

**PZJA Finfish Harvest Strategy Meeting
Joint Finfish Working Group
and
Finfish Resource Assessment Group Meeting**

**Wed 21st and Thurs 22nd March 2018
Torres Strait Regional Authority Building, Thursday Island**

MEETING TIME: 8:30 am – 4:30 pm Wednesday 21st March 2018
8:30 am – Midday Thursday 22nd March 2018

DRAFT AGENDA v2

1. Preliminaries

- 1.1 Opening Prayer / Acknowledgement of Traditional Owners / Welcome / Apologies
- 1.2 Adoption of agenda
- 1.3 Declaration of interests
- 1.4 Actions arising from Finfish Resource Assessment Group Meeting 9-10 November 2017

2. RAG Business

- 2.1 Biological data collection to support stock assessment updates
- 2.2 RAG work plan for 2018-2019

3. Torres Strait Finfish Fishery Harvest Strategy Project

4. Other Business

5. Date and Venue for the Next Meeting

Individuals seeking to attend the meeting as an observer must contact the Executive Officer – Andrew Trappett (andrew.trappett@afma.gov.au)

PZJA Torres Strait Finfish Resource Assessment Group	Meeting 2 21-22 March 2018
PRELIMINARIES Welcome and meeting preliminaries	Agenda Item No. 1.1 FOR NOTING

RECOMMENDATIONS

That the RAG **NOTE:**

- a. an opening prayer;
- b. an acknowledgement of traditional owners;
- c. the chairperson's welcome address; and
- d. apologies received from members unable to attend.

BACKGROUND

1. No **apologies** have been received.

PZJA Torres Strait Finfish Resource Assessment Group	Meeting 2 21-22 March 2018
PRELIMINARIES Adoption of agenda	Agenda Item No. 1.2 FOR NOTING

RECOMMENDATIONS

That the RAG **NOTE** and **ADOPT** the Agenda.

BACKGROUND

1. A **draft agenda (APPENDIX A)** was circulated to members and other participants on 2 March 2018. No changes were requested.
2. Agenda item 3 Torres Strait Finfish Fishery Harvest Strategy sub items were removed from the draft agenda noting the Project team are to provide a revised version closure to the meeting date.

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PZJA Torres Strait Finfish Resource Assessment Group	Meeting 2 21-22 March 2018
PRELIMINARIES Declarations of interests	Agenda Item No. 1.3 FOR ACTION

RECOMMENDATIONS

That the RAG:

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

BACKGROUND

1. 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 (**APPENDIX A**).
2. RAG members are asked to provide the executive officer with a list of declared interests.
3. FMP1 recognises that members are appointed to provide input based on their knowledge and expertise and as a consequence, may face potential or direct conflicts of interest. Where a member has a material personal interest in a matter being considered, including a direct or indirect financial or economic interest; the interest could conflict with the proper performance of the member's duties. Of greater concern is the specific conflict created where a member is in a position to derive direct benefit from a recommendation if it is implemented.
4. 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.
5. 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.

Item 1.3 Appendix A, REGISTER OF DECLARED INTERESTS

Name	Organisation	Declaration of interest
David Brewer – RAG Chairperson	Independent chair	Runs a fisheries consultancy which has no Torres Strait interests.
Selina Stoute – AFMA member	AFMA	Nil.
Tom Roberts – QDAF member	QDAF	Nil.
John Ramsay – TSRA member	TSRA	No pecuniary interests. TSRA manages sunset leasing and holds fishery access rights in trust.
Rocky Stephen – industry member	Kos and Abob Fisheries, Ugar	Councillor on Ugar, President of Kos and Abob Fishers Association. Eastern cluster representative on the PZJA Finfish Working Group. Does not hold a TIB licence.
Kenny Bedford – industry member	Erub Fisheries Management Association	TIB licence holder. President - Erub Fisheries Management Association
Tony Vass – industry member		No financial interests in the Torres Strait. Does not own or operate a licence in Torres Strait.
Michael O'Neill – scientific member	QDAF	Principal scientist for TSSAC recommended project to develop a harvest strategy for the Torres Strait Finfish Fishery. Member of PZJA Finfish Working Group.
Ashley Williams – scientific member	ABARES, JCU	Involved in previous TS research, is an author on the ABARES Fishery Status Reports.
Rik Buckworth		(An apology for RAG Meeting 1 and did not declare interests)

PZJA Torres Strait Finfish Resource Assessment Group	Meeting 2 21-22 March 2018
PRELIMINARIES Actions arising and record from RAG Meeting 1, 9-10 November 2017	Agenda Item No. 1.4 FOR NOTING

RECOMMENDATIONS

1. That the RAG **NOTE** the:
 - a. the progress of actions arising from the initial RAG meeting held on 9-10 November 2017; and
 - b. final meeting record of the meeting.

KEY ISSUES

Meeting record

1. This record was circulated for comments on 19 December 2017. The period for comments was closed on 11 January 2018.
2. Suggested comments were received from TSRA, some of which were incorporated into the final report which was circulated to members on 15 February 2018. **Attachment A** outlines the changes made to amend the record.
3. The final meeting record for the Finfish RAG Meeting of 9-10 November 2017 is provided at **Attachment B**.
4. The meeting record was closed and ratified as a true and accurate record and posted on the PZJA website for public viewing.

Actions arising

5. Progress against the actions arising from Working Group meeting is listed in **Table 1**.

ATTACHMENTS

Attachment A - Finfish RAG Meeting 9-10 November 2017 meeting record showing marked up changes based on member comments.

Attachment B - Finfish Working Group Meeting 9-10 November 2017 final meeting record

Table 1: Progress against action items from RAG Meeting 1, 9-10 November 2017

Number	Action	Status
1.	RAG 1, Action 1, Agenda item 2.2: Ashley Williams to advise the RAG on how beach price is determined in ABARES Fishery Status Reports. Whether by phone survey direct with Torres Strait buyers or fishers or whether this information is inferred from other sources.	In progress - Response supplied OOS to RAG EO, Ashley Williams will provide verbal update at Meeting 2.
2.	RAG 1, Action 2, Agenda item 3.2: Harvest strategy project team to provide a short paper advising the RAG on work that would be required to support Management Strategy Evaluation following the Harvest Strategy development.	Incomplete – to be prepared for RAG Meeting 3.
3.	RAG 1, Action 3, Agenda item 5.1: AFMA to liaise with the harvest strategy project team to investigate the coral trout catch data that underlies a) the apparent decline in biomass from 1980 to 2003 and b) the catch series that underlies the reference period 2001-2005, noting some of these data may be housed by QDAF.	In progress – Liaison complete. Coral trout data from AFMA supplied under deed of confidentiality to harvest strategy project team. Data is undergoing characterisation under harvest strategy project and will be reported to RAG.
4.	RAG 1, Action 4, Agenda item 6: Harvest Strategy project team to contact Roland Pitcher to enquire as to what Torres Strait habitat mapping data is available.	In progress – under harvest strategy project.
5.	RAG 1, Action 5, Agenda item 6: AFMA to liaise with the 2007 reef-line sector MSE project team to determine what coral trout catch data series were used in the MSE.	In progress – liaison complete. MSE project team is attempting to locate data.
6.	RAG 1, Action 6, Agenda item 6: Harvest Strategy project team to advise the RAG and Finfish Working Group on the outcomes of the east coast coral trout assessment in 2018.	In progress – east coast Coral Trout assessment due April 2018. To be reported to the RAG at RAG Meeting 3 in August 2018.
7.	RAG 1, Action 7, Agenda item 6: Michael O'Neill to provide the Finfish RAG with revised figures e) and f) from Figure 20 of the stock assessment report with the same scale to illustrate how a B60 long term average equilibrium point provides greater catch rates.	In progress.

Torres Strait Finfish Resource Assessment Group

Meeting Number 1

Meeting Record

9-10 November 2017 – Brisbane

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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Meeting Participants

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

Name	Organisation	Declaration of interest
David Brewer – RAG Chairperson	Independent chair	Runs a fisheries consultancy which has no Torres Strait interests.
Selina Stoute – AFMA member	AFMA	Nil.
Tom Roberts – QDAF member	QDAF	Nil.
John Ramsay – TSRA member	TSRA	No pecuniary interests. TSRA manages sunset leasing and holds fishery access rights in trust.
Rocky Stephen – industry member	Kos and Abob Fisheries, Ugar	Councillor on Ugar, President of Kos and Abob Fishers Association. Eastern cluster representative on the PZJA Finfish Working Group. Does not hold a TIB licence.
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Michael O'Neill – scientific member	QDAF	Principal scientist for TSSAC recommended project to develop a harvest strategy for the Torres Strait Finfish Fishery. Member of PZJA Finfish Working Group.
Ashley Williams – scientific member	ABARES, JCU	Involved in previous TS research, is an author on the ABARES Fishery Status Reports.

Meeting observers and declarations of interests volunteered

Maluwap Nona (Day one only)	Malu Lamar	Chairperson Malu Lamar. TIB licence holder. Currently making investments in mackerel fishing.
Andrew Tobin (Day two only)	JCU	No declaration made.
Ian Liviko	PNG-NFA	No declaration made.

Yen Loban	TSRA	Chairperson of the Finfish Quota Management Committee. TIB licence holder.
Mariana Nahas	TSRA	Nil.
Trevor Hutton	CSIRO	CSIRO receives research funding. Principal investigator for TSSAC recommended project to develop a harvest strategy for the Torres Strait Finfish Fishery.
George Leigh (Day 2 only)	QDAF	No declaration made.
Matthew Holden (Day 2 only)	UQ CARM	No declaration made.

Action items

Number	Action
1.	FRAG 1, Action 1, Agenda item 2.2: Ashley Williams to advise the RAG on how beach price is determined in ABARES Fishery Status Reports. Whether by phone survey direct with Torres Strait buyers or fishers or whether this information is inferred from other sources.
2.	FRAG 1, Action 2, Agenda item 3.2: Harvest strategy project team to provide a short paper advising the RAG on work that would be required to support Management Strategy Evaluation following the Harvest Strategy development.
3.	Finfish RAG 1, Action 3, Agenda item 5.1: AFMA to liaise with the harvest strategy project team to investigate the coral trout catch data that underlies a) the apparent decline in biomass from 1980 to 2003 and b) the catch series that underlies the reference period 2001-2005, noting some of these data may be housed by QDAF.
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5.	Finfish RAG, Action 5, Agenda item 6: AFMA to liaise with the 2007 reef-line sector MSE project team to determine what coral trout catch data series were used in the MSE.
6.	Finfish RAG, Action 6, Agenda item 6: Harvest Strategy project team to advise the RAG and Finfish Working Group on the outcomes of the east coast coral trout assessment in 2018.

Agenda Item 1 - Preliminaries

1.1. Welcome and meeting preliminaries

The inaugural meeting of the PZJA Torres Strait Finfish Fishery Resource Assessment Group (FRAG) was opened in prayer by Rocky Stephen at 8:45 am.

RAG Chairperson, David Brewer, acknowledged the traditional owners of the land on which the meeting was held. Noting that it was the inaugural meeting, the Chairperson provided a presentation on the roles of the RAG, terms of reference and conflicts of interest management procedures.

The Chairperson advised that the RAG would provide advice on items such as Recommended Biological Catches to the Finfish Working Group and to the PZJA.

The agenda was adopted and it was agreed that advice on the western line closure issue would be added under other business if time permitted.

It was noted that Andrew Tobin would attend day two of the meeting to discuss the barramundi, crab and jewfish scoping study research proposal.

1.2. Declarations of interests

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. In line with the AFMA standard for declaring conflicts of interest in Commonwealth MACs and RAGs to best protect the integrity of advice, members were sequentially asked to leave the room to allow the remaining RAG members to freely comment on their declared interests.

Industry members left the room. The RAG considered their declared interests in the fishery. The RAG noted that while industry members did have interests they had valuable input and their advice was required. The RAG agreed that all industry members could freely provide advice at all agenda items. Industry members re-joined the RAG meeting.

Science members left the room. The RAG considered their declared interests. Noting these interests and the valuable input the members would provide the meeting the RAG agreed that science members could freely provide advice at all agenda items. Science members re-joined the RAG meeting.

Agenda Item 2 – RAG Updates

2.1 Industry member updates

The RAG noted updates provided by members on strategic issues that may be affecting the adjacent Queensland east coast and the Torres Strait finfish stocks.

Queensland east coast finfish strategic issues

Vessel monitoring systems

- It was noted that the Queensland Vessel Monitoring System project was now in a trial stage with units fitted to both primary vessels in a number of fisheries (as per the Torres Strait) but also to dories – unlike in the Torres Strait. QDAF advised that they are waiting for trial data to come in for review in 2018.

East coast coral trout and reef-line species

- It was advised that the east coast coral trout TAC was nearly entirely now caught (96% of 917 t) and that no over-catch was allowed under management regulations.
- 2017 catch rates appear to have been good despite a 2016 cyclone.
- A theory was reported whereby a cyclone may trigger a drop in water temperature which impacts the coral trout metabolic rates which in turn affects their availability as they will not take baits as readily. It was noted that fish are seen to be present after a cyclone but their availability seems to be affected.
- QDAF advised that east coast coral trout assessment is planned to be updated every five years and was due to be updated in 2018 (stock status and reference points are to be examined).
- It was noted that east coast stock assessment team was reviewing the options for monitoring for coral trout to support the assessment and TAC setting. The project team are comparing the costs and benefits of fishery independent line fishing surveys (to support the age structured assessment model) and are comparing this to port sampling or crew based fishery dependent data. It was noted that Australian Institute of Marine Science survey data (underwater diver abundance surveys) had been powerful and useful data for the east coast coral trout assessment.

East coast red throat emperor

- It was advised that catches of red throat emperor and other reef line species remain low with most fishers focusing on live coral trout with some red throat emperor taken as by-product.
- 2018 will see an updated east coast Red Throat Emperor assessment which will be the first update to the assessment in about a decade.

East coast Spanish mackerel

- It was reported that around 50 per cent of the east coast Spanish mackerel TAC was taken during the last season with this seasons catches appearing to be good (up 31 per cent for the season to date; around 20 per cent of the TAC had normally been filled by this time in previous seasons).
- Finfish RAG will be updated on the outcomes of the east coast Spanish mackerel assessment which is being updated in 2018. It was advised that the new east coast VMS data will likely have a huge benefit in boosting the usefulness of the assessments spatial data (particularly the time spent searching for fish) can be used by assessment scientists for analysis.
- It was noted that the east coast Finfish Harvest Strategy includes decision-rules based on a CPUE model for the commercial sector only and does not apply to recreational sector. Under the Sustainable Fisheries Strategy Queensland will move to have explicit account for catches taken from all sectors under the harvest strategy.

Torres Strait strategic issues for industry

- Kos and Abob Fisheries on Ugar Island are preparing a business plan to guide development of their business over the next few years, especially for when the Ugar freezer is upgraded. The intent of this plan is to ensure that the freezer can run as a viable, commercial business.
- An industry member advised that there is a strong need for TACs to be set at levels that provide enough product to support business.
- Erub Island has seen a spike in finfish catches over the past few weeks before the meeting due to improved weather.
- With good prices and demand for product there is reportedly some interest among the Traditional Inhabitant Boat (TIB) sector in entering the finfish fishery but this would be dependent on infrastructure to support this.
- Both Erub and Mer communities would likely have some recorded data of recent finfish commercial catches.
- More fishers on Mer Island were taking coral trout with good prices being offered from buyers.
- Mer Island women were also engaging in finfish fishing with their partners to boost their household incomes.
- Malu Lamar advised that fishers in the TIB sector need to have a firm understanding of what the TAC is for their sector. The representative advised that the next few seasons would likely result in an increased take from the TIB sector as fishers move across from the beche-de-mer fishery to target finfish. Suggested that young TIB fishers such as Mr Allan Passi from the Mer Community be invited to the Finfish RAG to help increase understanding of fisheries science among the sector and facilitate community understanding.
- TIB sector fishers have an increased understanding of the value of logbooks and good data for management of their fishery.

Meeting observer, TSRA board member Yen Loban, noted that it was of high importance that the TIB sector supplies catch data to AFMA to support decision making and to ensure that the balance is understood between non-traditional inhabitant and TIB sector catches.

2.2 Management update – 2016/17 season summary

The Finfish RAG noted the tabled update on the fisheries performance, summarising the previous fishing season and recent trends in catch and effort.

The RAG noted the following points:

- It was noted that while \$12 per kilo was quoted as the average ABARES 2016 season price for mackerel, a factor of \$9.20 x 1.61 was generally used to get fillet price. The RAG sought clarification from ABARES on how beach price figures were obtained for reporting purposes – whether these were surveyed or inferred from east coast statistics.

FFRAG 1, Action 1, Agenda item 2.2: Ashley Williams to advise the RAG on how beach price is determined in ABARES Status Reports. Whether by phone survey direct with Torres Strait buyers or fishers or whether this information is inferred from other sources.

- Industry advised of increasing trend for sending whole fish (rather than fillets) to buyers e.g. Sydney Fish Market at a price of around \$20 per kilo. The ratio now is 60 whole to 40 per cent fillets whereas it used to be only 40 per cent whole fish.
- Industry members advised that the current season has seen the price being offered by buyers for frozen fillets reach a record high of \$17/kg for fillets on some islands.
- Industry member advised that Erub Island had a local market for mackerel belly flaps which were sold locally for \$10/kg.
- Science member suggested that a look at catch rates will help note whether the drop in catches is an issue
- QDAF member cautioned interpreting the apparent decline in coral trout catch in Torres Strait reef-line sector from 2015 to 2016 seasons. The RAG noted that this was likely due to change in operators with one access package not being fished for most of season. It was noted that due to the small number of fishers in the sector, changes from only one or two fishers would really impact the entire sectors performance i.e. one or two inexperienced operators entering for one season could decrease the raw catch per unit effort data of the whole fleet.

Agenda Item 3 – Data needs and research priorities

3.1 Short to medium-term data improvements

The RAG noted that the Torres Strait Finfish Fishery Harvest Strategy will provide a management framework and will guide and prioritise research and data needs in future. To support the development of the strategy it was noted that improved data such as catch rate information will likely be required from both sunset and traditional inhabitant boat sectors, as factors such as whether catch rates are being maintained would likely be an indicator which tracks the performance of the fishery over time.

RAG provided advice on a range of data issues and data needs identified by researchers and management as areas for improvement (**Table 2**) while the strategy was in development.

The RAG agreed for the table of data issues to be maintained as a live document over future RAG meetings to support these issues being actioned and was to be circulated out of session for input from members and observers.

Table 2. Short to medium-term Torres Strait Finfish Fishery data issues identified for improvement in previous research reports and meetings (current as of December 2017)

SM: Spanish mackerel, CT: coral trout.

Previous issues/ data needs identified	Action to address / comment
Reporting and data issues	
Catch and effort data needs to improve utility for assessments (SM and CT).	Review TSF01 daily fishing logbook to make sure it is best capturing data for assessment and management. Carry out industry workshop to review logbook/ discuss filling out logbook and raise awareness with fishers about the need for accurate CPUE data and accurate spatial data – including the importance of recording zero-catches. Verify catch disposal record data against logbooks to understand variance between fishers. Consider how VMS data might be analysed for stock assessment purposes.
Need to capture important data of zero-catches	
Spatial data issues with sunset logbooks – limited utility in past Spanish mackerel assessments.	
Need to capture TIB sector effort data – CDRs capture catch data but limited effort data.	Raise awareness among TIB finfish fishers about the need for accurate fishery data.
Need to reliably capture island freezer data	Ensure operational island freezers are filling out CDRs and awareness raising on value of accurate data for assessments and Harvest Strategy development.
Need monitoring for take from non-commercial sectors	Subsistence take project in progress. RAG advice is that recreational and charter catches are likely to be minimal.
Biological data issues	
Need to improve biological data inputs to stock assessment models due to age of most recent samples. Need to validate assumptions such as: age at maturity, age at length, length frequency.	Develop design of a sampling program alongside the Harvest Strategy project. Once designed evaluate how it might be delivered; e.g. through industry based sample collection, or an at-sea program funded through research channels. Investigate collection of samples to validate assumptions in the short term.
Stock structure	
Need to understand the relatedness within the Torres Strait SM and CT stocks to test the single-stock theory. Also important to understand connectedness to other adjacent stocks.	Previous acoustic monitoring carried out to examine SM exchange with Bramble Cay with limited findings. Genetic sampling could be carried out though this would likely be an involved project which would need to attract appropriate funding.
Assessment issues (SM)	
Need to understand how the SM assessment deals with most of the data coming from the Bramble Cay breeding aggregation of fish.	Next assessment update is to investigate.
Need to investigate the sudden peak of catches in the mid 2000's prior to the buyout and whether any of these catch data were 'paper' fish and the reported harvest level accurate.	Industry workshop and work on characterising the data, examining which boats entered the fishery and assess the accuracy of the available catch data from this time.
Ensure TIB sector changes such as experienced fishers leaving the fishery, freezers closing down, have been reflected in the assessment -	Data characterisation and industry workshop.
Ensure the impacts and benefits of the 2008 implementation of the 10 nm closures are understood and captured in the model (SM)	Next SM assessment update is to investigate. Industry workshop can record the impacts of the closures on reef-line sector marks (initial feedback is that this mainly impacted the SM sector)
Fish vulnerability (mainly SM issue)	
Improve understanding of fisher behaviour and how this varies across the fleet – including	Industry workshop to help stock assessment scientists and management characterise fishing practices.

variation in gear setup, targeting practices, daily fishing effort.	
Investigate SM 'domed' vulnerability where large fish are assumed to be less available to capture.	Next SM assessment update is to investigate.

The following additional points were discussed on data issues from the compiled table:

Catch and effort data issues

- More accurate fishing effort data is required to improve the assessment from the mackerel sector, particularly accurate effort (hours fished per day) per tender. A need exists for an understanding of how many hours are fished per tender and variability between operations.
- A measure of effort is required for the TIB sector. At present only total catch data (tonnage) is reported.
- Investigation is required on how changes in the TIB sector were accounted for in the data-set and model given when some long-term fishers left the fishery and when some island freezers ceased trading.
- There is a need for awareness raising with all finfish fishers on the importance of data to support fisheries management and stock assessments. It is important to talk about why data and CPUE time series matter for management and assessment purposes.
- There is a need to characterise the differences in targeting practices among fishers.
- There is strong support from industry for a staggered approach to engaging the TIB sector in data collection noting that if too much data is sought in a short period of time the overall quality of reporting might decrease. The following stages were suggested:
 - Stage 1 (now): Initial focus on the fish receiver system (filling out catch disposal records at point of landing) to understand total catches
 - Stage 2: Determine the best way to acquire effort data; then
 - Stage 3: Determine the best way to acquire biological data.

Biological data issues

- RAG noted that in future biological data needs for assessment purposes would be informed from the harvest strategy project team.
- RAG noted the age of available biological data for the Spanish mackerel stock assessment which was last collected in the early to mid-2000's (Table 1.3, pp 11 of Begg *et al.* 2006 below).
- A need was identified to validate the biological parameters of the Spanish mackerel age-structured population model, ideally at agreed intervals to ensure the assumptions are correct over time.
- There is a need for monitoring to understand the age structure of the stocks as this factor is linked to vulnerability which is one of the key assumptions of the model.
- Consideration was given to using fish frames retained by industry for biological sampling. It was noted that ageing data from otoliths collected from fish frames were very powerful data but would require an appropriate program with the right structure and stratification (e.g. random sampling from catch, whole-of-fishery representation, different size classes of fish, males and females etc.).

Table 1.3. Number of Spanish mackerel aged and measured in the DPI&F LTMP (2000-2002) and AFMA voluntary fisher logbooks (2004).

Year	Number aged			Number measured		
	Oct	Nov	Total	Sep	Oct	Nov
2000	795	97	892		802	98
2001	874		874		909	
2002	602		602		612	
2004				721	662	406
2005 ¹	710		710		719	
Total	2981	97	3078	721	3704	504

¹Data collected in 2005 as part of the CRC Torres Strait project were not included in the assessment.

Coral trout catch and effort data

- In running a coral trout assessment, it will be important to understand the percentage splits of catches between the four Torres Strait coral trout species given that they have different distributions across the fishery:
 1. Common (*Plectropomus leopardus*),
 2. Islander (*P. maculatus*) also called bar-cheeked trout,
 3. Leopard (*P. areolatus*) also called passionfruit trout,
 4. Bluespot (*P. laevis*);
- Daily Fishing Logbooks (TSF01) record total kilograms of coral trout and fishers are required to supply an estimated percentage breakdown of the four species in the logbook at the supplied prompts (as per the list point above).
- Buyers had a higher demand for trout species (or phenotypes) with red colouration for the whole-fish market and that species with darker colouration, such as passionfruit trout (also reported as 'leopard trout' - *P. areolatus*) were more frequently filleted rather than sold whole.
- It was noted that the current logbook does not have the capacity to record catch and effort per tender for the reef-line sector (mackerel sector is able to report per tender) and instead lumped all the catch per day under the primary vessel. This misses recording valuable effort data which may vary per dory.
- It was also noted that the logbook had no capacity to record where each tender was fishing, noting that they may travel some distance from the primary vessel.

Catch verification

- Following the implementation of catch disposal records (CDRs, to be implemented 1 December 2017) verification of catches can be carried out in 2018 to compare the accuracy of logbooks to CDR catch data.

Spatial representativeness of data

- Consideration was given to the completeness of available spatial data, noting that it had not been fully utilised in past Spanish mackerel assessments for a number of reasons.
- The RAG requested some analysis on how well spatial and other catch and effort data are being filled out by fishers noting that it is important for managers to understand the completeness of records.
- RAG also stressed the need for fishers to fill out and understand the value of zero catches - which are equally as important as catch data for assessment purposes.
- It will be important to conduct research in future to examine where the 'sources' and 'sinks' for the Torres Strait stocks are, noting spatial analyses done on Queensland east coast Spanish mackerel stocks had identified two distinct sources for the mackerel stock offshore from Cairns.

Domed vulnerability

- The domed-shaped selectivity issue identified during the Spanish mackerel assessment will be tested under the harvest strategy.

3.2 Research priorities

Finfish RAG noted that available research funding was almost fully allocated for the next two financial years. It was noted that the current investment for Torres Strait finfish research was supporting the Harvest Strategy.

The RAG noted suggested research priorities identified by Finfish Working Group and the Scientific Technical Working Group (as per the agenda paper).

The Finfish RAG identified that the **key research priority in the short term was acquiring ageing data to support the assessments for Spanish mackerel and coral trout**. This research would involve taking frames, extraction of otoliths, sending the otoliths to ageing services, having ageing performed and those data being provided to assessment scientists for input into the analyses. It was noted that consideration would need to be given to the stratification and number of samples to be collected and that this could be discussed out of session with RAG technical members.

Points discussed:

- AFMA member advised the RAG of the current proposal to use a small amount of expected underspend money to update the existing estimates of mortality and provide advice on future improvements (note this was discussed further by the RAG at Agenda Item 5.2 and was not supported by the RAG).
- RAG noted that Management Strategy Evaluation (MSE) would be required before a harvest strategy could be implemented. It was noted that the MSE testing was outside the funded scope of the present Harvest Strategy Project. RAG requested the harvest strategy project team to provide advice to the RAG on work that would be required to support MSE testing to support the work-plan.

Finfish RAG 1, Action 2, Agenda item 3.2: Harvest strategy project team to provide a short paper advising the RAG on work that would be required to support Management Strategy Evaluation following the Harvest Strategy development.

- An industry member suggested that any underspend of research funds would be best used to address some of the identified data issues (Agenda Item 3.1). It was noted that some of the data issues would be progressed through the harvest strategy project.
- Broad support was given for the need to understand stock structure in the Torres Strait and consideration was given to how this would be addressed through the Harvest Strategy. The RAG considered that while genetic analyses would be an appropriate method to address this, it would likely be an expensive exercise. It was noted that increasing our understanding of relatedness to adjacent stocks e.g. north Queensland stocks may shift the assessment boundaries and the associated TAC setting areas e.g. if Queensland fish were part of the Torres Strait stock or vice versa.

Agenda Item 4 – Research project updates

4.1 Traditional take project update

RAG noted the prepared update on the project aiming to improve estimates of finfish catches taken for subsistence purposes. The RAG noted that the project team had progressed the work as far as possible to date, noting that consideration has been given to several options for additional resources from TSRA that might have been made available to support the project.

The RAG agreed to support the continuation of the project with the revised scope. To support the continuation and delivery of the project the RAG supplied the following advice:

- Progressing the project needs community leaders to identify bodies/people that are willing to take responsibility for data collection and be a 'champion' for the issue.
- Ideally these 'champions' and community monitors should be identified before the project continues to help drive the issue.
- The project has value in advising future programs and raising awareness particularly given future expansion in the TIB sector, noting a proportion of commercial catch is retained for subsistence purposes.

The RAG provided the following advice to support the projects course of action over next few months:

- TSRA to confirm what additional resources might be available to support the project. To provide support, TSRA will require a statement of work from the project team which would be required for consideration.
- TSRA to write to industry associations to advise that the monitoring work could fall within the administrative funding grants.
- TSRA to assess if rangers could be utilised.

The RAG discussed the following points:

- It was noted that the planned outcome of the project was to provide a cost effective method to provide ongoing data on traditional take.
- AFMA advised that management requires periodic validation of the available estimates; understanding whether they are still valid or if they have changed to support evidence based decision making.
- TSRA advised that it is important to consider the costs and benefits; noting costs, time effort involved in improving the estimate which represents a small proportion of commercial catches.
- Industry members suggested that following future development, communities could take ownership of a subsistence take monitoring plan as per turtle and dugong management plans. Communities are apparently interested in sustainability and data collection including the use of daily fishing logbooks.
- Noting their role in the successful community uptake of the turtle and dugong management plans, some consideration and support was given to the capacity of the ranger program being tasked with this responsibility.
- It was noted that Mypathways can only be engaged in such a program if they are the host employer with CSIRO as principle investigator directing operations in this case. A different organisation such as Erub Fisheries Management Association or Kos and Abob Fisheries could be able to do so as a supervisor.
- Some islands have active fishing industry associations – these could feasibly be provided with financial administrative support to help drive subsistence monitoring. It was noted that TSRA offer grant funding to cover up to 20 hours per week in a community administrative officer role. The RAG noted that this could be an avenue to assist.

4.2 Scoping study for barramundi, black jewfish and crab in top-western Torres Strait communities

RAG observer Dr Andrew Tobin advised the RAG of the background of the project as per the agenda paper. The RAG were asked to provide initial advice on the project methodology and the likely outcomes of the project.

TSRA advised that the project ~~has a focus on scoping the economic~~ is a feasibility study at this early stage and one of the drivers for this project was community interest in re-developing their fisheries

~~that gillnets were considered by industry to be a cheap and powerful fishing method~~ which could potentially boost employment ~~in the cluster~~. It was ~~advised by Mr Tobin considered~~ that unlike jewfish, barramundi could not feasibly be fished commercially fished using line fishing methods. ~~TSRA and FRDC are funding the feasibility study. TSRA requested that the research be carried out and the RAG could then consider the outcomes.~~

Points discussed:

- It was noted that the ~~research feasibility study~~ is proposing to use ~~currentl~~~~y~~ a prohibited fishing method – mesh gillnets. Gillnetting was banned by the PZJA in 2005 over concerns over bycatch including dugongs ~~although the PZJA noted at the time that the ban was not intended to prohibit industry development in the Top Westerns should communities wish to do so~~. It was suggested that this could potentially be addressed through regulating fisher behaviour such as enforcing net attendance rules. It was noted that the trial fishing would collect data on all impacts, including any protected species capture.
- Barramundi is likely a shared stock with PNG. The PNG-NFA invited participant advised that PNG-NFA can provide catch data from western province factories buying barramundi flesh and swim bladders.
- RAG provided support for a strong data collection program alongside any developing fishery.
- RAG advised that if this research goes ahead, strong communication and consultation relating to bycatch will be required.

Agenda Item 5 – Advice for management

5.1 Recommended biological catches for upcoming seasons

The Finfish RAG recommended:

- A 125 t RBC for Spanish mackerel for the 2018/19 season, recognising:
 - the most recent 2016 assessment update provided an RBC for Spanish mackerel of 125 t with a B60 target reference point;
 - no new evidence existed to warrant a different approach; and
 - that a further update would be performed on this assessment in 2018 as part of the harvest strategy development.
- That the coral trout nominal TAC of 134.9 t remain unchanged for the 2018/19 season, recognising:
 - the age of available data;
 - a stock assessment will likely be performed for the Torres Strait stock in 2018; and
 - the need to look at historical catch data (1980's) where there was an apparent significant decline in catches.

AFMA advised that original intention of the agenda item was to get RAG advice on Recommended Biological Catches (RBCs) for the next three upcoming seasons. Following discussion with the harvest strategy project team, and new information provided, it was advised that management was only seeking advice from the RAG on the upcoming season given the likelihood that Spanish mackerel and coral trout stock assessments would be updated/performed as part of the harvest strategy project in 2018.

The AFMA member clarified for members that a Recommended Biological Catch is also known as total kill or maximum harvest. This RBC is to cover take from the ~~two commercial sectors (sunset and TIB sector)~~ and also other sources of mortality outside of the fishery such as subsistence take. It was advised that a B60 target reference point (above the Biomass of Maximum Sustainable Yield) was being used as an interim target to ensure healthy population biomass and catch rates in order to achieve and balance sustainability, economic, social and cultural objectives.

It was noted that the focus of the RAG was on the science to support RBCs. An RBC sets a total harvest (or total kill) for the stock and is used in setting a Total Allowable Catch (TAC) which covers catches from the commercial sectors. In setting a TAC, other known sources of mortality, such as recreational or subsistence take are deducted from the RBC. It was noted that working groups were tasked with providing advice on TACs.

Spanish mackerel RBC for the 2018/19 season

The RAG recommended a 125 t RBC for the 2018/19 season noting the following points:

- the most recent 2016 assessment update provided an RBC for Spanish mackerel of 125 t with a B60 target reference point;
- no new evidence existed to warrant a different approach; and
- that a further update would be performed on this assessment in 2018 as part of the harvest strategy development.

Work-plan for 2018 to support assessments

In updating the Spanish mackerel stock assessment and performing an initial coral trout stock assessment the following work will be carried out during 2018:

- Three additional Spanish mackerel stock assessment runs will be carried out together with the 2016 assessment runs, noting that analysis 4 which was deliberately inflated for contrast may be dropped. Revisiting the model with additional runs will attempt to address issues identified such as:
 - sensitivity analyses to examine how the model might perform with domed vulnerability;
 - hyperstability issue; and,
 - examination of CPUE data using indicator vessels.
- These additional Spanish mackerel model runs will feed into the design and testing of harvest strategy frameworks to understand how they will operate. RAG advice will be sought on performance metrics such as targets, limits and operational objectives which will be presented for discussion and feedback.
- Sunset boats which have frequent catch records throughout the available time series are to be investigated as potential indicator vessels and compared to the whole data set.

Subsistence take in the Spanish mackerel model

The RAG noted that for Spanish mackerel the last assessment yielded an RBC of 125 t. It was queried how subsistence catches were accounted for in the model and the B60 target reference point – whether it was methodologically correct to remove the subsistence catch amount if it was accounted for in the B60 target. Science members advised the RAG of how subsistence catches were dealt with in the assessment, RBC and TAC:

- A target level for the stock is set e.g. the B60 target reference point which provides for the stock to be maintained at a level that can sustainably support both commercial and traditional fishing.
- Setting the target at B60 doesn't account for the actual harvest, instead it is the target level that can support that harvest.
- After the objectives are set for the model it is run which outputs an RBC which yields a long term equilibrium harvest (called an 'optimisation') which is a calculation of the long term average catch which will maintain or move the stock towards the target.
- To keep the catches at the target level of harvest a TAC is set for the commercial sectors after the harvest from other sources, such as subsistence catches, are deducted from the RBC.

Future expansion of TIB sector catches

- Industry members advised that should the TIB sector expand its effort and catches in future with the rollout of the TSRA infrastructure funding and business plans, it was important to ensure that an appropriate allocation of the TAC is available to cover the catches and aspirations of this sector.
- Stronger data will be available in 2018 season from the implementation of mandatory catch disposal records which will aid mid-season understanding of TIB sector catches.

Split TAC for Bramble Cay

Consideration was given to whether Bramble Cay – the site of a breeding aggregation – which accounted for the majority of Spanish mackerel catch and effort per season ~~on the breeding aggregation targeted there~~, warranted management as a separate unit with a split TAC for this area of waters.

RAG noted it is important management issue and provided the following advice:

- It is important for management to understand and research stock structure noting that the mackerel are likely have a continuous distribution across the Torres Strait and is likely to have a fluid stock structure.
- It is important to analyse the fishing effort on Bramble Cay since the buyout and the implementation of the 10 nm closures noting that the fishery has likely changed.
- It was considered that the driver for capping catches at Bramble Cay was more likely an issue of economics ~~issue~~ for the ~~fishery~~ fishers accessing catch there, rather than a sustainability ~~issue~~ i.e. targeting fish at this location would likely become unprofitable before damage to the stock occurred. ~~ue~~
- Noting that an industry meeting is planned ~~for 2018~~ the RAG suggests that further discussion occurs with sunset licence holders to provide background information to support consideration of the issue.

Coral trout RBC for 2018/19 season

- The RAG noted that, unlike Spanish mackerel, the nominal coral trout TAC of 134.9t has been under caught in recent seasons which provides a buffer while the harvest strategy and assessment are under development.
- AFMA advised on the outcomes of the last Management Strategy Evaluation (MSE) work (*Evaluation of the eastern Torres Strait reef-line fishery*, Williams et. al 2007) noting the outcomes of which were still the main evidence used for decision making. The RAG noted that given the age of the MSE work the utility of the outcomes was beginning to decrease.
- Catch projections from MSE were based on effort data which was converted into catch meaning that the model only tracked effort NOT catch.
- Investigation is required into the 2001 to 2005 reference period used for setting the coral trout nominal TAC. This period does not appear to be stable in terms of catches plus two investment warnings were issued during this time. It was noted that these data may be housed in QDAF logbooks and the harvest strategy project team could submit a QDAF data request to query these data.
- RAG and harvest strategy project team need to see what the catch time series was during the apparent decline in predicted relative biomass from years 1980 to around 2003 (figure 6.38, pp. 103 from MSE work).
- Further understanding was required on the differences between the apparent CPUE and the stock abundance noting that trout could reportedly be abundant in an area with poor catch rates. The RAG flagged that there were likely issues with availability of trout to fishing gear and that other factors such as cyclones had been suggested on the east coast.
- The RAG recommended that the status quo for coral trout be maintained for the upcoming season noting:
 - the age of available data;
 - a stock assessment will likely be performed for the Torres Strait stock in 2018; and
 - the need to look at historical catch data (1980's) where there was an apparent significant decline in biomass.

Finfish RAG 1, Action 3, Agenda item 5.1: AFMA to liaise with the harvest strategy project team to investigate the coral trout catch series data that underlies a) the apparent decline in catches from 1980 to 2003 and b) the catch series that underlies the nominal TAC reference period 2001-2005, noting some of these data may be housed by QDAF.

Other points discussed:

- A previous James Cook University project had successfully boosted our understanding of TIB sector freezer data by visiting them and taking 1000s of photos of the available catch data pages from freezer ledgers. It was advised that this was a cost effective option.
- Noted that this TAC is not based on concerns over the biomass of the stock - last estimate of biomass puts the stock around 40 per cent of virgin biomass which is considered healthy. B40 which is healthy - instead the TAC will maintain good catch rates.
- Noted that clear communication needs to be made on process of RBC to TAC and to be clear about the target level.

5.2 Estimating catches taken outside of the commercial fishery

The Finfish RAG provided the following advice on catches taken outside of the commercial fishery:

- Recreational sector catches are likely to be minimal based on available evidence from the QDAF surveys.
- Charter sector catches are likely to be minimal based on available evidence provided from QDAF catch data. The RAG noted that there is no evidence to suggest the number of charter boat operations/licences is increasing.
- RAG recommended the estimate of subsistence take of Spanish mackerel used for TAC setting be increased from 5.155 tonnes to 10 tonnes.

- RAG considered that there was no requirement to provide a recommended subsistence take deduction from the coral trout TAC given the amount of available information and that an assessment would likely be conducted on the species in 2018.
- RAG did not recommend any work on improving the estimates of mortality at this time though some options were considered.

Points discussed on recreation and charter estimates:

The QDAF member reiterated previous advice provided to the Finfish Working Group (as per the tabled paper):

- Based on available QDAF catch data, Torres Strait charter sector catches appear to average at around one tonne per year for all species combined.
- Recreational survey –only two households were surveyed during the last phone survey. These data were unusable due to the small sample size and the large associated error.

The RAG noted that there is no evidence to suggest emerging trends from the status quo such as an increasing number of charter boat operations or licences.

The QDAF member advised that while QDAF was responsible for managing recreational fishing in the Torres Strait it was not considered a priority issue from a management perspective given the low population and the low number of recreational fishers in the Torres Strait.

The TSRA member advised that a new cadet position at TSRA could investigate the feasibility of a boat-ramp survey option for Torres Strait. The RAG noted that such a study could form the basis of a small academic project such as an honours project.

Points discussed on subsistence estimates:

RAG recommended the estimate of subsistence take of Spanish mackerel used for TAC setting be increased from 5.155 tonnes to 10 tonnes based on the following points:

- Data underlying the estimate was ageing and was available from only three islands
- The number of TIB [\(commercial\)](#) sector fishing endorsements has increased since the Busilacchi study.
- ~~• [Torres Strait population has decreased since the Busilacchi study.](#)~~
- Effort creep may have been occurring from the 1990s CSIRO studies to the Busilacchi study and may still be occurring.
- ~~• [Torres Strait population has likely decreased since the Busilacchi study.](#)~~
- ~~• [_____](#)~~

Points discussed:

- The RAG noted the age of the available estimate of subsistence from the 2008 Busilacchi study (*The subsistence coral reef fishery in the Torres Strait: monitoring protocols and assessment*)¹ with data available from the mid 2000's.
- Other research studies had generally determined an increase of ~3 per cent per year to account for effort creep (i.e. increased fishing power associated with advances in fishing gear - sounders, motors, GPS).
- RAG considered that getting the estimate of subsistence take wrong could potentially lead to overshooting the RBC. It was identified that this was a risk for Spanish mackerel where the catches were close to the RBC.
- It was suggested that a ~~surprisingly~~ large amount of Spanish mackerel from the central islands may be being retained for subsistence as there is no commercial market for it on those islands at present. Industry members advised that enough catch needs to be available to support growth in the TIB sector in the central islands should a market develop there in future.
- It was volunteered that less than 1 tonne (around 500kg) of mackerel might be taken per year as an estimate by the Ugar community for subsistence purposes.
- Census data indicates the population of the outer islands may have decreased over recent years meaning that the subsistence take could be decreasing over time.

5.3 Estimating Traditional Inhabitant Boat sector catches

The TSRA member and observers advised that the TSRA were of the view that the TSRA Finfish Quota Management Committee should be deciding the estimate of TIB sector catches and they were not comfortable with the PZJA RAG providing advice on this issue but rather that discussions in this forum should be around the total commercial take.-

AFMA advised that the RAG was tasked with determining the best estimates possible for PZJA decision making and TAC setting as per other fisheries.

Finfish RAG noted the implementation of the Fish Receiver System (mandatory catch disposal records from 1 December 2017) would assist in improving the understanding of catches from this the commercial sector.

5.4 Update on work supporting expansion of take of other reef-line species

The RAG noted the prepared update and that RAG advice would be sought on this issue in future meetings.

The TSRA member advised that there was no interest among lease holders this season to target other reef-line species. In response to a RAG member query, TSRA advised that fishers applying for coral trout catch entitlements also had to apply for a 10 per cent percentage by-product catch of other species i.e. one tonne of other species for every 10 t of coral trout.

Agenda Item 6 – Finfish Harvest Strategy Project

The RAG noted three presentations from the finfish harvest strategy project team:

The RAG was joined at this agenda item by project team members George Leigh and Matthew Holden who were developing the coral trout stock assessment.

Harvest Strategy Presentation, Part 1, Trevor Hutton CSIRO, project overview

¹ https://researchonline.jcu.edu.au/11041/2/02Thesis_whole.pdf

Trevor Hutton, CSIRO, project lead presented an overview of the harvest strategy project:

- Objectives of harvest strategy development
- Harvest strategy components – parts of the framework
- Indicative work plan ahead of the project team and RAG.
- Data collation achieved to date on Spanish mackerel.

The RAG noted the following points:

- The RAG and the harvest strategy project team will need to work together on understanding sectoral catches (e.g. subsistence harvest estimates).
- Distinction must be made between stock indicators compared to testing against performance indicators (generally referred to as performance statistics or metrics).
- CSIRO has provided some research on what indicators can be used to gauge fishery activity when the fishery is performing well.
- RAG input will be required into providing feedback on the performance metrics of the strategy.
- Origins of target and limit reference points are from the Commonwealth Harvest Strategy Policy. It was noted that these points align with international fisheries best management practices.
- Consideration was given to how interim harvest control rules might work - whether limit reference points are required and whether harvest control rules that allow lower exploitation rates are appropriate (limit reference point isn't necessarily set at the point at which fishing ceases) noting that ideally a stock would not approach the limit reference points.
- Consideration will need to be given to how harvest control rules will function and what advice will be required from the RAG to support their development.
- Consideration will need to be given to the performance metrics e.g. defining what good and poor catch rates per boat might look like for Spanish mackerel or coral trout.
- The RAG noted the 2015 work conducted by Natalie Dowling on Guidelines for developing formal harvest strategies for data-poor species and fisheries. It was suggested that this research could be summarised and presented at the next meeting.
- A glossary will be developed to help clarify terms and improve RAG member understanding e.g. B_0 should be called K (carrying capacity) or B_{100} (year zero).

Harvest Strategy Presentation, Part 2, George Leigh UQ CARMS, Coral trout east coast assessment

George Leigh provided the RAG with an overview of the Queensland Great Barrier Reef coral trout stock assessment from 2014, with a focus on the lessons learned to date.

RAG noted the following points on the Queensland east coast coral trout assessment:

- East coast coral trout model is regionally split
- Catch rates are loosely correlated to abundance.
- Underwater visual surveys and habitat mapping were indispensable to the Queensland stock assessment
- Age and length data are very powerful data but still very expensive to collect.
- Torres Strait coral trout assessment may need some transfer of information from the Great Barrier Reef which has a wealth of data which may be useful for the Torres Strait.
- Reef bioregions including reef morphology have been mapped for the Great Barrier Reef but not for Torres Strait. Some information transfer on reef morphology and information (e.g. abundance such as number of fish per hectare per habitat types such as front reef slope, submerged reef, back reef slope) from far north GBR could be similar to the Torres Strait.
- GBRMPA GIS data may aid in inferring reef morphology in the Torres Strait model.
- A harvest strategy for coral trout is still being developed in Queensland with harvest control rules currently in place which rely on logbook catch rates. There is still a need to implement monitoring (last data 2009) with a project currently in progress to develop monitoring. Noted that monitoring is very expensive.

- Different species were separated out in the east coast assessment – focus on common coral trout (*P. leopardus*). Consideration must be given to the four different species found in the Torres Strait given that they are likely to have different distributions and potentially different population biology.
- It was noted that if coral trout were theoretically fished down in an area their recovery time would be dependent on recruitment which can be variable. Low remaining numbers in an area would have the capacity to replenish a local area with strong recruitment and the correct environmental conditions.
- Catch rates can vary widely across an area noting industry reports that:
 - Coral trout may have the capacity for a sort of learned behaviour whereby fish become 'hook-shy' after a time and will not take baits.
 - dropping a fish on the retrieve can lead to a temporary drop in catch rates at that location - this report is also supported by studies where fishers re-entered closed reefs with good catch rates which was attributed to the 'naivety' factor where fish had not become hook-shy.
- It was noted that it may generally be harder to overfish coral trout compared to other species as economic factors – driven by catch rates - would likely come into play before ecological factors such as depleted biomass.

A coral trout CPUE time series can be confounded by the stocks distribution changing in association with complex ecology and environmental factors such as cyclones:

- Wave action and broken coral associated with cyclones are theorised to disturb baitfish which coral trout feed on.
- An associated drop in water temperature could be impacting trout metabolic rates – e.g. Cyclone Justin had a lot of associated upwelling of cooling water on the shallow reefs with an associated drop in catch rates. View bucketing showed fish were present but were not taking baits.
- An alternative theory is that trout fishers can generally only target down to 20m water depth as barotrauma occurs to trout fished from depths deeper than this. Trout reportedly may head to deeper water after cyclones as evidenced by more green coloured coral trout, normally found in shallower water, being captured in deeper water.

Finfish RAG, Action 4, Agenda item 6: Harvest Strategy project team to contact Roland Pitcher to enquire as to what Torres Strait habitat mapping data is available.

Finfish RAG, Action 5, Agenda item 6: AFMA to liaise with the 2007 Coral Trout MSE project team to determine what coral trout catch data were used in the MSE (Pre-2003 Torres Strait fishers were filling out east coast logbooks).

Finfish RAG, Action 6, Agenda item 6: Harvest Strategy project team to advise the RAG and Finfish WG on the outcomes of the east coast coral trout assessment in 2018.

Harvest Strategy Presentation Part 3, Michael O'Neill, QDAF, Presentation on Spanish mackerel assessment

The RAG noted an overview of the current Spanish mackerel stock assessment and an update on some of the recent data (post-2014). The RAG provided the following advice on the initial phase of the Spanish mackerel harvest strategy development and 2018 assessment update:

1. Initial focus should be on improving effort data – a strong CPUE time series is required and collecting representative effort data was considered to be the highest priority. Management were encouraged to raise awareness among fishers about the need for accurate and complete catch and effort data.
2. Project team is to examine how renewed collection of age-data could benefit the assessment and harvest strategy. It was noted that it could take some time to acquire these data as it was slower to collect and age. A pilot study (one or two weeks work) could

feasibly address what benefits do these data have for Torres Strait management and how these data may affect the assessment.

Noting that the assessment relied heavily on CPUE data (with some older 2002 biological data), ideally the Torres Strait Finfish Fishery would aim to have at least one year of reliable monitoring data as a snapshot followed by a structured program at scheduled intervals. Consideration could be given to the development of such a program and it could likely be developed to be cost-effective and powerful. Work will need to be done on sample sizes required to ensure that samples were representative of the catches across the fishery.

The RAG recommended examination of the following aspects:

- Effect of vessel freezer/hold capacity on catch rate data. The assessment could potentially be reporting higher catch rates per day but the onboard freezer capacity stops fisherman earlier that day and operation days are lost waiting to unload catch to the barge at Yorke Island. The peak catch rates that are possible may not be reflected. Analysis is required on the scale of catch reporting by hour and ground truthing with fishers is required alongside the scheduled logbook review process.
- Examination of a sub-set of CPUE data from the fishing targeting the Bramble Cay breeding aggregation from August to December.
- Uniformity of reporting across the fleet, whether logbook data was being provided as 'standard entries' with the same effort data every day.
- How Torres Strait Vessel Monitoring System data could benefit the assessment by being made available to scientists; noting that an algorithm would need to be developed to convert Torres Strait VMS data to infer fishing effort. It was recommended that the RAG examines the outputs of the Queensland VMS dory trial and then consider the value of VMS for sunset sector dories in the Torres Strait in future.
- Check that fisher's gear setups have not changed over time to understand if gear selectivity is changing.

Additionally, an industry member advised that while primary vessels have VMS fitted there are concerns that the tenders may range more widely and may be entering the 10 nm closures which cannot be monitored. This was noted as a compliance issue that was to be addressed separately to the stock assessment advice.

The RAG noted that a comparison of the catch rates from the model, comparing BMSY to B60 target reference points (page 39 of the assessment, figure 20) was a clear example of how higher catch rates could be maintained with an appropriate target.

Finfish RAG, Action 7, Agenda item 6: Michael O'Neill to provide the Finfish RAG with revised figures e) and f) from Figure 20 of the stock assessment report with the same scale to illustrate how a B60 long term average equilibrium points provides greater catch rates.

RAG noted the need for management to balance the short term revenue from leasing the resource compared to the long term goals for the fishery and how this is incorporated into the harvest strategy e.g. when the TIB sector expands in future what catch rates will be available.

Agenda Item 7 – Other business

Western line closure

Given the limited amount of time available to consider this agenda item, the RAG noted the prepared information at agenda item 2.2. It was noted that the Finfish Working Group had previously provided advice in supporting the removal of the closure.

Preliminary consideration from the RAG was as follows:

- Management is not proposing to increase the TACs for coral trout. In line with this it was suggested that removing the closure might spread the current commercial fishing effort to a broader area.
- RAG noted previous considerations about coral trout catch rates and considered that economic impacts would likely come into effect (hook-shy fish leading to a drop in local catch rates) before ecological impacts might occur.
- Some consideration was given to how the western habitats may be shallower than eastern habitats but data would be required to assess this.
- More fishing operations and freezers may open in the western Torres Strait in line with the outcomes of the current [TSRA](#) infrastructure project meaning there may be a total increase in fishing effort with more fishers entering the sector.

RAG requested an opportunity to provide more consideration on this item at a future meeting.

Acoustic monitoring

The RAG noted a presentation at agenda item 4.2 from Andrew Tobin on the outcomes of recent research on acoustic monitoring for Spanish mackerel.

Industry member flagged that communities must be consulted about research projects that happen in waters surrounding their communities. A strong process for consultation needs to be agreed and followed. It was advised that the Ugar community has a strong verbal history about catches taken from their waters and concerns have been raised about how the catch data from research might be published. The Kos and Abob association has a standing offer to discuss their communities' needs with researchers.

Barramundi-cod management objectives

At agenda item 3.1 the Malu Lamar representative advised that barramundi-cod could provide value to the Torres Strait in future as part of expansion in the area of ecotourism with the providing aesthetic value for divers. Malu Lamar queried what RAG members knew about the status of barramundi-cod in the Torres Strait and whether the species might become less abundant in the Torres Strait over time.

The RAG noted:

- Barramundi-cod were a protected species in Queensland east coast fisheries and were not protected in the Torres Strait.
- AFMA advised that there is a process to nominate a species to become listed as a protected species through the Department of Environment.
- Barramundi-cod were listed as a protected species in Queensland due to their iconic nature, not due to concerns over stock status or sustainability.
- Torres Strait fishers could maintain this species as a premium product given it cannot be marketed from elsewhere.
- No assessment has been done on Torres Strait stocks.
- Logbook catch data from sunset fishers suggests that low numbers are captured by the reef-line sector.
- The RAG advised that a scoping exercise or a student-project could be performed to examine available data and report on basic figures such as length, weight over time,

proportion of catches of mature versus immature fish which may help management develop some basic indicators.

- Consideration would need to be given to the management objectives for this species given the trade-offs between ecotourism values compared to the value from commercial catches.

Agenda Item 8 – Work plan, date and venue for next meeting

The RAG noted that the next meeting was proposed to be held in March 2018, potentially on Thursday Island. It was also noted that the meeting would have a focus on the next milestone of the harvest strategy project and might be a joint RAG and Working Group meeting.

TSRA advised once again that the timeframe being proposed would not suit as they wished to consult with AFMA out of session about the timing of any advice to support the Finfish Quota Management Committee needs to be in place by January.

The RAG chair thanked participants for a very productive first meeting. The meeting was closed at 3:45 PM, Friday 10th November 2017.

Torres Strait Finfish Resource Assessment Group

Meeting Number 1

Final Meeting Record

9-10 November 2017 – Brisbane

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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Meeting Participants

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

Name	Organisation	Declaration of interest
David Brewer – RAG Chairperson	Independent chair	Runs a fisheries consultancy which has no Torres Strait interests.
Selina Stoute – AFMA member	AFMA	Nil.
Tom Roberts – QDAF member	QDAF	Nil.
John Ramsay – TSRA member	TSRA	No pecuniary interests. TSRA manages sunset leasing and holds fishery access rights in trust.
Rocky Stephen – industry member	Kos and Abob Fisheries, Ugar	Councillor on Ugar, President of Kos and Abob Fishers Association. Eastern cluster representative on the PZJA Finfish Working Group. Does not hold a TIB licence.
Kenny Bedford – industry member	Erub Fisheries Management Association	TIB licence holder. President - Erub Fisheries Management Association
Tony Vass – industry member		No financial interests in the Torres Strait. Does not own or operate a licence in Torres Strait.
Michael O'Neill – scientific member	QDAF	Principal scientist for TSSAC recommended project to develop a harvest strategy for the Torres Strait Finfish Fishery. Member of PZJA Finfish Working Group.
Ashley Williams – scientific member	ABARES, JCU	Involved in previous TS research, is an author on the ABARES Fishery Status Reports.

Meeting observers and declarations of interests volunteered

Maluwap Nona (Day one only)	Malu Lamar	Chairperson Malu Lamar. TIB licence holder. Currently making investments in mackerel fishing.
Andrew Tobin (Day two only)	JCU	No declaration made.
Ian Liviko	PNG-NFA	No declaration made.

Yen Loban	TSRA	Chairperson of the Finfish Quota Management Committee. TIB licence holder.
Mariana Nahas	TSRA	Nil.
Trevor Hutton	CSIRO	CSIRO receives research funding. Principal investigator for TSSAC recommended project to develop a harvest strategy for the Torres Strait Finfish Fishery.
George Leigh (Day 2 only)	QDAF	No declaration made.
Matthew Holden (Day 2 only)	UQ CARM	No declaration made.

Action items

Number	Action
1.	FRAG 1, Action 1, Agenda item 2.2: Ashley Williams to advise the RAG on how beach price is determined in ABARES Fishery Status Reports. Whether by phone survey direct with Torres Strait buyers or fishers or whether this information is inferred from other sources.
2.	FRAG 1, Action 2, Agenda item 3.2: Harvest strategy project team to provide a short paper advising the RAG on work that would be required to support Management Strategy Evaluation following the Harvest Strategy development.
3.	Finfish RAG 1, Action 3, Agenda item 5.1: AFMA to liaise with the harvest strategy project team to investigate the coral trout catch data that underlies a) the apparent decline in biomass from 1980 to 2003 and b) the catch series that underlies the reference period 2001-2005, noting some of these data may be housed by QDAF.
4.	Finfish RAG, Action 4, Agenda item 6: Harvest Strategy project team to contact Roland Pitcher to enquire as to what Torres Strait habitat mapping data is available.
5.	Finfish RAG, Action 5, Agenda item 6: AFMA to liaise with the 2007 reef-line sector MSE project team to determine what coral trout catch data series were used in the MSE.
6.	Finfish RAG, Action 6, Agenda item 6: Harvest Strategy project team to advise the RAG and Finfish Working Group on the outcomes of the east coast coral trout assessment in 2018.
7.	Finfish RAG, Action 7, Agenda item 6: Michael O'Neill to provide the Finfish RAG with revised figures e) and f) from Figure 20 of the stock assessment report with the same scale to illustrate how a B60 long term average equilibrium point provides greater catch rates.

Agenda Item 1 - Preliminaries

1.1. Welcome and meeting preliminaries

The inaugural meeting of the PZJA Torres Strait Finfish Fishery Resource Assessment Group (FRAG) was opened in prayer by Cr. Rocky Stephen at 8:45 am.

RAG Chairperson, David Brewer, acknowledged the traditional owners of the land on which the meeting was held. Noting that it was the inaugural meeting, the Chairperson provided a presentation on the roles of the RAG, terms of reference and conflicts of interest management

procedures.

The Chairperson advised that the RAG would provide advice on items such as Recommended Biological Catches to the Finfish Working Group and to the PZJA.

The agenda was adopted and it was agreed that advice on the western line closure issue would be added under other business if time permitted.

It was noted that Andrew Tobin would attend day two of the meeting to discuss the barramundi, crab and jewfish scoping study research proposal.

1.2. Declarations of interests

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. In line with the AFMA standard for declaring conflicts of interest in Commonwealth MACs and RAGs to best protect the integrity of advice, members were sequentially asked to leave the room to allow the remaining RAG members to freely comment on their declared interests.

Industry members left the room. The RAG considered their declared interests in the fishery. The RAG noted that while industry members did have interests they had valuable input and their advice was required. The RAG agreed that all industry members could freely provide advice at all agenda items. Industry members re-joined the RAG meeting.

Science members left the room. The RAG considered their declared interests. Noting these interests and the valuable input the members would provide the meeting the RAG agreed that science members could freely provide advice at all agenda items. Science members re-joined the RAG meeting.

Agenda Item 2 – RAG Updates

2.1 Industry member updates

The RAG noted updates provided by members on strategic issues that may be affecting the adjacent Queensland east coast and the Torres Strait finfish stocks.

Queensland east coast finfish strategic issues

Vessel monitoring systems

- It was noted that the Queensland Vessel Monitoring System project was now in a trial stage with units fitted to both primary vessels in a number of fisheries (as per the Torres Strait) but also to dories – unlike in the Torres Strait. QDAF advised that they are waiting for trial data to come in for review in 2018.

East coast coral trout and reef-line species

- It was advised that the east coast coral trout TAC was nearly entirely now caught (96 per cent of 917 t) and that no over-catch was allowed under management regulations.
- 2017 catch rates appear to have been good despite a 2016 cyclone.
- A theory was reported whereby a cyclone may trigger a drop in water temperature which impacts the coral trout metabolic rates which in turn affects their availability as they will not take baits as readily. It was noted that fish are seen to be present after a cyclone but their availability seems to be affected.
- QDAF advised that east coast coral trout assessment is planned to be updated every five years and was due to be updated in 2018 (stock status and reference points are to be examined).
- It was noted that east coast stock assessment team was reviewing the options for monitoring for coral trout to support the assessment and TAC setting. The project team are comparing the costs and benefits of fishery independent line fishing surveys (to support the age structured assessment model) and are comparing this to port sampling or crew based fishery dependent data. It was noted that Australian Institute of Marine Science survey data

(underwater diver abundance surveys) had been powerful and useful data for the east coast coral trout assessment.

East coast red throat emperor

- It was advised that catches of red throat emperor and other reef line species remain low with most fishers focusing on live coral trout with some red throat emperor taken as by-product.
- 2018 will see an updated east coast Red Throat Emperor assessment which will be the first update to the assessment in about a decade.

East coast Spanish mackerel

- It was reported that around 50 per cent of the east coast Spanish mackerel TAC was taken during the last season with this seasons catches appearing to be good (up 31 per cent for the season to date; around 20 per cent of the TAC had normally been filled by this time in previous seasons).
- Finfish RAG will be updated on the outcomes of the east coast Spanish mackerel assessment which is being updated in 2018. It was advised that the new east coast VMS data will likely have a huge benefit in boosting the usefulness of the assessments spatial data (particularly the time spent searching for fish) can be used by assessment scientists for analysis.
- It was noted that the east coast Finfish Harvest Strategy includes decision-rules based on a CPUE model for the commercial sector only and does not apply to recreational sector. Under the Sustainable Fisheries Strategy Queensland will move to have explicit account for catches taken from all sectors under the harvest strategy.

Torres Strait strategic issues for industry

- Kos and Abob Fisheries on Ugar Island are preparing a business plan to guide development of their business over the next few years, especially for when the Ugar freezer is upgraded. The intent of this plan is to ensure that the freezer can run as a viable, commercial business.
- An industry member advised that there is a strong need for TACs to be set at levels that provide enough product to support business.
- Erub Island has seen a spike in finfish catches over the past few weeks before the meeting due to improved weather.
- With good prices and demand for product there is reportedly some interest among the Traditional Inhabitant Boat (TIB) sector in entering the finfish fishery but this would be dependent on infrastructure to support this.
- Both Erub and Mer communities would likely have some recorded data of recent finfish commercial catches.
- More fishers on Mer Island were taking coral trout with good prices being offered from buyers.
- Mer Island women were also engaging in finfish fishing with their partners to boost their household incomes.
- Malu Lamar advised that fishers in the TIB sector need to have a firm understanding of what the TAC is for their sector. The representative advised that the next few seasons would likely result in an increased take from the TIB sector as fishers move across from the beche-de-mer fishery to target finfish. Suggested that young TIB fishers such as Mr Allan Passi from the Mer Community be invited to the Finfish RAG to help increase understanding of fisheries science among the sector and facilitate community understanding.
- TIB sector fishers have an increased understanding of the value of logbooks and good data for management of their fishery.

Meeting observer, TSRA board member Yen Loban, noted that it was of high importance that the TIB sector supplies catch data to AFMA to support decision making and to ensure that the balance is understood between non-traditional inhabitant and TIB sector catches.

2.2 Management update – 2016/17 season summary

The Finfish RAG noted the tabled update on the fisheries performance, summarising the previous fishing season and recent trends in catch and effort.

The RAG noted the following points:

- It was noted that while \$12 per kilo was quoted as the average ABARES 2016 season price for mackerel, a factor of \$9.20 x 1.61 was generally used to get fillet price. The RAG sought clarification from ABARES on how beach price figures were obtained for reporting purposes – whether these were surveyed or inferred from east coast statistics.

FFRAG 1, Action 1, Agenda item 2.2: Ashley Williams to advise the RAG on how beach price is determined in ABARES Status Reports. Whether by phone survey direct with Torres Strait buyers or fishers or whether this information is inferred from other sources.

- Industry advised of increasing trend for sending whole fish (rather than fillets) to buyers e.g. Sydney Fish Market at a price of around \$20 per kilo. The ratio now is 60 whole to 40 per cent fillets whereas it used to be only 40 per cent whole fish.
- Industry members advised that the current season has seen the price being offered by buyers for frozen fillets reach a record high of \$17/kg for fillets on some islands.
- Industry member advised that Erub Island had a local market for mackerel belly flaps which were sold locally for \$10/kg.
- Science member suggested that a look at catch rates will help note whether the drop in catches is an issue
- QDAF member cautioned interpreting the apparent decline in coral trout catch in Torres Strait reef-line sector from 2015 to 2016 seasons. The RAG noted that this was likely due to change in operators with one access package not being fished for most of season. It was noted that due to the small number of fishers in the sector, changes from only one or two fishers would really impact the entire sectors performance i.e. one or two inexperienced operators entering for one season could decrease the raw catch per unit effort data of the whole fleet.

Agenda Item 3 – Data needs and research priorities

3.1 Short to medium-term data improvements

The RAG noted that the Torres Strait Finfish Fishery Harvest Strategy will provide a management framework and will guide and prioritise research and data needs in future. To support the development of the strategy it was noted that improved data such as catch rate information will likely be required from both sunset and traditional inhabitant boat sectors, as factors such as whether catch rates are being maintained would likely be an indicator which tracks the performance of the fishery over time.

RAG provided advice on a range of data issues and data needs identified by researchers and management as areas for improvement (**Table 2**) while the strategy was in development.

The RAG agreed for the table of data issues to be maintained as a live document over future RAG meetings to support these issues being actioned and was to be circulated out of session for input from members and observers.

Table 2. Short to medium-term Torres Strait Finfish Fishery data issues identified for improvement in previous research reports and meetings (current as of December 2017)

SM: Spanish mackerel, CT: coral trout.

Previous issues/ data needs identified	Action to address / comment
Reporting and data issues	
Catch and effort data needs to improve utility for assessments (SM and CT).	Review TSF01 daily fishing logbook to make sure it is best capturing data for assessment and management. Carry out industry workshop to review logbook/ discuss filling out logbook and raise awareness with fishers about the need for accurate CPUE data and accurate spatial data – including the importance of recording zero-catches. Verify catch disposal record data against logbooks to understand variance between fishers. Consider how VMS data might be analysed for stock assessment purposes.
Need to capture important data of zero-catches	
Spatial data issues with sunset logbooks – limited utility in past Spanish mackerel assessments.	
Need to capture TIB sector effort data – CDRs capture catch data but limited effort data.	Raise awareness among TIB finfish fishers about the need for accurate fishery data.
Need to reliably capture island freezer data	Ensure operational island freezers are filling out CDRs and awareness raising on value of accurate data for assessments and Harvest Strategy development.
Need monitoring for take from non-commercial sectors	Subsistence take project in progress. RAG advice is that recreational and charter catches are likely to be minimal.
Biological data issues	
Need to improve biological data inputs to stock assessment models due to age of most recent samples. Need to validate assumptions such as: age at maturity, age at length, length frequency.	Develop design of a sampling program alongside the Harvest Strategy project. Once designed evaluate how it might be delivered; e.g. through industry based sample collection, or an at-sea program funded through research channels. Investigate collection of samples to validate assumptions in the short term.
Stock structure	
Need to understand the relatedness within the Torres Strait SM and CT stocks to test the single-stock theory. Also important to understand connectedness to other adjacent stocks.	Previous acoustic monitoring carried out to examine SM exchange with Bramble Cay with limited findings. Genetic sampling could be carried out though this would likely be an involved project which would need to attract appropriate funding.
Assessment issues (SM)	
Need to understand how the SM assessment deals with most of the data coming from the Bramble Cay breeding aggregation of fish.	Next assessment update is to investigate.
Need to investigate the sudden peak of catches in the mid 2000's prior to the buyout and whether any of these catch data were 'paper' fish and the reported harvest level accurate.	Industry workshop and work on characterising the data, examining which boats entered the fishery and assess the accuracy of the available catch data from this time.
Ensure TIB sector changes such as experienced fishers leaving the fishery, freezers closing down, have been reflected in the assessment -	Data characterisation and industry workshop.
Ensure the impacts and benefits of the 2008 implementation of the 10 nm closures are understood and captured in the model (SM)	Next SM assessment update is to investigate. Industry workshop can record the impacts of the closures on reef-line sector marks (initial feedback is that this mainly impacted the SM sector)
Fish vulnerability (mainly SM issue)	
Improve understanding of fisher behaviour and how this varies across the fleet – including	Industry workshop to help stock assessment scientists and management characterise fishing practices.

variation in gear setup, targeting practices, daily fishing effort.	
Investigate SM 'domed' vulnerability where large fish are assumed to be less available to capture.	Next SM assessment update is to investigate.

The following additional points were discussed on data issues from the compiled table:

Catch and effort data issues

- More accurate fishing effort data is required to improve the assessment from the mackerel sector, particularly accurate effort (hours fished per day) per tender. A need exists for an understanding of how many hours are fished per tender and variability between operations.
- A measure of effort is required for the TIB sector. At present only total catch data (tonnage) is reported.
- Investigation is required on how changes in the TIB sector were accounted for in the data-set and model given when some long-term fishers left the fishery and when some island freezers ceased trading.
- There is a need for awareness raising with all finfish fishers on the importance of data to support fisheries management and stock assessments. It is important to talk about why data and CPUE time series matter for management and assessment purposes.
- There is a need to characterise the differences in targeting practices among fishers.
- There is strong support from industry for a staggered approach to engaging the TIB sector in data collection noting that if too much data is sought in a short period of time the overall quality of reporting might decrease. The following stages were suggested:
 - Stage 1 (now): Initial focus on the fish receiver system (filling out catch disposal records at point of landing) to understand total catches
 - Stage 2: Determine the best way to acquire effort data; then
 - Stage 3: Determine the best way to acquire biological data.

Biological data issues

- RAG noted that in future biological data needs for assessment purposes would be informed from the harvest strategy project team.
- RAG noted the age of available biological data for the Spanish mackerel stock assessment which was last collected in the early to mid-2000's (Table 1.3, pp 11 of Begg *et al.* 2006 below).
- A need was identified to validate the biological parameters of the Spanish mackerel age-structured population model, ideally at agreed intervals to ensure the assumptions are correct over time.
- There is a need for monitoring to understand the age structure of the stocks as this factor is linked to vulnerability which is one of the key assumptions of the model.
- Consideration was given to using fish frames retained by industry for biological sampling. It was noted that ageing data from otoliths collected from fish frames were very powerful data but would require an appropriate program with the right structure and stratification (e.g. random sampling from catch, whole-of-fishery representation, different size classes of fish, males and females etc.).

Table 1.3. Number of Spanish mackerel aged and measured in the DPI&F LTMP (2000-2002) and AFMA voluntary fisher logbooks (2004).

Year	Number aged			Sep	Number measured		
	Oct	Nov	Total		Oct	Nov	Total
2000	795	97	892		802	98	900
2001	874		874		909		909
2002	602		602		612		612
2004				721	662	406	1789
2005 ¹	710		710		719		719
Total	2981	97	3078	721	3704	504	4929

¹Data collected in 2005 as part of the CRC Torres Strait project were not included in the assessment.

Coral trout catch and effort data

- In running a coral trout assessment, it will be important to understand the percentage splits of catches between the four Torres Strait coral trout species given that they have different distributions across the fishery:
 1. Common (*Plectropomus leopardus*),
 2. Islander (*P. maculatus*) also called bar-cheeked trout,
 3. Leopard (*P. areolatus*) also called passionfruit trout,
 4. Bluespot (*P. laevis*);
- Daily Fishing Logbooks (TSF01) record total kilograms of coral trout and fishers are required to supply an estimated percentage breakdown of the four species in the logbook at the supplied prompts (as per the list point above).
- Buyers had a higher demand for trout species (or phenotypes) with red colouration for the whole-fish market and that species with darker colouration, such as passionfruit trout (also reported as 'leopard trout' - *P. areolatus*) were more frequently filleted rather than sold whole.
- It was noted that the current logbook does not have the capacity to record catch and effort per tender for the reef-line sector (mackerel sector is able to report per tender) and instead lumped all the catch per day under the primary vessel. This misses recording valuable effort data which may vary per dory.
- It was also noted that the logbook had no capacity to record where each tender was fishing, noting that they may travel some distance from the primary vessel.

Catch verification

- Following the implementation of catch disposal records (CDRs, to be implemented on 1 December 2017) verification of catches can be carried out in 2018 to compare the accuracy of logbooks to CDR catch data.

Spatial representativeness of data

- Consideration was given to the completeness of available spatial data, noting that it had not been fully utilised in past Spanish mackerel assessments for a number of reasons.
- The RAG requested some analysis on how well spatial and other catch and effort data are being filled out by fishers noting that it is important for managers to understand the completeness of records.
- RAG also stressed the need for fishers to fill out and understand the value of zero catches - which are equally as important as catch data for assessment purposes.
- It will be important to conduct research in future to examine where the 'sources' and 'sinks' for the Torres Strait stocks are, noting spatial analyses done on Queensland east coast Spanish mackerel stocks had identified two distinct sources for the mackerel stock offshore from Cairns.

Domed vulnerability

- The domed-shaped selectivity issue identified during the Spanish mackerel assessment will be tested under the harvest strategy.

3.2 Research priorities

Finfish RAG noted that available research funding was almost fully allocated for the next two financial years. It was noted that the current investment for Torres Strait finfish research was supporting the Harvest Strategy.

The RAG noted suggested research priorities identified by Finfish Working Group and the Scientific Technical Working Group (as per the agenda paper).

The Finfish RAG identified that the **key research priority in the short term was acquiring ageing data to support the assessments for Spanish mackerel and coral trout**. This research would involve taking frames, extraction of otoliths, sending the otoliths to ageing services, having ageing performed and those data being provided to assessment scientists for input into the analyses. It was noted that consideration would need to be given to the stratification and number of samples to be collected and that this could be discussed out of session with RAG technical members.

Points discussed:

- AFMA member advised the RAG of the current proposal to use a small amount of expected underspend money to update the existing estimates of mortality and provide advice on future improvements (note this was discussed further by the RAG at Agenda Item 5.2 and was not supported by the RAG).
- RAG noted that Management Strategy Evaluation (MSE) would be required before a harvest strategy could be implemented. It was noted that the MSE testing was outside the funded scope of the present Harvest Strategy Project. RAG requested the harvest strategy project team to provide advice to the RAG on work that would be required to support MSE testing to support the work-plan.

Finfish RAG 1, Action 2, Agenda item 3.2: Harvest strategy project team to provide a short paper advising the RAG on work that would be required to support Management Strategy Evaluation following the Harvest Strategy development.

- An industry member suggested that any underspend of research funds would be best used to address some of the identified data issues (Agenda Item 3.1). It was noted that some of the data issues would be progressed through the harvest strategy project.
- Broad support was given for the need to understand stock structure in the Torres Strait and consideration was given to how this would be addressed through the Harvest Strategy. The RAG considered that while genetic analyses would be an appropriate method to address this, it would likely be an expensive exercise. It was noted that increasing our understanding of relatedness to adjacent stocks e.g. north Queensland stocks may shift the assessment boundaries and the associated TAC setting areas e.g. if Queensland fish were part of the Torres Strait stock or vice versa.

Agenda Item 4 – Research project updates

4.1 Traditional take project update

RAG noted the prepared update on the project aiming to improve estimates of finfish catches taken for subsistence purposes. The RAG noted that the project team had progressed the work as far as possible to date, noting that consideration has been given to several options for additional resources from TSRA that might have been made available to support the project.

The RAG agreed to support the continuation of the project with the revised scope. To support the continuation and delivery of the project the RAG supplied the following advice:

- Progressing the project needs community leaders to identify bodies/people that are willing to take responsibility for data collection and be a 'champion' for the issue.
- Ideally these 'champions' and community monitors should be identified before the project continues to help drive the issue.
- The project has value in advising future programs and raising awareness particularly given future expansion in the TIB sector, noting a proportion of commercial catch is retained for subsistence purposes.

The RAG provided the following advice to support the project course of action over next few months:

- TSRA to confirm what additional resources might be available to support the project. To provide support, TSRA will require a statement of work from the project team which would be required for consideration.
- TSRA to write to industry associations to advise that the monitoring work could fall within the administrative funding grants.
- TSRA to assess if rangers could be utilised.

The RAG discussed the following points:

- It was noted that the planned outcome of the project was to provide a cost effective method to provide ongoing data on traditional take.
- AFMA advised that management requires periodic validation of the available estimates; understanding whether they are still valid or if they have changed to support evidence based decision making.
- TSRA advised that it is important to consider the costs and benefits; noting costs, time effort involved in improving the estimate which represents a small proportion of commercial catches.
- Industry members suggested that following future development, communities could take ownership of a subsistence take monitoring plan as per turtle and dugong management plans. Communities are apparently interested in sustainability and data collection including the use of daily fishing logbooks.
- Noting their role in the successful community uptake of the turtle and dugong management plans, some consideration and support was given to the capacity of the ranger program being tasked with this responsibility.
- It was noted that Mypathways can only be engaged in such a program if they are the host employer with CSIRO as principle investigator directing operations in this case. A different organisation such as Erub Fisheries Management Association or Kos and Abob Fisheries could be able to do so as a supervisor.
- Some islands have active fishing industry associations – these could feasibly be provided with financial administrative support to help drive subsistence monitoring. It was noted that TSRA offer grant funding to cover up to 20 hours per week in a community administrative officer role. The RAG noted that this could be an avenue to assist.

4.2 Scoping study for barramundi, black jewfish and crab in top-western Torres Strait communities

RAG observer Dr Andrew Tobin advised the RAG of the background of the project as per the agenda paper. The RAG were asked to provide initial advice on the project methodology and the likely outcomes of the project.

TSRA advised that the project is a feasibility study at this early stage and one of the drivers for this project was community interest in re-developing their fisheries which could potentially boost

employment in the cluster. It was advised by Mr Tobin that unlike jewfish, barramundi could not feasibly be fished commercially fished using line fishing methods. TSRA and FRDC are funding the feasibility study.

Points discussed:

- It was noted that the feasibility study is proposing to use currently prohibited fishing method – mesh gillnets. Gillnetting was banned by the PZJA in 2005 over concerns over bycatch including dugongs although the PZJA noted at the time that the ban was not intended to prohibit industry development in the Top Westerns should communities wish to do so. It was suggested that this could potentially be addressed through regulating fisher behaviour such as enforcing net attendance rules. It was noted that the trial fishing would collect data on all impacts, including any protected species capture.
- Barramundi is likely a shared stock with PNG. The PNG-NFA invited participant advised that PNG-NFA can provide catch data from western province factories buying barramundi flesh and swim bladders.
- RAG provided support for a strong data collection program alongside any developing fishery.
- RAG advised that if this research goes ahead, strong communication and consultation relating to bycatch will be required.

Agenda Item 5 – Advice for management

5.1 Recommended biological catches for upcoming seasons

The Finfish RAG recommended:

- A 125 t RBC for Spanish mackerel for the 2018/19 season, recognising:
 - the most recent 2016 assessment update provided an RBC for Spanish mackerel of 125 t with a B60 target reference point;
 - no new evidence existed to warrant a different approach; and
 - that a further update would be performed on this assessment in 2018 as part of the harvest strategy development.
- That the coral trout nominal TAC of 134.9 t remain unchanged for the 2018/19 season, recognising:
 - the age of available data;
 - a stock assessment will likely be performed for the Torres Strait stock in 2018; and
 - the need to look at historical catch data (1980's) where there was an apparent significant decline in catches.

AFMA advised that original intention of the agenda item was to get RAG advice on Recommended Biological Catches (RBCs) for the next three upcoming seasons. Following discussion with the harvest strategy project team, and new information provided, it was advised that management was only seeking advice from the RAG on the upcoming season given the likelihood that Spanish mackerel and coral trout stock assessments would be updated/performed as part of the harvest strategy project in 2018.

The AFMA member clarified for members that a Recommended Biological Catch is also known as total kill or maximum harvest. This RBC is to cover take from the commercial and also other sources of mortality outside of the fishery such as subsistence take. It was advised that a B60 target reference point (above the Biomass of Maximum Sustainable Yield) was being used as an interim target to ensure healthy population biomass and catch rates in order to achieve and balance sustainability, economic, social and cultural objectives.

It was noted that the focus of the RAG was on the science to support RBCs. An RBC sets a total harvest (or total kill) for the stock and is used in setting a Total Allowable Catch (TAC) which

covers catches from the commercial sectors. In setting a TAC, other known sources of mortality, such as recreational or subsistence take are deducted from the RBC. It was noted that working groups were tasked with providing advice on TACs.

Spanish mackerel RBC for the 2018/19 season

The RAG recommended a 125 t RBC for the 2018/19 season noting the following points:

- the most recent 2016 assessment update provided an RBC for Spanish mackerel of 125 t with a B60 target reference point;
- no new evidence existed to warrant a different approach; and
- that a further update would be performed on this assessment in 2018 as part of the harvest strategy development.

Work-plan for 2018 to support assessments

In updating the Spanish mackerel stock assessment and performing an initial coral trout stock assessment the following work will be carried out during 2018:

- Three additional Spanish mackerel stock assessment runs will be carried out together with the 2016 assessment runs, noting that analysis 4 which was deliberately inflated for contrast may be dropped. Revisiting the model with additional runs will attempt to address issues identified such as:
 - sensitivity analyses to examine how the model might perform with domed vulnerability;
 - hyperstability issue; and,
 - examination of CPUE data using indicator vessels.
- These additional Spanish mackerel model runs will feed into the design and testing of harvest strategy frameworks to understand how they will operate. RAG advice will be sought on performance metrics such as targets, limits and operational objectives which will be presented for discussion and feedback.
- Sunset boats which have frequent catch records throughout the available time series are to be investigated as potential indicator vessels and compared to the whole data set.

Subsistence take in the Spanish mackerel model

The RAG noted that for Spanish mackerel the last assessment yielded an RBC of 125 t. It was queried how subsistence catches were accounted for in the model and the B60 target reference point – whether it was methodologically correct to remove the subsistence catch amount if it was accounted for in the B60 target. Science members advised the RAG of how subsistence catches were dealt with in the assessment, RBC and TAC:

- A target level for the stock is set e.g. the B60 target reference point which provides for the stock to be maintained at a level that can sustainably support both commercial and traditional fishing.
- Setting the target at B60 doesn't account for the actual harvest, instead it is the target level that can support that harvest.
- After the objectives are set for the model it is run which outputs an RBC which yields a long term equilibrium harvest (called an 'optimisation') which is a calculation of the long term average catch which will maintain or move the stock towards the target.
- To keep the catches at the target level of harvest a TAC is set for the commercial sectors after the harvest from other sources, such as subsistence catches, are deducted from the RBC.

Future expansion of TIB sector catches

- Industry members advised that should the TIB sector expand its effort and catches in future with the rollout of the TSRA infrastructure funding and business plans, it was important to ensure that an appropriate allocation of the TAC is available to cover the catches and aspirations of this sector.

- Stronger data will be available in 2018 season from the implementation of mandatory catch disposal records which will aid mid-season understanding of TIB sector catches.

Split TAC for Bramble Cay

Consideration was given to whether Bramble Cay – the site of a breeding aggregation which accounted for the majority of Spanish mackerel catch and effort per season - warranted management as a separate unit with a split TAC for this area of waters.

RAG noted it is important management issue and provided the following advice:

- It is important for management to understand and research stock structure noting that the mackerel are likely have a continuous distribution across the Torres Strait and is likely to have a fluid stock structure.
- It is important to analyse the fishing effort on Bramble Cay since the buyout and the implementation of the 10 nm closures noting that the fishery has likely changed.
- It was considered that the driver for capping catches at Bramble Cay was more likely an issue of economics for the fishers accessing catch there rather than a sustainability issue i.e. targeting fish at this location would likely become unprofitable before damage to the stock occurred.
- Noting that an industry meeting is planned for 2018 the RAG suggests that further discussion occurs with sunset licence holders to provide background information to support consideration of the issue.

Coral trout RBC for 2018/19 season

- The RAG noted that, unlike Spanish mackerel, the nominal coral trout TAC of 134.9t has been under caught in recent seasons which provides a buffer while the harvest strategy and assessment are under development.
- AFMA advised on the outcomes of the last Management Strategy Evaluation (MSE) work (*Evaluation of the eastern Torres Strait reef-line fishery*, Williams et. al 2007) noting the outcomes of which were still the main evidence used for decision making. The RAG noted that given the age of the MSE work the utility of the outcomes was beginning to decrease.
- Catch projections from MSE were based on effort data which was converted into catch meaning that the model only tracked effort NOT catch.
- Investigation is required into the 2001 to 2005 reference period used for setting the coral trout nominal TAC. This period does not appear to be stable in terms of catches plus two investment warnings were issued during this time. It was noted that these data may be housed in QDAF logbooks and the harvest strategy project team could submit a QDAF data request to query these data.
- RAG and harvest strategy project team need to see what the catch time series was during the apparent decline in predicted relative biomass from years 1980 to around 2003 (figure 6.38, pp. 103 from MSE work).
- Further understanding was required on the differences between the apparent CPUE and the stock abundance noting that trout could reportedly be abundant in an area with poor catch rates. The RAG flagged that there were likely issues with availability of trout to fishing gear and that other factors such as cyclones had been suggested on the east coast.
- The RAG recommended that the status quo for coral trout be maintained for the upcoming season noting:
 - the age of available data;
 - a stock assessment will likely be performed for the Torres Strait stock in 2018; and
 - the need to look at historical catch data (1980's) where there was an apparent significant decline in biomass.

Finfish RAG 1, Action 3, Agenda item 5.1: AFMA to liaise with the harvest strategy project team to investigate the coral trout catch series data that underlies a) the apparent decline in catches from 1980 to 2003 and b) the catch series that underlies the nominal TAC reference period 2001-2005, noting some of these data may be housed by QDAF.

Other points discussed:

- A previous James Cook University project had successfully boosted our understanding of TIB sector freezer data by visiting them and taking 1000s of photos of the available catch data pages from freezer ledgers. It was advised that this was a cost effective option.
- Noted that this TAC is not based on concerns over the biomass of the stock - last estimate of biomass puts the stock around 40 per cent of virgin biomass which is considered healthy. B40 which is healthy - instead the TAC will maintain good catch rates.
- Noted that clear communication needs to be made on process of RBC to TAC and to be clear about the target level.

5.2 Estimating catches taken outside of the commercial fishery

The Finfish RAG provided the following advice on catches taken outside of the commercial fishery:

- Recreational sector catches are likely to be minimal based on available evidence from the QDAF surveys.
- Charter sector catches are likely to be minimal based on available evidence provided from QDAF catch data. The RAG noted that there is no evidence to suggest the number of charter boat operations/licences is increasing.
- RAG recommended the estimate of subsistence take of Spanish mackerel used for TAC setting be increased from 5.155 tonnes to 10 tonnes.
- RAG considered that there was no requirement to provide a recommended subsistence take deduction from the coral trout TAC given the amount of available information and that an assessment would likely be conducted on the species in 2018.
- RAG did not recommend any work on improving the estimates of mortality at this time though some options were considered.

Points discussed on recreation and charter estimates:

The QDAF member reiterated previous advice provided to the Finfish Working Group (as per the tabled paper):

- Based on available QDAF catch data, Torres Strait charter sector catches appear to average at around one tonne per year for all species combined.
- Recreational survey –only two households were surveyed during the last phone survey. These data were unusable due to the small sample size and the large associated error.

The RAG noted that there is no evidence to suggest emerging trends from the status quo such as an increasing number of charter boat operations or licences.

The QDAF member advised that while QDAF was responsible for managing recreational fishing in the Torres Strait it was not considered a priority issue from a management perspective given the low population and the low number of recreational fishers in the Torres Strait.

The TSRA member advised that a new cadet position at TSRA could investigate the feasibility of a boat-ramp survey option for Torres Strait. The RAG noted that such a study could form the basis of a small academic project such as an honours project.

Points discussed on subsistence estimates:

RAG recommended the estimate of subsistence take of Spanish mackerel used for TAC setting be increased from 5.155 tonnes to 10 tonnes based on the following points:

- Data underlying the estimate was ageing and was available from only three islands
- The number of TIB (commercial) sector fishing endorsements has increased since the Busilacchi study.
- Effort creep may have been occurring from the 1990s CSIRO studies to the Busilacchi study and may still be occurring.
- Torres Strait population has likely decreased since the Busilacchi study.

Points discussed:

- The RAG noted the age of the available estimate of subsistence from the 2008 Busilacchi study (*The subsistence coral reef fishery in the Torres Strait: monitoring protocols and assessment*)¹ with data available from the mid 2000's.
- Other research studies had generally determined an increase of ~3 per cent per year to account for effort creep (i.e. increased fishing power associated with advances in fishing gear - sounders, motors, GPS).
- RAG considered that getting the estimate of subsistence take wrong could potentially lead to overshooting the RBC. It was identified that this was a risk for Spanish mackerel where the catches were close to the RBC.
- It was suggested that a large amount of Spanish mackerel from the central islands may be being retained for subsistence as there is no commercial market for it on those islands at present. Industry members advised that enough catch needs to be available to support growth in the TIB sector in the central islands should a market develop there in future.
- It was volunteered that less than 1 tonne (around 500kg) of mackerel might be taken per year as an estimate by the Ugar community for subsistence purposes.
- Census data indicates the population of the outer islands may have decreased over recent years meaning that the subsistence take could be decreasing over time.

5.3 Estimating Traditional Inhabitant Boat sector catches

The TSRA member and observers advised that the TSRA were of the view that the TSRA Finfish Quota Management Committee should be deciding the estimate of TIB sector catches and they were not comfortable with the PZJA RAG providing advice on this issue but rather that discussions in this forum should be around the total commercial take.

AFMA advised that the RAG was tasked with determining the best estimates possible for PZJA decision making and TAC setting as per other fisheries.

Finfish RAG noted the implementation of the Fish Receiver System (mandatory catch disposal records from 1 December 2017) would assist in improving the understanding of catches from the commercial sector.

5.4 Update on work supporting expansion of take of other reef-line species

The RAG noted the prepared update and that RAG advice would be sought on this issue in future meetings.

The TSRA member advised that there was no interest among lease holders this season to target other reef-line species. In response to a RAG member query, TSRA advised that fishers applying for coral trout catch entitlements also had to apply for a percentage byproduct catch of other species i.e. one tonne of other species for every 10 t of coral trout.

Agenda Item 6 – Finfish Harvest Strategy Project

The RAG noted three presentations from the finfish harvest strategy project team:

The RAG was joined at this agenda item by project team members George Leigh and Matthew Holden who were developing the coral trout stock assessment.

¹ https://researchonline.jcu.edu.au/11041/2/02Thesis_whole.pdf

Harvest Strategy Presentation, Part 1, Trevor Hutton CSIRO, project overview

Trevor Hutton, CSIRO, project lead presented an overview of the harvest strategy project:

- Objectives of harvest strategy development
- Harvest strategy components – parts of the framework
- Indicative work plan ahead of the project team and RAG.
- Data collation achieved to date on Spanish mackerel.

The RAG noted the following points:

- The RAG and the harvest strategy project team will need to work together on understanding sectoral catches (e.g. subsistence harvest estimates).
- Distinction must be made between stock indicators compared to testing against performance indicators (generally referred to as performance statistics or metrics).
- CSIRO has provided some research on what indicators can be used to gauge fishery activity when the fishery is performing well.
- RAG input will be required into providing feedback on the performance metrics of the strategy.
- Origins of target and limit reference points are from the Commonwealth Harvest Strategy Policy. It was noted that these points align with international fisheries best management practices.
- Consideration was given to how interim harvest control rules might work - whether limit reference points are required and whether harvest control rules that allow lower exploitation rates are appropriate (limit reference point isn't necessarily set at the point at which fishing ceases) noting that ideally a stock would not approach the limit reference points.
- Consideration will need to be given to how harvest control rules will function and what advice will be required from the RAG to support their development.
- Consideration will need to be given to the performance metrics e.g. defining what good and poor catch rates per boat might look like for Spanish mackerel or coral trout.
- The RAG noted the 2015 work conducted by Natalie Dowling on Guidelines for developing formal harvest strategies for data-poor species and fisheries. It was suggested that this research could be summarised and presented at the next meeting.
- A glossary will be developed to help clarify terms and improve RAG member understanding e.g. B_0 should be called K (carrying capacity) or B_{100} (year zero).

Harvest Strategy Presentation, Part 2, George Leigh UQ CARMS, Coral trout east coast assessment

George Leigh provided the RAG with an overview of the Queensland Great Barrier Reef coral trout stock assessment from 2014, with a focus on the lessons learned to date.

RAG noted the following points on the Queensland east coast coral trout assessment:

- East coast coral trout model is regionally split
- Catch rates are loosely correlated to abundance.
- Underwater visual surveys and habitat mapping were indispensable to the Queensland stock assessment
- Age and length data are very powerful data but still very expensive to collect.
- Torres Strait coral trout assessment may need some transfer of information from the Great Barrier Reef which has a wealth of data which may be useful for the Torres Strait.
- Reef bioregions including reef morphology have been mapped for the Great Barrier Reef but not for Torres Strait. Some information transfer on reef morphology and information (e.g. abundance such as number of fish per hectare per habitat types such as front reef slope, submerged reef, back reef slope) from far north GBR could be similar to the Torres Strait.
- GBRMPA GIS data may aid in inferring reef morphology in the Torres Strait model.
- A harvest strategy for coral trout is still being developed in Queensland with harvest control rules currently in place which rely on logbook catch rates. There is still a need to implement

monitoring (last data 2009) with a project currently in progress to develop monitoring. Noted that monitoring is very expensive.

- Different species were separated out in the east coast assessment – focus on common coral trout (*P. leopardus*). Consideration must be given to the four different species found in the Torres Strait given that they are likely to have different distributions and potentially different population biology.
- It was noted that if coral trout were theoretically fished down in an area their recovery time would be dependent on recruitment which can be variable. Low remaining numbers in an area would have the capacity to replenish a local area with strong recruitment and the correct environmental conditions.
- Catch rates can vary widely across an area noting industry reports that:
 - Coral trout may have the capacity for a sort of learned behaviour whereby fish become 'hook-shy' after a time and will not take baits.
 - dropping a fish on the retrieve can lead to a temporary drop in catch rates at that location - this report is also supported by studies where fishers re-entered closed reefs with good catch rates which was attributed to the 'naivety' factor where fish had not become hook-shy.
- It was noted that it may generally be harder to overfish coral trout compared to other species as economic factors – driven by catch rates - would likely come into play before ecological factors such as depleted biomass.

A coral trout CPUE time series can be confounded by the stocks distribution changing in association with complex ecology and environmental factors such as cyclones:

- Wave action and broken coral associated with cyclones are theorised to disturb baitfish which coral trout feed on.
- An associated drop in water temperature could be impacting trout metabolic rates – e.g. Cyclone Justin had a lot of associated upwelling of cooling water on the shallow reefs with an associated drop in catch rates. View bucketing showed fish were present but were not taking baits.
- An alternative theory is that trout fishers can generally only target down to 20m water depth as barotrauma occurs to trout fished from depths deeper than this. Trout reportedly may head to deeper water after cyclones as evidenced by more green coloured coral trout, normally found in shallower water, being captured in deeper water.

Finfish RAG, Action 4, Agenda item 6: Harvest Strategy project team to contact Roland Pitcher to enquire as to what Torres Strait habitat mapping data is available.

Finfish RAG, Action 5, Agenda item 6: AFMA to liaise with the 2007 Coral Trout MSE project team to determine what coral trout catch data were used in the MSE (Pre-2003 Torres Strait fishers were filling out east coast logbooks).

Finfish RAG, Action 6, Agenda item 6: Harvest Strategy project team to advise the RAG and Finfish WG on the outcomes of the east coast coral trout assessment in 2018.

Harvest Strategy Presentation Part 3, Michael O'Neill, QDAF: Presentation on Spanish mackerel assessment

The RAG noted an overview of the current Spanish mackerel stock assessment and an update on some of the recent data (post-2014). The RAG provided the following advice on the initial phase of the Spanish mackerel harvest strategy development and 2018 assessment update:

1. Initial focus should be on improving effort data – a strong CPUE time series is required and collecting representative effort data was considered to be the highest priority. Management were encouraged to raise awareness among fishers about the need for accurate and complete catch and effort data.
2. Project team is to examine how renewed collection of age-data could benefit the assessment and harvest strategy. It was noted that it could take some time to acquire these

data as it was slower to collect and age. A pilot study (one or two weeks work) could feasibly address what benefits do these data have for Torres Strait management and how these data may affect the assessment.

Noting that the assessment relied heavily on CPUE data (with some older 2002 biological data), ideally the Torres Strait Finfish Fishery would aim to have at least one year of reliable monitoring data as a snapshot followed by a structured program at scheduled intervals. Consideration could be given to the development of such a program and it could likely be developed to be cost-effective and powerful. Work will need to be done on sample sizes required to ensure that samples were representative of the catches across the fishery.

The RAG recommended examination of the following aspects:

- Effect of vessel freezer/hold capacity on catch rate data. The assessment could potentially be reporting higher catch rates per day but the onboard freezer capacity stops fisherman earlier that day and operation days are lost waiting to unload catch to the barge at Yorke Island. The peak catch rates that are possible may not be reflected. Analysis is required on the scale of catch reporting by hour and ground truthing with fishers is required alongside the scheduled logbook review process.
- Examination of a sub-set of CPUE data from the fishing targeting the Bramble Cay breeding aggregation from August to December.
- Uniformity of reporting across the fleet, whether logbook data was being provided as 'standard entries' with the same effort data every day.
- How Torres Strait Vessel Monitoring System data could benefit the assessment by being made available to scientists; noting that an algorithm would need to be developed to convert Torres Strait VMS data to infer fishing effort. It was recommended that the RAG examines the outputs of the Queensland VMS dory trial and then consider the value of VMS for sunset sector dories in the Torres Strait in future.
- Check that fisher's gear setups have not changed over time to understand if gear selectivity is changing.

Additionally, an industry member advised that while primary vessels have VMS fitted there are concerns that the tenders may range more widely and may be entering the 10 nm closures which cannot be monitored. This was noted as a compliance issue that was to be addressed separately to the stock assessment advice.

The RAG noted that a comparison of the catch rates from the model, comparing BMSY to B60 target reference points (page 39 of the assessment, figure 20) was a clear example of how higher catch rates could be maintained with an appropriate target.

Finfish RAG, Action 7, Agenda item 6: Michael O'Neill to provide the Finfish RAG with revised figures e) and f) from Figure 20 of the stock assessment report with the same scale to illustrate how a B60 long term average equilibrium points provides greater catch rates.

RAG noted the need for management to balance the short term revenue from leasing the resource compared to the long term goals for the fishery and how this is incorporated into the harvest strategy e.g. when the TIB sector expands in future what catch rates will be available.

Agenda Item 7 – Other business

Western line closure

Given the limited amount of time available to consider this agenda item, the RAG noted the prepared information at agenda item 2.2. It was noted that the Finfish Working Group had previously provided advice in supporting the removal of the closure.

Preliminary consideration from the RAG was as follows:

- Management is not proposing to increase the TACs for coral trout. In line with this it was suggested that removing the closure might spread the current commercial fishing effort to a broader area.
- RAG noted previous considerations about coral trout catch rates and considered that economic impacts would likely come into effect (hook-shy fish leading to a drop in local catch rates) before ecological impacts might occur.
- Some consideration was given to how the western habitats may be shallower than eastern habitats but data would be required to assess this.
- More fishing operations and freezers may open in the western Torres Strait in line with the outcomes of the current TSRA infrastructure project meaning there may be a total increase in fishing effort with more fishers entering the sector.

RAG requested an opportunity to provide more consideration on this item at a future meeting.

Acoustic monitoring

The RAG noted a presentation at agenda item 4.2 from Andrew Tobin on the outcomes of recent research on acoustic monitoring for Spanish mackerel.

Industry member flagged that communities must be consulted about research projects that happen in waters surrounding their communities. A strong process for consultation needs to be agreed and followed. It was advised that the Ugar community has a strong verbal history about catches taken from their waters and concerns have been raised about how the catch data from research might be published. The Kos and Abob association has a standing offer to discuss their communities' needs with researchers.

Barramundi-cod management objectives

At agenda item 3.1 the Malu Lamar representative advised that barramundi-cod could provide value to the Torres Strait in future as part of expansion in the area of ecotourism with the providing aesthetic value for divers. Malu Lamar queried what RAG members knew about the status of barramundi-cod in the Torres Strait and whether the species might become less abundant in the Torres Strait over time.

The RAG noted:

- Barramundi-cod were a protected species in Queensland east coast fisheries and were not protected in the Torres Strait.
- AFMA advised that there is a process to nominate a species to become listed as a protected species through the Department of Environment.
- Barramundi-cod were listed as a protected species in Queensland due to their iconic nature, not due to concerns over stock status or sustainability.
- Torres Strait fishers could maintain this species as a premium product given it cannot be marketed from elsewhere.
- No assessment has been done on Torres Strait stocks.
- Logbook catch data from sunset fishers suggests that low numbers are captured by the reef-line sector.
- The RAG advised that a scoping exercise or a student-project could be performed to examine available data and report on basic figures such as length, weight over time, proportion of catches of mature versus immature fish which may help management develop some basic indicators.
- Consideration would need to be given to the management objectives for this species given the trade-offs between ecotourism values compared to the value from commercial catches.

Agenda Item 8 – Work plan, date and venue for next meeting

The RAG noted that the next meeting was proposed to be held in March 2018, potentially on Thursday Island. It was also noted that the meeting would have a focus on the next milestone of the harvest strategy project and might be a joint RAG and Working Group meeting.

TSRA advised once again that the timeframe being proposed would not suit as any advice to support the Finfish Quota Management Committee needs to be in place by January.

The RAG chair thanked participants for a very productive first meeting. The meeting was closed at 3:45 PM, Friday 10th November 2017.

PZJA Torres Strait Finfish Resource Assessment Group	Meeting 2 21-22 March 2018
RAG BUSINESS Biological data collection to support stock assessments	Agenda Item No. 2.1 FOR ADVICE

RECOMMENDATIONS

That the RAG:

1. **DISCUSS** and **PROVIDE ADVICE** on a work plan to support the collection of biological data necessary to support stock assessments for Spanish mackerel and coral trout;
2. That the RAG **NOTE** future data collection will be subject to available funding.

KEY ISSUES

3. At its first meeting the RAG agreed that the collection of biological data is a key short term research priority for the fishery.
4. The collection of additional data will be subject to available funding. Developing advice as soon as practical however on the likely design of a data collection program for the Finfish Fishery will assist in setting future funding priorities.
5. Advice from the RAG is sought on a work plan for designing a suitable data collection program.

BACKGROUND

6. Biological data is fundamental in understanding the parameters used in structured stock assessment models.
7. The last biological data from the Torres Strait Finfish Fishery was collected from 2000 to 2005 which included length-frequency measurements and ear bones (otoliths) which were removed and measured to determine fish age. These data were used to inform the assumptions of the current Spanish mackerel model.
8. Periodic checks through the collection and analysis of biological data are required at intervals to determine whether the assumptions of a stock assessment model (such as age structure of the fish being captured or length at age) still hold true.
9. At its initial meeting the Finfish RAG noted:
 - that in future biological data needs for assessment purposes would be informed from the harvest strategy project team.
 - the age of available biological data for the Spanish mackerel stock assessment which was last collected in the early to mid-2000's (Table 1.3, pp 11 of Begg *et al.* 2006 below).

- a need was identified to validate the biological parameters of the Spanish mackerel age-structured population model, ideally at agreed intervals to ensure the assumptions are correct over time.
 - there is a need for monitoring to understand the age structure of the stocks as this factor is linked to vulnerability which is one of the key assumptions of the model.
10. RAG consideration was given to using fish frames retained by industry for biological sampling. It was noted that ageing data from otoliths collected from fish frames were very powerful data but would require an appropriate program with the right structure and stratification (e.g. random sampling from catch, whole-of-fishery representation, different size classes of fish, males and females etc.).

Table 1.3. Number of Spanish mackerel aged and measured in the DPI&F LTMP (2000-2002) and AFMA voluntary fisher logbooks (2004).

Year	Number aged			Sep	Number measured		
	Oct	Nov	Total		Oct	Nov	Total
2000	795	97	892		802	98	900
2001	874		874		909		909
2002	602		602		612		612
2004				721	662	406	1789
2005 ¹	710		710		719		719
Total	2981	97	3078	721	3704	504	4929

¹Data collected in 2005 as part of the CRC Torres Strait project were not included in the assessment.

PZJA Torres Strait Finfish Resource Assessment Group	Meeting 2 21-22 March 2018
RAG BUSINESS RAG work plan for 2018-19	Agenda Item No. 2.2 FOR ADVICE

RECOMMENDATIONS

That the RAG:

1. **NOTE** the scheduled meetings for the Finfish RAG and Working Group for 2018-19.
2. **PROVIDE ADVICE** on work to be added to the plan based on group discussion.

KEY ISSUES

1. The RAG are asked to note **Table 1** (below) which outlines a proposed schedule for PZJA finfish meetings (RAG and Working Group) for the remainder of this 2017-18 cycle and the next 2018-19 meeting cycle.
2. The RAG are asked to provide **ADVICE** on any additional key items for these upcoming meetings.

BACKGROUND

3. At its initial meeting the Finfish RAG identified a range of research and data needs for the Fishery together with possible actions to be conducted by the RAG both in session and out of session. These tasks are recorded in **Table 2**.
4. Actions relating to the development of the harvest strategy have been provided to the harvest strategy project team.
5. RAG members are asked to give consideration to any tasks which can be actioned out of session with members input.

Table 1. Schedule of upcoming meetings and work planned to progress at each meeting

Date	Meeting	Main Business
20 March 2018	Finfish Working Group (2018.1)	TAC advice to PZJA for 2019-20 season. Formalising TACs
21-22 March 2018	Joint Finfish Working Group and Finfish RAG meeting (RAG 2)	RAG and WG: Progress harvest strategy project. RAG: Biological data collection to support assessments
2018-19 Fishing Season Starts 1 July 2018		
4 July 2018	Industry data meeting	*Focus on data issues raised through assessments. Industry to provide advice to mgmt. and scientists on characterising fishing gear setup, uniformity of effort, spatial data, large size classed fish (dome shaped selectivity). *Logbook review.
August 2018	Finfish RAG (RAG 3)	Progress harvest strategy project. RAG to consider preliminary assessments for coral trout and updated Spanish mackerel assessment. RAG to provide advice on proposed log changes.
October 2018	Finfish RAG (RAG 4)	RAG to consider any further updates performed and finalise assessments and provide RBC advice for 2019-20 season.
February/Mar 2019	Finfish Working Group	TAC advice to PZJA for 2019-20 season. Progress harvest strategy project.
June 2019	Joint Finfish Working Group and Finfish RAG	Presentation of harvest strategy options. Final part of the harvest strategy project.
2019-20 Fishing Season Starts 1 July 2019		

Table 2. Research and data needs for the Finfish Fishery together with possible actions to be conducted by the RAG. Agreed by Finfish RAG at its first meeting 9-10 November 2017.

Research and data needs	Action to address and comment
Catch and effort data needs to improve utility for assessments (SM and CT).	Review TSF01 daily fishing logbook to make sure it is best capturing data for assessment and management.
Need to capture important data of zero-catches	Carry out industry workshop to review logbook/ discuss filling out logbook and raise awareness with fishers about the need for accurate CPUE data and accurate spatial data – including the importance of recording zero-catches.
Spatial data issues with sunset logbooks – limited utility in past Spanish mackerel assessments.	Verify catch disposal record data against logbooks to understand variance between fishers. Consider how VMS data might be analysed for stock assessment purposes.
Need to capture TIB sector effort data – CDRs capture catch data but limited effort data.	Raise awareness among TIB finfish fishers about the need for accurate fishery data.
Need to reliably capture island freezer data	Ensure operational island freezers are filling out CDRs and awareness raising on value of accurate data for assessments and Harvest Strategy development.
Need monitoring for take from non-commercial sectors	Subsistence take project in progress. RAG advice is that recreational and charter catches are likely to be minimal.
Biological data issues	
Need to improve biological data inputs to stock assessment models due to age of most recent samples. Need to validate assumptions such as: age at maturity, age at length, length frequency.	Develop design of a sampling program alongside the Harvest Strategy project. Once designed evaluate how it might be delivered; e.g. through industry based sample collection, or an at-sea program funded through research channels. Investigate collection of samples to validate assumptions in the short term.
Stock structure	
Need to understand the relatedness within the Torres Strait SM and CT stocks to test the single-stock theory. Also important to understand connectedness to other adjacent stocks.	Previous acoustic monitoring carried out to examine SM exchange with Bramble Cay with limited findings. Genetic sampling could be carried out though this would likely be an involved project which would need to attract appropriate funding.
Assessment issues (SM)	
Need to understand how the SM assessment deals with most of the data coming from the Bramble Cay breeding aggregation of fish.	Next assessment update is to investigate.
Need to investigate the sudden peak of catches in the mid 2000's prior to the buyout and whether any of these catch data were 'paper' fish and the reported harvest level accurate.	Industry workshop and work on characterising the data, examining which boats entered the fishery and assess the accuracy of the available catch data from this time.
Ensure TIB sector changes such as experienced fishers leaving the fishery, freezers closing down, have been reflected in the assessment -	Data characterisation and industry workshop.
Ensure the impacts and benefits of the 2008 implementation of the 10 nm closures are understood and captured in the model (SM)	Next SM assessment update is to investigate. Industry workshop can record the impacts of the closures on reef-line sector marks (initial feedback is that this mainly impacted the SM sector)
Fish vulnerability (mainly SM issue)	
Improve understanding of fisher behaviour and how this varies across the fleet – including variation in gear setup, targeting practices, daily fishing effort.	Industry workshop to help stock assessment scientists and management characterise fishing practices.
Investigate SM 'domed' vulnerability where large fish are assumed to be less available to capture.	Next SM assessment update is to investigate.

	Next Spanish mackerel stock assessment		Ongoing education
	Industry workshop		Funded research
	Subject to future funding and advice on project design		

AGENDA

Torres Strait Finfish Harvest Strategy Project meeting

Dates: 21-22 March 2018

Venue: TSRA Building, Thursday Island - Torres Straits

Workshop Chair: Dave Brewer

Meeting co-ordinators: Trevor Hutton, Michael O'Neill, George Leigh & Andrew Tobin

Wednesday 21 March

08:30-9:00	RAG Agenda Items 1-2 [Preliminaries and RAG business]
09:00-9:45am	<ul style="list-style-type: none"> • Introduction to aims of harvest strategy project • Harvest Strategies - What are they and why? An overview • Explanation of the approach, components and examples • Questions
09:45-10:00pm	<ul style="list-style-type: none"> • Summary of project progress at the last Finfish RAG • Proposed Meeting <u>Action Items</u> - to progress project
10:00-11am	<u>Focus on Coral Trout</u> Description of the fishing sector and components Biology of species, harvests and fishing effort (data collected) Options for assessing stocks (species specific or aggregate) Specific data questions Uncertainties Current interim arrangements (set of indicators, harvest decision rule)
11-11:30am	Morning tea
11:30-12pm	<u>Action items: Coral Trout</u> - workshopping options
12-1pm	Lunch
1-2:30pm	<u>Focus on Spanish Mackerel</u> Description of the fishing sector and components Biology of species, harvests and fishing effort (data collected) Stock assessment (suggested sensitivity tests) Specific data questions Uncertainties Current arrangements (set of indicators, harvest decision rule)
2:30-3pm	<u>Action items: Spanish Mackerel</u> - workshopping options
3-3:30pm	Afternoon tea
3:30-4:30pm	<ul style="list-style-type: none"> • Recap on key challenges • Overview of risk and uncertainty • Feedback: view points from all • Summarise key points End of day 1

Thursday 22 March

08:30-9am	<u>Action Items</u> and Progress
9am-10am	Recap on Coral Trout - outstanding discussion points and issues Recap on Spanish Mackerel - outstanding discussion points and issues
10am-10:30am	Morning tea
10:30-11:30pm	Discussion on next steps

Torres Strait Finfish Working Group/Resource Assessment Group

Outline for sessions on harvest strategies

Meeting co-ordinators: Trevor Hutton, Michael O'Neill, George Leigh and Andrew Tobin

List of Meeting sessions and Action items

First session: Focus on Coral Trout

Meeting Action 1: Review uncertainties and practical management issues of assessing Coral Trout on the basis of main species (*Plectropomus leopardus*).

Meeting Action 2: As part of (A.1) review the implications for setting aggregated catch limits (for group of species) if Coral Trout is assessed on the basis of single species. Conversely, document potential increased uncertainties (and risks) with non-species specific assessments.

Meeting Action 3: Ascertain what was rationale for setting the current interim magnitude of Coral Trout catch levels. Where did the numbers come from? (we need information from WG and RAG).

Second session: Focus on Spanish mackerel

Meeting Action 4: Adopt a Limit Reference Point for Spanish mackerel.

Meeting Action 5: Adopt performance metrics for Spanish mackerel based on current standard performance measures/metrics used in fisheries.

Meeting Action 6: Discuss options for adopting a harvest control rule that takes into account the current stock assessment of Spanish mackerel, and responds to all the reference points. Explore 'response' rules to each reference point.

Meeting Action 7: Finalise agreement on different monitoring information that will be collected such as catch-at-age data (with consensus on who, when and by when?).

Third session: Key challenges, risks and uncertainties

Meeting Action 8: Review potential use of additional indicators (e.g. profit).

Meeting Action 9: Review potential use of additional performance metrics.

Fourth session: Wrap up/key points raised not considered before meeting

Meeting Action 10: Clearly document new points raised.