

**31st MEETING OF THE PZJA TORRES STRAIT TROPICAL
ROCK LOBSTER RESOURCE ASSESSMENT
GROUP (TRLRAG 31)**

Tuesday 12 October 2021 | 9am – 11am

Videoconference

DRAFT AGENDA v2

1 PRELIMINARIES

1.1 Welcome and apologies

The Chair will welcome members and observers to the 31st meeting of the TRL RAG.

1.2 Adoption of agenda

The RAG will be invited to adopt the draft agenda.

1.3 Declaration of interests

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

2 UPDATES FROM MEMBERS

Industry, scientific and government agency members and observers will be invited to provide verbal updates on matters concerning the TRL Fishery.

Industry members in particular, are encouraged to provide updates on fishing patterns, behaviours, prices, and market trends this season.

Detailed updates from industry members will be important to help the RAG better understand fishing patterns this season which may be considered uncharacteristic of a standard fishing season. It will be important for the RAG to consider the potential impacts of these trends when setting a Recommended Biological Catch for the TRL fishery in the 2021-22 fishing season.

3 TRL DATA CONSIDERATIONS FOR SETTING THE 2021-22 SEASON RBC

The RAG will discuss and provide advice on options and implications for setting a Recommended Biological Catch for the TRL Fishery in the 2021-22 fishing season, noting that the TAC is expected to be significantly under caught.

As at 8 September 2021, 111 tonnes (39.87% of the TAC) has been caught by the TIB sector, and 107 tonnes (75.28% of the TAC) by the TVH sector.

4 CLIMATE CHANGE IMPACTS ON TORRES STRAIT FISHERIES

The RAG is invited to note a pre-recorded video presentation from Leo Dutra (CSIRO) on the outcomes of the project '*Scoping a future project to address impacts from climate variability and change on key Torres Strait Fisheries*'.

5 TRL FISHERY RESEARCH PRIORITIES

The RAG will discuss and provide advice on research priorities for the 2022/23 – 2026/27 five year period.

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

TROPICAL ROCK LOBSTER RESOURCE ASSESSMENT GROUP (TRLRAG) (Video conference)	MEETING 31 12 October 2021
PRELIMINARIES	Agenda Item 1 For NOTING and DECISION

RECOMMENDATIONS

That the RAG:

1. **NOTE:**

- a) an acknowledgement of Traditional Owners;
- b) the Chair's welcome address;
- c) apologies received from members unable to attend.

2. **ADOPT** the draft agenda;

3. **DECLARE** all real or potential conflicts of interest in the Torres Strait Rock Lobster Fishery at the commencement of the meeting (**Attachments 1a** and **1b**);

4. **DETERMINE** whether the member may or may not be present during discussion of or during decisions being made on the matter which is the subject of the conflict;

5. **ABIDE** by decisions of the RAG regarding the management of conflicts of interest; and

6. **NOTE** that the record of the meeting must record the fact of any disclosure, and the determination of the RAG as to whether the member may or may not be present during discussion of, or decisions being made, on the matter which is the subject of the conflict.

BACKGROUND

Apologies

7. As at 28 September 2021, apologies had been received from:

- a) James Ahmat, Traditional inhabitant member – Maluililgal
- b) James Billy, Traditional inhabitant member – Kulkalgal

Declarations of Interest

8. 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.

9. RAG members are asked to confirm the standing list of declared interests (**Attachments 1a** and **1b**) is accurate and provide an update to be tabled if it is not.

10. FMP1 recognises that members are appointed to provide input based on their knowledge and expertise and as a consequence, may have 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.

11. 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.

12. Where it is determined that a direct conflict of interest exists, the forum may allow the member to continue to participate in the discussions relating to the matter but not in any decision making process. They may also determine that, having made their contribution to the discussions, the member should retire from the meeting for the remainder of discussions on that issue. Declarations of interest, and subsequent decisions by the forum, must be recorded accurately in the meeting minutes.

TRLRAG Declarations of interests from most recent meetings

Name	Position	Declaration of interest
Members		
Dr Ian Knuckey	Chair	<p>Chair/Director of Fishwell Consulting Pty Ltd and Olrac Australia (electronic logbooks). Chair/member of other RAGs and MACs. Conducts various AFMA and FRDC funded research projects including FRDC Indigenous Capacity Building project. Nil interests in TRL Fishery and no research projects in the Torres Strait.</p> <p>In 2019, delivered components of TSRA Induction Program for Traditional Inhabitant members on PZJA advisory committees.</p> <p>Has been approached by TSRA to deliver capacity building workshops for the new Zenadth Kes board members.</p> <p>Full declaration of interests provided at Attachment A.</p>
Dr Eva Plaganyi	Scientific Member	Lead scientist for PZJA funded TRL research projects conducted by CSIRO.
Dr Andrew Penney	Scientific Member	<p>Director of Pisces Australis Pty Ltd, an Australian registered marine/coastal research and management consultancy based in Canberra - interests in any opportunities in this regard.</p> <p>Currently Principal Investigator on FRDC Projects Nos 2017-180: Design and implementation of an Australian National Bycatch Report: Phase 1 – Scoping; and 2019-036: Implementation of dynamic reference points and harvest strategies to account for environmentally-driven changes in productivity in Australian fisheries, potentially red leg banana prawns or TRL.</p> <p>Independent scientific member on the AFMA Southeast RAG, the Tropical Rock Lobster RAG and the Small Pelagic Fishery RAG. Member of the AFMA ERA Technical Working Group.</p> <p>No shareholding and hold no positions relating to any other companies, including any fishing companies or industry associations.</p>
Aaron Tom	Traditional Inhabitant Member	Traditional Inhabitant Gudumalulgal and TIB licence holder.
Les Pitt	Traditional Inhabitant Member	Traditional Inhabitant Kemer Kemer Meriam, TIB licence holder and runs an independent freezer facility on Erub Island.
Harry Nona	Traditional Inhabitant Member	Traditional Inhabitant Kaiwalagal and TIB licence holder.

Dr Ray Moore	Industry Member	Torres Strait Master Fisherman licence holder and East Coast TRL Fishery licence holder.
Selina Stoute	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.
Jenny Keys	QDAF Member	To be declared.
Georgia Langdon	Executive Officer	Nil.
Observers		
Yen Loban	TSRA Board Member and TSRA Portfolio Member for Fisheries	TIB licence holder.
Joseph Posu	PNG National Fisheries Authority (NFA)	To be declared.
Quinten Hirakawa	TSRA Fisheries Program	TIB licence holder.

Declaration of interests
Dr Ian Knuckey – December 2020

Positions:

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

Current projects:

AFMA 2020/0807	Bass Strait Scallop Fishery Survey – 2020-22
FRDC 2017/069	Indigenous Capacity Building
FRDC 2016/116	5-year RD&E Plan for NT fisheries and aquaculture
Traffic Project	Shark Product Traceability
FRDC 2018/021	Development and Evaluation of SESSF multi-species harvest strategies
FRDC 2017/014	Informing structural reform of South Australia's Marine Scalefish Fishery
NT Fisheries	Design and implementation of a tropical snapper trawl survey
Sea Cucumber Ass.	Design and implementation of a sea cucumber dive survey
FRDC 2019-072	A survey to detect change in Danish Seine catch rates of Flathead and School Whiting resulting from CGG seismic exploration.

TROPICAL ROCK LOBSTER RESOURCE ASSESSMENT GROUP (TRLRAG) (Video Conference)	MEETING 31 12 October 2021
UPDATES FROM MEMBERS	Agenda Item 2 For NOTING & DISCUSSION

RECOMMENDATIONS

1. That the RAG **NOTE** verbal updates provided by industry, scientific and government agency members.

BACKGROUND

2. Verbal reports are sought from members under this item, with particular emphasis on changes to catch and effort trends this fishing season.
3. It is important that the RAG develops a common understanding of any strategic issues, including economic, fishing and research trends relevant to the management of the TRL Fishery. This includes within adjacent jurisdictions. This ensures that where relevant, the RAG is able to have regard for these strategic issues and trends.
4. RAG members are asked to provide any updates on trends and opportunities in markets, processing and value adding.
 - a. Industry is asked to contribute advice on economic and market trends where possible.
 - b. Scientific members are asked to contribute advice on any broader strategic research projects or issues that may be of interest to the Torres Strait in future.
5. Government agencies are asked to provide a brief update on matters relating to the Torres Strait TRL Fishery.

TROPICAL ROCK LOBSTER RESOURCE ASSESSMENT GROUP (TRLRAG) (Video Conference)	MEETING 31 12 October 2021
TRL DATA CONSIDERATIONS FOR SETTING THE 2021-22 SEASON RBC	Agenda Item 3 For DISCUSSION & ADVICE

RECOMMENDATIONS

1. That the RAG **DISCUSS** and **PROVIDE ADVICE** on potential implications for setting a Recommended Biological Catch for the TRL Fishery in the 2021-22 fishing season, noting that the 2020-21 TAC is expected to be significantly under caught.

KEY ISSUES

2. The Torres Strait TRL Fishery has experienced a series of disruptions to both the export market and the fishing sector over the past two fishing seasons including a temporary collapse of the live export market, continued suppressed TRL prices, freight route disruptions and import bans of Australian lobster product directly into China.
3. While fishing in the Torres Strait has continued for the most part throughout these anomalous periods, there has been some noticeable impacts on fishing effort and total catch, particularly in the TIB Sector which may be considered uncharacteristic of a standard fishing season.
4. It is important for the RAG to understand and consider the potential impacts such disruptions to fishery dependent data (i.e. total catch and CPUE indices) might have when providing advice on a recommended biological catch (RBC) for the next fishing season.
5. This approach is consistent with previous RAG consideration. TRLRAG27 considered a number of alternative CPUE scenarios to explore potential impact on RBC calculations that may have arisen if the representativeness of the 2019 CPUE data had changed in response to the introduction of a quota management system. The sensitivity testing showed that the empirical Harvest Control Rule (eHCR)-derived RBC is fairly robust to uncertainty in CPUE. The RAG considered this outcome to be expected because the eHCR is based on medium-term (5 years) trend in all indices, plus the contributions of the trends in the CPUE indices are small (10 per cent) relative to the weight accorded to the fishery independent pre-season survey (80 per cent).
6. TRLRAG 27 noted that using alternative CPUE standardisation scenarios did not make much difference to the overall CPUE indices and eHCR outputs, as there were no major differences in the standardisations.
7. Similarly, TRLRAG 30 considered a series of alternative average catch figures to determine whether ad-hoc adjustments to the eHCR were warranted by COVID-19 impacts in the 2019-20 season. The RAG agreed that the total average catch in the 2019-20 season could be considered negatively biased, but the subsequent increase in CPUE for the TIB sector could be considered positively biased. In lieu of additional information to better understand the COVID-19 impacts on the data inputs, RAG members agreed to recommend the default application of the eHCR and no further ad-hoc adjustments.
8. However, the RAG acknowledged that in the absence of pre-agreed meta rules to guide how extraordinary anomalous years are handled within the harvest strategy, further work and discussions are required to better understand impacts associated with trade disruptions and reduced fishing effort in the 2020-21 season.

9. Accordingly, the RAG is being asked to consider and provide advice on a range of options relating to the fishery-dependent data inputs (i.e. total catch, CPUE) used in the eHCR when recommending a biological catch for the 2021-22 fishing season.
10. AFMA will provide an end of 2020-21 season catch update for the Australian TRL Fishery at the meeting (**Attachment 3a – pending**). A summary of available catch data for the Papua New Guinea TRL Fishery for 2021 (as of 23 September 2021) is provided at **Attachment 3b**.

BACKGROUND

11. Under the TRL Harvest Strategy, a recommended biological catch (RBC) for the fishing season is calculated by applying an empirical Harvest Control Rule (eHCR) annually. This formula is the multiple of the average total catch (TIB, TVH and PNG) over the last five years and a statistic which measures the relative performance of the fishery based on the following data inputs:
 - a) Pre-season survey recruiting lobster (1+) standardised relative numbers;
 - b) Pre-season survey recently-settled lobster (0+) standardised relative numbers;
 - c) nominal CPUE for TIB sector; and
 - d) standardised CPUE for TVH sector (using data available up until end of October).

PNG TRL catch update for 2021 – provided 23 September 2021

PNG Jurisdiction of the TSPZ: Jan - Aug 2021				
Month (2021)	Tail weight (kg)	Tail wt converted to whole wt (C. factor 2.677)	Whole weight (kg)	Total Catch (kg)
JANUARY	986.22	2,640.11	971.60	4,597.93
FEBRUARY	1,473.28	3,943.97	1,179.86	6,597.11
MARCH	1,946.01	5,209.47	921.14	8,076.62
APRIL	1,657.83	4,438.01	809.06	6,904.90
MAY	2,012.86	5,388.43	619.95	8,021.24
JUNE	2,681.57	7,178.56	940.51	10,800.64
JULY	1,660.15	4,444.22	663.20	6,767.57
AUGUST	1,353.11	3,622.28	684.76	5,660.15
TOTAL	13,771.03	36,865.05	6,790.08	57,426.16

PNG Waters outside of TSPZ: Jan - Aug 2021				
Month (2021)	Tail weight (kg)	Tail wt converted to whole wt (C. factor 2.677)	Whole weight (kg)	Total Catch (kg)
JANUARY	627.79	1,680.59	1,467.03	3,775.41
FEBRUARY	387.06	1,036.16	586.82	2,010.04
MARCH	722.34	1,933.70	767.27	3,423.31
APRIL	732.37	1,960.55	767.05	3,459.97
MAY	1,072.01	2,869.77	831.50	4,773.28
JUNE	1,342.05	3,592.67	1,024.64	5,959.36
JULY	525.07	1,405.62	864.02	2,794.71
AUGUST	220.47	590.20	417.48	1,228.15
TOTAL	5,629.16	15,069.27	6,725.81	27,424.24

PNG Catch Total: Jan - Aug 2021				
Month (2021)	Tail weight (kg)	Tail wt converted to whole wt (C. factor 2.677)	Whole weight (kg)	Total Catch (kg)
JANUARY	1,614.01	4,320.70	2,438.63	8,373.34
FEBRUARY	1,860.34	4,980.13	1,766.68	8,607.15
MARCH	2,668.35	7,143.17	1,688.41	11,499.93
APRIL	2,390.20	6,398.57	1,576.11	10,364.88
MAY	3,084.87	8,258.20	1,451.45	12,794.52
JUNE	4,023.62	10,771.23	1,965.15	16,760.00
JULY	2,185.22	5,849.84	1,527.22	9,562.28
AUGUST	1,573.58	4,212.47	1,102.24	6,888.29
TOTAL	19,400.19	51,934.31	13,515.89	84,850.40

TROPICAL ROCK LOBSTER RESOURCE ASSESSMENT GROUP (TRLRAG) (Video conference)	MEETING 31 12 October 2021
CLIMATE CHANGE IMPACTS ON TORRES STRAIT FISHERIES (CSIRO)	Agenda Item 4 For DISCUSSION & ADVICE

RECOMMENDATIONS

1. That the RAG:

- a) **NOTE** the video presentation provided by Dr Leo Dutra (CSIRO) at the meeting on the outcomes of the project *Climate variability and change relevant to key fisheries resources in the Torres Strait — a scoping study* (climate change scoping project).
- b) **NOTE** the Torres Strait Scientific Advisory Committee (TSSAC) considered the projects outcomes and recommendations at its 79th meeting on 9-10 June and agreed that a further climate change project needs to:
 - i. be made a priority, as there are very real climate change threats to the Torres Strait;
 - ii. be tackled at a national /political scale and funding beyond TSSAC will need to be secured due to the high cost of the project;
 - iii. provide clear guidance on risks, threats and opportunities (if any) associated with climate change, and actions to address them;
 - iv. identify other participants both for funding and end users; and
 - v. that the modelling should start with focusing on commercial fisheries, and then can be upscaled to have more information on other fisheries.

2. That the RAG **DISCUSS** and **PROVIDE ADVICE** on the project recommendations for further research on evaluating the implications of climate variability and change on Torres Strait Fisheries.

KEY ISSUES

3. The TSSAC funds projects that are applicable across Torres Strait Fisheries. Two such projects that were funded in 2019-20 are the *Climate variability and change relevant to key fisheries resources in the Torres Strait – a scoping study* and *Measuring non-commercial fishing (indigenous subsistence fishing and recreational fishing) in the Torres Strait in order to improve fisheries management and promote sustainable livelihoods*.
4. The need to better understand the species-specific effects of climate change and variability on Torres Strait Fisheries was initially identified as a research priority by TSSAC in December 2018 (meeting 71). TSSAC agreed that as a starting point, a scoping study should be undertaken on the possible methods and resources needed to build an information framework that can evaluate the implications of future climate variability and change scenarios on fisheries to better allow fisheries managers and industry to respond and adapt to any changes.
5. The project scope that went out in the 2019-20 TSSAC call for research funding proposals is provided as **Attachment 4a** for the RAG's reference. The project was funded by AFMA and finalised on 31 January 2020. A summary of the suggested components and estimated costs for a full climate modelling project are outlined in **Table 1** in **Attachment 4b** and the full project report is provided as **Attachment 4c**.

6. The project builds on a literature review of the main climate change drivers in Torres Strait affecting tropical rock lobster, bêche-de-mer (sea cucumber), finfish, prawns, turtles and dugongs to provide detailed specification and costings for a future project that will produce the over-arching data framework at the appropriate spatial scales, as required to address future climate variability and change scenarios for Torres Strait fisheries. The report also includes detailed information about data availability, and specifications on data storage, management and data accessibility issues.
7. The TSSAC considered the project's outcomes and recommendations at their 79th meeting on 9-10 June 2021 and agreed that if the project was to progress beyond this scoping phase, it would provide a range of information that is of value to fisheries management, including:
 - Understanding interactions between fisheries and ecosystems.
 - Understanding impacts that different climate change scenarios could have on fisheries/ species.
 - Understanding impacts of changes in catchment conditions and rainfall.
 - Understanding impacts of incidences.
 - Assisting fisheries managers and communities with preparation for adaptation, where possible.
 - Providing predictions of changes in abundance, growth, reproductive capacity and distribution.
 - Helping to differentiate between the relative effects of fishing and environmental (climate) change on marine resources.
 - Use existing, and new data to be collected, to generate information of value to other sectors beyond fisheries, e.g. water circulation, winds, predicted sea level rise, rainfall and wind speed.
8. Given the limited annual research budget, the TSSAC agreed that other funding sources need to be explored including the Fisheries Research and Development Corporation (FRDC) and other agencies such as councils and state environment agencies.

BACKGROUND

Other research to date on climate change impacts on Torres Strait Fisheries

9. In terms of assessing the likely impacts of climate change on Torres Strait Fisheries the following has been undertaken:
 - a) Qualitative Sensitivity Analysis: Assessing the vulnerability of Torres Strait fisheries and supporting habitats to climate change (Welch and Johnson 2013);
 - b) Management Strategy Evaluation to integrate climate changes into the TRL Stock Assessment: An Integrated Management Strategy Evaluation (MSE) for the Torres Strait Rock Lobster *Panulirus ornatus* fishery (Plaganyi *et al* 2012);
 - c) System Modelling: Models of Intermediate Complexity of Ecosystems (MICE) – applied to TRL in the Torres Strait. Used in the following projects:
 - i. AFMA project 2017/0816 – Environmental drivers of variability and climate projections for the Torres Strait tropical lobster *Panulirus ornatus*. (Plaganyi *et al* 2018).

- ii. Decadal-Scale Forecasting of Australian Fish and Fisheries (Fulton *et al* 2018). A non-technical summary of the decadal-scale forecasting project¹ is provided at **Attachment 4d**.

10. In June 2018 the TSRA and National Environmental Science Programs (NESP) Earth Systems and Climate Change Hub convened a workshop on climate change implications for fisheries and marine ecosystems in the Torres Strait. The workshop identified initial thoughts on priority areas for research that may help fisheries and marine ecosystem management in the Torres Strait (**Attachment 4e**).

Adaption of Commonwealth fisheries management framework to climate change project (FRDC 2016-059) (the climate adaptation project)

11. The climate adaptation project is due for completion in 2021 and looked at the readiness of Commonwealth Fisheries Management Arrangements to the potential impacts of climate change and options to adapt to changes. Its key output is a climate adaption handbook that provides detailed steps for fisheries and other stakeholders to conduct climate risk assessment of their fishery management arrangements and operations. During the project, AFMA worked with the CSIRO, the Institute for Marine and Antarctic Studies (IMAS) and other researchers to answer the following questions:
 - a. *What changes does AFMA need to make to its regulatory system so that it can effectively deliver its management objectives?*
 - b. *What are the consequences of those changes for the fishing industry and other fishery stakeholders?*
12. While AFMA's current management strategies have flexibility built in them, it was important to assess the extent to which the direct and indirect impacts of climate change will challenge Australian fisheries and the management framework that they are currently managed under. The climate adaptation project did this by developing a risk assessment approach that tests the adaptability of current and potential management arrangements to projected, climate driven, changes of fish stocks on three case study fisheries, the Northern Prawn, Heard and MacDonald Island and Southern Bluefin Tuna Fisheries as part of the project.
13. The project consulted with key stakeholders from those fisheries, as well as recreational, indigenous and state fishery stakeholders to develop the final approach.
14. The project is likely to give some guidance around future research investment into possible management responses to the impacts of climate change on Torres Strait Fisheries, RAG advice is sought on the benefit of extending the outputs of the project to Torres Strait Fisheries.

¹ AFMA led project *Adaption of Commonwealth fisheries management framework to climate change project (FRDC 2016-059)*

Torres Strait Scientific Advisory Committee 2019-20 financial year research project scope

Project Title: Climate variability and change relevant to key fisheries resources in the Torres Strait — a scoping study.

Project Need:

Key commercial species in Torres Strait fisheries, such as tropical rock lobsters, prawn, finfish and beche-de-mer, are likely to be influenced by current and future climate variability and change. Fisheries management and assessments will need to take account of the implications of future variability and change that may affect stocks. These may manifest through effects on recruitment pathways, mortality rates, and critical habitats among other processes. Previous reviews have qualitatively assessed the vulnerability of the Torres Strait to climate change effects; however, future assessments need to account for these in a quantitative manner for fisheries management to respond appropriately. A quantitative MICE model (Model of Intermediate Complexity) has already been completed in the Torres Strait region for tropical rock lobster, as a part of understanding annual variability in abundance. Separate fishery specific assessment models for multiple species, will all require essentially the same over-arching regional-scale data. This data should cover future climate and environmental variability, potentially including currents, winds, temperature, rainfall etc, at an appropriate spatial extent and grid-resolution.

The requirement is to scope a future project that can deliver the over-arching data requirements that are needed from e.g. global atmospheric and/or oceanographic models, down-scaled to the broader Torres Strait region. This can be used as a framework to derive separate fishery specific models that will evaluate the implications of future climate variability and change scenarios on these fisheries. The down-scaled atmospheric and/or oceanographic outputs will need to be produced in way that meets the input data needs of the various fishery specific sub-models.

The scoping study will need to consider previous reviews of climate implications for Torres Strait; consult with relevant fishery researchers, managers and key stakeholders regarding the necessary inputs; identify a range of potential sources of co-investment funds to support the main future project. The scoping study could potentially include a workshop, if cost-effective, with relevant fishery modelling expert end-users and stakeholders.

Desired Outputs:

1. A detailed specification and costing for a future project that will produce the over-arching data framework at the appropriate spatial scales, as required to address future climate variability and change scenarios for Torres Strait fisheries.

Contacts

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Summary of the main outcomes and recommendations of the project *Climate variability and change relevant to key fisheries resources in the Torres Strait — a scoping study*

Main outcomes/ recommendations	Estimated cost
<p>Prioritise physical data collection and further strengthen and expand a large-scale monitoring program for Torres Strait that would support the identification of long-term trends and improve understanding about local and regional processes affecting habitats, species and fisheries, and to support the development of models.</p>	<p>Unknown.</p> <p>It is difficult to estimate costings for data collection programs, as some data is already being collected across fisheries. This issue can be discussed at the meeting. The PI will provide some estimates of cost associated with collecting hydrodynamic information.</p>
<p>Staged approach in the development of an integrated ecosystem modelling framework to investigate the impacts of climate and local changes on fisheries in Torres Strait, via coupling together:</p> <ul style="list-style-type: none"> • Development and implementation of data framework to support future modelling efforts in Torres Strait – approx. cost • Development of integrated ecological or socio-ecological models capable of integration with a regional hydrodynamic model: <p>For example, combining existing data and models (Tropical Rock Lobster, beche-de-mer, and dugongs) into an integrated spatial MICE, which will form the basis for a hybrid MICE-ATLANTIS ecosystem model;</p>	<p>Approximately 0.4-0.5 FTE for 1 year or rough estimate of AUD \$130,000.</p> <p>Approximately 0.5-0.7 FTE over each of 2 years, or rough estimate of \$460,000.</p>
<p>Dedicated regional hydrodynamic model, including physics and biogeochemistry for Torres Strait, for example similar to eReefs.</p> <p>Include the key findings – recommendations from each project, and the costs.</p>	<p>Approximately 0.3-0.5 FTE over each of 2 years, or rough estimate of \$350,000.</p>
<p>Total estimated costs for costed components of project (this excludes data collection components)</p>	<p>\$940,000</p>

TROPICAL ROCK LOBSTER RESOURCE ASSESSMENT GROUP (TRLRAG) (Video conference)	MEETING 31 12 October 2021
TRL Fishery Research Priorities	Agenda Item 5 For DISCUSSION & ADVICE

RECOMMENDATIONS

1. That the RAG **DISCUSS** and provide **ADVICE** on the research priorities provided in the rolling five year research plan for 2022/23 to 2026/27 (the Research Plan) for the Torres Strait Tropical Rock Lobster (TRL) Fishery (**Attachment 5a**), including advice on feasibility, timing and indicative costing of essential, unfunded research project(s).
2. That the RAG **NOTE**:
 - a) The current status of recently identified research needs, as last reviewed by TRLRAG 30 (held via videoconference on 6 October 2020) (**Table 1**); and
 - b) that although not yet funded, approximately \$477,000 of the 2022/23 available research budget is expected to fund multiyear TRL and Finfish related projects.
 - (i) This means that at present (i.e. in the absence of securing further funding) expected remaining AFMA and TSRA research funding available in the 2022/23 financial year is approximately \$93,000 across all Torres Strait fisheries (**Attachment 5b**).

KEY ISSUES

Research priorities for the TRL Fishery

3. The TRL RAG last discussed research priorities on 6 October 2020 for the 2021-22 TSSAC research funding round and recommended that:
 - a) The highest 'essential' priority for the fishery remains the need to undertake **fishery independent surveys, stock assessment, harvest control and Recommended Biological Catch (RBC)** work.
 - a) Undertaking an update to the 2007 **Ecological Risk Assessment (ERA)** for the TRL Fishery remains an essential priority. Assessment by CSIRO this financial year is dependent on prioritisation against other high priority fisheries. Funding can be sourced from the AFMA TRL Fishery budget (~\$20,400).
 - b) **Improvement of data collection** (to be pursued by the TRL RAG data sub-group) remains an essential priority.
 - c) **Understanding fisher behaviour** and capturing information on the impacts of COVID-19 on the fishery remain essential priorities.
 - d) **Understanding connectivity, environmental drivers and adaptation strategies** also remain an essential priority, noting that a recently funded climate project led by CSIRO (Leo Dutra) (presented under **Agenda Item 4**, as a pre-recorded video) will provide greater insights into available environmental information and advice on what should be collected to develop downscaled climate effects models for Torres Strait Fisheries. More specifically, the RAG supported further work on understanding connectivity, highlighting that a discrete tagging project of 0+ and 1+ lobsters could help better understand any potential disparities between pre-season survey data, and fishery dependent data.

- e) Following initial qualitative data collection through improvements to fishery dependent data, more specific resources can be dedicated to **understanding changes to fishing power** to develop a representative and structured annual fishing power survey. This will be better facilitated when face-to-face stakeholder engagement is more feasible. As such, this research item remains as desirable.
- f) Considering that perhaps the original driver for the **science peer review** is now less important, the RAG agreed it could be moved down in terms of priority against other research needs, and is now prioritised as desirable.

Broader research priorities for Torres Strait Fisheries

- 4. There are two recently funded projects (in 2019-20) that are applicable across all Torres Strait Fisheries. These are:
 - a) *Climate variability and change relevant to key fisheries resources in the Torres Strait – a scoping study*; and
 - b) *Measuring non-commercial fishing (indigenous subsistence fishing and recreational fishing) in the Torres Strait in order to improve fisheries management and promote sustainable livelihoods*.

- 5. The RAG is invited to provide feedback to the Torres Strait Scientific Advisory Committee (TSSAC) on the outcomes of these projects, in particular recommendations from the projects for future research. The project outcomes and recommendations were considered by TSSAC at its meeting on 9-10 June 2021.

- 6. Below is a brief overview of the measuring non-commercial fishing project.

Measuring non-commercial fishing (indigenous subsistence fishing and recreational fishing) in the Torres Strait in order to improve fisheries management and promote sustainable livelihoods.

- 7. This scoping study was funded to quantify the subsistence and recreational (i.e. non-commercial) take of key commercial species and to gauge interest from Torres Strait communities in collecting information on the subsistence take of other non-commercial species, to identify the most culturally significant and important species to communities (including contribution to health and livelihoods).
- 8. The research need was identified by the TSRA Finfish Fishery leasing quota committee. A committee at the time, comprising TSRA Board members and traditional inhabitant representatives from eastern island communities. Members identified the need to improve estimates of non-commercial catch of commercial species to inform stock assessments, the setting of sustainable catch levels and to determine the how much of the available catch needs to be reserved for traditional fishing.
- 9. The project found self-reporting using an app (or web-based approach indistinguishable from an app) was likely to be the best approach to monitoring non-commercial fishing, paired with a data validation method of conducting household surveys. The project undertook consultation with stakeholders on this monitoring approach which would need to continue should the project recommendation proceed. This would ensure communities are on board with this approach and identify risks and concerns that would need to be managed around it.
- 10. The TSSAC considered the project's recommendations at its 79th meeting on 9-10 June 2021 and agreed that if the project proceeds beyond the scoping stage, it should do so in a phased approach as follows:
 - a) Phase 1:
 - (i) Community consultation and sign on (re engaging community regarding the suggested monitoring method to gauge support).

- (ii) App design and development options (including data collection and storage options, and what data may be collected beyond non-commercial catch of commercial species (such as other species, environmental etc)). This process should be through co-design with communities and Government to meet stakeholder needs).
- b) Phase 2:
 - (i) Develop App, database and data flow infrastructure.
 - (ii) Community rollout – pilot (on some communities).
 - (iii) Community rollout – full-scale (to all communities).
- 11. A summary of the TSSAC's agreed recommendations and actions regarding this project are provided in **Attachment 5.4c** and the full final project report is provided as **Attachment 5.4d**.
- 12. It will be relevant for the TRL RAG to provide feedback to TSSAC on the outcomes and recommendations from this project as it relates to developing a catch data collection method for the region, and more specifically, improving understanding of the level of non-commercial catches of TRL.

BACKGROUND

TSSAC Research Funding Process

- 13. Each year the PZJA TSSAC invites applications for funding to undertake research to support the management of Protected Zone Fisheries. The TSSAC seek input from each fishery advisory committee to identify research priorities.
- 14. PZJA fisheries research is generally funded by AFMA. The AFMA research budget is generally set at around \$420,000 each year. In addition to the AFMA research funding, TSRA has recently committed in-principle to contributing \$150,000 each year towards PZJA fisheries research. This allows around \$570,000 annual for all Torres Strait research.
- 15. Additional funding can also be sought from other bodies such as the Fisheries Research and Development Corporation (FRDC), when needed, and when projects align with FRDC objectives.
- 16. Assuming no change to available AFMA and TSRA funding, considering expected research commitments and in the absence of securing further funding, available research funding across all Torres Strait Fisheries in the 2022-23 financial year will be around \$93,000.
- 17. A detailed breakdown of committed TSSAC funds for multi-year projects 2021/22 – 2024/25 is provided at **Attachment 5b**.

TSSAC Fisheries Strategic Research Plan 2018-2023 and rolling five-year fishery specific research plans

- 18. TSSAC operates under a SRP which guides priority setting for research in Torres Strait fisheries over a five year period. The SRP specifies the research priorities and strategies that the PZJA intend to pursue in Torres Strait fisheries, and provides background to the processes used to call for, and assess, research proposals. The research priorities can be broad, covering all topics within the SRP, some of which may be funded by AFMA, and some of which may require funding from other funding bodies.
- 19. There are 3 research themes within the SRP, under which the TRLRAG and TRLWG could identify research priorities for the TRL Fishery (**Attachment 5e**). There are several strategies under each theme and suggested ideas to help RAGs and Working Groups to think about the sorts of projects which may fit within these themes and strategies.
- 20. The TSSAC requires each fishery to develop a rolling five year research plan, which fits into the themes identified in this SRP.

Table 1. Overview of recent research needs identified or discussed at previous TRLRAG and TRLWG meetings with an update on current status.

Research need	Detail	TRLRAG Prioritisation	Status	Comments/Questions
Fishery surveys, stock assessment, harvest control rules and recommended biological catch (RBC)	<ul style="list-style-type: none"> • Monitor ongoing changes in the fishery and update or develop fishery performance indicators as required. • Recommend a recommended biological catch (RBC) annually for each season. • Every third year update and implement the long-term stock assessment. • Conduct a pre- season survey in November each year, including seabed habitat monitoring. • Continue development of a harvest strategy for the TRL Fishery including an empirical harvest control rule. • Facilitate data sharing with PNG. • Development of a tiered harvest strategy for the TRL Fishery. 	Essential (as per TRLRAG 29 advice)	Currently funded under AFMA Research Project (2019/0825) until 2021-22.	Unfunded after from 2022-23 onwards Estimated projected cost is \$290,000 annually
Ecological risk assessment (ERA)	<ul style="list-style-type: none"> • Conduct an update to the 2007 ERA for the TRL Fishery. 	Essential (as per TRLRAG 29 advice)	Assessment this financial year dependent prioritisation against other high priority fisheries. Funding can be sourced from the AFMA TRL Budget (~\$20,400).	TRLRAG 29 agreed that because the Fishery is based on a single species, collected by hand, there is unlikely to be any significant change in the ecological risk factors relating to the TRL fishery since the last ERA was undertaken in 2007.
Improvement of data collection	<ul style="list-style-type: none"> • Improved monitoring of commercial catch and effort in all sectors of the fishery. • Estimate of non-commercial take of TRL. • Alternative monitoring techniques of effort, for example GPS tracking. 	Essential (as per TRLRAG 29 advice)	Due to the timing of 2021 black teatfish opening in the Torres Strait Beche-de-mer Fishery, commencing on 30 April 2021, and the level of AFMA resources required to support a successful opening, AFMA had to reprioritise some of our other fisheries work during the first half of 2021, including TRL. This, combined with COVID-19 impacts and ongoing travel restrictions has unfortunately impacted the ability of the RAG data sub-group to	The RAG has supported the continuation of the data sub-group as a means to progress options for addressing ongoing fishing dependent data needs for the fishery. The funding for RAG data sub-groups is to be sourced from the AFMA TRLRAG budget.

Research need	Detail	TRLRAG Prioritisation	Status	Comments/Questions
			reconvene in 2021. The next meeting of the RAG data sub-group is still to be confirmed and will aim to be in the first half of 2022.	
Understanding fisher behaviour	<ul style="list-style-type: none"> Understanding the drivers and incentives in determining fishing behaviour in all sectors. Understanding fishing behaviour under output controls: the impact of ITQs or competitive quota on the fishery (including social impacts); the extent and impact of discard mortality; the effect of changing market preferences on fishing behaviour under output controls; the extent of value adding e.g. moving to live product, targeting different sizes; the extent of high grading under output controls. Work should also include capturing information on the impacts of COVID-19 on the fishery to ensure that analysis of fishery data is accounting for potential 'COVID noise'. Commencing initial conversations with industry now, to capture qualitative information on fishing activities, would be a useful approach. 	Essential (as per TRLRAG 29 advice)	Currently unfunded and requires an indicative cost estimate.	TRL Data Sub-group should commence initial conversations with industry and collection of qualitative data, with a view to developing a structured quantitative survey over time.
Understanding connectivity, environmental drivers and adaptation strategies	<ul style="list-style-type: none"> Understanding of migration of different age classes of lobsters between, and within, jurisdictions (e.g. PNG, QLD East Coast and Torres Strait). Understanding of recruitment connectivity between, and within, jurisdictions, including key areas of larval release within each jurisdiction. Management implications of movement and recruitment connectivity between, and within, jurisdictions. Understanding large scale environmental perturbations and their impacts on lobster recruitment, availability and aggregations. 	Essential (as per TRLRAG 29 advice)	Currently unfunded and requires an indicative cost estimate	<ul style="list-style-type: none"> industry could be engaged to undertake a discrete tagging project of 0+ (recently settled) and 1+ (juvenile) lobsters to examine movement from the East Coast into the Torres Strait. Useful to help better understand any potential disparity between pre-season survey data, and the fishery catch data, noting that the most recent tagging study is over 30 years old. The currently-funded climate project work led by CSIRO (Leo Dutra) will provide greater insights into the available environmental information, and advice on what information should be collected to develop

Research need	Detail	TRLRAG Prioritisation	Status	Comments/Questions
				downscaled climate effects models for TS fisheries.
Understanding changes to fishing power through time	Understanding changes in fishing behaviour and power over time (e.g. changes to the size of engines, use of GPS, gear, areas fished, time fished, experience of divers), to inform the standardisation of CPUE data.	Desirable (as per TRLRAG 29 advice)	TRL Data Sub-group to progress once progress on improving data collection has been made – funding for sub-group meetings to be sourced from RAG budget	Following initial qualitative data collection, more specific resources can be dedicated towards the project to develop a representative and structured annual fishing power survey. This will be better facilitated when face-to-face stakeholder engagement is more feasible, allowing for trusted relationships with industry to be built up over time.
Science peer review	Consistent with AFMA's best practice <i>Guidelines for quality assurance of Australian fisheries research and science information</i> (the Guidelines), a peer review be conducted of the TRL Fishery survey design.	Desirable (as per TRLRAG 29 advice)	This project is currently estimated to cost between \$60,000 - \$80,000 depending on final scope. The Chair and independent scientific member agreed to finalise the Terms of Reference for the review out-of-session (TRL RAG 29)	Original driver for this research need may be now less important.
Mid-year survey	Conduct mid- year survey, as required under the Harvest Strategy for the TRL Fishery.	To be conducted only if requirement to undertake a mid-year survey is triggered under the Harvest Strategy – indicative cost \$110,000 with in-kind contribution from CSIRO	n/a	Unless triggered under the Harvest Strategy for the TRL Fishery, this project is not a priority for the TRL Fishery.



DRAFT Rolling Five Year Research Plan 2022/23-2026/27

Torres Strait Tropical Rock Lobster Fishery



Compiled by AFMA with TRLRAG advice

September 2021

ABOUT THIS PLAN

The Torres Strait Scientific Advisory Committee (TSSAC) seeks input from each fishery advisory body (Resource Assessment Group (RAG), Management Advisory Committee (MAC) or Working Group (WG)) to identify research priorities over five year periods from 2022/23 to 2026/27. This template is to be used by the relevant advisory body to complete their five-year plan. The plans are to be developed in conjunction with the TSSAC Five-year Strategic Research Plan (SRP) with a focus on the three research themes and associated strategies within the SRP.

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

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

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

RESEARCH PRIORITIES

Table 1. Five-year Torres Strait Tropical Rock Lobster Fishery research plan for 2022/23 to 2026/27.

Proposed Project	Objectives and component tasks	Year project to be carried out and indicative cost*						Evaluation		
		2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	Priority essential / desirable	Priority ranking 1-5 (1 = highest)	Theme
Fishery surveys, stock assessment, harvest control rules and recommended biological catch (RBC)	<ul style="list-style-type: none"> ➤ Monitor ongoing changes in the fishery and update or develop fishery performance indicators as required. ➤ Recommend a recommended biological catch (RBC) annually for each season. ➤ Every third year update and implement the long-term stock assessment. ➤ Conduct a pre- season survey in November each year, including seabed habitat monitoring. ➤ Continue development of a harvest strategy for the TRL Fishery including an empirical harvest control rule. ➤ Facilitate data sharing with PNG. ➤ Development of a tiered harvest strategy for the TRL Fishery. 	290,824 (funded under AFMA Research Project 2019/ 0825)	290,000 (not yet scoped)	290,000 (not yet scoped)	290,000 (not yet scoped)	290,000 (not yet scoped)	290,000 (not yet scoped)	Essential	1	1
Ecological risk assessment (ERA)	<ul style="list-style-type: none"> ➤ Conduct an update to the 2007 ERA for the TRL Fishery. 	20,400	0	0	0	0	0	Essential	1	1
Improvement of data collection • Data sub-group to progress alongside RAG meetings – funding for sub-group meetings to be sourced from RAG budget	<ul style="list-style-type: none"> ➤ Improved monitoring of commercial catch and effort in all sectors of the fishery. ➤ Estimate of non- commercial take of TRL. ➤ Alternative monitoring techniques of effort, for example GPS tracking. 	20,000	0	0	0	0	0	Essential	1	1,3
Understanding fishing behaviour	<ul style="list-style-type: none"> ➤ Understanding the drivers and incentives in determining fishing behaviour in all sectors. ➤ Understanding fishing behaviour under output controls: the impact of ITQs or competitive quota on the fishery (including social impacts); the extent and impact of discard mortality; the effect of changing market preferences on fishing behaviour under output controls; the extent of value 	<p>To be advised</p> <p>TRL Data Sub-group should commence initial conversations with industry and collection of qualitative data, with a view to developing a structured quantitative survey over time.</p>						Essential	2	1

	<p>adding e.g. moving to live product, targeting different sizes; the extent of high grading under output controls.</p> <p>➤ Work should also include capturing information on the impacts of COVID-19 on the fishery to ensure that analysis of fishery data is accounting for potential 'COVID noise'.</p>				
Understanding connectivity, environmental drivers and adaptation strategies	<p>➤ Understanding the drivers and incentives in determining fishing behaviour in all sectors.</p> <p>➤ Understanding fishing behaviour under output controls: the impact of ITQs or competitive quota on the fishery (including social impacts); the extent and impact of discard mortality; the effect of changing market preferences on fishing behaviour under output controls; the extent of value adding e.g. moving to live product, targeting different sizes; the extent of high grading under output controls.</p>	To be advised	Essential	2	1
Understanding changes to fishing power through time	<p>➤ Understanding changes in fishing behaviour and power over time (e.g. changes to the size of engines, use of GPS, gear, areas fished, time fished, experience of divers), to inform the standardisation of CPUE data.</p>	<p>To be advised</p> <p>Sub-group to progress once progress on improving data collection has been made – funding for sub-group meetings to be sourced from RAG budget</p>	Desirable	2	1
Science peer review	<p>➤ Consistent with best practice Guidelines for quality assurance of Australian fisheries research and science information (the Guidelines), a peer review be conducted of the TRL Fishery survey design, stock assessment and draft Harvest Strategy.</p> <p>Terms of reference to be developed and considered by the TRLRAG</p>	<p>60,000 - 80,000</p> <p>(dependent on final scope)</p>	Desirable	3	
Mid-year survey Note: unless triggered under the Harvest Strategy for the TRL Fishery, this project is not a priority for the TRL Fishery.	<p>➤ Conduct mid- year survey, as required under the Harvest Strategy for the TRL Fishery.</p>	<p>To be conducted only if requirement to undertake a mid-year survey is triggered under the Harvest Strategy – indicative cost \$110,000 with in-kind contribution from CSIRO</p>	Only if triggered under HS priority = essential	Only if triggered under HS priority ranking = 1	1

Attachment 5b

Committed Torres Strait Scientific Advisory Committee (TSSAC) funds for multi-year projects 2021-22 to 2024-25

Research priority theme	Project Title	Cost per year			
		2021/22	2022/23	2023/24	2024/25
1a - Fishery stocks, biology and marine environment.	Fishery independent survey, stock assessment, Harvest Strategy and Recommended Biological Catch calculation for the Torres Strait Tropical Rock Lobster Fishery	\$291,000	yet to be scoped (estimate \$290,000)	yet to be scoped (estimate \$290,000)	yet to be scoped (estimate \$290,000)
1a - Fishery stocks, biology and marine environment.	Finfish Fishery: Coral Trout and Spanish Mackerel Biological Sampling 2021-2024	\$122,000	\$128,000	\$135,000	
1a - Fishery stocks, biology and marine environment.	Finfish Fishery Spanish mackerel stock assessment	\$57,000	\$59,000	\$61,000	
1a - Fishery stocks, biology and marine environment.	Designing a close-kin mark-recapture study for Torres Strait Spanish mackerel	\$93,000			
Total cost for all projects (including yet to be scoped TRL)		\$563,000	\$477,000	\$486,000	\$290,000
Available research budget (if TSRA funding continues at \$150,000 and AFMA at \$420,000 per year) ¹		NA – funding round complete	\$570,000	\$570,000	\$570,000
Remaining funding available if TRL project continues funding in future			~\$93,000	~\$84,000	~\$280,000

¹ The TRL stock assessment and survey is ongoing work generally funded each year. This work usually costs around \$290,000 a year. Although this project proposal will be assessed against all others, its considered a high priority for Torres Strait research and is likely to be funded. This can be taken into account when looking at the likely funding available for 2022-23 and beyond.

Summary of TSSAC 79 agreed recommendations and actions regarding the *Non-commercial fishing project*.

The TSSAC **AGREED** on the following recommendations and actions if this project moves forward:

- The project should be split into two phases, and the project scope released in the call for research should only include step 1 and 2 (“phase 1”) of the five-step process above. These two steps will cost out the rest of the project, at which time the relevant PZJA forums and TSSAC will consider the project for funding the remaining steps (pilot and full implementation). This is noting it is not possible for the project team to cost all five steps, until step 1 and 2 are complete, and it is difficult for a funding provider to support a project which has an undefined budget for parts of the work.
- That the focus of this project should remain with non-commercial catch of commercial species initially, however if communities wish to collect other information early on in the project, as their own initiative, this could be incorporated. This would be determined through step 1 and 2 of the project, using a co-design method with communities. In particular, communities should be consulted on whether they have any data they would like to collect (such as non-commercial species data) through this app for their purposes (not related to fisheries management as it isn't the PZJAs mandate), which would add value to it beyond non-commercial catch of commercial species. They also need to guide the data storage and access process, including the types of people they would want to share the data with (like family groups, island groups or broader).
- Community expectations need to be managed around the full project going ahead, noting only the first two steps will be funded initially if the project goes ahead.
- All Torres Strait communities, and Northern Peninsula Area communities should be consulted as a part of any future project.
- The non-commercial catch monitoring project research scope should include a requirement to consider alternative tools to an app, that fulfil the same function (such as webforms) as the non-commercial take monitoring tool, to ensure value for money, including upkeep and maintenance costs.
- Ensure data biases are accounted for if the non-commercial catch monitoring project progresses, noting there will be some fishers reporting a lot and others not at all, skewing results. Statistically adjusting the data will account for this and needs to be considered in this project.
- Ensure project team work alongside AFMA if the non-commercial catch monitoring project progresses, to ensure the data is collected in a way that will allow the data to be pulled into the AFMA database (if AFMA was chosen to be used to store the data).
- Draft scope for the non-commercial catch data collection project to be developed for TSSAC 80 meeting in November, for scoping discussions.
- Data ownership and intellectual property for the non-commercial catch data collection project needs to be discussed and managed effectively based on community needs. This can be established during the consultation phase of the project.
- Non-commercial catch data collection project team to consider what environmental (or other) data that could be collected through the app, which would be useful for managing climate change or other factors relevant to managing commercial fisheries.

The TSSAC **NOTED**:

That the first two steps may take longer than a year, given their complexity (including deciding what data to collect beyond commercial species, and where and how to house the data) and the level of consultation required. However undertaking the work as quickly as possible is a priority.

Torres Strait fisheries strategic research themes, strategies and research activities

Theme 1: Protecting the Torres Strait marine environment for the benefit of Traditional Inhabitants	
Aim: Effective management of fishery stocks based on understanding species and their biology and ecological dependencies so it can support Traditional Inhabitant social and economic needs.	
Strategy 1a - Fishery stocks, biology and marine environment	<p>Possible research activities under this theme may include:</p> <ul style="list-style-type: none"> a. Stock assessment and fishery harvest strategies for key commercial species. b. Ecological risk assessments and management strategies for fisheries. c. Minimising marine debris in the Torres Strait. d. Addressing the effects of climate change on Torres Strait fisheries through adaptation pathways for management, the fishing industry and communities. e. Incorporating Traditional Ecological Knowledge into fisheries management. f. Methods for estimating traditional and recreational catch to improve fisheries sustainability.
Strategy 1b – Catch sharing with Papua New Guinea	<p>Possible research activities under this theme may include:</p> <ul style="list-style-type: none"> a. Status of commercial stocks and catches by all sectors within PNG jurisdiction of the TSPZ. b. Good cross-jurisdictional fisheries management through better monitoring and use of technology.
Theme 2: Social and Economic Benefits	
Aim: Increase social and economic benefits to Traditional Inhabitants from Torres Strait Fisheries.	
Strategy 2a - Promoting social benefits and economic development in the Torres Strait, including employment opportunities for Traditional Inhabitants	<p>Possible research activities under this theme may include:</p> <ul style="list-style-type: none"> a. Models for managing/administering Traditional Inhabitant quota b. Understanding what influences participation in commercial fishing by Traditional Inhabitants. c. Understanding the role and contribution of women in fisheries. d. Capacity building for the governance of industry representative bodies e. Methods for valuing social outcomes for participation in Torres Strait fisheries. f. Identifying opportunities and take-up strategies to increase economic benefits from Torres Strait fisheries.
Theme 3: Technology and Innovation	
Aim: To have policies and technology that promote economic, environmental and social benefits from the fishing sector.	
Strategy 3a – Develop technology to support the management of Torres Strait fisheries.	<p>Possible research activities under this theme may include:</p> <ul style="list-style-type: none"> a. Electronic reporting and monitoring in the Torres Strait, including for small craft. b. Technologies or systems that support more efficient and effective fisheries management and fishing industry operations.