PZJA Torres Strait Finfish Resource Assessment Group

Meeting Number 4

13-14 March 2019
Rydges Plaza Hotel, Cairns

Meeting Record

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

Australian Government
Australian Fisheries Management Authority

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Agenda Item 1 – Preliminaries

1.1 Preliminaries

The fourth meeting of the PZJA Torres Strait Finfish Fishery Resource Assessment Group (FRAG) was opened in prayer by Cr Rocky Stephen at 8:45 am. FRAG Chairperson, Mr David Brewer, acknowledged the traditional owners of the land on which the meeting was held. Mr Kenny Bedford, Industry Member and Mr Tom Roberts, QDAF member were noted as apologies. It was noted that Malu Lamar, Registered Native Title Body Corporate, were invited participants but declined to send an attendee to the meeting. The RAG chair welcomed new industry members: Mr John Tabo, Mr Paul Lowatta and Mr Tenny Elisala.

The RAG were advised that AFMA was recording the meeting for the purpose of ensuring an accurate record is produced. The recording is kept secure and is deleted once the final meeting record is published.

The RAG Chairperson provided a presentation on the roles of the RAG, terms of reference and conflicts of interest management procedures (**Attachment A**).

1.2 Adoption of agenda

The agenda was adopted noting the agenda items would be reordered to focus on *Agenda Item 3.2 Spanish mackerel assessment and Recommended Biological Catch for 2019-20 season* on day one and *Agenda Item 3.1 Coral trout assessment and Recommended Biological Catch for the 2019-20 season* on day two with other agenda items to follow after these items. The RAG agreed to add a discussion on estimates of Traditional Inhabitant Boat sector commercial catches under other business noting the additional agenda paper from AFMA on this item.

1.3 Declarations of interests

Table 1. Attendance and declarations of interest – Finfish RAG members

Name and position	Organisation	Declaration of interest
David Brewer, Independent Chair	Upwelling P/L (David Brewer Consultancy).	Director – Upwelling P/L (David Brewer Consulting) which has no current Torres Strait projects or pecuniary interests. Honorary Fellow - CSIRO Chair - Torres Strait Finfish RAG Scientific member – Torres Strait Finfish Working Group Scientific member – Northern Prawn Fishery RAG Current consultancies with Quandamooka Yoolooburrabee Aboriginal Corporation, Redlands City Council.
Selina Stoute, AFMA Member	Australian Fisheries Management Authority	No interests declared.
Andrew Trappett, RAG Executive Officer	Australian Fisheries Management Authority	Involved in TSSAC pre-proposal project for Spanish mackerel stock assessment as data services and industry liaison role. Unpaid by project.
Rocky Stephen, Traditional Inhabitant Member	Kos and Abob Fisheries, Ugar	Councillor for Ugar, Chairperson of Kos and Abob Fisheries Ugar, Works with brother in a commercial fishing business on Ugar, Eastern cluster representative on the PZJA Finfish

Name and position	Organisation	Declaration of interest
	Brother Bear Fisheries, Ugar Torres Strait Island Regional Council.	Working Group. Sits on Prawn MAC and TS Scientific Advisory Committee. Does not hold a TIB licence.
Tenny Elisala. Traditional Inhabitant Member	Torres Strait Regional Authority	TSRA Ranger Dauan, TIB licence holder.
Paul Lowatta, Traditional Inhabitant Member		Full time commercial fisher. Holds a Torres Strait Traditional Inhabitant Boat Licence.
John Tabo, Traditional Inhabitant Member	Torres Strait Regional Authority	Commercial coral trout fisher. Holds a Torres Strait Traditional Inhabitant Boat Licence. Member of the Torres Strait Regional Authority Finfish Quota Management Committee.
Allison Runck, TSRA Member	Torres Strait Regional Authority	No pecuniary interests declared noting that TSRA holds access rights to Torres Strait Finfish Fishery and generates revenue on behalf of Traditional Inhabitants through seasonally leasing access.
Tony Vass, Industry Member		No financial interests in the Torres Strait. Former mackerel fisher in Torres Strait 1990 to 2008, does not own or operate a licence in Torres Strait.
Michael O'Neill, Scientific Member	Queensland Department of Agriculture and Fisheries	Principal scientist for TSSAC recommended project to develop a harvest strategy for the Torres Strait Finfish Fishery and pre-proposal for stock assessment work. Member of PZJA Finfish Working Group.
Ashley Williams, Scientific Member	Australian Bureau of Agricultural and Resource Economics James Cook University	ABARES fishery scientist under Department of Agriculture and Water Resources. Involved in previous TS research, is an author on the ABARES Fishery Status Reports.
Rik Buckworth, Scientific Member	Sea Sense (Consultancy)	Independent Fisheries Scientist with Sea Sense Consultancy, adjunct at Charles Darwin University, ex NT Fisheries, AFMA Northern Prawn RAG, AFMA South East RAG. Principal investigator on a proposal seeking funding for TS Spanish mackerel assessment work.

Meeting observers and declarations of interests registered.

Joseph Posu	Papua New Guinea National Fisheries Authority	No interest declared.
Trevor Hutton	Commonwealth Scientific and Industrial Research Organisation	CSIRO receives research funding. Principal investigator for TSSAC recommended project to develop a harvest strategy for the Torres Strait Finfish Fishery. AFMA Northern Prawn Fishery RAG scientific member and stock assessment scientist.

George Leigh	Queensland Department of Agriculture and Fisheries	No interests. QDAF gets external funding and bids for research contracts.
Matthew Holden	University of Queensland, Maths Department.	No interests. Involved with current Harvest Strategy project.
Egon Stewart*	AFV New Traveller	Holds a sunset licence to access the Torres Strait Finfish Fishery and skippers a commercial fishing boat.

**Mr Egon Stewart joined the RAG as an observer for part of the Spanish mackerel stock assessment discussion and provided a short update on fishing the Torres Strait over recent seasons. Mr Stewart was not present at the start of the meeting to register a formal interest for RAG consideration.*

Consistent with the *Protected Zone Joint Authority Fisheries Management Paper No. 1 (FMP 1)* which guides the operation and administration of PZJA consultative forums the RAG noted the requirement to declare all interests, perceived or real. Each member declared their interest in the fishery as documented in Table 1 (above). In line with the AFMA standard for declaring conflicts of interest in Commonwealth MACs and RAGs to best protect the integrity of advice, members with grouped interests (industry, science, TSRA) were sequentially asked to leave the room to allow the remaining RAG members to:

- freely comment on the declared interests;
- agree if the interests precluded the members from participating in any discussions; and
- agree to any methods to treat the declared interest (e.g. the member provides preliminary input but leaves the room when any advice is formed).

Industry members

Industry members left the room (Rocky Stephen, Tony Vass, John Tabo, Tenny Elisala, Paul Lowatta). The RAG noted that while industry members did have direct interests, fishers are dependent on the stocks for their livelihood just as the stock assessments are dependent on data from the fishery. The RAG agreed that industry members are well placed to provide valuable on-water practical advice and should participate in all agenda items. Industry members re-joined the meeting.

Scientific members and invited participants

Scientific members, the Harvest Strategy project team and those involved with TSSAC research pre-proposals left the room (Dave Brewer, Ash Williams, Rik Buckworth, George Leigh, Trevor Hutton, Michael O'Neill and Andrew Trappett).

The RAG considered their declared interests and that RAG advice was being sought on TSSAC pre-proposals for future research and that there was potential conflicts with some researchers likely to be providing advice relative to these projects. The RAG noted AFMA are listed as co-investigator on a TSSAC pre-proposal project for Spanish mackerel stock assessment.

The RAG also noted that these potential conflicts would need to be balanced against their subject matter expertise. The RAG agreed that these members and observers should participate in all agenda items with members, and if necessary, to leave the room and not participate in the RAG forming its advice on these projects. Scientific members re-joined the meeting.

Torres Strait Regional Authority

TSRA staff (Allison Runck, John Tabo – Finfish Quota Management Committee member) left the room. The RAG noted that TSRA had declared their role in holding finfish entitlements and generating revenue from the leasing of those licences on behalf of Traditional Inhabitants. It was

noted that TSRA support fisheries development in the region with a further significant investment in infrastructure underway.

The RAG noted that while TSRA held Finfish Fishery sunset licences and revenue generated from the leasing, these holdings are managed on behalf of traditional inhabitants. Due to this the RAG noted that TSRA may have an interest, perceived or real, on the level of Total Allowable Catch available for leasing.

The RAG agreed that TSRA advice on stock assessments and other agenda items was important. It was therefore agreed that the TSRA member should participate in all agenda items with declarations of interests to be updated by members and addressed by the RAG throughout the meeting. TSRA staff re-joined the meeting.

1.4 Actions arising from previous FRAG meetings

The RAG noted the agenda paper detailing actions from FRAG 3 (19-20 November 2018) and agreed to take the paper as read noting a number of the items would be addressed under the Spanish mackerel and coral trout stock assessment agenda items.

Agenda Item 2 – RAG Updates

To allow prioritisation on stock assessments the RAG agreed to take the government and industry update papers as read.

Agenda Item 3 – Stock assessments for coral trout and Spanish mackerel

3.1 Coral trout assessment and Recommended Biological Catch advice for the 2019-20 season

The PZJA Torres Strait Finfish Resource Assessment Group **RECOMMEND** maintaining the **134.9 tonne** Total Allowable Catch for coral trout for the 2019-20 fishing season.

In making this recommendation the RAG noted that the current notional Total Allowable Catch of 134.9 t has been in place since 2008 and is based on average catches (TIB and TVH) between 2001 and 2005.

The RAG noted a presentation of the first formal stock assessment for Torres Strait coral trout from Dr George Leigh (QDAF) and Dr Matthew Holden (UQ) (**Attachment B**) and welcomed the efforts made by the team in performing the assessment. The RAG accepted the assessment as preliminary noting the stage of development of the assessment and the range of uncertainties within the assessment. Further peer review and development is recommended. The RAG strongly recommended that ongoing work be undertaken to ensure the assessment can be developed and made available for future management decisions.

The RAG accepted the methodology of the assessment of using biomass estimates from known Great Barrier Reef (GBR) habitats and inferring and scaling these values to Torres Strait habitats based on satellite mapping data to model the population and create an estimate of abundance.

The RAG noted that GBR values were an input to the model together with a catch per unit effort data series from the sunset licence sector daily fishing logbooks.

The RAG noted that although the values used as inputs to the assessment were estimates from an adjacent fishery and had some uncertainty associated with them. The outputs of the model were still useful in scaling the present level of effort, risk and catches in the Torres Strait Fishery.

Through the preliminary assessment, the RAG noted that the outputs suggest that the Torres Strait coral trout stock is presently healthy with around 80 per cent of virgin biomass available and that this outcome was validated by advice from industry members that the stock appears healthy. The RAG noted that all of the model estimates of current spawning biomass were above 65 per cent estimated virgin biomass.

In considering the available information and likely risks to the stock from recent catch levels the RAG recommended maintaining the current 134.9 t Total Allowable Catch. The RAG noted that the stock assessment once developed, together with an agreed harvest strategy would provide an effective basis to reconsider the current TAC.

Model methods, inputs and data

The RAG noted that the key inputs for the Torres Strait model are from either the Great Barrier Reef (GBR) model or Torres Strait catch data and are:

- defined habitat areas (GBR values)
- underwater visual survey data providing a fish density per habitat area (GBR values)
- virgin fish density estimate (GBR estimate)
- Catch Per Unit Effort (CPUE) series (from Torres Strait daily fishing logbook data).

Harvest data used in the model shows that in recent seasons catches have been low with generally less than 50 t fished.

Two bio-regions defined in the Torres Strait model represent most of the Torres Strait harvests with reefs in Region 5 being morphologically similar to the Cairns region in GBR model and reefs in Region 3 being morphologically similar to the northern GBR region.

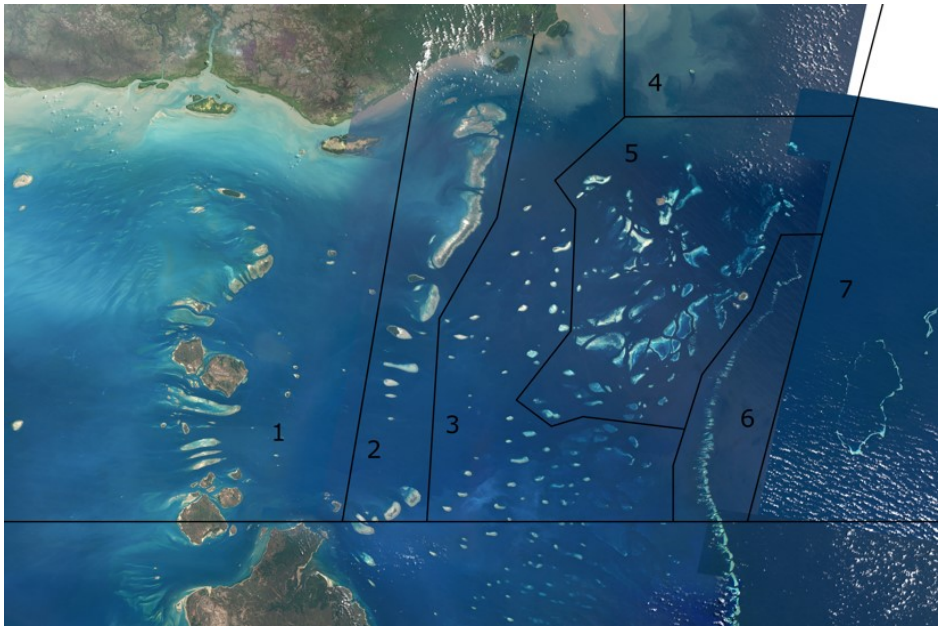

Figure 1. Map showing bioregions used in Torres Strait stock assessment.

The RAG noted:

- The model is using only sunset licence logbook data for the CPUE standardisation time series. The RAG noted that Region 3 has a smaller proportion of catch and different pattern of CPUE to Region 5.
- Industry advised that Region 3 may have higher carrying capacity then Region 5 but is not fished as frequently as it is harder to access due to distance, winds, currents and poorer anchorages. Consequently, Region 3 can normally only be fished in calmer weather.
- The biggest uncertainty in the model is TIB sector catches with little available data for the assessment.
    - Industry members confirmed that the peak reported TIB catches around the year 2004-05 coincides with the period when a non-traditional inhabitant fisher was operating in the Fishery and supporting local TIB fishers (with fishing gear, processing and buying of product).
    - The RAG agreed with the methodology to use either Islander freezer data or 4.2 times the level of docket book catch for the TIB sector catch size for each year (whichever is higher) in the assessment for years where catches were unavailable.
    - An industry member suggested that certain years did have low catches of coral trout due to fishers switching to Beche de mer fishing and lack of supporting infrastructure due to freezer closures. Industry members confirmed that:
        - Masig (Yorke Island) freezer was in operation until around 2009.
        - Mer (Murray Island) freezer closed operations in 2010.
        - 2010 was the last year representative freezer data is available for the assessment team with the Erub (Darnley Island) freezer operating inconsistently in recent seasons with fewer TIB fishers targeting coral trout.

Coral trout model outputs

The RAG agreed that the methods of the assessment are appropriate noting that the values being used to inform the assessment are assumptions at this stage of development.

The RAG noted that the stock status appears to be healthy with most model runs showing the stock biomass to be above 65 per cent of virgin biomass.

Scientific members advised that estimates generated by the model may be over or under estimates depending on the influence of tidal current flows within Torres Strait. The RAG noted that Torres Strait is shallower than GBR reefs with strong current flow. Industry members advised that coral trout generally go off the bite with strong current flow and murky water.

The model appears to have some areas where it is not able to fit to available catch data. The RAG suggested that the period following the November 2001 and February 2002 pre-buyout investment warning did see an increase in catch records returned to AFMA. Industry members and observers present supported this ‘paper-fish’ effect in the catch series and confirmed that industry were over-reporting catches to build up catch history through this period.

The RAG considered that an issue with assessing coral trout was that a pattern of short-term, localised depletion (or localised overfishing), followed by movement to a new reef, may act to maintain an illusion of high catch rates over time until catch rates suddenly decline. RAG noted that area-based catch limits can be developed to take account of local depletion issues. For example, if a particular zone of the fishery is known to be more easily accessible and will likely represent where the majority of catch will be taken, the likely effort from this zone can be compared to likely

effort from the rest of the fishery. This can then be used to scale a Total Allowable Catch from the whole fishery with the correct proportion set to be fully harvested from the key zone.

Future work and research needs

The RAG noted:

- a number of suggestions to increase precision in future coral trout stock assessment work. These will be detailed in the final project report;
- that future assessment should analyse species-split issues. The draft harvest strategy is likely to recommend the species split to be monitored;
- based on industry advice on the distribution of catches of common coral trout, it was recommended that the southern boundary of the region 5 be moved north to the Cumberland reefs. As currently demarcated, Region 5 splits key fishing grounds for common coral trout; and
- an upcoming FRDC project on the health of the Great Barrier Reef might result in a rescaling of habitat areas due to carrying capacities changing due to reef degradation. It was noted that the outcomes of this project may have flow on effects for east coast quota and the Torres Strait model.

The RAG suggested that the most immediate priority to improve data collection and assessment for the fishery would come from improved catch reporting.

3.2 Spanish mackerel assessment and Recommended Biological Catch for the 2019-20 season

The PZJA Torres Strait Finfish Resource Assessment Group **RECOMMEND** a **94 tonne** Recommended Biological Catch for Spanish mackerel for the 2019-20 season noting a decline in the stock and the need for precaution.

The FRAG noted from the harvest strategy work in 2018–2019, results from an updated stock assessment had been undertaken by Dr Michael O'Neil. The Spanish mackerel stock assessment used an annual age-structured model. The assessment uses all available catch-effort data and fish age-frequency data. The stock assessment update included an additional three years of catch data (fishing years 2015–2016, 2016–2017 and 2017–2018).

The RAG noted that the updated assessment accounted for FRAG advice at its meeting on 19-20 November 2018 and intersessional advice from a FRAG data sub-group meeting held 20-21 December. The data sub-group comprised all RAG Scientific members, QDAF, AFMA and CSIRO.

The RAG noted the results of the updated stock assessment show:

a) Biomass is on a down cycle (decline). The standardised catch rate of legal sized Spanish mackerel (the abundance index), using logbook data from sunset fishing operations, had declined since 2010-11. Standardised catch rates have reached near historic low levels in 2017-18.

b) The estimated 2017–2018 biomass was between 15% and 45% (B_{15} and B_{45}) of original unfished biomass (B_0) measured in 1940–1941. Four of 39 model scenarios estimated biomass in the 2017-2018 fishing season to be below B_{20}– the Commonwealth Fisheries Harvest Strategy Policy limit reference point. The RAG considered this situation (4 of 39 scenarios) to be equivalent to the Harvest Strategy Policy guideline for harvest strategies to ensure stocks remain above the limit reference point approximately 90 per cent of the time.

c) Recent fishing pressures are unlikely to be exceeding F_{MSY}. This means overfishing is unlikely to be occurring. The biomass decline may be associated with factors other than fishing. The RAG noted advice from scientific members that similar unexplained declines over the last four to five years were reported for other Spanish mackerel stocks in Western Australia, Northern Territory and Queensland suggesting that broader environmental factors could be driving trends in these fisheries.

To guide advice on a 2019–2020 RBC, the RAG recommended:

d) Applying a Maximum Sustainable Yield (MSY) fishing reference point on current 2017–2018 exploitable biomass. This interim management guide recognised that at the status of the stock, that B_{60} is not quickly achievable, and the fishery economic/data needs. A time to build the stock to this target reference point still needs to be evaluated with stakeholders as part of developing a harvest strategy. The RAG noted that the new Harvest Strategy Policy does not specify rates for building stocks that are above B_{LIM} and below $B_{TARG.}$

e) Equilibrium yields were previously used to calculate RBCs. The equilibrium yield approach is only useful if stock is at an equilibrium reference point or above. Hance, the equilibrium yield approach is no longer used. Consistent with the Harvest Strategy Policy the recommended approach is to advise on yields for current estimates of spawning biomass.

Based on outcomes of the stock assessment and applying an interim reference point of FMSY, the FFRAG recommended an RBC of 94 t for the 2019-2020 season. The 94 t represents the average over all 39 model-scenarios and this setting notes a decline in the stock and need for some precaution.

Noting there is no agreed harvest strategy in place for the Finfish Fishery, the FRAG considered fish-population projections for a range of RBCs to evaluate risks (**Figure 1** and **Table 1**). Risk was interpreted as the proportion of scenarios below B20 in 2029 (as a percentage of all scenarios). The year 2029 was 2017 plus three times the average age of mature female fish (4 years) – a standard and accepted approach for assessing the timeframe to guide fishery stock status.

The FRAG provided advice on best estimates for catches taken outside of the commercial fishery and supported the use of the values shown in **Table 2**.

Other points discussed on the Spanish mackerel assessment

The RAG noted that based on advice from FRAG 3 (19-20 November 2018) and the Finfish Data Sub-group Meeting 1 (20-21 December 2018), the updated assessment included analysis of past catch from Taiwanese pelagic drift-net vessels known to be in operation across northern Australian during the late 1970s and early 1980s and guided by investigations by NT Fisheries (Northern Territory) on apparent uncertainties about missing older size class fishes. To account for this potential take from the Torres Strait Spanish mackerel stock, scenarios in the model examined inflated harvests of 100 t of Spanish mackerel for the years 1979 to 1986. The RAG agreed with the inclusion of these scenarios noting that although the true amounts of these catches was not known, 100 t was deemed an appropriate order of catches for investigation following expert advice from a scientific member. The RAG noted that the inclusion of these catches did act to depress the estimates of stock biomass right through to the present day and that these catches resulted in a number of scenario runs which estimated the present stock biomass as being below the limit reference point (BLIM = B20).

Clarification was requested regarding the discrepancy between Spanish mackerel catches reported by AFMA at Agenda Item 2.2.1 for the years 2014-15 to 2017-18 and the total TVH and TIB catches used in the stock assessment over that period. Discrepancies were equal to around 6-9 tonnes annually (in the range of about 8-10% of total reported catches).

FRAG 4, Action Item 2: AFMA to work with QDAF on clarifying differences between data reported by AFMA from database (Agenda item 2.2.1 report) to stock assessment data summaries for years 2014-15 to 2017-18.

Table1. FRAG Decision Table based on model scenarios outputs for four RBC levels

Risk profile	RBC (t)	Number (and per cent) of runs out of 39 below limit reference point (B_{20}) in 2029.	Interpretation
"Low" risk	80	0	Precautionary but some implications for economics
Precautionary risk	94	0	Balancing for sustainability and risk
"Moderate" risk	110	3 (8 %)	Moderate risk
"High" risk	120	10 (26 %)	Unacceptable risk

*(B20 agreed interim, 20 per cent of virgin biomass) in 2029 (which is 2017 plus three times the average age of mature female fish (4 years) and generation time). Last estimate in 2017 + (3 x 4 years).

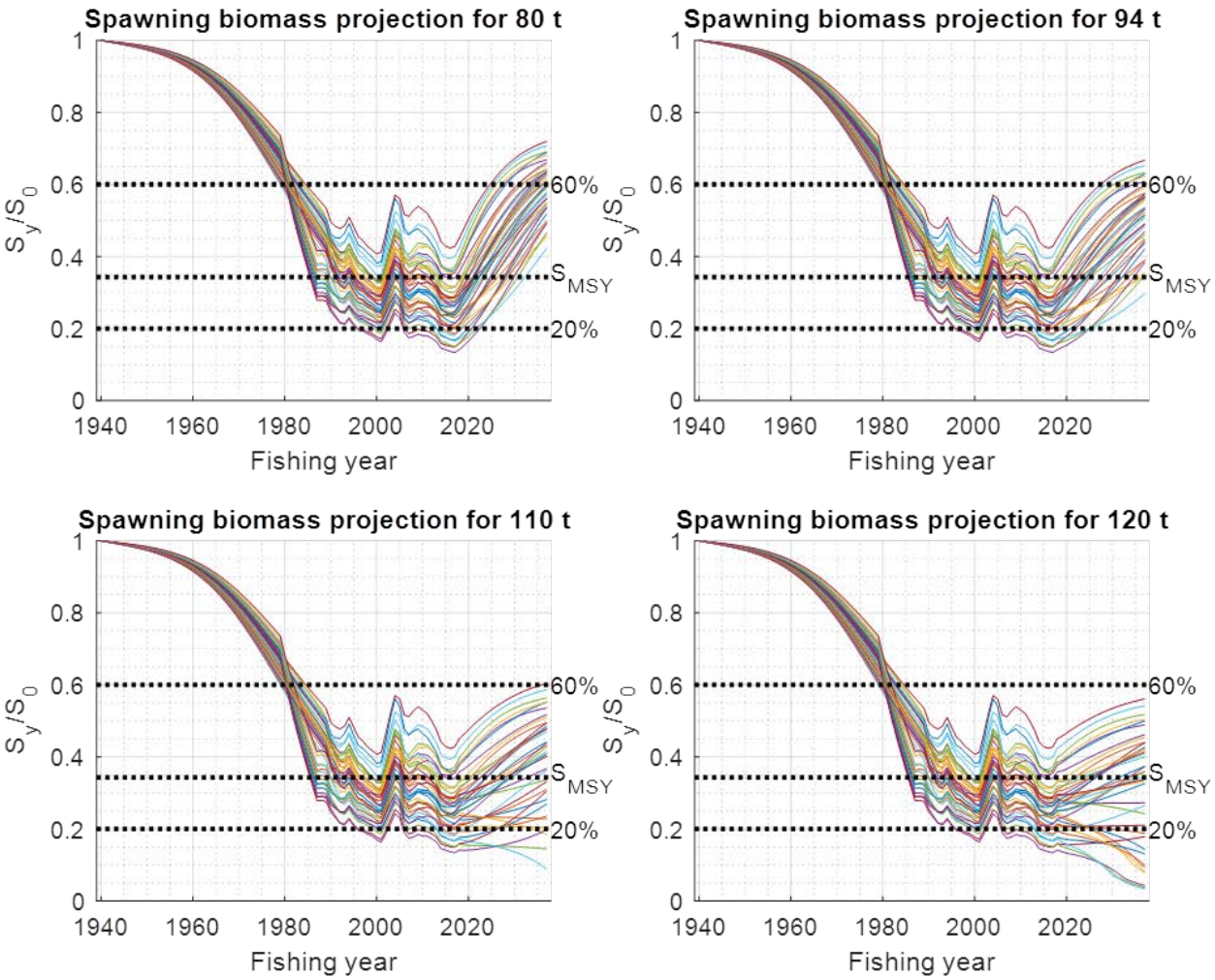

Figure 1. Spawning biomass projections under four different RBC levels.

Table 2. Summary of available information on catches outside of the commercial Spanish mackerel fishery**.**

Source of catches	Expected catch (t)	Comments
Subsistence catch (kai kai) by traditional inhabitants	10	Based on data from *Busilacchi 2013* this includes total of catch estimates for Mer, Masig and Erub Islands. The FWG agreed in July 2016 that the catch figures from the *Busilacchi 2008* research are the best estimates of traditional take of finfish. While originally reported by CSIRO as 12 t this was further refined to 5.155 t. The RAG recommended that an estimate of 10 t be used for decision making noting data was only from three islands, the number of TIB fishing endorsements has increased and effort creep may be occurring. NOTING that anecdotal information presented at the FRAG by TIB industry members infers this number generally may have gone down.
Recreational	2	RAG advised that based on the available evidence from QDAF recreational survey results recreational catches are likely to be minimal. Changed now - based on QDAF survey (2013) which included TS.
Charter	Likely to be minimal	Available QLD logbook records show Charter boat line catches are low. Logbook records for the period between 1995 and 2014 report a total of 19.58 tonnes of mixed species taken from Torres Strait waters. RAG has advised based on the available evidence from QDAF logbook data from charter catches are likely to be minimal.
PNG catch sharing	0	PNG-NFA declined to enter into catch sharing arrangements under the Treaty for 2018-19 fishing season.

Agenda Item 4 – Harvest strategy update

The RAG noted an update from Harvest Strategy project team leader Dr Trevor Hutton, CSIRO. The RAG noted that the Draft Harvest Strategy is scheduled for completion and presentation to the Finfish Working Group in June 2019. It was advised that the document will contain an executive summary and will have four major appendices including the Spanish mackerel assessment, draft harvest strategy for Spanish mackerel, coral trout assessment and draft harvest strategy for coral trout. The document will detail suggestions for research projects to reduce uncertainty in our understanding of the fishery.

The project PI suggested that the interim arrangements being used to support TAC setting might form the basis of the draft Harvest Strategy. The RAG clarified that specific discussion is required with stakeholders on all elements of the harvest strategy. It was noted that a stakeholder meeting had been planned for the present meeting to discuss the harvest strategy and that this meeting had been deferred due to scheduling issues. The RAG welcomed involvement from the project team in the upcoming stakeholder meeting when it is rescheduled.

Agenda Item 5 – Finfish fishery data needs

The RAG noted that a standing item for the group was to consider what the data needs were for the fishery and to provide advice on the appropriate means to address these needs. The RAG noted an update from AFMA and the agenda paper (Table 1, pp. 85) detailing previous RAG discussion on data needs for the Torres Strait Finfish Fishery. The RAG noted advice tabled at the present meeting on key identified data needs to support the Spanish mackerel assessment and desirable data needs to support development of the interim coral trout stock assessment.

Spanish mackerel key data and research needs:

1. Accurate fishery dependent catch data (daily fishing logbooks and catch disposal records) to support the assessment.
2. Monitoring data – biological ageing data and length frequency as an additional data stream to improve the stock assessment model.

Coral trout desirable data and research needs:

1. Validation of biomass estimates through more detailed work on mapping of Torres Strait habitat types using a Geographic Information System expert.
2. Underwater visual surveys from Torres Strait to validate density of coral trout per habitat type, noting that it would be useful to perform this survey work in the short term given the high level of biomass.
3. Ageing data to validate Torres Strait stock age structure, noting that the age structure of our model is based on the Great Barrier Reef model which has not had any ageing data assessed since 2009.

Other points discussed

The RAG performed a short white-board exercise to consider data needs aside from those key items listed above to support the mackerel and trout assessments:

Age and structure of Torres Strait mackerel stock

The RAG noted that the age structure of Torres Strait mackerel was an input to the model and the older 2001 to 2005 ageing data had a shortfall in larger size class fish sampled. It was recommended that broader scale sampling across Torres Strait should improve our understanding of how the TS mackerel stock varies spatially and between seasons.

Finer scale spatial data analysis

The RAG considered that collection and analysis of dory driver information for mackerel and coral trout was a key data need for the fishery to be improved and analysed in the short term, given that no dory information was collected for coral trout (data in the logbook is aggregated for the primary boat per day). It was noted that these data have historically been collected for Spanish mackerel but have not yet been analysed.

Effort measure for TIB sector fishing data

The RAG noted that daily fishing logbooks were voluntary for TIB fishers and commended fisher's already voluntarily returning effort data through the Fish Receiver System. The RAG noted AFMA was about to commence a round of community visits to provide feedback to industry where further reporting of these effort data would be encouraged. The RAG noted AFMA is supporting PZJA Traditional Inhabitant Members to attend these community visits to collaborate on communicating the importance of accurate data collection.

Environmental drivers

The RAG considered that a data need for the fishery was understanding other factors driving the abundance of Spanish mackerel. These might include consideration of other data streams such as the Integrated Marine Observing System remote sensing data, measuring shark depredation of catch (amending daily fishing logbooks) and broader climate change impacts and monitoring across Torres Strait / northern Australia. The RAG noted that the mackerel stock assessment pre-proposal received in answer to the TSSAC call for research, if funded, would begin investigating this issue.

Alternative measures of fishing mortality (F) and harvest rate

The RAG noted potential methods available to understand fishing mortality on a stock including gene tagging (c.f. Rik Buckworth research on NT mackerel), close kin genetic tagging or conventional tagging work. The RAG noted future consideration could be given to these methods and their associated costs and benefits

Historic data set

The RAG noted AFMA advice that work was in progress on forming an agreed historic dataset with associated data rules and treatments, noting that raw database catch figures may have different treatments applied to those performed during stock assessments. It was noted that QDAF could work with AFMA on incorporating TS assessments into upcoming work on serialisation of Queensland East Coast assessments with the outcomes of regular assessments automated through an access portal.

The RAG noted that AFMA would circulate a draft yearly data cycle detailing key dates for the fishery data and assessments to support season openings for comment out of session.

FRAG 4, Action Item 1: AFMA to circulate a draft yearly data cycle detailing key dates for the fishery data and assessments to support season openings for RAG member comment.

Agenda Item 6 – Research: TSSAC pre-proposals received: biological data collection and mackerel assessment

The RAG noted that a number of pre-proposals were received by the Torres Strait Scientific Advisory Committee (TSSAC) and considered at their 27 February 2019 meeting. TSSAC have sought additional RAG advice on two of the pre-proposals received;

a. *Enhancing biological data inputs to Torres Strait Spanish mackerel stock assessment; and*
b. *Spanish mackerel stock assessment.*

The RAG were asked to provide advice on the feasibility of a much more constrained project to enhance biological data inputs with a budget of around $30,000; and the benefits to fisheries management in undertaking a further Spanish mackerel stock assessment in the absence of any new biological data.

Enhancing biological data inputs to Torres Strait Spanish mackerel stock assessment

The RAG was joined by project Principle Investigator, Jo Langstreth, Queensland Department of Agriculture and Fisheries, Long Term Monitoring Program (LTMP) who provided an overview of the pre-proposal project and costings associated with sample collection.

The RAG confirmed their support for the project noting there is a strong need for fish ageing and

length frequency data to support the mackerel assessment and improve our understanding of the stock. The RAG advised that sampling for mackerel ideally needs to be ongoing, consistent and cost-effective with sampling from all areas of the fishery, not just from the Bramble Cay breeding aggregation.

Noting the limited funding available, the RAG supported QDAF working with AFMA out-of-session to refine the project scope and sampling design. The RAG noted that AFMA would work with RAG scientific member Dr Michael O'Neill on a sampling design and that AFMA would work with LTMP and RAG industry members on liaison with industry to get support to meet the project needs. It was noted that an iterative approach would likely be developed that will focus in the short term on what data can be collected within the available budget over the next financial year and how these data will aid the stock assessment.

Spanish mackerel stock assessment.

RAG scientific member and project principle investigator Dr Rik Buckworth provided an overview of the pre-proposal submitted to TSSAC. Noting their declared interests, project staff Rik Buckworth (PI), Michael O'Neill (stock assessment) and Andrew Trappett (data and liaison) left the meeting to allow the RAG free consideration of advice on the project.

The RAG considered that a stock assessment update is required in 2019-20 noting the apparent downwards trend in CPUE data and that more TIB sector catch and effort data are being collected for analysis through the Fish Receiver System. The RAG considered the 'sequencing' issue raised by TSSAC with the project being reliant on ageing data being provided by a separately funded project. The RAG were still supportive of project continuing over two years noting there may be issues with biological sampling data not being available but noted the apparent declining CPUE series still needed monitoring through an assessment.

The RAG supported the following approach by the project over two years:

a. First year (2019-20) assessment is proposed to analyse:
    a. one extra year of TVH daily fishing logbook data from 2018-19 season.
    b. all available TIB sector data from the Fish Receiver System (1 Dec 2017 to present)
    c. an exploration of biophysical drivers - noting that a broader environmental trend may explain the declining CPUE in mackerel across Northern Australia.
b. The second year assessment update (2020-21) is to incorporate biological sampling data if/when available.

Project staff rejoined the RAG meeting.

Agenda Item 7 – Western line closure

The RAG noted an update on the background of the Western line Closure and previous consideration on the issue as detailed in the agenda paper. A RAG industry member advised that he did not wish to provide advice on the matter noting it was relevant to communities outside of his own cluster (Kemer Kemer Meriam).

The RAG noted advice from industry members is that water turbidity means that fishers in Gudumalagal (top western) communities have fewer months of the year to target finfish compared to eastern, central and south-western Torre Strait communities.

The RAG considered that western Torres Strait may be comprised of shallower reef habitats which may have lower carrying capacity than other areas of Torres Strait.

Further Traditional Inhabitant boat sector licensed fishers will likely enter the fishery from Western Communities should the closure be removed. The RAG noted that catch data will be collected from operations in these waters through the mandatory Fish Receiver System which will allow monitoring of these extra harvests with analysis through future stock assessments.

The RAG provided the following advice on likely stock impacts from removing the Western Line Closure:

a) Stocks impacts would likely be negligible, noting removal of the spatial closure would simply increase the total fishable area of the Fishery while all other management arrangements including recommended TACs for coral trout are to remain unchanged; and

b) The boundary of the Western Line Closure is not likely to correspond to any natural stock boundary. Therefore there is no requirement for separate stock management arrangements within the Protected Zone for finfish species.

Agenda Item 8 – Other business

Estimates of TIB sector catch

AFMA introduced the item to update the RAG on finfish catches from Traditional Inhabitant Boat licenced fishers since the introduction of the mandatory Fish Receiver System on 1 December 2017. AFMA advised that RAG advice was being sought on best estimates of catches by Traditional Inhabitant Boat (TIB) licenced fishers for Spanish mackerel and coral trout to minimise the risk of catches exceeding agreed catch levels for the Fishery while TACs remain notional - that is, not enforced across all licences.

The RAG noted that while the assessment previously used the docket database from 2003-2010 fishing seasons which had a mean of 22.3 t, the updated model was using a median value of 9 t for years 2003-2010 with lower values of 1 to 3 t reported per season from 2011-12 to 2017-18.

RAG industry members advised that they did support the general level of the catch data being used in the updated model advising that the TIB sector has likely been taking less finfish in recent years with fishers preferentially fishing for other species such as coral trout or Beche-de-mer noting the challenge of little available infrastructure.

Industry reports to the RAG by community were as follows:

- Ugar (Stephens Island) has had recent activity with two fishers targeting mackerel reporting almost 3 tonnes of catch over three months working to smaller chest freezers.
- Erub (Darnley Island) community freezer was presently operational and was mostly focused on coral trout with the key mackerel fisher not presently active in the fishery.
- Massig (Yorke Island) was noted to mainly be fishing for crayfish with some local fishing for mackerel.
- Mer (Murray Island) was noted to mainly be targeting coral trout by individual business with some mackerel catches. Mer freezer has been closed since 2010.

Agenda Item 9 – Next meeting and meeting close

The RAG noted that their next meeting was scheduled for late August 2019 on Thursday Island. The RAG chair thanked all members for a productive technical meeting. The chair thanked PNG-NFA for attending and also the Spanish mackerel and coral trout stock assessment teams noting the valuable platform being built to support management of the fishery.

The RAG meeting was closed in prayer at 17:45 hrs.

Actions arising

Table 1. Action items tabled at the present Finfish RAG meeting (FRAG 4)

Number	Action
FRAG 4, Action 1.	AFMA to circulate a draft yearly data cycle detailing key dates for the fishery data and assessments to support season openings for RAG member comment.
FRAG 4, Action 2.	AFMA to work with QDAF on clarifying differences between data reported by AFMA from database (Agenda item 2.2.1 report) to stock assessment data summaries.

Attachments

Attachment A – Powerpoint presentation: *PZJA Torres Strait Finfish Resource Assessment Group Procedures and Processes.*

Attachment B – Powerpoint presentation: *Torres Strait finfish – Coral trout assessment March 2019, QDAF.*