Australian Government
Australian Fisheries Management Authority

Tropical Tuna and Billfish Fisheries Resource Assessment Group (TTRAG) 29

Minutes

10/11 September 2020

Video Conference

Contents

1 Preliminaries

1.1. Welcome and Apologies

The Chair, Dr Cathy Dichmont, welcomed members to the meeting, opening the meeting at 1.00pm. The following participants were present at the meeting:

Present	
Dr Cathy Dichmont	Chair
Dr Don Bromhead	AFMA member
Dr Rich Hillary	Scientific member, CSIRO
Mr Gary Heilmann	Industry member
Dr Julian Pepperell	Recreational fishing member
Dr Ian Knuckey	Scientific member
Dr Rob Campbell	Scientific member, CSIRO
Dr James Larcombe	Scientific member, ABARES
Mr David Mobsby	Economics member
Invited Participants	
Mr Terry Romaro	Industry invited participant
Observers	
Mr Phil Ravenello	Tuna Australia, Project Manager
Ms Ann Preece	CSIRO
Dr Jim Dell	CSIRO
Executive Officer	
Ms Lou Cathro	TTRAG Executive Officer
Apologies (did not attend)	
Mr David Ellis	Industry representative invited participant, TTRAG and TTMAC
Mr Paul Williams	Industry invited participant
Mr Pavo Walker	Industry Member

Apologies were received from Mr David Ellis, Mr Paul Williams and Mr Pavo Walker prior to the meeting.

1.2. Declaration of Interest

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 asked to leave the teleconference while the remaining members discussed their individual claims. All industry members declared conflicts with agenda items 3 and 4.

Member/participant	Declared Interests
Dr Cathy Dichmont (Chair)	Has a consulting company, but has no pecuniary interests in the tuna fisheries. *No conflict of interest declared.*
Dr Don Bromhead	Employee of AFMA, which includes a salary. Is the Manager of the tropical tuna fisheries. No pecuniary interest in tropical tuna fisheries. *No conflict of interest declared.*
Ms Lou Cathro	Employee of AFMA, which includes a salary. Acting as the Executive Officer for the TTRAG 29, but has no pecuniary interest in Australian tropical tuna fisheries.

	No conflict of interest declared.
Mr Gary Heilmann	Industry member, director of a processing company, no longer holds ETBF boat or quota SFRs. *Declared an interest in Agenda item 3 and 4.*
Dr Rich Hillary	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. *No conflict of interest declared.*
Dr James Larcombe	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. *No conflict of interest declared.*
Dr Robert Campbell	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: "*Data management, provision of fishery indicators and implementation of the harvest strategies for Australia's tropical tuna fisheries*". *No conflict of interest declared.*
Dr Ian Knuckey	Has a consulting company with interests in electronic monitoring in the tuna fisheries, and is a member on several other AFMA Committees. *No conflict of interest declared.*
Mr David Mobsby	Employee of ABARES, involved in fisheries research, as it relates to TTRAG primarily through the economic survey of the Eastern Tuna and Billfish Fishery. Has no pecuniary interest in the Australian Tropical Tuna Fisheries. *No conflict of interest declared.*
Dr Julian Pepperell	Independent fisheries consultant and representative of the recreational fishing sector. Is currently undertaking research into gamefishing. Is involved in projects including the monitoring of fish landed at game fishing tournaments and pop-up satellite tagging on juvenile Black Marlin. *No conflict of interest declared.*
Mr Terry Romaro	Director of a company that owns Eastern Tuna and Billfish Fishery (ETBF) boat statutory fishing rights (SFRs), minor line SFRs, ETBF longline SFRs, Western Tuna and Billfish Fishery (WTBF) boat SFRs, WTBF longline SFRs, Western Skipjack Tuna Fishery (WSTF) purse seine permit, Small Pelagic Fishery (SPF) purse seine, mid-water trawl SFRs, and SPF quota SFRs. Shareholder of a company that owns shares in a proposal to fish with foreign longliners in the WTBF. Industry member on Southern Bluefin Tuna (SBT) and Tropical Tuna MAC , Invited participant for TTRAG, and industry representative at the Commission for the Conservation of SBT (CCSBT) & IOTC. Invited participant for squidRAG and squid concession holder. Director of a company who owns a fish processing facility in Port Lincoln. *Declared an interest in Agenda item 3 and 4.*
Mr Trent Timmiss	Employee of AFMA, which includes a salary. Is the Senior Manager of the Tuna and International section. No pecuniary interest in tropical tuna fisheries. *No conflict of interest declared.*
Mr Phil Ravanello	Is currently the program manager of the industry association, Tuna Australia. Salary from industry.

	Declared an interest in Agenda item 3 and 4.
Dr Ann Preece	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. *No conflict of interest declared.*
Dr Jim Dell	Employee of CSIRO, no pecuniary interest in Australian tropical tuna fisheries. Involved in development of CPUE indices for the harvest strategy and indicators advice development.

In all cases where a member, invited participant or observer declared a conflict of interest, the participant left the teleconference. The remaining members unanimously agreed they were permitted to participate in the item of discussion, noting the expertise of the individuals and benefits of these members contributing to discussions.

1.3. Adoption of Agenda

The meeting agenda was amended significantly on Day 1, in terms of its order, following the late withdrawal of two industry members from Day 1 proceedings, leaving the meeting without a quorum, and resulting in Day 1 being substantially shortened. Subsequently, a revised agenda was adopted, with the majority of items shifted to Day 2 and re-ordered (but not re-numbered), as detailed in Appendix 1.

Please note: The minutes below are reported in order of the original agenda numbering (not the order they were presented).

1.4. Adoption of Minutes

The TTRAG adopted the minutes from the previous meeting without further amendment.

1.5. Actions Arising

The RAG discussed the action items arising following TTRAG 28 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 at TTRAG29	Discussion at TTRAG29
1	**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: The member noted that the final report will be due in October.	ONGOING: Dr Pepperell informed TTRAG that the work is being finalised and he will do a presentation at the October meeting.
2	**Quota zones:** 1. 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. 2. 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. 3. 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	1. TTRAG 15 2. TTRAG 19 3. TTRAG 19	AFMA/CSIRO	AFMA to discuss further with Tuna Australia. Addressing 2) and 3) is not needed until 1) is addressed, potentially over the next 12 months. WCPFC and FFA discussions around zone based management may need to be taken into account.	ONGOING: Action items had previously been put on hold with agreement from industry pending issues with funding. The ETBF genetics project by CSIRO is being finalised next year with the second set of swordfish samples, Dr Karen Evans will do a presentation for the RAG. Neither AFMA nor industry has prioritised moving this item further.

	Action	Meeting raised	Responsibility	Status at TTRAG29	Discussion at TTRAG29
	also work with AFMA to assist in sourcing offshore samples and possible funding from the ETBF.				
3	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: No further progress on this item however, Dr Campbell noted the paper on the initial work has now been published.	COMPLETE: Dr Campbell noted it would be up to his replacement and the RAG as to where this work is taken in future.
4	ABARES to touch base with SPC staff to discuss the inclusion of NSW recreational tagging data in the SPC tagging database.	TTRAG 19	ABARES	ONGOING: Previously, Dr Campbell spoke to Peter Williams at SPC. The RAG agreed that there should be continuing discussions around license agreements with NSW for potential use by RFMOs (SPC in particular). The TTRAG agreed this should be listed as an action for ABARES to progress.	ONGOING: Dr Campbell will provide background information to Dr Larcombe and Dr Pepperell will pass on relevant contact information (Phil Bolton and Brian Van der Wahl at NSW DPI).

	Action	Meeting raised	Responsibility	Status at TTRAG29	Discussion at TTRAG29
5	**CPUE analyses:** Dr Campbell to contact ABARES scientists regarding their 'clustering' analyses work to determine if it may provide insights for improving the CPUE analyses (and vice versa).	TTRAG 21 TTRAG 22	Dr Robert Campbell CSIRO ABARES	ONGOING: Dr Campbell has previously held discussions with ABARES with the TTRAG agreeing that this is an ongoing item. The TTRAG also agreed this item will be slightly rewritten to acknowledge staffing changes at ABARES (and has been amended for TTRAG25 accordingly).	ONGOING: This work is still being progressed noting a change in staff working on it at ABARES
6	**FMS 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.	TTRAG 21	AFMA industry/Dr Campbell	ONGOING: AFMA is still to progress a full logbook data fields review but will be discussing additional fields under Agenda Item 5	ONGOING: The AFMA member noted that this is an ongoing process with internal work underway at AFMA.
7	**Size monitoring project:** 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 21	AFMA and Tuna Australia	COMPLETE – Tuna Australia has entered into a 2 year co-management contract for collection of this data	COMPLETE: No comments

	Action	Meeting raised	Responsibility	Status at TTRAG29	Discussion at TTRAG29
8	**Indicators and CPUE standardisation:** 1. Dr Campbell to remove the regional maps that are not relevant for the billfish and tuna species, and a brief explanation of the main proportion percentage in the regions, to make the regions used in each analysis easier for the TTRAG to interpret. 2. Dr Campbell to put legend in the map to clearly indicate which regions are for and develop a clear name to identify Region 5 “extension” (e.g. Tasman Region). 3. Dr Campbell to include the plots for Region 5 catch by fleet and the CPUE indices for the tropical tuna species. 4. Dr Campbell to include the catch data from the area of Region 5 extension to the indicators table. This will be noted by the longitudinal marker.	TTRAG 22	CSIRO	COMPLETE: This section will be discussed under agenda item 3.	COMPLETE: Dr Campbell noted he incorporated comments into the paper he presented in either the September or October TTRAG last year.

	Action	Meeting raised	Responsibility	Status at TTRAG29	Discussion at TTRAG29
9	Dr Campbell will look to explore potential changes in fishing practices (particularly with the start of set location) associated with the introduction of Marine Parks, and determine potential implications for CPUE standardisations.	TTRAG 23	CSIRO	NOT YET PRIORITISED:	ONGOING: Dr Campbell noted he needs to obtain the specific boundaries of the marine parks and then will pass onto whoever takes on the work.
10	AFMA to coordinate and lead development of a discussion paper that provides an initial list of potential economic in-season indicators, including identifying those that are already collected, where other indicators can be sourced, and any associated costs to assist TTRAG in undertaking a step-wise review of the feasibility and cost effectiveness of developing in-season indicators. This to be completed by the September TTRAG meeting.	TTRAG 23	AFMA/TTRAG	COMPLETE: David Mobsby previously provided a paper on economic indicators to the TTRAG24, with economic indicators to be considered annually as part of the fishery indicators item. An updated paper on fishery economic indicators for discussion under agenda item 3.	COMPLETE: Mr Mobsby provided an economic indicators paper and further discussed under agenda item 4.4

	Action	Meeting raised	Responsibility	Status at TTRAG29	Discussion at TTRAG29
11	AFMA to determine how EM are recording heads that are brought up on board and report back to TTRAG with a short discussion paper including data collection options after consultation with AAP.	TTRAG 23	AFMA	ONGOING: This is relevant to determining predated fish. Difficult to determine species but they are recorded as 'tuna – discards'. Determining clean hooks can be done, but this is not determined as economically viable at this stage. The TTRAG queried if random video samples could be kept for a long period as videos are only kept 6 months. AFMA can look into/review whether it is economically viable to retain records of clean-hooks and will discuss data retention internally and provide an update on this at TTRAG29	ONGOING: AFMA to investigate increased EM review costs with AAP and will have discussions with industry outside the RAG The AFMA member confirmed that EM footage is only retained for 6 months unless it is flagged for a compliance investigation or historical purposes

	Action	Meeting raised	Responsibility	Status at TTRAG29	Discussion at TTRAG29
12	**Understanding of fishing depths** TTRAG to consider whether a research priority is required to address the uncertainty around changes in fishing practices, particularly for monitoring fishing depth. 1- AFMA to seek to include the following data fields into future ETBF e-logs - Vessel log speed (important distinction from vessel speed), Shooter speed, and bubble dropper length.* 2- TTRAG to consider development of TDR based research and/or data collection in the ETBF to better understand and account for (in CPUE analyses) the relationship between fishing strategies (including vessel log speed, shooter speed and dropper lengths etc) and fishing depth.** *moved from item 18 **moved from item 20	TTRAG 23	AFMA	TTRAG agreed to combine previous items 17, 18 and 20 into one item. 1. In progress – to be discussed under item 5. 2. In progress – TDR research prioritised in recent annual research statement with potential for Tuna Australia protected species mitigation projects to assist in undertaking this work	ONGOING: This item was discussed under agenda item 5. Phil Ravanello noted that Tuna Australia will be purchasing time depth recorders for another project and there is potential for these to be used in this project. AFMA will make the required changes to the logbooks.

	Action	Meeting raised	Responsibility	Status at TTRAG29	Discussion at TTRAG29
13	AFMA to examine VMS data to check and verify sets reported on logbooks as having mainline lengths greater than 100km.	TTRAG 24	AFMA	ONGOING – not yet actioned	ONGOING: Not yet actioned
14	TTRAG to consider frequency distributions of values for all factors used in CPUE standardisations and provide advice regarding the removal of outliers.	TTRAG 24	TTRAG/ Dr Campbell	ONGOING	ONGOING: AFMA to combine actions 13 and 14.

	Action	Meeting raised	Responsibility	Status at TTRAG29	Discussion at TTRAG29
15	1. Dr Hillary to include an additional level of effort share being 25% in the operating model. 2. Dr Hillary to relabel the HCR plot "limit" to being the "threshold" 3. Dr Hillary to present future results to include both the average, the confidence intervals (violin plots) and the individual model runs (the "worms") similar to the work presented for the Southern Bluefin Tuna management procedure testing. TTRAG also requested that the HCR plot labelling being changed to reflect that the x axis "index" is the CPUE, and the Y axis "HCR response" is the relative TACC change. All of these modifications would help TTRAG members to better understand how the HCR is working.	TTRAG 24	Dr Hillary	COMPLETE: This work was undertaken intersessionally post TTRAG 24 as part of the harvest strategy development project	COMPLETE
16	AFMA to review the background basis for differing CDR conversion factors used by CSIRO and AFMA.	TTRAG 24	AFMA	ONGOING: AFMA will look to prioritise this prior to March TTRAG 2021.	ONGOING: no additional comments.

	Action	Meeting raised	Responsibility	Status at TTRAG29	Discussion at TTRAG29
17	AFMA and TTRAG Chair to discuss the most appropriate avenue to address the transition for Dr Campbell. Dr Knuckey to also send AFMA details on how similar situations have been handled, based on his prior experiences.	TTRAG 24	AFMA TTRAG Chair	ONGOING AFMA to provide update	COMPLETE: This was discussed by CSIRO during agenda item 4.2. Dr Knuckey noted that this information needs to be thoroughly documented. The RAG decided this will be removed and pursued outside of these action items.
18	CSIRO and AFMA to discuss and secure extension of the ETBF stock structure project including relevant funding components (in particular salary time) to ensure collection and analyses of year-2 swordfish samples from AU and NZ.	TTRAG 24	AFMA	COMPLETE – CSIRO have given assurance of two years of samples to be analyses from ETBF and NZ. Suggest replace with action item "CSIRO to complete two years sampling and analyses for Swordfish in ETBF and NZ and present results to TTRAG"	COMPLETE: Dr Karen Evans will provide a presentation on the final results in 2021.
19	AFMA to send email to TTRAG members confirm the costs between the previous contract and current proposal and providing the updated process for comments on the research proposal.	TTRAG 26	AFMA	COMPLETE: Details provided in an email on 23 January 2020.	COMPLETE
20	Dr Campbell to contact Peter Williams at SPC to confirm the source of the AU_1 length data	TTRAG 27	Dr Campbell	Dr Campbell to provide update	COMPLETE – Dr Campbell confirmed the length data were based on Australian observer data.

	Action	Meeting raised	Responsibility	Status at TTRAG29	Discussion at TTRAG29
21	AFMA to liaise with Dr Hillary and Dr Campbell as to whether the additional longer low recruitment scenario is feasible and advise TTRAG	TTRAG 27	AFMA	COMPLETE: This scenario was undertaken and considered within the final HS MSE work	COMPLETE
22	Dr Bromhead, Dr Hillary, Dr Larcombe, Dr Campbell and Mr Ellis to develop text out of session outlining the reasons for differences in the assessment outcomes and circulate to TTRAG for approval.	TTRAG 27	Dr Bromhead, Dr Hillary, Dr Larcombe, Dr Campbell and Mr Ellis	COMPLETE: Text incorporated into final Harvest Strategy document approved by TTRAG.	COMPLETE
23	AFMA to compile responses to the questions posed by TTRAG members in the written feedback	TTRAG 27	AFMA	COMPLETE: Text incorporated into final Harvest Strategy document approved by TTRAG.	COMPLETE
24	AFMA to confirm the date and style (face to face or remotely) of the next meeting out of session	TTRAG 27	AFMA	COMPLETE	COMPLETE
25	AFMA to include changes to the logbook on the agenda for the September TTRAG meeting, including an update to the size structure project in the GHATF.	TTRAG 28	AFMA	ONGOING: For consideration under agenda item 5. AFMA to look into GHATF project.	COMPLETE: This was discussed through agenda item 5. Dr Knuckey has provided the project outline for the GHAT EM Discard Size Monitoring project.
26	AFMA to incorporate the agreed changes to the Harvest Strategy and provide an updated draft to TTRAG for approval	TTRAG 28	AFMA	COMPLETE: Updated draft Harvest Strategy approved by TTRAG in August. Considered and approved by TTMAC on 26 August.	COMPLETE

	Action	Meeting raised	Responsibility	Status at TTRAG29	Discussion at TTRAG29
27	AFMA to work with Tuna Australia (fishing depths) and Julian Pepperell (recreational fishing data) to update research scopes for TTRAG approval	TTRAG 28	AFMA	COMPLETE: Updated and provided to TTRAG for final approval on 6 August 2020. Provided to ARC on 17 August	COMPLETE
28	AFMA to confirm the date and style (face to face or remotely) of the next meeting out of session	TTRAG 28	AFMA	COMPLETE	COMPLETE

Table 2. Status of annual action items

	Action	Next Discussion	Responsibility	Status as of TTRAG 24	TTRAG 29 discussion
1	Review, update and input TTRAGs suggestions into the fishery events spreadsheets	TTRAG 29 – September 2020	AFMA to prepare updated draft	ONGOING: AFMA to input RAGs suggestions as they occur for annual review at the July TTRAG meetings. In 2020 will be presented at October TTRAG meeting	ONGOING: AFMA will look to updating the table for the October meeting.

1.6. Out of session Correspondence

The TTRAG noted the out of session correspondence between the TTRAG 26 and TTRAG 29 meetings.

2 Review of Fishery Performance

2.1. AFMA Catchwatch Report

The Catch Watch report was presented briefly to the TTRAG by the AFMA member, who noted the following key trends in 2020 in particular:

- Continued and historically low catches of Swordfish, Striped Marlin and Bigeye tuna, which may be a result of both pandemic impacts on fishing effort and practices but also continued low availability/abundance of those species in the ETBF area.
- Strong catches of Yellowfin Tuna and Albacore Tuna
- Significant catches of Southern Bluefin Tuna

2.2. Current catches and effort in the domestic fishery

The TTRAG industry members (including recreational members) provided updates of the current catches and conditions in the fishery.

An industry observer noted that COVID19 had impacted fishing for all target species except albacore from mid-late March 2020 through to present. Albacore catch remains high as it has the option to be frozen. He noted that demand in both international and domestic markets had significantly decreased. There has been increased effort closer to port to maximise quality and freshness of product, in an attempt to keep up with increasing freight prices. The industry member noted that there had been reasonable levels of swordfish catch in September and there has been higher levels Bigeye catch than in the last two years. He noted that Yellowfin catch had been consistent, unexpected since they are fishing so close to port. He also noted that social distancing requirements have been implemented where required.

An industry member noted that they had been trying to keep catch levels low to match freight availability. He noted that there had been a focus on quality of fish.

Another industry observer noted Coffs Harbour and Nelson Bay have had good catch rates but trips have been shorter due to weather events. He noted that foreign crew members haven't been able to access the government's Job keeper scheme.

The recreational industry member noted that private fishing has not been significantly impacted by COVID19 as they are able to use their own boats. He noted that recreational tournaments have been cancelled since March due to COVID19. There has been an impacted on the charter industry due to social distancing requirements.

A scientific member noted that there had been a slow recruitment process at CSIRO to replace Dr Campbell's position but is hopeful it will be completed soon.

2.3. International Meeting Updates

TTRAG noted the verbal update from AFMA on the outcomes of recent international meetings with the following key points noted:

In relation to the **WCPFC16 annual meeting** in December 2019:

- Australia played key role in updating the HS workplan. This work intersected with discussions with MSC on the need for MSC to adjust timeframes in their conditions for RFMOs to be more realistic. An industry observer noted to TTRAG that COVID impacts resulted in MSC extending the certification condition time frames to, coincidentally, meet the adjusted timings of the HS workplan.
- Australia introduced a proposal to reform the Conservation Management Measure (CMM) for SWPO Swordfish, including extending the CMM to apply to the full area of the stock and including management measures and restrictions where they don't currently exist(for example, fisheries in the northern area currently have no catch or effort restrictions). A lot of useful bilateral discussions were held and a suite of scientific work agreed to inform the development of the revised CMM.
- Adopted a CMM for sharks that combines the previous five measures
- Adopted a CMM for mobulid rays to prevent targeting and retention

In relation to the FFA's **FFC114** online meeting held in May, 2020, a key focus of the meeting was on the impact of the pandemic on Pacific Island nations and their fisheries particularly on how to progress the work of the Commission via the SC and TCC and Commission meeting in the absence of face to face meetings, and the significant disadvantages facing PICTS in negotiating in online meetings. A key conclusion of discussion was that FFA will be seeking to roll over the TTCMM if the status of the stocks remains healthy (based on assessments to be presented at SC16). One substantive outcome was the agreement of an FFA electronic monitoring policy.

In relation to the **WCPFC SC16** meeting held in August, 2020, the meeting was held as an online meeting in two parts – a plenary to discuss critical items and then an online forum to discuss non-critical items (to allow progression of those items without the need for decisions). Key points to note from the meeting included:

- 2019 was a record catch year for WCPO tuna catches, with over 2.9 million tonnes caught including just over 2 million tonnes of Skipjack
- The new Yellowfin tuna assessment had a significantly more optimistic result compared to the previous assessment, with spawning stock depletion now estimated at a median of 58% $SSB_{f=0}$, compared to 33% previously, with the main fishery impacts occurring in the tropical regions. The changes resulted from changes in growth parameter inputs, changes to CPUE indices and other factors. The Bigeye tuna assessment was slightly more optimistic, around 41% $SSB_{f=0}$ (from 36% depleted previously).
- A key outcome from the assessment work was the significant concern expressed by SPC around the high level of data conflicts in both assessments for the key data inputs the models are fitted. As a result, SPC expressed a lower level of confidence in the assessment and have called for an independent review of the assessments. The SC agreed and has outlined a review process to occur over the next three years and dropped an assessment from next year's schedule to make time for the independent review.
- Australia played a key role in helping set out a suite of candidate TRPs to be explored for both Yellowfin Tuna and Bigeye Tuna.
- Australia also presented a paper on options for managing swordfish in fisheries taking this species as bycatch and got a significant level of useful feedback and input from some key WCPFC member countries both pre-meeting and during the online forum.

2.4. TTMAC/AFMA Commission Outcomes

TTRAG noted the verbal update from AFMA on the outcomes of recent TTMAC and AFMA Commission meetings with the following key points discussed:

- TTMAC – the primary recent focus of the TTMAC has been the ETBF Harvest Strategy for Swordfish. TTMAC considered the draft technical specification of the HS at its meeting on 26 August and endorsed that with minor textual changes, for submission to the AFMA Commission.
- TTMAC also considered the industry proposal to amend the requirement for 500 hook limit to only apply in months and areas that accounted for the majority of black and blue marlin interactions. TTMAC agreed with the TTRAG recommendation that significant additional scientific information needed to be collated and presented to TTRAG and TTMAC to better inform their assessment and advice development in relation to that matter. TTMAC also requested additional consultation between the key stakeholders from the recreational and commercial fishing industries prior to the next TTMAC meeting.
- The AFMA Commission recently considered and endorsed the ETBF Harvest Strategy for Swordfish.

3 Striped Marlin Harvest Strategy

3.1. Harvest strategy redevelopment

The AFMA member provided some background on the ETBF harvest strategy redevelopment project currently being undertaken by CSIRO, noting that the Swordfish HS development has preceded that of Striped Marlin, with the intention that the latter harvest strategy would be able to benefit from the lessons learned in the Swordfish HS development process.

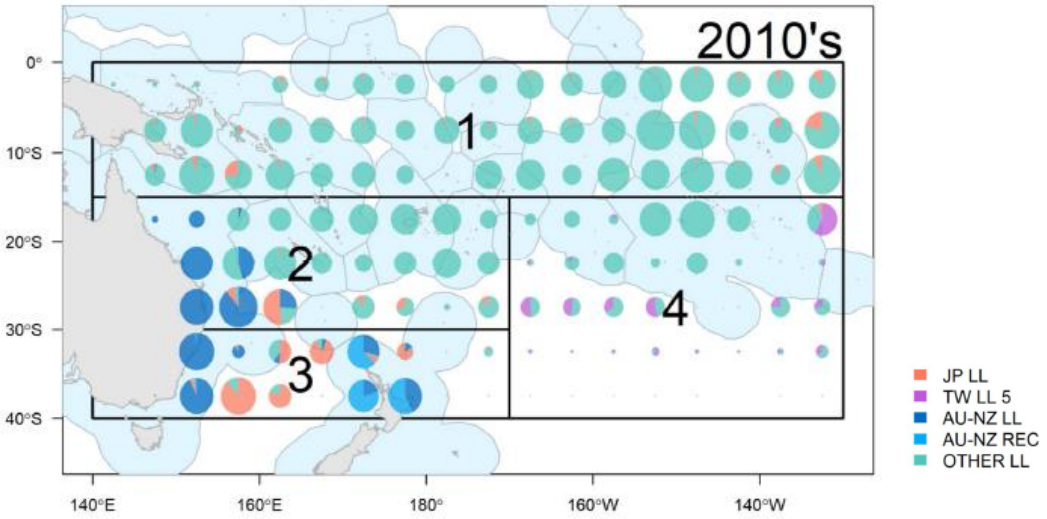
3.1.1. Operating Models

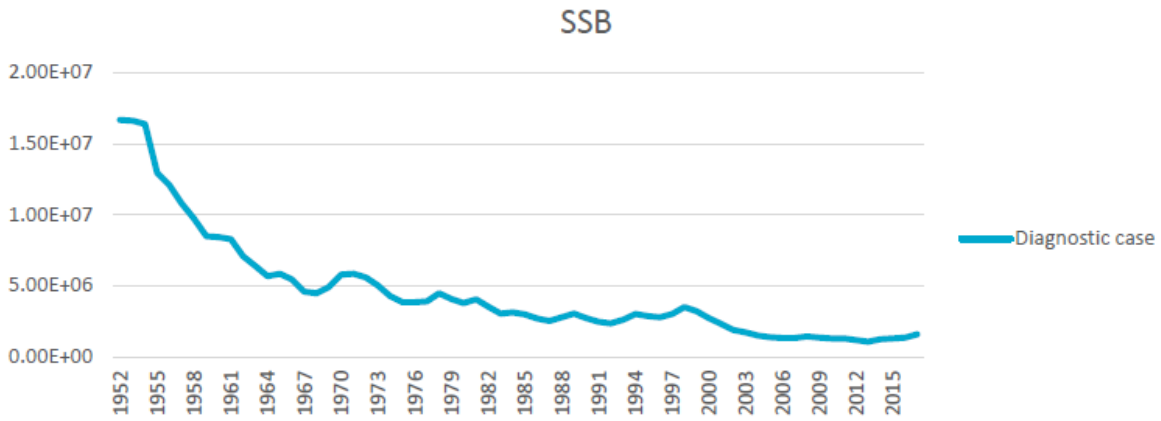
Dr Preece presented the paper *"The operating model for Striped marlin"*

The paper outlines the Striped Marlin (STM) Operating Models (OMs) that have been updated using the most recent assessment of the striped marlin stock in the South West Pacific Ocean. These operating models are used to evaluate a new harvest strategy for the management of the Australian domestic catch of striped marlin. This work builds on previous projects examining performance of harvest strategies for striped marlin and the other key species in Australia's Eastern Tuna and Billfish Fishery. The RAG was asked to review and discuss the technical paper.

Dr Preece highlighted the following key points:

- **Operating models** set up the historical population dynamics and conditions to allow for projections into the future. The projections aim to simulate TACC setting via candidate harvest strategies as part of the Management Strategy Evaluation, which tests how each candidate harvest strategy performs.
- The **striped marlin operating model** is based on the 2019 regional assessment model from SPC, which assumed a single mixed population, no subregional movement insufficient tagging data, new natural mortality and maturity parameters. The assessment estimates the stock to be at 20% of SSB in absence of fishing.





- The assessment used 300 plausible models encompassing a wide range of uncertainties.

Uncertainty	Parameter values
Steepness	0.65, 0.8* or 0.95
Growth	Kopf et al. 2011* or otolith age
Natural mortality	0.3, 0.4* or 0.5
CPUE	JPN 2 LL*, TW 5 LL or AU 6 LL
Size frequency weighting	Weight/length samples divided by 10/20, 20/40* or 50/100
Recruitment penalty CV	0.2*, 0.5 or 2.2

- However, for the Striped Marlin MSE it is proposed that the reference set of OMs are based on a smaller subset of these.
- The estimates from individual stock assessment models of the numbers at age in each year, selectivity of the different fisheries, and natural mortality, steepness and growth rates are used to define the values of the variables and parameters in each of the individual operating models. The population numbers are then projected into the future, using these population dynamics parameters.
- In the operating models, a two-area spatial structure is used to define an ETBF and non-ETBF area, with two hypotheses for connectivity between them (1% and 20% migration per quarter). The HS only operates in the ETBF area.
- The operating models will be divided into a **reference set** (above) and then a **robustness set** (less likely but plausible) to check robustness of the HS to key uncertainties.

Robustness OMs will consider CPUE process errors, alternative migration rates (20-% and 1% per quarter), changes in foreign catch/effort, implementation errors (as catch <TACC) and any other scenarios defined by TTRAG as needing inclusion.
- The projection period proposed is 20 years with 15 years as the maximum time to achieve the objectives, with 10 stochastic realisations per scenario.
- The TTRAG may wish to define plausible but less likely scenarios for robustness testing. The aim of inclusion of uncertainty in the testing of the HS, is to ensure that the HS is robust to those conditions and uncertainties.
- For striped marlin, a single CPUE series will be used as input in the new harvest strategy, combining data from all age classes
- A range of uncertainties that have been used in previous HS testing can be used to define the reference set of operating models, and the TTRAG may wish to define additional robustness tests. Conditioning of the OMs using results from a single (diagnostic) assessment model indicates that the observed and modelled CPUE tends are reasonably consistent.

The RAG discussion focussed on the following points/issues:

- In relation to the lack of **movement/spatial areas** modelled in the 2019 assessment, the RAG questioned why this was so when there is significant conventional and satellite tagging information available to inform that. Dr Hillary noted that CSIRO had provided estimates of movement to SPC, but they were unable to retrofit that information into the assessment. This is an issue that needs to be followed up in future assessments.

- TTRAG agreed that the OMs chosen need to span the range of uncertainty explored by the 2019 assessment. It is a reality that there are much larger uncertainties in this assessment than some of the tuna stocks. Dr Preece indicated she can explore the full set in future if needed.

- Robustness scenarios are mainly for looking at more pessimistic scenarios

- Climate change impacts could be explored through reduced recruitment scenarios and modified movement scenarios – this would need more thought.

- Striped marlin enter the fishery when they are already relatively large so the fishery is not getting data that can constitute a recruitment signal. Small fish are caught more in the subtropical fishery (e.g. Fiji). We will rely on the MSE to try to capture some of the uncertainty around recruitment.

- The recreational fishery is a significant component of the fishing mortality. The impacts of recreational catch on the abundance of striped marlin will be captured in the commercial CPUE index (it will respond to all sources of mortality)

- The migration scenarios can look to further consider the movement parameters work done by Dr Hillary for the SPC assessment which found up to 5% movement from Region 1 to 2 and up to 20% from Region 2 to 1.

- It would be good to understand which fleets are taking striped marlin and what the reporting uncertainties are associated with those

The RAG concluded that the OM scenarios outlined by Dr Preece are a good starting point for the striped marlin HS development work. Dr Preece will present further analyses, taking into account the current TTRAG discussion and recommendations, at the next TTRAG meeting.

3.1.2. Harvest strategy performance

Dr Preece presented the paper *"Progress in Management Strategy Evaluation for Striped Marlin"*

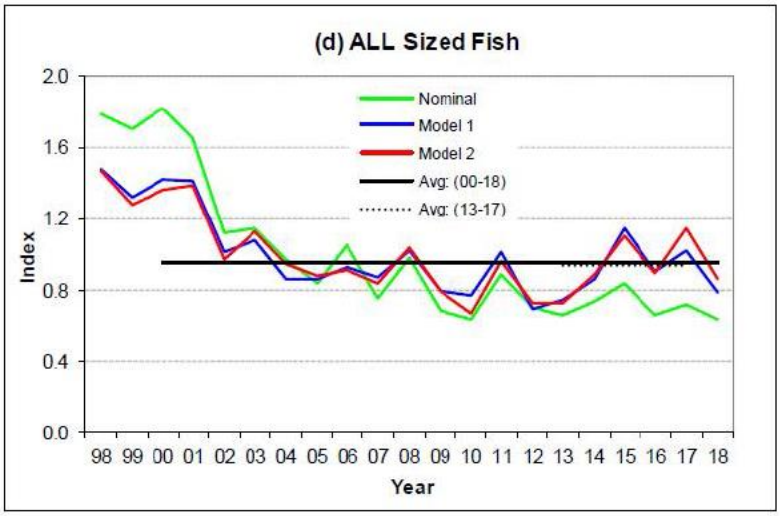
- The paper outlines an initial candidate harvest strategy based on the form of the Harvest Control Rule (HCR) agreed to by the TTRAG members in 2019 for swordfish. The RAG was asked to provide advice to CSIRO regarding the preferred options for the further development and finalisation of the MSE tested ETBF harvest strategy for Striped Marlin.

Dr Preece highlighted the following key points/findings/results/conclusion:

- The aim of the MSE is to test candidate harvest strategies, utilising OMs with initial conditions from the stock assessment and projecting into the future using candidate harvest strategies to set the TACs. The performance of candidate HS would be assessed looking at spawning stock biomass, CPUE, catch and consideration of the trade-off between competing objectives. This would assist the selection of the final HS for implementation.
- To date the RAG has agreed that the HCR should be based on a single CPUE indicator series with all sized fish included.
- The key questions for the RAG are a) what the form of the HCR in the HS should be and what are the objectives for the fishery and tuning level.
- The proposed and previously RAG endorsed general form of the HCR is the same as the general form adopted for Swordfish. Candidate harvest strategies could be proposed using different parameter settings in the HCR.
- Advice is needed on the preferred reference level (TRP) of CPUE, the size of the buffer zone, the lower trigger threshold and the slope of the decision rule above and below the buffer. Parameters in the HCRs can be adjusted so the HS meets the TRP (tuning) level.
- Possible tuning objectives could include that the reference CPUE level is reached by 2035 or later. Alternate reference levels of CPUE could be the previous target level (average 1998-2002) or the ref level used for Swordfish (average CPUE 2012-15).

Striped Marlin standardised CPUE 2019

Source: R. Campbell (2019)



- HCR parameters that could be explored could include:
    - Recent CPUE – average over 2,3 or 4 years
    - Responsiveness of HCR above and below buffer
    - Size of buffer zone (+-10,15,20%)
    - Max TACC change (e.g. 10% for annual, higher if 3 years)

- Annual or multiyear TACC decisions

The RAG discussion focussed on the following points/issues:

- The RAG agreed that utilising the general form of HCR adopted for Swordfish had been previously agreed already but what hadn't been agreed was the specific settings within that form.
- The initial tuning levels that should be explored would be some measure of the recent average CPUE, and then +10% and +20% above that, as a starting point to allow exploration of different settings. In coming to this conclusion:
- TTRAG noted that the recent level of CPUE in the ETBF correlates to a period which the assessment indicates the spawning stock (overall, through the SWPO) is at 20% of unfished levels. As such, it's unlikely a tuning level of recent average CPUE would be acceptable under the requirements of the CHSP. But testing this would confirm that to allow focus to switch to other tuning levels.
- An industry member noted that much of the stock depletion occurred in the 1950s and 1960s as a result of the Japanese longline fishery and expressed concern that Australia could be adopting a domestic HS that would require the ETBF to shoulder rebuilding (via reduced TACCs) of a stock that it did not cause to become near or at overfished level.
- Other TTRAG members agreed that it was critical to explore what control the ETBF had over the stock or local abundance and that there may be no point implementing a HS if the influence is limited or the fishery is forced to recover a stock that was depleted by other fisheries.
- The AFMA member agreed with these concerns and noted that MSE testing of candidate HS was still necessary to quantitatively determine what level of control the ETBF has and the appropriateness of implementing a HS.
- Dr Preece noted that assessing different migration/connectivity scenarios would be important in understanding these issues
- A scientific member noted that the assessment is quite unstable in the sense that depletion can vary significantly as key input parameters are improved and re-estimated over time. The recreational member stated that tuning levels should be conservative as new growth work may suggest that marlin grow more slowly than the current assessment assumes.

In conclusion, the RAG recommended that the initial MSE work use:

- The same general form of HCR as the Swordfish HS
- Tuning levels equivalent to the recent average CPUE (5 years), plus 10% and plus 20%, to be achieved by 2035
- The remaining HCR settings to be the same (initially) as for Swordfish
- Apply an annual TAC setting as base case and 3 year TAC also.

The RAG/MAC requested that Dr Preece draft and send to TTRAG a document summarising the intended setting for the initial MSE

ACTION ITEM 1: Dr Preece to provide TTRAG members with an update of the MSE scenarios and settings to be explored in the preliminary MSE analyses at the October meeting.

4 Review of Fishery Indicators

4.1. Fishery Data Summaries

TTRAG noted the presentation by Dr Campbell on the three papers from CSIRO on the data that supports the ETBF CPUE standardisation:

- catch and effort information,
- size data and
- environment and oceanographic conditions.

Dr Campbell presented the paper *"Summary of Catch and Effort Information pertaining to Australian Longline Fishing Operations in the Eastern Tuna and Billfish Fishery – 2020 Update"*. The paper outlines the ETBF logbook data, the first of three critical input data sets for the development of the ETBF standardised CPUE indices with the RAG asked to review and provide comment. Dr Campbell highlighted the following key points:

- There has been a steady increase in effort per boat and hooks per set, with only a few boats fishing less than 20 days/year
- The proportion of high "hooks per basket" sets in 2019 indicate an increase in the proportion of sets deep setting. There was also a decrease in the proportion of sets using light sticks or a high number of lightsticks, and an increase in the proportion of sets using greater than 80km of mainline.
- Bigeye and swordfish catch levels in 2019 were the lowest since the 1990s
- Albacore and yellowfin catches in 2019 were strong.
- Increasing trend in proportion of fish discarded especially for swordfish. TTRAG discussed if this was due to increased small fish and changes in depredation levels (e.g. by toothed whales). The AFMA member noted that the discarding trend was questioned by the AFMA Commission and that TTRAG needed to identify ways to collect data on this. A camera based approach might be possible similar to the GHAT project trialled, as small swordfish are often brought on board to remove the hook. An industry member noted some smaller boats might discard low value species for higher value ones.
- Yellowfin tends to turn up in the 3rd quarter in large catch years (and had very high inshore catches in 2019), Albacore peak in the 2nd/3rd quarters. Swordfish catch in 2019 3rd quarter was very poor and striped marlin catches low similar to 2018.

Dr Campbell then presented the paper *"Summary of Size Data collected for the Eastern Tuna and Billfish Fishery and Associated Indictors – 2020 Update*". The paper outlines the ETBF size monitoring data, the second of three critical input data sets for the development of the ETBF standardised CPUE indices with the RAG asked to review and provide comment.

Dr Campbell highlighted the following key points/findings/results/conclusion:

- From 1997 to 2019 a total of 2,039,884 individual processed weights have been collected pertaining to the five target species
- In the last year a very high proportion of fish caught have been size sampled but noting that the majority of albacore data is bulk samples, due to processors recording weights by bins, meaning only a mean size can be calculated. A TTRAG member questioned whether there was a need to subsample individual sizes, with an industry member indicating Albacore Tuna tend to be caught in clusters of the same sizes. TTRAG noted that the lack of individual size data is one reason why the RAG has never developed size based CPUE indices for this species. It could be looked at, but the narrower size selectivity of longline gear might make it less feasible than for other species.

- The proportion of fish comprising large fish for Yellowfin tuna has increased in recent years with a similar trend for Swordfish. TTRAG noted that these trends should not be interpreted as abundance trends for the size classes as proportions by size class are interrelated – for example, one size class will increase in proportion (with no increase in numbers) if the number of fish in another size class drops.

Dr Campbell then presented the paper "*Annual Time Series of Environmental and Oceanographic Conditions in the Eastern Tuna and Billfish Fishery – 2020 Update*". The paper outlines the environmental data associated ETBF fishing operation, the third of three critical input data sets for the development of the ETBF standardised CPUE indices with the RAG asked to review and provide comment. Dr Campbell noted a number of environmental data trends including differences in SSTs, wind speeds and bathymetry associated with fishing events in the northern, central and southern regions of the fishery. An industry invited participant suggested there was no evidence for longer term climate trends in the data presented but the scientific member noted the time series are too short and the broader evidence for climate driven changes in domestic fisheries is significant.

4.2. CPUE Standardisations

Dr Jim Dell presented the paper "*Standardised CPUE indices for the target species in the Eastern Tuna and Billfish fishery"*.

The paper outlines the data and methods used to standardise the CPUE for the five target species (Yellowfin Tuna, Bigeye Tuna, Albacore Tuna, Broadbill Swordfish and Striped Marlin) caught by vessels operating within the longline sector of the Australian Eastern Tuna and Billfish Fishery (ETBF).

In introducing the paper Dr Dell noted that:

- CSIRO is looking to transition the CPUE modelling from SAS platform to R code-based models. This has been a challenging process and the outputs in R are not yet completely duplicated.
- The approach taken is a delta approach which looks firstly at the presence/absence of catch trend and then how many fish are caught when at least one is caught.
- Key challenges are in modelling the clustering element, which one member noted would be important to resolve. This year's models were also unable to include sea current information (not available in time) but this factor has not typically explained a lot of the index variance. The RAG noted there is a large 3-year CSIRO led project to get a handle on what features in the ocean are influencing species on the east coast.

In relation to the **Yellowfin Tuna** CPUE indices, Dr Dell highlighted the following key points:

- There were relatively small discrepancies between the SAS and R modelled indices which were in large part due to how the different software select the median reference level for each parameter.

- Dr Campbell noted that in SAS the reference level is set to the category with the greatest number of observations. Dr Dell noted the R engine was coming out with a different category than the SAS code. When the different platforms are forced to select the same reference levels then the differences disappear.

- Dr Hillary emphasised that there is no statistical way to choose between reference levels, they don't matter. They do matter in how you construct the index – in our case it is by extracting the year, quarter and area interactions. The predictions won't differ but the differences are due to how the index is constructed. There's no better way to choose the reference levels.

- A scientific member noted that cluster is not included in the models but will be important to in future. He also suggested that the use of a linear trend line in the plots may not be a useful approach and that a moving average or other approach would be more appropriate, including with HS reference levels when selected.

- The AFMA member stated that the indices generated via SAS should at this point in time be considered the tried and tested methods, and should be the indices that should be used in the development of advice by TTRAG for the MAC and AFMA Commission. The R code indices are not finalised and are still in development and as such it would be appropriate to consider their adoption once development is finalised, at the March TTRAG in 2021. Dr Preece suggested this could be discussed further with AFMA after the TTRAG 29 meeting.

For **Bigeye Tuna**, Dr Dell highlighted that there is a greater variation between the SAS and R indices due to nuances in the areas being fed into the model.

For **Albacore Tuna**, Dr Dell noted that Albacore does not have size-based analysis and there are some discrepancies between the SAS and R generated indices that will need to be investigated further.

For **Swordfish**, Dr Dell highlighted the following points:

- Three size classes show different trends in SAS analyses

- Significant differences against most likely due to difference reference levels for recruits, but less so for subadults and for adults the differences are small

The RAG/MAC discussion focussed on the following points/issues:

- TTRAG noted the significant difference between the nominal and model predicted indices for all three size classes of swordfish in 2019, with the modelled indices being significantly higher. The RAG discussed the possibility that this was due to the observed declines in the use of lightsticks, squid bait and night setting in 2019, suggesting less targeting of Swordfish, which might also mean less effort in the traditional swordfish targeting fishing grounds. Future analyses would look to add back in the influence plots that have accompanied the CPUE paper in the past.

- An industry member noted that ETBF operators have been reporting more small fish over the last 12 months and very recently good catches of large fish.

For **Striped marlin**, Dr Dell noted that the R model index is much higher in earlier years and lower in latter – the differences.

TTRAG thanks Dr Dell for his work in transitioning the CPUE models from SAS to R.

4.3. WTBF Indicators

Dr Bromhead presented the summary paper on the indicators for the WTBF, noting that the AFMA Commission has requested that TTRAG provide it with an indicators paper to support Commission decisions on WTBF TACCs, in the same manner that TTRAG provides an indicators paper to inform Commission decisions on ETBF TACCs, in particular for the ETBF tuna species that do not have a local harvest strategy. Paper 4.3a is a draft template for a WTBF indicators paper.

He noted that the Commission supported a RAG proposal to base an indicators template on the following information:

- 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

He noted that the WTBF TACCs expire this year and as TTRAG will need to consider providing advice on TACCs for 2021 at least at the TTRAG30, AFMA is seeking final TTRAG comment on the template to help finalise it for TTRAG30.

Dr Bromhead provided an overview of the draft template and sought TTRAG feedback in relation to four questions:

- Should IOTC subregional catch, CPUE, depletion information be included in the indicators paper (as it is for ETBF), noting that the subregions used in IOTC are much larger and less localised to the area adjacent to the WTBF?
- Is there sufficient information available to add an indicator category for recreational catch in the area of the WTBF?
- Should the template include a RAG drafted summary statement highlighting for TTMAC and the Commission the key trends and scientific advice?
- Should the template include historic catch data trends from foreign fisheries operating in the Australian EEZ in the past (as suggested by a TTRAG invited participant in 2019).

The RAG discussed these issues and, in each case, agreed that the suggested information should be included in the template. In doing so, TTRAG noted:

- Subregional information such as catch and CPUE by fleet could be more refined by seeking relevant data from the IOTC (e.g. for subregional catch) so as to define a box of influence. There seems to be little international fishing in the waters adjacent to the WTBF. It would be useful to have a map of historical fishing effort also (to indicate the potential).
- AFMA should seek advice and assistance from the stock assessment scientists from CSIRO who are involved in the IOTC assessments
- AFMA to provide draft summary points also in the template to assist TTRAG development of advice

ACTIONS ITEM 2: AFMA to revise the WTBF Indicators template to include subregional IOTC information, recreational fishery information, summary statements and historic catch trends for foreign fishing in the EEZ.

4.4. Economic Indicators

Mr Mobsy presented the draft paper "*Fishery economic indicators: Eastern Tuna and Billfish Fishery*". The purpose of the paper is to increase TTRAG understanding of economic drivers of the fishery in 2019 and potential impacts on catches and catch rates to improve the economic advice provided to the AFMA Commission and TTMAC. TTRAG was asked to review and discuss the

paper and provide feedback to ABARES regarding potential changes and enhancements to future revisions of the paper.

Mr Mobsby noted a number of key trends in the economic indicators in the most recent year of the data (2019) being a reduced GVP due to lower catch volumes, with this mimicked by a reduced NER also and a reduction in the weighted average price. Squid prices remained elevated and fuel price increased somewhat after a very low period.

The economic conditions index, which is a simplified index that highlights the major drivers of economic conditions (e.g. CPUE, market price, fuel), indicates that in recent years lower than average CPUE has been a key factor in economic condition of the fishery (when previously fuel and exchange rates were key drivers). He noted that large Yellowfin catches tend to drive favourable economic conditions, and so the very recent increase in Yellowfin catch may improve conditions.

Mr Mobsby noted that recent export prices (first half of 2020) for ETBF tuna and billfish have been higher than the average prices over the past 5 years, while Japanese import prices for fresh/chilled tuna and swordfish (not Striped Marlin) are about average in contrast to frozen product being well below average in recent 6 months. An industry member explaining that the Japanese import data should be ignored as it lumps all global imports together including low quality product. The Australian product fetches much higher prices due to handpicked high-quality fish exported. The export price data is high recently despite Covid19 due to it being in demand locally as a take-away sushi product and as high quality fresh product in the US and Japanese markets, with shorter trips (to time to infrequent freight flights) meaning higher quality fish also.

TTRAG discussed the presentation and paper by Mr Mobsby and made the following recommendations:

- In relation to the **economic conditions index**, the AFMA member suggested splitting this out by species (each index with species specific chilled/fresh – not frozen - prices and CPUE), to help understand targeting switches and fisher's behaviour. The RAG noted that the species specific CPUE input (to be provided by CSIRO on a financial year basis) may need to be nominal CPUE (the CPUE experienced by fishers) as the standardised CPUE may remove some of the CPUE variance of interest for this issue (it's an index of abundance). A scientific member clarified in response to a question from an industry observer that the influence of fishing for SBT is taken into account in the ETBF std-CPUE models.

- Future updated paper should include fresh SBT market price data and indicators of what percentage of catch of each species is going into each market and the product type.

- Include a paragraph or two explaining how the ETBF operates in the market (product types and which markets etc) – Gary H to help David M draft.

In relation to the **TACC advice/indicators paper** to be developed for the October RAG meeting, the RAG recommended including:

- In the introduction section – GVP, NER, fuel and bait prices, exchange rates and overall fishery economic condition index

- In the species-specific sections – the species specific economic conditions indicators (with appropriate chilled price and CPUE inputs), species specific GVP, export value by month

- A couple of summary statements of economic conditions, including industry comment on bait price, prices etc in the overall species summary

It was noted the economic conditions indices were appropriate in aggregating a lot of the other information into one plot (i.e. no need to include price data separately). The RAG recognised the need to rationalise what is included in the indicators paper and tasked a small working group comprising the AFMA member, Gary Heilman, a CSIRO representative and David Mobsby with working out of session to incorporate the above information into the TACC indicators advice paper for the next TTRAG meeting.

AFMA and an industry observer also committed to discussing inclusion of information from the industry reports to the AFMA Commission. AFMA and CSIRO would discuss CSIROs role in updating the indicators paper.

ACTION ITEM 3: ABARES (David Mobsby) to update the economic indicators paper by a) developing species specific economic conditions indicators (with CSIRO to provide CPUE data by financial year); b) including fresh/chilled SBT price trends; c) including the % of species catch by product type to each market; d) working with Gary Heilman to include introductory description of how the ETBF operates in the market.

ACTION ITEM 4: A small working group of AFMA, CSIRO, David Mobsby and Gary Heilman to incorporate economic indicators data, as specified by TTRAG29, into the TACC indicators advice paper, for TTRAG30.

5 Logbooks

5.1. Review of potential new field in logbooks

TTRAG noted the background and summary of the recent discussion on logbooks provided by the AFMA member, noting the following key points:

- The paper provides TTRAG an opportunity to review and check to make sure the changes that AFMA is proposing to make to the logbooks properly captures what the RAG has agreed to seek in the past.
- Over the past 18 months or so, during development of the new HS, and as part of annual discussions of the ETBF CPUE indices, as well as discussions in relation to protected species mitigation and management, it was identified by TTRAG that there may be a need to collect additional information on logbooks that can be used to provide better proxies of fishing depth. The benefits of this will be in improved CPUE standardisation and a better understanding of interactions with protected species, in particular turtles and potentially diving seabirds.
- Dr Campbell has previously presented analyses of ETBF fishing depths that used a specific equation of Yoshihara (1951) which included:
    - Length of float line
    - Length of branch line
    - Length of mainline between floats
    - Hooks per basket
- TTRAG has also previously identified two additional important fields, being:
    - Line shooting speed
    - Vessel log speed

- Currently the AFMA AL06 logbook has the following relevant or potentially relevant data fields:
    - Hooks per basket
    - Vessel shooting speed (to be confirmed if this is vessel log speed which may also differ to GPS speed). AFMA to also check if this is in the database as Dr Campbell has not had access to it.
    - Line shooter used (yes/no) – but this does not give line shooting speed
    - Total hooks
    - Mainline length

Dr Campbell confirmed that the combination of hooks per basket, mainline length and total hooks in the existing logbooks could be used to calculate Yoshihara's "length of mainline between floats". Based on the above, TTRAG agreed to the following proposed new fields or field amendments:

- Line shooting speed (with the unit of measure to be confirmed after consulting skippers)
- Length of float line (meters)
- Length of branch line (meters)
- Amendment - Mainline length "deployed".

After discussions noted that there is poor uptake and reporting on other gear parameters in the annual gear surveys and the logbook gear/vessel tables, TTRAG agreed that the following fields which provide important information in relation to interactions with seabirds and sea turtles should also be added to the daily logbooks/e-logs:

- Line weighting - Weight (grams) and Distance from hook (meters)
- Hooks - Size and Type (Circle, Japanese, J, Other)

A number of other suggested fields were agreed to be further considered and reviewed by TTRAG in future, including fields relating to:

- The shape of the mainline set,
- Potential depredation of catches by toothed whales and sharks,
- WCPFC logbook and ROP required fields (e.g. including total number of baskets/floats, distance between branchlines, time–depth recorders, management of offal discharge, deep setting line shooter, mainline hauler, automatic bait thrower, automatic branch line attacher.

One suggested field, the "hook number" (within basket) associated with a protected species interaction, should be investigated as to its collection via electronic monitoring. It was also suggested that future gear surveys be done face to face in port to get better response and coverage.

TTRAG noted that AFMA is updating and rolling out a new IT platform to capture data from paper logbooks and e-logs, with this platform replacing the old elog platform that is becoming outdated. In the past, slight variations that have crept in between the elogs and paper log data fields, but with the new platform these have to be fully aligned. With the ETBF moving to full e-log implementation, AFMA is also exploring the potential development of a single line fishing paper log (used as a backup if an e-log system fails) that would combine the old minor line logs and pelagic longline paper log (AL06).

The RAG discussed how e-logs may allow better collection of gear information through the ability to prepopulate fields that do not regularly change, and the need for the fleet to form good reporting habits at the start of the elog transition.

ACTION ITEM 5:

a. AFMA to implement agreed new data fields in logbooks relating to fishing depths, line weighting and hooks (size and type).
b. AFMA to determine why vessel shooting speed field was not available in data provided to CSIRO by AFMA.
c. TTRAG to give further consideration to additional potential fields, specifically, those required by WCPFC logbooks and ROP, fields relevant to collecting data on depredation, and shape of mainline set.
d. AFMA to explore the possibility of collecting “hook number” information for protected species interactions via electronic monitoring

6 Other Business

6.1. ETBF Data Dictionary Review

Dr Campbell presented the paper “Data Management for Australia’s Tropical Tuna fisheries” which was drafted in order to create a detailed overview of the data collected and used in ETBF/WTBF over the past 20-30 years. Dr Campbell provided a brief overview of the contents of the report which describes:

- The domestic tuna data collections
- AFMA data management
- AFMA Data Warehouse
- AFMA Daily Fishing Logbooks data – noting only from AL04
- CSIRO Tuna Legacy Data
    - Includes old logbook and Japanese AFZ fishing data.
- ETBF Database tables
- ETBF Size Data
- ETBF Catch Disposal Data
- ETBF Observer Data
- ETBF Electronic Monitoring Data
- CSIRO Research Data – including tagging, Coral Sea observer and hook depth data

TTRAG thanked Dr Campbell for his thorough and comprehensive work that will provide an invaluable resource going forward. Dr Campbell noted that there are a suite of files that he runs to bring together all of the data for CPUE standardisation and that he is happy to explain and pass on

those files to the person who replaces him. An AFMA observer noted that AFMA could provide more details for the ADC line tables to Rob. Dr Campbell noted that AFMA is instituting changes to its database systems and hopes that this will not disrupt CSIROs data access to AFMA data and ability to get mirror images of the AFMA data.

ACTION ITEM 6:

a. CSIRO to provide AFMA with a copy of the CSIRO Tuna Legacy Data as described in the Data Dictionary.
b. AFMA (Natalie Rivero) to provide more details for the ADC line tables to CSIRO (Dr Campbell)

6.2. Date and Venue for next meeting

AFMA advised that the next TTRAG meeting would be held on 12/13 October via video conference.

The Chair closed the meeting at 5:03pm and thanked members for their attendance and contributions.

Appendix 1: Adopted Agenda

Australian Fisheries Management Authority - Canberra

Video Conference – 10-11 September 2020

Commencing at 9.00am (ACT/NSW/QLD time) – 7.00am (WA time)

Day 1

1. Preliminaries

1.1. Welcome and apologies
1.2. Pecuniary interest declarations
1.3. Adoption of Agenda
1.4. Adoption of Minutes
1.5. Actions Arising
1.6. Out of session correspondence

Day 2

1. Preliminaries

1.2 Pecuniary interest declarations

4. Review of Fishing Practices and Fishery Indicators

4.1 Fishery Data Summaries (CSIRO)
4.2 CPUE standardisations (CSIRO)
4.3 WTBF indicators (AFMA/CSIRO)
4.4 Economic Indicators (ABARES)

3. Striped Marlin Harvest Strategy

3.1 Harvest strategy redevelopment (CSIRO)
3.1.1 Operating models
3.1.2 Harvest strategy Performance (MSE)

5. Logbooks

5.1 Review of potential new field in logbooks

6. Other Business

6.1 ETBF Data Dictionary Review

2. Review of Fishery Performance

2.1 AFMA Catch Watch report (AFMA)
2.2 Current catches and effort in the domestic fishery – verbal updates from scientists, industry and recreational fishing members
2.3 International meeting updates (AFMA)
2.4 MAC/AFMA Commission outcomes (AFMA)
6.2 Date and venue for next meeting

Appendix 2: Actions arising from TTRAG 29

	Action	Responsibility
1	Dr Preece to provide TTRAG members with an update of the MSE scenarios and settings to be explored in the preliminary MSE analyses at the October meeting.	CSIRO
2	AFMA to revise the WTBF Indicators template to include subregional IOTC information, recreational fishery information, summary statements and historic catch trends for foreign fishing in the EEZ.	AFMA
3	ABARES (David Mobsby) to update the economic indicators paper by a) developing species specific economic conditions indicators (with CSIRO to provide CPUE data by financial year); b) including fresh/chilled SBT price trends; c) including the % of species catch by product type to each market; d) working with Gary Heilman to include introductory description of how the ETBF operates in the market.	ABARES
4	A small working group of AFMA, CSIRO, David Mobsby and Gary Heilman to incorporate economic indicators data, as specified by TTRAG29, into the TACC indicators advice paper, for TTRAG30.	AFMA/CSIRO/ABARES /Industry
5	New logbook fields: a. AFMA to implement agreed new data fields in logbooks relating to fishing depths, line weighting and hooks (size and type). b. AFMA to determine why vessel shooting speed field was not available in data provided to CSIRO by AFMA. c. TTRAG to give further consideration to additional potential fields, specifically, those required by WCPFC logbooks and ROP, fields relevant to collecting data on depredation, and shape of mainline set. d. AFMA to explore the possibility of collecting “hook number” information for protected species interactions via electronic monitoring	AFMA
6	a. CSIRO to provide AFMA with a copy of the CSIRO Tuna Legacy Data as described in the Data Dictionary. b. AFMA (Natalie Rivero) to provide more details for the ADC line tables to CSIRO (Dr Campbell)	CSIRO/AFMA