



TTRAG 45, 16-17 September 2025

Meeting Record

DRAFT

TTRAG – Tropical Tuna Resource Assessment Group

CHAIR: Dr Cathy Dichmont

Date: 16 – 17 September 2025

Venue: Online

Attendance:

Members:

- Dr Ashley Williams (Scientific Member)
- Mr Gary Heilmann (Industry Member)
- Dr Ian Knucky (Scientific Member)
- Dr Julian Pepperell (Scientific/ Recreational Member)
- Dr Lara Ainley (AFMA Member)
- Mr Pavo Walker (Industry Member)
- Dr Rich Hillary (Scientific Member)
- Dr Robert Curtotti (Economics Member)
- Dr Rohan Currey (Scientific Member)

Invited Participants:

- Mr David Ellis (Tuna Australia)
- Dr Denham Parker (CSIRO)
- Mr Terry Romaro, OAM (Tuna Australia/WTBF)

Observers:

- Mr Shayer Alam (AFMA)
- Michael Dylewski (ABARES)
- Ms Selina Stoute (AFMA)

Apologies: N/A

Executive Officer: Mr Robbie Wood (AFMA)

Agenda:

1. Preliminaries: welcome and apologies, adoption of agenda, declarations of interests, actions arising from previous meetings and out of session correspondence	Chair
2. Member updates	Members
3. ETBF Economic Indicators Report	ABARES
4. ETBF and WTBF fishery indicators 4.1 Yellowfin Tuna in the ETBF 2026 TACC Advice	CSIRO AFMA
5. ETBF broadbill swordfish RBCC – modified harvest strategy	CSIRO
6. ETBF striped marlin RBCC – constant catch approach	AFMA
7. SWO Harvest Strategy – OM Reference Grid	CSIRO
8. Finalisation of TACC advice for the ETBF and WTBF	AFMA
9. TTRAG priorities and meeting schedule	AFMA
10. Other business	Chair

Agenda Item 1: Preliminaries

1. The Chair opened the meeting with an Acknowledgement of Country.
2. The Chair welcomed all participants and noted that there were no apologies. Meeting participants were informed that the meeting would be recorded for the purpose of assisting the preparation of meeting minutes.
3. The RAG adopted the draft agenda (**Attachment A**).
4. The RAG noted, in line with Section 4.1.4 of *Fisheries Administration Paper 12 – Resource Assessment Groups*, the requirement for all meeting participants to declare relevant interests, not limited to pecuniary gain, regarding all agenda items proposed for TTRAG 45. The Chair asked members who declared potential conflicts to leave the meeting, pending discussion by the other members on how conflicts of interest will be managed during the meeting.
5. Declared conflicts of interests at TTRAG 45, including any updates to declared interests identified by members, are recorded in the register of interest at **Attachment B**.
6. For agenda items 4, 5, 6 and 8, the RAG agreed that conflicted industry members should be included in the discussion of the agenda item, but should be excluded from the finalisation of the RAG's recommendations and advice.
7. The RAG discussed the status of action items from previous meetings, noting items that are now considered completed. An updated summary of action items and new action items from TTRAG 45 is at **Attachment C**.
8. The RAG noted the out of session correspondence since TTRAG 44 (15-17 July 2025).

Agenda Item 2. Member Updates

9. The RAG noted updates from AFMA, industry and recreational members regarding current management arrangements and activities in the Eastern Tuna and Billfish Fishery (ETBF) and the Western Tuna and Billfish Fishery (WTBF).

AFMA Management update

10. The AFMA Management updates were taken as read.
11. Following previous discussion at [TTRAG 44](#), AFMA highlighted that changes to the seabird arrangements in the ETBF in the fishing area south of 40°S have now been implemented. The final changes were slightly different from, but overall consistent with, previous RAG advice.

Industry update

12. Industry reported that the southern bluefin tuna (SBT) season unfolded with similar tonnages to last year but challenging weather conditions led to pulse landings that negatively impacted domestic markets and affected tropical tuna prices. Operators pushed further north chasing yellowfin to avoid both weather conditions and market

influences from southern bluefin tuna dumping. Industry reported being approximately 700 t short of the 80% southern bluefin tuna total allowable commercial catch (TACC) threshold required for carryover into the next year.

13. Industry reported more normal yellowfin tuna fishing patterns this year, with improvements in catches beginning in August. This contrasted with last year when only 25% of yellowfin quota was caught by October due to availability of yellowfin arriving very late in the season. The RAG noted that recreational fishers were currently experiencing excellent yellowfin catches along the South Coast.
14. Issues with the quality of yellowfin tuna persisted with fish being unusually summery (pale and skinny) rather than the expected winter quality. This resulted in poor export prices, with fish being sold to canneries at approximately \$1 per kilogram and industry freezing approximately 100 t of low-grade yellowfin in shipping containers due to unmarketable quality.
15. The RAG noted that West Coast operations currently involve minimal activity, with one operator achieving good catches but experiencing poor returns due to market flooding from East Coast Southern Bluefin Tuna operations.
16. Industry highlighted significant labour cost pressures, reporting increases over 30% in recent years, with international crew costs now at \$73,100 plus 11% superannuation for Zone 2 workers. These elevated costs create competitive disadvantages when competing in global markets against international fleets with significantly lower wage structures.

Recreational fishing update

17. A record number of sailfish releases were reported during an annual tournament in Broome, Western Australia. The catch rates demonstrated the unpredictable nature of these species, though the underlying reasons for this event remain unclear.
18. Yellowfin tuna fishing conditions along the South Coast of Australia have been good from a recreational perspective, with large schools of 50-70 kg yellowfin tuna feeding on baitfish at the surface around Bermagui and Batemans Bay. There was uncertainty about whether these were winter fish or represented a different population group, highlighting that while not unprecedented, there are often long intervals between such significant events that are poorly understood.
19. The RAG noted a lack of black marlin recruitment, with zero appearance of 0+ (young of the year) black marlin migrating down the coast this year. These smaller fish typically appear off Townsville and Cairns inside the reef during July-August before moving south, while consecutive years without recruitment events is not unprecedented. Recent seasons had shown more consistent annual recruitment. The absence of recruitment events raises concerns in the recreational community about potential impacts from international fishing pressure on black marlin stocks in regional waters.

Scientific member update

20. The FRDC swordfish close-kin mark recapture design study contract has been finalised, following project funding approval in December.
21. A South Pacific Albacore Management (SPAM) working group meeting was held recently in preparation for bringing forward the management procedure for albacore to the Commission in December 2025. While the working group had not yet narrowed down the set of management procedures, the discussion is progressing well, however, there is significant work remaining.
22. An additional SPAM working group meeting is planned for November 2025 and is particularly important from an Australian perspective, relating to catch allocation splits, which also require Commission-level adoption. The alignment of FFA members in selecting and advocating for a specific management procedure was identified as crucial for the process

Action

ABARES Scientific Member to provide out-of-session updates to TTRAG on South Pacific albacore management procedure progress as developments occur, particularly following the TCC meeting and other key milestones leading up to the Commission meeting.

Agenda Item 3. Economic Indicators Report

23. The RAG noted and discussed the presentation from Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES) on the Economic Conditions Index (ECI) for the ETBF, specifically:
 - a. Total ETBF Gross Value of Production (GVP) for 2024-25 increased to around \$50 million, primarily due to higher yellowfin tuna catches. When including SBT longline component, total GVP further increased significantly due to sharp increases in SBT export prices to Japan.
 - b. Overall economic conditions in 2024-25 improved to be on par with 2015-16 and 2019-20 to 2021 periods, driven by high yellowfin tuna revenue and lower composite costs from reduced fuel prices and higher catch volumes. The move to composite cost structure lifted the ECI compared to previous below-average reporting, with the inclusion of longline SBT further increasing the index.
 - c. Air freight constraints were noted with sharp declines in the volume of fish exported to the US but better availability for routes to Japan.
24. industry noted that economic conditions had not improved as indicated by the ECI, the RAG discussed concerns regarding accuracy and interpretation of the economic indicators and integrating SBT data with ETBF indicators, noting that these represent different fisheries with different quotas, different effort and economic models.
25. Regarding price data, industry members further noted that reported price data contradicts actual market returns which are significantly lower than reported averages

across export and domestic markets. Industry questioned whether combining data from two separate fisheries (ETBF and SBT longline) was creating misleading economic indicators that did not reflect the actual financial performance of either fishery.

26. The RAG recommended further investigation to reconcile price data discrepancies, reassessing economic condition interpretations and reviewing the methodology to integrate SBT and ETBF economic data.

NER Updates with SBT included:

27. Following the discussion at TTRAG 44, the RAG noted and discussed the updated presentation on Net Economic Returns (NER) estimates by ABARES which now includes SBT.
28. Generally, with respect to NER, the fishery performs better when including SBT than without.
29. Despite higher SBT GVP in 2023-24 compensating for reductions in other fishery revenue, it was insufficient to offset the effects of increased operating costs in the ETBF. For 2023-24, the estimated fishery NER including SBT fell in real terms to \$12.4 million from a peak of \$15.7 million the previous year.
30. Analysis of individual cost categories showed that major operating costs increased in 2023-24, specifically labour, fuel, and repairs and maintenance costs. These three categories accounted for 89% of total fishery operating costs and 81% of total fishery costs.
31. Broader economic indicators showed the fishery's productivity (measured across labour, capital, fuel and repairs and maintenance) continues a downward trend, even when including SBT, which is largely driven by catch levels. The RAG discussed understanding whether declining productivity was a structural issue related to resource availability or primarily driven by cost pressures and market conditions.
32. The RAG recommended investigating the underlying causes of the productivity decline through examination of stock assessment data to distinguish between resource-driven productivity issues and operational cost pressures affecting fishery economic performance.

Action

ABARES to work with industry to exclude southern bluefin tuna from the ECI by separating the hooks and effort data from the fishery.

ABARES to investigate the reported price data and proportion of trade allocated to domestic vs international markets to address industry concerns and improve accuracy and representativeness.

ABARES to review labour cost modelling with the non-survey approach team to ensure recent wage increases and recruitment costs are properly captured

Agenda Item 4. Application of multi-season TACC procedure: non-TACC setting year

WTBF

33. The RAG considered the updated summary of fishery indicators (presented by CSIRO) and noted that overall catch and effort in the WTBF remain stable at very low levels.
34. Australian catches made up less than 0.1% of total Indian Ocean Tuna Commission (IOTC) catches per species in 2023.
35. Updated stock assessments were accepted by the IOTC in 2024 for yellowfin tuna and striped marlin.
 - a. Results indicated that the stock status of yellowfin tuna changed from overfished and subject to overfishing to not overfished and not subject to overfishing, according to IOTC reference points.
 - b. Stock status results for striped marlin were similar to the previous assessment, remaining overfished and subject to overfishing. The RAG noted that Australia's TACC and actual catch levels represent a very small proportion of the total fishing mortality on this stock and would have a negligible impact on the sustainability of these species in the IOTC.
36. The RAG confirmed that, in line with section 2.4 of the WTBF multi-season TACC setting procedure and having regard for the reduced set of fishery indicators reviewed, there is no indication that something has changed significantly in the fishery that may warrant alternate TACC advice for bigeye tuna, yellowfin tuna, broadbill swordfish and striped marlin in the WTBF.
37. The RAG maintained previous advice that if industry's request for the WTBF yellowfin tuna TACC to return to 5,000 t were considered, this would have negligible impact on the sustainability of yellowfin tuna in the IOTC.

ETBF Tropical Tunas

38. The RAG considered the updated summary of fishery indicators (for all ETBF species, presented by CSIRO), including the updated South-West Pacific catch data report, and discussed the following points:
 - a. With respect to Region 5 in the Western and Central Pacific Ocean (WCPO), used to evaluate the contribution of ETBF catches to total Western and Central Pacific Fisheries Commission (WCPFC) catches, albacore tuna catches represented 3.7% of the total, bigeye tuna catches represented 27.8% of the total, and yellowfin tuna catches represented 22.4% of the total.
 - b. Yellowfin tuna catch in 2024 was significantly greater compared to previous years.
 - c. Broadbill swordfish catch in 2024 declined from 2023 levels and represented 68.6% of Region 1 catch. Standardised Catch Per Unit of Effort (CPUE) for all

- categories was above the 5-year average except for recruits which were below average.
- d. The RAG noted that European Union catch data for 2024 was missing, which contributed to higher proportional Australian catches in the swordfish fishery. However, it was unclear if the missing data represented actual reduced fishing effort rather than incomplete data reporting,
 - e. Striped marlin catch in 2024 was greater than previous year and at levels not seen since 2003, representing 61.3% of Region 1 catch. Standardised CPUE showed large increases across all categories and was well above the 5-year average.
39. The RAG noted substantial discrepancies between logbook reported catches and verified catch weights via catch disposal records (CDR), where the CDR catches were substantially greater than logbook catches, particularly for yellowfin tuna and striped marlin, with industry noting systematic underreporting in logbooks due to operational practices. AFMA noted that for the purposes of providing advice on TACCs, the RAG should consider CDR reported catches as an accurate source of verified catch weights.
40. Industry members noted spatial changes in fishing effort, with operations returning to patterns more similar to the 2000s including increased South Coast targeting of yellowfin tuna, use of live bait, and fewer hooks per set, particularly affecting striped marlin catches.
41. Updated stock assessments were accepted by the WCPFC in 2025 for swordfish and striped marlin.
- a. Results indicated that the stock status of swordfish improved compared to the 2021 assessment, where the stock is now assessed as not overfished and unlikely to be subject to overfishing according to WCPFC reference points.
 - b. Stock status results for striped marlin remained overfished according to WCPFC reference points but not overfished according to the Commonwealth Harvest Strategy Policy reference points. The RAG noted that Australia represents a significant proportion of striped marlin catches in the Southwest Pacific region.
 - c. The RAG noted that in the 2025 striped marlin stock assessment, depletion estimates are based on numbers of fish rather than biomass which makes it difficult to compare directly to both previous estimates and default limit reference points (eg, 20% of unfished biomass).
 - d. Based on the overfished status, WCPFC Scientific Committee (SC21) recommended not increasing catch above recent average levels.
42. The RAG confirmed that, in line with section 2.4 of the ETBF multi-season TACC setting procedure for tropical tuna species and having regard for the reduced set of fishery indicators reviewed, there is no indication that something has changed significantly in the fishery that may warrant alternate TACC advice for bigeye, albacore and yellowfin tunas.

Actions:

AFMA and CSIRO to investigate and understand the differences between logbook and CDR catch data for yellowfin tuna and striped marlin.

CSIRO to separate striped marlin from combined stock status plots due to different assessment methodology and reference point incompatibility.

CSIRO to expand tables to include ETBF percentage contributions relative to total stock assessment areas for better context.

Agenda Item 4.1. Yellowfin Tuna in the ETBF 2026 TACC Advice

43. The RAG discussed a proposal to increase the TACC of yellowfin tuna (YFT) in the ETBF by 20% to 2,880 t for the 2026 and 2027 fishing seasons.
44. The RAG confirmed that there were no sustainability concerns or WCPFC compliance concerns if the YFT TACC is increased as proposed.
45. However, the RAG noted that such a change warrants further scrutiny; particularly in relation to the dynamics of the quota market, discards and the implications for non-target species, especially the bycatch of striped marlin (MLS).
46. The RAG discussed:
 - a. The current situation of periodic and typically end of season increases in the availability of YFT (pulse events) creates efficiency problems for operators in the ETBF. The RAG considered that, in these periods, people holding quota can become reluctant to lease out the quota in case they need it for their own operations; or anticipate that higher lease prices could be gained by waiting further into the season. The resultant disorderly trade in quota leads to higher unused quota than otherwise would be the case in pulse years, mainly because fishers are not left sufficient time at the end of the season to obtain additional quota to catch against an unexpected pulse late in the period. This lack of held quota at the end of the season results in greater discarded fish as fishers run out of quota.
 - b. Higher and unanticipated lease prices at the end of the season increases volatility in profits, especially if fishers need to plan for taking advantage of a pulse event in the context of rising lease prices and the need to obtain additional quota.
 - c. A higher YFT TACC may provide greater access to quota and allow fishers to both utilise the increased availability during pulse events and better spread their fishing activity through the pulse period, with fish caught likely to be directed to higher potential markets resulting in higher and less volatile profitability for fishers.

- d. Considering the proposed 480 t increase in TACC is a relatively small change, discarding due to poor returns against the cost of leasing quota may decline as a result. This means dead fish are more likely to be eaten rather than high-graded. This increase is not likely to cause a major disruption to the quota market given such a change in the TACC has occurred in the past without issue. Any minor disruption is likely to be offset by the benefits flowing to fishers from the increased and better product utilisation in the fishery, in terms of the quality and more orderly quantity of landed catch.
- e. Often in fisheries with persistently low NER, as is indicated by ABARES estimates presented at Agenda Item 3 for the ETBF from 2018–19 to 2023–24, economic theory suggests that consideration of a reduction in fleet effort is warranted, in order to lower the future costs of fishing through the positive effect of less fishing pressure on future CPUE. However, YFT in Australia varies according to availability and the Australian catch has a weak link with biomass given the size of its catch relative to other non-Australian sectors. The 2024 catch of YFT represents 22.4% of the provisional total catch of YFT within Region 5 of the WCPO; and 15.5% on average over the last 5 years. Therefore, increasing the TACC may avoid lost revenue through high-grading without affecting future fishing costs in the ETBF operational area.
- f. The RAG considered it unlikely that the proposed higher TACC would induce new entrants to the fishery, which could dissipate potential profits, as a package of quotas to each species would need to be bought (which are less available) and act as a barrier to entry to the fishery.
- g. The main issue regarding an increase in YFT TACC is the bycatch of MLS. The relationship between YFT and MLS are shown in the following figures:

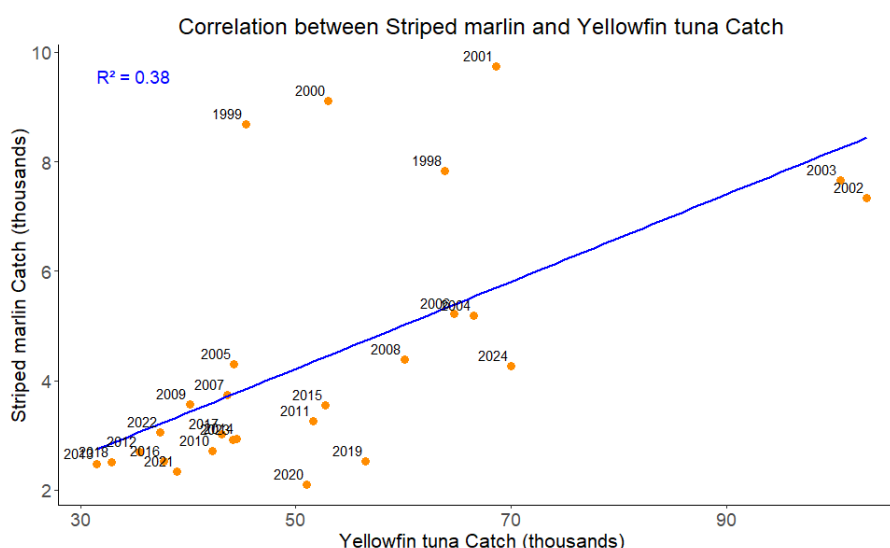


Figure 1. Annual catch (thousands of individuals) of yellowfin tuna and striped marlin in the ETBF for the period 1998–2024. Correlation statistic, $R^2 = 0.38$. Figure provided by CSIRO using daily fishing logbook data.

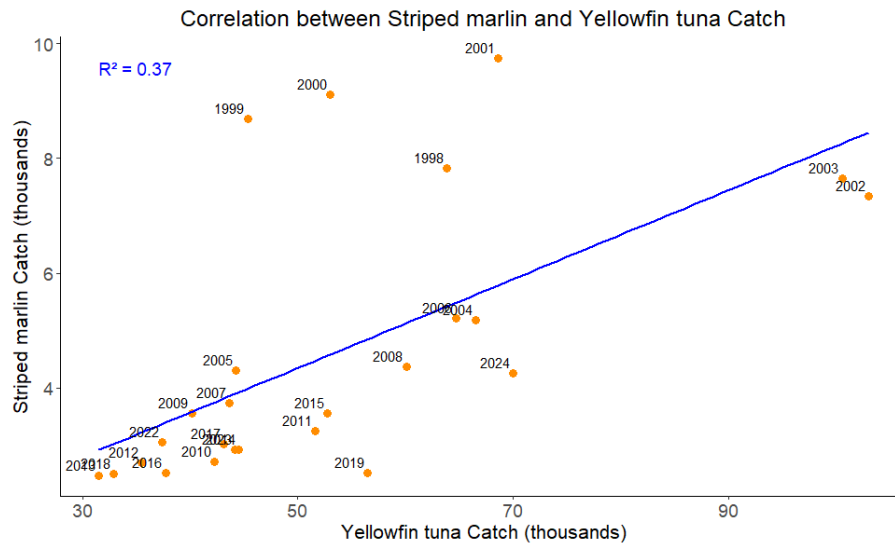


Figure 2. Annual catch (thousands of individuals) of yellowfin tuna and striped marlin in the ETBF for the period 1998-2024 (excluding covid years 2020 and 2021). Correlation statistic, $R^2 = 0.37$. Figure provided by CSIRO using daily fishing logbook data.

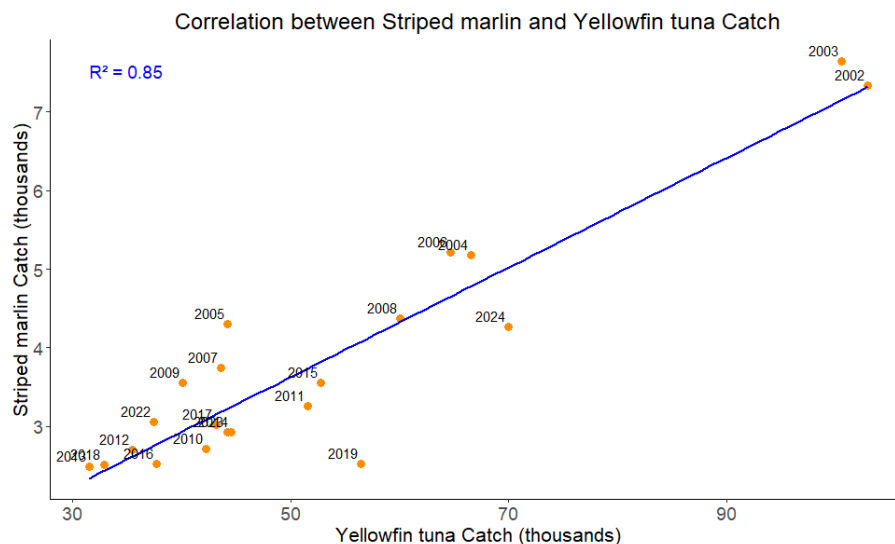


Figure 3. Annual catch (thousands of individuals) of yellowfin tuna and striped marlin in the ETBF for the period 2002-2024 (excluding covid years 2020 and 2021). Correlation statistic, $R^2 = 0.85$. Figure provided by CSIRO using daily fishing logbook data.

- h. Logbook catch in numbers for YFT and MLS show that there is some evidence of a correlation between catches of the two species from the early 2000 onwards (excluding the COVID years). The metier analysis to identify fishing strategies ([TTRAG Inter-sessional meeting 15](#) June 2023) further showed that MLS is also caught with swordfish and albacore.
- i. In the figures below, monthly catches of YFT tend to peak in August, however, in 2024 the peak catch was in October and characteristic of a pulse event late in the season. MLS catches peak towards end of the year, however, in 2024 the peak MLS catch was in March and may indicate some MLS targeting has

occurred. Industry stated that this targeting behaviour was likely due to two new entrants who found this was not a good strategy for MLS quota during the YFT part of the year. This observed targeting behaviour in 2024 has not been repeated in 2025 so far.

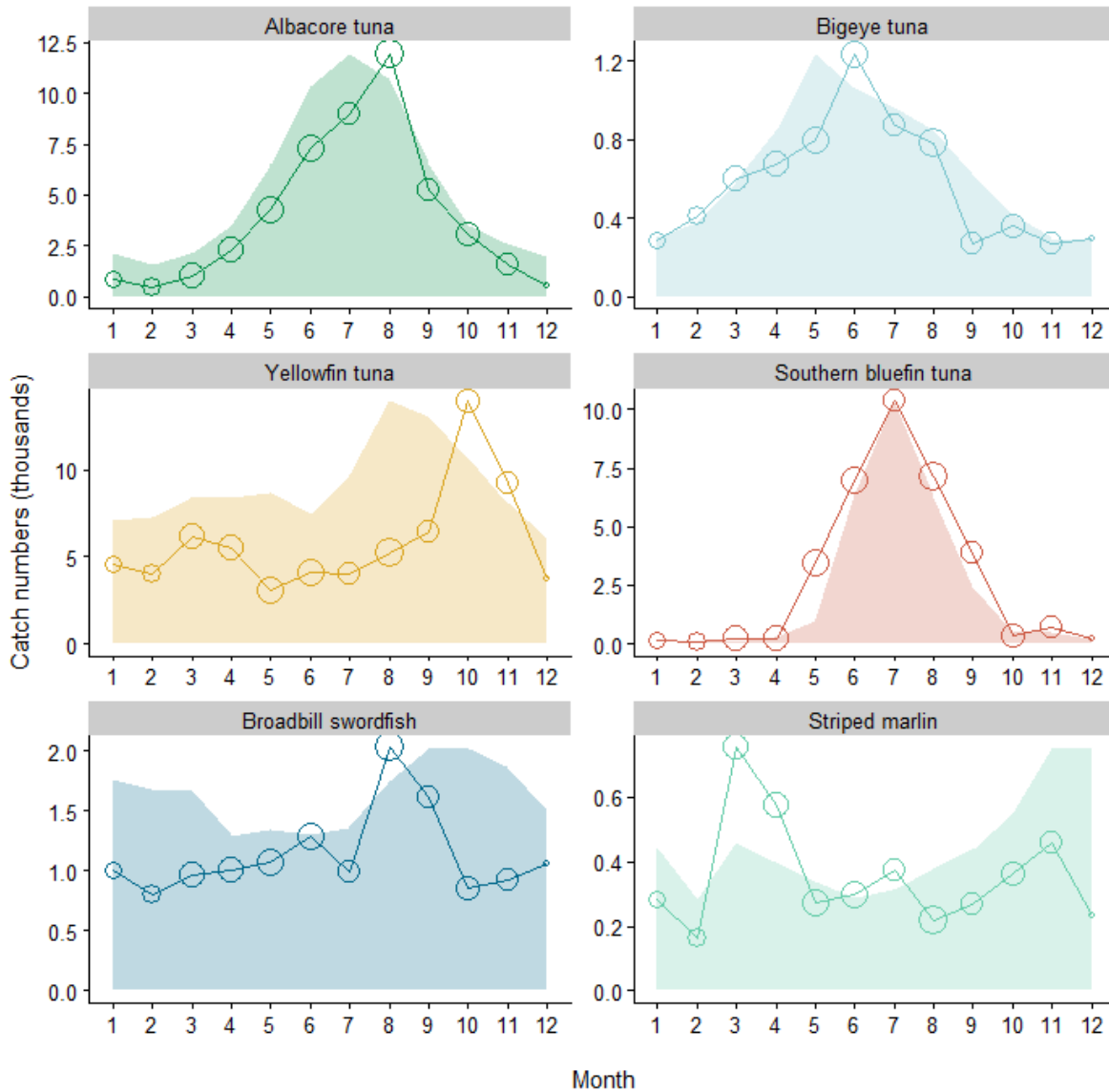


Figure 4. Monthly catch (thousands of individuals) for target species (albacore, bigeye, yellowfin, swordfish and striped marlin) and southern bluefin tuna in the ETBF in 2024 (lines and circles) and on average per year for the period (1998 to 2023). Figure provided by CSIRO using daily fishing logbook data.

- j. There is scope for an increase in the YFT TACC to avoid high levels of discarding, because the number of hooks targeting YFT is not expected to increase. On average, the MLS catch is well below the TACC (75.7% of the MLS TACC in the past 5 years) and so the potential impact of an increase in the YFT TACC would likely be managed within the current MLS TACC at 351 t.
- k. It should be noted that another option is to allow a 90-day reconciliation period of a fisher's quota to allow for a more flexible TACC to address pulse events.

47. An increase in the YFT TACC would likely support flexibility in how quota is used and potentially increase retention and utilisation of catch to improve the economic productivity in the fishery. Therefore, the RAG supports a TACC for the 2026 and 2027 seasons of 2,880 t for YFT.

Agenda Item 5. ETBF Broadbill Swordfish RBCC – modified harvest strategy

48. The RAG noted and discussed the presentation from CSIRO on the recommended biological commercial catch (RBCC) for broadbill swordfish in the ETBF resulting from the application of the modified swordfish harvest strategy.
49. Under the modified harvest strategy, the four-year moving average of the prime CPUE index was 0.69, which falls below the buffer zone value of 0.8, indicating a potential decrease in the RBCC with a multiplier of 0.9. However, the current catch level (720 t) was below the previous RBCC (942 t), creating an undercatch that exceeded the potential decrease under the modification rule.
50. While the mean sub-adult CPUE index (average over the 2021-2024 period) indicated a potential decrease in the RBCC, the existing undercatch in the fishery was sufficient to offset the potential decrease that would have been applied; resulting in no change to the TACC (1,047 t) because the fishery was already operating below the recommended catch level by a margin that exceeded any reduction that would have been applied.
51. The RAG recommended a 1,047 t TACC for broadbill swordfish for the 2026 ETBF fishing season. The RAG noted no further exceptional circumstances present in the fishery which would warrant a change to this recommendation.

Agenda Item 6. ETBF Striped Marlin – constant catch approach

52. The RAG considered updated fishery indicators for striped marlin in the ETBF and discussed the 351 t constant catch harvest strategy approach and additional triggers that may warrant revisiting MSE and the harvest strategy approach: the most recent WCPFC stock assessment, changes in targeting practice, increased take of TACC on a regular basis, and industry desire to increase catch.
53. The RAG considered available information including the updated annual indicator reports discussed at TTRAG 44, the ETBF Economic Conditions Index report, the indicator summary reports and the south-west Pacific catch report. Members noted that the most recent WCPFC stock assessment used a biomass dynamic model approach (a simpler stock assessment method that models overall population biomass without detailed age or size structure, focusing on population-level dynamics) rather than the previously attempted Stock Synthesis 3 (SS3) methodology (a more complex, integrated stock assessment model that incorporates detailed age/size structure, multiple data sources, and life history parameters), and raised concerns

regarding the current assessment methodology and subsequent interpretation of stock status from the results. Members noted that WCPFC intends to use the recent stock assessment results to further improve the SS3 methodology, which is several years away; and that investing in new MSE work based on the current assessment would be premature.

54. Noting the discussion raised at TTRAG 44 highlighting an industry desire to increase the TACC, increased catches of striped marlin in 2024 and the updated stock assessment, the RAG considered the previous MSE results to identify a potential alternative harvest strategy approach, ensuring that any of the previous assumptions made in that work are not undermined by the results of the updated stock assessment.
55. The RAG recommends not pursuing new MSE work for striped marlin as a current research priority, and instead revisiting the 2021 MSE results at a future TTRAG meeting when improved stock assessment methodology becomes available.
56. The RAG identified a gap in the current management framework regarding how to systematically increase or decrease TACCs for species not covered by formal harvest strategies, noting this affects not only striped marlin but also yellowfin tuna and other species.
57. The RAG recommends that TTRAG dedicate time at the March meeting to develop systematic approaches for TAC setting across all species not covered by formal harvest strategies, including frameworks for incorporating climate change and stock variability considerations.
58. Based on average catch levels relative to the TACC, the RAG agreed that the potential for increased catches and discards of striped marlin, associated with increased catch of yellowfin tuna, are likely to be accommodated within the established 351 t TACC.
59. Having regard for the SC21 advice that catches of striped marlin should not increase above recent average levels, the RAG confirmed that there was no additional advice and no indications that a TACC of 351 t would not be appropriate for the 2026 ETBF fishing season.

Agenda Item 7. SWO Harvest Strategy – OM Reference Grid

60. The RAG noted and discussed a presentation from CSIRO on additional information on the development of the reference grid for the ETBF swordfish harvest strategy MSE work, in line with the agreed workplan (component 3).
61. The RAG noted the base case includes three values of steepness, three natural mortality at age vectors and migration parameters kept constant. Stock structure assumes a single, well-mixed population across the entire area, and all reference operating models exclude foreign distant water fishing fleets operating in region 2. The RAG noted that the base case produces nine different operating models, with total depletion ranging from 0.58 to 0.62 across the nine models.

62. The RAG noted that the base case demonstrates very little variation because migration parameters were kept constant, and members agreed that this limited variation in the reference case was appropriate for the intended purpose of providing a stable foundation for MSE testing. Further, the steepness parameters were retained despite their limited current influence as they may become more important under different depletion scenarios during projections.
63. The RAG agreed to the reference grid as presented, comprising nine reference case operating models that provide the agreed range of uncertainties for initial MSE testing of the swordfish harvest strategy, with most variation attributed to the mortality at age vector rather than steepness parameters.
64. The RAG provided further advice on future work to update the MSE workplan (Attachment D), specifically:
 - a. An additional three factors to include in the robustness grid to consider potential impacts of climate change through changes in growth, changes in age-at-maturity and harvest stability.
 - b. That status quo maximum changes at different percentage levels be tested in their own right, in addition to levels inherently tested through multi-year TACC schedules.
 - c. To include testing of harvest control rules where TACCs are considered from alternate starting points, including 1,550 t prior to reductions under the harvest strategy.

Agenda Item 8. Finalisation of TACC advice for the WTBF and ETBF

WTBF

65. The RAG confirmed that, in line with section 2.4 of the WTBF multi-season TACC setting procedure and having regard for the reduced set of fishery indicators reviewed, there is no indication that something has changed significantly in the fishery that may warrant alternate TACC advice for bigeye tuna, yellowfin tuna, broadbill swordfish and striped marlin in the WTBF.
66. The RAG agreed that, for all WTBF species, 10% overcatch with 2 t determined weight and 10% undercatch provisions be determined for the 2026/27 WTBF fishing season.

ETBF

67. The RAG confirmed that, in line with section 2.4 of the ETBF multi-season TACC setting procedure and having regard for the reduced set of fishery indicators reviewed, there is no indication that something has changed significantly in the fishery and the fishery data that may warrant alternate TACC advice for albacore tuna and bigeye tuna in the ETBF.

The RAG discussed the increased catch and discards of yellowfin tuna in 2024 as a result of greater availability of yellowfin (a pulse event); and supported the proposed

20% increase to the TACC for yellowfin tuna for the 2026 and 2027 ETBF fishing seasons to support flexibility in how quota is used and increase the retention and utilisation of catch to improve economic productivity in the fishery. The RAG confirmed there were no sustainability concerns or WCPFC SC21 compliance concerns if increasing the yellowfin tuna TACC.

68. For striped marlin, having regard for the SC21 advice that catches of striped marlin should not increase above recent average levels, the RAG confirmed that there was no additional advice and no indications that a TACC of 351 t would not be appropriate for the 2026 ETBF fishing season.
69. For broadbill swordfish, the RAG advised, based on the application of the modified swordfish harvest strategy, a 1,047 t TACC (no change) for the 2026 ETBF fishing season.
70. The RAG agreed that, for all ETBF species, 10% overcatch with 2 t determined weight and 10% undercatch provisions be determined for the 2026 and 2027 ETBF fishing seasons.

Agenda Item 9. TTRAG priorities and meeting schedule

71. The RAG recommended that the coral sea hook trial research discussion be delayed until the March 2026 TTRAG meeting on the basis that a PhD student has only recently been appointed to the project and insufficient time has elapsed to analyse any research data or provide meaningful results to inform RAG discussions.
72. The RAG identified key priorities for the next meeting of TTRAG (likely in March 2026) including:
 - a. Framework to change TACC settings: Development of systematic approaches for adjusting TACCs for species not covered by formal harvest strategies, addressing the gap identified in current management processes for both increasing and decreasing catch limits.
 - b. Addressing concerns about the scientific advice informing the trial application of the climate risk framework to broadbill swordfish in the ETBF, with specific focus on understanding the underlying science and clarifying the RAG's role in this process. This includes a request for Dr Beth Fulton (CSIRO) to present on expectations for tunas in the future, building on her previous presentations to industry groups about what to expect for tuna fisheries under changing climate conditions.
 - c. Report on progress of the FishScoop project temperature and depth data that has been collected for nearly three years in this fishery, representing a growing and valuable data source that can inform future work.
 - d. Discuss progress on the Coral Sea hook trial research project.
 - e. Continuing discussion on the Swordfish harvest strategy review and MSE testing according to the updated workplan

- f. Completion of the review of Ecological Risk Management information that was deferred from previous meetings, with the aim of providing advice on potential research priorities and potential management actions to respond if required.

Agenda Item 10. Other Business

- 73. There was no other business raised.

Close of meeting

- 74. The Chair thanked members for their contributions this year and closed the meeting at 14:18pm.

Attachment A – TTRAG 45 adopted agenda, 16-17 September 2025.

DAY 1		
45 mins 9:00 – 9:45	1. Preliminaries 1.1 Welcome and apologies 1.2 Declaration of interests 1.3 Adoption of agenda 1.4 Actions arising from previous meetings 1.5 Out of session correspondence	Chair
60 mins 9:45 – 10:45	2. Member Updates	Members
15 mins 10:45 – 11:00	MORNING TEA	
45 mins 11:00 – 11:45	3. ETBF Economic Indicators Report	ABARES
45 mins 11:45 – 12:30	4. Application of multi-season TACC procedure: non-TACC setting year	CSIRO
60 mins 12:30-1:30	LUNCH	
90 mins 1:30 – 3:00	Application of multi-season TACC procedure: non-TACC setting year	
15 Mins 3:00-3:15	AFTERNOON TEA	
45 mins 3:15 – 4:00	5. ETBF Broadbill Swordfish RBCC – modified harvest strategy	CSIRO
60 mins 4:00 - 5:00	6. ETBF striped marlin RBCC – constant catch approach	AFMA

DAY 2		
90 mins 9:00 – 10:30	1. SWO Harvest Strategy – OM Reference Grid	CSIRO
15 mins 10:30 – 10:45	MORNING TEA	
60 mins 10:45 – 11:45	2. Finalisation of TACC advice for the ETBF and WTBF	AFMA
30 mins	3. TTRAG priorities and meeting schedule	AFMA

11:45 – 12:15		
15 mins 12:15 –12:30	4. Other business	Chair

Attachment B – Register of declared interests, TTRAG 45, 16-17 September 2025

Name	RAG position/ organisation	Declared Interests	Potential conflicts identified at TTRAG 44 and how they were managed
Cathy Dichmont	Chair	Has a consulting company but has no pecuniary interests in the tuna fisheries. Is the current Commonwealth Research Advisory Committee (ComRAC) chair. Member of Western Pacific Council Science and Statistical Committee. USA side of the IOTC and WCPFC but centred on all Pacific fisheries, mining and TEPs	Nothing declared
Ashley Williams	Scientific Member, CSIRO	Employee of CSIRO, no pecuniary interest in Australian tropical tuna fisheries. Is the PI for the project on Data Management, Assessment and implementation of Harvest Strategy for Australia's Tropical Tuna and Billfish Fisheries.	Nothing declared
David Ellis	Industry Invited Participant	Is currently the CEO of the industry association, Tuna Australia which includes a salary paid by industry. Is the PI on the following projects: • FRDC Project 2020-041. Improving the effectiveness, efficiency and safety of mitigation tools for protected species interactions in the Eastern Tuna and Billfish Fishery • FRDC Project 2021-078. Improving the management of wildlife interactions in pelagic longline fisheries FRDC Project 2021-063. Future Proofing: Integrating community quota, product supply, product innovation and market diversification in Australia's Tropical Tuna Industry.	Declared a potential conflict with items 4, 5, 6, 7 and 8 as the CEO of Tuna Australia and representative of the ETBF and WTBF fishing industry. The RAG agreed that industry members could participate in discussions for all identified agenda items, but would be excluded from the room when final recommendations were made for items 4, 5, 6, and 8 (the TACC-related items).
Denham Parker	Invited Participant Scientific, CSIRO	Employee of CSIRO, no pecuniary interest in Australian tropical tuna fisheries. Is the Co-investigator for the Scientific advice management of Tropical Tuna and Billfish Fisheries project Declared an interest in Agenda item 5 and was excluded from formalising any recommendations.	Nothing declared
Gary Heilmann	Industry Member	Director of a processing company; no longer holds ETBF boat or quota SFRs.	Declared a potential conflict with items 4, 5, 6, 7 and 8 as an industry representative. The RAG agreed that industry members

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			could participate in discussions for all identified agenda items, but would be excluded from the room when final recommendations were made for items 4, 5, 6, and 8 (the TACC-related items).
Ian Knuckey	Scientific member	Has a consulting company with interests in electronic reporting in the tuna fisheries and is a member on several other AFMA Committees. Has previously worked on a project on FADs in Tasmania and work relating to the Commonwealth resource sharing framework. Is working on a recreational and indigenous capacity building project with DAWE. Director of Fishwell Pty Ltd (ABN: 49 674 230 669) and Director of Olrac Australia (Electronic logbooks). Serves as Chair of multiple AFMA Resource Assessment Groups including Northern Prawn Fishery, Tropical Rock Lobster, and Victorian Rock Lobster and Giant Crab Assessment Groups. Also serves as Scientific Member on various Management Advisory Committees including Northern Prawn, Gulf of St Vincent's Prawn Fishery, TTRAG, and SESSF Resource Assessment Group. Chair of Gulf of St Vincent's Prawn Fishery MAC Research Scientific Committee and Spencer Gulf & West Coast Prawn Association Inc. Economic Optimisation Sub-committee. Member of The Geelong Agri Collective. Current projects through Fishwell include AFMA contracts for Small Pelagic Fishery monitoring, Bass Strait Scallop Fishery surveys (2025-2028), Torres Strait Tropical Rock Lobster surveys and assessments (2025-2028), various state fishery projects including Queensland sea cucumber and spanner crab fisheries, Northern Territory sandfish surveys, Gulf of Carpentaria developmental fin fish trawl fishery, IMOS/SIMS FishSOOP Ocean Monitoring Program, and seafood industry consulting in South Australia and Victoria. Also involved in Traffic International Shark Product Traceability project.	Nothing declared

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		Has interests in electronic reporting systems in tuna fisheries, previously worked on FAD projects in Tasmania, Commonwealth resource sharing framework, and recreational and indigenous capacity building projects.	
Julian Pepperell	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.	Nothing declared
Lara Ainley	AFMA Member	Employee of AFMA, which includes a salary. Manager of the tropical tuna fisheries. No pecuniary interest in tropical tuna fisheries.	Nothing declared
Michael Dylewski	Observer	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.	Nothing declared
Pavo Walker	Industry Member	Owner of several ETBF boat SFRs and holds a Coral Sea permit and minor line permit.	Declared a potential conflict with items 4, 5, 6, 7 and 8 as an active operator in the ETBF fishing industry. The RAG agreed that industry members could participate in discussions for all identified agenda items but would be excluded from the room when final recommendations were made for items 4, 5, 6, and 8 (the TACC-related items).
Rich Hillary	Scientific Member, CSIRO	Employee of CSIRO, no pecuniary interest in Australian tropical tuna fisheries. Is the Co-investigator for the Scientific advice management of Tropical Tuna and Billfish Fisheries project.	

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Robert Curtotti	Economics Member, ABARES	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.	Nothing declared
Robert Wood	Executive Officer, AFMA	Employee of AFMA, which includes a salary. Senior Management Officer in the tropical tuna fisheries team. No pecuniary interest in tropical tuna fisheries.	Nothing declared
Rohan Currey	Scientific Invited Participant	Employee of ABARES/DAFF, no pecuniary interests in Australian tropical tuna fisheries. Is Australia's Scientific Committee Representative to the Western and Central Pacific Fisheries Commission.	Nothing declared
Shayer Alam	Observer	Employee of AFMA, which includes a salary. Senior Management Officer in the tropical tuna fisheries team. No pecuniary interest in tropical tuna fisheries.	Nothing declared
Terry Romaro, OAM	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, and a Director of Tuna Australia.	Declared a potential conflict with items 4, 5, 6, 7 and 8 as a Director of Tuna Australia and representative of the WTBF fishing industry. The RAG agreed that industry members could participate in discussions for all identified agenda items, but would be excluded from the room when final recommendations were made for items 4, 5, 6, and 8 (the TACC-related items).

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Attachment C - Summary of Actions and Recommendations

Table 1. TTRAG Action Items. Status and progress

Number	Action	Meeting Raised	Responsibility	Status at TTRAG 45
1.	TTRAG to be provided an update in the new year on the Management Procedure for bigeye tuna.	TTRAG 35	ABARES/AFMA	NOT YET ACTIONED: To be discussed at a future TTRAG meeting.
2.	Grahame Williams to provide available tagging data to CSIRO and liaise with New South Wales Department of Primary Industries to enable further data to be available to CSIRO.	TTRAG 41	Grahame Williams and CSIRO	COMPLETE: Tagging data has not been obtained yet and there is no immediate need for the data. TTRAG 44 considered that the data can be available at any time and does not need to be considered as an ongoing action.
3.	AFMA to follow up again on the request to have depredation included in e-logs and check whether any information/data on this has come through.	TTRAG 41	AFMA	IN PROGRESS: Amendment to the logbook has been drafted, waiting implementation from Data team to be included during next API update.
4.	CSIRO to investigate size data availability for the WTBF and usefulness as a fishery indicator.	TTRAG 42	CSIRO	COMPLETE: CSIRO confirmed that size data for the WTBF is available.
5.	Economic Member to explore the following for future economic reports: • Possibility of building in a composite cost index in place of a proxy (for fuel and bait) in future. • Develop some supporting indicators for the ECI (e.g. cost of freighting good overseas) to give some context to the ECI. • Include volume as well as value int total exports in future reports/presentations.	TTRAG 42	ABARES	COMPLETE: ABARES has developed a composite cost index approach and relevant freight movement data which was incorporated into the ECI and presented at TTRAG 45. The cost items to be included in the composite cost index were fuel, bait, repairs and maintenance and labour.

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Number	Action	Meeting Raised	Responsibility	Status at TTRAG 45
6.	AFMA to consider future strategic direction of the fishery to provide guidance for the RAG and its role. Industry faces challenges including high operational costs, falling market prices, rising freight expenses, crew costs, competition for marine space, and fishery certification requirements. The RAG needs strategic direction to understand its role in addressing these broader fishery challenges.	TTRAG 44	AFMA	NOT YET ACTIONED:
7.	CSIRO to provide more detail on the utility of the climate indicators used in the Climate and Ecosystem Status Report for the ETBF; to ensure the indicators being used are able to detect signals of climate change early enough to inform management decisions.	TTRAG 44	CSIRO	NOT YET ACTIONED: More detail on the climate indicators used for the status report hadn't been provided. However, the chair clarified that the advice given on the climate risk framework was understood to relate to a trial and not a final result, and this had been made clear.
8.	AFMA to clarify the level of advice needed from the RAG and MAC on the Climate Risk Framework and trial applications, i.e., TTRAG is only providing advice about the trial and not the final results. The Climate Risk Framework trial application to broadbill swordfish showed "medium risk" with a projected 5-60% decline in abundance by 2040. However, the RAG had concerns about the methodology, model assumptions, and potential misinterpretation of draft results if published without high confidence.	TTRAG 44	AFMA	NOT YET ACTIONED:
9.	A climate specialist in the CRF working group to present information on the model assumptions, drivers and factors used to determine the 'medium risk' outcome for swordfish.	TTRAG 44	AFMA/CSIRO	NOT YET ACTIONED: The RAG had suggested getting a climate specialist to come and talk about model outputs to better understand the medium risk rating for swordfish in the ETBF.

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Number	Action	Meeting Raised	Responsibility	Status at TTRAG 45
10.	CSIRO to prepare a short technical paper that details the agreed reference grid and describes the selection process for migration parameter values for application in the robustness test scenarios.	TTRAG 44	CSIRO	COMPLETE:
11.	ABARES and Tuna Australia to confirm the scope of work being led by Kylie Scales to ensure that both research projects are complementary. ABARES is investigating factors that lead to higher turtle interaction rates, while Kylie Scales (University of Sunshine Coast) is doing similar work. Coordination is needed to avoid duplication of research efforts.	TTRAG 44	ABARES and Tuna Australia	COMPLETE: ABARES have discussed this research with Kylie Scales and will proceed as previously advised for a project that is resourced and lead by ABARES. More broadly, ABARES, Kylie Scales and Tuna Australia are having ongoing discussions regarding the potential for a separate collaborative project. TTRAG noted there were discussions between Don Bromhead (ABARES), David Tuner (Tuna Australia), and Kylie Scales (University of Sunshine Coast) were ongoing. ABARES was proceeding with their project as planned, with separate broader work discussions happening.
12.	Industry to provide information on the motivation for discarding striped marlin (and other quota species); and if this has changed over time. Striped marlin catches and discards increased significantly in 2024, with discards increasing proportionally with catch due to quota limitations. The RAG is concerned about the impact of discards on total mortality and needs to understand if discard motivations have changed.	TTRAG 44	Industry	COMPLETE: AFMA had provided some additional discarding information from logbooks in agenda item 6, and industries update on what was happening on the water was noted. Industry members indicated that striped marlin discarding in 2024 resulted from operational and quota constraints associated with targeting yellowfin tuna coupled with early season targeting of striped marlin by new operators. Fishing operations had returned to patterns similar to the 2000s, including increased South Coast targeting of

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Number	Action	Meeting Raised	Responsibility	Status at TTRAG 45
				yellowfin tuna using live bait and fewer hooks per set. This shift in targeting practice led to increased striped marlin bycatch during periods of high availability. When quota allocations for striped marlin were reached while yellowfin remained abundant, vessels were required to discard additional striped marlin caught incidentally.
13.	AFMA to investigate potential discrepancies in the conversion rates used across processors, catch disposal records and by CSIRO. The fishery indicators review identified potential discrepancies in 2024 between conversion rates used for logbook estimates, catch disposal records, processors and stock assessments. This affects the accuracy of weight-based analyses.	TTRAG 44	AFMA	IN PROGRESS: Tuna Australia has provided some additional information on the discrepancies to AFMA for further investigation.
14.	AFMA to provide advice on scope to set a ETCF striped marlin TACC for the 2026 fishing season that is greater than 351 t (and by how much), stepping away from the constant catch approach; or whether a change from the constant catch approach would require formal procedures (such as a review of the harvest strategy and MSE).	TTRAG 44	AFMA	COMPLETE: AFMA's position had been clarified in the agenda item 6 paper, noting it would be difficult to step outside the 351-ton limit based on current stock assessment understanding. The Scientific Committee at WCPFC had recently accepted an updated stock assessment using a Bayesian surplus production depletion model. SC 21 recommended not increasing catches above recent average levels.
15.	Tuna Australia to discuss with FRDC about how method development for tissue sample collection can be included in the CKMR design project.	TTRAG 44	Tuna Australia	COMPLETE: Tuna Australia has reached out to FRDC to discuss options to include tissue collection in the current CKMR design study and is awaiting further feedback.

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Number	Action	Meeting Raised	Responsibility	Status at TTRAG 45
				TTRAG 45 noted the feedback was to continue the current project through the approval system and then put in a supporting project rather than disrupting the existing project. The RAG also noted that it would be better to run this work in parallel rather than waiting, as it wasn't a large piece of work and would help line up all preparations before implementation. The aim was confirmed to be to run it in parallel.
16.	CSIRO to provide further advice on the feasibility and scope to undertake MSE for striped marlin.	TTRAG 44	CSIRO	IN PROGRESS: The RAG recommends not pursuing new MSE work for striped marlin as a current research priority, and instead revisiting the 2021 MSE results at a future TTRAG meeting when improved stock assessment methodology becomes available.
17.	ABARES Scientific Member to provide out-of-session updates to TTRAG on South Pacific albacore management procedure progress as developments occur, particularly following the TCC meeting and other key milestones leading up to the Commission meeting.	TTRAG 45	ABARES	NEW
18.	ABARES to: - work with industry to exclude southern bluefin tuna from the ECI by separating the hooks and effort data from the fishery. - investigate the reported price data and proportion of trade allocated to domestic vs international markets to address industry concerns and improve accuracy and representativeness.	TTRAG 45	ABARES	NEW

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Number	Action	Meeting Raised	Responsibility	Status at TTRAG 45
	review labour cost modelling with the non-survey approach team to ensure recent wage increases and recruitment costs are properly captured			
19.	AFMA and CSIRO to investigate and understand the differences between logbook and CDR catch data for yellowfin tuna and striped marlin.	TTRAG 45	CSIRO and AFMA	NEW
20.	CSIRO to separate striped marlin from combined stock status plots due to different assessment methodology and reference point incompatibility. CSIRO to expand tables to include ETBF percentage contributions relative to total stock assessment areas for better context.	TTRAG 45	CSIRO	NEW

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Table 2. TTRAG Action Items relating to CPUE

Number	Item	Meeting Raised	Responsibility	Status at TTRAG 45
1.	TTRAG discuss and provide advice at its meeting in March 2024, on priority need to undertake simulation testing of the CPUE standardisation. The RAG identified the following four CPUE refinement priorities: Priority refinement (1-3), further discussion needed for priority 4 simulation testing of CPUE. 1. Continue the implementation of metiers approach. 2. Move from area-based approach to explicit spatial approach. 3. Improve inclusion of oceanography covariates e.g. Eddies. 4. Simulation test of the CPUE standardisation-To be discussed in March TTRAG during research gaps.	TTRAG 38	CSIRO, TTRAG	IN PROGRESS: TTRAG 41 agreed that including oceanography co-variates remains a priority but confirmed that this work is paused while MSE testing of the swordfish harvest strategy is underway.
2.	Tuna Australia and CSIRO to investigate potential erroneous logbook reporting regarding 45 hooks between floats. Tuna Australia to follow up with operator if error is identified.	TTRAG 38	CSIRO, Tuna Australia	IN PROGRESS: Tuna Australia contacted all ETBF operators regarding 45 hooks per basket. However, has not received any responses to the query. AFMA confirms no amendments to logbooks have yet been made.

Attachment D – MSE workplan

Harvest Strategy Component	Options for MSE testing	Timing (RAG meeting)	Progress to date
1 Operating Model – general	- Update OM to include latest catch and effort data available - Compare predictions from updated OM against 2021 assessment	Jul 2025	TTRAG 44 endorsed the updated OM including the latest catch and effort data.
2 Operating model (Base case)	- Assume single spawning stock - Change zero migration to updated asymmetric movement parameters from Patterson et al. (2021) 3 steepness options (0.65, 0.8, 0.95) - M-at-age vector from the diagnostic case of the (2021/2025) WCPFC assessment - Exclude distant water fishery with high catches in far northeast of the assessment area	Jul 2025	TTRAG 44 agreed that the OM should use the Patterson migration estimates combined with 3 steepness values and three M-at-age vectors (9 scenarios). TTRAG 44 asked that a short technical paper be prepared and presented at the next meeting on the process to select additional migration parameters to apply in robustness test scenarios.
3 Operating model (Reference grid)		Sep 2025	Fleets (all) are now defined in the updated stock assessment.
4 Robustness grid	- Permanent low recruitment (lowest of a moving 5-year average) (regime shift) - Low levels of undercatch (~15%) – i.e. similar to pre-covid levels - Implementation scenarios where undercatch is incorrectly projected for the next year	Mar 2026	Removed: testing for lower M-at-age compared to 2021 assessment; and assuming separate spawning stocks in each region. TTRAG 44 advised that robustness tests should include implementation errors, undercatch scenarios and constant catch projections. TTRAG 45 agreed that 3 additional factors should be considered in the robustness grid for testing, relating to

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Harvest Strategy Component	Options for MSE testing	Timing (RAG meeting)	Progress to date
	• High movement rates between R1 and R2 – define two additional migration parameters (to be advised in a short technical paper). • Higher increase of DWFN catch • Include DWFN fleets in far northeast • Undercatch scenarios based on mean undercatch from 2013-23 (but remove covid year) • Increase/decrease AU catch share relative to other fleets (CSIRO to explore different levels using WCPFC data as a guide) • Look at changes in growth • Look at changes in the age-at-maturity • Harvest stability		potential impacts of climate change on growth and age-at-maturity; and harvest stability TTRAG also confirmed no need for north-south spatial division within Region 1 as there is no biological difference detected. Recreational fishery noted as not significant at present but should be monitored (especially large fish in Tasmania/Victoria waters)
5 Harvest Control Rule	• Consider a narrower buffer width (for longer term TACC setting). CSIRO to explore different widths • Consider 3, 4 and 5-year average of recent CPUE for HCR input • Retain modified feature of current HS to allow a response to future undercatch	Mar 2026	
6 RBCC setting	• 3 TACC schedules: ○ every year – 10% over	Mar 2026	TTRAG 45 articulated that status quo maximum changes at different % be tested in their own right, not integrated with the TACCs schedules

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Harvest Strategy Component	Options for MSE testing	Timing (RAG meeting)	Progress to date
	○ every 3 years (constant annual TACC) – 30% over (multiplicative) ○ every 5 years (constant annual TACC) – 50% • Status quo maximum changes to TACC (10%) - also test different % levels to allow for additional flexibility. • Test asymmetric TACC change e.g. max 10% down and max 11.1% up for annual TACC setting. • Evaluate setting a TACC relative to a tuned TACC (in addition to the current HS that uses the previous year TACC to set the new TACC) • Testing different HCRs including where the starting TACC is set at 1,550 t (prior to previous TACC reductions) – projecting TACCs forward, testing different HCRs, from a different starting point		• When testing multi-year TACC schedules, maximum changes scale multiplicatively (e.g., 3-year = 10% × 10% × 10%) • Starting TACC of 1,550t will be tested as a reset going forward (not as hindcasting due to too many unknowns about historical fleet behaviour)
7 Tuning objectives	• 2 tuning criteria: ○ CPUE-based ▪ Use the ETBF sub-adults index ▪ Move away from current 2012-2015 average CPUE. For example, could use an average CPUE over a long period or a multiplier	CPUE-based (Jul 2026) Depletion-based (Mar 2026)	

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Harvest Strategy Component	Options for MSE testing	Timing (RAG meeting)	Progress to date
	(determined from tuning to B48) of long-term average (1998-present). CSIRO to explore difference reference periods. ○ Depletion-based ▪ Depletion at B40 or B48 ▪ SSB relative depletion in Region 1 (for base case run only) ● Projection period – tune to achieve objective on average over the 2035-2040 period		

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