the 1+ year-class was at 5.2 (±1.5) million.

The approach is similar to that described above for the survey relative abundance index. The contribution of the survey data to the negative of the log-likelihood function (after removal of constants) is then given by:

$$-\ell \mathrm{n}\, L^{Bench} = \ell \mathrm{n}\left(\sigma_{89}\right) + \left(\varepsilon_{89}\right)^2 / 2\left(\sigma_{89}\right)^2 + \ell \mathrm{n}\left(\sigma_{02}\right) + \left(\varepsilon_{02}\right)^2 / 2\left(\sigma_{02}\right)^2 \qquad 39$$

where $\varepsilon_{89} = \ell \mathrm{n}\left(T_{89}\right) - \ell \mathrm{n}\left(\hat{N}^{mid}_{19891} + \hat{N}^{mid}_{19892}\right)$;

$\varepsilon_{02} = \ell \mathrm{n}\left(T_{02}\right) - \ell \mathrm{n}\left(\hat{N}^{mid}_{20021} + \hat{N}^{mid}_{20022}\right)$; and

$\left(\sigma_y\right)^2 = \ln\left(1+\left(CV_y\right)^2\right)$ and the two coefficients of variation (CV_{89} and CV_{02}) are input.

Stock-recruitment function residuals

The stock-recruitment residuals are assumed to be log-normally distributed. The contribution of the recruitment residuals to the negative of the (now penalised) log-likelihood function is given by:

$$-\ell nL^{pen} = \sum_{y=y1+1}^{y2} \frac{\left(\lambda_y\right)^2}{2\sigma_R^2} \qquad 40$$

where

$\lambda_y = \varepsilon_y$ is the recruitment residual for year y, which is estimated for year $y1$ to $y2$ (see equation 4),

ε_y from $N\left(0,(\sigma_R)^2\right)$,

σ_R is the standard deviation of the log-residuals, which is input.

Model parameters

Natural mortality:

Natural mortality (M_a) is generally taken to be age independent and is estimated in the model fitting process.

In sensitivity tests where age-dependence is admitted, it is taken to have the form:

$$M_a = \mu_1 + \mu_2 / a \qquad 41$$

Fishing selectivity-at-age:

The commercial selectivity is taken to differ over the 1973-2002 and 2002+ periods. Full selectivity of the 2+ class is assumed, with a separate selectivity parameter being estimated for each period for the 1+ class.

A.2 2018 Revised Reference Case model stock recruitment residual estimates and 90% Hessian-based confidence intervals

	Val	onfidence interval	
1985	0.08	-0.34	0.51
1986	0.03	-0.65	0.72
1987	0.02	-0.50	0.54
1988	0.70	0.46	0.95
1989	-0.05	-0.29	0.19
1990	-0.01	-0.24	0.21
1991	0.25	0.04	0.47
1992	0.29	0.07	0.51
1993	0.09	-0.12	0.31
1994	0.33	0.09	0.56
1995	0.08	-0.14	0.30
1996	0.05	-0.15	0.26
1997	0.16	-0.05	0.38
1998	-0.60	-0.84	-0.36
1999	-0.21	-0.45	0.03
2000	-0.83	-1.12	-0.55
2001	-0.35	-0.59	-0.11
2002	0.11	-0.10	0.33
2003	0.23	0.01	0.45
2004	0.27	0.06	0.48
2005	-0.67	-0.88	-0.47
2006	0.25	0.03	0.47
2007	-0.09	-0.30	0.12
2008	-0.24	-0.42	-0.06
2009	0.03	-0.19	0.26
2010	0.47	0.26	0.68
2011	0.44	0.23	0.66
2012	0.37	0.13	0.61
2013	-0.04	-0.26	0.18
2014	0.01	-0.23	0.24
2015	0.22	-0.01	0.45
2016	-0.40	-0.64	-0.15
2017	-0.61	-0.86	-0.37
2018	0.07	-0.20	0.35

Glossary

AFMA	Australian Fisheries Management Authority
CPUE	Catch Per Unit Effort
CSIRO	Commonwealth Scientific and Industrial Research Agency
eHCR	Empirical Harvest Control Rule
RBC	Recommended Biological Catch
TAC	Total Allowable Catch
TIB	Traditional Inhabitant Boat sector
TRL	Tropical Rock Lobster
TSSAC	Torres Strait Scientific Advisory Committee
TVH	Transferrable Vessel Holder (Licence)
TRL RAG	Tropical Rock Lobster Research Advisory Group
PNG	Papua New Guinea

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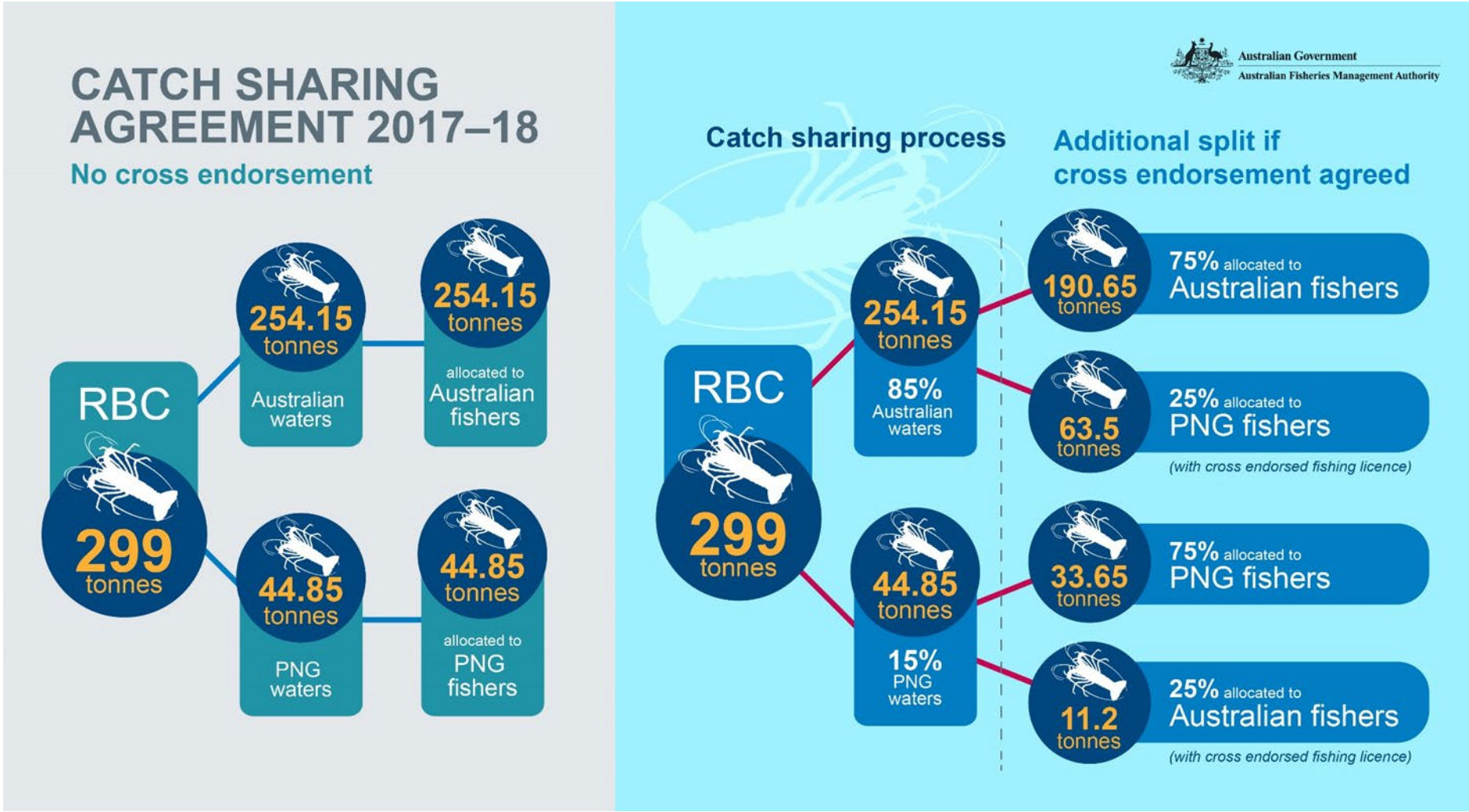
Proposed timeline for determining the recommended biological catch (RBC) and PNG-Australia catch shares for the 2018/19 fishing season for the Topical Rock Lobster (TRL) Fishery[1]

Steps	Description	Indicative timeline
Pre-season scientific survey	Results are used to update the annual stock assessment. Survey must be conducted in November to provide comparable results overtime and the most accurate estimate of annual lobster recruitment into the fishery.	11-23 November 2018
Stock assessment update	Conducted by CSIRO with preliminary stock assessment results within 4-5 weeks of the pre-season scientific survey.	early December 2018
TRL Resource Assessment Group (TRLRAG) advice[2]	Review the preliminary stock assessment results and Recommended Biological Catch (RBC) advice. Provide advice on finalising the assessment and RBC advice.	11-12 December 2018
PNG-Australia discussions	AFMA CEO and PNG NFA Director General to meet to discuss preliminary RBC advice from the TRLRAG, and cross-endorsement and catch sharing arrangements under the Treaty – a diagram illustrating the catch sharing formula as applied during the 2017/18 fishing season under the Treaty is provided below.	17 January 2019
TRLRAG advice2	Review the final stock assessment results and RBC advice. Provide final RBC advice.	5 February 2019
TRL Working Group (TRLWG) advice2	Consider TRLRAG advice on the final RBC and provide final RBC advice.	19-20 February 2019
PNG-Australia discussions	AFMA CEO and PNG NFA Director General to meet to discuss final RBC advice from the TRLRAG and TRLWG, and agree in principal to final catch sharing and cross-endorsement arrangements[3] under the Treaty.	22 February 2019

[1] The Australian Tropical Rock Lobster Fishery fishing season runs from 1 December each year to 30 September the following year. Hookah gear is not permitted between December and January.
[2] Officers from PNG National Fisheries Authority (NFA) are invited to attend all PZJA advisory forums.
[3] The Australian total allowable catch (TAC) equates to Australia's catch share of the final RBC in Australian waters, as agreed with PNG under the Treaty.

PZJA or Delegate	Agree to final TAC for the Australian TRL Fishery for the 2018/19 fishing season, to be administered under the *Torres Strait Fisheries (Tropical Rock Lobster) Management Instrument 2018* (TIB sector) and licence conditions (TVH sector). A final TAC for the Australia TRL Fishery to be determined by 1 March 2019.	25 February 2019
Cross-endorsement arrangements – if agreed between PNG and Australia	Formal letters exchanged between PNG and Australia confirming catch sharing and cross endorsement arrangements.	March 2019 onwards


CATCH SHARING AGREEMENT 2017–18
No cross endorsement
RBC
299 tonnes
254.15 tonnes
Australian waters
254.15 tonnes
allocated to Australian fishers
44.85 tonnes
PNG waters
44.85 tonnes
allocated to PNG fishers
Australian Government
Australian Fisheries Management Authority
Catch sharing process
Additional split if cross endorsement agreed
RBC
299 tonnes
254.15 tonnes
85% Australian waters
44.85 tonnes
15% PNG waters
190.65 tonnes
75% allocated to Australian fishers
63.5 tonnes
25% allocated to PNG fishers
(with cross endorsed fishing licence)
33.65 tonnes
75% allocated to PNG fishers
11.2 tonnes
25% allocated to Australian fishers
(with cross endorsed fishing licence)

TROPICAL ROCK LOBSTER WORKING GROUP (TRLWG)	MEETING 9 19-20 February 2019
FINALISING THE DRAFT HARVEST STRATEGY FOR THE TRL FISHERY	Agenda Item 4 For discussion and advice

RECOMMENDATIONS

1. That the Working Group:
    a. **DISCUSS** and **PROVIDE ADVICE** on the scoping of further options for a management trigger which has the objective of minimising impacts on the Traditional Inhabitant (TIB) sector when the TRL stock approaches the limit reference point, noting:
        i. the management trigger was originally proposed by some Working Group members at the meeting held on 25-26 July 2017 (TRLWG 6);
        ii. there have been significant changes to the management of the Torres Strait Tropical Rock Lobster Fishery (TRL Fishery) since TRLWG 6, specifically the determination of a quota Management Plan for the TRL Fishery (*Torres Strait Fisheries (Quotas for Tropical Rock Lobster (Kaiar)) Management Plan 2018*) and interim sectoral catch shares, the effect of which means that the TIB and non-Traditional Inhabitant (TVH) sectors will be restricted to a specified share of the TAC; and
        iii. the advice of the TRLRAG 22 meeting held on 27-28 March 2018, including the endorsement of the draft Harvest Strategy.
    b. If appropriate, following consideration of the above issue, **ENDORSE** the draft Harvest Strategy for PZJA consideration. A copy of the current draft Harvest Strategy is provided at **Attachment 4a**.
    c. **NOTE** the next steps for finalising the Harvest Strategy are:
        i. amend the draft Harvest Strategy to take into account any final proposed changes;
        ii. PZJA to consider the draft Harvest Strategy and decide whether to release the Strategy for public comment;
        iii. public comment sought on the draft Harvest Strategy;
        iv. TRLRAG and Working Group to consider and provide advice on comments received during the public comment period;
        v. PZJA to consider the draft Harvest Strategy and decide whether to adopt;
        vi. if adopted, Harvest Strategy to be applied to the first applicable fishing season.

KEY ISSUES

Most recent Working Group consideration

2. At the meeting held on 25-26 July 2017 (TRLWG 6), Working Group members considered in detail the draft Harvest Strategy as recommended by the TRLRAG, and having regard for the comments by members the Working Group:
    a. recognised that the draft Harvest Strategy is:

i. designed to inform management decisions for the Torres Strait TRL Fishery;

ii. is based on robust fishery independent survey data and stock assessment process;

iii. treats the TRL Fishery as a single stock;

iv. does not take into account recreational and traditional catches on the basis of TRLRAG advice that catches are likely low; and

v. has been subject to rigorous performance testing by the TRLRAG.

b. recognised that whilst there may be uncertainty in the level of connectivity between the east coast and Torres Strait TRL stocks, the draft Harvest Strategy uses the best available data including annual fishery independent survey data, to recommend annual RBCs. Future work such as the recently funded larval advection modelling project is likely to improve our understanding of stock connectivity overtime.

c. requested the following be presented at the next TRLWG meeting:

i. an overview of the current understanding of stock connectivity between the east coast and the Torres Strait TRL Fishery; and

ii. the basis for the Queensland East Coast TAC.

d. recommended that work should continue to examine whether there are cost-effective options for improving estimates of recreational catches in the region.

e. recommended that the PZJA work closely with both the Queensland and PNG Governments to ensure complementary management arrangements are adopted in the event that the TRL stock biomass falls below the limit reference point.

Proposed management trigger

3. 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.

4. Considering a range of differing views of members on this issue, the TRLWG 6 further recommended that work be undertaken by the TRLRAG and Working Group to examine possible options for including social and/or economic objective in the draft Harvest Strategy and applying a management trigger under the Harvest Strategy as the stock approaches the limit reference point to minimise the impacts on the TIB sector. In particular, the TRLRAG was asked to advise on the likely:

a. data and assessment requirements to support the proposed management trigger;

b. impediments, if relevant, to meeting the data and assessment requirements; and

c. costs of any new data and assessment requirements.

5. A copy of the TRLWG 6 meeting record is provided at **Attachment 4b**, for reference.

6. At the meeting held on 27-28 March 2018 (TRLRAG 22), the TRLRAG agreed that a management trigger could be included that results in alternative management and catch sharing arrangements. However, the trigger level itself and proposed management response needs to be identified by the Working Group before the TRLRAG can provide advice about how the draft Harvest Strategy should be modified to accommodate it. The TRLRAG discussed that:

a. social and economic limits are often based on tonnage and not per cent biomass. Biomass based triggers are difficult to monitor and it is not practical for the TRL Fishery given the limitations of available data.

b. triggers that result in management changes part way through a season are complex to administer and require real-time data and analysis which is expensive for a

fishery. In the TRL Fishery in-season adjustments would be difficult under the current inputs.

c. If a new trigger is incorporated, the draft Harvest Strategy would need to undergo management strategy evaluation (MSE) testing. This is a costly exercise.

7. TRLRAG 22 endorsed the draft Harvest Strategy and recommended the Working Group further discuss and provide the TRLRAG with details on the trigger level and proposed management response. A copy of the TRLRAG 22 meeting record is provided at **Attachment 4c**, for reference. At the TRLRAG meeting held on 11-12 December 2018 (TRLRAG 25), the TRLRAG reconsidered the number of years to be averaged in the eHCR index and decision rule triggers. No changes were recommended to the draft Harvest Strategy.

8. Since the consideration of the draft Harvest Strategy at TRLWG 6, the management of the TRL Fishery has undergone significant change, specifically the determination of a Management Plan for the TRL Fishery alongside interim sectoral catch shares, both commencing 1 December 2018. The Management Plan will introduce a quota management system. However, there is a formal process to allocate quota units which will take some time. In the interim, the PZJA agreed to implement separate TAC shares for the TIB and TVH sectors (66.17 and 33.83 per cent respectively). Once each sector has caught their share, they will be required to cease fishing (for further details refer to **Agenda Item 2.3**).

9. Under the interim sectoral catch shares and future quota management system, the relative sectoral catch shares are maintained, with seasonal catches adjusted according to the TAC. Under the Management Plan these shares can only change through quota trading. Input controls, for example based on the catch trigger arrangement discussed at TRLWG 6, cannot be used to change the relative shares. It would be possible however for the TIB sector to consider how it uses its catch within its sectoral share. Any such proposal would need to be subject to wide consultation with Traditional Inhabitant stakeholders and can be done overtime. The results of consultation could then be considered and if relevant, included into the TRL Harvest Strategy through an agreed amendment. Note the TRL Harvest Strategy will be subject to periodic review.

10. Noting these significant changes and the advice of TRLRAG 22, including the endorsement of the draft Harvest Strategy, the Working Group is asked to consider whether further options for a proposed management trigger be scoped.

11. Following the consideration of this issue, and if appropriate, the Working Group will be asked to endorse the draft Harvest Strategy for PZJA consideration. A copy of the current draft Harvest Strategy is provided at **Attachment 4a**. Of note, the draft Harvest Strategy has been updated just prior to this meeting to take into account updates to reflect:

    a. more recent arrangements around the setting of TACs;

    b. references to introduction of mandatory Fish Receiver System and data collection through it;

    c. updated references to the revised Commonwealth harvest strategy policy;

    d. references of additional TRLRAG and Working Group consideration of the draft Harvest Strategy.

    A track change version of these changes is provided at **Attachment 4d**.

BACKGROUND

Development of the draft Harvest Strategy for the TRL Fishery

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

13. The draft Harvest Strategy was developed to take into account key fishery specific attributes including:

a. there is potential for large, unpredictable inter-annual variations in availability and abundance of TRL;

b. TRL is a shared resource important for the traditional way of life and livelihood of traditional inhabitants, commercial and recreational sectors (TRLRAG 20 on 4-5 April 2017); and

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

14. The TRLRAG recommended harvest strategy objectives that place greater emphasis on the on the importance of the TRL Fishery for traditional way of life and livelihood of traditional inhabitants. The operational objectives of the Harvest Strategy 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.

b. 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).

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

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

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

15. The eHCR uses a regression of the 5 last year's data for the pre-season survey index of abundance of juvenile 1+ TRL (weighting 70%); newly recruited 0+ TRL (weighting 10%); the catch per unit effort (CPUE) indices for the TIB sector (weighting 10%) and CPUE indices for the TVH sector (weighting 10%).

16. The draft HS decision rules are:

a. Maximum catch limit - The eHCR includes a maximum catch limit of 1000 tonnes. Once the Harvest Strategy is implemented the cap will be reviewed after three years using Management Strategy Evaluation (MSE) testing with the updated stock assessment model.

b. Pre-season survey trigger - If in any year the pre-season survey 1+ indices is 1.25 or lower (average number of 1+ age lobsters per survey transect) it triggers a stock assessment.

c. Biomass limit reference point triggered - If the eHCR limit reference point is triggered in the first year, a stock assessment update must be conducted.

i. 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.

ii. 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).

d. Fishery closure rules - If the stock assessment determines the stock to be below the biomass limit reference point in two successive years, the TRL Fishery will be closed to commercial fishing.

i. MSE testing of the eHCR has shown that it is extremely unlikely (<1%) for the TRL Fishery to be closed based on its current performance.

e. Re-opening the Fishery - Following closure of the TRL Fishery, fishery-independent mid-season and pre-season surveys are mandatory. The TRL Fishery can only be

re-opened when a stock assessment determines the Fishery to be above the biomass limit reference point.

f. Based on the decision rules, there are four alternative possible scenarios that may occur under the application of the eHCR.

17. The TRL Fishery is currently operating under an interim Harvest Strategy. The key differences between the interim and draft Harvest strategy are the use of an eHCR to estimate a recommended biological catch (RBC) annually and the stock assessment model is conducted every three years (rather than annually) to assess the resource status and evaluate the performance of the eHCR. The draft Harvest Strategy has a number of pre-agreed decision rules that are designed to maintain the stock at the agreed target reference point.

Most recent TRLRAG and Working Group consideration

18. The Working Group last considered the draft Harvest Strategy at its meeting on 25-26 July 2017 (TRLWG 6), details of which are provided above. The draft Harvest Strategy has not changed since this time, although some elements have been reconsidered by the TRLRAG:

    a. at the TRLRAG meeting held on 27-28 March 2018 (TRLRAG 22), the TRLRAG agreed that a management trigger could be included that results in alternative management and catch sharing arrangements. However, the trigger level itself and proposed management response needs to be identified by the Working Group before the TRLRAG can provide advice about how the draft Harvest Strategy should be modified to accommodate it.

    b. at the TRLRAG meeting held on 18-19 October 2018 (TRLRAG 24), the TRLRAG recommended that in light of the 2017/18 fishing season, the number of years to be averaged in the eHCR index and decision rule triggers be revisited at the next meeting of the TRLRAG prior to finalising the draft Harvest Strategy.

    c. at the TRLRAG meeting held on 11-12 December 2018 (TRLRAG 25), the TRLRAG considered analyses presented by CSIRO detailing the results of testing of alternative eHCRs for the TRL Fishery. In consideration of the comparative results presented, the TRLRAG agreed to not change the current eHCR and continue the use of the 5-year slope rule.

    d. TRLRAG 25 also considered whether the mid-year survey trigger aligns with the current expectations or management of the TRL Fishery. Noting the sectoral catch shares in the TRL Fishery which may now alleviate previous concerns relating to the availability of TRL in a low TAC scenario; and the need to monitor the stock spawning biomass to inform RBCs, the TRLRAG agreed to maintain the 1.25 trigger limit as a biological indicator to trigger an extraordinary stock assessment rather than an economics based trigger (e.g. TAC-based limit). No changes were proposed to the draft Harvest Strategy as a result of the TRLRAG's further consideration of issues.

Australian Government

Australian Fisheries Management Authority

Torres Strait Tropical Rock Lobster Fishery

Draft Harvest Strategy

February 2019

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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

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 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 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 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 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). (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.

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, 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) and TRLWG (meeting no. 6 on 25-26 July 2017; meeting no. 9 on 19-20 February 2019). The HS was endorsed by the TRLRAG at meeting no. [insert meeting number] on [insert date] and TRLWG at meeting no. [insert meeting number] on [insert date]. The HS was adopted by the PZJA on [insert date]. This HS replaces the interim HS developed for the Fishery in 2008.

NOTE: This statement is to be updated as required.

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 in future years 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.

Overtime 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 should 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.

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 should not be accounted for, because the overall catches are likely to be relatively low and there would be limited impact on 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.

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 is compatible 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 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 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. 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+ indices is 1.25 or lower (average 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.
    - 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 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 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– 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, 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

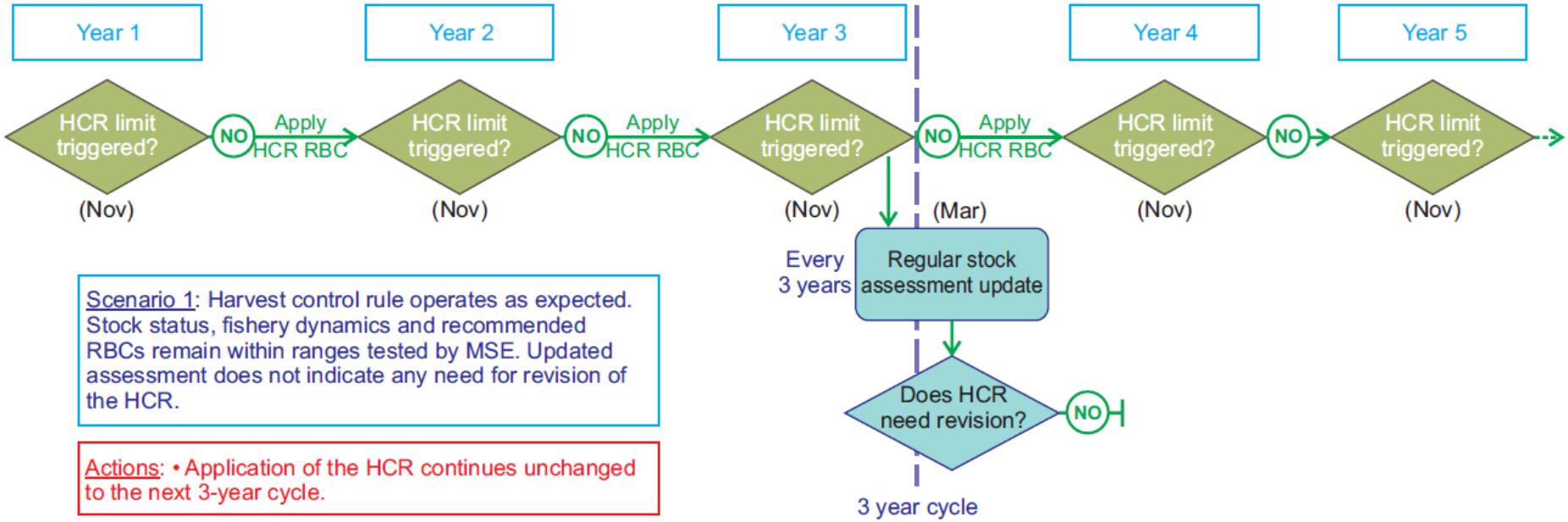


Figure 1. Torres Strait Tropical Rock Lobster Fishery decision rule scenario 1.

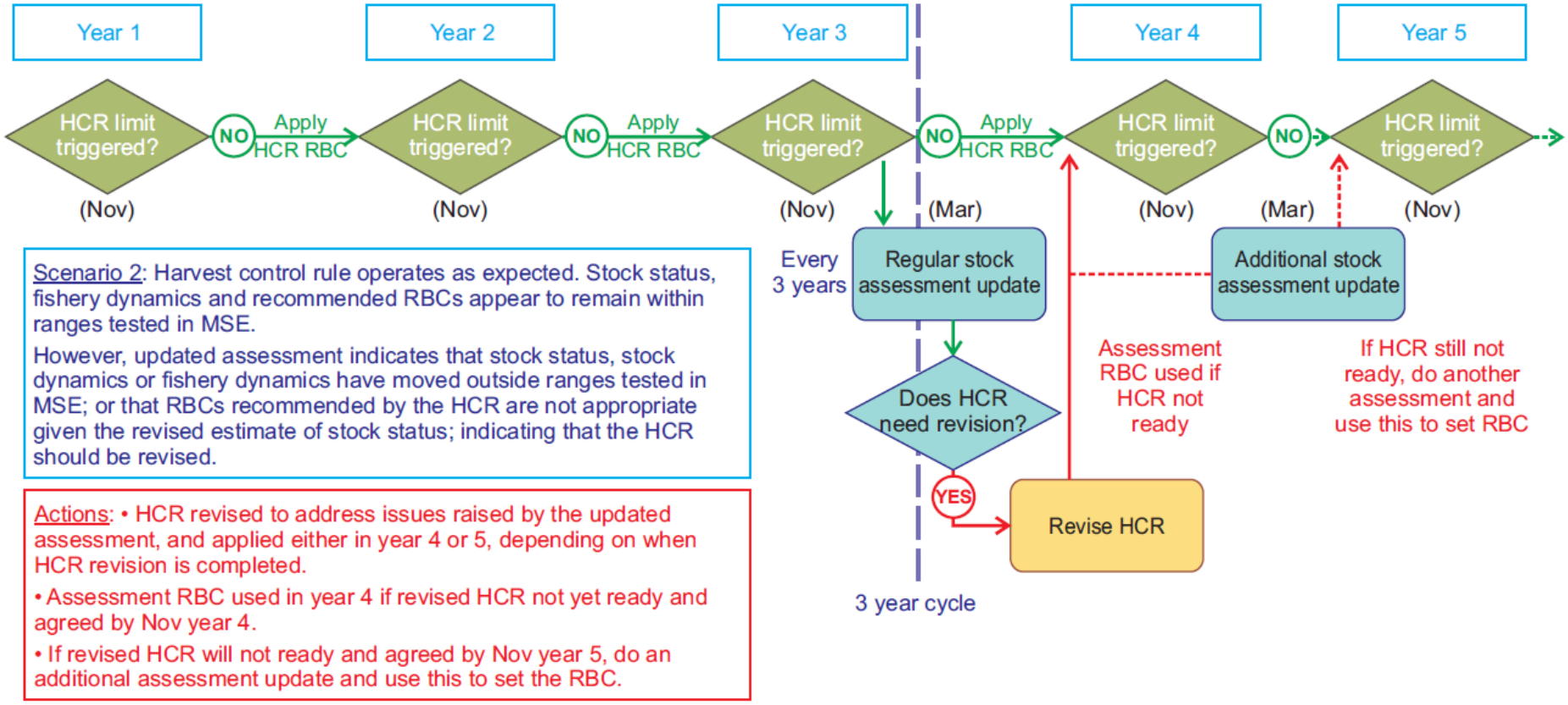


Figure 2. Torres Strait Tropical Rock Lobster Fishery decision rule scenario 2.

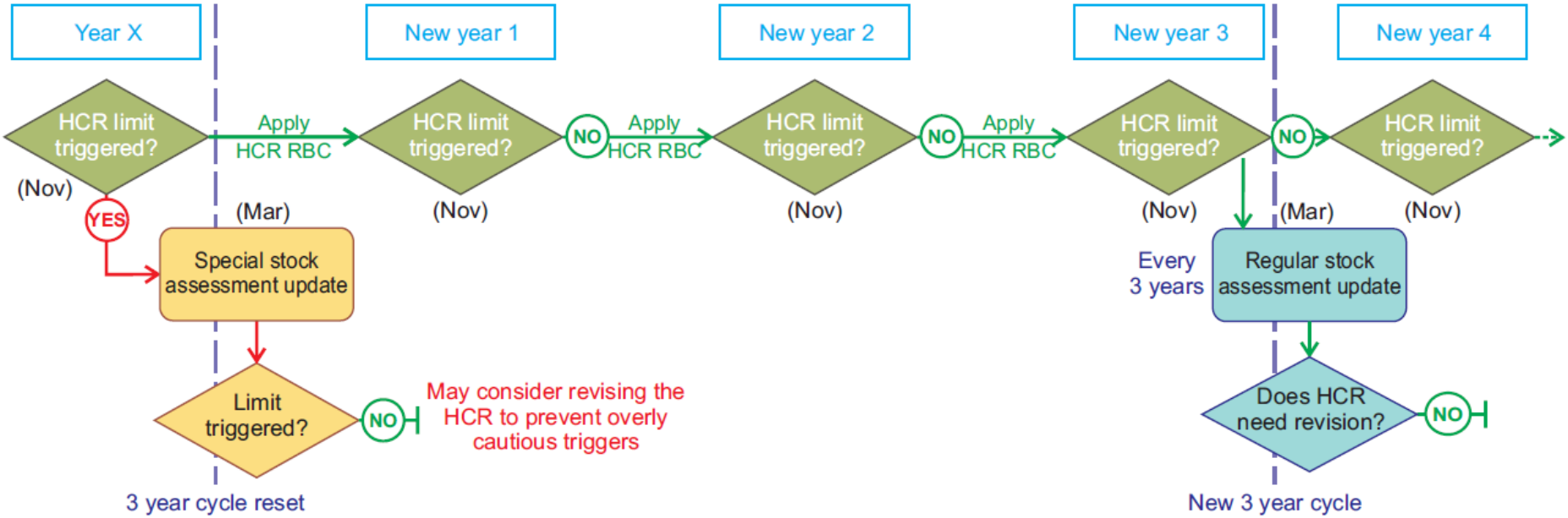
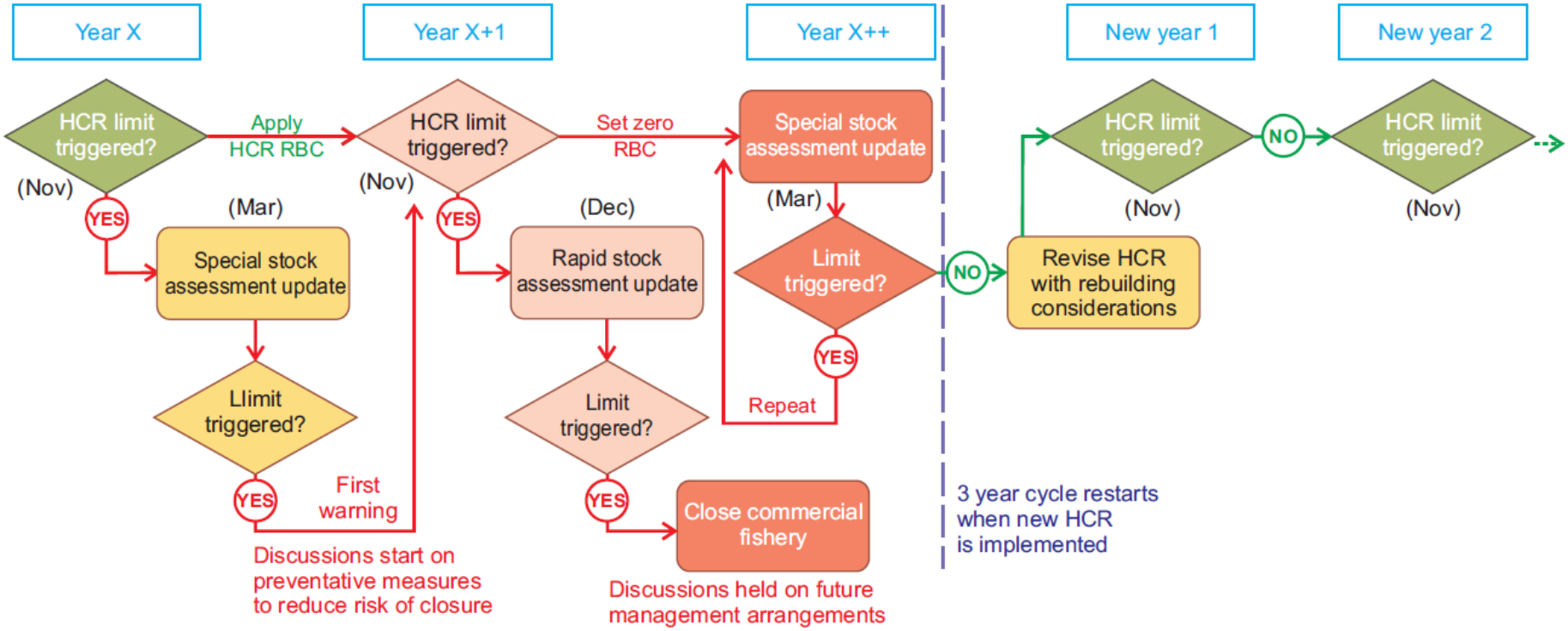


Figure 3. Torres Strait Tropical Rock Lobster Fishery decision rule scenario 3.



Scenario 4: Application of the HCR in a particular year results in the 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.

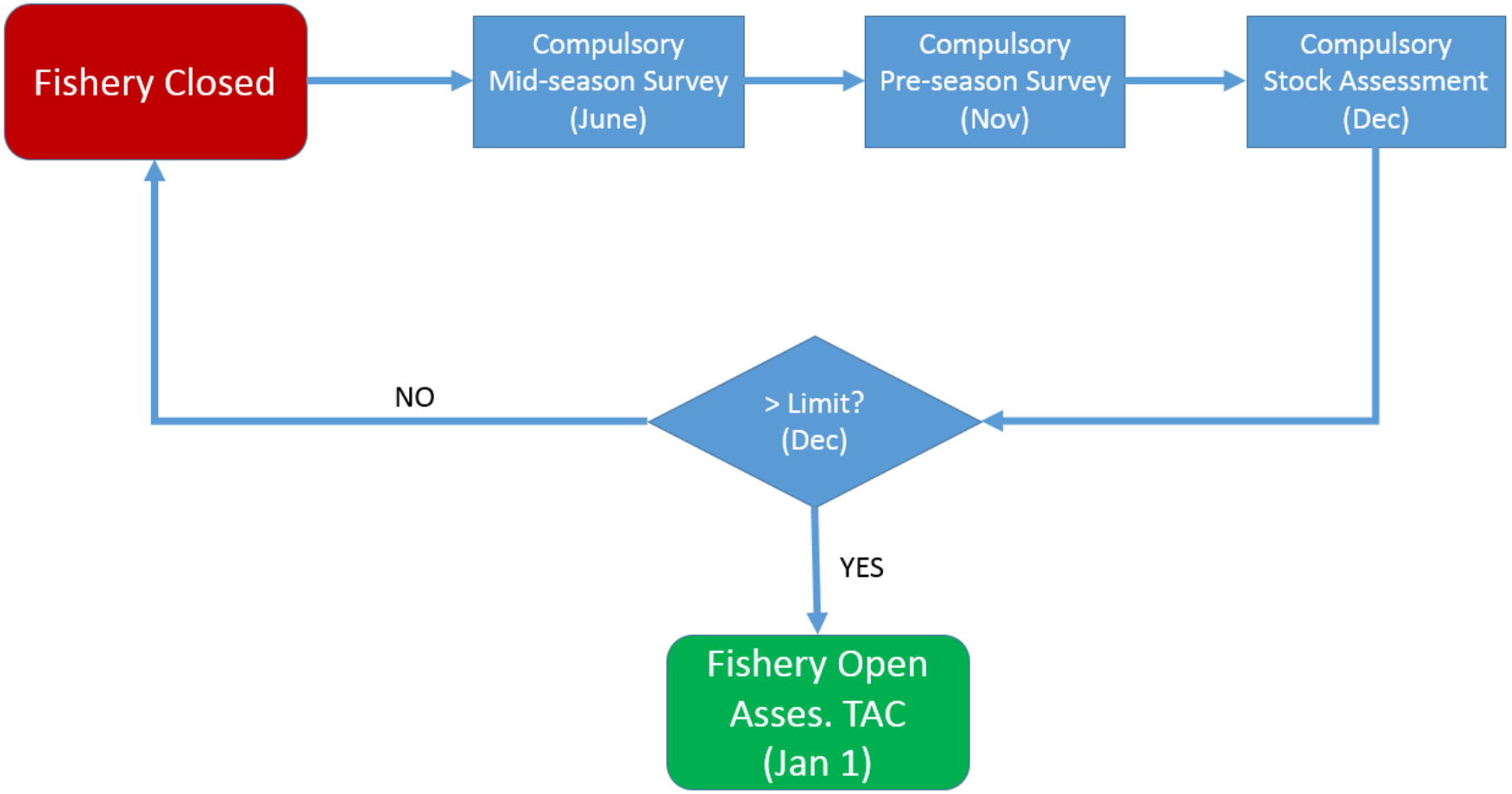


Figure 5. Torres Strait Tropical Rock Lobster Fishery closure and re-opening rule.

Torres Strait Tropical Rock Lobster Working Group

Meeting Record 6

25 & 26 July 2017

In-session meeting

Note all meeting papers and record available on the PZJA webpage:

www.pzja.gov.au

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Contents

Meeting participants

Members

Name	Position	Declaration of interest
Alexander Morison	Chair	Nil Member of other MAC's and RAG's.
Dean Pease	AFMA Executive Officer	Nil
Selina Stoute	AFMA Member	Nil
John Ramsay[1]	TSRA Member	Nil
Tom Roberts	Queensland Fisheries	Nil
Darren Dennis	Independent Scientific Member	Nil Previously involved in research projects
Aaron Tom	Industry Member	Wishes to own his own fishing boat and employ crew.
Mark David	Industry Member	TIB licence holder
Terrence Whap	Industry Member	Nil
Luke Dillon[2]	Industry Member	TVH licence holder
Mark Dean[3]	Industry Member	TVH operator
Daniel Takai[4]	Industry Member	Pearl Island Seafood, Tanala Seafood and TIB licence holder
Ian Liviko	(PNG NFA)	Nil
Sevaly Sen	Fisheries Economist	Conducts various FRDC research projects relevant to AFMA fisheries.

1: not in attendance for Agenda Item 4.
2. attended day one only.
3. attended day one and until 11am on day two.
4: attended day two only.

Observers

Name	Position	Declaration of interest
Jerry Stephen	TSRA Deputy Chair TSRA Fisheries Portfolio	TIB licence holder, Native title holder of Ugar.
Charles David	TSRA	Nil
Mariana Nahas	TSRA	Nil
Thomas Namoa	Industry	TIB licence holder
Graham Hirakawa	Industry	TIB licence holder
Maluwap Nona	Chairperson Malu Lamar	TIB licence holder
Harry Nona	Industry	TIB licence holder
Phil Hughes	Industry	TVH licence holder
Brett Arlidge	Industry	General Manager M G Kailis Pty Ltd, holder of TVH licences

[1] Attended the meeting on day two only.

Action items and recommendations

Action Items

Number	Action
1.	Malu Lamar (RNTBC) to provide the Working Group with maps of home reefs for Torres Strait Island communities.
2.	AFMA to provide the objectives of the *Fisheries Management Act 1991* and the *Torres Strait Fisheries Act 1984* to Working Group members and observers.
3.	Malu Lamar (RNTBC) to provide AFMA with a written proposal for any further proposed amendments to the *Torres Strait Fisheries Act 1984.*
4.	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.

Recommendations

Number	Action
1.	Work should continue to examine whether there are cost-effective options for improving estimates of recreational catches in the region
2.	The PZJA work closely with both the Queensland and PNG Governments to ensure complimentary management arrangements are adopted in the event that the TRL stock biomass falls below the limit reference point.
3.	Further work be undertaken by the TRLWG and TRLRAG to examine possible options for applying a management trigger under the harvest strategy as the stock approaches the limit reference point to minimise the impacts on traditional inhabitant commercial fishers.

Agenda Item 1 - preliminaries

1.1 & 1.2 Apologies / adoption of agenda / declaration of interest

Apologies were received from two industry members. Phillip Ketchell was an apology for the entire meeting and Daniel Takai for day one only. The Working Group also noted an apology from Patrick Mills, Chairperson of the Torres Strait Fisher's Association who was planning to attend the meeting as an Observer.

The Working Group adopted the agenda with no changes and noted written advice from Phillip Ketchell would be tabled at Agenda Item 4.

The Chair noted that there could be potential conflicts of interest for members and observers when providing information and advice on some agenda items. These conflicts should be tabled by members and observers. The Chair noted that the Working Group is a consultative forum of the PZJA that provides advice on the management of the TRL Fishery. The Working Group is not a decision making body.

Representation at meetings

One industry observer noted that the representative for Kaiwalagal (the inner cluster of islands including Thursday Island and Horn Island) had been absent from a number of TRL Resource Assessment Group (RAG) and Working Group meetings. As a result, local industry feel they are not being adequately represented at TRLRAG and Working Group meetings. Preferably proxies should attend if a members cannot.

The AFMA member noted that members are expected to attend meetings and that every effort is made to ensure meeting dates correspond with the availability of members. AFMA will continue to work with members to ensure they can participate and where necessary, confirm whether they are able to continue in the role. Proxies are not used however observers are welcome to attend meetings.

The AFMA member noted the consultative forum representatives were nominated at a meeting on Horn Island in 2015 comprising over 60 stakeholders from across the region. With current appointments due to end this financial year, AFMA welcomes advice on alternative processes for nominating members.

One member raised concern with being referred to as an industry member rather than an island cluster representative. The AFMA member noted that future records can make clear the cluster group from which each member was nominated.

The Chair noted that representatives are bound by Fisheries Management Paper Number One **(Attachment A)** and the role of members is to act in the best interest of the Fishery rather than to advocate for a specific sector of the Fishery. The Chair noted that if there are different views of members they are recorded in the meeting record.

1.3 Action items from previous meetings

The Working Group noted progress against action items from previous meetings. The list of action items and progress is provided in **Attachment B**.

Recreational fishing rules

The Working Group noted an update on the recreational fishing rules for TRL that apply in the Torres Strait Protected Zone as detailed the paper provided **(Action Item 9)**.

Some members noted that the amount of recreational catch is unknown and that work should be undertaken to estimate the recreational take of TRL. The QDAF member noted that a Queensland recreational fishing survey had been undertaken, however there was only one respondent for the Torres Strait and therefore the data provided could not be considered sufficient to be representative of all recreational fishing the region.

Working Group membership

The Chairperson for Malu Lamar (RNTBC) stated that Malu Lamar will not support any recommendation from the Working Group unless Malu Lamar (RNTBC) is recognised as a formal member of the group.

The Working Group noted advice that AFMA was progressing both Malu Lamar's and the TSRA Fisheries Portfolio member's request to become a member on all PZJA consultative forums.

Agenda Item 2 - updates

2.1 Industry

The Working Group noted the following updates provided by industry members and observers:

- Catches have been generally down however there has been some improvement in the months of June and July. The sand inundation of reefs surrounding Mabuiag including Beka Reef have started to clear and seagrass coverage around this area is increasing. The average size of TRL is slightly larger compared to last year.
- Catches around the inner cluster (Thursday Island) have been poor all season. It has not been worthwhile to use a big boat (primary/tender operation). Instead it has been more feasible to fish locally by dinghy.
- It is difficult for members to pass on the information of the RAG and Working Group meetings because the information is complex and the language used in meetings can be difficult to translate to something that is easy to understand and can be shared with fishers.
- Fishers from Iama are again reporting that hookah diving on top of the reef at Warrior and Dungeness reefs is continuing and this has an impact on the local Iama free dive fishers.

Fishing community home reefs

The Working Group noted advice from some industry members that communities continue to see transferrable vessel holder (TVH) operators diving their home reefs. This is of great concern to the communities and shows that the 'gentlemen's agreements' are not effective.

The Malu Lamar (RNTBC) Chairperson stated that home reefs should not be dived by the TVH sector and should be left for the local TIB fishers of that community. Malu Lamar (RNTBC) is currently undertaking a project to map the home reefs of Torres Strait communities and will work with the TVH sector to develop new agreements.

The Working Group noted and welcomed advice from both the Malu Lamar Chairperson and TVH industry members that they will work collaboratively with each other to develop agreements to address community concerns. It was noted that any such agreements could be the basis for an industry code of practice.

The AFMA member noted that upon request, AFMA could support future industry discussions by adjusting industry member travel arrangements alongside PZJA consultative forum meetings.

Action Item 1: Malu Lamar (RNTBC) to provide the Working Group with maps of home reefs for Torres Strait Island communities once finalised.

2.2 AFMA

The Working Group noted the updates provide by the AFMA member as detailed the agenda paper provided. The Working Group discussed the following updates:

Legislative amendments – Torres Strait Fisheries Act 1984

The PZJA has approved for AFMA to request legislative drafters to prepare draft amendments to the *Torres Strait Fisheries Act 1984*, including to allow for mandatory reporting by the TIB sector in the form of a daily fishing log. The drafting will provide the basis for consultation with the communities, industry members and the PZJA consultative forums.

- One industry observer noted that daily fishing logs may not be supported by the TIB sector, and it is preferred for reporting to be mandatory for seafood buyers and processors. TIB fishers don't want complicated rules, they just want to go fishing.

- One industry member suggested that a survey should be sent to each TIB licence holder questioning whether they support or do not support the introduction of mandatory daily fishing logs for the TIB sector.

- The Chairperson for Malu Lamar (RNTBC) noted that mandatory daily fishing logs for the Hand Collectable Fishery targeting bech de mer (BDM) would help support industry to develop the fishery. The Chairperson noted that some species are at risk of overfishing and that accurate catch reporting will be important for the sustainable management of the Fishery.

- The Fisheries Portfolio Member advised that the TIB sector will be discussing these issues in the near future, the sector should create another forum to consider these issues as a collective group and take relevant matters to the PZJA for consideration.

Amendment to the Commonwealth Fisheries Management Act 1991

Amendments to the Commonwealth *Fisheries Management Act 1991* have been proposed to require AFMA to have regard to interests of indigenous and recreational fishers.

The Chairperson for Malu Lamar (RNTBC) requested that a similar review be undertaken of the *Torres Strait Fisheries Act 1984* to check that the interests and recognition of indigenous fishers in the Torres Strait is consistent with the *Fisheries Management Act 1991*.

Action Item 2: AFMA to provide the objectives of the *Fisheries Management Act 1991* and the *Torres Strait Fisheries Act 1984* to Working Group members and observers.

Action Item 3: Malu Lamar (RNTBC) to provide AFMA with a written proposal for any further proposed amendments to the *Torres Strait Fisheries Act 1984.*

2.3 QDAF

The Working Group noted the Queensland Governments *Sustainable Fisheries Strategy* as detailed in the agenda paper and the following updates from the QDAF member:

- Queensland Boating and Fisheries Patrol has undertaken a recruitment round for 20 more fisheries patrol officers for Queensland;
- the Queensland East Coast Tropical Rock Lobster Working Group is likely to be re-established; and
- the Queensland East Coast TRL Fishery has had a very good season with the total allowable catch (195 tonnes) likely to be fully caught by 1 August 2017. Note on 7 September 2017 193.6 t of the 195 t TAC was taken.

2.4 TSRA

The Working Group noted the updates below provided by the TSRA member.

TSRA New Zealand study tour

- The TSRA recently visited New Zealand to learn about the Maori experiences with managing their traditional and commercial fishing interests;
- The TSRA Board will be briefed on the outcomes of the study tour at its meeting in September 2017;
- TSRA is planning to convene a Fisheries Symposium with stakeholders following the TSRA Board meeting to discuss both the study tour and how the TIB may benefit from the Maori experience. The TSRA Portfolio Member noted October or November would be suitable for industry members because it is during the Fishery closure;
- The TSRA can provide resources to establish community economic zones throughout the Torres Strait but ultimately it is up to Traditional Owners to determine how long this process will take.

Additional Government funding for TSRA

- The TSRA has been successful with recent funding bids for the region. The TSRA will receive $16.75 million in new funding this financial year. Of that amount $6 million is to be used for a landing jetty on Prince of Wales with the remainder ($10.75 million) to be used to buyback fishing licences and invest in fisheries infrastructure.
- TSRA has commissioned an audit of fisheries infrastructure across all Torres Strait Island communities. The audit will identify what infrastructure is needed and how money should be invested to support development of fisheries in the region. Infrastructure needs will be considered broadly and could be anything including fuel bowsers, upgrading or building processing facilities and live holding tanks.

Expression on interest to lease TRL TVH licence held by TSRA

- The TSRA Board has agreed to lease-out one of the TVH primary/tender licence packages recently purchased by the TSRA for the 2017/18 fishing season. Expressions of interest will be sought with only Traditional Inhabitants being eligible to apply in the first instance.
- In making its decision the TSRA Board considered three options: (1). lease back to the TVH sector; (2). lease only to the traditional Inhabitants; and (3): retire the licence package. Leasing to a traditional inhabitant would give the licence holder the flexibility to crew the fishing boat with non-traditional inhabitants.
- One industry observer advised that he did not support the leasing-out of the TVH licence. Instead, in his view, the TVH licence should be retired.

2.5 Malu Lamar (RNTBC)

The Working Group noted the following updates from the Malu Lamar (RNTBC) Chairperson:

- in his capacity as Malu Lamar Chairperson, he had also been invited by the TSRA to attend the New Zealand study tour to meet with the Maori and learn from their fisheries experiences. The Maori agreed to provide assistance to Torres Strait Islanders in developing Torres Strait Fisheries;
- Malu lamar is aiming to establish a company two months from now;
- it is Malu Lamar’s aim to empower TIB fishers across the board; and
- Malu lamar is looking forward to engaging with MG Kalis Pty Ltd and others and noted how the New Zealand Iwi work collaboratively across all sectors.

Agenda Item 3 - TRL Harvest Strategy

The Working Group noted the final draft TRL Harvest Strategy recommended by the TRL Resource Assessment Group (TRLRAG) as detailed in the Agenda Item paper and presented by the AFMA Executive Officer. A summary of the presentation is provided below.

Draft TRL harvest strategy recommended by the TRLRAG

- The draft Harvest Strategy (HS) sets out the pre-agreed management actions needed to achieve the Fishery objectives. The HS uses an empirical harvest control rule (eHCR) to determine a recommended biological catch (RBC).
- The major differences between the draft HS compared to the current interim Harvest Strategy are:
    - The draft HS uses an eHCR to calculate the RBC, while the interim HS uses an annual stock assessment to calculate the RBC. The draft HS applies a stock assessment on a three year cycle to review and evaluate performance of the eHCR and check the status of the resource.
    - The draft HS has a suite of pre-agreed decision rules that are designed to maintain the stock on average at the target biomass reference point (B_{TARG}) and to rebuild the stock if it breaches the biomass limit reference point (B_{LIM}) in two successive years. The draft HS B_{TARG} and B_{LIM} are more precautionary than the default Commonwealth Harvest Strategy Policy reference points.
    - The draft HS objectives have been developed to (a) place greater emphasis on the importance of the Fishery to the traditional way of life and livelihood of traditional inhabitants; and (b) maintain the stock on average at a target biomass level equal to recent years (2005-2015).
- The eHCR uses a regression of the 5 last year's data for the pre-season survey index of abundance of juvenile 1+ TRL (weighting 70%); newly recruited 0+ TRL (weighting 10%); the catch per unit effort (CPUE) indices for the TIB sector (weighting 10%) and CPUE indices for the TVH sector (weighting 10%).
- The draft HS decision rules 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 indices is 1.25 or lower (average 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.

- Based on the decision rules, there are four alternative possible scenarios that may occur under the application of the eHCR. Graphic representations of the four scenarios were presented to the Working Group **(Attachment C)**.

Comments and advice from Working Group members

1. *Impacts of the East Coast TRL Fishery on the robustness of the harvest strategy*

- Concerns were raised by some members that the impacts of the east coast fishery are not properly taken into account in the harvest strategy. Specifically the impact from how much is caught and when. With the east coast fishery season opening a month earlier (January) concerns were raised that the fishery may be having a bigger impact on spawning by catching berried females.

- Some members raised concerns that if the Torres Strait TRL Fishery is closed because it breaches the limit reference point (B_{LIM}) in two successive years then the Queensland East Coast TRL Fishery and the Papua New Guinea TRL Fishery should also be closed. It was recommended by some member that the PZJA write to the Queensland Minister requesting that they close the east coast fishery in the event that the Torres Strait fishery has to be closed.

- Some members noted that the Torres Strait Fishery is the only fishery conducting fishery independent surveys to determine the status of the resource and estimate a TAC. Some members remain concerned that the East Coast TAC is not based on good science.

- The QDAF member advised that an East Coast TRL Harvest Strategy will be developed as part of the Queensland Government's recently announced reform process.

- The AFMA member noted that the PZJA works with both the PNG Government and QDAF to develop complementary arrangements including Harvest Strategies. For the purposes of the Protected Zone, AFMA will formally seek support from the PNG-National Fisheries Authority on the Harvest Strategy through the Australia and PNG Fisheries Bilateral process under the Treaty.

- The Working Group noted that TRL is a shared stock with the QLD East Coast Fishery however the level of connectivity is uncertain. Irrespective of this uncertainty however the Working Group noted that the pre-season survey provides good data on the level of recruitment to the Torres Strait TRL Fishery and that the Harvest Strategy is designed to use these data to inform the management of the TRL Fishery.

- The Working Group further noted that the recently AFMA funded CSIRO larval advection project is aimed at providing updated information on TRL larval recruitment patterns for the Torres Strait.

2. *Potential for measures to be added as Limit Reference Point is approached to limit impacts on the TIB sector.*

- 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 HS before B_{LIM} at which point priority is given for fishing to the TIB sector over the TVH sector the TVH sector.

- The Fisheries Economist noted: (1) that there would need to be an agreed HS objective if the TVH sector were to take a larger reduction in the TAC compared to the TIB sector; (2) another option might be to restrict the Fishery to free dive only if a certain trigger point was reached; (3) and that the objective of any triggers would need to be agreed.

- The Malu Lamar Chairperson noted that the report titled 'A fair share of the catch' interprets the order of priority for Torres Strait Fisheries as (1) traditional fishing; (2) community fishing and (3) commercial fishing. The Chairperson noted the report should be considered when developing management arrangements for the Fishery including the draft HS and a legal interpretation of the report and its findings is required.

- The Industry Member from the TVH sector advised they could not agree to any proposal to have different measures applied to the TVH sector until more detail could be provided. The industry member noted that they too needed to make a living.

- Some TIB representatives and observers noted that TVH operators have the option of operating under a dual licence with the East Coast while TIB operators are unlikely to be able to secure endorsement to operate on the East Coast should the TS fishery close.

- An industry observer commented that industry should be left to work through these issues directly with each other.

- The AFMA member noted that the draft harvest strategy takes into account importance of TRL as an important shared resource. Having regard for importance of the resource for traditional fishing the harvest strategy is set to maintain a relative large stock size (target biomass is B_{65}). If the stock size reduces towards the limit reference point, then the harvest strategy process will recommend that the total catch be reduced so that the stock may build.

3. *Taking into account recreational catches*

- Some members questioned whether or not recreational catches were properly accounted for under the harvest strategy and sought advice on any plans to collect reliable estimates of recreational catches.

- The Working Group noted advice that TRLRAG did not recommend accounting for recreational catches at this time because overall catches are likely to be relatively low. One industry member did not support this assumption and considered recreational catches to be higher.

- The Working Group further noted advice that the FinFish Working Group has identified the need to examine whether there are cost-effective options for developing improved estimates of recreational catches in the future.

- The AFMA member noted that it is generally very costly to collect recreational catch data and so a risk based approach is generally required when accounting catches by that sector.

Recommendation

Having regard for the comments by members the Working Group:

1. **Recognised** that the draft harvest strategy is:
   - designed to inform management decisions for the Torres Strait TRL Fishery;
   - is based on robust fishery independent survey data and stock assessment process;
   - treats the TRL Fishery as a single stock;
   - does not take into account recreational catches on the basis of TRLRAG advice that catches are likely low; and
   - has been subject to rigorous performance testing by the TRLRAG.

2. **Recognised** that whilst there may be uncertainty in the level of connectivity between the east coast and Torres Strait TRL stocks, the draft TRL harvest strategy uses the best available data including annual fishery independent survey data, to recommend annual total allowable catches. Future work such as the recently funded larval advection modelling project is likely to improve our understanding of stock connectivity overtime.

3. **Requested** (**Action Item 4**) the following be presented at the next TRLWG meeting: a) an overview of the current understanding of stock connectivity between the east coast and the Torres Strait TRL Fishery; and b) the basis for the Queensland east coast TAC.

4. **Recommends** that work should continue to examine whether there are cost-effective options for improving estimates of recreational catches in the region;

5. **Recommends** that the PZJA work closely with both the Queensland and PNG Governments to ensure complementary management arrangements are adopted in the event that the TRL stock biomass falls below the limit reference point.

6. **Recommends** that further work be undertaken by the TRLWG and TRLRAG to examine possible options for including social and/or economic objective in the draft Harvest Strategy and applying a management trigger under the harvest strategy as the stock approaches the limit reference point to minimise the impacts on traditional inhabitant commercial fishers.

Agenda Item 4 – TRL Management Plan

The Working Group noted advice from the TSRA Fisheries Portfolio Member and Malu Lamar Chairperson that outcomes of the recent TSRA study tour to New Zealand needs to be shared and considered by the TIB sector before proceeding with a plan of management for the fishery. The Working Group however agreed for public consultation outcomes on the draft management plan to be tabled (Agenda Items 4.2, 4.3 and 4.4).

A further summary table was circulated at the meeting which was intended to aid discussion among members on the key issues raised in the public consultation process **(Attachment D)**.

4.1 Revised Sectoral Provisional Allocations

The Working Group noted that the TSRA had purchased two TVH primary/tender licence applications. Based on the provisional allocations assigned to those licences, the revised sectoral allocations that could be made under a quota management plan if they were to be combined with the TIB quota unit allocation is: TIB sector 62.54 per cent and TVH sector 37.46 per cent.

4.2 TRL Plan Public Meeting Outcomes

The Working Group noted the outcomes of public consultation meetings on the proposed TRL Management Plan as detailed in the Agenda Item paper.

One industry member noted that some communities, for example Masig, have not been provided an opportunity to meet with the industry representative for that cluster, to discuss and formulate a position on the management plan to allow them to provide a formal submission.

4.3 TRL Plan Written Submissions

The AFMA member read out the apology letter from the industry member Phillip Ketchell, the letter states that the Torres Strait Fishers Association (TSFA) does not support the proposed draft TRL Management Plan **(Attachment E)**.

The Working Group noted the written submissions received on the draft plan as detailed in the Agenda item paper.

4.4 Native Title Notification – Malu Lamar (RNTBC) Submission

The Working Group noted the native title notification response on the draft plan from Malu Lamar (RNTBC) based on the Agenda Item paper.

The Working Group did not review the full summary on issues raised in the Malu lamar submission noting advice from the Chairperson for Malu Lamar (RNTBC) that the TIB sector and industry members first need to reflect on the recent meetings held with the Maori's before progressing development of the proposed draft management plan.

A single Malu lamar recommendation was noted. That is for the draft plan to provide separate rights and interest between native title holders and traditional inhabitants. Persons who are not native title holders, particularly if their traditional inhabitant identity is derived from the amnesty list, should not be granted TIB licences.

The Chairperson of Malu Lamar (RNTBC) noted the approval process for the grant of traditional inhabitant boat (TIB) licence is out of date and needs to be reviewed. The approval to grant a TIB licence needs to be based on genealogy to determine if a person is eligible to hold the licence. The Chairperson noted that PNG 'amnesty people' and aboriginal people from Cape York are not defined as a Torres Strait Islander under Article 1 of the Torres Strait Treaty.

4.5 Consideration of the draft management plan following public consultation

The Working Group noted advice from the TSRA Fisheries Portfolio Member and Malu Lamar Chairperson that the recent New Zealand study tour provided attendees with greater insight to the benefits and opportunities of quota management and how Maori manage their quota entitlements.

In light of what was learnt from meetings with the Maori and concerns raised about the draft plan through the public consultation, the Fisheries Portfolio Member and Malu Lamar

Chairperson did not support any further discussion on the draft Plan until the TIB sector and native holders more broadly, first meet to consider how their quota entitlements might be managed in order to meet their aspirations from the fishery.

The Fisheries Portfolio Member advised the that TSRA Board will be considering the outcomes of the NZ study tour at its meeting in September and that a work plan will be devised for leading the further consultation with the TIB sector and Malu Lamar. The Fisheries Portfolio Member further advised that the additional consultation may be a two year process with the first TIB meeting possibly occurring in beginning in October to coincide with the TRL Fishery closure. The aim of the TIB sector meeting will be for the sector to gather an understanding of the benefits of the Maori model and to agree on a preferred TRL Fishery management approach for the TIB sector. Additionally the consultation process may also cover issues across all fisheries such as restrictive rules in the Beche de Mer Fishery (7m boat length limit, free dive only).

Some industry members noted that the TVH sector should be included in the discussions about the Maori fisheries model to facilitate their understanding of how it could benefit the Torres Strait and fishery as a whole.

Industry members (TVH included) supported setting aside further development of the draft TRL Management Plan until the Traditional Inhabitant sector has developed preferred options for managing their quota allocation.

Other business – Malu Lamar reform proposal

The Chairperson of Malu Lamar circulated a paper titled 'Torres Strait Fisheries Reform Proposal – Australian Government and Queensland Government Assistance Request, June 2014 (**Attachment F**) to Working Group members at the end of the first meeting day and requested that he be able to present the paper on day two. The Malu Lamar Chairperson sought that it be tabled as it was relevant to the TIB sector in considering future options for managing fishing entitlements, such as TRL quota units.

The Malu Lamar Chairperson did not describe the detail of the paper but instead sought general comment from the Working Group.

The AFMA member advised that the paper is likely to be of some assistance for discussions being planned for the traditional inhabitant sector and Malu Lamar (as advised under Agenda Item 4). The AFMA member noted that the stated Malu Lamar vision includes working in partnership with industry, including the TVH sector and initiatives being progressed such as leasing-back arrangements and drawing on the Maori experience.

The AFMA member further advised that whilst it is helpful to be informed of the Malu Lamar reform proposal it was beyond the terms of reference of the Working Group to provide advice on the steps recommended in the paper as they relate to agreements and funding arrangements requested between Governments.

The Malu Lamar Chairperson advised that native title owners have commercial rights and interest prior to colonisation and that these rights have been recognised by the High Court. Their understanding of the *Akiba Decision* is that native title owners own the resources and this must be recognised. Malu Lamar has no interest in continuing to participate in future working groups and instead will take the Government to court.

The TSRA Fisheries Portfolio member noted that it has been requested on number of occasions for Malu Lamar to become a member of the PZJA. The AFMA member advised that the PZJA has previously requested Malu Lamar to put its proposal in writing but has not yet received response.

Some industry members and observers confirmed their support for the Malu Lamar Chairpersons position, including Malu Lamar becoming a member of the PZJA.

The TSRA member recommended that a legal synopsis of the *Akiba Decision* be formally considered by the PZJA and the precise nature of native title rights determined by the decision be explain to the working groups.

The Malu Lamar Chairperson reiterated his disappointment with the Working Group failing to properly recognise their native title rights and left the meeting.

Section 5 – Proposed Future Management Arrangements

Agenda items under section 5 *Proposed future management arrangements* were not discussed.

The Chair closed the meeting around 11am due to a lack of a quorum following the early departure of another industry member.

Section 5 agenda items were deferred to the next Working Group meeting. The Working Group noted that arrangements would be made out-of-session to reconvene as soon as possible.

TROPICAL ROCK LOBSTER WORKING GROUP (TRLWG)	MEETING No. 6 25-26 July 2017
Action Items	**Agenda Item 1.3** **FOR INFORMATION**

Number	Meeting	Action	Status
1.	TRLWG #5 held on 5-6 April 2016	AFMA to circulate further information to TRLWG members and observers on the AMSA requirements for commercial vessels under 10 m.	**Complete** AFMA provided AMSA contact details to the TRLWG members and observers by email on 6 May 2015. The email also included information on Torres Strait Maritime Safety Workshops.
2.	TRLWG #5 held on 5-6 April 2016	AFMA to circulate the sea surface water temperature website to the TRLWG members and observers out-of-session.	**Complete** The Thursday Island water temperature website is available at the aims.gov.au website: http://data.aims.gov.au/aimsrtds/datatool.xhtml?site=921&param=water%20temperature
3.	TRLWG #5 held on 5-6 April 2016	AFMA to amend the draft Plan to stipulate that the PZJA must review the TIB quota unit allocation within two years of the Plan commencing.	**Complete** Amended in Draft Plan.
4.	TRLWG #5 held on 5-6 April 2016	AFMA to circulate additional information regarding cancellation provisions under the *Torres Strait Fisheries Act 1984*.	**Complete** AFMA circulated further information on 28 April 2016.
5.	TRLWG #5 held on 5-6 April 2016	TRLRAG to provide advice on any findings relating to the impacts of changing the season start date to provide industry with a longer TAC notice period.	**Ongoing** The RAG has not yet considered this action item. To be considered at the next TRLWG meeting.

Number	Meeting	Action	Status
6.	TRLWG #5 held on 5-6 April 2016	AFMA to provide further information on whether the Act could restrict foreign ownership of fishing entitlements in the fishery.	**Complete** To be provided at Agenda Item 4.5.
7.	TRLWG #5 held on 5-6 April 2016	CSIRO to provide an update of the harvest strategy development at the next TRLWG meeting.	**Complete** To be provided at Agenda Item 3.
8.	TRLWG #5 held on 5-6 April 2016	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.	**Complete** To be considered at Agenda Item 5.5
9.	TRLWG #5 held on 5-6 April 2016	QDAF member to circulate to members and observers out-of-session the regulations regarding the recreational take of TRL in the Torres Strait.	**Complete** AFMA (on behalf of QDAF) will circulate prior to the TRLWG meeting no. 6 the recreational fishing regulations for TRL in the Torres Strait to RAG ad Working Group members and observers.
10.	TRLWG #5 held on 5-6 April 2016	AFMA to circulate the FRDC Report 2002/008 'Biology, larval transport modelling and commercial logbook data analysis to support management of the QLD TRL Fishery' to members and observers out-of-session.	**Complete** AFMA circulated the FRDC report 2002/008 to the TRLWG members and observers on 6 May 2016.
11.	TRLWG #5 held on 5-6 April 2016	TRLRAG review the advice and justification for opening the east coast TRL season on 1 January and AFMA present that advice as an update at the next TRLWG meeting.	**Ongoing** CSIRO provided a report titled *Biology, larval transport modelling and commercial logbook data analysis to support management of the NE Queensland rock lobster Panulirus ornatus fishery*. The report was sent to members and observers prior to the TRLWG meeting no. 6.

Number	Meeting	Action	Status
			The report provides information to support management arrangements for the East Coast Fishery. The RAG has not yet considered this action item.
12.	TRLWG #5 held on 5-6 April 2016	QDAF member to circulate to TRLWG members and observers further information regarding the approval process for the indigenous fishing permit.	**Complete** AFMA (on behalf of QDAF) circulated information regarding applications for indigenous fishing permits on 13 June 2016 to TRLRAG and TRLWG members and observers.

APPENDIX B

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

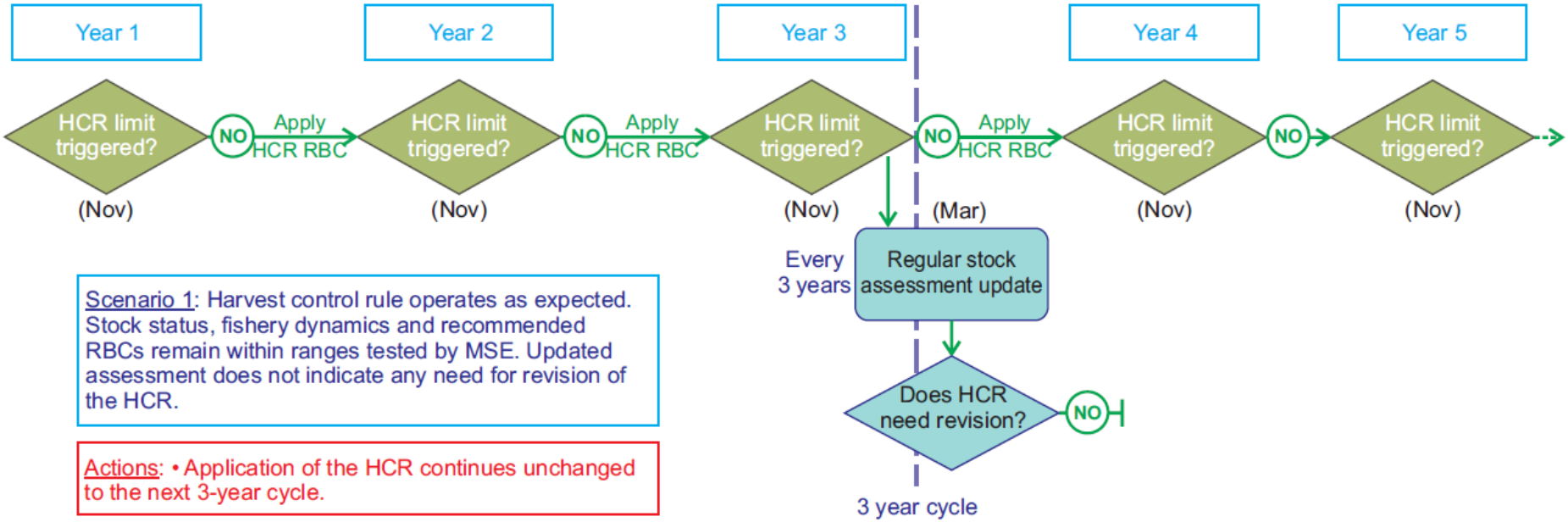


Figure 1. Torres Strait Tropical Rock Lobster Fishery decision rule scenario 1.

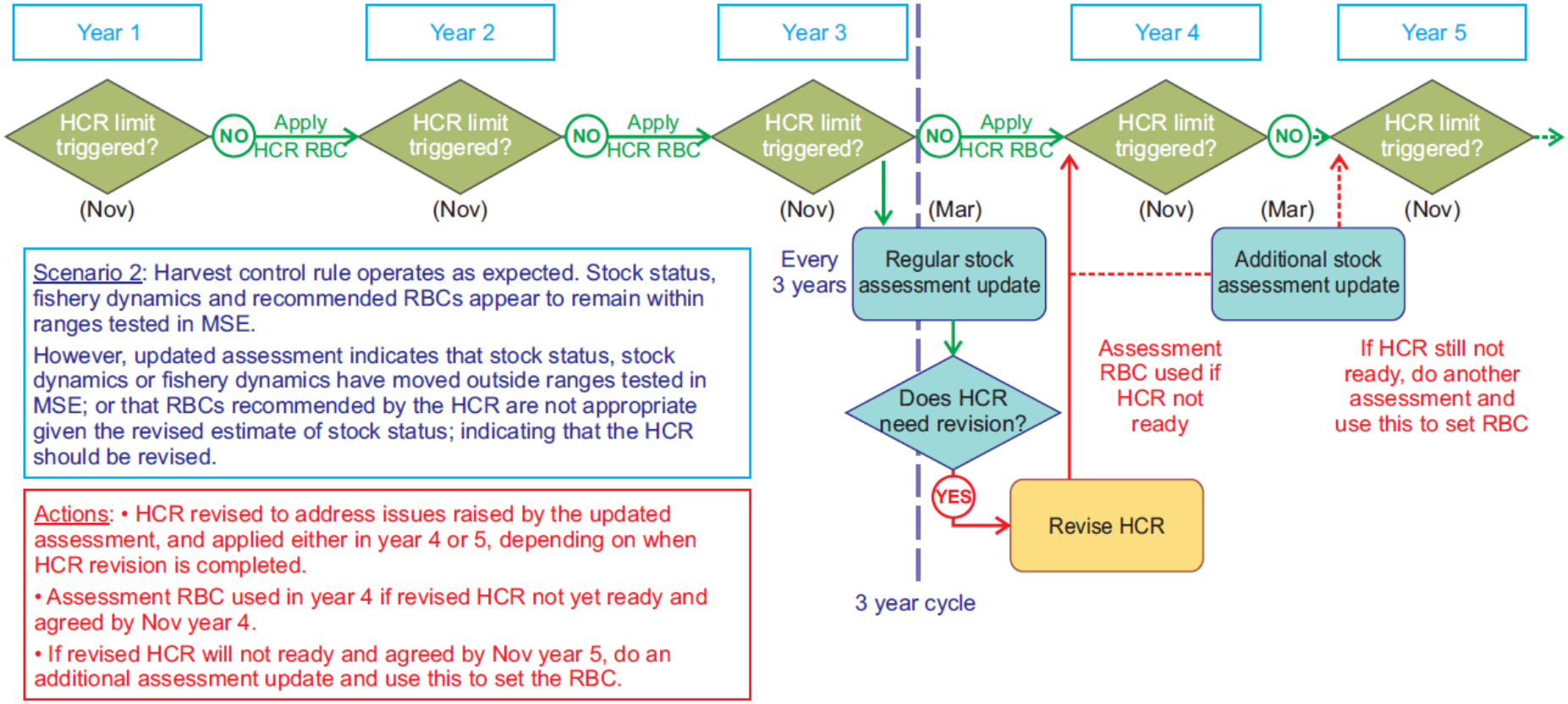


Figure 2. Torres Strait Tropical Rock Lobster Fishery decision rule scenario 2.

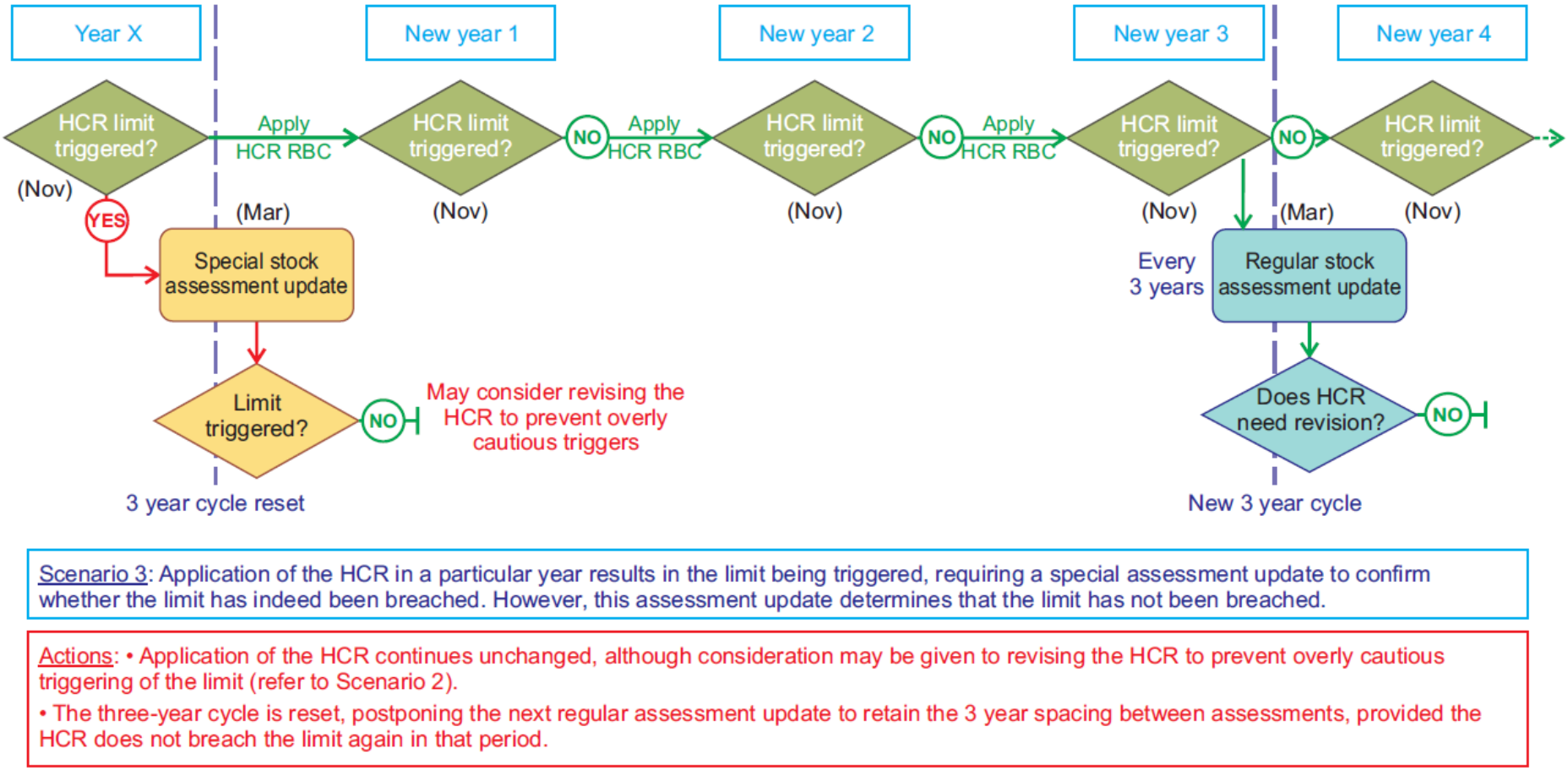
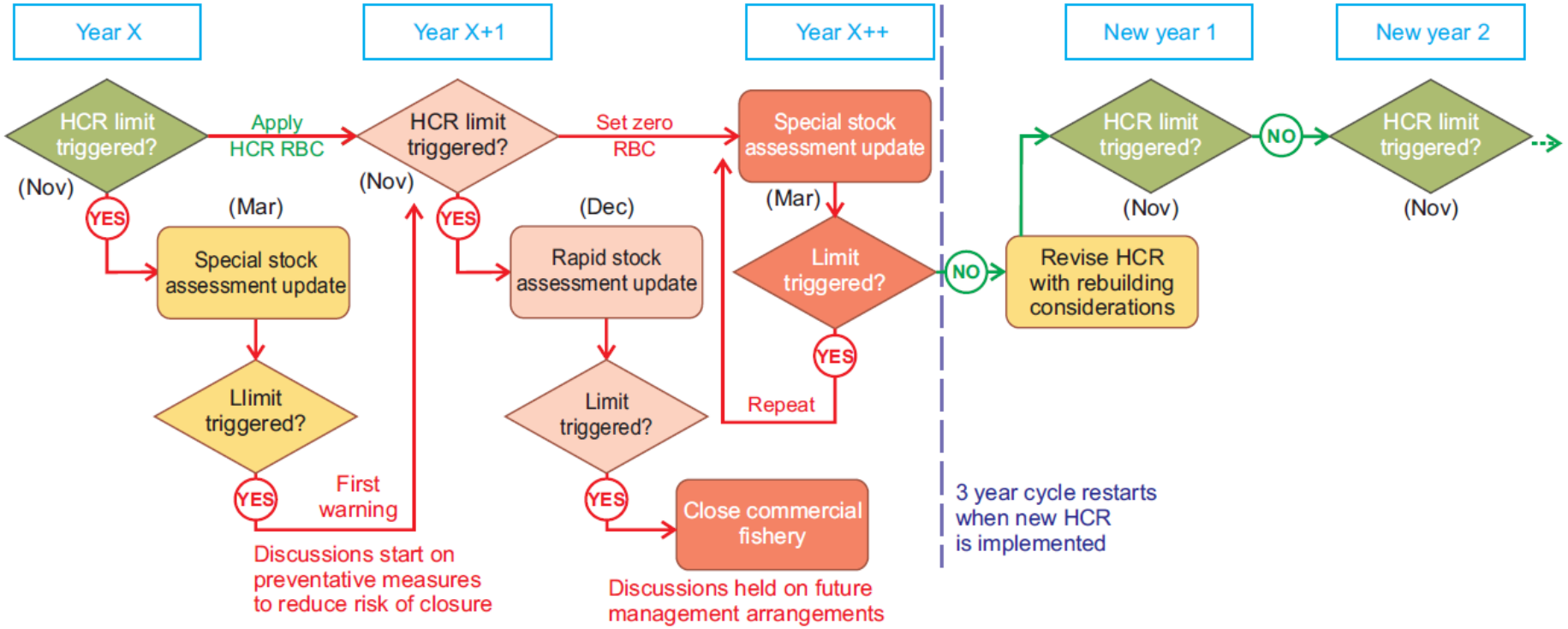


Figure 3. Torres Strait Tropical Rock Lobster Fishery decision rule scenario 3.



Scenario 4: Application of the HCR in a particular year results in the 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.

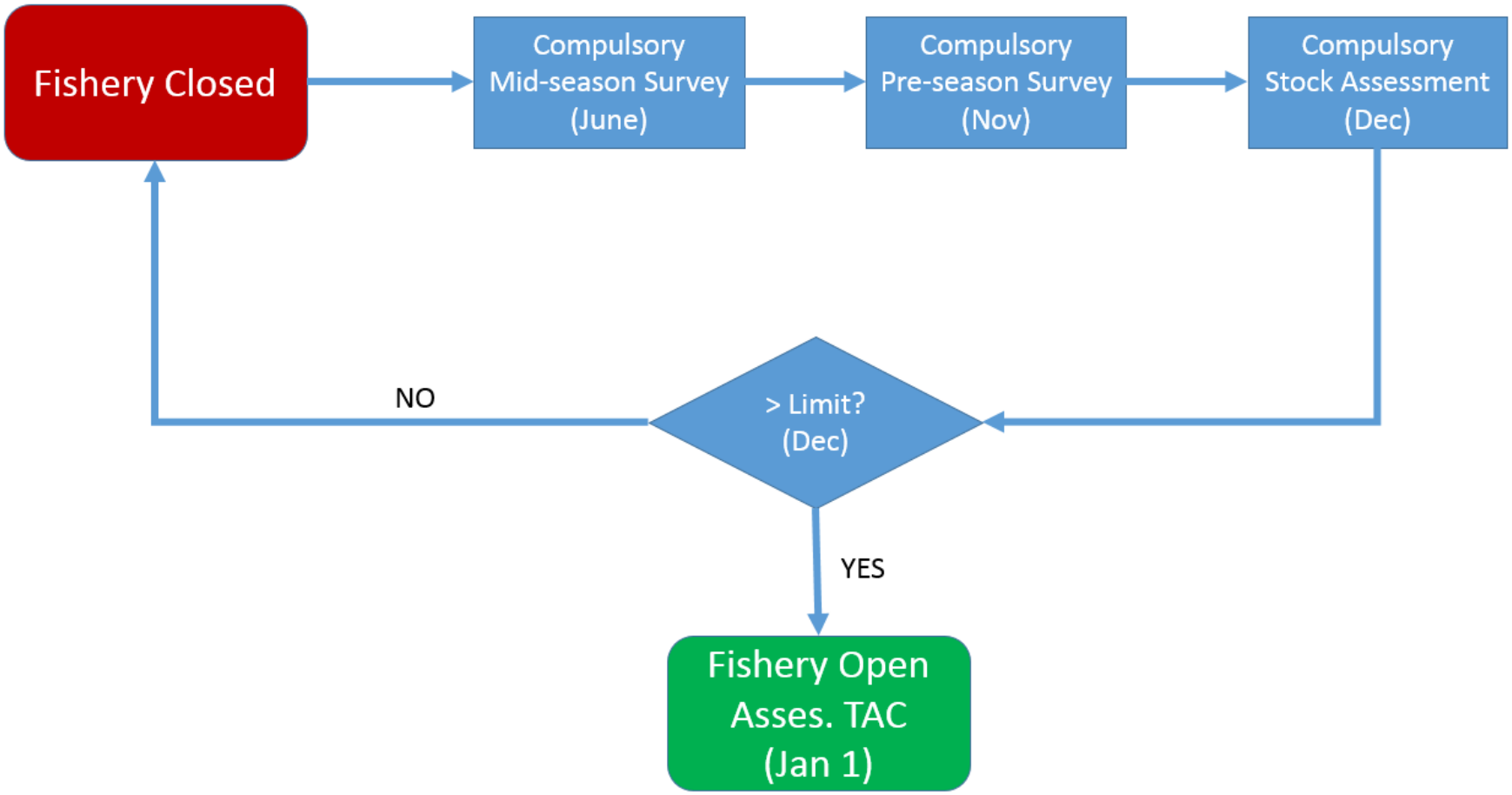


Figure 5. Torres Strait Tropical Rock Lobster Fishery closure and re-opening rule.

Agenda 4.3 Attachment A Summary of publically available written submissions received on the draft plan

Part 1: Comments on the proposed quota management plan

Overarching management approach – Moving to quota management under a plan of management	
Mabuiag Traditional Owners	• General concern that under the TRL management plan commercial fishers will be allowed to focus more on catching their share at the least cost which can encourage excessive hookah and tender use on home reefs which can be detrimental to the local 'dinner plate' and local free divers, forcing them to go further afield. • In light of concerns over equity issues in the sectors and other issues, Traditional Owner groups should have the right to submit community TRL Management plans. Community plans would protect a community's right to practice Indigenous traditional sustainability and provide a platform for community level-decision making ownership. • A community management plan could be another input control in the fishery outlining controls for localised areas (traditional boundaries), these may include spatial and temporal closures, hookah restrictions, move-on provisions and community engagement protocols. • Support 100% move to TIB sector and a phasing out of the TVH sector in stages to reduce economic shock to the industry and allow time for capacity building, as long as there is no cost shifting to the TIB sector. • A move to 100% control TIB sector would need to include grass roots input and one way is through local area community management plans.
Kenneth McKenzie	• The introduction of quota will allow partial buyback of quota allocated. For example if an operator is allocated 3% of the fishery then they will have the option of selling 1% or 2%. TSRA would have the first right of refusal for such a transaction.

Phil Hughes	• In considering moving to a quota management system, the choice must be made between input controlled fishery where the resource is owned by the community and managed on behalf of that community by a PZJA that is responsive to the needs of community OR an output controlled fishery where the quota is held by the highest bidder; a fishery that is principally driven by market forces above any respect for social or community impact.
Torres Strait Seafood	• Under a quota management system one company will likely hold the monopoly of quota which could lead to that entity dictating lease arrangements and lower beach price of TRL for fishers. Do not believe the implementation of the quota system as it is will at all benefit the community.
Torres Strait Fisher's Association Inc	• Do not agree with the proposed plan on the grounds that some of its clauses may be contrary to the intent of the Torres Strait Treaty and the *Torres Strait Fisheries Act 1984*and therefore detrimental to the long-term interests of Traditional Inhabitants. Position informed by the report "a fair share of the catch". • The plan takes away the TIB's sector's capacity for future growth by granting quota to the TVH sector and then requiring the TIB sector to buy it back. This can only happen if the TVH sector wishes to sell. By allowing this the Minister may make decisions that over-rule the *prima-facie* priority ranking of community fishing ahead of commercial fishing (refer to *Fair Share of the Catch* report). • The plan gives entitlements to TVH licences not allowed under the Act. The PZJA should use its power to not renew TVH licenses as the TIB sector grows (refer to *Fair Share of the Catch* report). • Implying that a TVH license will be renewed annually creates a legal liability for the Commonwealth to the detriment of the TIB sector which is against the intention of the Act (refer to *Fair Share of the Catch* report).

Assessing objectives of the Plan (section 6)		
Raymond Moore		• The allocation of quota units to the traditional inhabitant sector, deals with commercial fishing, not traditional fishing. The report "*A fair share of the catch'* (Skehill and Young 2002) gives a legal interpretation that 'livelihood' refers to livelihood as derived from traditional activity.
Setting a Total Allowable Catch		
Mabuiag community		• Support the idea of quota management system and capping catches to protect sustainability.
Quota unit allocation – TIB sector		
Mabuiag community		• Support TSRA to hold quota in the interim as an entity on behalf of the TIB sector.
Kenneth McKenzie		• Support TIB sector operating under an Olympic pool at the start as a quota system would be difficult to implement and police for the sector. As the quota system evolves this could be changed.
Torres Strait Seafood		• Concerns regarding how and by whom the TIB quota could be managed. In the interests of transparency, fairness to TIB licence holders, recipients of any economic benefit and the ongoing viability of the fishery.
Leasing of Quota Units		
TVH sector	Kenneth McKenzie Raymond Moore	• The TVH sector should be permitted to lease quota to any licence holder or the TSRA.

TIB sector	Kenneth McKenzie	• TIB sector catch could be assessed at the mid-point of the season (May) and with consultation quota that is likely to be uncaught can be leased to the TVH sector. Another assessment could be made at the end of July and leased quota amounts adjusted to suit.
	Raymond Moore	• Do not support leasing of TIB quota because it increases competition for the TIB sector. Whilst there is financial gain it comes at the expense of more competition for the TIB sector.
	Kenneth McKenzie	• Money raised by leasing could be held in trust for future buybacks or economic development.
Transferring (selling) Quota Units		
Kenneth McKenzie Raymond Moore		• TVH sector should be permitted to sell or lease only part of their quota to an existing licence holder or TSRA.
Granting of new TVH licences (the number of quota units are fixed however number of Fishing Licences is uncapped)		
Raymond Moore		• Although the proportion of catch that the TVH sector could take would not increase (due to the limit on quota units), allowing new TVH licences to be created would increase the TVH effort. Existing TVH effort is one of the major factors limiting the expansion of the TIB sector. • The granting of TVH sunset licences to lease unused TIB quota as done in the Finfish Fishery would add competition which would be detrimental to the TIB sector.
Foreign Ownership of Quota Units and Fishing Licences		
Raymond Moore		• Quota units should only be able to be sold to Australian citizens. Foreign ownership of quota units would make it impossible to achieve 100% ownership.

	• Quota units should only be held by a person who also holds a Fishing Licence. Under this arrangement quota could only be held by a traditional inhabitant or one of the existing 12 TVH licences. Allowing investors to hold quota units will make it more difficult to achieve 100% ownership.

Part 2: Comments on the TSRA additional elements as detailed in the paper titled TSRA's coments TRL (Kaiar) management plan – exposure draft

Submission	Summary of issue raised
Economic Development Contribution	
Torres Strait Fisher's Association Inc.	• Introducing an economic development contribution from the TVH sector is not necessarily a good thing if it ends up as just more revenue to be managed by the TSRA. • Rather than a financial contribution, the TVH operators should be required to contribute by helping train Torres Strait Islander divers or by a partnership arrangement helpful to that cause.
Kenneth McKenzie	• Do not support the TVH sector contributing anymore in the way of annual fees or similar, for the economic wellbeing of Torres Strait Islanders.
Torres Strait Seafood	• Do not support. Introducing an economic development contribution would be an impost to make the fishery economically unviable. Introducing a 'contribution' after the fact.
Raymond Moore	• There is confusion over the meaning of an economic development contribution. If this means a financial contribution then it is unrealistic considering there are only 8 TVH licence holders compared with about 300 TIB licence holders.
	• TVH could work with TSRA in promoting economic development, the main value of the TVH being its expertise in the fishery. TVH are willing to increase employment and training of traditional inhabitants

	to improve employment and training opportunities for traditional inhabitants, the limiting factor in the past has always been trying to source willing applicants. • Very difficult to include such factors into a management plan, there needs to be discussion on what exactly the TSRA is trying to include.
	• TSRA should be more active in promoting development in the TRL Fishery. For example, including the development of infrastructure to support trade in live TRL rather than tailed product at outer islands.
Mabuiag Traditional Owners	• Support.
First Right Refusal	
Kenneth McKenzie	• Support TIB sector to have first right of refusal on TVH licence sales, but if a third party offered a higher price, the licence should be permitted to be sold to the third party.
Raymond Moore	• Support, assuming first right of refusal means, the purchaser meets the value of other offers, their offer takes priority. There is general support for the traditional inhabitant aspiration to gain 100% ownership provided this is achieved in a fair and equitable manner. That is, it has to be voluntary and with fair compensation.
Mabuiag Traditional Owners	• Support.
Torres Strait Seafood	• Concerns with how this may be enforced.

Trading between existing licence holders only	
Raymond Moore	• Some clarification is needed on this proposal however it infers that the sale of licences can only be between existing licence holders. Restricting the purchase of licences to existing licence holders is likely to result in a monopoly making it difficult for the TIB sector to achieve 100 per cent ownership. • At present TVH licences can be purchased by anyone. TVH licence holders could not be expected to give up their right to a freely transferable licence.
Mabuiag Traditional Owners	• Support.
Kenneth McKenzie	• Subject to the first right of refusal proposal, TVH should be able to sell to persons other than existing licence holders.
Torres Strait Seafood	• This statement needs clarification.
Other aspects of the draft management plan	
Powers	The Plan would be made by the Commonwealth Minister. This gives the Minister the power to set the Total Allowable Catch (TAC) and the length of the season. The TSRA is seeking clarification as this is different from the Finfish and Prawn fisheries management plans in which the PZJA has the authority to make the Plans.
Cancellation of quota	Currently the Plan will cancel quota if a licence is cancelled. The TSRA is seeking that the quota from a cancelled licence be transferred to the TIB sector.
Unused PNG catch allocation	The Plan is silent on the annual PNG allocation. The TSRA would like the Plan to state that any unutilised PNG allocation, should be allocated to the TIB sector.

Allocations under the plan	The TSRA is seeking it be made clearer that the current ownership of the fishery; 43.8% TVH and 56.2% TIB, are the initial allocations only.
Review	Following the two year review point after the allocation of quota to the TIB, the Plan presents only three options to the PZJA: the allocation of quota to individuals, allocation of quota to a non-government organisation or a combination of those two options. The TSRA believes that in the event there is no agreement from the TIB sector on a preferred quota holding model, it would be prudent to allow the PZJA the option of asking the TSRA to continue to hold the TIB quota until such time as the TIB sector has agreed on a preferred ownership model

Part 3: Comments on other management arrangements and issues

Submission	Summary of issue raised
Input controls generally	
Kenneth McKenzie	• The introduction of quota could allow current input controls to be relaxed. The 10m boat length restriction for example, has become very inefficient due to changing rules and regulations by other government departments such as AMSA and Queensland Transport.
Torres Strait Seafood	• Additional controls (input controls) should not be required should quota be introduced. Alternatively why would quota be enforced if the fishery is operating successfully under the current controls?
Luke Dillion	• Input controls and standards have to be applied equally to the industry, all sectors, so that the impact is the same on each of the operators.
Season Start Date	
Kenneth McKenzie	• Season should start a fortnight earlier each year to capitalise on the Chinese New Year market. For example around 16 January however the exact date to determined annually depending on tidal conditions.
	• Queensland East Coast TRL Fishery should start mid-January (eg 16 January.as proposed for the Torres Strait).
Torres Strait Seafood	• Torres Strait season start date should be consistent with the East Coast TRL Fishery opening on 1 January so that the Torres Strait industry can also benefit in being able to access the high market demand period leading up to Chinese New Year. Alternatively the East Coast season should be changed to be consistent with Torres Strait hookah fishery opening of 1 February.
Temporal Closures	

Kenneth McKenzie	• Upon introduction of the quota system the tidal closures (moon-tide closures) could be removed as quota catch becomes the new limitation (on effort).
	• Total fishery closure be put in place for three weeks starting around 18 August (dependent on tidal movement) to allow the completion of the annual moulting process where live lobster are subject to higher mortality rates.
	• Total fishery closure 1 October to 16 January be maintained (after adjusting for a recommended earlier hookah season start date) to protect juveniles stocks. This must apply to PNG cross endorsed vessels.
Kenneth McKenzie	• Annual moulting season for the East Coast is mid-September so maybe the season could be bought back two weeks to allow for the higher mortality.
Spatial Closures	
Kenneth McKenzie	• Recommend investigating areas for no-take zones on the East Coast to protect TRL spawning. For example in deeper drop-off zones.
Fishery Research	
Kenneth McKenzie	• Recommend more research on the connectivity between Queensland east coast TRL spawning and recruitment for the Torres Strait TRL Fishery.
	• Support current assessment process to recommend a total allowable catch annually.
Compliance	
Phil Hughes	• There is inadequate monitoring, control and surveillance (MCS) to support a quota management system.

	• Because a single company owns a significant proportion of the TVH sector licences and an even greater share of the product, there is a conflict of interest and potential for manipulating any TAC on paper.
Free Dive and Lamp Fishing	
Kenneth McKenzie	• TIB and TVH sector should be allowed to night spear and free dive from December to 16 January since only larges lobster come to the shallows in this period. An effort to police this period is required (ie no use of hookah).
Ownership of TIB licences	
Torres Strait Seafood	• There should be more transparent and a more rigorous test for owning a TIB licenced carrier/processing vessels, to prevent loophole entry in to the fishery.
Finfish leasing revenue	
Torres Strait Fisher's Association Inc	• Many fishermen do not agree with the way money received from the lease of finfish quota has been spent in the past. TSRA's needs to improve its accountability by directly the funds towards a vision and strategies agreed to by the whole TIB sector, not just finfish representatives.

AFMA
PO Box 376
Thursday Island
Ph 0740691990

To AFMA

I give my apology for not being able to attend the TRL working group meeting on Tuesday 25 and Wednesday 26 July 2017 due to work commitments.

Could you please have recorded in the minutes that the Torres Strait Fishermen's Association rejects the proposed TRL Management Plan and reconfirms the position put forward in its official submission.

The proposed plan looks at the quota management issue from the perspective of a non-islander. What is needed is a plan that looks at the issue from an Islander perspective.

We believe that:

- The TRL management plan works outside of the intentions of the Torres Strait Fisheries Act and Torres Strait Treaty as outlined in the Fair Share of the Catch 2002
- The TRL management plan is designed to give TVH holders rights they do not have under the Torres Strait Fisheries Act.
- Therefore, we do not agree with the TRL Management plan
- Our stance has been voiced through the submission of our letter to AFMA in rejection of the TRL management plan
- We are in the process of coming up with an alternative plan and have started work on a concept for discussion.

Yours sincerely

Phillip Ketchell
TRL Working Group Rep, TSFA Vice Chair

Phone: 0437701055

25 July 2017

Synopsis – Version 2

Torres Strait Fisheries Reform Proposal

Australian Government and Queensland Government Assistance Request

June 2014

1. Introduction

1.1 Pending formal commencement of development of the Torres Strait Fisheries Reform Proposal, the Torres Strait Fisheries Reform Working Group ("WG") seeks to keep the Australian Government and the Queensland Government generally updated through consecutive versions of the project synopsis. This is Version 2; Version 1 was circulated in April 2014.

1.2 On 7 August 2013, the High Court of Australia decided in the Torres Strait Regional Sea Claim (Part A), that the native title of Torres Strait Islanders includes a right to fish for any purposes, including commercial and trading purposes. It was the first time that native title sea rights were found to include a commercial element.

1.3 That alone creates a need for reform of fisheries legislation; to ensure it operates in a way more consistent with the pre-existing traditional laws and customs (native title) of the Indigenous people of the Torres Strait.

1.4 However the need for reform is driven by other imperatives as well:-

(a) Indigenous people in the Torres Strait are amongst the poorest in Australia. The dominance in the region of government services and a welfare based economy crowds out private enterprise, deters personal responsibility and dulls the ingenuity and self-reliance for which the region's Indigenous people were historically known.

(b) Although modest legislative changes to initiate a TIB fishing sector have previously been made, the fisheries entitlements which provide greatest economic opportunity remain outside Indigenous ownership and control.

(c) Fishing is the original industry of the region's Indigenous people. The industry is tailored to the inherent interests and aptitude of those people and inspires their vision for economic independence.

2. Vision

2.1 There is a short, medium and long term vision. It involves reform of both commercial and recreational fisheries in the region.

2.2 In the short term (6 to 12 months), WG seeks to:-

(a) Complete a comprehensive commercial fisheries reform proposal of the kind suggested by Senator Scullion at the Sea Summit in Cairns on 22-24 January 2014.

(b) Complete a complimentary proposal for recreational fisheries reform as part of the Queensland Government's current fisheries management review.

(c) Complete the establishment of Malu Lamar as the registered native title body corporate for the Sea determination area and Gur A Baradharaw Kod Sea and Land Council as the region's successor native title representative body to the TSRA.

2.3 In the medium term (12-24 months), the WG/Malu Lamar seeks to:-

(a) Work with the Australian Government and the Queensland Government in making legislative changes to the *Torres Strait Fisheries Act 1984* (Cth) and the *Fisheries Act 1994* (Qld) and associated regulations, coming out of the proposals referred to in paragraph 2.2. In essence, these changes will deliver Indigenous ownership of all fisheries entitlements on the basis of possible lease-back to existing TVH operators *and* direct commercial operations by the TIB sector.

(b) Establish a new commercial structure for commercial and recreational fishing opportunities by Indigenous people in the Torres Strait. It will draw on learning from the Maori experience in New Zealand, involve collaboration with other Australian Indigenous fisheries initiatives and be informed by independent fisheries expertise.

(c) Complete an overarching agreement between the region's native title holders, the Australian Government and the Queensland Government to record and provide for implementation of the outcomes in subparagraph (a) and (b) . This agreement may also provide for a streamlined system for fishing industry-related compliance with the *Native Title Act 1993* (Cth) and the *Torres Strait Islander Cultural Heritage Act 2003* (Qld). It might also address native compensation issues. It could be in the form of an Indigenous Land Use Agreement ("ILUA").

2.4 In the long term (24 months and beyond), the vision is for world class Indigenous owned and operated commercial and recreational fishing enterprises to be trading. They will provide for local employment, skills development and wealth generation for all of the region's people. Government's role will be as an efficient and streamlined regulator to ensure the scientifically-based sustainability of fisheries and oversee a rules-based system for ongoing commercial dealings with fishing entitlements.

2.5 The long term vision arises from the following:-

(a) A government based economy and government funded welfare system in the region is not financially or socially sustainable. There is a demand for change amongst the region's Indigenous people.

(b) The region's fisheries are not currently fully utilised to sustainable limits, the marine products are world class, aquaculture potential is completely untapped and Indigenous ownership and operation of sustainable fisheries presents great domestic and international marketing opportunities.

(c) There is already broad support by both TIB and TVH sectors for a shared vision for the region's fishing industry. Successful dialogue between all industry sectors at an industry forum on Thursday Island on 31 March/ 1 April 2014 has already established that consensus.

(d) There is rising global demand, especially from Asia's growing middle class, for agricultural produce. Asia already takes more than 40% of Australia's food exports. The Australian Bureau of Agricultural and Resources Economics and Sciences estimates massive Asian demand growth for Australia's agricultural produce to 2050.

(e) The Torres Strait is geographically located on the door step of the Asian region. Seafood is amongst the highest value Asian food commodities, especially fresh/live product. Relatively modest investment in Horn Island's existing airport infrastructure will enable direct export of live product to Singapore and Hong Kong and from there trans-shipment to all of Asia. Australia has secured free trade agreements with South Korea and Japan. It may be on the verge of a free trade agreement with the People's Republic of China.

(f) The region has a large pool of unemployed Indigenous youth. Many have strong aptitude in marine activities. They have a strong desire for training and practical skills development in sectors where there is a realistic potential for future employment and reward.

(g) The Island composition of the region's land resources mean there is little scope for most other types of industry development. However, this lends itself to off-shore aquaculture, recreational fishing and adventure tourism.

(h) The region's proximity to PNG and the Torres Strait Treaty may present opportunities for further joint fishing and tourism industry development between the Torres Strait and PNG.

(i) The region's Indigenous people already have runs on the board in world class marine research and policy development. An example is their work with James Cook University and Tagai State College on the Torres Strait sea grass program.

3. Realising the vision

3.1 The WG, TIB and TVH sectors all accept the challenge set by Minister Scullion in January 2014 for the development of a detailed proposed for fisheries reform.

3.2 It needs to be a proposal of, by and from the region's Indigenous people. It will recognise the existing and ongoing role of the TVH sector.

3.3 The WG has already:-

(a) Secured support for the vision from all industry stakeholders (refer to minutes from the industry forum held in April 2014.)

(b) Identified sources of fisheries expertise within Australia to assist the WG in developing the proposal (MRAG Asia Pacific).

(c) Identified sources of fisheries expertise from New Zealand to help inform the proposal.

(d) Commenced dialogue with commercial advisers on other Australian Indigenous fisheries initiatives (Ambrose Solutions).

(e) Secured an indication from the National Native Title Tribunal for its ILUA assistance should parties decide to utilise such an agreement.

(f) Commenced the development of detailed ideas for reform.

4. Further Progress Since Version 1

4.1 Since Version 1 of the Synopsis was circulated in April 2014, the following further outcomes have been achieved:-

(a) On 15 May 2014 Malu Lamar (Torres Strait Islander) Corporation ("Malu Lamar") was incorporated under the *Corporations (Aboriginal and Torres Strait Islander) Act 2006* (Cth).

(b) On 26 June 2014, the Honourable Justice Greenwood in the Federal Court of Australia made Orders that Malu Lamar be the prescribed body corporate for purposes of the *Native Title Act 1993* (Cth) in respect of the native title sea determination area arising out of the Torres Strait Regional Seas Claim (Part A) (QUD6040/2001).

(c) On 30 June 2014, details of Malu Lamar were entered on the Native Title Register maintained by the National Native Title Tribunal ("NNTT"). It is now the registered native title body corporate for the determination area.

(d) In addition to its native title functions under the *Native Title Act 1993,* Malu Lamar is also now the Torres Strait Islander party for the area for

cultural heritage purposes under the *Torres Strait Islander Cultural Heritage Act 2003* (Qld).

(e) On 20 June 2014, the directors of Malu Lamar held a meeting and resolved to adopt the WG as a formal working group of Malu Lamar. The WG will continue its work with the Australian Government and the Queensland Government on reforms to the *Torres Strait Fisheries Act 1984* (Cth) and the *Fisheries Act 1994* (Qld). The working group will report to the executive committee of Malu Lamar.

4.2 The following operational arrangements have also been completed:-

(a) With the kind support of the Australian Fisheries Management Authority, administrative procedures and other corporate establishment arrangements for Malu Lamar are either in place or underway.

(b) Administrative support arrangements for Malu Lamar provided by the PBC Support Officer of the Torres Strait Regional Authority ("TSRA") and the Native Title Office ("NTO") of the TSRA, are now in place.

(c) Arrangements have been made for the inaugural annual general meetings of Malu Lamar in August 2014. Members will receive a full update on the fisheries reform proposal at the meeting.

(d) The WG has overseen responses to dozens of s24HA native title notifications in respect of future acts within the sea determination area over the last three months. To date responses have been provided by the NTO in its native title representative body capacity. Now that Malu Lamar is the registered native title body corporate for the area, future responses will be provided by it directly.

5. Next steps

5.1 Australian Government and Queensland Government commitment to grant assistance to help resource development by Malu Lamar of the proposal.

5.2 Appointment by the Queensland Government of a Malu Lamar representative (Mr Ned David), to the Ministerial Advisory Committee for the review of Queensland fisheries management.

5.3 Put in place other mechanisms for effective direct interface between Malu Lamar, the Australian Government and the Queensland Government in the development of the proposal. In particular the WG is seeking maximum dialogue directly with Senator Scullion as Australia's Indigenous Affairs Minister and the Australian and Queensland fisheries Ministers.

Torres Strait Tropical Rock Lobster Resource Assessment Group Meeting 22

Meeting Record

27-28 March 2018

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

Contents

Meeting participants

Members

Name	Position	Declaration of interest
Dr Ian Knuckey	Chair	Chair/Director of Fishwell Consulting Pty Ltd and Olrac Australia (electronic logbooks). Chair/member of other RAGs and MACs. Conducts various AFMA and FRDC funded research projects including FRDC Indigenous Capacity Building project. No research projects in the Torres Strait. Full declaration of interests provided at **Attachment A**.
Dean Pease	AFMA Executive Officer	Nil
Selina Stoute	AFMA member	Nil
Charlie Kaddy	TSRA member (Fisheries Programme Manager)	Nil. TSRA holds multiple TVH TRL fishing licences on behalf of Torres Strait Communities but does not benefit from them
Tom Roberts	Queensland Department of Agriculture and Fisheries (QDAF) member	Nil
Dr Andrew Penney	Scientific member	Research consultant (Pisces Australis), member of other RAGs. No research projects in the Torres Strait
Dr Eva Plaganyi	Scientific member	Project staff for PZJA funded TRL research projects
Mark David	Industry member	Traditional Inhabitant Kulkalgal, TRLWG Industry member, Traditional Owner and TIB licence holder
Terrence Whap	Industry member	Nil. Traditional Inhabitant Maluialgal and Traditional Owner and TRLWG Industry member. Does not hold a TIB licence

Name	Position	Declaration of interest
Les Pitt	Industry member	Nil. Traditional Inhabitant Kemer Kemer Meriam and TRLWG Industry member
Phillip Ketchell	Industry member	Nil. Traditional Inhabitant Kaiwalagal, TRLWG Industry member, and Traditional Owner
Daniel Takai	Industry member	Pearl Island Seafoods, Tanala Seafoods and TIB licence holder
Dr Ray Moore	Industry member	Industry representative and Master Fisherman licence holder
Brett Arlidge	Industry member	General Manager MG Kailis Pty Ltd. MG Kailis Pty Ltd is a holder of TVH licences

Observers

Name	Position	Declaration of interest
Alexander Morison	TRLWG Chair	No pecuniary or other interest in the Tropical Rock Lobster Fishery or any other Torres Strait fisheries Fisheries Consultant. Chair of SERAG and SharkRAG. Scientific member on SEMAC. Contracted by government departments, non-government agencies and companies for a range of fishery related matters including research and MSC assessments of AFMA managed and other fisheries (by SCS Global Services)
Sevaly Sen	TRLWG Fisheries Economist member	Nil interest in Torres Strait fisheries. Conducts various FRDC research projects relevant to AFMA fisheries
Allison Runck	TSRA observer	Nil. TSRA holds multiple TVH TRL fishing licences on behalf of Torres Strait Communities but does not benefit from them

Name	Position	Declaration of interest
Jerry Stephen	TSRA Deputy Chair, TSRA Member for Ugar and TSRA Portfolio Member for Fisheries	TIB licence holder and Traditional Owner
Patrick Mills	Chair of the Torres Strait Fisher's Association	TIB licence holder and Traditional Owner
Seriako Stephen	Representative for Malu Lamar (Torres Strait Islanders) Corporation Registered Native Title Body Corporate (RNTBC)	Nil
Sandie Edwards	Industry observer	Torres Straits Seafood Pty Ltd and buyer
Koro Samai	Industry observer	Fisher
Pala Rubu	Industry observer	Fisher
Yacoba Wena	Industry observer	Fisher
Ngukis Asse	Industry observer	Fisher
Dr Mark Tonks	CSIRO scientific observer	Project staff for PZJA funded TRL research projects
James Mills	Industry observer	TIB licence holder
Ted Whap	Industry observer	Fisher
Susamie Ketchell	Industry observer	Fisher
Kumi Bon	Industry observer	Fisher
Kumi Abua	Industry observer	Fisher
Karo Whap	Industry observer	Fisher
Muttie Assan	Industry observer	Fisher
Kevin Sabatino Snr	Industry observer	TIB licence holder and Traditional Owner
Thomas Nomoa	Industry observer	TIB licence holder and Traditional Owner
Thomas Mene	Industry observer	Fisher
Paul Ahmat	Industry observer	Fisher
Richard Takai	Industry observer	Fisher
Hideo Shibasaki	Industry observer	Fisher
Kevin Takai	Industry observer	Fisher
Kevin Sabatino Jnr	Industry observer	Fisher
Morgan Daniel	Industry observer	Fisher

Name	Position	Declaration of interest
Jack Bani	Industry observer	TIB licence holder and Traditional Owner
Natalie Couchman	AFMA observer	Nil
Steve Bolton	AFMA observer	Nil

Notes:

This list of observers may be incomplete as some observers attended at different times and some declined to complete the attendance form.

Napau Pedro Stephen (TSRA Chair) attended at the reopening of the meeting on the morning of 28 March 2018. Further details are provided under agenda item 1.2.

1 Preliminaries

1.1 Apologies

1. Mr Terrence Whap opened the meeting in prayer at 1:00 pm on 27 March 2018.
2. The Chair welcomed attendees to the 22nd meeting of the Torres Strait Tropical Rock Lobster Resource Assessment Group (TRLRAG22). The Chair acknowledged the Traditional Owners of the land on which the meeting was held and paid respect to Elders past and present.
3. Attendees at the RAG are detailed in the meeting participant tables at the start of this meeting record.
4. Apologies were received from Maluwap Nona (Chairperson, Malu Lamar (Torres Strait Islanders) Corporation RNTBC) and Aaron Tom (Industry member).

1.2 Adoption of agenda

5. The draft agenda was adopted without change (**Attachment B**). Agenda Items 1-4 were discussed on 27 March 2018. Agenda Items 4-10 were discussed on 28 March 2018.
6. On the morning of 28 March 2018, the Chair moved to open the meeting. A request was received for Mr Napau Pedro Stephen (Chairperson, TSRA) to provide a statement to the meeting prior to the commencement of meeting proceedings. The Chair granted this request. A summary of the statement made by Mr Stephen is noted for the record at **Attachment C**. Mr Stephen did not attend the remainder of the meeting and was not asked to declare conflicts of interest.

1.3 Declaration of interests

7. The Chair stated that as outlined in PZJA Fisheries Management Paper No. 1 (FMP1), all members of the RAG must declare all real or potential conflicts of interest in Torres Strait TRL Fishery at the commencement of the meeting. Given the number of meeting observers, it was decided it would be too time consuming to ask each participant to leave the room while a decision is made as to whether, for the relevant agenda items, they can participate in the discussion and in the making of recommendations, or remain absent from the meeting. The declarations of interests would be noted under each agenda item.
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. Unrelated to this agenda item but noted for the record, an Industry observer, Mr Anthony Assan, made a statement regarding recent comments made by the TSRA Chairperson in the Torres News concerning 100% Traditional Inhabitant ownership of the TRL Fishery and the decision of the TSRA Board to lease out TVH licences in the Fishery in the 2017/18 fishing season. Mr Assan does not expect the ownership target to be reached. Further, Mr Assan expressed the opinion that some in the TIB sector do not support the leasing of the TVH licences as they feel it is putting more pressure on the TIB sector to compete.
10. The TSRA Portfolio Member for Fisheries advised the meeting that he would look to organise a meeting with Mr Assan and the TSRA Chair to discuss this matter following the RAG meeting. The Chair noted it was not a matter for the RAG to be considering. The TSRA Portfolio Member for Fisheries noted that TSRA is currently conducting consultation on the Community Management Framework.

1.4 Action items from previous meetings

11. The RAG noted the report provided by the Executive Officer advising of the status of actions arising from previous TRLRAG meetings (**Attachment D**).
12. With regards to Action Item 3, an Industry member raised concerns about Australian access to and quality of PNG catch data and whether any catch is being taken using trawl. The CSIRO Scientific member noted that at recent meetings with the PNG NFA there was some discussion and interest from the PNG NFA in undertaking a research project to survey catch landed in local PNG markets, noting there is uncertainty around PNG catches.

2 Updates from members

2.1 Industry and scientific

13. The RAG noted updates provided by Industry and Scientific members and observers on the recent performance and key issues affecting the TRL Fishery:
    a. An Industry member reported that there had been no large change in the Fishery.
    b. Another Industry member reported that compared to previous seasons, the 2017/18 season was fairly normal, if slightly below average, but not markedly so. Catches from December to February have been slightly higher than last season, but noting that last season was the poorest on record for them. The catches are coming from the West, more so than in previous season, but this may be driven by where fishers have chosen to operate and may not be a reflection of stock distribution. Sizes are what would be expected this season (average is less than 1.5 kg). The catch rates and sizes do not align with what is expected from the stock assessment.
    c. The CSIRO Scientific member noted that the results of the integrated stock assessment have been finalised and will be presented at this meeting. The indices are showing lower recruitment than previous seasons. Some anecdotal reports are also supporting this conclusion.
    d. Another Industry member reported that lobsters appear to be concentrated around Mabuiag island, with poor catches being experienced to the South East and around Thursday Island. The fishing around Mabuiag is concentrated about 8 nm off the island but is patchy. These fishing grounds have not fished well for a number of years, but have come good again this season. This may be attributed to sand incursions of past seasons clearing this season. Fishers are not seeing good numbers of 0+ nor 1+ lobsters on the Mabuiag fishing grounds.
    e. Another Industry member reported that catches around Darnley island are slow (average of 10-20 kg of tails per fishing trip). In previous seasons there were more larger lobsters around.
    f. An Industry observer reported that TVH fishers appear to be concentrated around Buru (Turnagain). There seems to be good number of larger lobsters (over 1.5 kg) around Mabuiag island.
    g. Another Industry observer reported that catches around Tudu island have not been as good as they have in previous seasons, they have started slow and remained slow. Dungeness Reef is the same. The fleet is favouring the Western fishing grounds. Sizes are ok, about half are > 1 kg and half are < 1 kg.

h. Another Industry observer reported that there is food on the grounds around Thursday Island, but the lobsters are in low numbers.

i. An Industry member noted that it is unlikely that freshwater inflow would be affecting lobster numbers on the grounds. Around the outflow of the Fly River in PNG, lobsters have shown an ability to adapt their tolerance to freshwater. In past seasons, Deliverance Island had some very large lobsters and these may have migrated to the grounds around Mabuiag island. Something similar may be occurring this season.

j. An industry member noted that the catches from PNG are low but slightly higher than last season which was very poor. This is in the main due to a hookah closure being in place until 31 March 2018.

2.2 Government

14. The RAG noted an update provided by the AFMA member regarding management initiatives relevant to the TRL Fishery:

    a. Industry meeting - on 27 February 2018 AFMA held an industry meeting on Thursday Island. AFMA provided industry members information about the preliminary RBC and catch rates, explained the stock assessment process, explained the purpose of this RAG and the following Working Group meeting, to notify industry members that additional measures may be needed to regulate catch in the 2017/18 fishing season and to gather industry views.

    b. Draft TRL Management Plan - the TSRA has conducted further consultation with Traditional Inhabitant fishers about how quota allocations under a quota management system could be managed. Outcomes from this consultation as well as that on the draft TRL Management Plan and TRL Working Group advice will be tabled with the PZJA.

    c. Australia and PNG bilateral meeting - the Fisheries Committee met on 5 February 2018 and provided advice to the Joint Advisory Council (JAC). The JAC noted advice regarding the preliminary TRL RBC for the 2017/18 fishing season. The JAC also noted ongoing interest by the PNG prawn trawl industry to retain TRL and agreed that any departures from the current ban must be assessed in line with the Treaty. The JAC recognised the importance of the resource to Traditional Inhabitants noting that it is a shared stock and the potential for trawling to impact spawning migration pathways and biomass in the Torres Strait. PNG also agreed to provide data on catches. The AFMA CEO will be following up again with the NFA Managing Director on these matters.

    d. Australian National Audit Office (ANAO) - the ANAO has commenced a performance audit of Australian Government coordination arrangements in the Torres Strait. ANAO officers will be visiting the Torres Strait in April.

15. The RAG noted an update provided by the QDAF member regarding QDAF activities relevant to the management of the TRL Fishery:

    a. East Coast TRL Working Group – this group met for the first time since 2011 and will focus on developing a harvest strategy, to be implemented by 2020. The group will also review existing management arrangements.

    b. Catch to date – approximately 55 tonnes of the 195 tonnes TAC has been caught. Last season the TAC was reached by 1 July. Catch for the last month has slowed (3 tonnes in March) as the industry has decided to fish to higher market prices and catch per unit effort (CPUE) expected later in the season. The QDAF member advised that there is 5 tonnes allocated to the indigenous sector under indigenous fishing permits. The purpose of these permits is to provide the

opportunity for indigenous fishers to trial commercial fishing. In order to access more quota, fishers would need to purchase it. QDAF are currently reviewing the policy detailing access arrangements to the 5 tonnes indigenous sector allocation.

16. An industry member noted that the East Coast TRL Fishery is able to fish to higher market prices due to the certainty provided by quota.
17. The RAG noted an update provided by the TSRA member regarding TSRA activities relevant to the management of the TRL Fishery:
    a. Fisheries Summit – planned for May 2018 to span 3 days. Further details to be provided closer to time but key fisheries projects and issues will be up for discussion as well as seeking nominations for Traditional Inhabitant positions on PZJA forums. These positions will be for a three-year term. AFMA will write to all licence holders with further details.
    b. Audit of infrastructure and services – a draft report has been considered by the TSRA Board and the report will be finalised shortly. The report will be made public on the TSRA website, and made available at the Fisheries Summit.
    c. Export and branding for Torres Strait seafood - a consultant has been 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.
    d. Separate licence entity – broad consultation has been conducted on a project looking at the establishment of a corporate entity separate from the TSRA to hold in trust and manage commercial fishing licences on behalf of Torres Strait communities. There is general support for the entity and TSRA now need to complete further work on legal and governance structures.

2.2.1 Fish receiver update

18. In the interests of time, the RAG noted the update provided in the associated agenda paper as read.

2.2.2 TRL Fishery export approval

19. In the interests of time, the RAG noted the update provided in the associated agenda paper as read.

2.2.3 Legislative amendments update

20. In the interests of time, the RAG noted the update provided in the associated agenda paper as read.

2.3 PNG NFA

21. This item was not discussed as the PNG NFA invited participant was not in attendance.

2.4 Native Title

22. The RAG noted concerns raised by the representative for the Malu Lamar (Torres Strait Islanders) Corporation RNTBC. The Chairperson for Malu Lamar was an apology for the meeting. The Malu Lamar representative expressed concerns over the low RBC for the 2017/18 fishing season. The representative advised that the rights of Traditional Inhabitants to fish are protected under Article 10 of the Torres Strait Treaty and

prescribed in the objectives of the *Torres Strait Fisheries Act 1984*. The representative stated that what remains of the RBC needs to be allocated to Traditional Inhabitants.

3 2017/18 TRL catch and effort information

23. The RAG noted an update provided by the AFMA Executive Officer on catch and effort in the TRL Fishery for the 2017/18 fishing season to date:
    a. As reported through the new mandatory fish receiver system implemented on 1 December 2017, the total landed catch reported for the TRL Fishery from 1 December 2017 to 21 March 2018 is 81,688 kg (**Table 1**).
    b. There are outstanding catch disposal records (TDB02) for the period 1 to 21 March 2018. Therefore, the landed catch reported for the March period may be under-reported.
    c. AFMA is awaiting an update from the PNG National Fisheries Authority on catches to date for the PNG TRL Fishery.

Table 1: Landed catch (kilograms whole weight) of tropical rock lobster by sector for the Torres Strait TRL Fishery for the period 1 December 2017 to 21 March 2018. Source: catch records from the Torres Strait Catch Disposal Record (TDB02).

Dates	TIB (kg)	TVH (kg)	Combined catch (kg)	Number of records
01/12/2017 to 31/12/2017	8,516.8	31.3	8,548.1	414
01/01/2018 to 31/01/2018	9,802.4	0.0	9,802.4	493
01/02/2018 to 28/02/2018	21,574.2	27,307.8	48,882.0	755
1/03/2018 to 21/03/2018	5,749.8	8,706.0	14,455.9	255
Total	**45,643.2**	**36,045.2**	**81,688.4**	**1,917**

4 Finalising the stock assessment update and recommended biological catch

24. The RAG noted a presentation provided by Dr Mark Tonks, CSIRO Scientific observer, detailing the results of the November 2017 pre-season survey. With regards to survey design, the RAG noted:
    a. Dive surveys were conducted at 77 sites using 500 x 4 m belt transects. These sites have been repeated over the last two years. At each site the number of lobsters is counted and seabed habitat assessed. Some of the sites occur in currently fished areas.
    b. Survey conditions were fair with good visibility and were similar to previous surveys. Noting this, weather is not considered to have impacted on the survey results.
25. The results of the survey show:
    a. 1+ lobster abundance index – 1.78 lobsters observed per transect. This is the lowest recorded for a pre-season survey, just 25% of the highest index in 2015. The index is the same as the 1998 mid-season survey and higher than the 2001 and 2005 mid-year surveys. Compared to previous surveys, it is looking similar to previous poor seasons.

b. 1+ lobster abundance and distribution – low abundance around the Western survey sites (Thursday Island, Mabuiag, Buru (Turnagain)). The South East survey sites were up 250% from the 2016 survey. Distribution is similar to previous surveys but with an absence of 1+ lobsters around Buru.
c. 0+ lobster abundance index – lowest ever recorded, just 20% of the 2016 survey index.
d. 0+ lobster abundance and distribution – very low abundance around Mabuiag and Thursday Island and low across most other sites except the South East. The distribution is unusual compared to the 2016 survey.
e. Certainty - CSIRO are confident about the 1+ lobster results, with a little less certainty about the 0+ lobster results because 0+ lobsters are harder to see.
f. Size frequency – commercial size length frequency data provided by MG Kailis has been fairly consistent through time. However, the survey data is showing tail width size has decreased over the last 4 years.
g. Seabed habitat – the seabed habitat has remained relatively consistent through time (1994-2014), with a slight downwards trend in rubble and coral, and a slight increase in algae and seagrass. There was a coral bleaching event recorded in 2010. Sand cover has been relatively consistent with the Southern sites experiencing some sand incursions in 2015.

26. The RAG noted the number of survey sites has decreased through time (from 144 to 77 sites). The biggest decrease has been in the last 3 years. A drop in precision was seen with the removal of some Eastern sites, however the existing sites are considered representative of the TRL Fishery.
27. RAG members discussed the value in increasing the number of sites in subsequent years. It was noted that increasing the number of sites will reduce the standard error, however the trend of abundance will remain the same. The CSIRO Scientific observer advised that new sites would need to randomly stratified and scaled on the basis of TRL stock distribution and previous surveys. Industry members suggested additional sites are needed at Warrior Reef. The RAG noted that there were more survey sites around Warrior Reef previously, and that surveys in this area may be able to indicate of any change to migration patterns.
28. The CSIRO Scientific member noted that tagging and larval convection studies look at developing a better understanding the TRL life cycle and may assist in understanding if there have been any changes to migration patterns through time.
29. RAG members discussed the utility of a mid-season survey to provide better precision in survey results. The CSIRO Scientific member advised that:
    a. Pre-season surveys provide the best information about 1+ lobster abundance, but also provide abundance information on 0+ and 2+ lobsters.
    b. Mid-season surveys provide good information 2+ lobsters. In the absence of a mid-season survey, CPUE data is used as an indicator of 2+ lobster abundance. When conducted in the past, the mid-season surveys showed a strong correlation with the CPUE data.
    c. Pre-season surveys are more important for setting a TAC for the following fishing season. A mid-season survey would give independent information about the spawning stock. The Independent Scientific member noted however, as there is not a stable relationship between the spawning stock and recruitment, it is not possible to predict recruitment from this information. It is better to survey those lobsters that have already recruited into the fishery, that being the 0+ and 1+ lobsters.

d. Much remains uncertain as to where the sources of recruitment are for the TRL Fishery, the thinking is that there are many sources. Given this uncertainty, the TRL stock needs to be protected across its distribution.

30. In summary, the RAG noted that the November 2017 pre-season survey showed the lowest level of 1+ (high certainty) and 0+ (less certainty) lobsters in the TRL Fishery's history of pre-season surveys. This is the main factor causing the reduction of the RBC for the 2017/18 fishing season.
31. The RAG noted a presentation, titled *Draft Updated 2017 Integrated Stock Assessment to provide management advice on the Torres Strait rock lobster fishery*, provided by Dr Eva Plaganyi, CSIRO Scientific member, detailing the results of the updated integrated stock assessment and RBC calculations. The RAG noted the integrated stock assessment takes into account:
    a. Data from pre-season surveys – last 8 years, including that conducted in November 2017;
    b. Data from mid-year surveys – 1989-2014;
    c. Catch and effort information – TIB and TVH;
    d. Length frequency information – Australia and PNG;
    e. Historical information;
    f. Environmental information.
32. The RAG noted catch data for the period 1973-2017 and in particular 2017 catch against the RBC: Traditional Inhabitant Boat sector 106.4 tonnes; Transferable Vessel Holder sector 149 tonnes; PNG 113 tonnes. This accounted for 74% of the 495 tonnes RBC.
33. Industry observers requested further details on the TRL life cycle. The RAG discussed the TRL life cycle as presented by the CSIRO Scientific member (**Attachment E**). The life cycle that was presented is general in nature and it was noted that there will be exceptions. In the Western Torres Strait, females walk East to PNG in August-September and don't return. In the Eastern Torres Strait female lobsters walk out to deeper water and then return. The same is thought to occur in the East Coast TRL Fishery. Lobsters spawn and recruit within the Coral Sea gyre. The TRL larval phase lasts approximately 6 months.
34. The RAG discussed possible explanations for the low abundance of TRL around Thursday Island. The CSIRO Scientific member advised that the research shows TRL do not migrate far once settled in the Torres Strait, until they migrate to spawn. An Industry member noted that there have been some historical observations of 1+ lobsters moving from the Northern area of the East Coast TRL Fishery into the Torres Strait, but strong evidence for this is not available. Recruitment in the Torres Strait is primarily through the settlement of juvenile lobsters. As such it is unlikely that TRL settled in the East Coast TRL Fishery migrate to the Torres Strait.
35. The RAG noted a summary the survey cycle (**Attachment F**).
36. The RAG noted the model used is an age-structured production model (ASPM) which integrates all available data and fits that data to calculate an RBC. The outputs of the model show:
    a. Abundance of TRL in each age class (0+, 1+ and 2+) – all age classes are lower than previous years. Model does not fit 0+ lobsters as the variability of the data is high.
    b. CPUE – the trend is down for 2017. This trend was also seen in other poor years (2004, 2008, 2011). If there are not a lot of 1+ lobsters growing into fishable size, then should see a drop in CPUE around March-April 2018. TRL generally reach legal size at 22 months, they are generally 18 months old at the time of the pre-season survey each November.

c. Stock-recruitment residuals – recruitment in 2016 and 2017 is worse than average. There have been poor recruitment years in the past, but not for two consecutive years.

37. The RAG discussed the implications of the low abundance of 0+ and 1+ lobsters for the 2017/18 fishing season. 1+ lobsters surveyed during the November 2017 pre-season survey will grow out to fishable size around March/April 2018. 0+ lobsters will grow out to fishable size a year later in March/April 2019. If the abundance of 1+ lobsters is as low as the survey indicates, then fishing mortality for the 2017/18 fishing season needs to be decreased to allow for a sufficient spawning stock for subsequent seasons. A similar issue may arise for the 2018/19 fishing season, given the low abundance of 0+ lobsters during the pre-season survey, though there is less certainty around the estimates of abundance for this age class.
38. The CSIRO Scientific member advised that where there are low abundances of 1+ and 2+ lobsters, concentrations or 'hot spots' would be expected. There would not be high abundances spread across the fishery as has occurred in past years.
39. The RAG noted that the 2+ lobsters being caught now are likely larger males left over from the previous year. This is borne out by the length frequency data. It is expected that when the 2+ lobsters are mostly caught, which they generally are during a season, there will be a drop in CPUE as they are replaced by a low abundance of 1+ lobsters.
40. The Independent Scientific member advised that they have reviewed the results of the November 2017 pre-season survey and the outputs of the model and has confidence in the findings.
41. The RAG discussed the CPUE data in further detail (**Attachment G**):
    a. December 2017 and January 2018 CPUEs are higher than in recent years. February 2018 is looking to be on a par with the long-term average, maybe slightly lower. The effort for the TVH sector in 2018 is not particularly high compared to past years.
    b. The Chair noted that the effort information collected in catch disposal records may not always be accurate, for example in many cases dive hours are not recorded and fishing days where there has been zero catch or low catch may not be recorded. Given this, any trends extrapolated from this data may be impacted. There is also a need to update the CPUE standardisation with regards to fishing patterns and efficiency.
    c. An Industry member noted that if the survey is correct, and noting that in the past there has been a strong correlation between the survey results and CPUE data, then it should be expected that the CPUE will drop markedly and as such are less likely to reach the Australian catch share of the RBC.
    d. Another Industry member noted that in order to get the best outcome for the Fishery and the industry this season, the fishers themselves have a responsibility to come together to participate in and support the making of decisions.
42. In summary, the RAG noted that the CPUE data for the 2017/18 season to date has not contradicted the results of the November 2017 pre-season survey nor the outputs of the integrated stock assessment.
43. Taking into consideration all of the above, the RAG recommended a final RBC for the 2017/18 of 299 tonnes for Australia and PNG inclusive.

Recommendation 1

The RAG recommended a final RBC for the 2017/18 of 299 tonnes for Australia and PNG inclusive.

44. With reference to FMP1, the RAG discussed the attendance of the large number of observers at the meeting, noting some were wearing protest shirts and the majority were in attendance without seeking the prior agreement of the Chair. The RAG noted that while observers are generally welcome to attend RAG meetings to observe the proceedings, their presence in large numbers, particularly at this meeting, may have had the potential to inhibit or disrupt members from freely contributing to discussions and recommendations. The Chair also noted that Agenda Item 5 involved fine-scale examination of individual fisher's catch and effort data. It was not considered appropriate that observers had access to this information. On this basis, the Chair thanked observers for the time taken to attend the meeting and advised that the next session of the meeting would be closed to observers.
45. Following observers leaving the meeting the members discussed the implications of having such a large group of observers at a meeting and whether it impacted on members' comfort in providing advice to the RAG. Members considered it was generally (two-way) a positive role that observers played in the RAG and that although there were large numbers at this meeting, they did not disrupt the meeting or behave in a manner inconsistent with the standard of behaviour expected under FMP1. It was noted that many of the observers, however, had not sought permission from the Chair to attend and that this should be addressed in the future. Members agreed that, in general, they would be comfortable with observers continuing to attend the meetings.

5 Data rules for using catch data reported in the Torres Strait Buyers and Processors Docket Book

46. RAG members discussed data rules for the use of TRL catch data reported in the Torres Strait Buyers and Processors Docket Book (TDB01). The RAG noted:
    a. The TDB01 was used in the TRL Fishery principally to record the catch and effort for fishers operating in the TIB sector of the fishery. The TDB01 was replaced on 1 December 2017 by the mandatory Torres Strait Catch Disposal Record (TDB02);
    b. Catch from the TRL Fishery is also reported through the Torres Strait Tropical Rock Lobster Fishery Daily Fishing Log (TRL04). Catch sold between processors can also be recorded in the TBD01. This can create duplicate catch records making it difficult to accurately determining the true catch taken by the TIB sector of the fishery.
    c. A number of mechanisms have been introduced in an attempt to reduce duplicate catch records, however a number of uncertainties still remain, including:
        i. The TDB01 "related-logs" field identifies if the catch has been reported elsewhere (e.g. TRL04). If the fisher or processor does not complete this field, duplicate records may not be identified.
        ii. The TDB01 "seller-type" field identifies the fisher by name/entity. This can be used to identify between TIB and TVH fishers. Seller names are often not included, misspelt or a nickname is used reducing the utility of this field.
        iii. The TDB01 "vessel-type" field is used to indicate whether the vessel-symbol detailed in the TBD01 corresponds to a vessel listed in the TVH database.
    d. The recommended data rules are proposed to assign TDB01 records with unknown or missing information to either the TIB sector, TVH sector or as processor-to-processor trading.

47. The RAG agreed to adopt the data rules provided at **Attachment H**.

Recommendation 2

The RAG agreed to adopt the data rules provided at Attachment H.

6 TRL harvest strategy

48. The RAG noted an update provided by the AFMA member regarding the Harvest Strategy for the TRL Fishery:
    a. The TRLWG considered the draft TRL Harvest Strategy at its meeting on 25-26 July 2017.
    b. The WG recommended that further work be undertaken by the WG and RAG to examine possible options for including social and/or economic objective in the draft harvest strategy and applying a management trigger under the harvest strategy as the stock approaches the limit reference point to minimise the impacts on traditional inhabitant commercial fishers.
49. The RAG was asked to advise on the likely:
    a. Data and assessment requirements to support the proposed management trigger;
    b. Impediments, if relevant, to meeting the data and assessment requirements; and,
    c. Costs of any new data and assessment requirements.
50. The RAG agreed that a management trigger can be included that results in alternative management and catch sharing arrangements. However, the trigger level itself and proposed management response needs to be identified by the WG before the RAG can provide advice about how the Harvest Strategy should be modified to accommodate it. The RAG discussed that:
    a. Social and economic limits are often based on tonnage and not % biomass. Biomass based triggers are difficult to monitor and it is not practical for the TRL Fishery given the limitations of available data.
    b. Triggers that result in management changes part way through a season are complex to administer and require real time data and analysis which is expensive for the fishery. In the TRL Fishery in-season adjustments would be difficult under the current inputs.
    c. If a new trigger is incorporated, the Harvest Strategy would need to undergo management strategy evaluation (MSE) testing. This is a costly exercise.
51. 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.

Recommendation 3

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.

7 Justification for a January season start date for the QLD East Coast TRL Fishery

52. The RAG noted a summary provided by the QDAF Member regarding the 1 January season start date for the East Coast TRL Fishery:

a. In 2014, QDAF changed the end date of the East Coast TRL Fishery's spawning closure from 31 January to 31 December. The start date of the spawning closure 1 October remained unchanged.
b. The amendment to the closure date did not remove the closure over the peak spawning months of October-December, but reduced the length of the closure to allow industry to take advantage of a period of high demand in January.
c. The limited data available indicates the peak spawning period for the East Coast TRL Fishery occurs in November and in deep water. The closure starts and finishes one month either side of the peak spawning period. Fishers are also restricted to shallower waters reducing their interactions with spawning lobsters in deep water. If spawning lobsters are encountered at any time whilst the fishery is open there is total protection on the take of berried and tar spot lobsters. A total allowable catch (TAC) also restricts the level of catch.
d. Advice from CSIRO TRL scientists at the time of the change was supportive in bringing forward the start date of the new season to 31 December considering the East Coast TRL Fishery is managed under a TAC and the peak spawning period is in November.
e. The Torres Strait TRL Fishery spawning closure is slightly different to the East Coast TRL Fishery with a closure from 1 October to 30 November and then a prohibition on the use of hookah gear from December-January.

53. The CSIRO Scientific member reinforced that there are no concerns about a season opening in January, as peak spawning occurs November in deeper water. This change is not considered to affect the Torres Strait TRL Fishery.
54. The RAG noted advice from some Industry members that there is little evidence that larger lobsters migrate from the East Coast to the Torres Strait. Therefore, it is considered to be minimal impact from this spawning closure on the Torres Strait. There is anecdotal evidence that 1+ lobsters migrate from the Northern area of the East Coast into the Torres Strait. But these lobsters would be undersize and only grow to a fishable size later in the fishing season.
55. The RAG noted that historically TIB fishers had access to areas of the East Coast TRL Fishery. It was advised that concerned fishers raise this matter with QDAF directly.
56. The QDAF member advised that they are seeking an indigenous member for their East Coast TRL Fishery and have sought nominations including from relevant native title bodies. No nominations have been received to date.

8 Setting of hookah closures

57. The RAG noted a proposal from the TSRA Portfolio Member for Fisheries regarding the setting of moon-tide hookah closures for the TRL Fishery. It was proposed that:
    a. A second hookah closure period be implemented each month in the TRL Fishery for the remainder of the 2017/18 fishing season, effective from 13 April 2018.
    b. Consideration be given prior to each fishing season as an additional effort control in years with a recommended biological catch set below historical catch averages.
58. The RAG noted that moon-tide hookah closures were originally introduced in 2005 as a temporary measure as a way to reduce fishing effort to levels recorded in 2002. This was at a time when the TRL Fishery was considered to be subject to overfishing. In 2013 the closures were removed following a buy-out of TVH licences. They were again reintroduced for the 2014/15 fishing season following agreement from both the TIB and TVH sectors.

59. It was highlighted that any changes in fishery management during 2018 to respond to the low TAC, could impact on or bias CPUE as an index of abundance for input into the next assessment or a harvest strategy.
60. The CSIRO Scientific member noted that a second hookah closure period would slow the rate of fishing which would prolong fishing and support the continuity of CPUE data for a longer period. This would be important particularly in a year where the fishery may close early as having continuous CPUE throughout a fishing season is important for informing calculations on spawning biomass.
61. The RAG recommended the proposal be put forward to the WG for further consideration.

Recommendation 4

The RAG recommended the proposal from the TSRA Portfolio Member for Fisheries regarding the setting of moon-tide hookah closures for the TRL Fishery be put forward to the WG for further consideration.

9 Other Business

62. There was no other business raised by members.

10 Date and venue for next meeting

63. The RAG noted that the next meeting is tentatively scheduled for December 2018, with a date to be decided out of session.
64. The meeting was closed in prayer at 12:00pm on 28 March 2018.

Declaration of interests
Dr Ian Knuckey – April 2018

Positions:

- Director – Fishwell Consulting Pty Ltd
- Director – Olrac Australia (Electronic logbooks)
- Chair / Director – Australian Seafood Co-products (seafood waste utilisation)
- Chair / Director – ASCo Fertilisers (seafood waste utilization)
- 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
- Invited scientific participant – SEMAC, SERAG

Current / Recent Projects and funding:

- Principal Investigator – FRDC Project 2017-069 Indigenous Capacity Building
- Principal Investigator – VFA Project 17-646976 – Ocean Scallop Biomass Survey – 2018
- Principal Investigator – FRDC Project 2017/122 - Review of fishery resource access and allocation arrangements across Australian jurisdictions
- Principal Investigator – FRDC Project 2016/116 - 5-year RD&E Plan for Northern Territory fisheries and aquaculture
- Principal Investigator – AFMA Project 2017/0803 - Analysis of Shark Fishery Electronic Monitoring data
- Principal Investigator – AFMA Project 2017/0807 - Resource Survey of the Great Australian Bight Trawl Sector – 2018
- Principal Investigator – AFMA Project 2016/0809 – Improved targeting of arrow squid
- Principal Investigator – AFMA Project 2018/08xx – Bass Strait and Central Zone Scallop Fishery – 2018 and 2019 Survey
- Principal Investigator – DPIPWE Project – Review of abalone dive rates
- Principal Investigator – FRDC Project 2015/204 – Realising economic returns of reducing waste through utilization of bycatch in the GAB Trawl Sector of the SESSF
- Principal Investigator – FRDC Project 2014/203 – Review of Monitoring and Assessment in the SESSF
- Principal Investigator – AFMA Project 2014/0809 – Fishery Independent Survey of shelf resources in the Great Australian Bight Trawl Fishery 2017
- Principal Investigator – Survey for Black teatfish in the Queensland Sea Cucumber Fishery.
- Principal Investigator – CRC Project 2013/748.40 – Improved understanding of economics in fisheries harvest strategies.
- Principal Investigator – FRDC Project 2014/207 – The social drivers and implications of conducting an ecological risk assessment of both recreational and commercial fishing - a case study from Port Phillip Bay
- Co-Investigator – Optimising processes and policy to minimise business and operational impacts of seismic surveys on the fishing industry and oil and gas industry.
- Co-Investigator – FRDC Project 2017/014 – SA Marine Scalefish Review
- Co-investigator – AFMA Project - SESSF 2018 Fishery Independent Survey

- Co-investigator – Bird mitigation in the SESSF trawl sector
- Researcher – Various fishing industry liaison projects for oil and gas industry
- Scientific Advisor – Atlantis, GABIA, Gulf St Vincent Prawn Fishery, Seafish JV, SETFIA, SSIA
- MSC Auditor – Falklands Is 2016 Surveillance Audit (Acoura), Macquarie Is Toothfish (SCS)
- Facilitator – WWF shark traceability workshop
- Facilitator – SPC Tuna Data Collection Committee
- Facilitator – Indonesian fishery training and development

Current / Recent Clients (>$5000):

- ABARES
- Acoura
- Atlantis Fisheries Consulting Group
- Australian Fisheries Management Authority (AFMA)
- CRC – Seafoods
- Department of Agriculture and Water Resources
- Department of Primary Industry - Victoria
- Dept. Primary Industry, Parks Water and Environment (DPIPWE) Tasmania
- Fisheries Research and Development Corporation (FRDC)
- Great Australian Bight Fishing Industry Association (GABIA)
- Gulf of St Vincent Prawn Boat Owners Association
- Monash University
- NT Fisheries
- Richey Fishing
- South Australian Rock Lobster Advisory Council (SARLAC)
- SARDI Aquatic Sciences
- SCS Global Services
- Seafood Industry Victoria
- Seafish JV
- SeaFresh
- Secretariat of the Pacific Community
- South East Trawl Fishing Industry Association (SETFIA)
- Southern Shark Industry Alliance (SSIA)
- Tasmanian Seafoods
- Victorian Fisheries Authority
- Western and Central Pacific Fisheries Commission
- World Wildlife Fund – Australia (WWF)

TORRES STRAIT TROPICAL ROCK LOBSTER

RESOURCE ASSESSMENT GROUP (TRLRAG) MEETING #22

TUESDAY 27 March 2018 1:00PM-5:30PM

WEDNESDAY 28 March 2018 8:30AM-12:00PM

THURSDAY ISLAND, TSRA CONFERENCE ROOM

AGENDA

1. Preliminaries
   - 1.1. Apologies
   - 1.2. Adoption of agenda
   - 1.3. Declaration of interests
   - 1.4. Action items from previous meetings

2. Updates from Members
   - 2.1. Industry and scientific
   - 2.2. Government
     - 2.2.1. Torres Strait Fisher Receiver System
     - 2.2.2. TRL Fishery Strategic Assessment
     - 2.2.3. Torres Strait legislative amendments
   - 2.3. PNG-NFA
   - 2.4. Native Title

3. 2017/18 TRL catch and effort information

4. Finalising the stock assessment update and recommended biological catch

5. Data rules for using catch data reported in the Torres Strait Buyers and Processors Docket Book

6. TRL harvest strategy

7. Justification for a January season start date for the QLD East Coast TRL Fishery

8. Setting of hookah closures

9. Other Business

10. Date and venue for next meeting

Summary of the statement made by Napau Pedro Stephen to the TRLRAG on 28 March 2018

Key points made by Napau Pedro Stephen:

- Noted the low recommended biological catch (RBC) of 299 tonnes for the Torres Strait TRL Fishery for the current season (2017/18 fishing season).
- Mr Stephen acknowledged that the TRL Resource Assessment Group (RAG) and Working Group are the appropriate bodies through which advice needs to be provided about the management of the TRL Fishery this season.
- The TSRA Board are of the view that in making decisions about the management of the TRL Fishery this season, noting aspirations for 100% ownership of Torres Strait fisheries, the benefits of any such decisions need to go to the Traditional Inhabitants of the Torres Strait.
- Mr Stephen has requested an urgent meeting with the Commonwealth and Queensland Ministers to discuss the outcomes of the meeting. Mr Stephen will represent the interests of Traditional Inhabitant fishers at this meeting.
- Mr Stephen's message to the meeting with Ministers will be that, in light of a low RBC, it should not be on Traditional Inhabitants to sacrifice this season. Traditional Inhabitant fishers from day dot have sacrificed to ensure the stock is sustainable. The TRL Fishery is critical in providing livelihoods for Traditional Inhabitants across the Torres Strait, and it is under threat this season. The only choice many Traditional Inhabitant fishers will have if the TRL Fishery is closed will be the Community Development Programme (CDP). This is no choice. Future decisions about the management of the TRL Fishery need to be made to the benefit of Traditional Inhabitants.
- Mr Stephen made himself available to any fishers that would like to meet with him.
- Mr Stephen noted that both the Management Plan and Harvest Strategy for the TRL Fishery had yet to be finalised. Regardless, action is needed now and this action needs to benefit Traditional Inhabitants.
- Traditional management of the TRL stock has been historically practised. These practices are in line with the science in ensuring that effort on the stock is controlled so the sustainability of the stock is not negatively impacted. The science does not tell us anything new regarding the management of the TRL stock.
- Mr Stephen noted that the TSRA Portfolio Member for Fisheries (and TSRA Deputy Chair), in attendance at the meeting, speaks for the TSRA Board. Mr Stephen requested AFMA consider the appointment of TSRA Portfolio Member for Fisheries as a member of the TRLRAG.
- There are already tensions between Traditional Inhabitant fishers and TVH fishers out on the fishing grounds and no one wants to see these tensions inflamed and ending up in front of the Court.

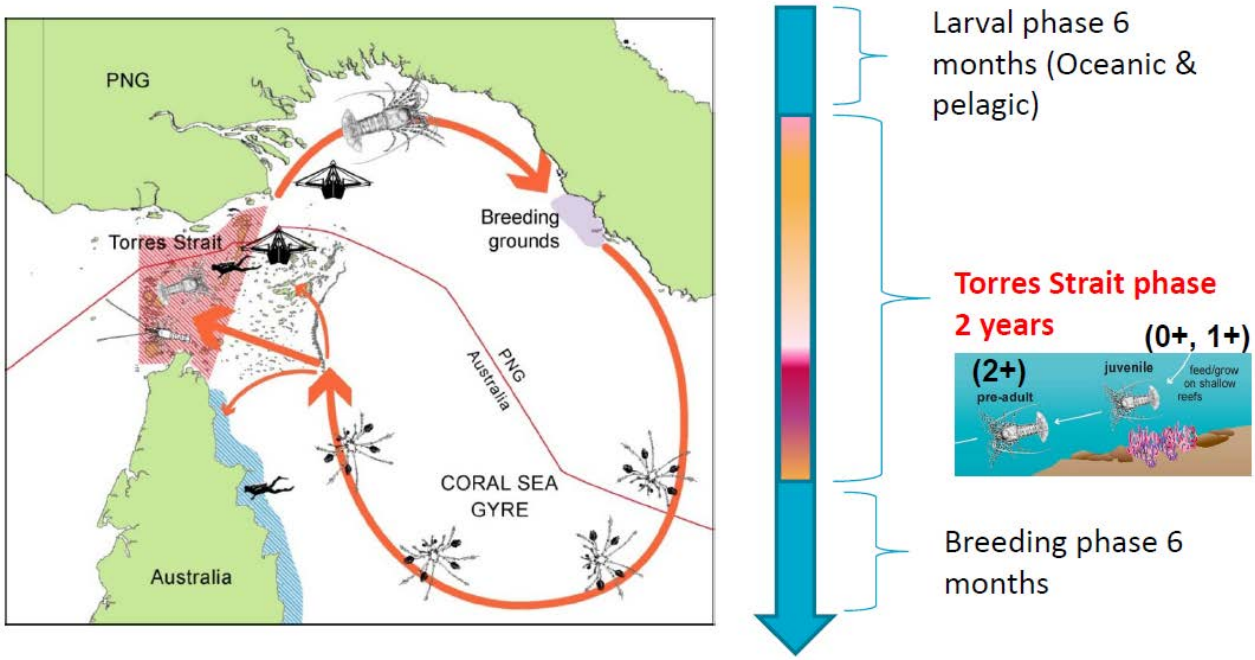
Action items from previous meetings

#	Action Item	Agenda	Agency	Due Date	Status
1.	AFMA to review the effectiveness of certain TIB licensing arrangements (in its 2016 licencing review) including: • TIB licenses should share a common expiry date • licences to last for longer than the current 12 month period.	TRLRAG14	AFMA	2017	**Ongoing** AFMA has begun undertaking a review of licensing of Torres Strait Fisheries, this issue will be considered as part of this review. At present however, AFMA resources are focused on progressing the proposed legislative amendments as a matter of priority.
2.	AFMA and CSIRO prepare a timeline of key events that have occurred in the Torres Strait Tropical Rock Lobster Fishery (e.g. licence buy backs, weather events and regulation changes) and provide a paper to TRLRAG.	TRLRAG14	AFMA CSIRO	TRLRAG17	**Ongoing** AFMA to complete further work. This has been difficult to action ahead of other priorities for the TRL Fishery.
3.	AFMA to prepare a summary of evidence that PNG trawl-caught TRL are a shared stock between Australia and PNG, including details such as the TRL biological characteristics, larvae dispersal, tag recapture data and catch and effort information. AFMA will circulate the paper to the RAG	TRLRAG19	AFMA		**Ongoing** AFMA sent a letter to PNG NFA outlining concerns of trawlers retaining TRL on 8 March 2017. AFMA presented the key findings of the CSIRO larval advection model at the Fisheries Bilateral meeting held in Port Moresby on 5 February 2018. The bilateral meeting noted that the findings show the Australian and PNG TRL fisheries are based on a single stock. AFMA and CSIRO (Dr Plaganyi) met with PNG NFA officials, including the NFA Managing Director, John Kasu on 7 February 2018 at the NFA offices in Port

	out-of-session for comment before sending to PNG NFA.				Moresby. Dr Plaganyi presented the updated stock assessment results and larval advection modelling. There was agreement that the updated larval modelling together with past research provides strong evidence that TRL is a shared stock between Australia and PNG. These meetings have been followed up with a phone call between the PNG NFA Managing Director and AFMA CEO which included discussions on the importance of controlling catches so they do not exceed each jurisdiction's catch share of the recommended biological catch (RBC).
4.	Malu Lamar RNTBC to provide AFMA with the map of traditional boundaries and regional area and reef names for each of the Torres Strait Island nations and for CSIRO to examine possible revised naming conventions for survey sites	TRLRAG20	Malu Lamar		**Ongoing** AFMA is awaiting advice from Malu Lamar and will assist where possible. Email reminders sent 20/12/2017 and 08/03/2018. CSIRO advised that they have received some maps with information on traditional names but that this is not complete. They will work with Malu Lamar if further information is needed.
5.	AFMA to investigate the potential cause of the TVH sector misreporting of fishing hours.	TRLRAG21	AFMA	TRLRAG22	**Complete** The missing data was tracked to logbooks returns from two vessel operators. The licence holder was notified.
6.	Lamp fishing data should be used for future TIB CPUE analyses	TRLRAG21			**Complete** TIB sector CPUE analysis will be updated to include lamp fishing.
7.	Torres Strait Docket Book (TDB01) data rules to be presented at the next RAG meeting scheduled for March 2018	TRLRAG21	CSIRO AFMA	Deferred to TRLRAG22	**Complete** Data rules to be considered at TRLRAG 22.

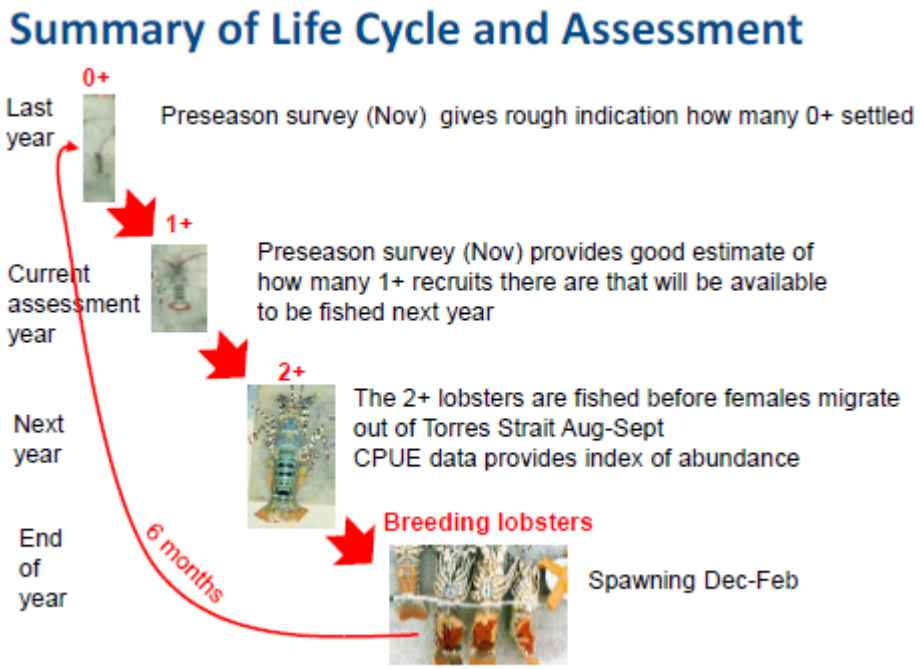
	The scientific observer recommended that RAG members and observers read the meeting paper prior to discussing this agenda item at the next meeting.				

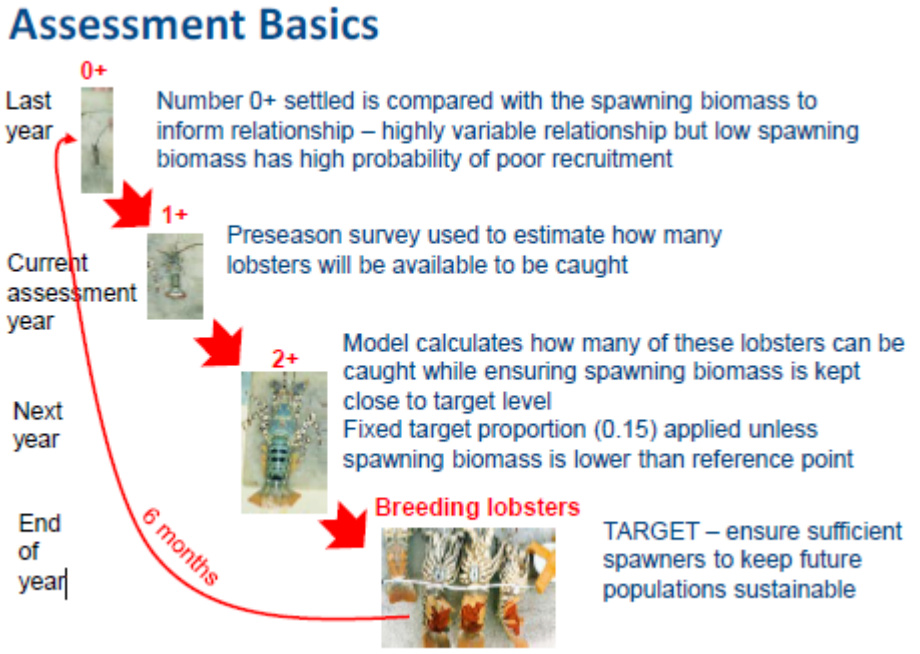
***Panulirus ornatus* Life Cycle**



Source: : Éva Plagányi, Mark Tonks, Rob Campbell, Mick Haywood, Roy Deng (2018) Final 2017 Integrated Stock Assessment and RBC (2018) for the Torres Strait rock lobster fishery. Powerpoint presentation presented to the 22nd meeting of the Torres Strait Tropical Rock Lobster Resource Assessment Group held on 27-28 March 2018.

Summary of the Assessment Cycle for the Torres Strait Tropical Rock Lobster Fishery





Source: Éva Plagányi, Rob Campbell, Mark Tonks, Mick Haywood, Roy Deng, Nicole Murphy, Kinam Salee (2018) Torres Strait rock lobster (TRL) 2017 fishery surveys, CPUE and stock assessment: AFMA Project 2016/0822. March 2018 Draft Final Report.

Nominal CPUE for the Torres Strait Tropical Rock Lobster Fishery

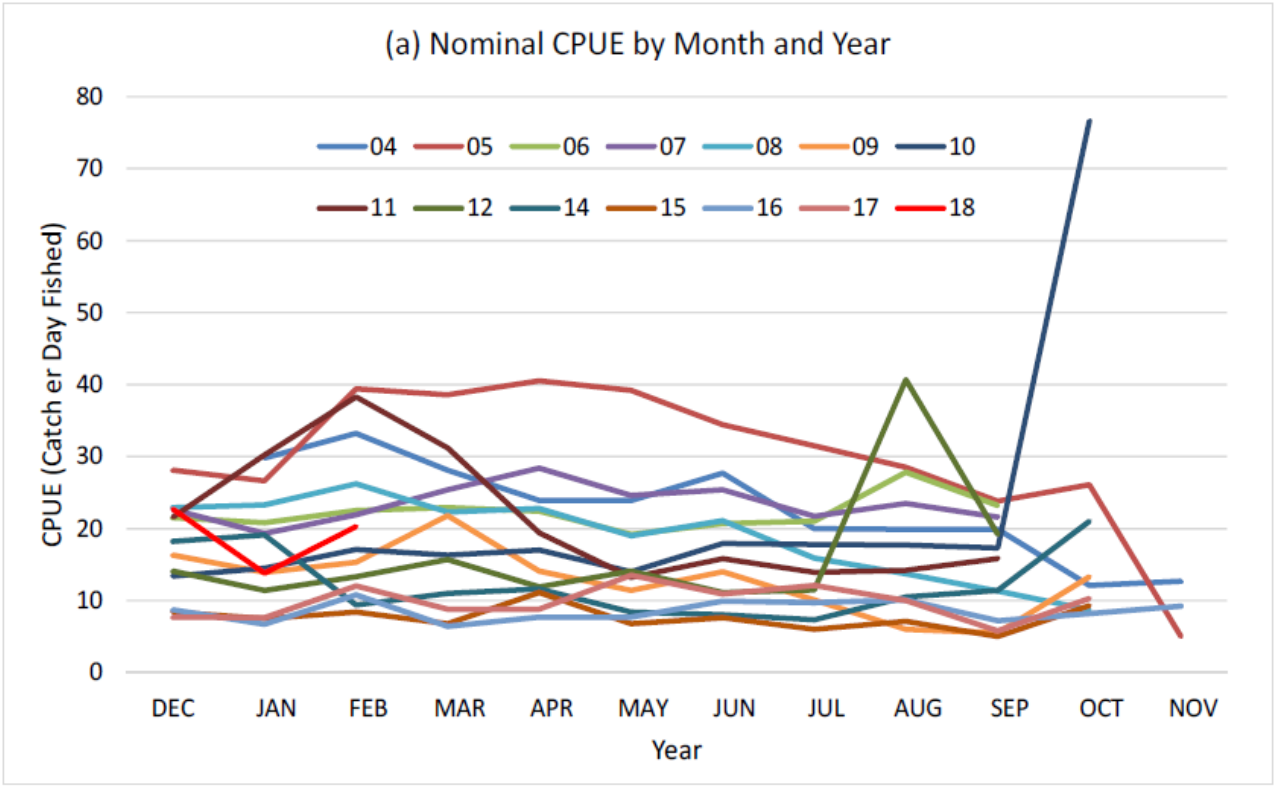


Figure1: Nominal CPUE for the Traditional Inhabitant Boat (TIB) sector per month and year.

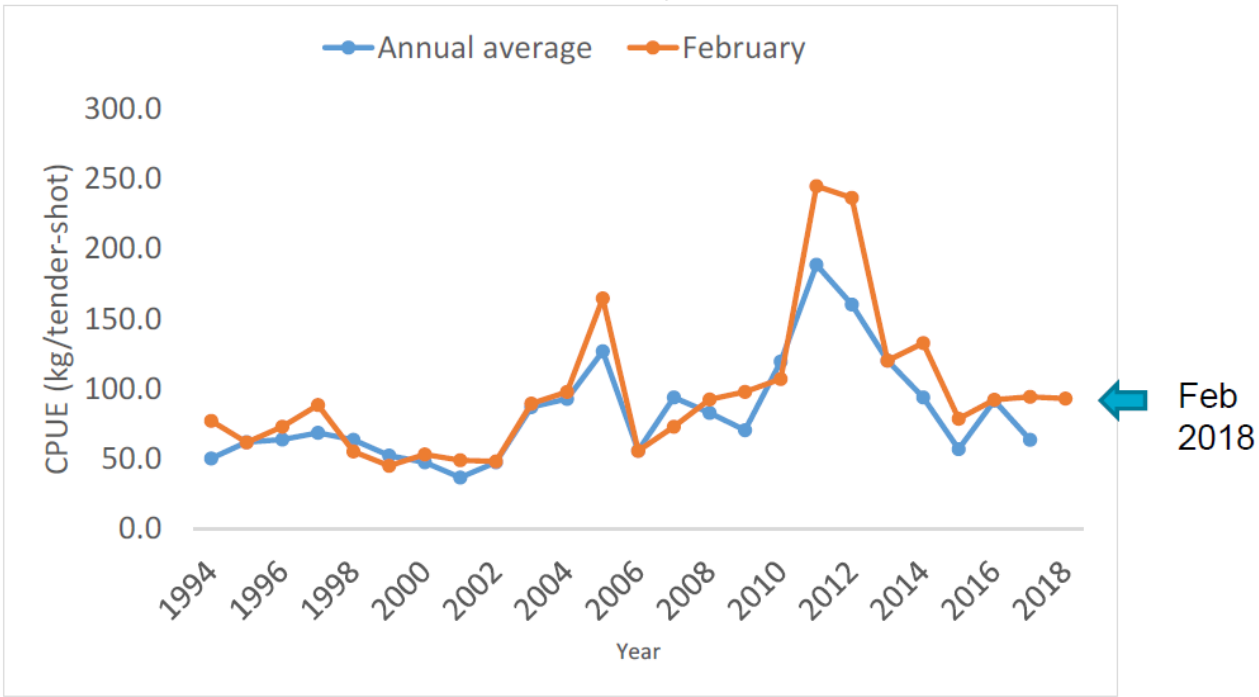


Figure 2: Nominal CPUE for the Transferable Vessel Holder (TVH) sector per year (annual average and February each year).

Source: : Éva Plagányi, Mark Tonks, Rob Campbell, Mick Haywood, Roy Deng (2018) Final 2017 Integrated Stock Assessment and RBC (2018) for the Torres Strait rock lobster fishery. Powerpoint presentation presented to the 22nd meeting of the Torres Strait Tropical Rock Lobster Resource Assessment Group held on 27-28 March 2018.

Data rules for using Tropical Rock Lobster catch data reported in the Torres Strait Buyers and Processors Docket Book (TDB01)

1. Where Seller-Type is identified as a processor then the corresponding catch record should be interpreted as a duplicate associated with a Processor-to-Processor trade and as such should not be included in the catch for the TIB sector. The DATA_TYPE associated with these records is therefore set to 'PROCESSOR'.
    a. An exception is made for the records associated with Joseph Dai where DATA_TYPE='TIB'.
2. Where Seller-Type is identified as processor but the Seller-Name is a business name then the corresponding catch record should be identified with the fishery sector (TIB or TVH). The DATA-TYPE is listed as 'TVH-TradeName' or 'TIBTradeName' respectively.
3. Where Vessel-Type is identified as a TVH-vessel then the corresponding catch record should be interpreted as a duplicate associated with the TVH sector and as such should not be included in the catch for the TIB sector. The DATA-TYPE is listed as TVH.
    a. Note, whether or not the corresponding catch is contained in the TVH database needs to be checked.
4. Where Vessel-Type identifies the distinguishing symbol as an 'F-symbol' then the corresponding catch record should be included in the catch for the TIB sector and the DATA-TYPE is listed as 'TIB'.
    a. An exception is made for the two vessels with the symbol FXYC or FWED which are TVH vessels and for these records the DATA-TYPE is listed as 'TVH'.
5. Where Related-Log is blank then the corresponding catch record should be identified as a catch for the TIB sector and the DATA-TYPE is listed as 'TIB'.
6. All other records should be attributed to the TIB sector and the DATA-TYPE listed as 'TIB'.
    a. After fitting the five rules above, only 1055 records (of the 77,358 in total) remained un-assigned. Note: all but 3 of the 1055 (22 of the 25 vessels-symbols) occur in the Docket-Book database where the DATA-TYPE has already been assigned to the TIB sector.

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 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 Ttropical Rrock Llobster (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 Ffishery 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 tTotal aAllowable cCatches (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.

Overtime 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-seasonyear 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 StrategyHS 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 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 should not be accounted for, because the overall catches are likely to be relatively low and there would be limited impact on 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-season~~s~~ 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.

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 Book~~Fisheries 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 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 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 Straits 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 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+ indices is 1.25 or lower (average 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

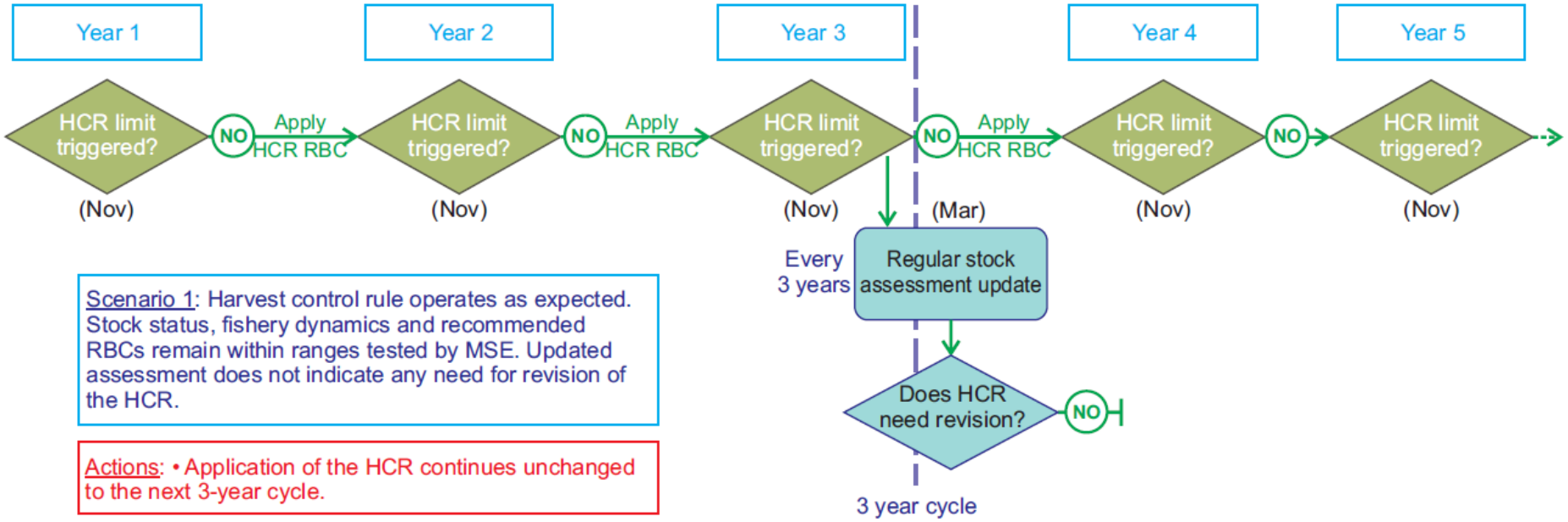


Figure 1. Torres Strait Tropical Rock Lobster Fishery decision rule scenario 1.

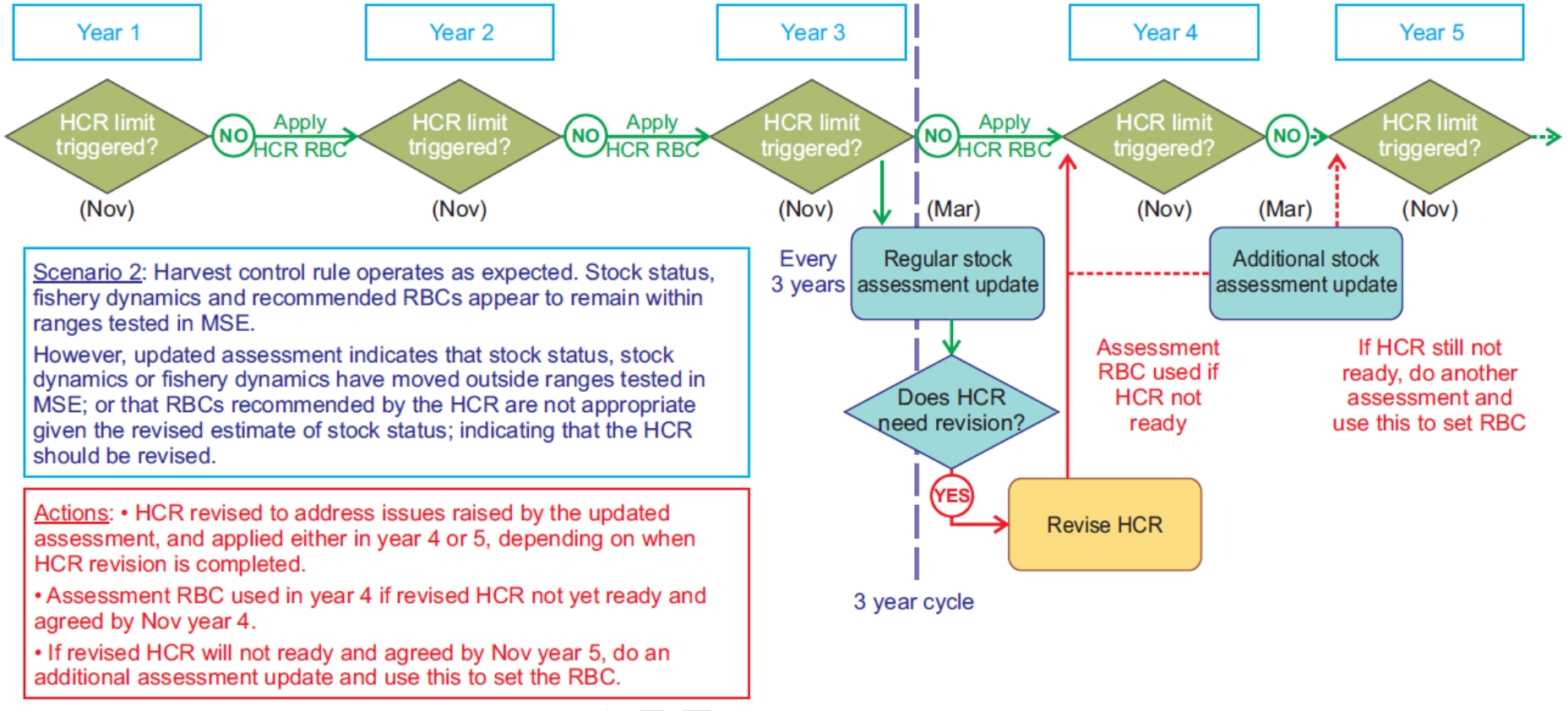
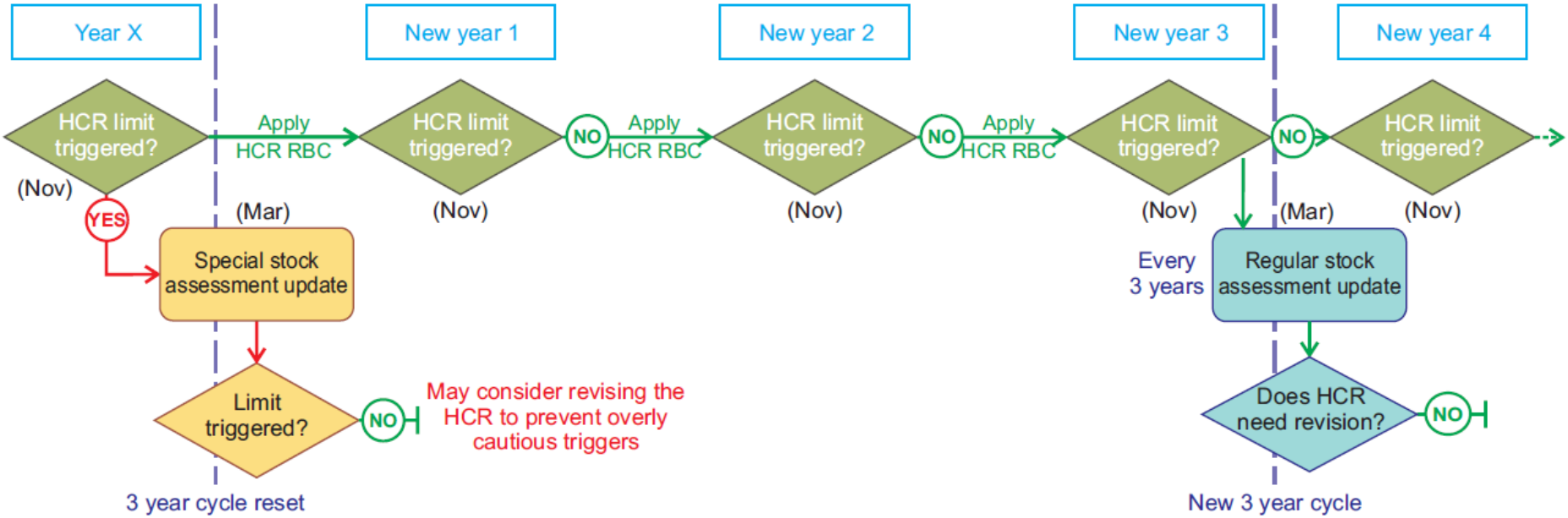


Figure 2. Torres Strait Tropical Rock Lobster Fishery decision rule scenario 2.

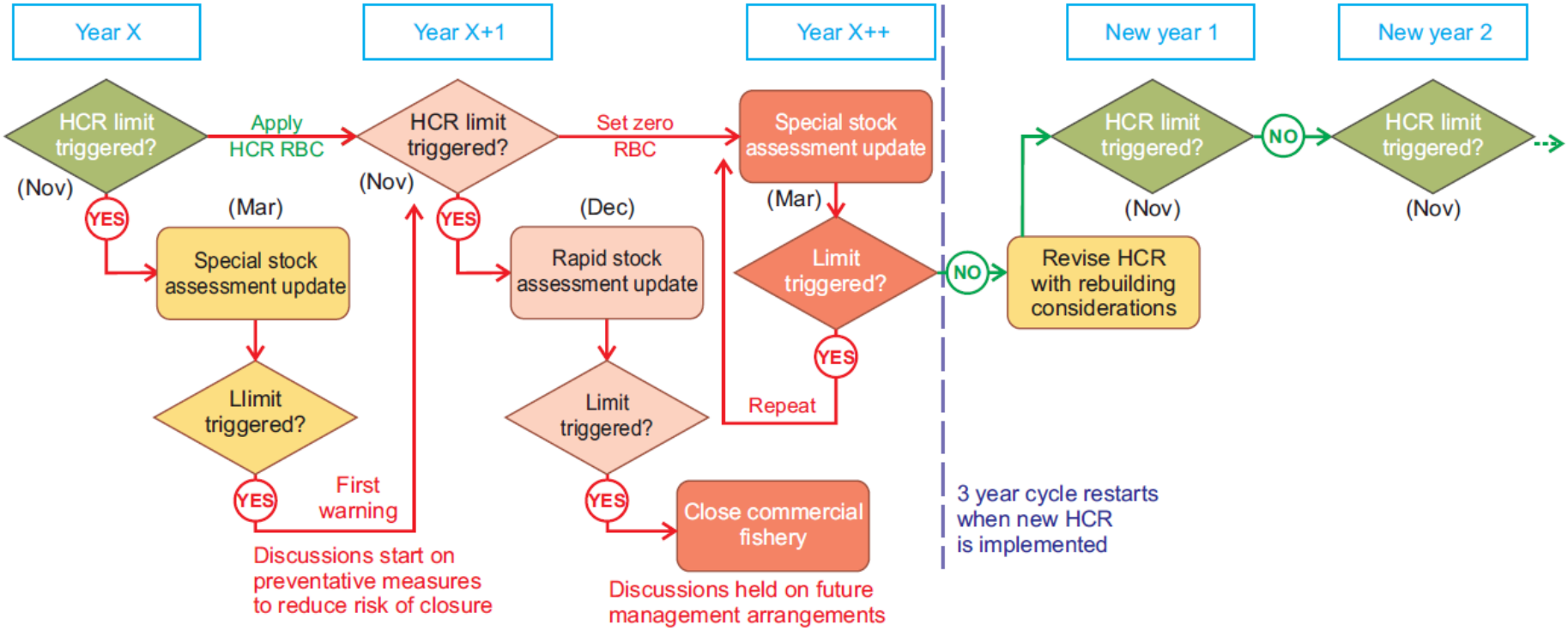


Scenario 3: Application of the HCR in a particular year results in the limit being triggered, requiring a special assessment update to confirm whether the limit has indeed been breached. However, this assessment update determines that the limit has not been breached.

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.

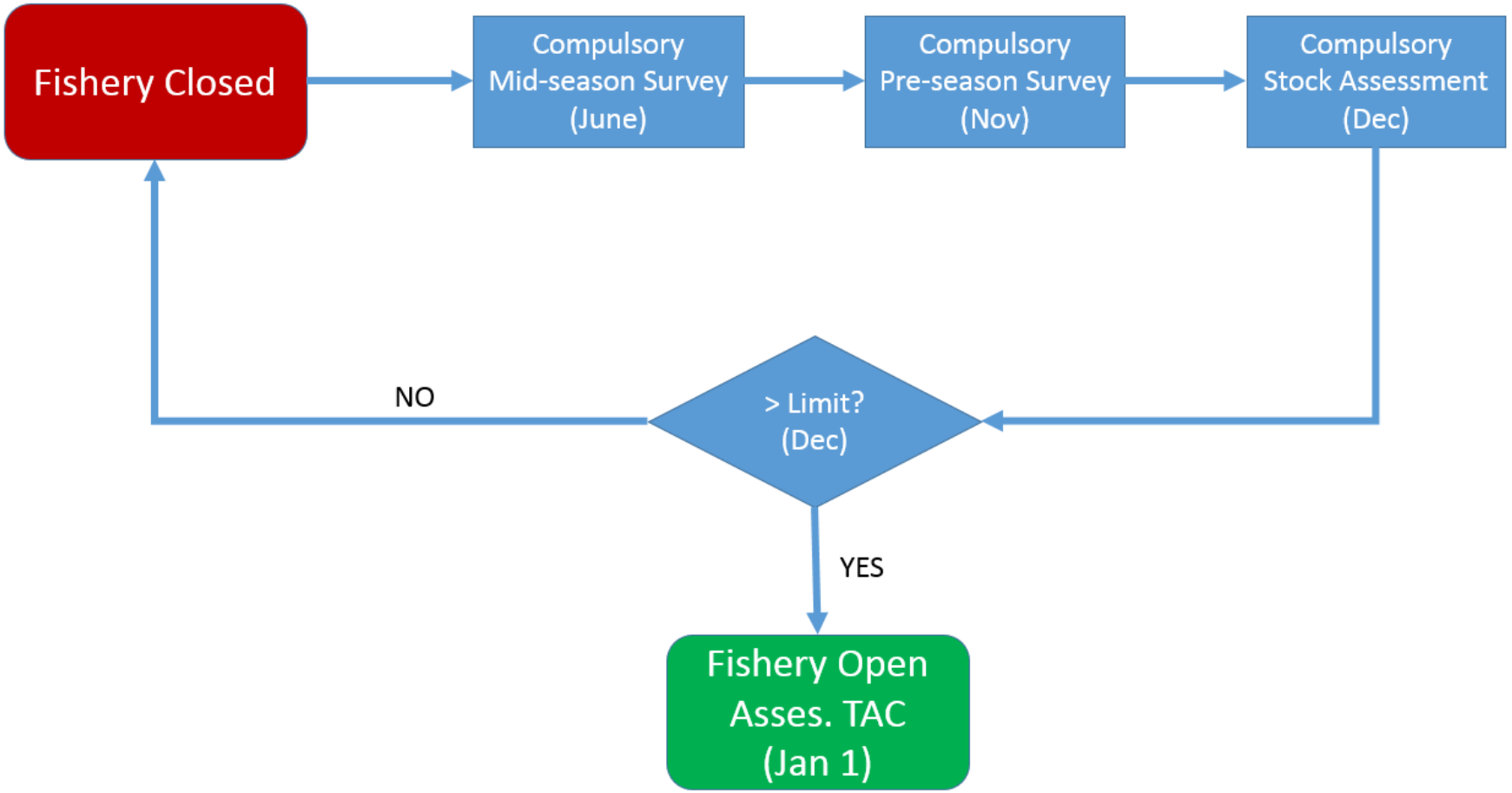


Figure 5. Torres Strait Tropical Rock Lobster Fishery closure and re-opening rule.

Updated version tabled at meeting

Australian Government
Australian Fisheries Management Authority

Torres Strait Tropical Rock Lobster Fishery

Draft ~~Working Draft~~

Harvest Strategy

~~May 2017~~February 2019

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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]~~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

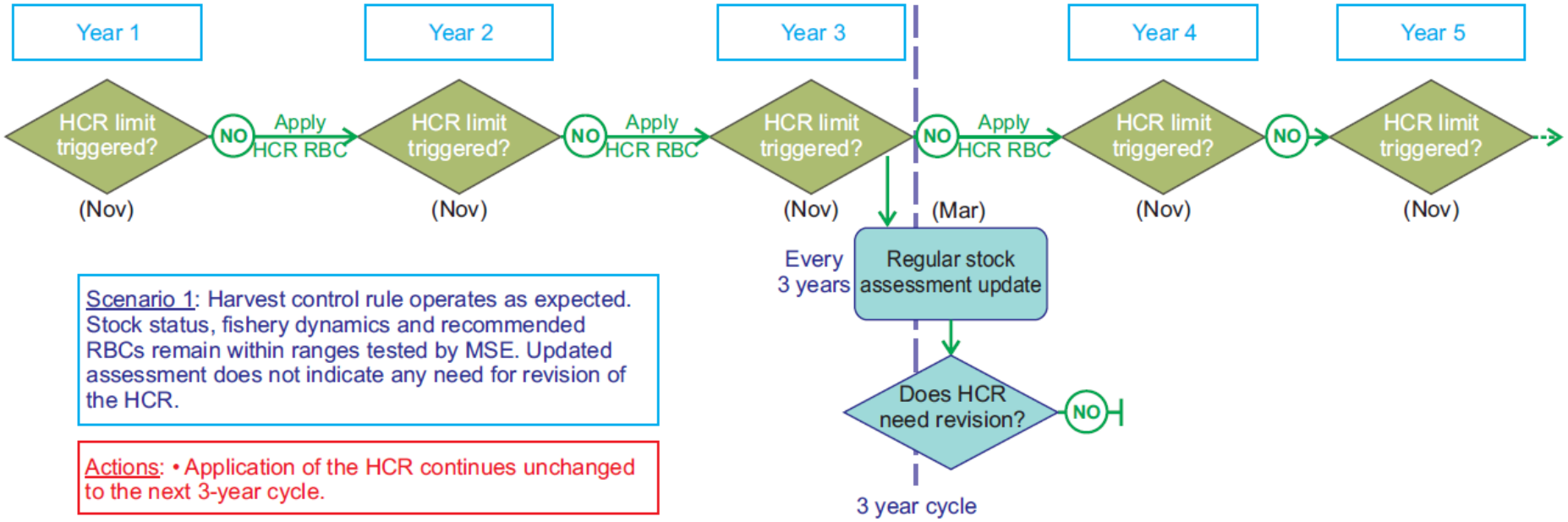


Figure 1. Torres Strait Tropical Rock Lobster Fishery decision rule scenario 1.

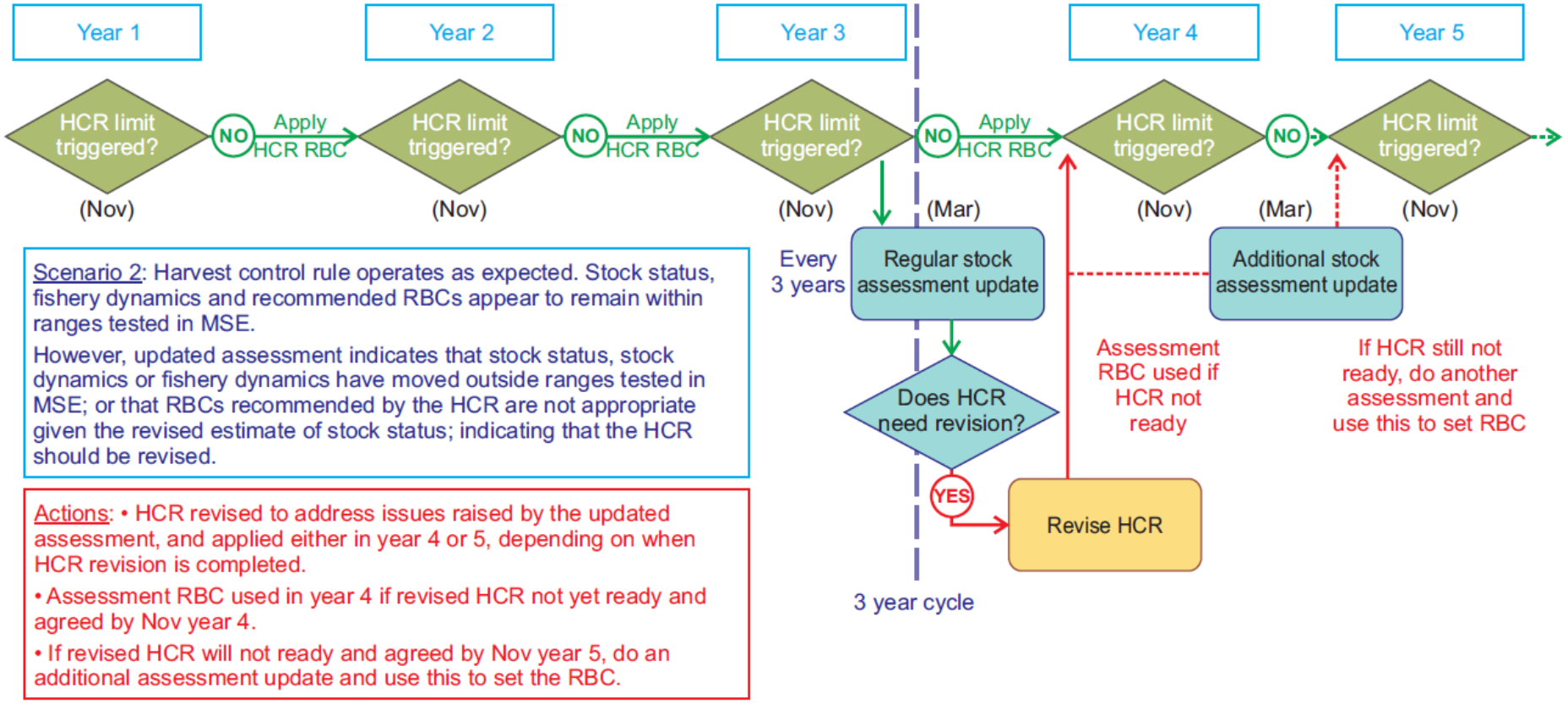


Figure 2. Torres Strait Tropical Rock Lobster Fishery decision rule scenario 2.

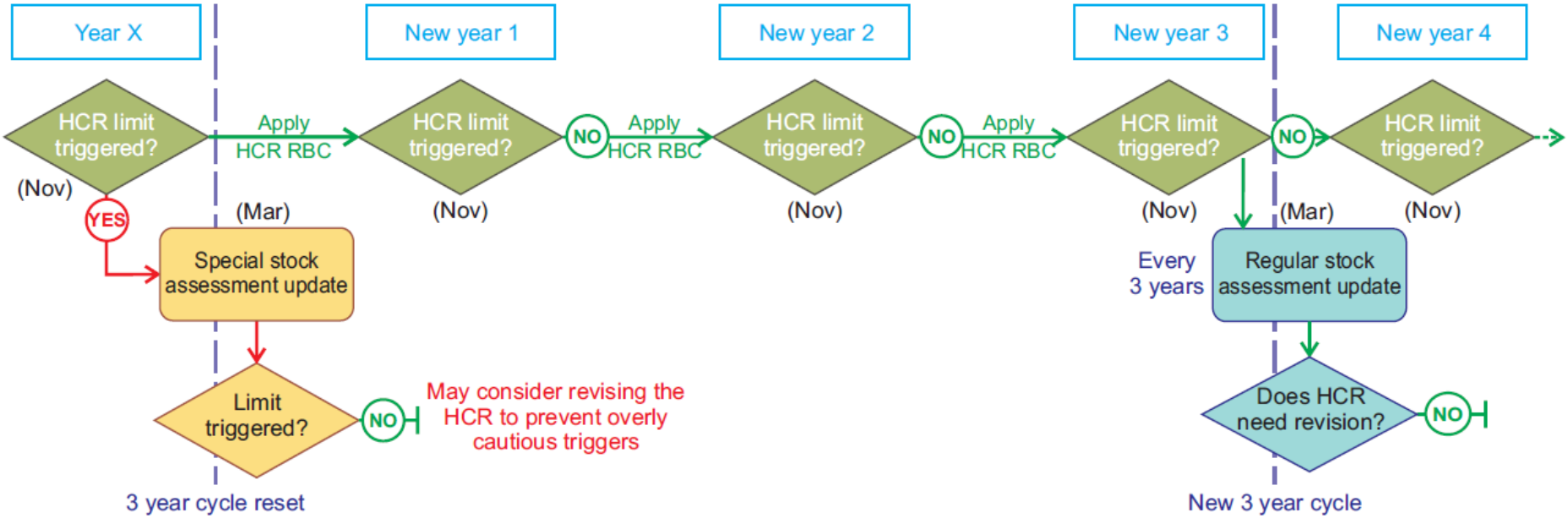
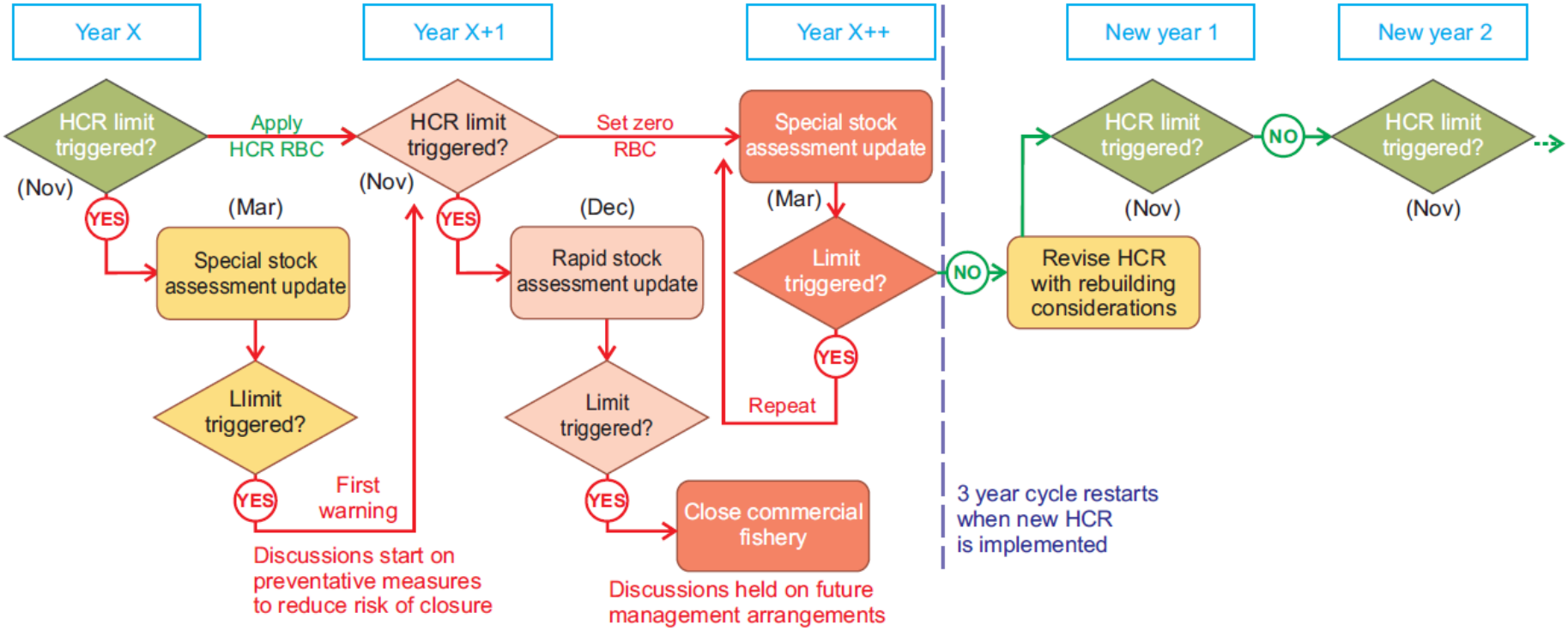


Figure 3. Torres Strait Tropical Rock Lobster Fishery decision rule scenario 3.



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.

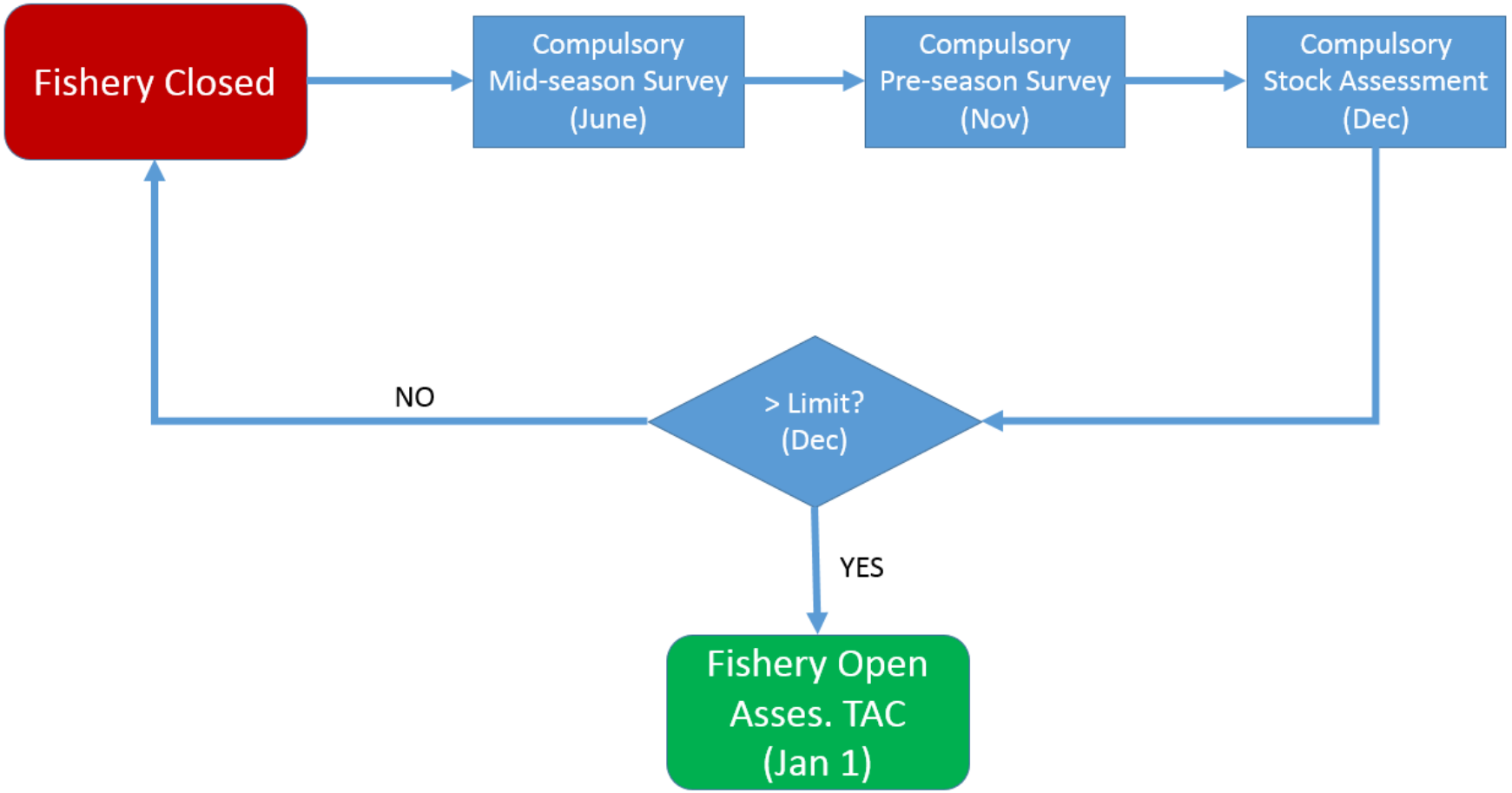


Figure 5. Torres Strait Tropical Rock Lobster Fishery closure and re-opening rule.

TROPICAL ROCK LOBSTER WORKING GROUP (TRLWG)	MEETING 9 19-20 February 2019
FUTURE MANAGEMENT PRIORITIES	Agenda Item 5 For discussion and advice

RECOMMENDATIONS

1. That the Working Group **DISCUSS** and **PROVIDE ADVICE** on AFMA's proposed management priorities as the relate to the Torres Strait Tropical Rock Lobster Fishery (TRL Fishery):
    a. implementation of the Management Plan for the TRL Fishery, to include the formal allocation of quota units, review of related interim sectoral catch shares, setting of a total allowable catch (TAC) and strategic assessment under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act);
    b. finalisation and implementation of the draft Harvest Strategy for the TRL Fishery, to include a call for public comments, further consideration by the TRLRAG and Working Group, adoption by the Protected Zone Joint Authority (PZJA) and application;
    c. improvement of fishery dependent data collection and analyses for the TRL Fishery, to include ongoing implementation of the fish receiver system (FRS) and meetings of the TRLRAG Data Sub-Group to discuss identified data issues; and
    d. legislative amendments to enable more efficient and effective fisheries management and enforcement.
2. That the Working Group **NOTE** that on 26 November 2018, having considered outcomes of consultation, the PZJA decided to determine the *Torres Strait Fisheries (Quotas for Tropical Rock Lobster (Kaiar)) Management Plan 2018* (the Management Plan):
    a. in making this decision, the PZJA reaffirmed existing management controls currently applied to the TRL Fishery. TRL Fishery licence holders were notified at that time, that a review of existing PZJA licencing policies and management arrangements, including input controls, will be conducted periodically after the quota management system is operational;
3. That the Working Group **NOTE** at the meeting held on 11-12 December 2018, the TRLRAG recommended 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;
4. That the Working Group **NOTE** the next Working Group meeting will discuss management arrangements for future fishing seasons.

KEY ISSUES

5. Advice is sought from the Working Group on management priorities for the TRL Fishery for progression in 2019. AFMA seeks advice from each Working Group on priorities to ensure management resources are effectively focused.
6. AFMA has proposed a number of management priorities relevant to the TRL Fishery for the Working Group's consideration. The priorities described in more detail below.
7. In developing the priorities AFMA notes:

a. the PZJA reaffirmed existing management controls currently applied to the 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; and

b. 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. Subject to further advice from the TRLWG, AFMA recommends that Working Group develop advice on a work plan to guide a review of management arrangements overtime. A summary of management arrangements currently in force for the TRL Fishery is provided at **Attachment 5a** for information.

9. AFMA has also committed resources to support Federal Court proceedings lodged by Malu Lamar (Torres Strait Islander Corporation RNTBC (No:VID1510/2018). Further details on these proceedings is provided under **Agenda Item 2.3**.

CURRENT MANAGEMENT PRIORITIES

Implementation of the Management Plan

10. The Management Plan will introduce a quota management system. However, there is a formal process to allocate quota units which will take some time. In the interim, the PZJA agreed to implement separate TAC shares for the TIB and TVH sectors (66.17 and 33.83 per cent respectively).

11. Unless delayed by legal appeals, it is planned that a quota management system will be fully operational in the TRL Fishery for the 2019/20 fishing season. To enable this, over the coming year, the following will require progression:

a. the formal allocation of quota units as prescribed under Part 3 of the Management Plan;

b. once the formal allocation of quota units has been completed, the interim sectoral catch shares, currently implemented under sections 4A-7C of the Instrument, will require review;

c. the setting of TACs as prescribed under sections 13-14 of the Management Plan; and

d. strategic assessment under the EPBC Act. The TRL Fishery was strategically assessed under the EPBC Act in 2017 and accredited as a Wildlife Trade Operation for three years (valid until 18 December 2020) alongside a number of recommendations to improve the sustainability of the Fishery. The determination of the Management Plan will trigger a re-assessment of the TRL Fishery, to be undertaken in 2019.

Finalisation and implementation of the draft Harvest Strategy

12. Finalising the draft Harvest Strategy for the TRL Fishery is a high management priority. The Harvest Strategy will provide greater management certainty for stakeholders and enable more timely RBC advice. More timely advice is necessary to support more timely and effective business planning. This matter will be discussed in detail under **Agenda Item 4**.

13. Will entail convening a public consultation process

Data improvement

14. 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.

15. 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.

16. AFMA is also preparing to provide public monthly catch updates for all Torres Strait Fisheries, via the AFMA and PZJA websites, to assist industry in monitoring catch against TACs. These reports will also assist in the monitoring of interim sectoral split arrangements for the TRL Fishery for 2018/19 fishing season.

17. In addition, 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 and performance of the TRL Fishery and agreed improvements that could be made to its collection and analysis. In light of this, 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, including:

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

18. The TRLRAG Data Sub-Group will meet in March/April 2019, to progress these issues.

Legislative amendments

19. Following PZJA and further Ministerial approval, AFMA is continuing to progress draft amendments to the Act and *Torres Strait Fisheries Regulations 1985*. The amendments will provide immediate improvements to the efficiency and effectiveness of fisheries administration in the Torres Strait.

20. Of particular relevance to the Working Group, the amendment to provide for catch reporting across all licence holders will allow for the implementation of mandatory daily logbook reporting by TIB licence holders. This will provide for improved data on which to base management advice and decisions.

21. A description of the proposed amendments and their status is provided below.

Instrument to be amended	Proposed amendment	Current status
Regulations (prior to Act amendments)	1. Simplified collection and disclosure of information 2. Implementation of Infringement Notices	Drafting instructions issued to the Office of Parliamentary Counsel (OPC) and legislative drafter has been assigned.
Act	1. Capacity to extend logbook requirements to all commercial fishers	Awaiting policy approval.

	2. Electronic licensing and monitoring 3. Permit the delegation of the powers to grant and vary scientific and developmental permits 4. Simplified renewal of fishing licences 5. Capacity to delegate certain powers and functions to contracted service providers	
Regulations (after Act amendments)	1. Prescribe relevant measures for Act amendments 2. Repeal redundant provisions	Work will start on these measures once amendments to the Act are made.

22. Legislative amendments generally take a number of years, with progress often constrained by the priority of the amendments relative to other amendments being progressed at the time both within AFMA, and more broadly by the Department of Agriculture and Water Resources and other Australian Government agencies. The amendment process generally increases in time and complexity depending on the instrument being amended (e.g. the process to amend Acts may take many years, Regulations 1-2 years and fisheries management instruments within a year).

23. AFMA will work closely with the TSRA and Queensland Department of Agriculture and Water Resources in progressing the proposed amendments. Opportunities to provide comment on the proposed amendments will also be provided to fishers, their communities and the general public as the amendments are progressed. This will be done so through direct communication with fishers, public notices as well as through the PZJA RAGs, MACs and Working Groups. Further details on when these opportunities will be publicised once determined.

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	Pending (TSRA to hold TIB sector quota units in trust)	Pending	TRL Fishery Management Plan once fully operational
Tender/dinghy number restrictions	No[1]	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	Yes	Yes	TRL Fishery Management Plan
Fishery closure (1 October – 30 November)	Yes	Yes	TRL Fishery Instrument

[1] 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 Instrument (TRL Fishery Management Plan once fully operational)
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 crewed and operated by Traditional Inhabitants)	No	Licence conditions

Boat length restrictions and boat replacement policy[2]	Yes (maximum 20 m)	Yes (maximum 18 m)	Policy, licence conditions and *Torres Strait Fisheries Management Notice No. 47* (maximum 20 m)

[2] • 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.

TROPICAL ROCK LOBSTER WORKING GROUP (TRLWG)	MEETING 9 19-20 February 2019
TRL FISHERY BUDGET REPORT FOR 2019/20	Agenda Item 6 For noting

RECOMMENDATIONS

1. That the Working Group **NOTE** the draft budget for the Torres Strait Tropical Rock Lobster (TRL Fishery) for the 2019/20 financial year.

KEY ISSUES

2. Each year, AFMA's annual operating budget is determined by the Australian Government. AFMA uses part of its budget to provide management services to the Protected Zone Joint Authority (PZJA). AFMA's Torres Strait budget is apportioned across a range of activities and fisheries.
3. 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.
4. AFMA's draft budget for the TRL Fishery for the 2019/20 financial year is $167,920. These are direct costs only, and exclude staff costs and associated overheads, compliance, licencing and data management costs.
5. The budget covers:
    a. the convening of three Working Group meetings (two-day meetings on Thursday Island);
    b. the convening of two TRLRAG meetings (two-day meetings on Thursday Island); and
    c. administrative costs associated with the management of the TRL Fishery and implementation of the quota Management Plan for the TRL Fishery (*Torres Strait Fisheries (Quotas for Tropical Rock Lobster (Kaiar)) Management Plan 2018*).
6. A detailed breakdown of the budget is provided in **Attachment 6a**.
7. Meeting costs for TRLRAG and Working Group members who are Traditional Inhabitants are funded by the TSRA.

Draft budget for the TRL Fishery for the 2019/20 financial year

Table 1. Working Group budget

Item	Description	Budget ($)
Sitting fees		
Chair	1 person x 12 days x $747/day	8,964
Independent Scientific Member	1 person x 12 days x $561/day	6,732
Independent Economist Member	1 person x 12 days x $561/day	6,732
Industry Members	2 persons x 6 days x $561/day	6,732
Malu Lamar RNTBC Observer	1 person x 6 days x $483/day + administrative fee	3,276
Sub-total	**Sitting fees for three x two-day meetings on Thursday Island**	**32,436**
Travel		
Air fares	5 persons originating from Melbourne, Brisbane, Cairns and eastern Torres Strait x three meetings	9,900
Taxi/ ferry/ parking/ mileage allowance	5 persons originating from Melbourne, Brisbane, Cairns and eastern Torres Strait x three meetings	1,773
Accommodation	5 persons x three meetings	9,600
Meals/ incidentals	5 persons x three meetings	6,105
Venue	Three x two-day meetings on Thursday Island	2,880
Working Group dinner	Dinners	1,500
Sub-total	**Travel costs for three x two-day meetings on Thursday Island**	**31,758**
TOTAL Budget	**Three x two-day meetings on Thursday Island**	**64,194**

Table 2. TRLRAG budget

Item	Description	Budget ($)
Sitting fees		
Chair	1 person x 8 days x $1,800/day	14,400
Independent Scientific Member	1 person x 10 days x $1,500/day	15,000
Industry Members	2 persons x 4 days x $418/day	3,344
Malu Lamar RNTBC Observer	1 person x 4 days x $420/day + administrative fee	1,932
Sub-total	**Sitting fees for two x two-day meetings on Thursday Island**	**34,676**
Travel		
Air fares	3 persons originating from Melbourne, Canberra, Cairns x two meetings	4,000
Taxi/ ferry/ parking/ mileage allowance	3 persons originating from Melbourne, Canberra, Cairns x two meetings	1,140
Accommodation	3 persons x two meetings	5,400
Meals/ incidentals	4 persons x two meetings	4,070
Venue	Two x two-day meetings on Thursday Island	1,920
Working Group dinner	Two dinners	1,000
Sub-total	**Travel costs for two x two-day meetings on Thursday Island**	**17,530**
TOTAL Budget	**Two x two-day meetings on Thursday Island**	**50,206**

Table 3. Administrative budget

Item	Description	Budget ($)
Advertising	General management arrangements notices	1,520
Legal services	Legal costs and fees*	50,000
TOTAL Budget	**Administrative costs**	**51,520**

*Legal services costs are predominately covered in overheads.

TROPICAL ROCK LOBSTER WORKING GROUP (TRLWG)	MEETING 9 19-20 February 2019
OTHER BUSINESS	Agenda Item 7 For discussion

RECOMMENDATIONS

1. That the Working Group **NOMINATE** any further business for discussion.

TROPICAL ROCK LOBSTER WORKING GROUP (TRLWG)	MEETING 9 19-20 February 2019
DATE AND VENUE FOR NEXT MEETING	Agenda Item 8 For discussion and advice

RECOMMENDATIONS

1. That the Working Group **NOMINATE** a date and a venue for the next meeting, noting the draft TRLRAG and Working Group work plan for 2019.

BACKGROUND

2. The next meeting is proposed for August-September 2019. A draft work plan for the TRLRAG and Working Group for 2019 is detailed in the below table.

Date and location	Meeting	Purpose
Between 19-21 March or 17-18 April 2019 in Brisbane	RAG Data Sub-Group	Issues concerning fishery dependent data
Out of session in April 2019	TRLRAG	Full research proposals
August-September 2019 (location TBA)	TRLRAG and TRLWG	Subject to availability: report from independent peer review of the TRL Fishery survey design Report from the RAG Data Sub-Group Public comments on draft TRL Fishery Harvest Strategy Implementation of the draft TRL Fishery Harvest Strategy Tiered harvest strategy, dependant on funding Any issues identified or referred to the TRLRAG, by the TRLWG, concerning management priorities for the TRL Fishery Update of TRL Fishery rolling five-year research plan
November 2019 – pre-season survey		
10-11 December 2019	TRLRAG	Survey results CPUE analyses Updated integrated stock assessment or application of the eHCR Preliminary or final RBC