14th Meeting of the FFRAG – Wednesday 30 August 2023

Thursday Island/Video Conference

Index

14th MEETING OF THE PZJA TORRES STRAIT
FINFISH FISHERY RESOURCE ASSESSMENT GROUP (FFRAG 14)

Wednesday 30th August 2023 (830am – 5pm)

Joint Video Conference / Face to Face Meeting - Thursday Island (Pearls Building)

AGENDA v1

1 PRELIMINARIES

1.1 Acknowledgement of Traditional Owners, Welcome and Apologies

The Chair will welcome members and observers to the 14th meeting of the FFRAG.

1.2 Adoption of Agenda

The FFRAG will be invited to adopt the draft agenda.

1.3 Declaration of Interests

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

1.4 Out-of-Session Correspondence

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

2 STOCK ASSESMENTS

2.1 Review of Data Inputs to Support the 2023 Spanish Mackerel Stock Assessment

The RAG will be invited to discuss and provide advice on data inputs (including total harvests, standardised catch rates, fish age compositions) for the 2023 Spanish mackerel stock assessment and recommended model analysis to calculate the Recommended Biological Catch (RBC).

2.2 Estimates of Spanish Mackerel and Coral Trout Non-Commercial Catch

The FFRAG are to discuss and provide advice to the Finfish Fishery Working Group and PZJA on best estimates of Spanish mackerel and coral trout catches taken outside the fishery. This includes catches taken for traditional use (kai kai), recreation, charter fishing and PNG catch sharing.

3 DATE AND VENUE FOR NEXT MEETING

The FFRAG will review the date and venue for FFRAG 15 (29-30 November 2023) and be advised of upcoming meetings of the FFWG and PZJA meeting to decide next season's sustainable catch limits (January 2024).

4 OTHER BUSINESS

FFRAG members will be invited to discuss other business for consideration.

The Chair must approve the attendance of all observers at the meeting. Individuals wishing to join the meeting as an observer must contact the Executive Officer – Chris Boon (chris.boon@afma.gov.au)

TORRES STRAIT FINFISH FISHERY RESOURCE ASSESSMENT GROUP	Meeting 14 30 August 2023
PRELIMINARIES Welcome and Apologies	Agenda Item 1.1 For NOTING

RECOMMENDATIONS

1. That the Resource Assessment Group **NOTE**:
    a) an acknowledgement of Traditional Owners;
    b) the Chair's welcome address;
    c) apologies received from members unable to attend.

2. As of 29 August 2023, one formal apology has been received from Benny Dau.

TORRES STRAIT FINFISH FISHERY RESOURCE ASSESSMENT GROUP	Meeting No. 14 30 August 2023
PRELIMINARIES Adoption of Agenda	Agenda Item 1.2 For DECISION

RECOMMENDATION

1. That the Resource Assessment Group consider and **ADOPT** the draft agenda.

BACKGROUND

2. A first draft annotated agenda was circulated to members and observers on 11 August 2023.
3. As of 28 August, no comments were received on the draft agenda.
4. Agenda item 1.4 'Out-of-Session Correspondence' was added to the agenda by the Executive Officer.
5. The official meeting agenda was then recirculated on 29 August 2023.

TORRES STRAIT FINFISH FISHERY RESOURCE ASSESSMENT GROUP	Meeting 14 30 August 2023
PRELIMINARIES Declarations of Interest	Agenda Item 1.3 For DECISION

RECOMMENDATIONS

1. That the Resource Assessment Group members:

   a) **DECLARE** all real or potential conflicts of interest in Torres Strait finfish fisheries at the commencement of the meeting (**Table 1**).

   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 Resource Assessment Group regarding the management of conflicts of interest.

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

BACKGROUND

2. Consistent with *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.

3. Resource Assessment Group members are asked to declare all real or potential conflicts of interest or update the standing list of declared interests (**Table 1)** if required.

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

5. When a member recognises that a real or potential conflict of interest exists, the conflict must be disclosed as soon as possible. Where this relates to an issue on the agenda of a meeting this can normally wait until that meeting, but where the conflict relates to decisions already made, members must be informed immediately. Conflicts of interest should be dealt with at the start of each meeting. If members become aware of a potential conflict of interest during the meeting, they must immediately disclose the conflict of interest.

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

of interest, and subsequent decisions by the forum, must be recorded accurately in the meeting minutes.

Table 1. FFRAG member and observer Declarations of Interest to be updated at the meeting. Interests declared by those persons at FFRAG meeting 12 (3-4 November 2022) and FFWG meeting (7-8 December 2022) are shown.

Name	Position	Declaration of interest
Members		
David Brewer	Chair	• Director – Upwelling P/L (David Brewer Consulting). • 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, Newcrest Mining Ltd. • Ex co-investigator on the completed Torres Strait 'Non-commercial catch' project. • As a fisheries consultant, may apply for funds for Torres Strait fishery research projects in the future where consistent with hisrole as Chair.
Rocky Stephen	Industry member	• Traditional Owner (Kemer Kemer Meriam), Ugar. • Councillor for Ugar. • Chairperson of Kos and Abob Fisheries Ugar. • Works with brother in a commercial fishing business on Ugar (Brother Bear Fisheries). • Eastern cluster representative on the PZJA Finfish RAG & Working Group. • Traditional inhabitant member - Torres Strait Prawn Management Advisory Committee. • TSRA Board member for Ugar • TSRA Finfish Quota Management Committee. • TSRA Board Fisheries Advisory Committee member. • Member of Zenadth Kes Fisheries company.
Terrence Whap	Industry member.	• Traditional Owner (Maluialgal), Mabuiag. • Member of the PZJA TRL working group • President of the local fisherman's association in Maluialgal • PBC Director • TSRA Board Member and Ranger
Harry Nona	Industry Member	• Traditional Owner (Kaureg). • Fulltime fishermen • TIB licence holder

Name	Position	Declaration of interest
Benny Dau	Industry member	TBC
Gavin Mosby	Industry Member	• Traditional Owner (Kulkalgal), Masigal. • TIB licence holder • Member of the TS Prawn MAC • ZK fisheries board member • Member of local fishing association
Michael O'Neill	Scientific Member	• Principal scientist for TSSAC recommended two-year project for Spanish mackerel stock assessment work. • Member of PZJA Finfish RAG and Working Group. • Coinvestigator on the TSSAC finfish age-length monitoring project. • Principal fisheries scientist working with the Queensland Government (Department of Agriculture and Fisheries, Fisheries Queensland) in the stock assessment program.
Ashley Williams	Scientific Member	• Recently moved to CSIRO in 2020. Continued work with ABARES as a fishery scientist under Department of Agriculture and Water Resources. Involved in previous Torres Strait research.
Andrew Penny	Scientific Member	• Researcher and management scientist. • Serves on six AFMA/PZJA advisory groups. • Conducted research previously with the Torres Strait Prawn fishery and Tropical Rock Lobster fishery. No current Torres Strait projects. • Is a consultant with a general interest in tropical fisheries. • Researcher on current projects involving climate change/stock assessments.
Chris Boon	AFMA Member	• Employed by AFMA, no pecuniary interests or otherwise
Rachel Downes	RAG Executive Officer -AFMA	• Employed by AFMA, no pecuniary interests or otherwise
Nicholas Richards	Torres Strait Regional Authority (TSRA) Member	• Employed by TSRA – Project Manager (Fisheries). • No pecuniary or vested interests in Torres Strait fisheries as an individual. • Notes that TSRA holds finfish fishing licences on behalf of Traditional Inhabitants.
TBC	QDAF Member	TBC
Permanent Observers		
TBC	Malu Lamar	TBC
Egon Stewart	Industry Observer	TBC

Name	Position	Declaration of interest
Casual Observers		
Ian Butler	ABARES	• No pecuniary interests
Quinten Hirakawa	TSRA	• TIB licence holder with Spanish mackerel, Reef line, Tropical Rock Lobster and Beche-de-mer endorsements • Has a background as a commercial Tropical Rock Lobster fisher. • Co-investigator on the Spanish mackerel and coral trout biological sampling project.

TORRES STRAIT FINFISH FISHERY RESOURCE ASSESSMENT GROUP	Meeting 14 30 August 2023
PRELIMINARIES Out of session correspondence	Agenda Item 1.4 For NOTING

RECOMMENDATIONS

1. That the RAG **NOTE** the correspondence sent out-of-session since 11/11/2022.

BACKGROUND

2. The following correspondence was circulated out-of-session since 11/11/2022. Copies of this correspondence can be requested at any time from the FFRAG Executive Officer.

Date	Item
11 November 2022	For comment: DRAFT FFRAG 11 Meeting Record
09 December 2022	FFWG Meeting - 7 - 8 December 2022 - Documents for WG noting
03 January 2023	FFRAG 12 Record
18 January 2023	For action: Finfish Harvest Strategy Workshop - Proposed dates. Please indicate your availability
09 March 2023	Finfish Harvest Strategy Workshop
28 March 2023	Finfish Fishery RAG meeting - June 2023
06 April 2023	Response required: FFRAG 13 - Stock Assessment Data Meeting
02 May 2023	RE: Finfish Fishery RAG meeting - June 2023
07 June 2023	FFRAG FFWG OOS item - ERM policy and guidelines - FOR PUBLIC COMMENT
27 June 2023	FW: Public comment notice for the Torres Strait Finfish Fishery
12 July 2023	FFRAG 14 - Stock Assessment Data Meeting. 30th August 2023. Teams link included
02 August 2023	FFRAG 15 / FFWG Meeting Dates - 29-30 November
11 August 2023	RE: FFRAG 14 - Stock Assessment Data Meeting. 30th August 2023. Teams link included
11 August 2023	FFRAG - Draft Research Scopes - for comment

TORRES STRAIT FINFISH FISHERY RESOURCE ASSESSMENT GROUP	Meeting 14 30 August 2023
SPANISH MACKEREL STOCK ASSESSMENT Review of data inputs to support the 2023 Spanish mackerel stock assessment	Agenda Item 2.1 For DISCUSSION & ADVICE

RECOMMENDATIONS

1. That the RAG:

    a) **NOTE** a presentation from the Spanish mackerel stock assessment project team summarising data inputs, including newly available catch and biological data, that are available for use in the scheduled 2023 stock assessment update; and

    b) **DISCUSS** and **RECOMMEND:**

        (i) key data inputs available for use in the 2023 stock assessment; and

        (ii) model analyses to calculate the Recommended Biological Catch.

KEY ISSUES

2. The project "*Torres Strait Finfish Fishery Spanish mackerel stock assessment"* (project number 200815) was approved in June 2021. The 2023 stock assessment will be the third assessment conducted during this project, and will support the FFRAG in formulating a Recommended Biological Catch (RBC) for the 2024-25 season.

3. The outputs of the 2022 stock assessment were delivered to the FFRAG and Working Group (FFWG) and advice from these groups was used by the Protected Zone Joint Authority (PZJA) at their 28 February 2023 meeting to decide a Total Allowable Catch (TAC) for the present 2023-24 season (1 July 2023 to 30 June 2024).

4. The PZJA set the Torres Strait Finfish Fishery TAC for Spanish mackerel for the 2023-24 fishing season at 75 tonnes.

5. The 2023 stock assessment will utilise data up to 30 June 2023. This assessment will be reviewed by the FFRAG and FFWG, then considered by the PZJA at their planned January 2024 meeting to set the TAC for the next fishing season (2024-25 season starting 1 July 2024). Should further time be required by the FFRAG (e.g. if additional meetings are required by the committee), the PZJA TAC decision can potentially be deferred to a later out-of-session meeting in the first quarter of 2024.

6. There are three outcomes required from FFRAG 14 for the 2023 Spanish mackerel stock assessment:

    1) Review the data for 2023.

    2) Select the data treatments for 2023.

    3) Define the stock assessment model analyses to support setting an RBC.

7. Best practice in the process of undertaking a fishery stock assessment is to consider available data sources and inputs then review how they are to be used in the model. The outputs of a stock assessment model (such as abundance of fish) are dependent on the agreed treatments and quality of data that are put into the model (blue and orange cells in the **Figure 1** overview below).

8. As per the usual process in undertaking a stock assessment, the project team have identified a number of data treatments which require review. A summary of assessment items for the FFRAG are summarised in **Table 1,**

noting that previously reviewed items may be re-examined to ensure they are still appropriate for the 2023 stock assessment.

9. The project team are seeking RAG views on confirming how to treat these data as inputs into the model ahead of the 2023 stock assessment update which will be presented at the FFRAG 15 meeting on 29-30 November 2023.

10. The project team are also seeking RAG views on reviewing the number of model-runs performed in the 2023 assessment (recall that a range of **six** specific agreed core model analyses with a range of treatments/factors were presented in 2022 to support setting an RBC). **See Table 2 in background section**.

11. Four additional model analyses were recommended at FFRAG 11 as 'sensitivity-trials'. **See Table 3 in background section**. Only the six core model analyses were considered by the FFRAG when formulating the RBC in 2022.

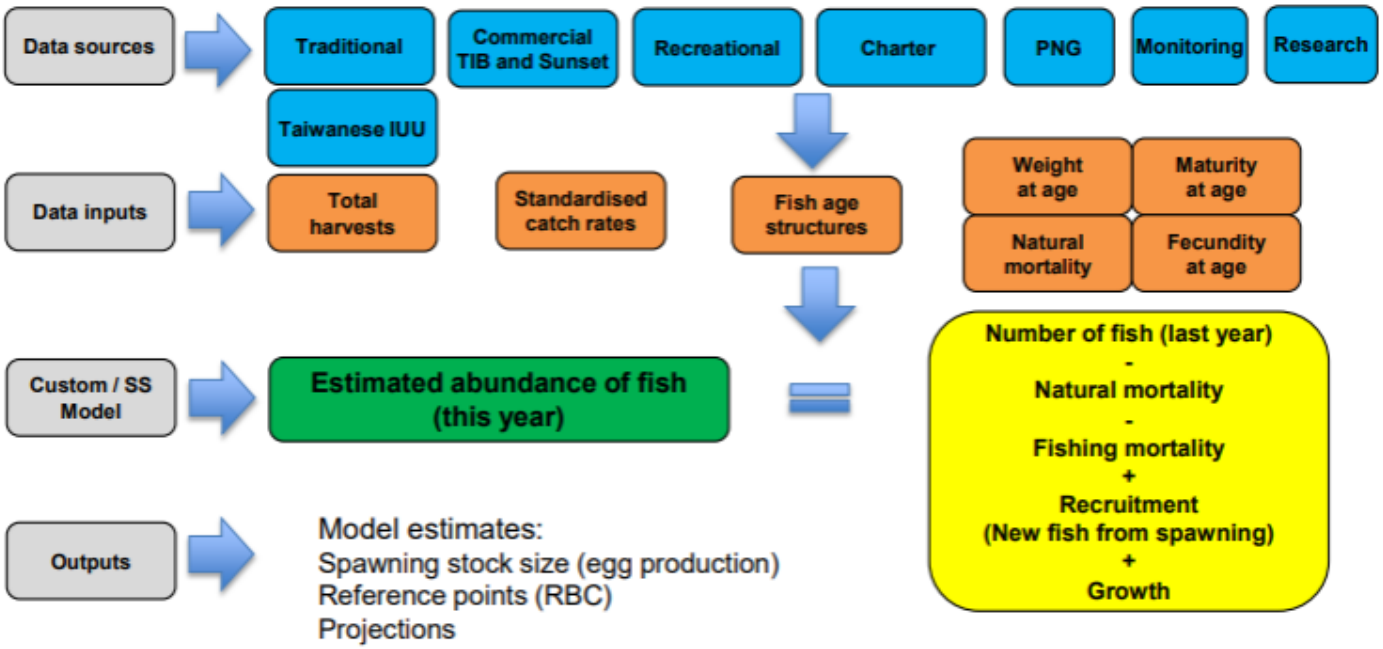

Figure 1. Overview of components of the 2022 Spanish mackerel stock assessment. *Source: Michael O'Neill QDAF presentation to FFRAG 11, 2022.*

PLAN OF ACTION

1) Review the data for 2023.

- The FFRAG will provide advice on which available biological data should be utilised for the 2023 stock assessment.
- Biological data which was collected during the 2022/23 season is available for input into the 2023 stock assessment. This data comprises the second round of sampling from AFMA project number 2020/0814, project title: *Torres Strait Finfish Fishery Coral Trout and Spanish Mackerel Biological Sampling 2021-2024.*
- The FFRAG will also be asked to review all other data inputs to be included in the 2023 stock assessment. Refer to **BACKGROUND** section below for a summary of data input decisions reviewed at FFRAG 11 (12 Oct 2022).
- **Inputs into the 2022 stock assessment** included:

i. Catch and effort data from Sunset sector fishers Daily Fishing Logbooks (TSF01) from 1989 to June 2022.

ii. Catch data, and some limited effort data, from the Fish Receiver System (Catch Disposal Records (CDRs) – TDB02).

iii. Biological sampling data from the QDAF Long Term Monitoring Program 2000 to 2003 including length, sex and ageing data.

iv. Meteorological data including wind strength, wind direction and lunar phase.

v. 2019-20 and 2020-21 season length, sex and ageing data from the funded project "*Torres Strait Finfish Fishery: Coral Trout and Spanish Mackerel Biological Sampling"*.

vi. 2021-22 season length, sex and ageing data from the funded project "*Torres Strait Finfish Fishery: Coral Trout and Spanish Mackerel Biological Sampling"*.

vii. 2005 length measurements and ageing data from an older JCU sampling project.

- **Newly available data** for the 2023 stock assessment include:

i. 2022-23 season length, sex and ageing data from the funded project "*Torres Strait Finfish Fishery: Coral Trout and Spanish Mackerel Biological Sampling"*.

ii. 2022-23 season catch and effort data from TSF01 Daily Fishing Logbooks (Sunset sector only).

iii. 2022-23 Fish Receiver System catch data from TBD02 Catch Disposal Records (Traditional Inhabitant Boat sector and Sunset sector).

2) Select the data treatments for 2023.

- The 2023 stock assessment will lead on from data treatments selected for the 2022 stock assessment. Pending any new advice from the RAG, the 2022 assessment will follow RAG advice provided at FFRAG 11 and FFRAG 13.

  Refer to **BACKGROUND** section below for a summary of data treatment decisions reviewed by the RAG at FFRAG 11.

3) Define the stock assessment model analyses to support setting a Recommended Biological Catch.

- The project team are seeking RAG views on reviewing the number of model-runs to be performed in the 2023 assessment. See **Table 2** for the outputs provided by the six core model-runs presented at FFRAG 12 (3-4 Nov 2022) which supported the Recommended Biological Catch.

  Refer to **BACKGROUND** section below for a summary of stock assessment model decisions reviewed by the RAG at FFRAG 11.

Table 1. FFRAG list of assessment items previously reviewed. Red font – outstanding

Assessment item
1. Total annual harvest tonnes
Established time series of TIB harvests
Standardise AFMA and DAF data scripts
Revise annual fish weights in Sunset tonnages
Review harvest estimates 1940-1988
Keep or adjust the 100 t Taiwanese gillnet harvest 1979-1986
Assess logbook over reporting of fish harvest (paper fish)

2. Standardised catch rates
Assess all boats and subsets of boats
Include annual increase in fishing power from QLD East Coast
Spatially classify harvests
Re-examine the number of dories reported
Categorise fishing skippers and dory drivers
Re-examine the GLM influences – effects of model terms
3. Biology
Using Torres Strait data
Select new age frequency data
Select natural mortality rates
Spawner – recruitment steepness
4. Stock assessment model
Demonstrated methods and model to the RAG
Define the data treatments (analyses) – (Re-review for 2023)
Stock forecasts assuming constant harvests
Set the method for calculating RBCs
Design RBC decision tables
Dissect the depletion levels up to 1989 and catch history
Retrospective analyses

Table 2. Summary of RBC options presented to the FFRAG (meeting 10) as outputs from the '1940 custom model' in the 2021 Torres Strait Spanish mackerel stock assessment. Each RBC option was calculated using six core model-analyses.

No.	Name of RBC approach 1941 custom model	% of all simulations below S_{20} over 12 years and 6 analyses Assuming average recruitment and constant RBC	Median RBC tonnes Over 6 analyses
1	Constant F_{MSY}	12.7%	137
2	Constant F_{40}	12.2%	132
3	Constant F_{48}	10.3%	102
4	Constant F_{50}	9.9%	95
5	Constant F_{60}	8.9%	67

BACKGROUND

Extract from FFRAG 11 meeting record 12 October 2022. Data input decisions for 2022 Spanish mackerel stock assessment.

1 The FFRAG noted a presentation from Dr O'Neill on the 2022 Spanish mackerel stock assessment and model analyses. The presentation summarised newly available data for the 2022 stock assessment and presented several data-treatment questions for discussion. Newly available data includes catch and effort data from the 2021/22 fishing season, and length/age data from the biological sampling program (project number 2020/0814). The RAG was asked to discuss and provide advice across four separate data assessment categories:

1. Total Annual Harvest
2. Standardised Catch Rates
3. Biology
4. Stock Assessment Model/RBC Calculation

2 The RAG reviewed the list of assessment items on slide four of the presentation and were invited to discuss the items listed in blue. The RAG noted that items listed in red have been discussed and identified as important at previous meetings but are yet to be addressed. Items listed in black have been addressed, but if uncertainty is raised in the future then the RAG will be invited to revisit these points.

3 While reviewing slide ten of the presentation, Dr O'Neill drew the RAG's attention to a labelling change for 'fishing season' which has been implemented throughout the 2022 stock assessment. Each fishing season will now be labelled with the ensuing calendar year; 2021/22 is labelled 2022 etc.

Data Item 1 – Total Harvests

4 The RAG noted that an additional 6.6 tonnes of sunset catch has been added to the stock assessment model for the 2018/19 season. This was due to the late submission of five Catch Disposal Records. There was also a small increase to the TIB catch for the 2020/21 season for the same reason. The RAG noted that 5.8 tonnes had been reported from the TIB sector for the 2021/22 season, representing a significant increase compared to 3.5 tonnes from the 2020/21 season.

5 The RAG recommended to include all newly available commercial catch-weight data from the 2021/22 season, which comprised the 5.8 tonnes from the TIB sector and 47.3 tonnes from the sunset sector. In addition to an estimate of non-commercial catch (see agenda item 2.2), this brings the total catch for the 2021/22 season to **73.1 tonnes.**[1]

6 The RAG also agreed to an expected harvest for the 2022/2023 season. This was projected to be **81 tonnes** (sunset sector - 57 t , TIB Sector - 4 t, 15 t kai kai, 5 t rec, and 0 for charter and PNG). This projected harvest will be entered in the stock assessment to calculate an RBC for the 2023/24 season (see agenda item 2.2).

7 The RAG recommended to retain all remaining 'total harvest' data treatments in line with the 2021 assessment.

[1] The projected estimate of total fishing mortality for the 2021/22 fishing season provided at FFRAG 9 was 74 t (50 t sunset harvest, 4 t TIB harvest (based on the mean of the past three TIB seasons), 15 t subsistence, 5 t recreational and 0 t of PNG & charter catches).

Data Item 2 – Standardised Catch Rates

Sunset sector catch rates

8 The RAG reviewed the Generalized Linear Model (GLM) variables on slide nine and discussed newly available sunset sector catch-per-unit-effort (CPUE) data for 2021/22 season. This data has been applied to the standardised catch rate analysis which has updated the CPUE timeseries (slide ten of the presentation). Notably, standardised catch rates increased from approximately 22 fish-per-boat-day in 2020/21, to approximately 29 fish-per-boat-day in 2021/22. This continues an upward trend since a 20-year low in 2019.

9 The RAG agreed that this increase in catch rates can be validated by recent anecdotal reports from both TIB and Sunset sector operators.

10 In 2021/22, 'fishing power', which is defined as the 'effectiveness of a vessel's fishing effort relative to that of other vessels or in other periods of time', has been estimated at 19% greater when compared to the fleet in 1990. The RAG noted that for this latest season, data from three vessels is available, which is an increase from two vessels in some recent seasons. This leads to greater certainty in the standardised catch rates.

11 The RAG next discussed whether to include the historical catch rate data sourced from G McPherson (pre-1989). This data (from one vessel) has not been included in previous core RBC assessments; only for separate test runs. Dr O'Neill noted that this data has been test-fit to the model in 2021. Its inclusion does not influence outcomes and was consistent with other data inputs and model trend. The RAG agreed that it is best practice to include all available data that was consistent and appropriate, and therefore recommended to the stock assessment team to incorporate this data into the core 2022 RBC assessments.

12 **The RAG recommended** to include all new CPUE data in the 2022 stock assessment and retain the GLM variables in line with the 2021 assessment.

13 The RAG discussed whether to continue to use standardised catch rates as the index of abundance in future assessments. The RAG agreed that this is suitable index in its current form, however flagged the possibility of reviewing some additional variables in the model. This was agreed to be addressed at a later date as part of a FFRAG sub-group to dissect the potential issues.

14 Further to this discussion, Dr O'Neill raised the ongoing uncertainties about the number of dories used and hours reported contained in logbook data. The RAG noted that this requires further review for future assessments.

TIB sector catch rates

15 The RAG noted that although there was an increase in total TIB catch for the 2021/22 season, there is less effort data available (11 'effort' data points in 2021/22 compared to 63 in 2020/21). A review of the data suggests this is due to a small number of large catch-reports through the Fish Receiver System, compared to many smaller 'daily' catch-reports received in previous seasons.

16 The RAG discussed the possible reasons for this change in catch reporting. Industry members confirmed there are no new commercial freezers operating which could be facilitating stockpiling. It was raised that outside pressures such as increased fuel prices and fluctuating market prices may have led to cultural changes in the industry. Fishers may now feel the need to stockpile daily catches before landing to a buyer/receiver to attain the best price.

17 The failure to land catch daily is likely tied to the practice of selling to receivers at the time of 'landing' the catch, thereby utilising the CDR form as a 'sales docket'. This may indicate a need for further education with industry on the fish receiver system, namely the requirement to land/report catch 'immediately'. In practice, this means

fishers are required to report catch after each fishing trip. The inclusion of effort data provided in 'part b' of the CDR form will increase the accuracy and value of catch-rate data from the TIB sector.

18 The RAG agreed that due to the large confidence intervals associated with the 2021/22 season, that TIB CPUE data for the past four seasons will be incorporated into the 2022 assessment as a sensitivity analysis only. This approach is in line with RAG advice from 2021.

Data Item 3 – Biology

Fish Age Frequencies

19 The RAG noted that newly available data from the biological sampling program suggests that there is a strong year-class of 3-year-old fish in 2022. This validates the evidence of a strong cohort of 2-year-old fish in 2021. In line with 2021, there is also strong evidence of older fish in the 4-5-year-old age class. This data suggests that the age structure of the population continues to recover.

20 However, the RAG discussed possible issues with the apparent shift in the age distribution and whether this could be due to a non-representative sample. The RAG noted that in 2021/22 sampling was conducted over a wider range of locations compared to previous years, suggesting that sampling was representative for the sunset sector. However, the RAG further noted that no length measurements from TIB catches were recorded in 2021/22.

21 The RAG discussed whether to include this newly available data and **recommended that all available biological data be included in the 2022 assessment.**

22 As a further discussion for future consideration, the RAG discussed whether there's evidence of spatial distributions of separate age-classes of fish, to which Dr O'Neill reported that there is no evidence to suggest this.

Fish Growth Curve

23 The RAG were invited to discuss the nominated fish-growth curve. **The RAG recommended that, for the 2022 assessment, the substantive growth curve should be retained in line with the 2021 assessment.**

24 However, the RAG agreed to convene a FFRAG data sub-group before the next assessment to further develop the agreed growth curve. Dr O'Neill advised the RAG he will be seeking advice on "truncating age at maturity" (>= 2 years) and reviewing the growth curve to establish the optimum 't0' parameter. In refining the curve, the sub-group will consider how to treat the estimate of unknown 1 year-old fish in the curve, and the merits of anchoring the curve at zero. In the interim, the RAG suggested several variables to input into the growth curve as a sensitivity trial in the 2022 analysis.

25 A scientific member noted the need to better track the relationship between biological and environmental parameters. Given that data is lacking for young fish < 1 yr (under Minimum Legal Size), it would be a novel area of research to investigate whether higher water temperature increases growth rates in juvenile fish. This relatively unknown stage of Spanish mackerel life-history may be particularly impacted by the effects of climate change.

Steepness parameter

26 The RAG noted that the estimated value for steepness has remained consistent throughout multiple assessments, including during a preliminary model run in the 2022 assessment. This suggests that the estimate is reliable. It was noted that the estimated value from the Torres Strait model is consistent with that estimated in

the QLD east coast fishery model. The RAG therefore recommended to discontinue sensitivity trials with fixed steepness (0.6 – 0.7) in the 2022 model. These sensitivity trial had previously been conducted in the 2021 assessment.

Data Item 4 – Stock Assessment Model

27 The RAG summarised the agreed data treatments for the 2022 stock assessment model. These treatments result in **six recommended core analyses (Table 2),** which is consistent with the 2021 assessment. The RAG noted that the average output from these six analyses will be used for the RBC calculations. The RAG also recommended four sensitivity trials to test several variables (**Table 3**).

28 The key treatments for the 2022 stock assessment are summarised below:

1. **Total harvests:**
   - Apply two models of historical estimates 1940-1988
   - Apply the agreed tapered estimate of Taiwanese IUU harvests to these models.
2. **Standardised catch rates:**
   - Do not apply tender/dory data
   - Apply the Qld north east coast 'fishing power' offset to the GLM
   - Incorporate available TIB CPUE data into a sensitivity trial.
3. **Fish age frequencies:**
   - Utilise all years with fish age or length data
4. **Natural mortality rate**
   - Apply a natural mortality rate of 0.3, 0.35 and 0.4
5. **Growth curve**
   - Apply variables to a new growth curve as a sensitivity trial.
6. **Steepness parameter**
   - Apply the model-estimate for steepness

Table 3. Six core model runs to be applied to the 2022 Torres Strait Spanish mackerel fishery stock assessment

Label	Catch rate series	Natural mortality rate (M)	Steepness parameter	Harvest pre-1989	Ageing data	Start year for data*
1	No tender data. Fishing power included.	0.3	Estimated	Historic catches actual + polynomial model + IUU tapered	All years	1941
2	No tender data. Fishing power included.	0.35	Estimated	Historic catches actual + polynomial model + IUU tapered	All years	1941
3	No tender data. Fishing power included.	0.4	Estimated	Historic catches actual + polynomial model + IUU tapered	All years	1941

Label	Catch rate series	Natural mortality rate (M)	Steepness parameter	Harvest pre-1989	Ageing data	Start year for data*
4	No tender data. Fishing power included.	0.3	Estimated	Historic catches actual + logistic model + IUU tapered	All years	1941
5	No tender data. Fishing power included.	0.35	Estimated	Historic catches actual + logistic model + IUU tapered	All years	1941
6	No tender data. Fishing power included.	0.4	Estimated	Historic catches actual + logistic model + IUU tapered	All years	1941

* Start year is 1940-1941, now labelled as 1941. Previously this was labelled as 1940.

Table 4. Four additional model runs (sensitivity analyses) agreed to be applied to the 2022 Torres Strait Spanish mackerel stock assessment.

Label	Catch rate series	Natural mortality rate (M)	Steepness parameter	Harvest pre-1989	Ageing data	Start year for data	Comments
7	TIB data included No tender data. Fishing power included.	0.35	Estimated	Historic catches actual + polynomial model + IUU tapered	All years	1941	TIB catch rate in. Compared to analysis 2.
8	No tender data. Fishing power included.	0.35	Estimated	Historic catches actual + polynomial model + 0.5 IUU tapered	All years	1941	Illustrate 1/2 IUU. Compared to analysis 2.
9	Tender data and fishing power both included.	0.35	Estimated	Historic catches actual + polynomial model + IUU tapered	All years	1941	CPUE with tenders. Compared to analysis 2.
10	No tender data. Fishing power included.	0.35	Estimated	Historic catches actual + polynomial model + IUU tapered	All years	1941	New growth curve. Compared to analysis 2.

RBC calculation

29 The RAG revisited the process that was used to calculate the RBC for the 2022/23 season. Of note, the three key components of the RBC calculation were:

1. Forecasting the RBC to account for the time lag between the stock assessment and the beginning of the 2022/23 fishing season. This is where stock recruitment and mortality for the 2021/22 season was accounted for (as above). Average recruitment was assumed, removing natural mortality, and removing predicted fishing mortality.

2. Producing a range of RBC values (matrix of scenarios) which corresponded with biomass target reference points (also referred to as target fishing mortality rates: 'F-values). These F-values ranged from 'maximum sustainable yield' (MSY) to 'F_{60}' (to maintain a stock that is at 60% of virgin biomass)

3. Running simulations to assess risk to the stock over 12 years against each RBC value.

30 The RAG discussed whether the same approach should be applied to calculate the RBC for the 2023/24 season. It was also discussed whether the stock assessment team should assume average recruitment in the fishery as an input into the RBC calculation.

31 **The RAG recommended that the same RBC approach be applied**, and that unless there is evidence to suggest otherwise, then average recruitment should be assumed.

Extract from FFRAG 12 meeting record 3-4 November 2022. RBC advice based on the 2022 Spanish mackerel stock assessment.

1. The RAG noted a presentation from Dr Michael O'Neill on the 2022 Spanish mackerel stock assessment.

Section 1 - Summary of median biomass and appraisal of stock synthesis analysis.

2. The RAG noted that the median 2021-22 spawning biomass/unfished biomass derived from the six core analyses of the 2022 stock assessment was **31%** (custom model). This is an increase in estimated biomass compared to 29% in 2020-21.

3. This follows an upward trend since an estimated biomass of 23% in 2019. Notably, Sunset standardised catch rates increased from approximately 22 fish-per-boat-operation-day in 2020/21, to approximately 29 fish-per-boat-operation-day in 2021/22. This also continues an upward trend since the 20-year low in 2019 (**slide 29**).

4. When reviewing the summary of median stock biomass, the RAG discussed the appraisal of transitioning to a stock synthesis-based stock assessment in future years. The RAG noted the work to date in progressing stock synthesis (SS) in the current stock assessment project and agreed to record an official action item to further develop this methodology. (**Action item 2**).

5. The RAG noted that the SS model produced marginally higher estimates for steepness and unfished recruitment when compared with the custom model (**slide 30**). This is consistent with results reported in the 2021 stock assessment. The RAG discussed having an unconstrained estimate for steepness in the SS model, noting that many other assessments in SS fix values for steepness when they do not appear feasible. This point was noted for continued consideration.

6. Despite the slightly higher estimates, the SS models produced similar parameter estimates to the custom model, including to model fits of standardised catch rates and estimated stock biomass (31%). When plotting fish age frequencies, the SS model also fit the data very well. Further, consistent recruitment deviation estimates between the two models suggests that the SS model can produce reliable results for future assessments.
7. Broadly, the current outputs from both models suggest that the Torres Strait Spanish mackerel spawning biomass ratio was between the 20% limit and 48% interim target reference point (**slide 8**).
8. The RAG noted that the catch-rate estimates produced by the custom model are a good fit to the observed data (**slide 31**), and that these cycles in CPUE give confidence to the estimated value for steepness.
9. Further, the RAG noted that the custom model suggests that recruitment is returning to average after a downturn in the years pre-2019. This continues an upward trend in recruitment since an all-time low in 2012/13, providing evidence that the stock is likely to be recovering (**slide 33**).
10. The estimates of recruitment also suggested that the level of recruitment was not solely reliant on the size of the spawning stock; but likely to be responsive to environmental influences. The RAG noted that this is typical of a fast-growing tropical pelagic species.

Section 2 - Spawning Biomass – comparison of assessment models

11. The RAG reviewed slides eight and nine of the presentation, which summarised the spawning biomass ratios estimated by the standard custom model (1.0), modified custom model (0.7), and SS model. The overall signals from these models were consistent.
12. The '0.7' custom model was modified to test scenarios of giving more weight to the CPUE data over the age data. This was conducted to investigate the effect this would have on the model, considering that the observed CPUE data suggested a marginally higher biomass than the observed age data. For this reason, the modified custom model provided a slightly higher estimate of spawning biomass in 2022, when compared to the standard and SS models in analyses 1 to 9 (**slide 9**).
13. The RAG noted that the SS model estimated that the stock declined 5% lower in the early 2000's when compared to the custom (1.0) model. However, the spawning stock was estimated to have recovered to a level similar to that estimated by the custom models (slide 8). The RAG noted that it is a point of interest as to why the SS model estimated the stock to have reached a lower level. It was suggested that this could be a focus of retrospective analysis in future assessments using SS.
14. The RAG's conversation then turned to environmental drivers. The RAG noted that population dynamics are driven by a wide range of factors, and that this is inherently difficult to predict. In the absence of a robust understanding of these complex environmental drivers, it was agreed that the most efficient approach in managing the stock is to monitor recruitment and catch rates closely to ensure that any issues in the population are detected. Management arrangements can then continue to be tailored in response. This highlighted the importance of the ongoing research priorities to conduct yearly stock assessments and biological sampling.

Section 3 – Recommended Biological Catch (RBC) advice

15. The RAG recapped on the agreed RBC calculation process (**slide 12**). This process was consistent with the methodology applied in 2021. Dr O'Neill clarified that the RBC calculations were projected over a 12-year period using a 'constant catch' rule. This approach was agreed to in the absence of a formal harvest strategy to supply the model with a range of decision rules. This is what a future MSE project might provide.
16. The RAG agreed that the current method is a conservative approach in line with past harvest strategy workshop advice to "bank fish". This methodology aims to achieve the established objective to 'not significantly raise the

TAC while the stock recovers' to ensure the population recovers to the target reference point as soon as practicable.

17. In providing advice on a Recommended Biological Catch for the 2023/24 season the RAG considered the calculated risk-levels of a range of RBC options. Presented as a 'matrix of scenarios', the potential RBC figures are based on different target reference points **(Table 3/Slide 13).**

18. Consistent with methodology in 2021, the RAG:

    a) agreed to forecast the stock biomass to the 2023-24 fishing season based on an assumed level of total harvest in 2022-23 (81 t = 57 t sunset, 4 t TIB harvest (based on the mean of the past three TIB fishing seasons), 15 t subsistence, 5 t recreational and 0 t for charter and PNG catches, and to assume average recruitment;

    b) considered five different constant harvest rates applied to the results of the six key model runs (Analysis No. 1 to 6). Each level of harvest rate related to building the stock to different target reference points (F_{MSY} through to F_{60});

    c) reviewed fish population projections to evaluate risk to the spawning stock. Consistent with approach followed in the 2019, 2020, and 2021, it was agreed to consider how many years in a model projection the stock would drop below the limit reference point (B20 or 20% of the unfished spawning biomass level in 1940) during a 12 year-time period (three times the age of full sexual maturity), assuming average recruitment and the constant catch (RBC) related to building the stock to the different target reference points.

       The RAG agreed to be guided by the '90% risk criterion' of the *Commonwealth Harvest Strategy Policy*, that if more than 10% of model runs (based on 1000 simulations) dropped the stock below BLIM, this would represent unacceptable risk to the stock.

    d) agreed B48 continued to be a sensible interim target reference point, noting that B48 is the default proxy for BMEY when no economic data are available (under the Commonwealth Harvest Strategy Policy); and

    e) reviewed the fish population projections to evaluate the likelihood of the biomass reaching the reference point of B_{48} after 12 years. When applying a constant catch (RBC) of 95 tonnes per year (F_{50}), five of the six model runs build the stock spawning biomass to B_{48} in 12 years (**Slide 14**).

19. Noting the 90% risk criterion, the RAG elected to rule out the RBC options which were assessed to exceed this acceptable risk level. This left the RAG with two options: 95 tonnes (B50), or 67 tonnes (B60).

20. The RAG first discussed these RBC options as a group and agreed to a request from TIB members to discuss this topic as a sub-group. The RAG then reconvened to provide final advice.

21. **The RAG recommended an RBC for Spanish Mackerel of 95 tonnes for the 2023/24 season.**

22. This RBC falls within the acceptable risk-level and considers the objectives of the *Torres Strait Fisheries Act 1984*. The RBC also fulfills the requirements of the interim target reference point.

Table 5: RBC options derived from the 6 core analyses of the 2022 Torres Strait Spanish mackerel stock assessment.

No.	Name of RBC approach 1941 custom model	% of all simulations below S_{20} over 12 years and 6 analyses Assuming average recruitment and constant RBC	Median RBC tonnes Over 6 analyses
1	Constant F_{MSY}	12.7%	137
2	Constant F_{40}	12.2%	132
3	Constant F_{48}	10.3%	102
4	Constant F_{50}	9.9%	95
5	Constant F_{60}	8.9%	67

Section 4 – Refining the assessment

23. Dr O'Neill identified several areas which require future exploration to 'fine tune' the stock assessment. These include developing a new growth function and reviewing the stock-recruitment relationship 'steepness'. These are aspects of biology that contribute to the productivity and resilience of the stock. Dr Buckworth presented several slides on these topics, with the RAG noting that new biological data and assessment techniques are now available to "address some of the selectivity problems with the data." The RAG also noted several potential approaches to redefining the steepness value.

24. Based on these considerations, the RAG agreed that a scientific sub-group should be formed in early 2023 to investigate these new options further. This will ensure that any proposed refinements can be actioned for the 2023 assessment.

25. TIB members raised a question about the required data to continually build upon the stock assessment model. The RAG noted that while there is currently a satisfactory level of confidence in the stock assessment model, there are still meaningful ways to reduce uncertainty. Scientific members reiterated that continually adding to the data pool will increase certainty in the model, with the key data needs for the fishery remaining to be biological and catch-rate data.

26. The key area requiring improvement was acknowledged to be TIB sector daily catch-rates, which are currently not mandatory. The RAG also noted the importance of developing an alternate index of abundance, such as close-kin mark-recapture.

TORRES STRAIT FINFISH FISHERY RESOURCE ASSESSMENT GROUP	Meeting No.14 30 August 2023
STOCK ASSESMENT **Estimates of Spanish Mackerel and Coral Trout Non-Commercial Catch**	**Agenda Item 2.2** **For ADVICE & DISCUSSION**

RECOMMENDATIONS

That the Resource Assessment Group (RAG):

a. **NOTE** previous RAG advice on estimated catch outside of the commercial fishery.

b. **DISCUSS and PROVIDE ADVICE** on any recommended changes to these estimates in light of new data or knowledge.

KEY ISSUES

Spanish Mackerel

1. Consistent with Australian Government policy (detailed in the *Commonwealth Fisheries Harvest Strategy Policy and Guidelines 2007*), all sources of mortality (catch) must be taken into account when setting a TAC. This means the TAC generally equates to the Recommended Biological Catch (RBC) for the species minus expected catches to be taken outside of the commercial fishery.
2. Estimates of other sources of mortality have been used to revise the Spanish mackerel notional annual TAC since the 2017-18 season.
3. FRRAG 8 (4-5 Nov 2020) updated the estimate of non-commercial catches of Spanish mackerel (**Table 1)** which was subsequently applied to the TAC for the 2021-22 and 2022-23 seasons.

   Increases were recommended from 10 tonnes to 15 tonnes for subsistence fishing, and from 2 tonnes to 5 tonnes for recreational fishing. Consistent with previous years, the RAG agreed that charter fishing catches were likely to be minimal. These estimates were subsequently left unchanged for the 2021-22, 2022-23, and 2023-24 fishing seasons. The FFWG supported this approach in all instances.
4. The RAG is invited to discuss whether these estimates of Spanish mackerel 'non-commercial catch' require amending for the following three purposes:

   1. For the 2022/23 season, noting any new evidence, to ensure that the most accurate level of **past** harvest can be inputted into 2023 stock assessment (to calculate the 2024/25 **RBC**).
   2. For the 2023/24 season, noting any new evidence, to ensure that the most accurate level of **future** harvest can be inputted into 2023 stock assessment (to calculate the 2024/25 **RBC**).

3. For the 2024/25 season, noting any new evidence, to ensure that the most accurate level of **future** harvest can be provided to the FFWG for their consideration in recommending a **TAC** for the 2024/25 season.

Coral Trout

5. It was noted at FRRAG 9 (14-15 Oct 2021) in relation to coral trout that "*consistent with previous years, the RAG noted the current under-utilised nature of the coral trout fishery and agreed it was not priority at this time to estimate catches taken outside of the commercial fishery.*"
6. This approach was applied by the FFRAG again in 2022 when considering whether to provide an estimate on non-commercial catch for the 2023-24 season.
7. The RAG is asked to discuss and provide advice on whether an estimate of non-commercial coral trout catches should be provided to support the TAC of coral trout for the 2024-25 season.
8. It remains an action for AFMA to develop a work plan for the FFRAG to advise on best estimates of coral trout catches taken outside the commercial fishery, noting however, that progressing this action needs to be assessed against other RAG priorities, and in-light of any future research investment to develop an approach for measuring non-commercial fishing for the region.
9. The RAG is asked to note that 'Phase 2' of the non-commercial catch project (*Measuring non-commercial fishing catches (traditional subsistence fishing) in the Torres Strait in order to improve fisheries management and promote sustainable livelihoods)* is currently underway in 2023-24.
10.

Table 1. FFRAG 8 (4-5 November 2020) summary advice of available information on catches outside of the commercial Spanish mackerel fishery.

Source of catches	Expected catch (t)	Comments
Subsistence catch (kai kai) by Traditional Inhabitants	15	Based on data from *Busilacchi 2013* this includes total of catch estimates for Mer, Masig and Erub Islands. The Finfish Working Group (FWG) agreed in July 2016 that the catch figures from the *Busilacchi 2008* research are the best estimates of Traditional take of finfish. While originally reported by CSIRO as 12 t this was further refined to 5.155 t. At FFRAG meeting 4, the RAG recommended that an estimate of 10 t be used for decision making noting data was only from three islands, the number of TIB fishing endorsements has increased and effort creep may be occurring. At FFRAG meeting 8, the RAG accepted advice from industry members and the TSRA member that estimate should be increased to 15 tonnes to account for anecdotal information that 10 tonnes would be an underestimate.
Recreational	5	Previously, the RAG advised that, based on QDAF survey (2013) which included TS, 2 t was appropriate. At FFRAG meeting 8, the RAG agreed to recommend the estimate be increased to 2 t having regard for accepted industry member advice that the recreational boat numbers have increased over time, with a lot more contractors resident in Torres Strait taking boats out to communities to fish in their spare time. Following FFRAG meeting 8, QDAF advised AFMA that under the 2019-20 Queensland state-wide recreational fishing survey, there were only seven catch records from two people on four fishing days in Region B (Torres Strait). There was only one record of a coral trout and none for Spanish mackerel.

Source of catches	Expected catch (t)	Comments
Charter	Likely to be minimal	Available QLD logbook records show Charter boat line catches are low. Logbook records for the period between 1995 and 2014 report a total of 19.58 tonnes of mixed species taken from Torres Strait waters. The RAG has advised, based on the available evidence from QDAF logbook data, that charter catches are likely to be minimal.
PNG catch sharing	0	Catch sharing arrangements have not been entered into for Spanish mackerel. PNG-NFA declined to enter into catch sharing arrangements under the Treaty for 2020-21 fishing season.

Background

2017 – FFRAG 1 meeting 9 10 November 2017

11. At the Finfish RAG 1 meeting on 9-10 November 2017 the following advice was provided 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 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.
- 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.

2019 Extract from FFRAG 4 Record (13 – 14 March 2019)

The FRAG at meeting 4 (13-14 March 2019) provided advice on best estimates for catches taken outside of the commercial fishery and supported the use of the values shown in **Table 2**.

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

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

2020 Extract from FFRAG 8 Record (4 – 5 November 2020)

The FFRAG provided advice and updated the estimates of catches outside the fishery as follows:

"The Finfish RAG reviewed the available information to support estimates of non-commercial catches available to the PZJA in setting a Total Allowable Catch from the RBC. The RAG noted advice from Dr O'Neill and the Chairperson that the QDAF recreational fishing for 2019-20 had concluded however, the survey did not sample the Torres Strait to form a meaningful estimate of recreational catches for the region.

The RAG noted that 10,000 kg of catch estimated for subsistence catch by Traditional inhabitants, at 7.3 kg average weight per fish (based on the most recent biological sampling), would represent 1400 fish from all communities. This roughly translates to an average take of a few hundred fish from each

Torres Strait community per year. Applying the same average weight, the previously assumed two tonne catch[1] for recreational fishing represented around 280 fish.

Industry members and the TSRA member considered that both the subsistence and recreational estimates were a likely underestimate for the coming season.

- *The TSRA member advised that, based on consultation on the Waphill trainee project, fishers in eastern communities are reportedly catching good numbers of Spanish mackerel for subsistence. The TSRA member has been advised by fishers that Spanish mackerel is not being sold due to the current lack of infrastructure.*

- *Industry members advised that along with having periods of good catches, many eskies of frozen Spanish mackerel are regularly shipped south to friends and family and are also used as barter/trade in communities. By way of example, industry members advised that within one community over the last three weeks, around eight boats have been fishing twice daily and landing 5-7 Spanish mackerel each fishing session per boat.*

- *Industry members were of the view that the recreational boat numbers have increased over time, with a lot more contractors resident in Torres Strait taking boats out to communities to fish in their spare time.*

- *Industry members advised that along with the rollout of fisheries infrastructure in the near future there is a likelihood that with more fishers commercially targeting mackerel, more catch will be retained also for subsistence.*

The RAG discussed the potential for recent observations to cause bias in the perception of seasonal trends, noting earlier advice from industry that there had been limited fishing most of the year due to poor weather. An industry member also commented that Spanish mackerel was not a preferred subsistence species with communities preferring species like Siganids (rabbitfishes) instead. However, on balance, the RAG accepted member advice that the previous estimates were likely an underestimate and, in line with the objectives of the Treaty, traditional fishing needed to be protected and have priority over harvesting for commercial purposes.

***The RAG recommended** increasing non-commercial catch estimates for Spanish mackerel for calculating TACs for the 2021-22 season (that is reducing the RBC by the total estimate to derive the TAC). Increases were recommended from 10 tonnes for subsistence to 15 tonnes and from 2 tonnes for recreational to 5 tonnes. Consistent with previous years, the RAG agreed that charter fishing catches were likely to be minimal and accepted AFMA advice that Australia and PNG were unlikely to enter into catch sharing arrangement under the Treaty in 2021-22 fishing season. Both were subsequently left unchanged for the 2021-22 fishing season."*

2021 – Extract from FFRAG 9 Record (14 – 15 October 2021)

"The FFRAG were asked to discuss and provide advice on best estimates of Spanish mackerel and coral trout catches taken outside the commercial fishery to support advice on TACs for the 2022-23 fishing season. Catches outside the fishery include catches taken for Traditional use (kai kai), recreation,

[1] The Spanish mackerel stock assessment team advised that the model used the 2013 point estimate of 2 t for recreational sector harvest with error bars ranging from 2-4 t (the model alternates between 2, 3 or 4 tonnes).

charter fishing and PNG catch sharing. Estimates of current/projected catch are used to assist in recommending the next season's notional TAC.

Noting that there was no new information available, the RAG recommended applying the same Spanish mackerel catch estimates recommended by the FFRAG at its meeting on 4-5 November 2020.

Consistent with previous years, the RAG noted the current under-utilised nature of the coral trout fishery and agreed it was not priority at this time to estimate catches taken outside of the commercial fishery. It remains an action for AFMA to develop a work plan for the FFRAG to advise on best estimates of coral trout catches taken outside the commercial fishery, noting however, that progressing this action needs to be assessed against other RAG priorities, and in light of any future research investment to develop an approach for measuring non-commercial fishing for the region."

Torres Strait Finfish Resource Assessment Group	**Meeting 14** **30 August 2023**
DATE AND VENUE FOR NEXT MEETING	**Agenda Item 3** **For Discussion & Advice**

RECOMMENDATIONS

1. That the Resource Assessment Group:
    a) **REVIEW** the proposed dates for future meetings.

BACKGROUND

Date and venue for future meetings

2. The next RAG meeting is currently proposed for 29th-30th November 2023.
3. The next WG meeting date is TBC.
4. The PZJA meeting to decide PZJA meeting to decide next season's sustainable catch limits is proposed for January 2023.

TORRES STRAIT FINFISH FISHERY RESOURCE ASSESSMENT GROUP	Meeting 14 30 August 2023
Other Business	Agenda Item 4 For DISCUSSION

RECOMMENDATION

1. That RAG members **NOMINATE** and **DISCUSS** any additional items of business for the meeting.