



**Australian Government**

**Australian Fisheries Management Authority**

**Tropical Tuna and Billfish Fisheries  
Resource Assessment Group  
TTRAG 21**

**Meeting Minutes**

**16 & 17 July 2018**

**Mooloolaba**

# Contents

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<b>Contents .....</b>	<b>2</b>
<b>1 Preliminaries.....</b>	<b>4</b>
1.1 Welcome and Apologies.....	4
1.2 Pecuniary interest declarations.....	4
1.3 Adoption of Agenda .....	6
1.4 Acceptance of minutes.....	6
1.5 Actions arising .....	6
1.6 Out of session correspondence.....	15
<b>2 Review of fishery performance.....</b>	<b>15</b>
2.1 Current catches and effort in the domestic fishery .....	15
2.2 Update on the 22 <sup>nd</sup> Regular Session of the Indian Ocean Tuna Commission (IOTC) .....	16
2.3 MAC/AFMA Commission outcomes .....	16
<b>3 Harvest Strategy .....</b>	<b>17</b>
3.1 Harvest Strategy – Current status and future developments .....	17
3.2 Fishery Data Summaries .....	17
3.3 CPUE Standardisation.....	19
3.4 Identifying indicators for Swordfish and Striped Marlin TACC advice .....	21
3.5 Western Tuna and Billfish Fishery Catch Triggers (AFMA Commission Request) .....	21
<b>4 Fishery Management Strategy (FMS) .....</b>	<b>23</b>
4.1 Data Strategy update .....	23
<b>5 Research.....</b>	<b>24</b>
5.1 General research update .....	24
5.2 ATBF Annual Research Statement .....	24
5.3 Genetics Project update .....	25
5.4 Recreational fishing project update.....	26
5.3 Oceanography project update .....	26
<b>6 Ecological Risk Assessment (ERA) .....</b>	<b>27</b>
6.1 ERA Residual Risk – Dusky Shark .....	27
6.2 ETBF and WTBF significant events spreadsheet.....	28
<b>7 Date and venue for next meeting.....</b>	<b>28</b>

**Appendix 1: Adopted Agenda ..... 29**  
**Appendix 2: Actions arising from TTRAG 21 ..... 31**

# 1 Preliminaries

## 1.1 Welcome and Apologies

The Chair, Dr Cathy Dichmont, opened the TTRAG 21 meeting at 8:30am.

The following participants were in attendance at the meeting:

<b>Members</b>	
Dr Cathy Dichmont	Chair
Dr Don Bromhead	AFMA Member
Dr Robert Campbell	Scientific member, CSIRO
Dr Rich Hillary	Scientific member, CSIRO
Mr James Larcombe	Scientific member, ABARES
Mr John Abbott	Industry member
Mr Pavo Walker	Industry member
Dr Julian Pepperell	Recreational fishing member
Mr Gary Heilmann	Industry member
<b>Invited Participants</b>	
Mr Paul Williams	Industry member
Mr David Ellis	Industry Invited Participant
<b>Observers</b>	
Mr Adam Whan	Industry (Attended 2 <sup>nd</sup> day only)
Ms Claire Wallis	AFMA
<b>Executive Officer</b>	
Ms Amelinda Byrne	AFMA

## 1.2 Pecuniary interest declarations

The Chair asked all participants present at the meeting to declare any conflict of interest with the agenda items. Each participant with a declared conflict of interest was then asked to leave the room while the remaining members discussed their individual claims.

The attendees declared their conflict of interests as follows:

Member/ participant	Declared Interests
<b>Mr John Abbott</b>	Owns an ETBF boat SFR, and ETBF quota SFRs, and also holds a state licence fish receiver permit. <i>Declared an interest in Agenda items 3 and 6.1.</i>
<b>Dr Don Bromhead</b>	Employee of AFMA, which includes a salary. Is the Manager of the tropical tuna fisheries. No pecuniary interest in tropical tuna fisheries. <i>No conflict of interest declared.</i>

<b>Ms Amelinda Byrne</b>	Employee of AFMA, which includes a salary. Acting as the Executive Officer for the TTRAG 21, but has no pecuniary interest in Australian tropical tuna fisheries. <i>No conflict of interest declared.</i>
<b>Dr Robert Campbell</b>	Employee of CSIRO, no pecuniary interest in Australian tropical tuna fisheries. Is actively engaged in research on the Eastern and Western Tuna and Billfish Fisheries. PI of the following research project: “ <i>Data management, provision of fishery indicators and implementation of the harvest strategies for Australia’s tropical tuna fisheries</i> ”. <i>Declared an interest under agenda items 4 and 5.</i>
<b>Dr Cathy Dichmont (Chair)</b>	Has a consulting company, but has no pecuniary interests in the tuna fisheries. <i>No conflict of interest declared.</i>
<b>Mr David Ellis</b>	Previously involved in the Southern Bluefin Tuna Fishery, has a consultancy company and is the CEO of the industry association, Tuna Australia. <i>Declared an interest in Agenda items 3 and 6.1.</i>
<b>Mr Gary Heilmann</b>	Industry member, director of a processing company, no longer holds ETBF boat or quota SFRs. <i>Declared an interest in Agenda items 3 and 6.1.</i>
<b>Dr Rich Hillary</b>	Employee of CSIRO, no pecuniary interest in Australian tropical tuna fisheries. Is the PI for the Management Strategy Evaluation (MSE) project for the tropical tuna and billfish species. <i>Declared an interest under agenda items 4 and 5.</i>
<b>Mr James Larcombe</b>	Employee of ABARES, involved in fisheries research, primarily through engagement with the Western Central Pacific Fisheries Commission. Has no pecuniary interest in the Australian Tropical Tuna Fisheries. <i>Declared an interest under agenda items 4 and 5.</i>
<b>Dr Julian Pepperell</b>	Independent fisheries consultant and representative of the recreational fishing sector. Is currently undertaking research into game fishing. Is involved in projects including the monitoring of fish landed at game fishing tournaments and pop-up satellite tagging on juvenile Black Marlin. <i>Declared an interest under agenda items 4 and 5.</i>
<b>Professor John Tisdell</b>	Employee at the University of Tasmania and is a scientific member of the Great Australian Bight Resource Assessment Group (GABRAG). Has no pecuniary interest in tropical tuna fisheries. <i>Did not attend TTRAG 21</i>
<b>Mr Pavo Walker</b>	Owns several ETBF boat SFRs, and ETBF quota SFRs for all species. Holds a Coral Sea permit and minor line permit. <i>Declared an interest in Agenda items 3 and 6.1.</i>
<b>Ms Claire Wallis</b>	Employee of AFMA, which includes a salary. Participating as an observer for the TTRAG 21, but has no pecuniary interest in Australian tropical tuna fisheries.

	<i>No conflict of interest declared.</i>
<b>Mr Paul Williams</b>	Director of a company that holds an ETBF boat SFR, ETBF quota SFRs, and holds a Commonwealth fish receiver's permit. <i>Declared an interest in Agenda items 3 and 6.1.</i>

All industry members declared their interests in agenda items 3 (Harvest Strategy) and 6.1 (Ecological Risk Assessment Residual Risk for Dusky sharks).

In all cases where a member or participant declared a conflict of interest, the remaining members unanimously agreed they were permitted to participate in the item of discussion. It was decided that the expertise of the members and invited participants present at the meeting was critical for comprehensive discussion of the agenda items, further noting that no final decisions were being made at the meeting.

### 1.3 Adoption of Agenda

The agenda was endorsed by TTRAG and the final agenda is provided in Appendix 1.

It was noted that agenda item 6 on Dusky Sharks should be moved to before agenda item 4 (Data Strategy) to allow sufficient time for discussion.

### 1.4 Acceptance of minutes

TTRAG accepted the minutes of TTRAG 20, pending AFMA checking the accuracy of paragraph 113 (specifically the statement relating to increases/decreases in TACCs relative to the target and limit reference points) in the draft minutes against the audio recording of the meeting. AFMA will provide TTRAG with an update and seek finalisation of the minutes inter-sessionally.

<b>ACTION ITEM 1</b> – AFMA to confirm a comment from the last minutes.
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### 1.5 Actions arising

The RAG discussed the action items arising from TTRAG 20 and ongoing action items from previous RAG meetings and commented on the progress on each item (Table 1).

A summary of actions arising from this meeting is included at Appendix 2.

**Table 1. Status of actions arising from previous TTRAG meetings.**

	Action	Meeting raised	Responsibility	Status as of TTRAG 21
1	ETBF Management Arrangements spreadsheet: TTRAG members to each review their area of expertise and add relevant management arrangements to the existing table also including management arrangements in the WTBF. Separate sheets suggested for economic factors and recreational fishing.	TTRAG 14	TTRAG	ONGOING: The update of this spreadsheet will be completed routinely (as a standing agenda item for the July meeting each year).
2	Estimating Recreational Catch: AFMA to contact NSW fisheries for the charter boat logbook data. Dr Julian Pepperell with contact Danielle Ghosn to see what recreational club data she can provide.	TTRAG 14	AFMA/Dr Julian Pepperell	ONGOING: Dr Pepperell received a substantial amount of data from Dr Sam Williams on Yellowfin and Striped Marlin. Dr Pepperell will provide a further update at the September 2018 TTRAG.
3	AFMA and CSIRO to prepare a paper that includes information from the harvest strategy, stock status information, the CSIRO MSE analysis and connectivity review assess sustainability issues in implementing inshore and offshore quota zones for swordfish.	TTRAG 15	AFMA/CSIRO	ONGOING: This project stalled due to a lack of required funds to undertake the field based components. AFMA to discuss with FRDC about the flexibility in modes of funding this research.

	Action	Meeting raised	Responsibility	Status as of TTRAG 21
4	AFMA will provide economic data from ABARES to include in the RBCC advice in future.	TTRAG 16	AFMA	ONGOING. Dr John Tisdell will be coming to Canberra to assist with this in August/September 2018.
5	AFMA member to seek clarification from the ERA TWG on their advice regarding bypassing the species component at the SICA stage.	TTRAG 17	AFMA	ONGOING: This has been passed onto the AFMA ERA team who have indicated it will be raised at the next ERA TWG, but this meeting has not occurred yet. This issue is about bypassing just species sustainability component of SICA, not habitats and community elements. Managers of fisheries undertaking ERAs have also been informed of the issue.
6	AFMA to follow up internally on how to best provide EM data to Dr Robert Campbell.	TTRAG 17	AFMA	COMPLETE: AFMA has now integrated EM data into its data warehouse and linked EM to logbook data records. AFMA has now provided this data to Dr Campbell.
7	Dr Robert Campbell to follow up with Simon Hoyle if there is value and if it is practical to conduct the two-stage process for models not tested under Group-A	TTRAG 17	Dr Robert Campbell	ONGOING: Dr Campbell has followed this up with Simon Hoyle and have agreed there is room for continual improvement. Will progress this later in the year and provide update at the March 2019 RAG meeting.
8	The RAG sub-committee explore options available to the RAG for collecting economic information and prepare a paper for RAG and MAC consideration.	TTRAG 18	Tuna Australia, AFMA, ABARES, Professor John Tisdell	ONGOING: No meeting by the RAG sub-committee has yet occurred TTRAG and TTMAC discussion this is not an immediate high priority. However, Dr Tisdell will continue to explore options for economic indicators based on those used in the WCPFC.



	Action	Meeting raised	Responsibility	Status as of TTRAG 21
9	Dr Robert Campbell to add the nominal CPUE to the first and last stepwise influence plots for comparison.	TTRAG 18	Dr Robert Campbell	COMPLETE: Dr Campbell has added the nominal CPUE to the first and last steps of the model
10	AFMA to follow up on the exact date the trip limit for Mahi Mahi was removed and add it to the significant events spreadsheet	TTRAG 18	AFMA	ONGOING: Gary Heilmann recalled the limit being removed in 2002, noting that it was an amendment to the OCS arrangements. AFMA unable to find the date as yet but will confirm and report back on details as part of the continual improvements to the spreadsheet. However, this is not currently considered a high priority.
11	Dr Julian Pepperell to update the recreational sector significant events and add to the document out of session	TTRAG 18	Dr Julian Pepperell	ONGOING: An update provided by Dr Pepperell at TTRAG 21 showed the spreadsheet as completed, with a few final details on when first clubs were formed and data collected yet to input. The RAG agreed that this should be circulated to WA regulators and recreational organisations to gather historical tuna and billfish data. It was noted that this is not a high priority but any data collected would provide valuable information. AFMA to follow up on WA commercial catches and Dr Pepperell on recreational sector.
12	AFMA to split action items into two categories; standing items that require regular meeting updates, and actionable actions to be addressed in the short term.	TTRAG 19	AFMA	COMPLETE: This was presented to TTRAG 21.

	Action	Meeting raised	Responsibility	Status as of TTRAG 21
13	AFMA to examine the cumulative impacts of the annual 10 per cent change threshold for the small fish CPUE trend under the Harvest Strategy Review.	TTRAG 19	AFMA	ONGOING: This will be part of the wider discussions around the development of the new harvest strategy and to remain as ongoing.
14	Dr Campbell to touch base with SPC staff to discuss the inclusion of NSW recreational tagging data in the SPC tagging database.	TTRAG 19	Dr Robert Campbell	ONGOING: Dr Robert Campbell to discuss this with SPC at the next Scientific Committee meeting. TTRAG noted that it would be beneficial for SPC to be made aware of the data so people can request the data if interested.
15	Dr Pepperell to talk to Karen Evans to consider morphological differences in yellowfin tuna sickle size from studies done by Schaefer and Diplok in the oceanography project.	TTRAG 19	Dr Julian Pepperell Dr Karen Evans	COMPLETE: Dr Pepperell provided an update for Dr Karen Evans. It was noted that there might be an inherent bias occurring when comparing fish so a larger sample size might be needed. John Diplock was contacted and this could have been related to the difference between offshore and inshore development of Yellowfin. SPC will be holding a stock structure workshop in October 2018 and the morphology discussion could raised by AFMA who is attending. This is now completed for Dr Pepperell and Dr Evans. AFMA
16	Dr Campbell to update the tagging paper and analysis that was presented on bigeye tuna a few years ago to tie in with the new oceanographic studies.	TTRAG 19	Dr Robert Campbell	COMPLETE: Dr Campbell/AFMA distributed the paper on 3 July 2018.
17	Dr Campbell to obtain updated catch data for Region 5 to provide an update	TTRAG 19	Dr Robert Campbell	COMPLETE: Dr Campbell has included this information in the Regional Catches paper for TTRAG 21.

	Action	Meeting raised	Responsibility	Status as of TTRAG 21
	to the RAG in the March 2018 meeting.			
18	The RAG agreed to capture a statement in the MAC report that provides a summary of the condition of the fishery as per the industry updates.	TTRAG 19	TTRAG	COMPLETE: AFMA understands this action related to the RAGs determination of confidence in the old harvest strategy and reflecting industry views on this, however given the outcomes of the harvest strategy review and redevelopment of the harvest strategy, the process has now moved past this and the action can be removed.
19	AFMA to provide a brief WTBF catchwatch report at each July TTRAG meeting.	TTRAG 19	AFMA	COMPLETED: AFMA provided a summary under Agenda item 2.2.
20	AFMA suggested contacting John Annala from New Zealand Ministry of Primary Industries to see if New Zealand would be interested in supporting the swordfish project and investigate the potential of New Zealand providing some funding.	TTRAG 19	AFMA	ONGOING: Discussions have been held with New Zealand, but funding has not yet been secured. This will remain as ongoing to contact John Annala from DPI pending industry/AFMA getting FRDC funding for the project
21	AFMA to follow up with Karen Evans of CSIRO to determine exactly how many swordfish samples would be required from each zone to satisfy an adequate sampling design, for each inshore, offshore and potential western New Zealand. David Ellis to also work with AFMA to assist in	TTRAG 19	AFMA Dr Karen Evans Mr David Ellis	ONGOING: An update was due to be provided at TTRAG 21, and but there was difficulty for Karen Evans phoning in to the meeting. This is continuing for AFMA to follow up on zone sample requirements to meet design with regards to inshore and offshore split to the TAC zones.

	Action	Meeting raised	Responsibility	Status as of TTRAG 21
	sourcing offshore samples and possible funding from the ETBF.			
22	AFMA to investigate where the AFMA conversion factors were originally derived from.	TTRAG 19	AFMA	COMPLETE: There is still discussion to be had between AFMA, TTMAC and industry whether these factors need updating. This will be removed as an action for the RAG until it receives further instruction from the MAC or AFMA.
23	TTRAG to consider the AFMA Commission's request regarding a harvest strategy for the WTBF at the July 2018 meeting.	TTRAG 20	TTRAG	ONGOING: The TTRAG agreed that AFMA would prepare a response to the AFMA Commission on their request for advice on WTBF catch triggers
24	Dr Robert Campbell to remove any operators that discard 90% or more of their Striped Marlin catch from the data set and distribute the results to TTRAG out of session.	TTRAG 20	Dr Robert Campbell	COMPLETE: Dr Campbell had included this in the CPUE standardisation data set. This removed one vessel from the model but this did not impact on the result.
25	AFMA to provide Dr Robert Campbell with a list of ETBF boats that have been in the fishery for an extended period and have recently changed their targeting practices for Swordfish.	TTRAG 20	Dr Robert Campbell	ONGOING: Dr Campbell noted that the past CPUE analysis completed with these vessel effects had little impact on the CPUE. The RAG agreed to keep this as an ongoing item as part of the Harvest Strategy review to analyse whether there was a difference pre and post introduction of the quota system (repeating Rob and Anne's previous analyses on this). Dr Campbell to run this analysis and present the findings at the March 2019 TTRAG meeting.
26	Dr Robert Campbell and Dr Rich Hillary to ask Yukio Takeuchi (SPC) to re-run the Swordfish assessment with	TTRAG 20	Dr Robert Campbell and Dr Rich Hillary	ONGOING: This is a high priority action for the next meeting. Dr Campbell to follow up with SPC at the August WCPFC meeting to

	Action	Meeting raised	Responsibility	Status as of TTRAG 21
	areas 1N and 2N removed for the two movement scenarios (no movement and 11% movement) and using all 72 parameters.			get this data to provide stock status advice to the Commission in the absence of a Harvest Strategy.
27	AFMA to develop a statement and justification for the harvest strategy decision to be provided to the AFMA Commission.	TTRAG 20	AFMA	COMPLETE.
28	The TTRAG EO to send a reminder email to RAG members out of session requesting comments on the current draft FMS.	TTRAG 20	TTRAG EO	ONGOING: This was completed but the document is marked as one for continual improvement so suggestions on the document are welcome anytime from the RAG.
29	AFMA to work with ABARES to develop a table for the data strategy that includes required information that is not directly reported on by AFMA or ABARES.	TTRAG 20	AFMA	ONGOING: This is related to information required from RFMOs, in particular WCPFC. Dr Campbell provided comments after the last RAG meeting that were not included into the table. AFMA to update and circulate to TTRAG.
30	ABARES to investigate the level of post-release mortality for Dusky Whaler sharks and provide results to AFMA and CSIRO for consideration in the ERA.	TTRAG 20	ABARES	ONGOING: ABARES provided an update to this under agenda item 6.1 and identified further information to be sort prior to TTRAG 22
31	Dr Robert Campbell to provide Dr Alistair Hobday with more accurate	TTRAG 20	Dr Robert Campbell	COMPLETE.

	Action	Meeting raised	Responsibility	Status as of TTRAG 21
	boundaries for dividing the ETBF into sub-regional areas.			
32	Dr Alistair Hobday to distribute the previous study paper on species eddy association to TTRAG.	TTRAG 20	TTRAG EO	COMPLETED: This paper was distributed on 23 March 2018.
33	ABARES to contact the WCPFC SC regarding improving the management of the tissue bank.	TTRAG 20	ABARES	ONGOING: It was noted that Dr Evans had experienced issues in the past getting samples. ABARES to follow up at the upcoming SC meeting to progress Australia's interest in this area. ABARES to provide an update at TTRAG September 2018 meeting.

## 1.6 Out of session correspondence

The RAG noted the out of session correspondence between the TTRAG 20 and TTRAG 21 meeting described in Agenda item 1.5 with no further correspondence added to the list.

## 2 Review of fishery performance

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### 2.1 Current catches and effort in the domestic fishery

The AFMA member presented the current catches table, focusing on how catches in 2018 were tracking relative to previous years. The AFMA member noted in particular that:

- Albacore, Yellowfin, Swordfish and Striped Marlin catches were fairly strong in 2017.
- Bigeye catch was the lowest catch in many years. It is expected 2018 will show a low catch again given how size monitoring has been tracking the past 2 years.

With regards to 2018 so far, Albacore, Swordfish and Yellowfin are tracking quite well compared to catches at the same time in previous years while Bigeye and Striped Marlin catches are low.

In the WTBF there are very low percentages across all species and catches remain steady. Swordfish remains the main catch and has been decreasing, but this may be related to decreased effort.

The industry and recreational members of the RAG gave an update of the catches in the fishery since the last RAG meeting in March 2018.

Mooloolaba industry members noted:

- Significant amounts of whale depredation occurring in early 2018 and stated that fish were avoiding the line due to the whales congregating. Southern industry members also noted this issue. The industry member also noted that it is difficult to determine the numbers as some hooks will come up with heads attached as clear evidence of predation, whereas some will be clean hooks. AFMA noted there was work being done on 'pingers' to divert whales from longline fishing gear. The industry member expressed interest in trialling their effectiveness. TTRAG discussed the need to potentially record depredation on logbooks if this is a factor that may impact CPUE. The worst months of depredation appear to have passed.
- recent large and unproductive eddy's occurring from 24 degrees to about 33 degrees, with operators having to travel further (e.g. south of Lord Howe) than normal.
- Increased price of squid forcing operators to using more fish bait for the first time in 12 – 15 years and to deep setting for Albacore. The RAG noted such economic drivers might be considered by Dr Campbell in future CPUE modelling.
- Recent catch rates have improved for Albacore, Yellowfin and Swordfish with a quite a few larger Swordfish caught, consistent with previous years catches at this time.

One industry member also noted this has been one of the worst seasons in a number of years, in part due to the large eddy system (which they can't travel past) and had halted operations for 6 weeks for economic reasons. He noted concerns with the closure of a specific marine park area which had previously been a preferred fishing area for his boat.

Southern industry member also noted that Yellowfin catches have been good recently, with Southern Bluefin Tuna catches and sizes the highest they have been in a number of years. The movement of SBT has also been occurring higher up the coast. The scientific member noted that the catch and size rates are consistent with the new cohort coming through from the significant recruitment period seen in 2014. The industry member also noted that there has been high

amounts of Swordfish caught off Ulladulla this season, including occasionally in bottom trawl methods.

The industry invited participant noted that the association was headed into a period of uncertainty due to the retirement of a number of senior government officials, the potential for a federal election later in the year, uncertainty over Commonwealth Marine Parks, and the move to e-logs from January 1, 2019. In the WCPFC, the Association is interested in working with government to change the transshipping measure in WCPFC and is seeking the setting of the target reference point for Albacore. He also requested consideration of other types of depredation that can impact the CPUE standardisation.

The recreational member noted that last year was best season in a number of years, with tournaments catching large amounts of Blue Marlin in particular off Sydney, large Yellowfin tuna offshore (55-75kg, with large sickles like Hawaiian fish) and good numbers of SBT (70 – 80kgs), from Bermagui to Port Macquarie. Swordfish off Victoria and Tasmania are picking up with reasonable numbers averaging 200kg.

South-coast swordfish weighing 436kg recently aged by NSW fisheries to be 20 years old. There has been a good start to the season of small Black Marlin off Townsville, and in Harvey Bay, indicating a possible shift in spawning area.

## 2.2 Update on the 22<sup>nd</sup> Regular Session of the Indian Ocean Tuna Commission (IOTC)

The AFMA member updated the RAG on the outcomes of the 22<sup>nd</sup> Regular Session of the IOTC held in Phuket, Thailand during May 2018. Key points to note from that meeting for TTRAG were:

- No new observer measures were agreed but Australia pushed for the inclusion of EM as an alternate option to human observers. There was widespread support for including EM in IOTC measures, and Australian will propose EM standards to the SC this year.
- A new Billfish measure was agreed where billfish less than 60cm must be released.
- A blue shark measure was agreed with data collection obligations Australia already meets
- Allocation measure – This key discussion focussed heavily on catch history attribution to flag States or Coastal States when fishing by foreign flagged boats has occurred in Coastal State waters. Coastal States put forward a very co-ordinated position. The meeting only considered one formal allocation proposal put forward by the coastal states, but EU had a pseudo proposal in an information paper. Coastal states agreed to further test a range of allocation scenarios. Australia's allocation will be dependent on the weighting given to coastal States, noting our large coastal zone.
- New IUU listings included an extra 5 vessels from India who did not attend the meeting. A total of 74 vessels are on the IOTC IUU vessel list.

**ACTION ITEM 2** – AFMA to confirm whether the IOTC size limits where billfish caught are less than 60cm refers to Swordfish or Striped Marlin.

## 2.3 MAC/AFMA Commission outcomes

The AFMA member provided TTRAG with an update on outcomes from recent TTMAC and AFMA Commission meetings.



TTMAC noted the ETBF harvest strategy review by Dr Hillary on the development of a new harvest strategy for Broad Billed Swordfish and Striped Marlin, and that this redevelopment process will occur over 18 months. In the interim, TTRAG will develop advice to the AFMA Commission for TAC setting. TTMAC also noted the ETBF ERA may be required to explore management options for Dusky Whalers if residual risk is still considered high following the outcomes from this meeting. TTMAC suggested that the draft FMS might include consideration of resource sharing; be designed to meet third party certification requirements; fit with requirements and standards under revised Harvest and Bycatch Strategies; and ensure reporting requirements are more streamlined; and be shorter.

Following the last TTRAG meeting, the Commission has taken the advice of the TTRAG not to use the current harvest strategy for Swordfish and Striped Marlin into the 2019/20 TAC setting process. In the absence of a harvest strategy, the Commission requested the TTRAG put forward indicators that the Commission can use to assist the TACC setting decision process. The draft transshipping policy was open for public consultation until the end of July 2018.

## 3 Harvest Strategy

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### 3.1 Harvest Strategy – Current status and future developments

The AFMA member presented a brief summary overview of progress to date under the Harvest Strategy Review, as context to issues to be considered under the remainder of Agenda Item 3. He noted that over the past 18 months TTRAG has conducted a comprehensive review of the ETBF Harvest Strategy for swordfish and striped marlin that has:

- Systematically identified key issues/problems with different components of the harvest strategy and undertaken technical work to resolve the identified issues.
- Updated the management strategy evaluation (MSE) for the harvest strategy which identified that the current Harvest Strategy would not meet HSP objectives (principally, it would continue to cut TACCs even when the stock exceeded the TRP).

He noted the AFMA Commission has agreed to the TTRAG recommendation to cease use of the current HS and initiate redevelopment of a new HS over the next 18 months. The Commission asked that TTRAG provide advice on what indicators it would be provided to assist with TACC decision making in the interim period (Item 3.4). There is also continuing work on CPUE indicators being undertaken (Item 3.3). TTRAG will also be required to develop a scope for the HS Redevelopment research as part of the Annual Research Statement (Item 5.2).

TTRAG noted that the HS redevelopment could take up to two years, would be best funded through AFMA Research Fund (as it is core research) and may rely on information coming from genetics project currently underway.

### 3.2 Fishery Data Summaries

Dr Rob Campbell presented an overview of a series of updated ETBF data summary papers that include data used in the CPUE standardisations and which TTRAG reviews each July.

#### ***Summary of Catch and Effort Information pertaining to Australian Longline fishing operations in the ETBF – 2018 Update.***

Dr Campbell's presentation highlighted:

- The first increase in active longline vessels since 2001 (39 vessels in 2017)
- The highest effort since 2009 (8.7 million hooks)
- Continued increases in the number of hooks per set (mean 1657 hooks) and number of sets per day.

- An increase in the percentage of sets that are greater than 80km long and that are less than 10km long (very short sets).
- 2017 being a strong year for swordfish, yellowfin, albacore and striped marlin catches but the lowest bigeye tuna catch year (2nd lowest catch since 2006).

TTRAG requested that information on species proportions provided in spatial maps also be presented as proportional bar plots over time for each 5 degree square, as this would help examine changes in species proportions over time. TTRAG also noted that there are in recent years a number of logbook data fields (e.g. bait type) that are not being entered by some operators and AFMA indicated that it would look to identify these operators and contact them on this matter.

**ACTION ITEM 3** – Dr Campbell to update data for the next meeting and also include information on species proportions provided in spatial maps also be presented as proportional bar plots over time for each 5 degree square, to examine changes in species proportions over time.

### ***Summary of size data collected for the ETBF and associated indicators – 2018 Update***

Dr Campbell highlighted a couple of trends from this paper being:

- Increased proportion of large swordfish and decreased proportion of small swordfish in the ETBF catch in recent years
- Decreased proportion (on average) of large striped marlin in recent years
- Increased proportions (on average) of large yellowfin tuna, bigeye tuna and albacore tuna in recent years

TTRAG noted the paper.

### ***Annual time series of environmental & oceanographic conditions in the ETBF – 2018 Update***

Dr Campbell's paper highlighted a number of trends including:

- Prevalence of fishing closer to the full moon in the central ETBF
- Increasing average sea surface temperatures as latitude decreases
- Recent increase in SST Anomaly in the southern ETBF
- Recent increase in sea surface height and mixed layer depth in the central ETBF region – TTRAG noted this might have some impact on swordfish catch rates and should be examined further. Dr Campbell noted that this data was not available in time for the most recent swordfish CPUE standardisation.

### ***Annual catch by fleet and fishing method within the southwest Pacific – 2018 Update***

Dr Campbell noted that the 2017 southwest Pacific data provided by SPC may still not yet be complete and he would look to update the figures for the September TTRAG meeting. Keeping that in mind, TTRAG noted that:

- The proportion of regional catches of both striped marlin and swordfish taken by the ETBF in 2017 has increased since 2016, while the proportion of yellowfin, bigeye and albacore tuna appear to have decreased.
- The catch of swordfish in region 5 taken by foreign longline vessels in 2017 was the second highest in the analysed time period (since 2006) but a decrease on the catch taken in 2016.
- The large drop in ETBF bigeye catch in 2017 was not mirrored by foreign fleets in region 5 (with the 2017 catch for these fleets being slightly higher than the catch in 2016).

- Extending the region 5 area to just east of New Zealand results in a drop in the ETBF percentage of regional swordfish catch from nearly 63% to 38%, due to the additional catch of foreign longline vessels in that extended area.

TTRAG noted that the regional data will be central to discussion in the September meeting when there is discussion on the stock status advice.

**ACTION ITEM 4** – Dr Campbell to provide the most up-to-date Swordfish regional data at the next TTRAG meeting.

### ***Identifying cohorts in the ETBF and application to the Harvest Strategy***

Dr Campbell noted that this paper updates the size cohorts analyses presented to TTRAG 20 in March to include analyses of the tropical tuna species. The analyses attempt to determine the most appropriate size categories (and associated “cut-offs”) for the size category based CPUE analyses. TTRAG has generally concluded that choosing size categories for CPUE analyses that are more biologically relevant is desirable. The updated analyses tested 6 different models for splitting the size data. Dr Campbell noted that:

- The average quarterly approach allows tracking of increasing size of cohorts through the seasons within years.
- Models C and D allowed too much freedom in the fitting process resulting in some unrealistic results
- Models E and F were constrained to deal with that issue and there was little difference in the outputs of the two models
- Model E was selected as the best model for use in CPUE standardisation for both yellowfin tuna and bigeye tuna.

TTRAG noted that for most quarters the yellowfin catch is comprised of between two and four age cohorts. TTRAG also noted the very strong size modes apparent in the bigeye tuna data.

## **3.3 CPUE Standardisation**

Dr Campbell then presented the paper “*Aggregate and size based standardised CPUE indices for longline target species caught within the ETBF – 2018 Update*”.

The paper examined the following combination of GLM model scenarios:

- Model 1 – the standard base case model used within the recent harvest strategy that uses a 2 way interaction term has been more widely used for less risk-based modelling
- Model 2 – a sensitivity test on the base case model that tests a 3 way interaction between area, quarter and year
- Method 1 – utilises the original size categories based on lower 25, mid 50 and upper 25 percentiles
- Method 2 – utilises the new size categories based on biology of the species including:
  - Swordfish – C1/2 (recruits); C3/4/5 (sub-adults); C6+ (spawners)
  - Striped marlin – C1/2, C3, C4-C8
  - Bigeye tuna – C1/2, C3/4, C5-C8
  - Yellowfin tuna – C1/2, C3, C4-C8
- Sensitivity model runs
  - R1 – 2017 model run (original areas and size categories)
  - R1a – Striped marlin only - excludes vessels that discard > 90% of striped marlin

- R2 – R1 models that sequentially add the fishing gear factors to demonstrate the relative impacts
- R3 – Use Method 2 size categories for each species
- R3a – Swordfish only - applies C1 as the “recruits” category
- R4 – Applies Method 1 (old) sizes but new areas (agreed at TTRAG 20)
- R5 – tests the application of both the new areas and the new sizes (Method 2).

TTRAG was asked to provide advice on which model runs would be used for the final CPUE indices for informing TTRAG advice to the AFMA Commission on TACCs (with that advice to be developed by TTRAG in September 2018). TTRAG recommended the following models be used to provide advice on species abundance trends:

For both Yellowfin tuna and Bigeye tuna, TTRAG recommended that a model (for each) be used that:

- Uses a 2-way interaction term (Model 1) as it has less parameters, is more stable, and gives similar result to model 2 (with 3-way interaction term).
- Uses two size categories, being C1/2 (pre-spawners/recruits) and C3-C8 (spawners/mature) based on examination of size/age at maturity data for both species. TTRAG noted there was no biological basis to separate “prime” and “large” fish.

For albacore tuna there is only one size category and model 1 was endorsed by TTRAG. For all three tropical tuna species TTRAG recommended running Model 2 as a sensitivity test in future.

For Swordfish, TTRAG recommended the model that:

- Uses the new areas (e.g. R4 sensitivity run)
- Uses 2 way interaction (ie Model 1)

However TTRAG, while generally agreeing the split between sub-adults and adults occurs between C4 and C5, could not agree on the overall size category cut-offs and asked that Dr Campbell present three options to TTRAG22 in September, these being:

- C1-C4 (immature fish), C5-C13 (mature)
- C1/2 (recruits), C3/4 (sub-adults) and C5-C13 (adults)
- C1/2 (recruits); C3/4/5 (sub-adults); C6+ (spawners)

For Striped Marlin, TTRAG recommended the best model to be that which uses the 2-way interaction term, new spatial areas and is aggregated across size categories, noting that catches are derived mainly from two cohorts and there is little basis to separate these.

- Uses the new areas (R4 sensitivity run)
- Uses Model 2 as sensitivity

**ACTION ITEM 5** – Dr Campbell to contact ABARES regarding their ‘clustering’ analyses work to determine if it may provide insights for improving the CPUE analyses (and vice versa).

### 3.4 Identifying indicators for Swordfish and Striped Marlin TACC advice

The AFMA member explained a request from the AFMA Commission for TTRAG to provide advice to the Commission regarding what fishery indicators, information and/or data will be provided to the Commission to assist its TACC decision making processes for ETBF Swordfish and Striped Marlin for the 2019 season. He noted that the Commission would review the intended approach (once communicated by AFMA) and provide feedback if it required any additional information or a different approach. TTRAG would then apply the endorsed approach to its advice provision process in September 2018.

He recommended that as a starting point, TTRAG base its summary of indicators and relevant information for the Commission on the approach and template already used by TTRAG for tropical tuna species (see example at Attachment A of paper). In addition, he noted that the proportion of total stock catches (of swordfish and striped marlin) taken by the ETBF is much higher, under current stock structure assumptions, than for ETBF tropical tunas. This means the relative level of fishing mortality by the ETBF on each stock is higher. As such, he asked TTRAG to consider including statements in its advice to the Commission regarding the potential implications of any changes to TACCs for the future condition of the stock(s) as a whole and potentially for stock abundance and catch rates in the ETBF region.

TTRAG agreed with both the approach of using the tropical tunas indicators paper template and the addition of information that would help the Commission to understand the implications of increasing, fixing or decreasing TACCs for the stock. In addition, TTRAG recommended further modifications to the tuna template, including splitting the regional assessment section to “overall findings” and “regional findings” and adding in further information and findings from the recent harvest strategy MSE analyses undertaken by CSIRO as well as info on stock movement and sequential seamount depletions. It was agreed that this section should utilise Region 1 from the swordfish assessment model, but noted that the Norfolk Island EEZ sits outside that region.

It was further noted that the regional striped marlin assessment is not spatially stratified and that the striped marlin advice might more usefully present subregional information based on the more restricted subregion (containing the ETBF) used in the striped marlin MSE (which was based on tagging and movement information). Dr Rich Hillary was asked to notify TTRAG of the longitudinal boundary used in the MSE analyses, which he provided on day 2 of the meeting. This boundary was from 165 degrees east.

**ACTION ITEM 6** – AFMA to modify the indicators table (‘WCPO Stock Assessment’) in the first row to be a summary of the whole WCPO assessment and then add a second row to focus to our region.

**ACTION ITEM 7** – Dr Rich Hillary to provide the most recent assessment on Swordfish and Striped Marlin to the TTRAG and provide a summary of key points on the assessments to aid with discussion at the next meeting.

### 3.5 Western Tuna and Billfish Fishery Catch Triggers (AFMA Commission Request)

The AFMA member outlined a request from the AFMA Commission regarding the management of the WTBF into the future. Specifically, at its November 2017 meeting, the AFMA Commission queried the lack of a harvest strategy to manage the quota species and requested advice from TTRAG on options for the ongoing management of the WTBF species. They requested that “AFMA Management provide advice to the Commission from TTRAG on appropriate triggers for review of levels of catch of the various target species.”

The AFMA member noted that a paper was circulated to TTRAG providing background information relevant to the consideration of this request, including the history of TACC decision making and harvest strategy development in the WTBF. He noted that current TACCs are still set at the level originally determined by the 2006 Australian “Whole of Government” position, in the absence of IOTC allocation or any subsequent WoG position, and recognising the extremely low risk presented by the ongoing low catch levels in the fishery. While the paper recommended that TTRAG develop advice on triggers as requested by the Commission, he noted subsequent discussions had highlighted that neither a triggers nor local harvest strategy based approach might be appropriate (for reasons captured below).

TTRAG discussed the Commission’s request and in relation to both the application of harvest strategies in the WTBF and the use of triggers, and came to the following conclusions:

- Under both current catch levels and a “fully caught TACCs” scenario, WTBF catch levels would be far too low (as a proportion of total stock catches, based on current stock structure knowledge) to ever justify applying a local harvest strategy in the WTBF (and certainly not one of the style adopted in ETBF), for any of the four key commercial species. This is largely based on the same logic applied to tropical tunas in the ETBF which do not have triggers or a harvest strategy.
- The most appropriate approach from a stock sustainability viewpoint, and consistent with the above, is applying TACCs that are equivalent to IOTC agreed allocations (where those are agreed in future in conjunction with harvest strategies that ensure total catches are sustainable), or the Australian whole-of-government position in the meantime. IOTC allocation processes are underway as is the first steps towards development of harvest strategies for bigeye and yellowfin tuna.
- In the absence of a local harvest strategy, TTRAG can provide the AFMA Commission with annual information relevant to the consideration of TACC levels in a manner similar to that used for tropical tuna in the ETBF. That is, to provide an indicators paper which includes information relating to (for each stock):
  - Stock Region
  - Stock Status (based on the most recent regional stock assessments):
  - IOTC Scientific Committee Advice
  - Present IOTC Management Arrangements
  - Catch: IOTC and WTBF
  - CPUE: IOTC and WTBF
  - Mean Catch Weight: IOTC and WTBF
  - Mean Catch Weight and Catch Proportions by Size: WTBF
- The use of triggers below any agreed TACC level might be more useful for maintaining stock sustainability if new information is presented to suggest that stock structure is present that provides for more localised stocks of these species. A project in the IOTC is currently looking into this.
- TTRAG is happy to consider the issue further at its September 2018 meeting if required but may require the Commission to provide some further context and clarification of its concerns relating to monitoring and management of the WTBF.

TTRAG requested that the AFMA member write a draft of the TTRAG response to the Commission and circulate to TTRAG out of session for review and comment.

**ACTION ITEM 8** – TTRAG requested that the AFMA member write a draft of the TTRAG response to the Commission and circulate to TTRAG out of session for review and comment.

## 4 Fishery Management Strategy (FMS)

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### 4.1 Data Strategy update

The AFMA member provided an update on progress on the FMS to date and reminded TTRAG members of the purpose and outcomes of the ongoing project to meet AFMA's legislative and management objectives. He also noted that part of this FMS is a Data Strategy for the ETBF that could incorporate any data gaps. He also noted that this is an opportunity for the TTRAG to identify any further improvements. AFMA noted that Dr Campbell submitted comments had yet to be incorporated in the current draft.

TTRAG noted that this was discussed extensively at the last meeting and there were a few data gaps that could be further inputted and included in the paper. Specifically, Table 2 in the draft Data Strategy should include reference to:

- Environmental data
- Recreational data
- International fisheries data: WCPFC and the SPC (this data for inclusion was previously suggested by Dr Campbell and remains an action item for AFMA to include these parameters in the future revision).

**ACTION ITEM 9** – AFMA to include reference to environmental, recreational and international fisheries data in the Data Strategy and to input Dr Campbell's suggestions from the last meeting and circulate revision to the TTRAG ahead of the next meeting.

The

AFMA noted that there is a reference to RFMO reporting requirements and this is an area for future work as previously discussed at the TTRAG20 and TTMAC. This was generally viewed as a valuable addition and will aim to reduce duplication in reporting.

The TTRAG also noted that there might be other logbook data fields that may need to be changed/amended or added which could have impact or help improve Dr Campbell's standardisation models and suggested a review of logbook data fields by a sub-group comprising AFMA and Tuna Australia in consultation with Dr Campbell. Potential additional fields identified included those relating to whale/shark depredation (e.g. clean hooks, damaged fish). Clarification of "length of line" (set versus on the drum) may also be required. TTRAG also identified the need to include actions to address recent data gaps occurring in the data (for example the increase in operators not recording bait type).

**ACTION ITEM 10** – AFMA to begin a logbook review with industry and Dr Campbell to determine if there should be any amendments in logbook data fields (including those discussed at TTRAG21). AFMA will report progress at the next TTRAG meeting.

## 5 Research

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### 5.1 General research update

The AFMA member gave a general overview of the main issues for this item to the TTRAG of the paper prepared by the Research section within AFMA. These updates included:

- status of relevant FRDC projects and proposals
- the update on the review of AFMA's research program, currently underway to identify efficiencies
- the need to submit an ATBF annual research plan to identify research needs for 2019-20 funding (AFMA and potential FRDC funding) -
- the need to determine the future of the tropical tuna size monitoring program

### 5.2 ATBF Annual Research Statement

The AFMA member noted that TTRAG is due to consider tropical tuna fishery research priorities and develop and submit an Annual Research Statement to the AFMA Research Section by mid-September, in time for consideration at the October 6 meeting of the AFMA Research Committee.

He noted that:

- TTRAG has two meetings during which to develop and finalise the statement, including the current meeting and the September 18/19 meeting.
- Currently the ETBF has four major projects funded and in progress, being the TTRAG Assessment project (ARC funding), the size monitoring project (ARC funding), the fisheries oceanography project (FRDC funding) and the genetics project (FRDC funding).
- AFMA has identified two additional priorities for consideration by TTRAG being firstly, a renewed size monitoring project and secondly, a project to redevelop the harvest strategy.

TTRAG discussed the annual research statement and agreed that both the size monitoring and harvest strategy redevelopment are the immediate priorities for inclusion on the annual research statement and that both should be targeted for AFMA Research Fund funding, noting that they are both considered to be "core" research.

In relation to the HS Redevelopment, a scientific member noted that the project should look to report to TTRAG in March 2019 with a full plan and potentially some initial runs, to get feedback from TTRAG. The project should continue to report back to TTRAG through 2019 and ideally present a more definitive MSE tested HS in March 2020. TTRAG noted that:

- Future MSE should include more robustness tests, including in relation to uncertainties in the CPUE standardisation.
- MSE should utilise the new striped marlin assessment to be developed by SPC in 2019.
- The project should consider potentially developing an assessment and operating model conditioned to what Australia requires (e.g. with relevant spatial structure, regions etc.)

<p><b>ACTION ITEM 11</b> – TTRAG asked that AFMA work with scientific members prior to TTRAG22 to develop a more detailed scope for the project for the annual research statement.</p>
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In relation to the future of size monitoring project, the AFMA member noted that AFMA is currently in discussion with ETBF industry to consider options for what might be the most cost efficient



mechanism by which to continue size data collection in future. Options include both continuation of the current project, industry lead data collection, and/or more automated data submission options.

TTRAG requested that AFMA report back on this at TTRAG22, and if necessary, provide a more detailed scope for the annual research statement.

**ACTION ITEM 12** – AFMA and Tuna Australia to work together to assess options for the ongoing collection of size data and report back to TTRAG22, including if required, developing a more detailed scope for the annual research statement.

TTRAG also summarised there are currently major projects currently funded due to finish in 2019, therefore the TTRAG is unlikely to pursue further research projects until the recreational, oceanography and harvest strategy projects have been concluded.

### 5.3 Genetics Project update

The AFMA member gave an update of Dr Karen Evan's paper, noting the decision to move this agenda item to the September TTRAG meeting where Dr Evan's could potentially be in attendance.

**ACTION ITEM 13** – AFMA to liaise with Dr Karen Evan's on her availability to attend the next TTRAG meeting in September, or the potential for an out-of-session teleconference/webinar for the update against this agenda item.

The AFMA member outlined the purpose of the project was to determine the interconnectivity of the 5 ETBF species with the rest of the WCPO region. He also noted that the project was funded for three years to 30 June 2019 but there is a strong likelihood this will be extended, noting the difficulty with getting swordfish samples.

The AFMA member gave an update on the following samples status:

- All ETBF samples have been collected and only Bigeye Tuna samples still to be sequenced.
- Albacore samples from New Caledonia have been sequenced with samples from New Zealand identified and preparing to be sequenced.
- Bigeye samples from the ETBF and Marshall Islands sequenced with key samples from the Solomon Islands identified. TTRAG requested that AFMA seek confirmation on whether samples have been identified from Indonesia and will be collected from the areas east of Australia.

**ACTION ITEM 14** – AFMA to query with Dr Karen Evan's whether she has obtained samples from areas directly east (and from Indonesia) for Bigeye tuna sampling.

- Striped Marlin samples from NZ identified from the recreational sector and being shipped, which will provide clarity between NZ stock. Still seeking a second Pacific site samples.
- There are ongoing problems in getting Swordfish samples from NZ and presents a possible disconnect between contacts in NZ and with MPI.
- This is also difficulty obtaining samples obtained from other areas of the Pacific where prior requests for samples have been made.

**ACTION ITEM 15** – ABARES and Dr Campbell to liaise with Dr Evans on attending the upcoming SC meeting. If she is unable to attend the meeting, then seek a clear direction from her on which countries to target to facilitate the provision of samples for the genetics project.

**ACTION ITEM 16** – ABARES and Dr Campbell to also confirm whether samples from PNG have been collected.

## 5.4 Recreational fishing project update

The recreational member presented this item and gave an update on the project comparing historic catches of Yellowfin tuna and Striped Marlin. He noted that:

- Catch data goes back to 1930s in Bermagui and then from the 1960s for the wider region, with tagging data continuous from the early 1970s.
- There has been very good data sets on recreational catches obtained from NZ.
- There had been some issues with accessing NSW club data post 2011 due to the inconsistencies between clubs and the delays inputting information into the various databases.
- NSW recognition of the importance of gathering quality tagging data and the value this information has been, whereas information from QLD has been more difficult to acquire.
- NSW charter data from outside the tournament and clubs systems will hopefully provide more clarity on the numbers of tuna caught per year.
- QLD charter fisheries also keep logbooks and have made this available for the project.
- Dr Pepperell and Dr Campbell will aim to collate the data later this year to report back to the TTRAG for the March 2019 meeting.

## 5.3 Oceanography project update

The AFMA member gave an update on the Oceanography project on behalf of CSIRO, noting that it was hoped that Dr Alastair Hobday and Dr Jason Hartog could attend the next Steering Committee meeting to provide an update in-person.

He gave an update on the development of two types of Phase 1 habitat distribution models, where these models have focused on sea surface temperatures preferences (derived from satellite tagging data) to estimate key habitat for Yellowfin.

This work is well underway however, data is still needed from a number of Pacific island countries (principally Fiji and PNG)) who have committed previously to providing data for this project. Wez Norris had previously been identified as a potential FFA representative at the last FFC Steering Committee meeting. However, due to scheduling issues, endorsement at the last meeting did not occur. Confirmation is needed on how to best gather the required data to progress the project.

**ACTION ITEM 17** – AFMA determine if Wez Norris is still willing to represent FFA on the steering committee and then seek FFA endorsement. AFMA to inform ABARES and Dr Campbell information on which delegates to approach in relation to additional data provision at the upcoming SC meeting.

**ACTION ITEM 18** – AFMA to coordinate with Dr Hobday on the next Steering Committee meeting in conjunction with the next TTRAG meeting.

## 6 Ecological Risk Assessment (ERA)

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### 6.1 ERA Residual Risk – Dusky Shark

Note: this item was rescheduled ahead of agenda item 4.1 (Data Strategy) to allow sufficient time for adequate discussion.

Dr James Larcombe (ABARES) presented the paper “*Post capture mortality for dusky shark – Advice Note No 4799*”. The paper provides information to assist TTRAGs review of the SAFE score for this species, after TTRAG20 (March 2018) noted that the post capture mortality score used for this species assumed 100% mortality of captured dusky shark and requested that this assumption be reviewed against available fisheries data and literature. ABARES kindly volunteered to conduct that review and report back to TTRAG21.

Dr Larcombe noted that the paper looks at both at vessel mortality (at first point of landing, using logbook and observer data) and post release mortality (survival after release, for those individuals released, based on tagging research studies) and then highlighted some of the key findings of the review paper including:

- The most relevant satellite tagging study looked at PRM in 21 dusky shark caught on demersal longline, which noted PRM depends on many variables such as environmental and gear factors. In particular the study found PRM was higher after longer soak times (41% >3 hours) than shorter soak times (11% when <3 hours), however soak time was not a statistically significant predictor. TTRAG noted that survival on demersal longlines may be impacted by the short snoods and “tethered” nature of the fish after hooking.
- While the ERA SAFE scoring method assumes effectively that all dusky shark are retained (an assumption applied to all by-product species), in fact ETBF logbook data suggest that since 2013, only 1-17% of dusky shark are retained each year.
- Logbook data indicated long soak times, averaging 17.6 – 18.4 hours (by year).
- Observer data indicate that around 67% of dusky shark were released in an alive and vigorous state.

The paper concluded that the biological characteristics of dusky shark, combined with the lack of reliable estimates of post release mortality from the ETBF and of reliable predictors or surrogates from available data, that a PCM score of 3 appears internally consistent with the application of the current methodology.

Unfortunately, TTRAGs consideration of this matter was significantly hindered due to technical problems with CSIRO ERA expert’s phone-in to the meeting. The ERA expert’s participation in the discussion is critical to the resolution of this matter and after numerous attempts, the phone-in was aborted and TTRAG requested that the ERA team attend (in person) the next meeting to finalise this issue.

In the meantime, TTRAG also raised questions around the accuracy of ETBF skippers/crews identification of dusky sharks, noting that separating whaler shark species is a difficult task even for trained observers. TTRAG also requested that additional information be gathered from currently ongoing studies on PRM from longline fisheries.

**ACTION ITEM 19** – ABARES to continue work on the PRM of Dusky sharks, including species identification and review work done on similar species for update at the next meeting.

**ACTION ITEM 20** – AFMA to liaise with the ERA team for their attendance at the TTRAG 22 in September 2018.

## 6.2 ETBF and WTBF significant events spreadsheet

The AFMA member introduced this item and noted this is a standing item at each of the July sessions of the TTRAG.

He explained the intent of the document is to record events that may provide an explanation for certain data trends and effects evident in the fishery.

The RAG discussed the document and suggested adding a number of new events which included:

- a) Dr Pepperell's game fishing and charter fishing significant events spreadsheet
- b) Date of the trip limit for Mahi Mahi. This is an action item from the last meeting.
- c) The change from 1 July 2018 to marine parks, and
- d) The date from when the decision was made to cease use of the harvest strategy (while it is redeveloped).

TTRAG also noted that more detail can be put into the management arrangements listed and what these actually entailed to make it a bit clearer (i.e. for the introduction of snoods, increased hooks/floats surface sets etc.). It was agreed this should be continually updated but AFMA will recirculate to the RAG once these amendments are made.

**ACTION ITEM 21** – AFMA to input TTRAGs suggestions on the spreadsheet and circulate out-of-session.

## 7 Date and venue for next meeting

The next meeting is tentatively scheduled for 18 – 19 September 2018 in Mooloolaba. This meeting and details will be confirmed by TTRAG out of session. TTRAG noted that Dr Rich Hillary and Dr James Larcombe will be unavailable to attend the next meeting and that AFMA may seek to appoint a proxy for Dr Larcombe.

**ACTION ITEM 22** – AFMA to determine, in the absence of key TTRAG members, if there are procedures governing the use of proxies and whether the appointment of a proxy is possible.

The Chair thanked all participants and observers for their contributions and closed the meeting at 1:30pm.

# Appendix 1: Adopted Agenda

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## Landmark Resort Mooloolaba

16 – 17 July 2018

Commencing 8:30am

### Monday 16 July 2018

#### 1. Preliminaries

- 1.1. Welcome and apologies
- 1.2. Pecuniary interest declarations
- 1.3. Adoption of Agenda
- 1.4. Acceptance of TTRAG 20 minutes
- 1.5. Actions arising/out of session developments
- 1.6. Out of session correspondence

#### 2. Review of fishery performance

- 2.1. Current catches and effort in the domestic fishery – verbal updates from scientists, industry and recreational fishing members since last RAG Meeting (March 2018)
- 2.2. ETBF & WTBF catchwatch reports (AFMA)
- 2.3. Update from the 22<sup>nd</sup> session of the Indian Ocean Tuna Commission (AFMA)
- 2.4. Outcomes from TTMAC 18 and AFMA Commission (May 2018)

#### 3. Harvest Strategy

- 3.1. Harvest Strategy - Current status and future development (AFMA)
- 3.2. Fishery Data Summaries (CSIRO)
- 3.3. CPUE standardisations (CSIRO)
- 3.4. Identifying indicators for Swordfish and Striped Marlin TACC advice (CSIRO/AFMA)
- 3.5. AFMA Commission request – WTBF Harvest Strategy

### Tuesday 17 July 2018

#### 4. Fishery Management Strategy (FMS)

- 4.1 Data Strategy update

#### 5. Research

- 5.1. General research update
- 5.2. ATBF Annual Research Statement
- 5.3. Genetics project update
- 5.4. Recreational fishing project update (Julian)
- 5.5. Oceanography project update

## **6. Other business**

6.1 ERA Residual Risk – Dusky Shark (ABARES)

6.2 ETBF & WTBF significant events spreadsheet (AFMA)

## **7. Date and venue for next meeting**

## Appendix 2: Actions arising from TTRAG 21

	Action	Responsibility
1	AFMA to confirm a comment from the last minutes.	AFMA
2	AFMA to confirm whether the new IOTC CMM size limits for billfish (< 60cm) refers to Swordfish or Striped Marlin or all billfish.	AFMA
3	Data Summaries: Dr Campbell to update data for the next meeting and also include information on species proportions provided in spatial maps also be presented as proportional bar plots over time for each 5 degree square, to examine changes in species proportions over time.	Dr Robert Campbell
4	Regional Data Summary: Dr Campbell to provide the most up-to-date Swordfish regional data at the next TTRAG meeting.	Dr Robert Campbell
5	CPUE analyses: Dr Campbell to contact ABARES regarding their 'clustering' analyses work to determine if it may provide insights for improving the CPUE analyses (and vice versa).	Dr Robert Campbell
6	TACC Indicators paper: AFMA to modify the indicators table ('WCPO Stock Assessment') in the first row to be a summary of the whole WCPO assessment and then add a second row to focus to our region.	AFMA
7	Dr Rich Hillary to provide the most recent assessment on Swordfish and Striped Marlin to the TTRAG and provide a summary of key points on the assessments to aid with discussion at the next meeting.	Dr Rich Hillary
8	TTRAG requested that the AFMA member write a draft of the TTRAG response on the suit of indicators for the WTBF to the Commission and circulate to TTRAG out of session for review and comment.	AFMA
9	Data Strategy: AFMA to include reference to environmental, recreational and international fisheries data in the Data Strategy and to input Dr Campbell's suggestions from the last meeting and circulate revision to the TTRAG ahead of the next meeting.	AFMA
10	Data Strategy: AFMA to begin a logbook review with industry and Dr Campbell to determine if there should be any amendments in logbook data fields (including those discussed at TTRAG21). AFMA will report progress at the next TTRAG meeting.	AFMA/industry/Dr Robert Campbell
11	TTRAG asked that AFMA work with scientific members prior to TTRAG22 to develop a more detailed scope for the harvest strategy redevelopment project for the annual research statement.	AFMA/CSIRO
12	AFMA and Tuna Australia to work together to assess options for the ongoing collection of size data and report back to TTRAG22, including if required, developing a more detailed scope for the annual research statement.	AFMA and Tuna Australia

13	AFMA to liaise with Dr Karen Evan's on her availability to attend the next TTRAG meeting in September, or the potential for an out-of-session teleconference/webinar for the genetics project update.	AFMA
14	AFMA to query with Dr Karen Evan's whether she has obtained samples from areas directly east (and from Indonesia) for Bigeye tuna sampling.	AFMA
15	ABARES and Dr Campbell to liaise with Dr Evans on attending the upcoming SC meeting. If she is unable to attend the meeting, then seek a clear direction from her on which countries to target to facilitate the provision of samples for the genetics project.	ABARES/Dr Robert Campbell
16	Genetics project: ABARES and Dr Campbell to also confirm whether Swordfish samples from PNG have been collected.	ABARES/Dr Robert Campbell
17	AFMA determine if Wez Norris is still willing to represent FFA on the Fisheries Oceanography project steering committee and then seek FFA endorsement. AFMA to inform ABARES and Dr Campbell information on which delegates to approach in relation to additional data provision at the upcoming SC meeting.	AFMA Dr Campbell and ABARES
18	AFMA to coordinate with Dr Hobday on the next Steering Committee meeting in conjunction with the next TTRAG meeting.	AFMA
19	ABARES to continue work on the PRM of Dusky sharks, including species identification and review work done on similar species for update at the next meeting.	ABARES
20	AFMA to liaise with the ERA team for their attendance at the TTRAG 22 in September 2018.	AFMA
21	AFMA to input TTRAGs suggestions on the ETBF and WTBF significant events spreadsheet and circulate out-of-session.	AFMA
22	AFMA to determine, in the absence of key TTRAG members, if there are procedures governing the use of proxies and whether the appointment of a proxy is possible.	AFMA