PZJA Torres Strait Finfish Fishery Resource Assessment Group

FFRAG Meeting 5

31 October- 1 November 2019
Novotel Oasis, Cairns

Draft Meeting Record

Note all meeting papers and records are available on the PZJA webpage:
https://www.pzja.gov.au/torres-strait-finfish-groups

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Australian Fisheries Management Authority

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Agenda Item 1 – Preliminaries

1.1 Preliminaries

The fifth meeting of the PZJA Torres Strait Finfish Fishery Resource Assessment Group (FFRAG) was commenced at 8:40 am. FFRAG Chairperson, Mr David Brewer, welcomed participants and acknowledged the Traditional Owners of the land on which the meeting was held. Tom Roberts from QDAF was noted as an apology.

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

The RAG Chairperson provided a presentation on the role of the RAG, terms of reference for providing advice to the PZJA (including consensus model) and procedures for declaring and managing conflicts of interest.

1.2 Adoption of agenda

The agenda (**Attachment A**) was adopted noting that the order of the agenda would be amended to ensure highest priority items were completed, commencing with industry updates followed by the main focus of the meeting - the Harvest Strategy Agenda item. It was noted that, if time permits, additional agenda items would be covered, including research priorities. No other business was raised and the revised agenda was accepted by FFRAG.

Additionally TIB industry members attended the QLD Department of Primary Industries Cairns Laboratory (Northern Fisheries Centre) to participate in Spanish mackerel biological sampling on the morning of Friday 1 November 2019.

1.3 Declarations of interests

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

Name and position	Organisation	Declaration of interest
David Brewer, Independent Chair	Upwelling P/L (David Brewer Consultancy).	Director – Upwelling P/L (David Brewer Consulting) which has no current Torres Strait projects or pecuniary interests. Honorary Fellow - CSIRO Chair - Torres Strait Finfish RAG Scientific member – Torres Strait Finfish Working Group Scientific member – Northern Prawn Fishery RAG Current consultancies with Quandamooka Yoolooburrabee Aboriginal Corporation, Redlands City Council. Co-investigator on non-commercial fish fishery project
Belinda Norris Acting Executive Officer	Australian fisheries Management Authority	No interests
Andrew Trappett, RAG Acting AFMA member	Australian Fisheries Management Authority	Involved in TSSAC pre-proposal project for Spanish mackerel stock assessment as data

		services and industry liaison role. Unpaid by project.
Rocky Stephen, Industry Member	Kos and Abob Fisheries, Ugar Brother Bear Fisheries, Ugar Torres Strait Island Regional Council.	Councillor for Ugar, Chairperson of Kos and Abob Fisheries Ugar, Works with brother in a commercial fishing business on Ugar, Eastern cluster representative on the PZJA Finfish Working Group. Sits on Prawn MAC and TS Scientific Advisory Committee. Does not hold a TIB licence. Elected TRSRA member for Ugar
Tenny Elisala. Industry Member	Industry, Torres Strait Regional Authority	TSRA Ranger Dauan, TIB licence holder.
Paul Lowatta, Industry Member	Industry	Full time commercial fisher. Holds a Torres Strait Traditional Inhabitant Boat Licence.
Kenny Bedford, Industry Member	Debe Mekik Le Consultancy	Runs a consultancy business which has recently delivered the infrastructure audit to TSRA
John Tabo, Industry Member	Industry, Torres Strait regional Authority	Commercial coral trout fisher. Holds a Torres Strait Traditional Inhabitant Boat Licence. Member of the Torres Strait Regional Authority Finfish Quota Management Committee.
Allison Runck, TSRA Member	Torres Strait Regional Authority	No pecuniary interests declared noting that TSRA holds access rights to Torres Strait Finfish Fishery and generates revenue on behalf of Traditional Inhabitants through seasonally leasing access.
Tony Vass, Industry Member	Industry	No financial interests in the Torres Strait. Former mackerel fisher in Torres Strait 1990 to 2008, does not own or operate a licence in Torres Strait.
Michael O'Neill, Scientific Member	Queensland Department of Agriculture and Fisheries	Principal scientist for TSSAC recommended project to develop a harvest strategy for the Torres Strait Finfish Fishery and pre-proposal for stock assessment work. Member of PZJA Finfish Working Group.
Tom Roberts, QDAF member	Queensland Department of Agriculture and Fisheries	No Interests declared
Ashley Williams, Scientific Member	Australian Bureau of Agricultural and Resource Economics James Cook University	ABARES fishery scientist under Department of Agriculture and Water Resources. Involved in previous TS research, is an author on the ABARES Fishery Status Reports.
Rik Buckworth, Scientific Member	Sea Sense (Consultancy)	Independent Fisheries Scientist with Sea Sense Consultancy, adjunct at Charles Darwin University, ex NT Fisheries, AFMA Northern Prawn RAG,. Principal investigator on a proposal seeking funding for TS Spanish mackerel

		assessment work. Chair of NT Research Advisory Committee for FRDC

Meeting Invited participants and declarations of interests registered.

Yen Loban	Industry	TIB licence holder, TSRA Fisheries portfolio members, TSRA member, Traditional inhabitant Torres Strait
Trevor Hutton	CSIRO	CSIRO receives research funding. Principal investigator for TSSAC recommended project to develop a harvest strategy for the Torres Strait Finfish Fishery. AFMA Northern Prawn Fishery RAG regular observer and PI for the NPF stock assessment project.
Jo Langstreth	QDAF monitoring program	Manager of enhancing biological data inputs to Torrs Strait Spanish mackerel stock assessment

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

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

Scientific members and invited participants

Scientific members, the Harvest Strategy project team and those involved with TSSAC research pre-proposals left the room (Rik Buckworth, David Brewer, Andrew Trappett, Trevor Hutton, Ashley Williams, Michael O'Neill and Allison Runck). The group considered their declared interests, noting the involvement of some in the Spanish mackerel stock assessment, harvest strategy project team and the Non-commercial fish fishery project.

The remaining Group considered the declared interests stated by the researchers and scientific members. The Group noted the potential conflicts of interest needed to be balanced against their subject matter expertise. The particular focus of this meeting was to develop harvest strategies for the Spanish mackerel and coral trout fisheries. It was considered that the input for the researchers and scientific members would be valuable during the development of these documents. The Group noted that much of the science was quite technical for non-science members and that the scientists should slow down their discussions and explanations.

The Group agreed that all these members and invited participants should participate in all discussions as their expertise would likely be required. If a clear conflict arose, the scientific members would leave the room and not participate in that discussion. The scientific members and researchers re-joined the meeting, were briefed on the discussion and meeting expectations and reminded that if they thought of any other areas of interests that they wished to have recorded that they could do so at any time.

Industry members

Industry members and other industry invited participants (Kenny Bedford, Paul Lowatta, Tenny Elisala, John Tabo, Rocky Stephen, Tony Vass and Yen Loban) left the room.

The remaining Group discussed that the fishers were an integral part of the development of the harvest strategies, as the access to the finfish fisheries are 100 per cent owned by traditional inhabitants. The Group noted that the advice from the FFRAG would support decisions being made about the fishery, therefore, needed to include expert advice from industry.

The Group discussed the declared interests of the members and participants that had left the room and noted that the potential conflicts were not just at the personal level, but could include if an industry member advocated for a particular cluster or community to have more benefit from a management arrangement than other areas of the fishery. The Group agreed to remind the industry members of this possible conflict.

The Industry members and participants were invited back into the room, briefed on the discussion and meeting expectations and reminded that if they thought of any other areas of interests that they wished to have recorded that they could do so at any time.

Government

Government employees and those on the TSRA Quota Management Committee (Allison Runck, Andrew Trappett, Kenny Bedford, Yen Loban, Tom Roberts and Belinda Norris) left the room.

The Group discussed the declared interests of the members and participants that had left the room. The Group noted that the TSRA had declared their holdings of finfish entitlements and that the revenue generated from leasing these entitlements (Sunset Licences) and that this revenue was invested in the development of the fisheries in the region.

The Group agreed that the Government members and participants were important in forming advice to the PZJA and should participate in discussions and that members and participants could be asked to leave if a direct conflict of interest applied to a particular agenda item.

Government employees and TSRA Quota Management Committee members were invited back into the room, briefed on the discussion and meeting expectations and reminded that if they thought of any other areas of interests that they wished to have recorded that they could do so at any time.

1.4 Actions arising from previous FRAG meetings

The RAG noted the agenda paper detailing actions from FRAG 4 (13-14 March 2019) and agreed to take the paper as read. AFMA is updating the Finfish webpage on the PZJA website and this is where all documents relating to the meetings are stored.

Agenda Item 2 – RAG Updates

2.1 Industry update

The RAG noted during this discussion that, in considering the future of the Fishery, the impacts of climate change will be a priority and there is a need for:

- Improved understanding of RAG members in interpreting climate change trends and impacts
- Data collection on impacts of climate change
- Need for the Torres Strait communities and PZJA advisory groups to be kept abreast of:
    - key developments and research across the broader Great Barrier Reef
    - how stakeholders can receive information on research and
    - data trends and how these developments may impact the Torres Strait.

The RAG noted that there is dashboard temperature tracking available for the Torres Strait through The Australian Institute of Marine Science, which would likely be a useful tool for fishers to track changes in water temperature (e.g. being used by Tropical Rock Lobster fishery in relation to avoiding cray deaths in cages in hot water during transit).

RAG also noted that remote sensing information was available on the National Oceanic and Atmospheric Administration (NOAA) website[1] regarding water temperature anomalies which stakeholders could freely access. Suggestion was made that the FFRAG should be monitoring trends and anomalies rather than absolute water temperature values.

FFRAG noted a number of updates from industry members:

- Fishers on Ugar have had little participation in the Finfish Fishery for the last six months due to unfavourable weather. Recent mackerel fishing has resulted in a range of different sized fish present in the catches.
- Erub Community Freezer is back online and presently purchasing finfish species from community fishers (TIB).
- A round of community visits have been undertaken by AFMA along with PZJA industry members. Focus of this round was to provide feedback to communities about the fish receiver system and data collection (outcomes detailed on page 115 to 161 of the meeting papers).

FFRAG 5, Action 1	AFMA are to advise on appropriate information streams and resources to help the FFRAG to consider the impacts of climate change on the Torres Strait Finfish Fishery.

Scientific

- There will be a new Queensland East Coast stock assessment for coral trout in 2020.
- A new stock assessment has been commissioned for Gulf of Carpentaria Spanish mackerel and will be published by QDAF in 2020.
- The next East Coast Spanish mackerel full assessment has been scheduled for 2021.

Government.

TSRA provided the following updates to the FFRAG:

- TSRA Environment Programme is looking at the possible use of towed underwater cameras for biodiversity surveys as part of the and opportunities for undertaking machine learning. This also includes possible trialling of baited cameras next year. FFRAG noted these approaches may be useful for coral trout abundance surveys in future.TSRA are supporting PZJA advisory committee traditional inhabitant members to travel in each cluster and lead presentations on the fisheries. These will become annual visits.
- TSRA have been progressing infrastructure investment in communities, including a package of 90 traineeships each year (as part of the QLD government Skilling Queenslanders for Work package) in the Torres Strait Fisheries over the next two years aimed at increasing indigenous participation in fisheries. Additional support is being provided to existing facilities to have three paid positions over an 18 month period (freezer manager, resources manager and admin position). Fishing boats and equipment will be provided as a part of the package with Erub Community Freezer as the first trial of this package.
- TSRA has supported a new micro enterprise development officer position on Thursday Island.
- TSRA has finalised an export and branding project and has made handbooks available, including to the FFRAG.
- TSRA is progressing with the establishment of a new commercial entity (planned for July 2020) which is aiming to hold access rights on behalf of traditional inhabitants (transferred from TSRA).

[1] https://www.ospo.noaa.gov/Products/ocean/sst/anomaly/

The AFMA member advised FFRAG that the agenda paper summarised AFMA updates and provided some key points to the group:

- AFMA noted that little TIB fishing effort has occurred so far in the 2019-20 season due to poor fishing weather and little finfish data has been received so far this season through the Fish Receiver System (FRS). The round of community visits (detailed in agenda papers) had seen good engagement from fishers with the FRS.
- Sunset licence holders report that the start of the season has yielded good daily catch rates at Bramble Cay.
- A number of sunset licenced vessels have had mechanical issues meaning fishing effort in the fishery has been low so far this season. It is expected these vessels will join later in the season than normally planned, meaning overall harvests may be lower than normal seasons.

FFRAG5, Action 2	AFMA are to confirm that TIB licence holders are receiving text message, catch-watch updates from AFMA linking fishers to the reports on the PZJA website.
FFRAG5, Action 3	AFMA to update the FFRAG on the outcomes of Torres Strait case study fisheries adaption to climate change case study to be presented once complete (it was noted that it may be appropriate for AFMA to arrange an expert to present to the FFRAG on this report at an upcoming meeting).
FFRAG5, Action 4	TSRA to forward FFRAG a link to AIMS water temperature self-serve portal.

Native title update
FFRAG noted that Malu Lamar, RNTBC, had accepted the PZJAs invitation to attend the meeting but was not in attendance.

Agenda Item 3 – Harvest Strategy

3.1 Draft Torres Strait Finfish Fishery Harvest Strategy Framework

The FFRAG noted that the Harvest Strategy project has now closed and the final report has been provided to AFMA. The FFRAG noted the summary table provided by AFMA with AFMAs views on the project outputs, outlining a number of outstanding points for progression ahead of implementing the Spanish mackerel and coral trout harvest strategies. Led by the AFMA member, the FFRAG worked through most components of the table and provided advice to support progression of the harvest strategy, as detailed at **Attachment B**.

Harvest strategy for Spanish mackerel

Key outstanding points that the FFRAG elected to revisit and provide advice on from the framework were:

- Confirming the B48 target reference point (and providing advice around B60 being an aspirational target for the future)
- Confirming the approach under the harvest strategy should the Spanish mackerel stock drop below B LIMIT (20 per cent of unfished biomass)

- Developing Decision rules (harvest control rules) and building rates for when the stock is above B LIM but below B TARGET - how the stock is to be moved towards target based on stock assessment outcomes
- Considering assessment cycle for Spanish mackerel under the Harvest Strategy, certainty and risk.

The FFRAG noted reference points had been agreed by stakeholders and captured in the project outputs. FFRAG considered that the key component that needed progressing was development of decision rules for building the stock to the target reference point.

The harvest strategy project team presented a hockey stick decision rule for consideration mapping a proposed relationship between harvest rate and biomass and how this relationship could be built into the stock assessment to set Recommended Biological Catches (RBCs) (RBC = biomass x harvest rate). It was agreed for this to be further developed into a matrix and considered at FFRAG 6 in the context of the Spanish mackerel stock assessment, with consideration being given to how RBC setting and decision rules might work under different possible scenarios under the Strategy.

The FFRAG advised that forward projections based on the model of how the stock would perform under different scenarios should be analysed and the RAG could examine risk to the stock based on the number of model runs where the stock is predicted to drop below the limit reference point of B20, noting the model uses a range of 35 model runs with maximum likelihood estimates.

FFRAG5, Action 5	FFRAG are to work on forming a matrix of scenarios (different target reference points and building rates) to support RBC setting and deciding control rules for the Harvest Strategy. Matrix is to compare RBC, time to reach B Target and risk to stock (being number of model runs dropping below the limit reference point.

Issues with low data levels under the harvest strategy

Noting that the indicator of Spanish mackerel stock abundance in the fishery is mainly driven by data from a small number of sunset boats (and that the same applies for coral trout), the RAG considered a future scenario for the fishery where these sunset fishers were no longer active (i.e. low abundance and small available TAC might mean no leasing, boat break downs or these fishers working other fisheries like QLD east coast). The RAG considered that this scenario would mean a loss of the signal of stock abundance and would require urgent development of alternative options for data collection to support ongoing understanding of the stock.

The suggestion was made that, if this scenario arose, a sunset boat could be contracted as a fishery dependent survey boat accessing set areas of the fishery; examining catch-rates at set locations, taking biological samples and performing tagging work. FFRAG did not recommend this as a firm option, but as a suggested method for consideration in future.

The PZJA Torres Strait Finfish Resource Assessment group **RECOMMEND** that if catch rate data (e.g. catch and effort data from sunset daily fishing logbooks) are no longer available from the fishery the RAG support investigation of alternative options for data collection.

The FFRAG recognised a key need for the future of the fishery would be to build a time series of TIB catch and effort data that marries with the sunset data series to support future assessment scenarios. It was noted that it would be challenging to standardise the two data streams given that the TIB sector

fished different areas with different fishing effort patterns

The TSRA Fisheries Portfolio Member suggested that, as a management priority, there is a need for the development of a statement to help fishers and community leaders understand the need for building TIB catch and effort data to support understanding the health of the Spanish mackerel and the harvest strategy, especially if Sunset licences are not active in the fishery. It was suggested that this should be publically released with a communications strategy e.g. in the Torres Strait News.

RAG strongly supported the push for legislation to be changed to support mandatory logbooks to maximise accurate data provision from TIB sector of the fishery. RAG considered that amendments to the daily fishing logbook may be necessary to streamline data collection with TIB fishers (e.g. simplified separate data sheets for Spanish mackerel and reef-line fishing, the FFRAG considered the *Northern Territory Government Spanish Mackerel Fishery Daily Log Sheet* as an example of a simple log-sheet) and that training on recording GPS co-ordinates may be required.

Harvest Strategy for Coral Trout

Given the meeting focus had been on progressing the harvest strategy for Spanish mackerel, the FFRAG agreed to continue reviewing the draft coral trout harvest strategy framework at FFRAG 6, but briefly touched on a few key issues.

FFRAG noted that the outputs of the harvest strategy project had recommended a 'holding pattern' approach for coral trout (based on the preliminary assessment suggesting there was currently 80 per cent of unfished biomass available and that a number of technical issues had been identified with the assessment for progressing) while further data was collected from the Fish Receiver System to support future analysis of the stock and harvest strategy options.

FFRAG noted the project outputs, based on stakeholder advice, suggest two triggers which may indicate changes in the risk profile for the stock:

1. Catches from TIB + Sunset sector exceeding 90t (being two thirds of the constant catch TAC of 134.9 t)
2. If the standardised catch rate per day drops below 90.6 kg per primary vessel day[2].

Either of these two triggers being met will flag a change in the stock status and will mean a stock assessment is to be carried out to investigate. FFRAG considered that further work would be required to develop decision rules based on the outcomes of this assessment if triggered; i.e. how are the outputs of the assessment used to then move the stock relative to the reference points.

Noting the next stock assessment is planned for 2021-22 (TAC advice for 2022-23) FFRAG advised that, until this time, the best practice would be for the RAG to examine standardised catch rates (rather than raw/nominal catch rates) in the intervening years to check how the stock is tracking and whether the trigger for stock status change has been met.

FFRAG strongly recommended that an alternative, robust indicator of stock status, other than CPUE from the small number of sunset boats targeting coral trout, needs to be developed to track the stock status over time.

3.2 Consultation and implementation of the Harvest Strategy

[2] The catch rate associated with B80 was determined to be 120 kg per day based on an average from 2012-2017 advice is that if it falls below 90 kg per day (as a proxy for B60) it would trigger an assessment.

This item was deferred until FFRAG 6 meeting.

Agenda Item 4 – Management and Science

4.1 Review of Western Line Closure

This item was deferred until FFRAG 6 meeting.

4.2 Australian Spanish mackerel stock assessments

This item was deferred until FFRAG 6 meeting.

4.3 Use of vessel Monitoring systems to support Finfish Fishery data needs

This item was deferred until FFRAG 6 meeting.

Agenda Item 5 – Research

5.1 Outcomes from the Torres Strait Scientific Advisory Committee (TSSAC) meeting

The RAG noted that:

- Nine projects were recommended for funding and funded through AFMA and TSRA budgets
- The AFMA funded projects have fully committed AFMA research funds for 2019-20 and approximately $365,000 (of a possible $411,000) for 2020-21.
- TSSAC will have approximately $45,000 for any urgent tactical project during 2020-21 financial year (the FFRAG research priorities may suggest projects to be funded against this amount).

5.2 Research Updates

5.2.1 Enhancing biological data inputs to Torres Strait Spanish mackerel stock assessment

QDAF Monitoring Program, Dr Jo Langstreth, provided an update to the RAG on the status of the funded project. The RAG noted that the project has had a good start by collecting fish frames from Sunset vessels and establishing channels to begin collection of TIB sector frames (with sample expected soon). Given peak fishing for the season is beginning, the project is on track to reach its targets with the following samples collected:

- Lengths: 37% of target reached - 551 supplied.
- Catches: 22% of target reached - 11 sampled.
- Otoliths: 16% of target reached - 78 fish sampled and otoliths extracted. More frames are en-route to Northern Fisheries Centre for sampling.

The sampling program will continue collecting frames and length-frequency data until March 2020 and then aging of collected otoliths (ear bones) will be undertaken.

FFRAG noted that QDAF are taking tissue samples from the Spanish mackerel frames being donated which will likely be appropriate for future genetic testing, should funding become available. RAG suggested that consultation with genetic experts would be required to provide information on how many samples and from what areas would be required to support a broader project on Spanish mackerel stock structure, e.g. close kin genetic sampling to understand abundance of mackerel. In the context of research priorities (Agenda Item 5.3) it was suggested that a broader research project, perhaps funded by FRDC, might examine gene-tagging or close-kin genetic abundance techniques across northern Australia to address reported declines in abundance from 2010. It was noted that storage of Torres Strait tissue samples from the current project was a good step to support future research.

5.2.2 Torres Strait Spanish mackerel stock assessment with appraisal of environmental drivers

Dr Michael O'Neill and Dr Rik Buckworth presented on the funded project. FFRAG Science Member Dr Rik Buckworth noted the pronounced decline in the Torres Strait stock and that the project was attempting to expand the assessment to include environmental aspects such as river flow, tide, primary production and climatology, such as sea surface temperature. It was noted that effort has been low in the fishery since the 2007 buyout so the project will consider other factors besides fishing mortality (which is not suspected to be significantly impacting these declining catch rates).

FFRAG Science Member Dr Michael O'Neill presented an overview on the preliminary data analysis, including updated data from 2018-19 fishing season received from AFMA:

- Analysis of total annual harvest from 2018-19 season has been completed
- Fishery level catch rates have been standardised and 2018-19 season appears to have a similar standardised catch rate to the previous season (2017-18) despite reports from industry that catch rates might have been improved
- Biological information (older ageing and length frequency data) has been assessed, noting that the missing 2005 data has been located and will be supplied to the stock assessment team for inclusion. QDAF also advised that some additional late 90's Torres Strait length-frequency data (and potential associated ageing otolith data) had recently been discovered and will be reviewed to see if it can be included in the assessment.

Dr Michael O'Neill advised that the Queensland Government is working towards forming 'core' stock assessments for key commercial species that will be automated and produced on a yearly basis, based on updated data.

The stock assessment team flagged an apparent data issue with the FFRAG - that the Bureau of Meteorology wind data received from Poruma (Coconut) Island weather station appeared to have declined since 2010 to a factor of about half of its long term average intensity. The FFRAG advised that these data seemed incorrect especially given that the Horn Island weather station data appeared to have consistently higher average daylight hours wind strength through the same period. An industry member from Masig Island, nearby to Poruma, confirmed that there did not appear to be an evident drop in wind strength in central Torres Strait over the period flagged and it was likely faulty recording equipment. The assessment team agreed to investigate discounting these data from use in the assessment model due to this uncertainty and using Horn Island data instead.

The RAG noted that Spanish mackerel catch rates presented from Queensland managed east coast and Gulf of Carpentaria fisheries did have evident decline in catch rate trends. The RAG noted that Spanish mackerel stocks are known to be supported by strong recruitment events (evidenced by tracking classes of recruits in the Queensland east coast mackerel fishery over time through their monitoring program) which in turn may be driven by environmental drivers.

FFRAG5, Action 5	Obtaining accurate catch and effort data from the TIB sector is a key data need. AFMA and TSRA are to continue supporting industry in collecting voluntary effort data in catch disposal records and work on progressing compulsory logbook reporting as a priority.
FFRAG5, Action 6	Spanish mackerel stock assessment team are to develop a matrix of harvest strategy scenarios to support FFRAG consideration of RBC setting options (35 runs for each scenario with maximum likelihood estimate); and to examine what risks these RBC options may pose to the stock (number of runs below the limit reference point) and how long each option will take to build the stock to the target reference point.
FFRAG5, Action 7	FFRAG are to consider retrospective analyses for Spanish mackerel and how these can be built in to the assessment

5.2.3 Developing an approach for measuring the non-commercial fishing in Torres Strait in order to improve fisheries management and promote sustainable livelihoods

FFRAG noted an update from funded project Principle Investigator, and FFRAG Industry Member, Kenny Bedford on the project. It was advised that the project will be investigating the design of a catch monitoring system, will examine past monitoring approaches and will report on data needs across the various sectors and stakeholders in Torres Strait Fisheries (noting the project does not apply solely to finfish species).

5.3 Five Year Fishery Research Plan

The PZJA Torres Strait Finfish Resource Assessment group **RECOMMEND** that the priority tactical research needs for funding in 2020-21 were:

1. Further biological sampling (ageing and length frequency) for Spanish mackerel. The RAG recommended this data collection ideally occurs for an additional three to four years; and
2. Updating the Standardised CPUE series for coral trout with additional catch and effort data to track how the stock is tracking

In forming their 2019 Fishery Five Year Research Plan, the RAG reviewed their input to the 2018 plan and what identified research priorities were at that time. The RAG noted good progress with funding secured to support development of the Fishery harvest strategy, stock assessments for Spanish mackerel and coral trout, as well as biological sampling and environmental risk assessment for Spanish mackerel. The main gaps identified that had not been progressed since 2018 were Management Strategy Evaluation Testing for the Harvest Strategy (noting AFMA advice that this would be considered based on the outputs from the funded project) and understanding stock structure for Spanish mackerel. The FFRAG noted that a number of points have previously been raised in relation to the Spanish mackerel data and stock assessment (paper fish, hyperstability - Bramble Cay centric data) which were being investigated through the two-year funded project.

Beyond tactical projects for potential funding in the 2020-21 financial year, the RAG considered a range of research needs for the fishery as detailed in **Table 1** below. AFMA advised that these research needs would be translated to the five year research plan and circulated out of session for RAG comment and that the identified tactical research needs (Spanish mackerel biological sampling and coral trout standardised CPUE analysis) would be presented to TSSAC at their late November 2019 meeting to be considered as scopes for 2020-21 research funding.

Table 1: Summary of FFRAG 5 considerations on Finfish Fishery research priorities.

Research	**RAG Comments**	**Priority / How to action**
Biological sampling for Spanish mackerel	RAG confirmed the need for biological data collection to support the Spanish mackerel stock assessments, build a time series and aid demonstrating that the stock is building towards the target reference point. RAG recommends three to four additional years of sampling to build a time series to attempt to understand changes in the stock age structure over time i.e. recruitment variation.	High priority data need to address the need to understand the declining catch rate trend (and noting the age of available data)- Immediate priority for tactical research funding through TSSAC. **ESSENTIAL**
Biological sampling for coral trout.	Suggested that a future project could expand existing Spanish mackerel collection protocols to collect coral trout frames for ageing, sexing and length frequency analysis and that this would help address the species basket issue by providing firm identification and catch composition data.	Important to develop an indicator of stock abundance aside from CPUE from the limited number of active sunset sector trout boats. Not recommended as an immediate priority for funding noting Spanish

	It was also suggested that the project could include fishers sending in photographs of whole catches of coral trout for catch composition and species identification.	mackerel is the higher priority focus at present given declining biomass.
Examining standardised CPUE for coral trout	Until additional work flagged on the coral trout stock assessment occurs, the only way to understand stock performance (changes in abundance) is to examine standardised CPUE. Examining raw (nominal) CPUE from logbooks will likely provide a false indication of stock performance. Therefore, a small project is required to put new catch and effort data into the standardised catch rate series and report on catch for a standardised unit of fishing effort (accounting for factors like time of day, wind strength, tide, moon-phase etc.).	Important to consider standardised CPUE as an indicator of stock performance and understand stock trends. Considered a relatively simple project with an additional year of CPUE data to be input into the existing standardisation. To be progressed by TSSAC as a high priority tactical research need. **ESSENTIAL**
Management Strategy Evaluation (MSE) testing of the fishery harvest strategy.	Noted that MSE testing is best practice ahead of implementing a harvest strategy to test if the Strategy is achieving the stated objectives for the fishery. AFMA has advised that funding for MSE testing will be dependent on the outputs of the HS Project and whether there is sufficient mechanical decision rules developed for testing. RAG advised that a project could be formed to conduct MSE testing and setup a mechanism to feedback the results from this testing into development, refinement and evaluation of different decision rules.	FFRAG considered that a project could be formed to conduct testing and evaluation/development of decision rules. FFRAG noted that the requirement for this approach would depend on the outcomes of the FFRAG 6 meeting where further consideration of harvest strategy options would occur.
Stock structure and broader ecological understanding of Spanish mackerel.	Testing the assumption of single Torres Strait management unit (single stock) noting most assessment data comes from Bramble Cay. In investigating potential environmental drivers of mackerel abundance, it is important to understand where recruits to the fishery are coming from, the structure within Torres Strait stock as well as level of connectedness with adjacent stocks in other fisheries. It is also important to understand the related ecological factors - what is driving recruitment (spawning success), feeding patterns, where spawning aggregations occur and to use this info to manage the Torre Strait stock e.g. predict where good fishery catch rates might occur, where/when protection may be required.	Noted as scientifically important but not recommended as a priority for the fishery at this stage. Recommended for TSSAC to discuss, progress potentially through FRDC channels as a broader project and look for collaboration with state governments noting other reports of declining Spanish mackerel catch rates across northern Australia.
Shark depredation	Study to investigate increased shark interaction with fishery operations and depredation impacts on Finfish Fishery catch rates (how to capture and track over time, potential mitigation options). RAG noted that this would be a good, broad level project that could investigate a number of fisheries that lose catch to sharks and could be funded by FRDC for example.	Recommended for TSSAC to discuss, progress potentially through FRDC channels as a broader project with further collaboration opportunities for other stakeholders.
Fishery independent survey data	Given the small number of boats supplying fishery dependent data (for mackerel and trout) as indicators and the risk of losing these signals of stock abundance	General RAG support for consideration of a project to look at alternatives to fishery dependent

	should sunset harvest cease (e.g. reduced TAC resulting in no leasing, break downs, boats leaving the fishery) there is a need for a project to consider options for understanding Spanish mackerel and coral trout biomass. Suggestion that biological sampling for Spanish mackerel has industry collecting frames from which tissue samples are being taken and stored which might form the basis for an ongoing project to develop and conduct gene-tagging[3] and/or close-kin genetic analysis (c.f. blue-fin tuna) to understand stock dynamics and abundance of mackerel over time. Though noted as expensive, it was also suggested that traditional tagging/recapture may be another valid approach. Additionally, a key input to the east coast coral trout assessment is abundance counts from underwater visual surveys. The Torres Strait assessment model uses values from the east coast model to assume coral trout abundance per hectare per reef habitat type. There is a need for survey work to validate these assumptions for use in Torres Strait stock assessment.	data though not recommended as an immediate priority for funding/progression given higher priorities for the fishery at this stage. Noted that an underwater visual survey for coral trout would be challenging in Torres Strait but underwater drone technology and baited cameras may help augment the dive survey approach. A future project could be formed to examine the feasibility and design of an approach to achieve an UWVS for coral trout in Torres Strait to prepare for when funding might become available to progress this work (given Spanish mackerel is the focus for research funding for now).
Otolith morphology	Suggested that more cost-effective long-term sampling for Spanish mackerel might be achieved by developing an index of mackerel ages based on the shapes and sizes of otoliths recorded so far. It was considered that development of this technique might mean less time is spent reading each otolith in future but cost would still be incurred in collecting each sample from industry and extracting the otoliths, meaning the return on such an investment may be low.	Not recommended as a priority for progression at this stage based on consideration of costs-benefits.
Optimum ratio B MSY to B MEY for Spanish mackerel	While stakeholders may select a higher future target reference point (e.g. B60) to support good catch rates and stock sharing, noted this will mean a trade-off for a lower RBC as less harvest will occur to keep more fish in the water and less boats will be active in the fishery. RAG supported a desktop study (e.g. applying Pascoe et al.[4] work to the Torres Strait Spanish mackerel stock c.f. QDAF east coast work) to determine the optimum ratio between B MSY and B MEY and the appropriate proxy economic target for the fishery.	General RAG support for this work as a smaller desktop study potentially in-line with future reviews of the harvest strategy. Not recommended for progression as an immediate research priority.

[3] https://www.csiro.au/~/media/OnA/Files/Southern-Bluefin-Tuna-Gene-tagging-factsheet-06-2018.pdf?la=en&hash=A51A86269A01BBDCD74754C74E687D61B48B5301

[4] *Estimating proxy economic Target Reference Points in Data-poor singe-species fisheries,* Pascoe, Thebaud & Vieira, Marine and Coastal Fisheries Dynamics, Management and Ecosystem Science 6:247-259 (2014) http://dx.doi.org/10.1080/19425120.2014.966215

Agenda Item 6 – Other business

6.1 Other business

FFRAG discussed the option of developing a five minute video summary of the outcomes from the meeting for circulation in Torres Strait communities (e.g. to be played at community meetings). A video summary was not actioned for this meeting due to time constraints but members were supportive of future meetings attempting to capture this summary if possible.

6.2 Next meeting and meeting close

The RAG noted that FFRAG 6 is confirmed for 27-28 November 2019 on Thursday Island.

In closing the meeting, the FFRAG Chair thanked all of the participants for their input with a lot of good productive discussion.

Meeting closed 17:00 Friday 1 November 2019.

Attachments

Attachment A: FFRAG 5 Agenda

Attachment B: FFRAG 5 Review of draft Spanish mackerel harvest strategy components

Table 1. Status of Spanish mackerel draft harvest strategy components.

Guiding principles and key fishery attributes – factors that helped shape the development of the Harvest Strategy		**RAG Comments**
Recommended	Consistent with the Commonwealth Fisheries Harvest Strategy Policy and Guidelines (HSP, 2018). This is consistent with objectives of the *Torres Strait Fisheries Act 1984* (the Act).	AGREED
	Have regard for traditional knowledge and the ability of communities to manage fishery resources locally, through acknowledging and incorporating customary and traditional laws, recognising; Malo Ra Gelar, Gudumalulgal Sabe, Maluailgal Sabe, Kulkalgal Sabe.	AGREED AFMA queried whether the Kaurareg nation was included in this statement. Traditional Owners present advised that Maluailgal Sabe law reference includes the inner western communities.
	Recognise commercial fishing by traditional inhabitants is important for local employment, economic development and for the passing down of traditional knowledge and cultural lore. Enough fish need to be left in the water for future fishers to make money and to protect the traditional way of life, livelihoods and cultural values. Spanish mackerel are a shared resource important for subsistence, commercial, traditional, charter and recreational sectors. Shared stock under the Torres Strait Treaty with PNG, stock to be shared if PNG nominate to do so.	AGREED - with minor change. RAG suggested that the word 'future' is added to reference sustainability.
	TACs should vary according to stock status (up and down): • If biomass decreases be cautious. Stock is not to go below the limit;	RAG noted that 'banking' fish was challenging to capture in the decision rules of a harvest strategy with stocks

	• If biomass is increasing be conservative; 'bank' fish.	generally building towards a target reference point in a prescribed way based on assessment outcomes. RAG noted that the prescription for this in-principle objective from traditional owners was in regard to when the stock was increasing, to not necessarily increase the TAC but possibly only after a trend/consecutive years of increasing stock. . RAG also advised that this approach and wording should also consider the level of certainty and precaution underlying future decision making. RAG suggested that this wording required greater clarity in the final harvest strategy but the spirit of the objective was understood and would likely only apply to the fishery when the stock has eventually build above the Target Reference Point and increases in TACs (via a potential fish-down of the stock to B Target by increasing harvests) are suggested by the assessment estimate of biomass. It was considered that clear decision rules to implement this stakeholder desire would need to be developed with stakeholders, potentially as the Strategy is reviewed over time.
	Having regard for the current stock size (B_{31}) and that B_{60} is not quickly achieved (possibly greater than 12 years) without significant reductions in catch which may in turn cause significant economic and social impacts on the Fishery, a shorter-term target reference point is first required.	AGREED. FFRAG noted that the Strategy has a focus on the immediate future of the fishery given present stock condition. It was noted that a 94 t RBC is not conservative and balances sustainability with socio-economic impacts; and that a 94 t RBC based on present biomass (31 per cent of unfished) might take 17 years to build to the B48 target reference point.

	Torres Strait Spanish mackerel stock are assumed separate from other regional stocks. They ~~do not mix~~ have limited mixing with the Queensland East Coast and the Gulf of Carpentaria stocks (see Buckworth et al. 2007 and Newman et al. 2009).	AGREED minor wording change to reflect limited mixing with adjacent stocks.
	There is potential for variations in availability and abundance of Spanish mackerel in the Fishery, due to their movement, schooling and aggregation patterns for feeding and spawning, recruitment and mortality.	AGREED with minor wording additions
	Spanish mackerel are a shared resource important for subsistence, commercial, traditional, charter and recreational sectors.	AGREED - Minor wording additions to acknowledge shared stock with PNG under the Torres Strait Treaty. and agreed to move this point to higher up in the table to give it higher precedence.
Outstanding	None identified at this time. Subject to any further FFRAG and Working Group advice	(none).

Operational objectives What we want the harvest strategy to achieve.		**RAG comments**
Recommended	Maintain the stock at (on average), or return to, a target biomass point (B_{TARG}) equal to a stock size that aims to protect the traditional way and life and livelihood of traditional inhabitants and is biologically and economically acceptable.	AGREED
	Maintain stocks above the limit biomass level (B_{LIM}), or an appropriate proxy, at least 90 per cent of the time.	AGREED
	Reduce fishing levels if a stock is below B_{TARG} but above B_{LIM}.	AGREED
	Implement rebuilding strategies, if the stock moves below B_{LIM}.	AGREED - considered further below in the context of decision rules if B LIM triggered.
Outstanding	None identified at this time. Subject to any further FFRAG and Working Group advice	FFRAG agreed with the operational objectives captured by the draft Harvest Strategy.

Indicators Indicators provide information on the state of the stock and how the stock is doing against agreed reference points (reference points are addressed below and are a specified level of these indicators)		**RAG Comments**
Recommended	Biomass – Catch and effort data from daily fishing logbooks is used as a proxy for abundance in the stock assessment model which is used to calculate biomass of the stock as a proportion of unfished biomass (B_0).	(not considered by FFRAG 5)
Outstanding (1)	Fishing mortality (B) based indicators. The stock assessment model can estimate a level of F to move the stock towards the target. There was some consideration from the FFRAG of using an F-based indicator in the harvest strategy. Advice is sought from the FFRAG on whether there is value in further exploring this as an option.	(not considered by FFRAG 5)

Reference points A reference point is a specified level of an indicator used as a basis for managing a stock or fishery. Reference points will generally be based on indicators of either the total or spawning stock size (biomass) or the amount of harvest (fishing mortality). Reference points show where we want (target) and don't want (limit) the stock levels in the fishery to be.			**RAG Comments**
Recommended	Unfished biomass (B_0) = B_{1940} = 100%.	The year 1940 is considered the start of the commercial operations in the Fishery. The unfished biomass B0 therefore is the model-estimate of spawning stock biomass in 1940.	AGREED
	Target (B_{TARG}) reference point = B_{48}	B_{48}[5] is the default target (a proxy for B_{MEY} - biomass at maximum economic yield) in the Commonwealth HS Policy ~~and the project team advise that B48 is less than BMEY.~~	AGREED with B48 as target reference point and removal of line as B48 is known to be less than B MEY.
	Limit reference point (B_{LIM}) = B_{20}	B_{LIM} is the spawning biomass level below which the ecological risk to the stock is unacceptable and the stock is defined as 'overfished'. This is an agreed level which we do not want the stock to fall below. B_{20} is the default limit proxy in the Commonwealth HS Policy[6].	AGREED

[5] Comm HSP: The target reference point for key commercial fish stocks is the stock biomass required to produce maximum economic yield from the fishery (BMEY). For multispecies fisheries, the biomass target level for individual stocks may vary in order to achieve overall maximum economic yield from the fishery. In cases where stock-specific BMEY is unknown or not estimated, a proxy of 0.48 times the unfished biomass, or 1.2 times the biomass at maximum sustainable yield (BMSY), should be used. Where BMSY is unknown or poorly estimated, a proxy of 0.4 times unfished biomass should be used. Alternative target proxies may be applied provided they can be demonstrated to be compliant with the policy objective.

[6] Comm HSP: All stocks must be maintained above their biomass limit reference point (BLIM) at least 90 per cent of the time. Where information to support selection of a stock-specific limit reference point is not available, a proxy of 0.2 times unfished biomass should be used.

Outstanding (2)	B_{48} is less than B_{MEY}	~~The HS project team advise the current target of B_{48} is less than B_{MEY}.~~ FFRAG discussion and advice on this calculation is required to ensure a common and clear understanding.	FFRAG supported the B48 target reference point and outlined the following rationale for adopting this value. FFRAG noted that the most recent assessment update was estimating B MSY for the stock as being close to the Commonwealth Harvest Strategy Policy of B40 which is a commonly accepted indicator in fisheries as a target reference point for maintaining a level of biomass (not catches) focused on maximising sustainable harvest (yield) from the fishery. Noting identified uncertainty in our data and stock assessment model there is a need to be precautionary and apply a 'buffer'. Traditional owners have also advised an objective for the fishery is to have a target biomass level that supports good catch rates. For these two reasons, a multiplier is applied to set the target biomass at a higher level than B MSY. It was noted in other fisheries this may be considered as a B MEY target reference point or proxy (to maximise economics from harvest taken) but in this fishery, B MEY is unable to be calculated without reliable price data from catches. The RAG agreed that a 20 per cent buffer would be applied to B MSY in order to set B TARG (1.2 times B MSY of B40 = B48), though consideration (based on QDAF experience) was given to alternative multipliers given work undertaken by Pascoe et al. to estimate the best proxy economic target reference point in data-poor fisheries. FFRAG considered comparisons of costs to revenue ratios and appropriate multipliers from the

			research but noted that the examples were not comparable with the Torres Strait Finfish Fishery. It was noted that a desktop study could be funded to calculate this optimum B MSY: B MEY point noting that setting a biomass level that is high will trade off available harvest and the number of boats active in the fishery.
Outstanding (3)	Long term B TARG = B_{60}	Advice from the HS project team and RAG scientific members is sought on the suitability of B60 as a long-term B TARG, in comparison to other target biomass levels above B_{MSY} having regard for the biology of the species and performance of the Strategy in meeting its objectives. Stakeholders have recommended that the Strategy ensures enough fish are left in the water to support commercial fishing but also protect the traditional way of life and livelihoods of traditional inhabitants. Advice to date is that a higher target biomass level (referring to 60%), would increase catch rates and improve profits in the fishery over other lower reference points, such as B_{48}. Having regard for any advice from the HS project team advice is sought however, RAG advice on the suitability of B_{60} against other possible higher target biomass levels. There are likely to be trade-offs between medium-term returns from the fishery (significantly reduced TAC) and longer-term returns (more fish in the water meaning less cost to catch and therefore higher returns. Also there would be more fish in the water for other users).	FFRAG agreed that B60 should not be included as part of the final harvest strategy and was aspirational only at this stage in the fisheries development. FFRAG are supportive of a future research project to determine what the optimum biomass for the fishery might be, noting, while aspirational, a value as high as B60 would likely trade off available catches and might limit the number of boats that could feasibly fish. FFRAG agreed that future research could focus on developing an optimum biomass in line with future reviews of the Strategy.

		Quantitative analysis and/or evidence from comparable fisheries is sought to enable more evidence-based advice and decision making on the longer-term target.	

Decision Rules (*also called Harvest Control Rules*) These rules are designed to maintain and/or return the stock to the target reference point.			**RAG comments**
Recommended	If stock falls below the limit reference point (B_{LIM}).	The Fishery is closed (all commercial fishing for Spanish mackerel is to cease) and subject to a rebuilding strategy. The nature of the rebuilding strategy will be determined on the basis of the stock assessment (to be applied immediately) and the rate of recovery (i.e. number of years to achieve a biomass greater than B_{LIM}).	AGREED FFRAG noted that before the biomass dropped below B20 the RBCs would be very small to move the stock away from this point.
	Re-opening the Fishery[7]	Following closure of the Fishery, the Fishery can only be re-opened when a stock assessment determines the Fishery to be above the biomass limit reference point.	AGREED
Outstanding (4)	If the stock is above the limit reference point but below the target reference point.	The RBC is to be set at level that allows for the stock to build towards the target. Importantly the decision rule can be designed to build the stock at different rates (e.g. the number of years for the stock to build to the target reference point or the rate of building near the target or limit). An outstanding action has been for the FFRAG to consider scenarios with multiple timeframes to build the stock to reach B_{48}. Specifically to examine a 12 year	FFRAG noted that the best way to build the stock to target was to reduce harvests but this approach needs to be balanced against socio-economic impacts when setting TACs based on the current state of the stock and the risk of losing long-term CPUE data sets from the fishery. Noted that as the fishery is open-access for TIB and with extra infrastructure coming online to support participation and potential low seasons in

[7] Comm HSP: Once a stock has been rebuilt to above the limit reference point with a reasonable level of certainty, it may be appropriate to recommence targeted fishing in line with its harvest strategy, which will continue to rebuild the stock towards its target reference point.

		recovery time (equivalent to 3 times the average age of maturity) and explore 10 and 8 year recovery periods as alternatives. Having regard for any advice from the HS project team, advice is sought from the RAG on appropriate building rates to incorporate into the HS decision rules and/or a work plan for examining options noting scenarios will be examined and presented by the Spanish mackerel stock assessment team (*AFMA funded project 2019/0831*) as part of the next stock assessment update to be presented at the FFRAG planned for 27-28 November 2019.	TRL/BDM there may be increasing fishing pressure which may impact building rates in the fishery. FFRAG noted that if the harvest control rules were applied at present with the stock currently at B31 to build the stock to B48 a harvest rate of approximately 9% would be recommended. The RBC for B31 would be 63t if strictly applied and the RBC once the stock reaches B48 would be 129t (an 18% harvest rate). However, during building to the BTARG the RBC should increase each year as the stock moves closer to BTARG. FFRAG noted the proposal to examine building rates of 8, 10, 12 year timeframes and what these would mean for the fishery (catches and catch rates). It was noted that the logic supporting a particular value as a building timeframe came from the harvest strategy policy and only applied (in the older HS Policy version) to when a stock was below B LIM. FFRAG noted that the funded mackerel assessment project would have building timeframes (forward projections) as a standard output and that FFRAG 6 could examine these rates in the context of the assessment update.
Outstanding (5)	If stock is overfished (below B_{LIM})	Consistent with the Commonwealth HS policy the FFRAG and FFWG have recommended that commercial fishing for Spanish mackerel should cease if the stock falls below B_{LIM}. Further FFRAG discussion and advice is now sought to consider additional decision rules and	FFRAG confirmed that under the HS targeted fishing will cease for mackerel if the estimate of biomass shows the level of the stock is below B LIM and a FFRAG will have a key role in developing a rebuilding strategy should this occur

		actions required to guide rebuilding and to trigger any necessary reviews of the HS, noting the HS should be designed to avoid the stock breaching the limit. FFRAG are to note and discuss the HS policy requirements to be included in the Spanish Mackerel HS if the stock falls below $B_{LIM:}$ a) that targeted commercial fishing for Spanish mackerel will cease b) a rebuilding strategy will be developed to build the stock above B_{LIM} with a reasonable level of certainty c) if B_{LIM} is breached while the fishery is operating in line with HS, the HS must be reviewed. FFRAG to provide advice on: a) A process to understand how the stock has rebuilt above B_{LIM} with certainty in the absence of commercial fishing e.g. model projections. b) whether a decision rule with a lower level of fishing pressure would be appropriate if the stock is above but close to B_{LIM}.	(in line with Commonwealth Harvest Strategy Policy). FFRAG noted that four years would likely be the minimum possible recovery time (based on biology of the animal) to rebuild the stock back above B LIM and the existing model could be used to forecast how the stock would respond with zero catches if closed to commercial fishing.
Outstanding (6)	Utilisation related Decision Rules (desired fishing intensity) noting a fishery may have indicators and	Decision rules have yet not been established for harvest related performance metrics such as future 'target' catches or 'target' catch rates desired by industry per primary vessel or per TIB dory day. Given that limited catch and effort data has only recently become available from TIB sector, the HS focus has been on agreeing biomass based reference points and decision rules. Additionally, at the last FFRAG/FFWG meeting with regard to considering various longer-term target biomass reference points, industry expressed a strong preference	(not discussed)

	reference points including spawning stock size (biomass) or the amount of harvest (F or fishing mortality i.e. utilisation of the resource).	for management to focus on building the biomass back to BTARG in the coming years, before exploring any other scenarios. FFRAG are asked to confirm this approach and consider how future decision rules may incorporate increased growth of the TIB sector.	
Outstanding (7)	Precautionary increases to total allowable catches.	Stakeholders recommended that if the stock assessment outcomes suggested increases in the TACs, these increases should only occur slowly through some kind of change limiting rule, noting that an increased TAC would likely not affect the TIB sector with the low present level of utilisation. Stakeholder advised a preference for 'banking' these fish to contribute to the biomass and future catch rates rather than harvesting this extra stock. At the last FFRAG/WG meeting a number of challenges were identified with applying a change limiting rule for possible TAC increases. Instead the RAG/WG placed priority on examining different building rate scenarios which may achieve this desired precautionary outcome. FFRAG are asked to confirm this approach and provide advice on how to progress change-limiting rules if necessary.	Not specifically discussed by the RAG. However, at other items it was considered that focus would need to be on building the stock to B40 and development of harvest control rules in future to address this stakeholder desire when biomass is proven to be above B TARG.

Monitoring and assessment cycle		RAG comments
Recommended	Based on the most recent estimate of the stock status (0.31 times unfished biomass) and declining biomass (and CPUE) trend, a stock assessment should be performed annually until the biomass is estimated to be above B_{40}.	AGREED.
Outstanding (8	Subject to any further advice from the HS project team, FFRAG advice is sought on: a) An appropriate assessment cycle when the stock is above B40 and/or methods for evaluating future assessment cycles. b) Likely data needs to support monitoring stock performance under the Strategy over time, noting that some biological data is to be sampled in 2019 and 2020 as a snapshot to augment our understanding and assessment of the stock but no monitoring program advice has been developed or presented to date. c) Standard procedures for applying the decision rules to the stock assessment outcomes, and, any other minimum stock assessment scenarios, and/or, sensitivities that should be examined to support 2019-20 season TAC setting (e.g. FFRAG 4 used a methodology of selecting the median of a range of plausible stock assessment scenarios to recognise a range of uncertainty).	FFRAG noted that although other options balancing risk and cost might be considered, given the decline in catch rates, transitional nature of the fishery, lack of fishery independent monitoring and suggestions of environmental influences on the fishery, there is a strong rationale to conduct yearly stock assessments for Spanish mackerel. FFRAG considered that examining CPUE in intervening years between full assessments (as an alternative) would be possible as an indicator of stock health but running a full assessment using the model would be more cost effective - given that running CPUE standardisations alone does require time and resources and the accepted full model can be run. FFRAG recommended that until MSE testing had been conducted, and the stock could be demonstrated to be at or above B40 (as a B MSY proxy), yearly stock assessments are required. QDAF advised that conducting assessments over the next two years will be semi-automated and hence, it will not be unreasonable to run annually, provided data supply is consistent (i.e. just inputting new seasons catch and effort data).