

TTRAG 46, 16-17 March 2026

Meeting Record

Final

TTRAG – Tropical Tuna Resource Assessment Group

CHAIR: Dr Cathy Dichmont

Date: 16 – 17 March 2026

Venue: Maroochydore RSL

Attendance:

Members:

- Dr Ashley Williams (Scientific Member)
- Mr Gary Heilmann (Industry Member)
- Dr Ian Knuckey (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 Joshua Esman (USC)
- Dr Kylie Scales (USC)
- Mr Terry Romaro, OAM (Tuna Australia/WTBF)
- Dr Nigel Abery (AFMA)
- Ms Fiona Hill (AFMA)

Observers:

- Ms Stephanie Blake (ABARES)

Apologies: N/A

Executive Officer: Mr Robbie Wood (AFMA)

Agenda:

1. Preliminaries: welcome and apologies, adoption of agenda, declarations of interests and actions arising from previous meetings	Chair
2. Member updates	Members
3. Striped Marlin Harvest Strategy	AFMA
4. Project Update: FishSOOP	Fishwell Consulting
5. TTRAG Economics Update 2026	AFMA
6. Catch and discard data update	AFMA
7. IOTC Management Procedure for Bigeye Tuna	CSIRO
8. Swordfish Harvest Strategy – MSE results	CSIRO
9. Project Update: Coral Sea Hook Trial Research	USC
10. TTRAG Priorities	AFMA
11. 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 apologies from Mr David Ellis and Mr Denham Parker for Day 1 and advised that Mr Rich Hillary would be joining late on Day 2. The RAG adopted the draft agenda (**Attachment A**).
3. 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**.
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 46. 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. For agenda items 3 and 8, relating to the striped marlin and swordfish harvest strategies, the RAG agreed that industry members with conflicts or perceived conflicts should be included in the discussion of the agenda item but should be excluded from the finalisation of the RAG's recommendations and advice.
6. The RAG discussed the status of action items from previous meetings, noting several items that are now considered completed. An updated summary of action items and new action items from TTRAG 45 is at **Attachment C**.

Agenda Item 2. Member Updates

7. The RAG noted updates from AFMA, industry and recreational members regarding the Eastern Tuna and Billfish Fishery (ETBF) and the Western Tuna and Billfish Fishery (WTBF).

AFMA Management update

8. The AFMA Management update included, the recent increase in the ETBF yellowfin tuna TACC and current levels of discarding; recent changes to the seabird management arrangements; AFMA's finalised [Climate Risk Framework](#) and future work; ongoing research regarding interactions with marine turtles in the ETBF; AFMA's new standards-based approach for electronic monitoring; AFMA's Information Communication and Technology uplift program and progress; and the [successful accreditation of the WTBF for export approval](#).
9. The AFMA Commission determined the ETBF yellowfin tuna TACC at 2,880 t for the 2026 fishing season and expressed concern regarding current levels of discarding, noting that other regulatory options may be required if discarding does not reduce.

10. Further changes to seabird management arrangements were consulted on with SFR holders in November 2025 and AFMA is working towards implementing these for the start of the winter TAP season on 1 May 2026.

Industry updates

11. Fuel supply disruptions are creating significant concern for the industry, affecting vessel operating costs and the broader supply chain.
12. Labour availability remains challenging with visa processing times of six to seven months for international crew. The industry can no longer readily source Australian skippers or engineers and engagement with the Minister is underway to explore options for improving visa processing times.
13. Tuna Australia's FRDC research projects on work health and safety and managing wildlife interactions are near completion with results expected to be released towards the end of May 2026. The New Zealand industry has also expressed interest in the outcomes following flyback events using the Procella hook.
14. The reassessment of the ETBF for Marine Stewardship Council accreditation for tropical tunas and swordfish is underway.
15. A New South Wales Aquaculture Development Fund application has been lodged to look at maximising product value.
16. There is some interest in the WTBF from Western Australian operators following demersal trawling closures in that state. AFMA has been providing information to those operators on the requirements for entry into the fishery. The SBT catch is now effectively year-round, supplying the domestic market for extended periods and flooding the market for tropical tuna landed at Mooloolaba, impacting the economic viability of the tropical ETBF sector.
17. The south coast is seeing increased vessel numbers fishing further south and targeting SBT, two consecutive good seasons for yellowfin on the South Coast have also generated some new investment in the region
18. The RAG noted the historical variability of South Coast conditions and that the pattern may not continue.
19. The WTBF continues to operate at low levels with one active operator, facing ongoing challenges with distance to markets and fish quality by the time of landing.
20. Quota lease prices have been impacted by the yellowfin TACC increase, with lease values falling as a result of the additional quota available in the market.

Recreational fishing update

21. Black marlin: the heavy tackle fishery out of Cairns had a very good season in October–November 2025, with catch rates well above the long-term average and many large fish. However, for the second or third consecutive year the expected recruitment event of juvenile black marlin migrating down the coast did not occur, which is generating concern in the recreational community.

22. The Striped marlin recreational season was quite unusual with an extraordinary concentration of fish moving rapidly south down the coast, with recreational boats reporting very high catch rates. The concentration subsequently extended to northeast Tasmania and the west coast of New Zealand's South Island. Approximately 2,500 striped marlins were tagged in the last financial year, well above the annual average of approximately 1,000.
23. Swordfish: continued reports of good recreational catches off Victoria and northern Tasmania, consistent over several years and including large fish up to approximately 250 kg.
24. Yellowfin tuna: good offshore catches of large fish (50–70 kg) but the persistent absence of inshore school fish (1–3 kg size class) continues.
25. Skipjack tuna: effectively absent from inshore recreational catches, a change from historical patterns, though recent stomach content analysis of blue marlin conducted by Tristan Guillermin suggests they remain present offshore.
26. Dolphinfish: consistently good season with large fish up to approximately 30 kg reported.
27. Southern bluefin tuna: good fishing continuing around Victoria and northern Tasmania, including some fish caught out of season in January.
28. A record sailfish tournament at Broome with over 1,000 sailfish releases reported, with the winning boat recording 154 fish over three days.

Scientific member update

29. The RAG noted an update on the CSIRO/FRDC close-kin mark recapture project for swordfish is now underway. Additionally, SPC are leading similar work across tuna and billfish species in the Western Central Pacific, noting that Australia has no samples in the current dataset despite substantial contributions from New Zealand and other nations. The RAG supported the contribution of samples from Australia to such work where possible.

Action

CSIRO, in consultation with AFMA and Tuna Australia to discuss opportunities for sampling albacore and other key ETBF species to contribute to the SPC/CSIRO close-kin mark recapture programme in the Western Central Pacific.

Agenda Item 3. Striped Marlin Harvest Strategy

30. AFMA introduced the paper on the striped marlin harvest strategy, providing a brief history of recent discussions on the development of the draft multi-season TACC setting procedure for striped marlin to complement the procedures in place for tropical tuna species in the ETBF and WTBF.

31. More recently, catch and discards of striped marlin in 2024 were very high, prompting reflection on whether the current harvest strategy approach remained appropriate, noting that any change to the harvest strategy approach (currently, a constant catch approach) would require supporting MSE analysis.
32. At their meeting in July 2025 ([TTRAG 44](#)), the RAG noted the increased catch and discard levels and a desire from some industry members to increase the TACC; and the RAG agreed to consider MSE testing for the striped marlin harvest strategy approach before progressing the development of the draft multi-season TACC setting procedure for striped marlin.
33. The RAG were asked to review the 2021 MSE testing for striped marlin and consider whether the results could still be used to inform a revised harvest strategy, and if not, what updates or new information would be required to do so.
34. The RAG noted that since this work, the WCPFC had undertaken a new stock assessment for south-west Pacific striped marlin in 2025 which used a simplified model producing outputs in numbers rather than biomass, making it unusual and not directly comparable to 2019 stock assessment on which the 2021 MSE testing was based. Therefore, an update to the operating model would not be straightforward.
35. In considering the MSE for striped marlin, the RAG discussed:
 - a. the 2024 catch and discard levels and noted that catch in 2024 exceeded the TACC but did not exceed the adjusted TACC when accounting for undercatch.
 - b. the high catch and discard levels was likely driven by targeting behaviour by a small number of new operators on the South Coast early in the season, which industry members stated was not repeated in 2025; and that discard levels are not expected to return to 2024 levels under normal operations.
 - c. striped marlin is not typically targeted in the fishery, however, managing high catch and discard levels during pulse events when other species are encountered in large numbers can be challenging.
 - d. Recent observations indicated that approximately 2,500 striped marlin were tagged in the last financial year (2024-2025), well above the typical annual figure and consistent with increased availability on the South Coast in early 2026, which may have implications for catch and discard levels in the current season.
 - e. The RAG recalled that their advice at the time on increasing the yellowfin tuna TACC noted that striped marlin catch appears to be intrinsically linked to that of yellowfin tuna.
 - f. The RAG recalled the current WCPFC Scientific Committee advice that catches of striped marlin should not be increased, given the stock assessment indicates the stock is overfished though not subject to overfishing. An increase to the striped marlin TACC would be inconsistent with this advice.
 - g. There is potential that the observed high levels of catch and discards for striped marlin in the fishery could reflect a pulse of early recovery or a short-term effect

of targeting and considered that more time is required to better understand the trends in the fishery.

- h. The RAG noted that while AFMA monitors catch and discard data, industry is responsible for avoiding targeting behaviour, particularly during a yellowfin tuna pulse event, and that industry should reinforce with operators, including new entrants, the importance of avoiding targeting striped marlin early in the season.
36. Based on the current stock status of striped marlin and the potential drivers of the increased catch and discard levels, the RAG proposed that continued monitoring of striped marlin catch and discards is needed to establish a better understanding of the catch trends in the fishery before progressing to review the harvest strategy approach for striped marlin. If abundance indicators continue to improve and discarding pressures increase beyond what can be managed through industry behaviour, the RAG can revisit the question of MSE testing in the future, informed by the best available information.

Action

Tuna Australia to advise industry operators to manage their take of striped marlin by avoiding targeting and treating the species as a by-product to lessen the impact of the species becoming a choke species.

Agenda Item 4. Project update: FishSOOP

37. Dr Ian Knuckey provided an update on the Fisheries Ships of Opportunity Project (FishSOOP), an initiative that uses commercial fishing vessels to collect subsurface ocean temperature and depth data, filling critical observational gaps in coastal and shelf waters. FishSOOP operates as part of the Integrated Marine Observing System (IMOS), implemented through a collaboration between the University of New South Wales and Fishwell Consulting.
38. The RAG noted the following key points from the update:
- a. The project has grown from an initial group of approximately 20 vessels in south-eastern Australia to approximately 165 vessels across Australia and the Pacific. Expansion beyond the core 40 IMOS-funded vessels has occurred through project-based partnerships with AFMA, NT Fisheries, Tuna Australia, SPC and ranger groups, growing the network to the current 165 vessels.
 - b. The coverage of the dataset now spans approximately 2.1 million km², with over 34,000 fishing events recorded and 10 million data points collected from the surface to approximately 2 km depth.
 - c. Data is transmitted in near real-time to the Australian Ocean Data Network (AODN) and feeds into the Global Telecommunication System (GTS) for use in weather and cyclone forecasting. The project is now recognised as meeting

- international best practice standards for vessel-based ocean observation, with data accepted by multiple agencies at global scale.
- d. IMOS has committed to funding the project as a formal facility within a three-year budget cycle.
 - e. The project has begun linking subsurface temperature and depth data with catch and catch rate data, with explicit consent from individual vessel operators, to develop ecological knowledge products exploring relationships between environmental conditions and species distribution and catch rates. This work is at an early stage but is generating useful preliminary findings.
 - f. Data confidentiality is protected through spatial smearing of vessel positions for sensitive fixed-gear operations and delayed data release arrangements where competitive concerns exist. Vessel operators retain intellectual property in their catch and effort data; only environmental profile data is shared.
39. The RAG noted the value of FishSOOP data for fisheries science, including potential to improve CPUE standardisation using subsurface temperature as a covariate.
40. The RAG noted coverage gaps remain in Queensland inshore waters and south-west Western Australia and the importance of monitoring IMOS triennial budget processes to ensure the project's continuity
41. The RAG noted that maintaining industry trust is foundational to the project's success, and that any use of linked catch and environmental data must be transparent and undertaken only with explicit operator consent. The RAG noted there is a risk that misuse or misrepresentation of vessel data could erode industry goodwill and undermine participation.

Agenda Item 5. TTRAG Economics update

42. AFMA presented economic indicators for ETBF and WTBF quota species, covering quota SFR lease prices, sale prices, the ratio of lease to sale price, quota holder numbers and leasing activity, and market capitalisation of quota SFRs for the period 2019 to 2025. The RAG was reminded of their obligations under Fisheries Administration Paper 12 – Resource Assessment Groups regarding the confidentiality of the information presented.
43. The RAG noted this was the first time these indicators have been presented to TTRAG; that the analysis was developed in response to a request from the AFMA Commission; and that it is intended to complement the annual reporting on the ETBF Economic Condition Index, undertaken by ABARES.
44. The RAG considered the economic indicators and provided feedback on data accuracy and analysis, noting:
- a. The five cent per kilogram lower threshold applied to exclude lease price records is not appropriate for all species in the ETBF.

- b. A proportion of quota leasing occurs under contracted purchase-leaseback arrangements, which often don't reflect market quota prices.
 - c. The RAG noted that such leaseback transactions are not currently identified as a distinct category in the GoFish data entry system; but the ability to identify and categorise such transactions would improve the indicator signal for the ETBF.
 - d. Given that the SFR-to-kilogram conversion rate changes over time, sale price indicators are best represented as sale price per kilogram.
 - e. The market capitalisation indicator used sale price multiplied by the total number of SFRs and should not be conflated with the sale price indicator.
 - f. Due to the availability of data, annual data points are not consistently meeting confidentiality thresholds; therefore, the sale price and ratio indicator signals were presented as a biennial rolling average over time. The RAG highlighted the benefit of detecting changes in these indicators at an annual level (such as when TACC changes occur) and noted that the resolution of the signal may be dampened when using a biennial rolling average. The RAG further noted that annual data points, with gaps indicated where data fall below the confidentiality threshold, may create an incentive to improve data collection.
 - g. The RAG discussed whether reporting of quota lease and sale price data was currently mandatory, suggesting that if it was then this could improve the data available for and reliability of these economic indicator analyses.
 - h. The RAG discussed that intra-company leases, end-of-season quota dumps at nominal prices, and package deals across multiple species add further complexity to interpreting the data.
 - a. The SBT longline lease price indicator appeared broadly consistent with industry experience, and that the general downward trend in SBT lease values in recent years was plausible given increasing TACC and market dynamics.
 - i. Based on the above, the RAG recommended that AFMA:
45. Implement a quality assurance and quality control process for quota price data collection, given it is now being used to inform Commission-level decisions.
46. Work with industry to develop species-specific and fishery-specific data cleaning thresholds that better reflect actual market conditions and implement a mechanism to identify and separate purchase-leaseback arrangements from spot-market transactions in future analyses.
- a. Express sale price figures on a per-kilogram basis rather than a per-SFR basis.
 - b. Present annual data points where data permits, with gaps indicated where confidentiality thresholds are not met, rather than a biennial rolling average, to support year-on-year interpretation aligned with management events.
 - c. Consider making the recording of quota lease and sale prices mandatory to improve data availability and reliability.

Action:

AFMA to provide out-of-session responses to the RAG's questions on the data cleaning methodology and analysis that could not be resolved at the meeting.

Agenda Item 6. Catch and Discard Update

47. AFMA presented a catch, discards and protected species data update covering the ETBF and WTBF for the period 2020 to 2026. The RAG noted the update was provided for information, with AFMA working to establish the right format and frequency for more regular in-season data updates to complement the annual indicators reports provided by CSIRO.
48. The update covered retained catch, effort, total discards and discard rates, and turtle and seabird interaction levels across both fisheries. The RAG noted that across all metrics, levels in the WTBF are considerably lower than in the ETBF. The RAG noted that retained ETBF catch has been broadly stable, that yellowfin tuna and SBT have grown as a proportion of the catch, and that yellowfin discard rates have increased progressively in recent years, a trend the Commission has flagged as a concern.
49. On protected species, the RAG noted that turtle and seabird interactions in the ETBF have been broadly stable, with the majority of turtle interactions involving leatherback and green turtles and a high proportion released alive. The exception was the 2024 summer TAP season, which recorded a notable spike in seabird interactions.
50. The RAG noted the ongoing southward shift of fishing effort is reflected in current seabird interaction patterns, with the performance criterion recently being exceeded in higher-risk southern latitudes. A proportion of turtle interactions continue to be recorded as unspecified each year, and EM data had not assisted in resolving these identifications. AFMA had directed affected vessels to implement additional mitigation in response to the current exceedance of the seabird performance criterion.
51. The RAG discussed the update and noted the following:
 - a. Discard data is estimated in logbooks and a stocktake of discard data quality and logbook fields, including the reason for discarding field, would be useful to understand the reliability of the data being presented.
 - b. Discard rates should be presented as a percentage of total catch rather than landed catch only.
 - c. Where discard rates appear outside normal levels of variability (10%) this could usefully trigger additional analysis including the size composition of discarded fish and reasons for discarding.

Agenda Item 7. IOTC Bigeye Tuna Management Procedure

52. CSIRO presented an overview of management procedures (MPs) in the Indian Ocean Tuna Commission (IOTC), fulfilling an action item from [TTRAG 35](#) (July 2022).
53. The IOTC has been developing MPs for its key target species; skipjack, yellowfin, bigeye, albacore and swordfish tuna for approximately ten years, with blue shark recently added to the workplan. Australia, including CSIRO, has played a leading role in MP development in the IOTC.
54. CSIRO presented a detailed summary of the IOTC Bigeye Tuna MP, which was adopted in 2022 and first applied operationally in April 2025, and noted:
 - a. The Bigeye MP uses total catch across the IOTC area of competence and a standardised CPUE index derived from Japanese, Korean and Taiwanese longline fleets and runs a simple biomass-dynamic estimation model. The model outputs are applied to a “hockey stick” harvest control rule to derive a recommended total allowable catch (TAC) and includes a 15% maximum change limiting rule between cycles.
 - b. The MP was tuned to achieve a 60% joint probability of the stock being in the ‘green zone’ of the Kobe plot (spawning biomass above B_{MSY} and fishing mortality below F_{MSY})¹.
 - c. The MP was first run in 2025, using catch and CPUE data up to 2023 and derived a recommended TAC of approximately 175,000 t which was substantially greater than the previous TAC of 80,500 t for the 2024-2025 period. Applying the 15% maximum change limiting rule, the final recommended TAC for the 2026-2028 period was 93,000 t.
 - d. The RAG noted that the 15% maximum change limiting rule has been applied in multiple consecutive cycles, reflecting the sensitivity of the simple biomass-dynamic model to the CPUE inputs. Deriving a standardised CPUE index from multiple major fleets is methodological complexity and challenging, and that resulting errors in the CPUE standardisation required a special Scientific Committee meeting prior to running the MP again in 2025.
 - e. The RAG noted the MP has been externally reviewed and is subject to a full review in 2030.
 - f. In the IOTC, catch limits for individual members are set through species-specific catch limit resolutions. Australia’s catch limit for bigeye tuna was not materially affected by the 2025 TAC increase.
 - g. The RAG noted that a potential IOTC swordfish catch limit resolution may be considered at the 2026 IOTC Commission (May 2026).

¹ B_{MSY} = biomass at maximum sustainable yield; F_{MSY} = fishing mortality at maximum sustainable yield.

Agenda Item 8. SWO Harvest Strategy – MSE results

55. CSIRO presented results from the swordfish harvest strategy MSE testing, covering the harvest control rule (HCR) CPUE target, robustness testing and RBCC setting components as per the agreed workplan at Table 3. To provide context for the discussions, CSIRO provided a summary comparison of the key features of the 2019 and 2025 operating models and MSE, see Table 1.

Table 1. Operating Model and Harvest Control Rule since the previous (2019) SWO MSE

Comparison of SWO OM and MSE (2019 vs. 2025)			
Category	Feature	2019 OM and MSE	2025 OM and MSE
OM Basis	Assessment Guide	Conditioned using data from the 2017 WCPFC stock assessment (data to 2015).	Conditioned using data from the 2021 WCPFC Swordfish stock assessment (data to 2019).
	Fisheries	Focus on ETBF vs. non-ETBF meta-structure ; excluded Northern Area 2 (DW2N) as the reference.	Separated into 13 extraction and 3 index fisheries to isolate removal effects from abundance signals - this was a feature of the 2021 assessment.
Data	DWFN Fleets	DW2N excluded from Reference Set to avoid influence from distant northern catches.	DW2N remains excluded from Reference Set.
	Size Resolution	10 kg weight bins for composition data.	Increased resolution to 5 kg weight bins to better capture recruitment signals - this was a feature of the 2021 assessment.
OM Biology	CPUE indices	5 CPUE indices included in the OM: DW_1C (1954-2015), AU_1 (1998-2015), DW_2C (1963-2001), DW_2C (2001-2015), EU_2 (2004-2015)	3 CPUE indices included in the OM: AU (1998-2019), NZ (2004-2019), EU (2005-2019) - this was a feature of the 2021 assessment.
	Natural Mortality (M)	Tested two scenarios: the diagnostic case (Mcont) and one lower mortality alternative.	Tests three vectors: Mbase (2021 assessment), Mcont (original OM), and Malt (lower). Mbase was found not to converge for high steepness values, and removed from the Reference set. As such, M vectors remain identical to 2019.
	Steepness (h)	Fixed values of 0.65, 0.8, and 0.95 used in the grid.	Retained 0.65, 0.8, and 0.95 as core parameter variations.
	Stock Structure	Tested panmictic vs. separate stocks (Region 1 and 2).	Reference Set assumes a panmictic stock (Region 1 and 2)
Movement	Migration Basis	Explored symmetric probabilities (0, 5, 10%); Reference Set assumed zero migration .	Reference Set uses asymmetric movement parameters (Patterson et al., 2021).
MSE Features	Tuning Target	ETBF sub-adult CPUE index for the period 2011-2016 . The ETBF sub-adult CPUE index was derived from Dell et al., (2020).	ETBF sub-adult CPUE index for the period 2011-2016 ; also tested "Long-term" (1998-2024) and "Recent" (2015-2024) CPUE targets. The ETBF sub-adult CPUE index was derived from Williams and Tremblay-Boyer (2025).

Comparison of SWO OM and MSE (2019 vs. 2025)			
Category	Feature	2019 OM and MSE	2025 OM and MSE
	TAC Schedule	Tested 1 and 3-year TAC cycles.	Tests 1, 3, and 5-year TAC schedules.
	TAC Constraints	Symmetric changes: 10% (annual) or 27% (3-year) .	Symmetric changes remain (10% annually). Also tested asymmetric changes (e.g., max 10% down and 11.1% up). Will test 10,20,30% over 3-year TAC cycle
	Implementation Error	Beta distribution based on 2013-2018 under-catch levels.	Scenarios updated based on mean under-catch from 2013-2023 (excluding COVID years).

OM reference set – update

56. The RAG recalled that [TTRAG 45](#) agreed for the reference set of OMs to be based on 3 values of mortality-at-age and 3 values of steepness, resulting in 9 reference OMs. CSIRO advised that OMs based on the M_{base} mortality-at-age value resulted in highly uncertain projections and did not converge well and were therefore removed from the reference set.
57. The RAG supported this approach and noted that the remaining set of six reference OMs adequately covered uncertainty; and noted that the mortality-at-age vector is the primary driver of variation between OMs, with steepness having limited practical effect.

HCR CPUE target

58. In updating the sub-adult standardised CPUE time series with current data to 2025, relative to the 2011-2016 reference period, the resulting HCR CPUE target (1.37) was substantially higher than the current target (1.05).
59. The std-CPUE trend indicates that values since 2016 have been below 1.0, compared to the reference period when the std-CPUE was higher, which may influence the resulting HCR CPUE target value.
60. The RAG recalled that the updated sub-adult standardised CPUE time series was agreed at [TTRAG 44](#) (July 2025), using a mixed effects spatial model rather than the original fixed effects approach. The two series are not directly comparable. The RAG noted that the updated methodology produces a peak in the 2011 to 2016 reference period relative to the rest of the time series, in particular the year quarter effect was found to be highly influential, and that this is the primary reason the HCR target increased from 1.05 to 1.37 when recalculated using the updated series. Some industry members expressed renewed concern in the updated std-CPUE time series, specifically that the high CPUE values during the 2011-2016 reference period was inconsistent with their experience of the fishery during that time, when swordfish catches were declining and fleet effort was consolidating. However, the nominal CPUE catch rate data also shows a similar peak during this period, indicating that it was a period of higher catch rates.
61. CSIRO highlighted that when the harvest control rule (HCR) is applied with such a high target value (1.37), the projected catch rates would result in RBCC scalars of less than

1 and, consequently, a 92% probability of TACC reductions in the short term (2025-2030). Despite such reductions, the projected catch rates would not increase enough to meet the target by 2040.

62. The RAG noted that this outcome is incompatible with the intent of the harvest strategy and considered two alternative HCR CPUE targets, see Table 2:

Table 2. Comparison of HCR CPUE target scenarios and projected outcomes to 2040.

HCR CPUE target	Current	Long-term	Recent
Reference period	2011-2016	1998-2024	2015-2024
Resulting CPUE target value	1.37	1.0	0.76
Projected outcomes	Target not achievable. Progressive TACC reductions.	Progressive TACC reductions, then stabilising.	Maintains a stable TACC, then increases.
Median catch at 2040	235 t	427 t	943 t

63. The RAG noted that biological outcomes across all three scenarios are comparable at the whole stock level, with median relative spawning stock biomass in 2040 ranging from 0.64 to 0.67 and the stock healthy and improving in all cases.

64. The RAG noted that the CPUE index has not been above 1.0 since 2015. Moreover, any target above 1.0 would likely not be achieved through ETBF management alone given the small proportion of catch relatively to that in the entire WCPO. The RAG noted that the recent target (0.76) is a better reflection of the current dynamics of the fishery.

65. The RAG discussed the relative influence that the ETBF has over the broader swordfish stock and the justification for a domestic harvest strategy. Specifically:

- a. Based on an updated sub-adult standardised CPUE time series and HCR CPUE target, large changes in ETBF TACC and catch had relatively small influence on depletion, spawning stock biomass and recruitment.
- b. The re-conditioned OMs used in the current MSE testing incorporated updated literature and assumes a level of regional migration, which was not previously assumed (Table 2).
- c. That the influence of constraining SWO catches (i.e., fishing mortality) within the ETBF on the WCPO stock as whole may be smaller than previously thought, consistent with declining catch and std-CPUE trends over recent years.
- d. There were dissenting views on whether a domestic harvest strategy was still justified noting that while ETBF catch shares relative to the broader WCPO stock were less than 30%, catch shares relative to Region 1 are still considerable (48%). Additionally, there is precedence and ongoing risk of localised depletion of swordfish by the ETBF in Region 1.

66. In considering the influence of the ETBF and the impact of catches in the ETBF on the broader WCPO stock, the RAG requested that MSE performance results be presented

both in terms of the broader WCPO stock and the Region 1 sub-stock. The RAG noted that the results were more nuanced when considered at the Region 1 sub-stock level.

67. The RAG highlighted the value of the close-kin mark-recapture research project, currently funded by FRDC, to reduce uncertainty regarding swordfish stock structure, but noted that the work will take time to produce meaningful results.

Preliminary robustness tests and RBCC setting components

68. CSIRO presented some preliminary robustness tests and projections for TAC, depletion, spawning stock biomass, recruitment and CPUE outcomes to demonstrate the influence of a number of different components on the performance of the harvest control rule.
69. The RAG noted that performance was most sensitive to the HCR CPUE target and other components had minimal influence.
70. The RAG noted that variability in depletion reduces when the TACC is determined for longer time periods (increasing stability).
71. Regarding a TACC change limiting rule, the RAG noted that 30% (additive equivalent of 10% each year for three years) was considered too large for a single TACC decision and asked CSIRO to test 10%, 20% and 30% maximum change limits per three-year cycle as well.
72. The RAG noted the current HCR already embeds asymmetric conservatism through the shape of the harvest control rule, with the upward slope above the buffer shallower than the downward slope below it, and that introducing the proposed 10%/11.1% asymmetric limiting rule would duplicate this intentional feature of the HCR design.

Recommendations

73. The RAG made the following recommendations:
- a. The recent HCR CPUE target (0.76, based on a 2015 to 2024 reference period) is a better reflection of the current dynamics of the fishery, noting that stock status is good, the target is achievable, and the HCR will respond appropriately should recruitment failures, changes in migration or localised depletion occur. Therefore, the RAG agreed that the recent HCR CPUE target (0.76) should be used as the new target in the harvest strategy.
 - b. The buffer zone width should be retained at $\pm 20\%$ around the HCR CPUE target, consistent with the original rationale based on CPUE observation error of approximately $CV = 0.15$.
 - c. The std-CPUE index should continue to be calculated as a 4-year moving average.
 - d. Align TACC setting schedule with the three-year cycle used for other ETBF species.
 - e. Retain the symmetric change limiting rule, rather than an asymmetric rule.

- f. The modified harvest strategy undercatch feature should be retained, noting the fishery has been catching approximately 70% of the TACC in recent years.

Next steps

- 74. The RAG noted that the final components of the workplan will be presented at TTRAG 47. Following this, and pending any further advice, a draft revised swordfish harvest strategy will be presented to TTRAG and TTMAC before being provided to the AFMA Commission for consideration.
- 75. The updated swordfish MSE workplan and a summary of decisions made during the current MSE testing are provided at Table 3.
- 76. The current modified harvest strategy continues to apply for TACC setting in the interim.

Table 3. Swordfish MSE workplan.

Harvest Strategy Component	Options for MSE testing	Timing (RAG meeting)	Progress to date
1 Operating Model – general	<ul style="list-style-type: none"> • Update OM to include latest catch and effort data available Z • 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)	<ul style="list-style-type: none"> • 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. TTRAG 46 noted the reference set was updated to six OMs following removal of the M-base mortality vector.
4 Robustness grid	<ul style="list-style-type: none"> • Permanent low recruitment (lowest of a moving 5-year average) (regime shift) • Low levels of undercatch (~15%) – i.e. similar to pre-covid levels 	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

Harvest Strategy Component	Options for MSE testing	Timing (RAG meeting)	Progress to date
	<ul style="list-style-type: none"> • Implementation scenarios where undercatch is incorrectly projected for the next year • 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 		<p>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 potential impacts of climate change on growth and age-at-maturity; and harvest stability</p> <p>TTRAG also confirmed no need for north-south spatial division within Region 1 as there is no biological difference detected.</p> <p>Recreational fishery noted as not significant at present but should be monitored (especially large fish in Tasmania/Victoria waters)</p>
5 Harvest Control Rule	<ul style="list-style-type: none"> • 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	<p>TTRAG 46 decisions:</p> <ul style="list-style-type: none"> • Buffer width: retain $\pm 20\%$ • CPUE smoothing window: retain 4-year moving average • TACC setting schedule: align with three-year cycle • Asymmetric change rule: not adopted, symmetric $\pm 10\%$ retained • Undercatch feature: retained
6 RBCC setting	<ul style="list-style-type: none"> • 3 TACC schedules: <ul style="list-style-type: none"> ○ every year – 10% over ○ every 3 years (constant annual TACC) – 30% over (multiplicative) 	Mar 2026	<p>TTRAG 45 articulated that status quo maximum changes at different % be tested in their own right, not integrated with the TACCs schedules</p>

Harvest Strategy Component	Options for MSE testing	Timing (RAG meeting)	Progress to date
	<ul style="list-style-type: none"> ○ 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 		<ul style="list-style-type: none"> ● 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	<ul style="list-style-type: none"> ● 2 tuning criteria: <ul style="list-style-type: none"> ○ CPUE-based <ul style="list-style-type: none"> ▪ 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 (determined from tuning to B48) of long-term average (1998-present). CSIRO to explore difference reference periods. ○ Depletion-based <ul style="list-style-type: none"> ▪ 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 	<p>CPUE-based (Jul 2026)</p> <p>Depletion-based (Jul 2026)</p>	TTRAG 46 noted tuning objectives deferred to TTRAG 47.

Action:

CSIRO to test 10%, 20% and 30% maximum TACC change limits per three-year cycle at TTRAG 47, with results to include both Region 1 specific and whole stock outputs.

CSIRO to present MSE performance results in terms of both the broader WCPO stock and the Region 1 sub-stock at TTRAG 47.

Agenda Item 9. Project update: Coral Sea Hook Trial Research

77. Joshua Esman, PhD candidate, USC presented an overview of their recently commenced PhD project that includes multiple components relevant to the ETBF fishery, and specifically, the Coral Sea Hook Trial research.
78. The RAG recalled that the Coral Sea Zone has a 500 hook limit on longline shots to enhance marlin survivability; and that an initial trial ran from 2020 to 2024.
79. an additional research project using an updated sampling protocol is currently underway, with analyses to be conducted as part of the PhD project.
80. The RAG noted that the trial methodology was designed anticipating three to four vessels to participate. However, only two vessels participated in the first year of the research (2025) and has now reduced to one vessel due to unforeseen circumstances.
81. The project proponents proposed to pool data from the 2020-2024 trial and current research, to bolster the dataset and provide additional context on spatio-temporal trends in marlin interactions.
82. The RAG noted the value of historical data from 1990s research in the Coral Sea and the need to account for the 2015 introduction of electronic monitoring as a structural break in any long-term analysis. The RAG noted CSIRO's interest in the catchability and subsurface oceanography components of the project and looked forward to receiving results at a future meeting.

Agenda Item 10. TTRAG priorities and meeting schedule

83. The RAG reviewed their current priorities (Table 1) and an indicative agenda schedule for upcoming meetings (Table 2). The RAG noted the following key updates against priorities:
 - a. The swordfish harvest strategy MSE work is progressing, with TTRAG 47 to consider the final MSE results. A draft revised harvest strategy will be developed following completion of the MSE work.
 - b. Seabird management arrangement changes consulted on in 2025 have been partly implemented, with further changes being progressed to come into effect at the start of the 2026 winter TAP season (1 May 2026).
 - c. The WCPFC adopted an updated CMM on seabirds at its December 2025 session. AFMA noted this has no material impact on domestic seabird management arrangements.

- d. The Coral Sea hook trial is continuing, as presented under Agenda Item 9.
 - e. The ERA ecological risk management response under FMP14 remains a priority. AFMA noted it intends to progress this once ABARES turtle research project results and Tuna Australia FRDC project outcomes are available to inform the discussion.
 - f. The Climate Risk Framework has been endorsed by the AFMA Commission and AFMA's Climate Risk team plans to present to the RAG during 2026.
 - g. The use of artificial intelligence in electronic monitoring should be noted as potential and valuable tool for monitoring and data collection in the fishery. The RAG noted that this is an ongoing research priority.
84. The RAG noted that a review of the framework for making TACC decisions for species where no harvest strategy or harvest control rule is in place would be scheduled for the March 2027 TTRAG meeting. The RAG discussed the priority list and agreed the following changes:
- a. The RAG agreed that the yellowfin tuna pulse events priority has been addressed following the 2025 TACC increase and can be removed from the table, noting that in-season monitoring of discarding remains ongoing.
 - b. Close-kin mark recapture for swordfish should be added to the priority list, with the CSIRO FRDC project now underway.
 - c. A review of current and future data needs should be elevated as a priority, noting the discussions on mandatory reporting of quota price data and refinement of logbook discard categories during this meeting.
85. On the indicative meeting schedule, the RAG confirmed dates of 21–23 July 2026 for TTRAG 47.

Action

AFMA to arrange an update from the AFMA EM program on artificial intelligence developments in EM footage review.

Agenda Item 10. Other Business

86. There was no other business raised.

Close of meeting

87. The Chair thanked members for their contributions this year and closed the meeting at 2:20 pm.

Attachment A – TTRAG 46 adopted agenda, 16-17 March 2026.

DAY 1		
30 mins 9:00 – 9:30	Preliminaries Welcome and apologies Declaration of interests Adoption of agenda Actions arising from previous meetings	Cathy Dichmont, Chair
45 mins 9:30 – 10:15	Member Updates	Members
15 mins 10:30 – 10:45	MORNING BREAK	
60 mins 10:30 – 11:30	Striped Marlin Harvest Strategy	Lara Ainley, AFMA
30 mins 11:30 – 12:00	Project Update: FishSOOP	Ian Knuckey, Fishwell
60 mins 12:00 – 1:00	LUNCH BREAK	
60 mins 1:00 – 2:00	TTRAG Economics Update 2026	Claire Wallis, AFMA
30 mins 2:00 – 2:30	Catch and discard data update	Robert Wood, AFMA
30 mins 2:30 – 3:00	IOTC Management Procedure for Bigeye Tuna	Ashley Williams, CSIRO
15 Mins 3:00 – 3:15	AFTERNOON BREAK	
105 mins 3:15 – 5:00	Overflow as required	

DAY 2		
90 mins 9:00 – 10:30	Swordfish Harvest Strategy – MSE results	Denham Parker, CSIRO
15 mins 10:30 – 10:45	MORNING BREAK	
90 mins	Swordfish Harvest Strategy – MSE results	Denham Parker, CSIRO

10:45 – 12:15		
45 mins 12:15 – 1:00	LUNCH	
45 mins 1:00 – 1:45	Project Update: Coral Sea Hook Trial Research	Kylie Scales, USC Joshua Esman, USC
45 mins 1:45 – 2:15	TTRAG Priorities	Lara Ainley, AFMA
15 mins 2:15 – 2:30	Other business	Cathy Dichmont, Chair

Attachment B – Register of declared interests, TTRAG 46, 16-17 March 2026

Name	RAG position/ organisation	Declared Interests	Potential conflicts identified at TTRAG 46 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 3 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 3 and 8.
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 3 and 8 as an industry representative. The RAG agreed that industry members could

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			participate in discussions for all identified agenda items, but would be excluded from the room when final recommendations were made for items 3 and 8.
Ian Knuckey	Scientific member	<p>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.</p> <p>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.</p> <p>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.</p> <p>Has interests in electronic reporting systems in tuna fisheries, previously worked on FAD projects in Tasmania,</p>	Nothing declared

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		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 3 and 8 as an industry representative. 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 3 and 8.
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 3 and 8 as an industry representative. 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 3 and 8.

Attachment C - Summary of Actions and Recommendations

Table 1. TTRAG Action Items. Status and progress

Number	Action	Meeting Raised	Responsibility	Status at TTRAG 46, March 2026
1.	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	<p>IN PROGRESS</p> <p>AFMA's development team are working on including the depredation update. It is likely to go out to the vendors with the next API release (scheduled for around the end of February to early March) to be added to the e-log software.</p>
2.	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	<p>NOT YET ACTIONED</p> <p>AFMA intends to invite Dr Beth Fulton to attend a TTRAG meeting when Climate Risk Framework species assessment reports for the ETBF and WTBF are to be discussed. Dr Fulton can provide further information on the preliminary projections and modelling that provides the basis of assessing climate risk for a range of Commonwealth species including in the ETBF and WTBF. Further information on these preliminary projections has also been published in the following reports:</p> <ul style="list-style-type: none"> - FRDC project 2016-059 - Guidance on adaption of Commonwealth Fisheries management to climate change <p>FRDC project 2016-139 - Decadal scale projection of changes in Australian fisheries stocks under climate change</p>

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Number	Action	Meeting Raised	Responsibility	Status at TTRAG 46, March 2026
3.	<p>AFMA to investigate potential discrepancies in the conversion rates used across processors, catch disposal records and by CSIRO.</p> <p>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.</p>	TTRAG 44	AFMA	<p>IN PROGRESS</p> <p>Tuna Australia has provided some additional information on the discrepancies to AFMA for further investigation.</p>
4.	<p>CSIRO to provide further advice on the feasibility and scope to undertake MSE for striped marlin.</p>	TTRAG 44	CSIRO	<p>IN PROGRESS</p> <p>A discussion on the striped marlin harvest strategy approach will be discussed under Agenda Item 3</p>
5.	<p>Regarding the annual economics indicator report, ABARES Economics Member to:</p> <ul style="list-style-type: none"> 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. <p>review labour cost modelling with the non-survey approach team to ensure recent wage increases and recruitment costs are properly captured.</p>	TTRAG 45	ABARES	<p>NOT YET ACTIONED</p>

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Number	Action	Meeting Raised	Responsibility	Status at TTRAG 46, March 2026
6.	CSIRO, in consultation with AFMA and Tuna Australia, to discuss opportunities for sampling albacore and other key ETBF species to contribute to the SPC/CSIRO close-kin mark recapture programme in the Western Central Pacific.	TTRAG 46	CSIRO / AFMA / Tuna Australia	NEW
7.	Tuna Australia to advise industry operators to manage their take of striped marlin by avoiding targeting and treating the species as a by-product to lessen the impact of the species becoming a choke species.	TTRAG 46	Tuna Australia	NEW
8.	AFMA to provide out-of-session responses to the RAG's questions on the economic indicator data cleaning methodology and analysis that could not be resolved at the meeting.	TTRAG 46	AFMA	NEW
9.	CSIRO to test 10%, 20% and 30% maximum TACC change limits per three year cycle at TTRAG 47, with results to include both Region 1 specific and whole stock outputs.	TTRAG 46	CSIRO	NEW
10.	CSIRO to present MSE performance results in terms of both the broader WCPO stock and the Region 1 sub-stock at TTRAG 47.	TTRAG 46	CSIRO	NEW
11.	AFMA to arrange an update from the AFMA EM program on artificial intelligence developments in EM footage review, to be presented at TTRAG 47.	TTRAG 46	AFMA	NEW

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Table 2. TTRAG Action Items relating to CPUE

Number	Action	Meeting Raised	Responsibility	Status at TTRAG 46
1.	<p>TTRAG discuss and provide advice at its meeting in March 2024, on priority need to undertake simulation testing of the CPUE standardisation.</p> <p>The RAG identified the following four CPUE refinement priorities: Priority refinement (1-3), further discussion needed for priority 4 simulation testing of CPUE.</p> <ol style="list-style-type: none"> 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	<p>IN PROGRESS</p> <p>TTRAG 41 (July 2024) 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.</p>
2.	<p>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.</p>	TTRAG 38	CSIRO/AFMA/ Tuna Australia	<p>IN PROGRESS</p> <p>Tuna Australia contacted all ETBF operators regarding 45 hooks per basket. However, has not received any responses to the query. AFMA will investigate further to identify specific operators reporting 45 hooks between floats.</p> <p>AFMA confirms no amendments to logbooks have yet been made.</p>