Torres Strait Scientific Technical Finfish Working Group

Meeting Record

10 November 2016 – Brisbane

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Australian Government

Australian Fisheries Management Authority

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Contents

Meeting Participants

Attendance

Name	Organisation	Declaration of interest
Eva Plaganyi	CSIRO	Research funding. Principal scientist for TSSAC project to develop a harvest strategy for the Torres Strait Beche-de-mer Fishery.
Steve Hall	AFMA	Nil
Selina Stoute	AFMA	Nil
Tom Roberts	DAF QLD	Nil
Mariana Nahas	TSRA	Nil
Michael O'Neill	DAF QLD	Research funding. Principal scientist for TSSAC project to develop a harvest strategy for the Torres Strait Finfish Fishery.
David Brewer	Upwelling PL	Research funding. Principal scientist for TSSAC project to develop a harvest strategy for the Torres Strait Finfish Fishery. Previous CSIRO researcher for TSSAC project investigating traditional take of finfish in Torres Strait.
Kenny Bedford	Erub	TIB licence holder. President - Erub Fisheries Management Association
John Ramsay	TSRA	Nil
Andrew Tobin	JCU	Research funding. Principal scientist for TSSAC project to develop a harvest strategy for the Torres Strait Finfish Fishery.
Tony Vass	Industry	Nil. Does not own or operate a licence in Torres Strait. Holds Queensland East Coast quota for coral trout and 'other' finfish species.
Trevor Hutton	CSIRO	Research funding. Principal scientist for TSSAC project to develop a harvest strategy for the Torres Strait Finfish Fishery.

Name	Organisation	Declaration of interest
Andrew Trappett	AFMA, Meeting EO	Nil

Action items

Number	Action
1.	Next meeting of the working group to work towards developing a work plan for assessing risk and managing potential expansion of effort on 'other' reef line species.

Recommendations

Number	Recommendation
1.	The Torres Strait Finfish Scientific Technical Working Group **recommended** that the Torres Strait Finfish Working Group consider a Recommended Biological Catch (RBC) of **125 tonnes** for the 2017-18 Spanish mackerel fishing season noting the following: ▪ RBC of 125 tonnes was based on the updated stock assessment and was an estimated median total harvest of the preferred base case analyses 1 and 2, and an MEY reference point accepted by the working group. ▪ Using an assumed fishery management reference point of B_{MEY} (stock level at 60 per cent of virgin biomass) the assessment predicts annual harvests below 150 tonnes will maintain healthy biomass and catch rates.
2.	The working group **recommended** priorities for additional work on Spanish mackerel stocks in Torres Strait to further improve data collection and the stock assessment model.
3.	AFMA and TSRA, in consultation with temporary licence holders, to work on characterising fishing gear selectivity and different fishing practices and identify options for improving the accuracy and level of information collected through logbooks (a workshop with temporary licence holders was recommended as a starting point).

Agenda Item 1 - Preliminaries

1.1. Opening Prayer / Acknowledgement of Traditional Owners / Welcome / Apologies

Mr Kenny Bedford opened the meeting in prayer. Meeting chairperson Selina Stoute acknowledged the traditional owners, past and present, of the land where the meeting was held.

The working group noted that the meeting had been convened as an outcome of the Finfish Working Group meeting of 12-13 July 2016 (**Attachment A**). The group noted that the meeting had been formed with a scientific focus and was tasked with recommending a Spanish mackerel

Recommended Biological Catch (RBC) for the 2017-18 fishing season while the Torres Strait Finfish Working Group would focus on the management implications of this recommendation.

1.2. Adoption of Agenda

The Torres Strait Finfish Scientific Technical Working Group (the Working Group) adopted the agenda (**Attachment B**) without change.

Agenda Item 2 – Spanish Mackerel Stock Assessment

The working group noted the updated draft Spanish mackerel stock assessment detailed in the report titled: '*Torres Strait Spanish Mackerel Stock Assessment II, 2015, Torres Strait AFMA Project Number RR2014/0823*' and presented by Dr Michael O'Neill. The stock assessment updates the last assessment performed by Dr Gavin Begg in 2006. The last assessment suggested that harvests taken prior to 2007 were near or likely to be exceeding maximum sustainable levels. It was noted that the new assessment examines 11 further years of logbook data where harvest levels and fishing effort have declined since 2006 (average 64 to 105 t compared to an average of 98-233 t from 1989 to 2006).

The stock assessment

The working group accepted the new assessment as the best available stock assessment for Spanish mackerel whilst also noting sources of uncertainty in the assessment. The working group recognised that a level of uncertainty is expected in fishery stock assessments and that the current assessment should serve to guide future research and data priorities for the fishery.

The Working Group identified the following key uncertainties**:**

1. Catch data: Two potential sources of uncertainty in the catch estimates for the fishery include:
    a. deliberately inflated catch reports ('paper' fish) immediately following the 2002 investment warning. Total catches increased significantly in this period; and
    b. unaccounted changes in the traditional inhabitant (TIB) catch associated with some long term fishers exiting the fishery and some island freezer operations closing down. The working group supported the approach taken for the assessment to impute TIB catch for periods where data are missing based on 18.5% of logbook reported TVH catches.

2. Fish vulnerability (availability, selectivity and catchability): Industry members advised that operators can target certain sized fish. A better understanding of these behaviours may improve the CPUE standardisation and utility of length frequency samples. By way of example, industry members advised that at times:
    a. some fishers take different size classes of fish due to their gear setup;
    b. fishers limit effort and catches according to onboard / shore based freezer capacity;
    c. fishers may need to halt fishing and wait 3-4 days to unload catch to barges.

3. Spatial data: Spatial data was not used in the assessment due to missing data prior to the introduction of the TSF01 Logbook and a number of other periods where spatial information has not been reported in logbooks. Catch rate analyses were performed for individual vessels rather than over various spatial areas.

4. Stock structure: Biologically there is some uncertainty in stock connectivity between the Torres Strait and adjacent waters, where spatial-temporal patterns of fish movement may affect fish vulnerability and data.

5. Hyperstability: Hyperstability can occur in fisheries that target aggregations. Hyperstability is yet to be explored in the assessment (hyper-stability: where catch rates continue at a set rate over time but the stock abundance is actually declining); and

6. Restricted length frequency samples (by area and time) and the absence of larger size classes in the samples.

The Working Group **recommended** additional analyses be undertaken to improve the stock assessment including***:***

- sensitivity analyses to examine how the model might perform with 'domed vulnerability' where large fish are assumed to be less available to capture; and
- examination of CPUE data using 'indicator' vessels with known fishing histories as a means to further validate the CPUE time series.

To improve the stock assessment in the longer-term the Working Group **recommended** the following research and data collection/analysis priorities:

- appropriate spatial genetic sampling to clarify the current single Torres Strait stock/population structure assumption (noting the single stock assumption is the most precautionary approach);
- additional length frequency sampling to improve the spatial representativeness of biological data used in the model. This will assist in: a) assessing the fishing mortality and selectivity of the catch i.e. whether the catch size structure is representative of the underlying population age structure and b) validate fecundity at age assumptions;
- further data analysis and consultation with stakeholders to investigate options for improving the accuracy of the TIB catch data series; and
- AFMA and TSRA, in consultation with temporary licence holders, to work on characterising fishing gear selectivity and different fishing practices and identify options for improving the accuracy and level of information collected through logbooks (a pre-season workshop with temporary licence holders was recommended as a starting point).

Preferred model

Four stock analyses (model runs) were conducted (parameters described on report pp. 36) which generated estimates of harvest levels for either Maximum Sustainable Yield (MSY[1]) or Maximum Economic Yield (MEY[2]) reference points calculated to be $B_{0.4}$ and $B_{0.6}$ respectively. These correspond to the principles of the *Commonwealth Harvest Strategy Policy and Guidelines 2007,* noting no formal reference points have been set for Torres Strait finfish stocks at present.

[1] MSY **maximum sustainable yield:** the maximum average annual catch that can be removed from a stock over an indefinite period under prevailing average environmental conditions

[2] MEY **maximum economic yield:** the sustainable catch level for a commercial fishery that allows net economic returns to be maximised; generally more conservative (i.e. less harvest and fishing effort) than maximum sustainable yield

The working group noted the harvest estimates for an MSY reference point ranged from 145 t to over 210 t. The estimates from MEY analyses ranged from 122 t to 185 t (**Figure 1**).

The Working Group did not support the use of analysis 3 and 4 noting:

- analysis 4 was based on inflated harvests (1.75 times the average 1989-2014 logbook harvest) which the working group considered too high. Analysis 4 was included in the report for the purpose of contrast to document uncertainty; for possible unaccounted harvest across the Torres Strait. The result was noted by the group and management staff but further data evidence is required to verify the scenario for use in RBC procedures.
- analysis 3 had a high level of uncertainty.

The Working Group agreed that analyses 1 and 2 were acceptable noting:

- some concerns were raised that the parameters of analysis 1 were conservative estimates; and
- the *M* value (natural mortality) was fixed lower in analysis 2 and as a result, the steepness estimate (*h*) was higher. Future work should revisit the sensitivities of these parameters and investigate possible higher steepness values; together with the vulnerability uncertainty noted above.

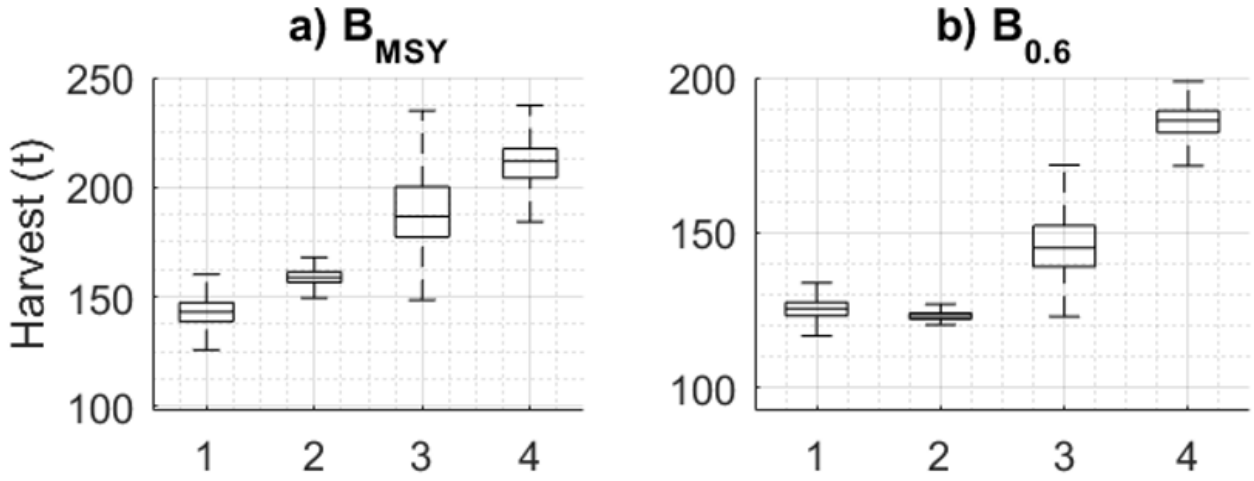

Figure 1. (Figure 20 of the report pp. 39) The estimated equilibrium harvest reference point (tonnes) for Spanish mackerel, where the first boxplots (a) is for the exploitable biomass at MSY ($B_{MSY} \approx B_{0.4}$) and the second boxplot (b) is for a higher exploitable biomass at 60% of virgin ($B_{MEY} \approx B_{0.6}$). Each boxplot illustrates the distribution around the median (line in the middle of each box). The bottom and top of each box were the 25th and 75th percentiles. The whisker lengths indicate about 99% coverage of the MCMC simulations. B_{MSY} median values (t) by scenario 1) 143.140, 2) 158.820, 3) 186.590, 4) 211.880 and $B_{0.6}$ median values (t) by scenario 1) 125.510, 2) 122.970, 3) 145.040, 4) 186.100

Target reference point

The working group noted that a harvest strategy is to be developed for the fishery which will establish formal reference points for the stock. In the interim RBC advice should be made on the best available science and be guided by existing Australian Government harvest strategy policy.

The working group **recommended** that the B_{60} target reference point (aim for a stock level at 60 per cent of unfished biomass, used here as a proxy for MEY) is preferred over a MSY target reference point (B_{40}) for Spanish mackerel, recognising that the stock is a shared resource of high importance to traditional inhabitants.

The working group **noted** that:

- similarly high target reference points have been recommended for the Torres Strait TRL fishery and in the '*Green paper on fisheries management reform in Queensland, July 2016'*; and
- the updated stock assessment report recommended a target reference point above B_{MSY} to ensure healthy population biomass and catch rates, in order to achieve and balance sustainability, economic, social and cultural objectives.

Recommended Biological Catch

The working group noted advice from the updated stock assessment report that if harvests increase above 150 t and/or fishing effort increases above 1000 operation days, then catch rates may erode long term.

The Working Group **recommended** an RBC of **125 tonnes** for the 2017-18 Spanish mackerel fishing season having regard for the following:

- the need for a precautionary approach to take into account the uncertainties in the assessment;
- the preferred interim target reference point of $B_{60;}$ and
- RBC is based on an estimated median total harvest (tonnes) of the preferred stock analyses 1 and 2 for the exploitable biomass at B_{60}.

Agenda Item 3 – Work plan for assessing risk and managing potential expansion in effort on 'other' reef line species

The working group agreed to defer discussion on this item to allow adequate time for a full discussion.

It was noted that assessing risk and managing potential expansion in effort on 'other' reef line species will likely be a lengthy process (e.g. more than one meeting) and would require substantial input from the working group members. It was also noted that the development of a harvest strategy will play a role in the formation of a work plan for 'other' reef line species.

Action: AFMA to explore options to convene a Technical Working Group Meeting alongside the Tropical Rock Lobster Resource Assessment Group meeting scheduled for 13 December 2016.

MEETING CLOSED 4:15 PM

Attachment A

Outcomes of the last Finfish Working Group – 12-13 July 2016

Number	Recommendation
1.	The FWG **recommended** for the 2017-18 Spanish mackerel fishing season that**:** ▪ TAC setting advice to be finalised subject to consideration of updated stock assessment and advice from the newly convened Technical Scientific Working Group; ▪ Technical scientific working group to review stock assessment update to allow for full consideration of inputs and outcomes. Technical scientific working group to report back to FWG; ▪ The technical scientific working group should comprise the follow members: ➢ Scientific members ➢ Two industry members: Tony Vass, Kenny Bedford ➢ Andrew Tobin ➢ Nicole Murphy ➢ Government ▪ The technical scientific working group should consider the following: ➢ Disproportionate effort in Bramble Cay ➢ Local factors – unexpected factors (e.g. environmental and/or climate change related effects) ➢ Changes in accessible area of the fishery (closures) ➢ Estimates of TIB, Traditional, Recreational catches ➢ Logbook data quality ➢ Stock structure ➢ Catch rate objectives (effort & catch) ▪ Recognising the importance of precautionary approach, as an interim approach (noting Harvest Strategy to be developed) TAC should not exceed best estimates of MSY after taking into account all other sources of fishing mortality;
2.	The FWG **recommended** that the Spanish mackerel TAC remain unchanged (187.7t tonnes) for the 2016-17 fishing season noting the following: • the current TAC (187t) is based on average catches 2001-05. A stable period of catch; • recent reported catches are > 100 tonnes; • proposed lease amount for 2016-17 is 99 tonnes (across four boats) (18% TIB to TVH catch ratio was used in updated stock assessment);

Number	Recommendation

	• management risks include unreported catches and potential unknown impacts from coral bleaching; and
	• on balance management risks are acceptable this season however the next season TAC setting process should take into account updated stock assessment and agreed estimates of catch from other sectors. Catches and the TAC remain within estimates of maximum sustainable levels:
	  • *Begg et al 2006* maximum sustainable levels 146-264t
	  • *O'Neil & Tobin 2016/17*: *Defining the status of Torres Strait Spanish mackerel to inform future fisheries allocation and sustainable fishing*
	  ▪ maximum sustainable levels 145-210t
	  ▪ catch rates may reduce if future average harvests exceed 150t

3.	The FWG **recommended** that the coral trout TAC (134.9 tonnes) remain unchanged for the current fishing season (2016-17) and the 2017-18 fishing season noting the following: • the TAC (134.9t) is based on average catches 2001-05. A stable period of catch; • although there is no stock assessment for coral trout, the Management Strategy Evaluation conducted (Williams et al 2007) using four constant catch scenarios (80-170t) predicted biomass of at least 70% of unfished by biomass by 2025; • proposed lease amount for 2016-17 is 74 tonnes (across four boats); and • industry feedback that catch rates on Islands are considered good.
4.	For the 2016-17 fishing season the FWG recommended that the leasing out of 28.5 tonnes of other species by TSRA be supported subject to following **ACTIONS**: 1. improved logbooks (that enable accurate reporting of all species. The FWG noted that the AFMA logbook would require reprinting creating a possible timing issue and use of the QDAF logbook may be constrained by administrative constraints); 2. Prior reporting (possible use of QDAF system?)
5.	The FWG **recommended** that subject to further consideration by the Technical Scientific Working Group of coral trout to byproduct catch ratios when targeting coral trout and total take of 'other species' by other sectors – there should be no further increase above 30 tonnes until systems are in place to independently verify catches, a species-specific risk assessment has been undertaken and where applicable catch triggers and control rules have been agreed.

Attachment B

TORRES STRAIT FINFISH TECHNICAL SCIENTIFIC WORKING GROUP MEETING

10 November 2016

The Space meeting room, Ground Floor
80 Anne Street, Brisbane

MEETING TIME:

9:00am – 3:00pm, Thursday, 10 November

AGENDA

1. **Preliminaries**
   - 1.1. Opening Prayer / Acknowledgement of Traditional Owners / Welcome / Apologies
   - 1.2. Adoption of Agenda
   - 1.3. Declaration of Interests

2. **Updated Spanish mackerel stock assessment review**

3. **Work plan for assessing risk and managing potential expansion in effort on 'other' reef line species**

4. **Other Business**