

**Meeting of the Tropical Tuna  
Resource Assessment Group  
(TTRAG)**

**FINAL RECORD**

**TTRAG INTER-SESSIONAL MEETING 1**

**15 JUNE 2023**

## TROPICAL TUNA RESOURCE ASSESSMENT GROUP (TTRAG)

**Chair:** Dr Cathy Dichmont

**Date:** 15 June 2023

**Meeting:** TTRAG Inter-sessional meeting 1

**Format:** Video conference

**Attendance:**

All members attended the meeting, except those identified.

Members	Invited Participants
Dr Ian Knuckey, Science Member	David Ellis, Industry
Dr James Larcombe, Science Member	Dr Terry Romaro, Industry <sup>1</sup>
Dr Ashley Williams, Science Member	Laura Tremblay - Boyer, CSIRO
Gary Heilmann, Industry Member	Selina Stoute, AFMA
Dr Julian Pepperell, Science/Recreational Fisheries Member	
Robert Curtotti, Economic Member	
Mr Pavo Walker, Industry Member	
Kate Martin, AFMA Member	
Lachlan Farquhar, Executive Officer, AFMA	

**Non-Attendance:**

Mr Paul Williams, Industry Member

Dr Rich Hillary, Science Member

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<sup>1</sup> Terry Romaro joined the meeting at 1100hrs.

## Agenda item 1 - Preliminaries

### 1.1 Welcome and Apologies

1. The Inter-sessional Tropical Tuna Resource Assessment Group (TTRAG) was opened at 0930hrs on 15 June 2023 by the Chair, Dr Cathy Dichmont. The Chair welcomed members and observers to the meeting and:
  - a) made an Acknowledgement of Country;
  - b) advised members the meeting would be recorded to assist with the preparation of the meeting record. The recording will be deleted once the record is finalised.

### 1.2 Declarations of interest

2. The standing declaration of interests was reviewed by RAG members and RAG members provided updates as necessary following TTRAG March meeting (meeting 37). The updated declarations of interest are at **Attachment 1a**.
3. The Chair sought the views of the RAG on perceived or actual pecuniary interests with industry members in the meeting today. All members agreed that there was no pecuniary interest between industry members and the meetings' objectives.

### 1.3 Adoption of agenda

4. The RAG adopted the agenda as circulated on 09 June 2023. The agreed agenda is at **Attachment 1b**.

## Agenda Item 2 Fishery Indicators

### Review of modelling approach to identify ETBF fishing strategies with feedback from TTRAG 37 (including new predictor variables)

5. Ms Laura Tremblay-Boyer (CSIRO) presented an update to the RAG on *Identifying changing fishing strategies through time in the ETBF (Attachment A)*. At its March meeting TTRAG37, the RAG supported continued work on the new approach presented by Ms Tremblay-Boyer and recommended:
  - further refinement of the gear covariates to try to better define 'swordfish' fishing strategies;
  - assess distance to nearest port or distance to nearest seamount;
  - bait status: live vs dead; and
  - fishing shots be grouped by set.
6. The following meeting was convened for the RAG to further review and agree on the appropriateness of fishing strategies (clusters) generated by the model prior to them being included in the CPUE standardisation model as a covariate. Ms Tremblay-Boyer made the following enhancements to the fishing strategy modelling, following meeting 37:

### Bait Composition

7. The modelling included bait species composition and proportion of bait in sets (squid, pilchard or mix reported in logbooks). This model showed very similar fishing strategy clustering to previously presented configurations when targeting *Yellowfin Tuna (YFT) in the Coral Sea* and *deep setting for Albacore (ALB) Southern Bluefin Tuna (SBT)*. There was no further delineation between all the fishing strategies. It was **recommended** by RAG members that for future presentations, labelling of fishing strategy clusters would assist in the model's interpretation as the models rotate through time.

### Distance to shelf

8. Distant to shelf was included to the modelling to further refine fishing strategies clusters or to further delineate swordfish targeting. Four strategies remained constant through the modelling (*Coral Sea YFT*, *deep setting for ALB*, *Southern Bluefin Tuna (SBT)* and *East Coast YFT* (later merged with the *YFT/ALB mixed bait strategy* to form the *YFT and ALB with either scad or mixed bait strategy*). The *mixed Tuna with Swordfish (SWO)* targeting strategy remained indistinct in the model.

### Distance to Shelf + Bait Life Status (dead, live or mixed) + Bait species

9. Bait life status was added to the distance to shelf modelling. With the addition of species and life status, *Coral Sea YFT* and *YFT and ALB with either scad or mixed bait* strategies became less distinct, however the *mixed SWO with tuna* strategy began to form a more distinct and separate group within the SWO cluster. It was noted by the RAG that bait status can change over time through external factors such as bait availability or price. Members queried whether this affected fishing strategy clusters, however the clusters represent a fishing strategy on an annual basis and as a result, annual changes would be picked up through the model. An industry participant also noted there are distinct fishing strategies adopted by NSW (live) and QLD (dead) fleets using either dead or live baits. The addition of bait species to the clusters showed a distinct pattern for targeting *YFT and ALB with either scad or mixed bait* and using squid in the *mixed tuna with SWO* strategy.

### Silhouette metric to compare model performance.

10. The silhouette metric was used to assess the level of influence of the following enhancements to the covariates within the fishing strategies presented at TTRAG 37. The metric compared each of the additional covariates added to the model to determine the level of influence on each of the identified fishing strategy. The covariate with the highest silhouette metric was Distance to shelf + Bait status + Bait species and was therefore that greatest influence in assisting in further defining the fishing strategies, especially the SWO fishing strategy.

### Summary: Key covariates distribution

11. The following trends were identified during this process:
  - Distance to shelf was selected as a covariate over longitude, as longitude showed low silhouette value and was therefore excluded from the final model.
  - ALB deep-setting was identified using the species composition model (high proportion of ALB) and the hooks-between-floats model (high number of hooks). Mainline length modelling was also influential on deep-setting for ALB data (notable in the 2021 data).
  - Industry representatives noted a strong correlation, both in the modelling and what was observed at sea, between YFT targeting and the use of live bait (scad).
  - Distance from shelf, bait species and seasonal change was analysed and demonstrated no significant influence on the distance from shelf, bait type/status and fishing strategy.
  - A scientific member noted live bait targeting for YFT incurs a high catch rate of STM.
  - Two distinct SWO fishing strategies were identified (pre- and post-2011). Industry members noted the change to SWO fishing strategy in 2011 when quota was introduced. RAG members agreed to split the SWO fishing strategies to ensure that valuable information would not be influenced by mixed signals by combining the two strategies as one.

#### The RAG **recommended**:

- mixed tuna using shallow sets with mixed tuna with SWO – remain separate
  - YFT with scad bait with YFT/ALB with mixed bait – **merge**
12. The RAG **recommended** that seven fishing strategies (clusters) generated by the model and for the following fishing strategies to be included in the CPUE standardisation model as a covariate.
    - ALB Deep setting;

- YFT Coral Sea;
- SWO targeting (ending in 2011);
- Mixed Tuna using shallow sets;
- Mixed Tuna with SWO;
- SBT Targeting;
- YFT and ALB with either scad or mixed bait.

### **Agenda Item 3 Other Business**

13. There was no other Business identified for the meeting.

### **Agenda Item 4 Next Meeting**

14. The next TTRAG is to be held in Maroochydore in July 2023.
15. The meeting was closed at 1205pm.

## Attachment 1a

### Member, invited participant and observer's declarations of interest as advised to date.

Position	Membership	Declared Interests
<b>Dr Cathy Dichmont</b>	Chair	Has a consulting company but has no pecuniary interests in the tuna fisheries. Is the current Commonwealth Research Advisory Committee (ComRAC) chair.
<b>Ms Kate Martin</b>	AFMA Member	Employee of AFMA, which includes a salary. Is the Manager of the tropical tuna fisheries. No pecuniary interest in tropical tuna fisheries.
<b>Ms Selina Stoute</b>	AFMA, Senior Manager, Tuna and International Fisheries	Employee of AFMA, which includes a salary. Is the Senior Manager of the Tuna and International section. No pecuniary interest in tropical tuna fisheries.
<b>Mr Lachlan Farquhar</b>	Executive Officer	Employee of AFMA, which includes a salary. Is a Senior Management Officer in the tropical tuna fisheries team. No pecuniary interest in tropical tuna fisheries.
<b>Ms Laura Tremblay Boyer</b>	Scientific Invited Participant	Employee of CSIRO, no pecuniary interest in Australian tropical tuna fisheries. Is the Co-investigator for the <i>Scientific advice management of Tropical Tuna and Billfish Fisheries</i> project
<b>Dr Julian Pepperell</b>	Scientific Member	Independent fisheries research consultant and representative of the recreational fishing sector. Is involved in projects including monitoring and research on pelagic fish landed at game fishing tournaments, analysis of gamefish tagging data and assessing current data and alternate data collection methods relating to recreational catches of tropical tuna and billfishes.
<b>Dr Ian Knuckey</b>	Scientific Member	Has a consulting company with interests in electronic reporting in the tuna fisheries, and is a member on several other AFMA Committees. Is working on a commercial, recreational and indigenous capacity building project with DAWE. Involved in a project regarding threaten endangered and protected species (TEP) interactions in the small pelagic fishery.
<b>Dr James Larcombe</b>	Scientific Member	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.
<b>Dr Ashley Williams</b>	Scientific Member	Employee of CSIRO, no pecuniary interest in Australian tropical tuna fisheries. Is the PI for the project on <i>Data Management, Assessment and implementation of Harvest Strategy for Australia's Tropical Tuna and Billfish Fisheries</i> .
<b>Mr David Ellis</b>	Industry Invited Participant	Is currently the CEO of the industry association, Tuna Australia which includes a salary paid by industry.
<b>Mr Gary Heilmann</b>	Industry Member	Industry member, director of a processing company, no longer holds ETBF boat or quota SFRs. Member of Tuna Australia.
<b>Mr Terry Romaro</b>	Industry Invited Participant	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 SFR holder. Director of a company who owns a fish processing facility in Port Lincoln, & a Director of Tuna Australia.
<b>Mr Robert Curtotti</b>	Economics Member	Employee of ABARES, involved in fisheries economic research related to the Eastern Tuna and Billfish Fishery. Has no pecuniary interest in the Australian tropical tuna fisheries.
<b>Mr Pavo Walker</b>	Industry Member	Owens several ETBF boats, holds a Coral Sea permit and minor line permit.

# Tropical Tuna Resource Assessment Group

## Inter-sessional Meeting

15 June 2023

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Video Conference  
Thursday 15 June 2023

0930 – 1200hrs (AEST)

[Click here to join the meeting](#)

### 1. Preliminaries

0930-0945hrs

- 1.1 Welcome and apologies
- 1.2 Declaration of interests
- 1.3 Adoption of agenda

### 2. Fishery Indicators

0945-1050hrs

#### 2.1 Review of modelling approach to identify ETBF fishing strategies with feedback from TTRAG 37 (including new predictor variables)

- It was recommended at TTRAG 37 that the RAG convene to consider and agree on the final settings for the fishing strategies co-variate to be used by CSIRO in the CPUE standardisation model.

Break 1050-1100hrs

1100-1155hrs

#### 2.2 The RAG will be asked to provide advice on the updated classification of ETBF fishing strategies

- At TTRAG 37, the RAG noted that there can be limitations with only using species composition to determine fishing strategies as it is not always representative of targeting. The updated method presented to TTRAG 37 categorises fishing strategies based on both operational covariates and species proportions. New covariates based on TTRAG 37 feedback include bait type and distance of the fishing set from the shelf.

### 3. Other Business

1155-1200hrs

Members will be invited to raise any other Business agreed by the Chair.

### 4. Next Meeting

TTRAG 38 will be held in person on 12-13 July 2023 at Maroochydore QLD. Venue TBD.