Report of the 28th Session of the IOTC Working Party on Tropical Tunas

Tenerife, Spain, 20 - 24 October 2026

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ACRONYMS

aFAD	anchored Fish Aggregating Device
ASAP	Age-Structured Assessment Program
ASPIC	A Stock-Production Model Incorporating Covariates
ASPM	Age-Structured Production Model
B	Biomass (total)
BDM	Biomass Dynamic Model
BET	Bigeye tuna
B_0	The estimate of the unfished spawning stock biomass
B_{curr}	The estimate of current spawning stock biomass
B_{MSY}	Biomass which produces MSY
B_{thresh}	Threshold level, the percentage of B0 below which reductions in fishing mortality are required
CE	Catch and effort
CI	Confidence Interval
C_{max}	Maximum catch limit
CMM	Conservation and Management Measure (of the IOTC; Resolutions and Recommendations)
CPCs	Contracting parties and cooperating non-contracting parties
CPUE	Catch per unit of effort
current	Current period/time, i.e. $F_{current}$ means fishing mortality for the current assessment year
dFAD	drifting Fish Aggregating Device
D_{max}	Maximum change in catch limit
EEZ	Exclusive Economic Zone
ENSO	El Niño–Southern Oscillation
E_{targ}	The estimate of the equilibrium exploitation rate associated with sustaining the stock at B_{targ}.
EU	European Union
F	Fishing mortality; F_{2011} is the fishing mortality estimated in the year 2011
FAD	Fish aggregating device
F_{MSY}	Fishing mortality at MSY
GLM	Generalised linear model
HBF	Hooks between floats
HPB	Hooks per Basket
I_{max}	Maximum fishing intensity
IO	Indian Ocean
IOTC	Indian Ocean Tuna Commission
IWC	International Whaling Commission
K2SM	Kobe II Strategy Matrix
LL	Longline
M	Natural Mortality
MSC	Marine Stewardship Council
MSE	Management Strategy Evaluation
MSY	Maximum sustainable yield
n.a.	Not applicable
PS	Purse seine
q	Catchability
ROS	Regional Observer Scheme
RTTP-IO	Regional Tuna Tagging Project in the Indian Ocean
RTSS	RTTP-IO plus small-scale tagging projects
SC	Scientific Committee, of the IOTC
SB	Spawning biomass (sometimes expressed as SSB)
SB_{MSY}	Spawning stock biomass which produces MSY (sometimes expressed as SSB_{MSY})
SCAA	Statistical-Catch-At-Age
SKJ	Skipjack tuna
SS3	Stock Synthesis III
Taiwan, China	Taiwan, Province of China
VB	Von Bertalanffy (growth)
WPTT	Working Party on Tropical Tunas of the IOTC
YFT	Yellowfin tuna

STANDARDISATION OF IOTC WORKING PARTY AND SCIENTIFIC COMMITTEE REPORT TERMINOLOGY

SC16.07 (para. 23) The SC **ADOPTED** the reporting terminology contained in Appendix IV and **RECOMMENDED** that the Commission considers adopting the standardised IOTC Report terminology, to further improve the clarity of information sharing from, and among its subsidiary bodies.

HOW TO INTERPRET TERMINOLOGY CONTAINED IN THIS REPORT

Level 1: ***From a subsidiary body of the Commission to the next level in the structure of the Commission:***
RECOMMENDED, RECOMMENDATION: Any conclusion or request for an action to be undertaken, from a subsidiary body of the Commission (Committee or Working Party), which is to be formally provided to the next level in the structure of the Commission for its consideration/endorsement (e.g. from a Working Party to the Scientific Committee; from a Committee to the Commission). The intention is that the higher body will consider the recommended action for endorsement under its own mandate, if the subsidiary body does not already have the required mandate. Ideally this should be task specific and contain a timeframe for completion.

Level 2: ***From a subsidiary body of the Commission to a CPC, the IOTC Secretariat, or other body (not the Commission) to carry out a specified task:***
REQUESTED: This term should only be used by a subsidiary body of the Commission if it does not wish to have the request formally adopted/endorsed by the next level in the structure of the Commission. For example, if a Committee wishes to seek additional input from a CPC on a particular topic, but does not wish to formalise the request beyond the mandate of the Committee, it may request that a set action be undertaken. Ideally this should be task specific and contain a timeframe for the completion.

Level 3: ***General terms to be used for consistency:***
AGREED: Any point of discussion from a meeting which the IOTC body considers to be an agreed course of action covered by its mandate, which has not already been dealt with under Level 1 or level 2 above; a general point of agreement among delegations/participants of a meeting which does not need to be considered/adopted by the next level in the Commission's structure.
NOTED/NOTING: Any point of discussion from a meeting which the IOTC body considers to be important enough to record in a meeting report for future reference.

Any other term: Any other term may be used in addition to the Level 3 terms to highlight to the reader of and IOTC report, the importance of the relevant paragraph. However, other terms used are considered for explanatory/informational purposes only and shall have no higher rating within the reporting terminology hierarchy than Level 3, described above (e.g. **CONSIDERED**; **URGED**; **ACKNOWLEDGED**).

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EXECUTIVE SUMMARY

The 28th Session of the Indian Ocean Tuna Commission's (IOTC) Working Party on Tropical Tunas (WPTT), was held in Tenerife, Spain from 20-24 October 2026. The meeting was opened by the Chairperson, Dr David Kaplan (EU, Spain) who welcomed participants. The meeting was in-person only and a total of 45 participants attended the session (cf. 65 in 2025, 130 in 2024, 91 in 2023, and 113 in 2022). The list of participants is provided at Appendix I.

The following are the recommendations from the WPTT28 to the Scientific Committee, which are provided at Appendix VIII.

Update of Any New Data Available at the Secretariat for Tropical Tuna Species Since the Data Preparatory Meeting

WPTT28.01 (para 17): The WPTT **NOTED** that deficiencies in data quality and consistency can significantly compromise stock assessment results and reduce confidence in management advice. The WPTT **RECOMMENDED** that the Commission encourage CPCs to improve the quality and transparency of fisheries data by: providing comprehensive documentation of estimation methodologies; reviewing and validating historical datasets; and addressing outstanding data gaps.

WPTT28.02 (para 18): The WPTT **RECOMMENDED that the Commission encourage** CPCs to work with the Secretariat, through the WPDCS, to develop and implement a standardised data quality evaluation framework to assess the consistency of reported data over time. This framework should facilitate the identification and documentation of substantial changes in datasets and determine whether such changes reflect actual trends in fisheries performance or are attributable to modifications in estimation procedures, data processing methods, or data management systems.

Selection of stock status indicators for skipjack tuna

WPTT28.03 (para 115): The WPTT **RECOMMENDED** that the SC report the status of Indian Ocean skipjack using the Kobe plot (MSY based) for consistency with the approach used for the other tropical tuna stocks in the IOTC.

WPTT28.04 (para 119): The WPTT **RECOMMENDED** that the SC oversee a review of Resolution 15/10 and its application of the target and limit reference points and how they are used for the purposes of categorizing stock status and implementing management procedures for IOTC stocks.

WPTT28.05 (para 120): The WPTT REQUESTED that the IOTC Secretariat update the draft stock status summary for skipjack tuna with the latest 2025 catch data, if necessary. The WPTT **RECOMMENDED** that the SC develop the stock status advice as part of the Executive Summary, following the review of the final assessment results.

- Skipjack tuna (*Katsuwonus pelamis*) – Appendix V

Consideration of exceptional circumstances of skipjack tuna management procedure

WPTT28.06 (para 126): Based on information reviewed to date, the WPTT did not identify any exceptional circumstances that warrant the change of the implementation of the skipjack tuna MP. However, the WPTT **RECOMMENDED** that the Commission ensure catches remain within the levels set under the adopted Management Procedure for this stock.

Consideration of exceptional circumstances of bigeye tuna management procedure

WPTT28.07 (para 130): Based on information reviewed to date, the WPTT did not identify any exceptional circumstances that warrant the change of the implementation of the bigeye tuna MP. The WPTT **NOTED** that catch in 2024 and 2025 exceeded the agreed TAC in Resolution 23/04, which may negatively impact the stock. The WPTT further **NOTED** the uncertainty in catches and changes in catch reporting. The WPTT **RECOMMENDED** that the Commission and Compliance Committee review the catches, enact the relevant mechanisms in Resolution 23/04, and ensure total catches are below the TAC.

Resolution 24/02 On Management of Drifting Fish Aggregating Devices (DFADs) in the IOTC Area of Competence

WPTT28.08 (para 185): The WPTT **RECOMMENDED** the establishment of an intersessional expert group, comprising DFAD users and other interested stakeholders, to co-develop DFAD marking guidelines through dedicated virtual meetings and correspondence. Interested participants are encouraged to contact the IOTC Secretariat and the Chair of the WGFAD. A draft set of DFAD marking guidelines should be presented at the next session of the WGFAD for review and consideration.

Revision of the WPTT Program of Work (2027–2031)

WPTT28.09 (para 201): The WPTT **RECOMMENDED** that the SC consider, amend as necessary, and then endorse the WPTT Program of Work (2027–2031), as provided in Appendix VII.

Date and place of the 29th and 30th Sessions of the WPTT (Chair and IOTC Secretariat)

WPTT28.10 (para 210): The Secretariat will continue to liaise with CPCs to determine their interest in hosting these meetings in the future. The WPTT **RECOMMENDED** the SC consider late October 2027 as a preferred time period to hold the WPTT29 meeting in 2027. It was also **AGREED** that the WPTT Assessment meeting should continue to be held back-to-back with the WPM.

Review of the draft, and adoption of the Report of the 28th Session of the WPTT

WPTT28.11 (para 215): The WPTT **RECOMMENDED** that the Scientific Committee consider the consolidated set of recommendations arising from WPTT28, provided at Appendix VIII, as well as the management advice provided in the draft resource stock status summary for each of the three tropical tuna species under the IOTC mandate, and the combined Kobe plot for the three species assigned a stock status in 2026 (Figure 2).

- Bigeye tuna (*Thunnus obesus*) – Appendix IV
- Skipjack tuna (*Katsuwonus pelamis*) – Appendix V
- Yellowfin tuna (*Thunnus albacares*) – Appendix VI

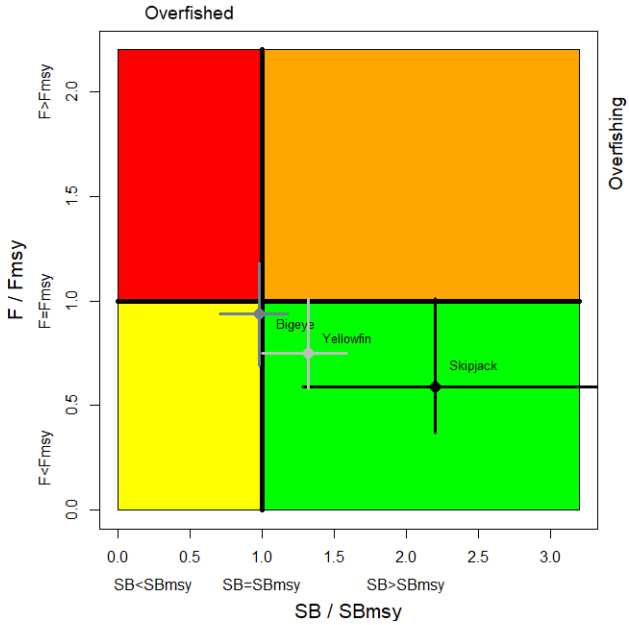

Figure 2. (Left) Combined Kobe plot for skipjack tuna (black: 2026), bigeye tuna (dark grey: 2025), and yellowfin tuna (grey: 2024) showing the estimates of current stock size (SB) and current fishing mortality (F) in relation to the MSY-based spawning biomass and fishing mortality reference points. Cross bars illustrate the range of uncertainty from the model runs with an 80% CI.

Table 1. Status summary for species of tropical tuna under the IOTC mandate (bigeye tuna status to be finalized intersessionally and advice to be developed at the SC28).

Stock	Indicators		2018	2019	2020	2021	2022	2023	2024	2025	2026	Advice to the Commission
Bigeye tuna *Thunnus obesus*	Catch in 2024 (t) Average catch 2020-24 (t) MSY (1,000 t) (80% CI) F_{MSY} (80% CI) SB_{MSY} (1,000 t) (80% CI) F_{2024} / F_{MSY} (80% CI) SB_{2024} / SB_{MSY} (80% CI)	96,950 91,934 100 (94 – 106) 0.27 (0.21 – 0.33) 276 (143 – 409) 0.94 (0.69-1.18) 0.98 (0.71 – 1.25)		**38%**			**79%**			**16%**		No new stock assessment was conducted in 2026. The stock status for yellowfin tuna was estimated based on the stock assessment carried out in 2025. The 2025 stock assessment was built on the 2022 assessment model structure and incorporated new growth and natural mortality estimates. The model was fitted to regional joint longline CPUE indices, and the European Union (EU) purse seine index. The reported stock status is based on a grid of 36 model configurations designed to capture the uncertainty on stock recruitment relationship, longline selectivity, natural mortality and catchability dynamics. Overall, the stock assessment results suggest that bigeye biomass has nearly recovered to the target SB_{MSY} level. Considering the characterised uncertainty, the assessment indicates that. •there is a 54% probability that SB_{2024} is below SB_{MSY}, with median spawning biomass in 2024 estimated at 0.98 (0.71-1.25) times the level that can support MSY. • there is a 62% probability that F_{2024} is below F_{MSY}, with median fishing mortality (in 2024) estimated at 0.94 (0.69-1.18) times the F_{MSY} level. On the weight-of-evidence available in 2025, the bigeye tuna stock is determined to be **overfished** but **not subject to overfishing** As IOTC agreed on a bigeye Management Procedure (Res. 22/03) it should be noted that the stock assessment is not used to provide a recommendation on the TAC <Click here for full stock status summary>
Skipjack tuna *Katsuwonus pelamis*	Catch in 2025 (t): Average catch 2021-2025 (t): $F_{40\%SSB0}$ (t): SB_0 (t) SB_{2025} (t) SB_{2025} / SB_0 SB_{2025}/ $SB_{40\%SB0}$	732,675 670,815 0.5 (0.41–0.6) 2 376 (1,816–2,865) 1 099 (805-1522) 0.5 (0.29–0.71) 1.25 (0.71–1.77)			**60%**		**70%**				**92.1%**	A new stock assessment was carried out for skipjack tuna in 2026 using Stock Synthesis with data up to the end of 2025. An ensemble of 48 models was used to generate stock status. Forty-seven models converged. The agreed stock status from the 2026 stock assessment model is the same as the previous assessment (2023) despite the high catches recorded in the period 2022-2025,

	SB_{2025} / SB_{MSY} F_{2025} / F_{MSY} F_{2025} / $F_{40\%SB0}$ MSY (1,000 t)	2.20 (1.28–3.64) 0.59 (0.37–1.01) 1.09 (0.79–1.77) 570 (505-683)										which exceeded the catch limits established in 2020 for this period. The final assessment indicates that: i) The stock is above the adopted target for this stock (40% SB_0). Current spawning biomass relative to unexploited levels is estimated at 50%. ii) The probability of the stock being above SB_{MSY} and below F_{MSY} at the same time is estimated to be 92.1 % (see KOBE plot). iii) All the models in the ensemble estimate that the SB_{2025} is above the limit reference point (20 % SB_0) in 2025. Based on the weight-of-evidence available in 2026, the skipjack tuna stock is determined to be **not overfished** and **not subject to overfishing**. The application of the skipjack tuna management procedure as per Resolution 24/03 generated an annual TAC of 565,745 t for 2027–2029. The 2026 stock assessment estimated higher recruitment deviates in recent years, but similar to earlier estimates. Higher recruitment within the population could be due to skipjack life history characteristics and favourable environmental conditions. The stock level was also estimated to be above the target reference point. As environmental conditions along with ocean productivity can vary substantially inter-annually, and skipjack recruitment responds quickly to such variability, it is important that the Commission ensures that catches of skipjack do not exceed the TAC. In addition, the SC recognizes the potential impact on other associated stocks (bigeye tuna and yellowfin tuna) of exceeding the TAC of skipjack tuna. <Click here for full stock status summary>
Yellowfin tuna *Thunnus albacares*	Catch in 2025 (t) Average catch 2021-25(t) MSY_{recent} (1000)(80% CI) F_{MSY} (80% CI) $SB_{MSYrecent}$ (1000) (80% CI) F_{2023} / F_{MSY} (80% CI) SB_{2023}/ $SB_{MSYrecent}$ (80% CI) SB_{2023} / SB_0 (80% CI)	517,726 457,425 421 (416-430) 0.2 (0.16-0.26) 1,063 (890-1,361) 0.75 (0.58-1.01) 1.32 (1.00-1.59) 0.44 (0.40-0.50)	94%			68%			89%			No new stock assessment was conducted in 2026. The stock status for yellowfin tuna was estimated based on the stock assessment carried out in 2024. The 2024 stock assessment was carried out using Stock Synthesis III (SS3), a fully integrated model that is currently used to provide scientific advice for the three tropical tunas stocks in the Indian Ocean. The model grid from this assessment was re-run in 2025 in light of errors identified and subsequent revisions to the standardised CPUE input data. However, none of the figures or tables have been updated, because a full stock assessment with the corrected CPUE has not been conducted. Based on 2024 evidence and a 2025 review, yellowfin tuna is estimated to be **not-overfished** and **not-subject to overfishing**.

												The review of the 2024 assessment grid in 2025 was deemed sufficient to extend the management advice provided in 2024. As such, the following advice was recommended: • If catches are maintained within the estimated MSY range (416,000-430,000 tons) there is more than a 50% probability that the stock will remain above SBMSY in 2033. • Higher levels of catch are predicted to lead the stock to an overfished state in the long term. • The probability of breaching the biological limit reference point (0.4SBMSY) with recent catches is 0% by 2033. The probability of breaching the F limit reference point (1.4 FMSY) with recent catch is 0% by 2033However, in order to account for the uncertainty of the projections (e.g., relating to whether estimated high recruitment will be maintained) and uncertainty not captured in the assessment grid (e.g. relating to the new CPUE indices), the Commission should set a TAC that does not exceed the median recent MSY estimate. • Results of the K2SM generated from the 2024 assessment is not used as catch advice. Noting these points, it is recommended that the Commission sets a TAC for the period 2026, 2027 and 2028 that does not exceed the median recent MSY estimate (421,000 t). The SC noted the catch level in 2024 (489,742 t), and urged the Commission to ensure that the recommended TAC is not exceeded. The SC does not consider the need to advance the next yellowfin stock assessment, scheduled for 2027**.** <Click here for full stock status summary>

*Estimated probability that the stock is in the respective quadrant of the Kobe plot, derived from the confidence intervals associated with the current stock status.

1. OPENING OF THE MEETING

1. The 28th Session of the Indian Ocean Tuna Commission's (IOTC) Working Party on Tropical Tunas (WPTT) was held in Tenerife, Spain from 20-24 October 2026. The meeting was opened by the Chairperson, Dr David Kaplan (EU, Spain) who welcomed participants. The meeting was in-person only and a total of 45 participants attended the session (cf. 65 in 2025, 130 in 2024, 91 in 2023, and 113 in 2022). The list of participants is provided at Appendix I.

2. ADOPTION OF THE AGENDA AND ARRANGEMENTS FOR THE SESSION

2. The WPTT **ADOPTED** the Agenda provided in Appendix II. The documents presented to the WPTT28 are listed in Appendix III. The WPTT **NOTED** a number of papers were provided after the deadline for submission, significantly hindering productive and comprehensive discussion at the meeting. The WPTT reminded the authors of the submission deadlines established by the Commission.

3. UPDATE OF ANY NEW DATA AVAILABLE AT THE SECRETARIAT FOR TROPICAL TUNA SPECIES SINCE THE DATA PREPARATORY MEETING

3.1 DATA AVAILABLE AT THE SECRETARIAT

3. The WPTT **NOTED** papers IOTC-2026-WPTT28-06 and IOTC-2026-WPTT28-07_Rev2, which provided updated reviews of the statistical data and fishery trends for tropical tunas and for skipjack tuna, respectively, as received by the IOTC Secretariat for the period 1950–2025. The WPTT **NOTED** that a comprehensive review of the data available at the Secretariat had been undertaken at the Data Preparatory Meeting held in June 2026, and that the presentation focused only on data updates since that meeting.

4. The WPTT **NOTED** that the data-quality figures presented reflect only the quality of reporting and do not account for potential biases arising from data collection, estimation or processing procedures within CPCs. The WPTT **EMPHASISED** that the quality scoring framework is intended only as an indicator of the relative reliability of the data used in the assessment, and **SUGGESTED** that future presentations include quality assessments at the CPC level in addition to fleet-level summaries.

Catch trends and reporting by CPCs

5. The WPTT **RECALLED** that, at WPTT27, catches reported by Somalia were available for only a single year and resulted in a substantial increase in tropical tuna catches, and that Somali catch data were consequently excluded from the assessment. The WPTT **NOTED** that catches reported by Somalia increased again in 2025, with skipjack catches more than doubling, and that skipjack catches reported by Oman also increased substantially in 2025.

6. The WPTT **NOTED** that Secretariat staff recently conducted a mission to Oman and observed significant investment in the purse seine fleet, including the addition of three new vessels in 2025, which may partly explain the increase in catches reported by the Omani purse seine fishery. The WPTT further **NOTED** that the increase may also be partly explained by the acquisition of purse seine vessels previously operating under the EU,France fleet, which experienced declining catches in 2025. Secretariat staff also confirmed that Oman is currently reviewing and improving its artisanal fisheries data-processing system.

7. The WPTT **NOTED** that Oman indicated during WPDCS21 that historical artisanal fishery catches may need to be reduced by approximately 15% following an ongoing data review, but that no revised historical catch estimates have yet been submitted. The WPTT **NOTED** that tropical tuna catches reported by Oman in 2025 were lower than in previous years. The Secretariat highlighted potential biases in the current datasets and emphasised the need for continued improvements to Oman's data collection and processing systems, with additional details to be provided in the mission report.

8. The WPTT **NOTED** that catch estimates for Yemen continue to be derived from secondary sources, primarily FAO statistics, and that, although exchanges have taken place between the Secretariat and Yemen, no official catch datasets have yet been submitted.

9. The WPTT **NOTED** that recent increases in baitboat catches from Indonesia and India are driven by different factors. For Indonesia, the increase appears to be associated with the expansion of the baitboat fleet, particularly in the

Java region, whereas the increase in Indian baitboat catches is largely attributable to fisheries operating in the Lakshadweep area.

10. The WPTT **NOTED** that increases in skipjack catches have also been observed in other tuna RFMOs, particularly in the IATTC area, where they have been associated with increased productivity and recruitment. The WPTT **RECOGNISED** that a similar mechanism could be contributing to the increased skipjack catches observed in the Indian Ocean, including those reported by Somalia and other fisheries.

11. The WPTT **NOTED** that substantial increases in reported catches should be evaluated through additional sensitivity analyses under different catch scenarios, to assess their potential impact on the skipjack tuna stock assessment results.

Review of historical catches and anomalous catch trends

12. The WPTT **EMPHASISED** that accurate catch estimates are critical for stock assessments and for the processes that depend on them, including the development and evaluation of management procedures (MPs).

13. The WPTT **NOTED** the importance of systematically evaluating whether observed changes in catches reflect genuine changes in fishery productivity, in fishing effort, or are instead the result of improvements or changes in data collection, estimation and reporting procedures. The WPTT **NOTED** that criteria should be developed by the WPDCS within the next year to help distinguish genuine changes in catch levels from artefacts arising from revisions, methodological changes or reporting issues.

14. The WPTT **NOTED** that, whenever substantial or unexpected changes in catch levels are reported, the IOTC Secretariat should seek clarification from the relevant CPCs regarding the causes. The WPTT further **NOTED** that CPCs reporting anomalous catch trends should be subject to closer review, including consideration of CPUE information and annual catch estimates.

15. The WPTT **NOTED** that some other tuna RFMOs have established dedicated working groups to identify data inconsistencies, maintain cross-checking databases and facilitate the clarification of anomalies with CPCs, and that similar mechanisms could be beneficial within the IOTC framework.

16. The WPTT **STRESSED** the need for CPCs undertaking historical catch reviews to accelerate these processes and provide updated datasets as soon as possible. The WPTT **REQUESTED** that the WPDCS prioritise historical catch reviews and strengthen efforts to ensure that CPCs provide adequate supporting documentation describing the methodologies used to estimate and revise catches, and that the outcomes of these reviews and the associated methodologies be reported back to the WPTT.

17. The WPTT **NOTED** that deficiencies in data quality and consistency can significantly compromise stock assessment results and reduce confidence in management advice. The WPTT **RECOMMENDED** that the Commission encourage CPCs to improve the quality and transparency of fisheries data by: providing comprehensive documentation of estimation methodologies; reviewing and validating historical datasets; and addressing outstanding data gaps.

18. The WPTT **RECOMMENDED** that the Commission encourage CPCs to work with the Secretariat, through the WPDCS, to develop and implement a standardised data quality evaluation framework to assess the consistency of reported data over time. This framework should facilitate the identification and documentation of substantial changes in datasets and determine whether such changes reflect actual trends in fisheries performance or are attributable to modifications in estimation procedures, data processing methods, or data management systems.

Size-frequency data

19. The WPTT **NOTED** that raising size-frequency data is a standard practice intended to reduce sampling bias and improve the representativeness of size-composition data. However, given the potential influence of raising procedures on assessment results, the WPTT **REQUESTED** that CPCs document and report the methodologies used to raise their size-frequency data.

20. The WPTT **NOTED** the substantial increase in size-frequency samples reported from the Iranian gillnet fishery over the last two years and **REQUESTED** that Iran clarify whether these data represent actual samples collected or raised estimates.

21. The WPTT **NOTED** notable changes in the raised size-frequency distributions reported by EU,France between 2021 and 2022, which may reflect changes in fleet composition or operational patterns. The WPTT also **NOTED**

differences in the size distribution of sampled fish from the Maldives, and that the relatively larger fish observed in 2024 may be attributable to lower sampling levels and a greater representation of larger individuals compared with 2025.

22. The WPTT **REQUESTED** that the Secretariat clearly distinguish between anchored FAD (AFAD) and other FAD categories in analyses of Indonesian purse seine fisheries.

Presentation of EU data

23. The WPTT **NOTED** the suggestions to present catch and size-frequency information aggregated across all EU Member States rather than by individual Member State. However, the WPTT **NOTED** that Resolution 12/02 applies confidentiality provisions to fleets comprising three or fewer vessels, and **REQUESTED** further discussions between the Secretariat and the European Union to determine the most appropriate approach for presenting and interpreting these data while respecting confidentiality requirements.

3.2 FISHERY INDICATORS

24. The WPTT **NOTED** paper IOTC-2026-WPTT28-08 which provides a summary of the Port-in entry authorization processes and import statistics for tropical tuna in Thailand in 2025, with the following abstract provided by the authors:

> "As the world's leading processor and exporter of canned tuna, Thailand heavily relies on foreign raw materials to sustain its large-scale processing sector. To maintain supply chain integrity and ensure compliance with international regulations, Thailand has implemented a rigorous Port State Measures (PSM) framework. This study outlines Thailand's vessel port-entry authorization process and systematically analyses statistical data regarding tropical tuna imports for the year 2025. It details a robust monitoring mechanism comprising three stages: pre-authorization controls, strict vessel inspections during port calls, and oversight of transshipment and landing operations at processing facilities. Analysis of the landed tropical tuna volume reveals a total of 23,243.93 tonne, with a market value of 39.19 million USD. By species, Skipjack tuna accounted for the largest share of imports, totalling 15,454.10 tonne valued at 25.65 million USD, followed by Yellowfin tuna at 6,449.93 tonne (11.29 million USD) and Bigeye tuna at 1,339.90 tonne (2.25 million USD). In conclusion, the systematic integration of port control measures with smooth trade operations demonstrates that strict regulatory enforcement does not hinder commercial activity. Instead, it helps strengthen the traceability system, safeguard the country's biosecurity, and enhance the long-term sustainability of the Thai seafood industry in the global market."

25. The WPTT **NOTED** the importance of tropical tuna import to Thailand to support the processing sector, with skipjack accounting for the largest volume of imports in 2025 (15,454.1 t), followed by yellowfin tuna (6,449.93 t) and bigeye tuna (1,333.9 t).

26. The WPTT **NOTED** that the process in place at Thailand to implement Port State Measures framework, comprising a three-stage digitalized traceability chain that includes pre-port authorization, in-port vessel inspections, and factory-level offloading controls.

27. The WPTT **ENQUIRED** about the possibility of conducting an analysis for cross-checking species composition and weight declared at authorization, landing and at factory level and NOTED the usefulness of conducting such analysis in future presentations.

28. The WPTT **ENQUIRED** whether fishes are sampled to measure size at factory-level verification and control, when officials supervise fish sorting and sizing operations at the factory.

29. The WPTT **NOTED** paper IOTC-2026-WPTT28-09 which provides a summary of composition and spatio-temporal distribution of tropical tuna catches in the Madagascar fishing zone in 2024 and 2025, with the following abstract provided by the authors:

> "The Madagascar fishing zone is an important area for tropical tuna exploitation in the western Indian Ocean, where fishing activities are largely dominated by foreign fleets. Understanding catch composition and fishing patterns is essential for effective monitoring and sustainable resource management. This study characterizes tropical tuna catches in the Madagascar fishing zone during 2024 and 2025, focusing on longline and purse seine fisheries. Data were obtained primarily from Electronic Reporting System (ERS) declarations and vessel entry and exit records. The analysis examined catch composition and the spatial and temporal distribution of the main tropical tuna species: yellowfin tuna (YFT), bigeye tuna (BET), and skipjack tuna (SKJ). The results show marked differences between the two fisheries. Overall, SKJ dominated catches, accounting for 74.10% in 2024 and 69.16% in 2025, while YFT represented 12.84% and 23.95%, and BET 11.90% and 4.11%, respectively. Longline fishing showed a more diversified species composition and occurred throughout most of the year, with activity concentrated mainly along the eastern coast of Madagascar. Purse seine activity was strongly dominated by SKJ and was mainly concentrated in the northwestern part of the fishing zone, particularly during the first half of the year. These findings improve the understanding of tropical tuna exploitation patterns in the Madagascar fishing zone and provide useful information for fisheries monitoring and sustainable management"

30. The WPTT **NOTED** that while the Madagascar fishing zone is highly productive for tropical tunas, the fisheries operating in this zone are mainly foreign purse seine and longline vessels operating under protocols/specific agreements.

31. The WPTT **NOTED** that the data analyzed for the paper were obtained from the Electronic Reporting System, vessel entry and exit records, and VMS data.

32. The WPTT **NOTED** that purse seine gear accounted for the highest proportion of the tropical tuna catch, contributing 99% and 97% in 2024 and 2025 respectively, while longline contributed 1% and 3%, respectively.

33. The WPTT **NOTED** that the total tropical tuna catch was dominated by skipjack tuna, followed by yellowfin tuna and bigeye tuna. Purse seine catches comprised mainly skipjack and yellowfin tuna, while longline catches were dominated by yellowfin and bigeye tuna.

34. The WPTT **NOTED** that longline catches were distributed throughout the year, with most bigeye tuna caught in June and July, while yellowfin tuna catches peaked between May and July. The WPTT further **NOTED** that purse seine fishing was limited to January through June and December, with vessels moving out of the Madagascar fishing zone during the remaining months.

35. The WPTT **NOTED** the limited spatial overlap between longline and purse seine fishing operations. Longline fishing had a wider distribution and was concentrated mainly on the eastern side of the Madagascar EEZ, while purse seine operations were concentrated mainly in the western and northern areas of the EEZ.

36. The WPTT **NOTED** that catches by foreign vessels operating within the Madagascar EEZ under protocols/agreements are reported through their respective CPCs.

37. The WPTT **NOTED** that when presenting results and data, it would be more appropriate to present them by CPC rather than by individual company.

38. The WPTT **NOTED** the authors' assertion that the data and results presented should be interpreted with caution, as they represent indicative values and trends due to inconsistencies in reporting and data availability between the two years covered by the study.

39. The WPTT **NOTED** paper IOTC-2026-WPTT28-11rev1 which provides a summary of the research, policy, and livelihood goals for strengthening sustainable Tuna fisheries in India, with the following abstract provided by the authors:

> "India's Exclusive Economic Zone (EEZ), spanning over 2.02 million km² in the northern Indian Ocean, holds significant potential for oceanic tropical tuna fisheries, particularly yellowfin (*Thunnus albacares*) and skipjack (*Katsuwonus pelamis*). While these resources represent a crucial frontier for economic growth, India's tuna fisheries sector is dominated by traditional, artisanal, and small-scale fisheries. India's marine fisheries provide food and livelihood security to over 28 million stakeholders. Any management action implemented for a

particular resource within the ambit of India's multi-species fisheries will thus have visible impacts on the coastal communities that depend on these fisheries for income and food. To align with national goals of strengthening livelihood security and with the objectives of the Indian Ocean Tuna Commission (IOTC), India proposes a policy roadmap that integrates socio-economic stability with its marine fisheries management frameworks." See the paper for the full abstract.

40. The WPTT **NOTED** the information presented regarding the Minimum Legal Size (MLS) advisories adopted in India for tuna species. It was further **NOTED** that the primary objective of these advisories is to create awareness among fishers and other stakeholders on the importance of conserving fishery resources and reducing the harvest of juvenile fish. Several participants **OBSERVED** that, for MLS measures to be meaningful and effective as management tools, the prescribed sizes should be underpinned by robust biological information and stock-specific considerations. The effectiveness of MLS measures in gillnet fisheries where the majority of fish are dead at haul was also questioned.

41. The WPTT **NOTED** that India conducts stock assessments for tuna resources within its waters and uses the outcomes to provide management advice at regional scales. The WPTT **OBSERVED** that, given the highly migratory nature and ocean-wide distribution of tropical tuna stocks, assessments intended to inform the status of tropical tunas should consider their broader distribution across the Indian Ocean. It was however **ACKNOWLEDGED** that some neritic tuna species may exhibit regional stock structuring, in which case assessments conducted at sub-regional or national scales may provide useful management information.

42. The WPTT **NOTED** the information provided on fisheries monitoring programmes undertaken by India, including the collection of fishery landing statistics, length-frequency and size-composition data through the monitoring programmes overseen by the Central Marine Fisheries Research Institute (CMFRI). The WPTT further **NOTED** that this information along with the data generated on exploratory surveys conducted by the Fishery Survey of India (FSI) is integrated into national fisheries databases and reporting systems.

43. The WPTT **NOTED** that India's fisheries operate in a multi-species, multi-gear environment in which fishing gears are often designed to target particular species assemblages. However, target species may vary spatially and temporally, and not all fisheries consistently target the same resources throughout the year. The Working Party **NOTED** that species landed which are not the primary target of a fishing operation are generally considered bycatch, and that the magnitude and composition of bycatch may vary considerably among fisheries and gear types.

44. The WPTT **NOTED** that restrictions relating to the capture of endangered, threatened and protected (ETP) species, as well as other protected or ecologically important species, are regularly communicated to fishers and relevant stakeholders. The Working Party further **NOTED** that fisheries conservation and management measures in India seek to balance obligations arising from international and regional commitments with national socio-economic objectives, including the livelihood needs of coastal fishing communities.

45. The WPTT **NOTED** that the minimum size limit for skipjack applied by India differs from the size-at-maturity value currently used in the stock assessment.

46. **RECOGNIZING** the potential implications of these differences for management and assessment outcomes, the WPTT REQUESTED that India provide the biological data and analyses used to establish its minimum size limit for skipjack. The WPTT further **NOTED** that these data would contribute to a better understanding of skipjack biology and population dynamics in the Indian Ocean and support future assessment and management discussions.

47. The WPTT **NOTED** that paper IOTC-2026-WPTT28-12 was withdrawn as the author was unable to attend the meeting in person.

48. The WPTT **NOTED** paper IOTC-2026-WPTT28-15 which provides a summary of exploring ocean patterns and trends at your fingertips with the newly released Indian Ocean Digital Atlas, with the following abstract provided by the authors:

"The **IODA** is a newly developed digital platform that integrates oceanographic data from data-assimilative models and satellite observations with advanced visualisation tools into a single operational system. The platform provides free access to more than thirty years of environmental observations describing the physical

and biological state of the Indian Ocean. Updated monthly, IODA enables users to explore ocean variability, identify long-term trends, and analyse the effects of climate variability and climate change on marine ecosystems and ocean-based activities. In this paper, we present the datasets and main features of the atlas. This paper documents the achievements of the project in relation to its Terms of Reference and aims to foster ownership and uptake of the atlas within the IOTC scientific community."

49. The WPTT **NOTED** that the paper was presented by the IOTC Secretariat on behalf of the author who was unable to attend the meeting in person.

50. The WPTT **ACKNOWLEDGED** the excellent work by the authors of IODA and NOTED its usefulness for the inclusion of environmental considerations into fisheries science.

51. The WPTT **NOTED** that the use of IODA will be a valuable contribution to fisheries research and management, particularly through its capacity to support the integration of environmental information into stock assessments and other scientific analyses, as well as its ability to assist IOTC CPC governments to assess and better understand the impacts of environmental and oceanographic variability upon their fisheries in the IOTC area.

52. The WPTT **ENCOURAGED** users to contact the authors, should there be any features deemed helpful taking into account their specific scientific and management needs.

53. The WPTT **AGREED** that training sessions on the use of the tool will be useful to generate the uptake of the tool.

54. The WPTT **NOTED** IOTC-2026-WPTT28-28 which describes a prototype interactive tool for consolidating catch and effort data from IOTC national reports, with the following abstract provided by the authors:

"This paper presents a prototype interactive tool developed to consolidate catch and effort data extracted from IOTC national reports submitted by 28 CPCs, mainly covering the period 2020–2024. The tool provides a single interface to explore catch composition and effort by country, species, gear and vessel characteristics, and allows comparisons between selected CPCs" see the paper for the full abstract

55. The WPTT **NOTED** that the paper was presented by means of a pre-recorded video, as the author was unable to attend the meeting in person. The Chair then led the discussion of the paper.

56. The WPTT **REVIEWED** the paper examining the consistency between data presented in CPC National Reports and data submitted directly by CPCs to the Secretariat. The WPTT **NOTED** that discrepancies may arise for several reasons, including the fact that National Reports provide summary information, while official data submissions contain more detailed datasets.

57. The WPTT further **NOTED** that assessments are based on datasets available at a specific point in time, whereas historical revisions and updates are regularly undertaken by CPCs.

58. The WPTT **REITERATED** that National Reports provide valuable contextual information on fisheries, catch revisions, and changes in national reporting practices, and should therefore be considered an important reference source rather than a substitute for official data submissions.

59. The WPTT **NOTED** the development of a machine-readable application for National Reports, which could facilitate data extraction, validation, and cross-checking, NOTING that such a tool could improve the transparency, consistency, and usability of National Reports, while also helping to identify opportunities for enhancing reporting templates.

60. The WPTT **SUGGESTED** that the paper and associated application be presented to the WPDCS for review and feedback, particularly regarding its potential use in supporting data validation and improving reporting practices.

4. SKIPJACK TUNA STOCK ASSESSMENT

4.1 Review any new information on skipjack tuna biology, stock structure, fisheries and associated environmental data since the data preparatory meeting

61. The WPTT **NOTED** that there have been no updates with any new information on skipjack tuna biology, stock structure, fisheries and associated environmental data since the data preparatory meeting in June.

62. The WPTT **NOTED** paper IOTC-2026-WPTT28-16 which provides a summary of a preliminary study of the age and growth of skipjack tuna (Katsuwonus pelamis) in the Southern Waters of Java, Indonesia, with the following abstract provided by the authors:

> "This study estimated the population parameters, mortality rates, exploitation rate, and spawning potential ratio (SPR) of skipjack tuna (Katsuwonus pelamis) landed at 13 fishing ports along the Indian Ocean side of Indonesia from 2018 to 2021. A total of 126,994 fish were measured across seven fishing gear types, dominated by handlines (53.0%), purse seines (26.6%), and trolling lines (14.1%). Growth parameters were estimated at an asymptotic fork length ($L\infty$) of 78.48 cm, a growth coefficient (K) of 0.64 $year^{-1}$, and t0 of 0.54 years. Total mortality (Z), natural mortality (M), and fishing mortality (F) were 3.38 $year^{-1}$, 1.034 $year^{-1}$, and 2.35 $year^{-1}$ respectively, resulting in an exploitation rate (E) of 0.6956. Length-based SPR (LB-SPR) analysis revealed relative fishing mortality (F/M) at approximately twice the natural mortality (2.01–2.08). The estimated model SPR values remained around 18–20% (0.18–0.20) of unfished levels, with length at 50% selectivity (SL50) estimated between 30.85 cm and 31.73 cm. These findings provide essential biological evidence to support skipjack tuna assessment and fisheries management in Indonesia."

63. The WPTT **NOTED** the paper presented by Indonesia, which estimated spawning potential ratio (SPR) and population parameters for skipjack tuna from length and weight data collected by enumerators at 13 fishing ports during 2018-2021. The fisheries sampled were mostly handline and purse seine. The WPTT **NOTED** that F was approximately 2 x natural mortality and that SPR was consistently below 0.4.

64. The WPTT **DISCUSSED** the L50 maturity value used in the analysis and whether this was the same as that used in the SS3 assessment (39.9 cm). The presenter **RESPONDED** that this was not known and that they would return with the information.

65. The WPTT **NOTED** the large contribution of handline gear to total catches in Indonesian waters, and **DISCUSSED** that this was not the case in other areas of the Indian Ocean. The WPTT **NOTED** that the handline fishery in this area targets yellowfin tuna, as well as skipjack tuna.

66. The WPTT **NOTED** that SPR was estimated at between 18% and 20% which suggests the stock is overexploited in these waters. This is different to the SS3 assessment results, where the stock is estimated to be not overfished. The WPTT **NOTED** the presenter's explanation that there is high fishing pressure on the local skipjack stock in the eastern Indian Ocean. Additionally, the WPTT **NOTED** that LB-SPR assumes logistic selectivity only, and a dome-shaped selectivity may be more appropriate. LB-SPR cannot account for more than one selectivity pattern, which interacts negatively with the F/M and SPR estimates.

67. The WPTT **NOTED** paper IOTC-2026-WPTT28-17 which provides a summary of Opposite effects of positive and negative Indian Ocean Dipole events on skipjack tuna abundance and purse seine catch rates, with the following abstract provided by the authors:

> "The Indian Ocean Dipole (IOD) is a major mode of climate variability that can affect ocean conditions and tuna fisheries in the Indian Ocean. This study examines relationships between IOD variability, skipjack tuna recruitment and purse seine catch rates. Environmental data from the Indian Ocean Digital Atlas (IODA) were analysed together with the Dipole Mode Index (DMI), skipjack recruitment deviates and standardized purse seine CPUE. Empirical Orthogonal Function analysis showed clear IOD-related patterns in temperature, thermocline depth, dissolved oxygen and primary production. Recruitment deviates were positively related to the September–November DMI of the preceding year, with the model explaining 17.2% of the deviance. This indicates that positive IOD events may be followed by increased skipjack recruitment in the subsequent year. In the western Indian Ocean, purse seine CPUE decreased with increasing temperature at 78 m and increased

with integrated chlorophyll concentration in the upper 300 m. These results suggest that positive IOD events can affect the fishery through two distinct pathways: by influencing skipjack recruitment with an 8 to 10-month lag when the ocean productivity is enhanced, and by modifying the oceanographic conditions that affect purse seine catch rates. Monitoring the IOD and associated oceanographic conditions could therefore provide useful indicators for anticipating changes in skipjack recruitment and fishery performance"

68. The WPTT **NOTED** that the paper was presented by means of a pre-recorded video, as the author was unable to attend the meeting in person. The Chair then led the discussion of the paper.

69. The WPTT **NOTED** the presentation, which examined the response of ocean temperature, thermocline depth, oxygen, chlorophyll-a and net primary production to the Indian Ocean Dipole (IOD), and their relationship with skipjack recruitment deviates from the SS3 assessment and the purse seine (PS) CPUE index. The WPTT **NOTED** that estimated recruitment deviates correlated positively to a positive IOD in the previous year, and that PS CPUE declined with increasing temperature and increased with increasing productivity. The WPTT also **NOTED** that the IOD and El Niño are not always in phase, and that the Dipole Mode Index (DMI) might be considered as a potential predictor of recruitment and PS CPUE trends in subsequent years.

70. The WPTT **CONGRATULATED** the presenter on his work over many years, and **NOTED** that this work will be very useful for many exploratory and quantitative analyses.

71. The WPTT **AGREED** that environmental effects should be further considered in the next skipjack tuna assessment.

72. The WPTT **ASKED** whether the effects of a positive dipole on productivity could also apply to other pelagic species. It was **NOTED** that yellowfin tuna had been examined in previous years and the signals were less convincing. The analyses suggest that skipjack tuna may respond to environmental variables faster than the other tropical tunas.

73. The WPTT **NOTED** that environmental and recruitment correlations had not been tested against the other (non purse seine) CPUE and abundance indices owing to limited time, and that climate variables should not be included in both the CPUE standardisation and the IOD analysis. It was **NOTED** that the Maldives pole-and-line (MDV) CPUE should also be examined in future, and that recruitment variability is unlikely to be detected in CPUE indices composed only of larger fish, such as longline. The WPTT **NOTED** that pole-and-line CPUE may show a greater catchability influence because of the spatially "fixed" nature of the fishery, that may be more subject to subregional variability in oceanography and its impacts on local availability of tuna to the fishery, and **AGREED** that this was a good hypothesis to test.

74. The WPTT **ASKED** whether changes in oceanographic conditions would influence CPUE indices in different ways. The WPTT **NOTED** that the purse seine fishery operates mainly in a box in the western Indian Ocean, which drives the PS catches, and that the fleet would move to the eastern Indian Ocean if it could, but does not. The WPTT **NOTED** that an Indonesian CPUE index would provide a good contrast and may show an inverse pattern to the PS CPUE, as might the MDV CPUE. The WPTT **ACKNOWLEDGED** the value of regional CPUE indices and **ENCOURAGED** the development of more of them.

75. The WPTT **NOTED** that recruitment estimated from the model is driven by CPUE and is therefore confounded with variables such as catchability, and **REQUESTED** that cross-validation be run to test predictive capability before the relationship is used for projection. It was **NOTED** that the recruitment deviates were taken from SS3 and that the IOD explained about 15-20% of their variability, with the remainder probably attributable to catchability and other factors. The WPTT **NOTED** that the relationship could still be useful for improving the stock assessment model, and that it should continue to be investigated, and that a lag of about one year was apparent. The WPTT **ASKED** whether a direct observation of recruitment could be obtained from the fishery, and **NOTED** that the PS fishery is perhaps the most likely source of recruitment data.

76. The WPTT **NOTED** that the PS CPUE is the index closest to independent recruitment information. In theory, recruitment from the assessment model should be derived from the age and length data, but there is usually insufficient informative data in the model (the length data is often uninformative of recruitment), which is a problem.

77. The WPTT **NOTED** that correlations between the MDV CPUE and catch rates are also being examined, and that the same CPUE trends should not be expected from different areas. It was further **NOTED** that El Niño and the IOD are not in sync, but that El Niño also affects the temperature of the Indian Ocean. The WPTT **NOTED** that in 1997-1998, a year with both a positive IOD and El Niño, the fishery moved to the eastern Indian Ocean, and that such complex effects are not summarised by a single index.

4.2 Update on the nominal and standardised CPUE indices presented at the data preparatory meeting

78. The WPTT **NOTED** that there has been no update of the Standardised CPUE Indices since the data preparatory meeting in June.

4.3 Stock assessment results

79. The WPTT **NOTED** paper IOTC-2026-WPTT28-18 describing the preliminary Indian Ocean skipjack tuna stock assessment 1950-2025 (Stock Synthesis), including the following summary provided by the author:

> *"*The Indian Ocean skipjack tuna (*Katsuwonus pelamis*, SKJ) fishery is one of the largest tuna fisheries in the world, with total catches of ~ 400-600 thousand tonnes over the past decade. This report presents an integrated stock assessment for *K. pelamis* in the Indian Ocean in 2026, using data up to the end of 2025 (31st December 2025). The stock assessment is based on an update of the 2023 model, and is seasonally, and age-structured using catch rate indices, length compositions, tagging data, and catch data to inform estimates of spawning stock biomass (SSB) and fishing mortality (F), relative to estimated maximum sustainable yield (MSY). Additional metrics of SSB and F relative to a depletion target reference point of 40 % virgin biomass (0.4 B_0) are also provided." See the paper for the full abstract.

80. The WPTT **THANKED** Dr Genevieve Phillips, IOTC Stock Assessment Expert, for her excellent work and **CONGRATULATED** her on completing the skipjack tuna assessment.

81. The WPTT **NOTED** that the assessment approach involved three main steps: (i) developing a reference model and evaluating its performance through a range of diagnostics; (ii) conducting sensitivity analyses to identify the impact of alternative assumptions and configurations; and (iii) constructing a model grid to estimate stock status that captures the main sources of uncertainty.

82. The WPTT **NOTED** that the assessment is used to estimate stock status only, whereas management advice (TAC) for the skipjack tuna stock is provided through the adopted skipjack tuna management procedure (Resolutions 24/07 and 25/03).

Reference model and exploratory analyses

83. The WPTT **NOTED** that the previous reference model was updated through a sequential, step-wise process, which included updating the SS3 executable to the latest version and updating the observational data inputs and biological parameters (i.e. length-at-maturity). The updated reference model ("4_update_L50") was the starting point for further analyses and the exploration of model sensitivities.

84. The WPTT **NOTED** that the final year of the assessment model is 2025, with the catch, CPUE and length-frequency data updated to that year. The RTTP-IO tagging data were also included in the assessment, with no changes to that dataset.

85. The WPTT **NOTED** that the assessment model is spatially aggregated, with an annual time step divided into four seasons, and that the population is partitioned into eight age classes with no sex differentiation.

86. The WPTT **NOTED** that the available relative abundance indices were the Maldives pole-and-line CPUE (PL), the purse seine log-school CPUE (PSLS), the echosounder buoy index for juvenile skipjack tuna (BAI) and the associative behaviour buoy index (ABBI). The preliminary reference model included the PL and PSLS indices.

87. The WPTT **NOTED** that seven fisheries were defined in the model's fleet structure. Among them, the "Other" fishery is a composite group of miscellaneous gears and fisheries that do not fit into the major fishery groups, and the size structure of the fish caught by these gears can differ considerably, which is not ideal. The WPTT **NOTED** that the definition of this fishery had been reviewed in previous assessments, leading to several gears being

separated out (longline [LL], line [LI] and gillnet [GL]); however, the catch from the current "Other" fishery remains significant. The WPTT **SUGGESTED** that the "Other" group be reviewed further, and that gears with similar fishing characteristics operating in similar areas be combined where possible. The WPTT **NOTED** that, given the complexity of the gear and fleet composition of this group, refining the fleet definition to ensure that the size structure within each fishery group is as homogeneous as possible will require ongoing effort.

88. The WPTT **NOTED** that the reference model used a constant natural mortality (M) of 0.8, whereas the maximum age of 8 years assumed in the model implies an M of about 0.64, which the WPTT **SUGGESTED** could be explored. However, it was pointed out that assessments of skipjack tuna in other oceans have adopted considerably higher values of M. The WPTT further **NOTED** that the model is not particularly sensitive to the alternative form of M examined (Lorenzen M).

89. The WPTT **NOTED** that the reference model adopted a recruitment variability (sigmaR) of 0.3. This is an annual value, derived from a quarterly value of 0.6 as recommended by an earlier ISSF workshop on recruitment variability in tuna stocks. However, as the skipjack tuna stock is strongly driven by environmental conditions and recruitment variability is known to be very high, the WPTT **SUGGESTED** that a higher sigmaR (e.g. 0.6) be examined in a sensitivity run.

90. The WPTT **NOTED** that there are large variations in the length frequencies over time (e.g. the LI fishery appears to have caught some large fish in recent years, and the PL fishery shifted from large fish in 2024 to small fish in 2025). These variations result in poor fits to the length-frequency data, as the model assumes constant selectivity for all fisheries. The WPTT **SUGGESTED** that more flexible selectivity functions (e.g. time-varying selectivity) be explored. The WPTT **NOTED** that, although there is no compelling evidence that gear selectivity has changed over time for most fisheries, estimated selectivity may also reflect spatial changes in the distribution of the population and hence its availability to the fisheries. The WPTT **NOTED** that the IATTC has developed a decision analysis to assist in the choice of fishery selectivity functions.

91. The WPTT **NOTED** that a constant CV of 0.2 was adopted for both CPUE indices in the assessment model, as the CVs estimated by the standardisation models were considered too small to be realistic. However, a constant CV implies that the PL and PSLS indices are weighted equally. The WPTT **NOTED** that the weighting of multiple CPUE indices should take into account their representativeness (e.g. spatial coverage) and **SUGGESTED** that, in the absence of prior information, additional variance for the indices could be estimated within the model, allowing the CPUE indices to be weighted accordingly.

92. The WPTT **NOTED** that the large seasonal variability in the CPUE indices does not appear to be adequately accounted for in the model, as it assumes constant catchability across seasons, which may not be realistic (e.g. catchability for the PSLS index appears to be higher in season 2), although some of the variability is explained by seasonal recruitment distribution, growth and mortality. The WPTT **SUGGESTED** that seasonal catchability be explored in future, which may also help to examine whether there are conflicts in the abundance trends among seasons.

93. The WPTT **DISCUSSED** in detail the appropriate configuration of the available abundance indices (including the PL and PSLS indices in the reference model, and the BAI and ABBI indices examined in the exploratory analyses) in order to reduce bias while capturing the possible uncertainty.

94. The WPTT **NOTED** that, while the long-term trends of the PSLS and PL indices are similar, the indices have diverged over the last three to four years: the PL index has remained high, whereas the PSLS index has been much lower than in previous years. As a result, the reference model underestimates the PL index and overestimates the PSLS index for these years.

95. The WPTT **NOTED** that, while both the PL and PSLS indices are assumed to index the abundance of skipjack tuna in the Indian Ocean, they are derived from fisheries operating in different regions. The conflict may therefore reflect genuine differences in population trends among areas, which could be better accounted for in a spatially structured model.

96. The WPTT **AGREED** that, in a spatially aggregated model, it is preferable to avoid including conflicting indices (other than for diagnostic and comparative purposes in sensitivity analyses) in the same model, as this can cause model misspecification and lead to the conclusion that all indices are problematic. It would be preferable to include individual indices in different axes of the model grid to represent uncertainty in the different states of nature.

However, the WPTT also **NOTED** that, in the context of a model ensemble, including the two indices in separate sets of models may potentially lead to a bimodal distribution of estimates from the ensemble.

97. The WPTT **NOTED** that, of the additional abundance indices, the PL index is more strongly correlated with the BAI (both increasing over 2012–2024), whereas the PSLS index is more consistent with the ABBI (both declining from 2022 to 2025). The WPTT **NOTED** the view that similar indices should preferably not be included together in the model, to avoid duplicating information.

98. The WPTT **RECOGNISED** the need to develop new indices to complement the CPUE from commercial fisheries, and that indices such as the BAI and ABBI have been developed in response to this need. As these indices are still short and at an early stage of development, they are not sufficient to be used alone. The WPTT therefore **NOTED** the need for a structured way to assess the utility of such indices to encourage their further development, and **SUGGESTED** that the BAI and ABBI be formally included in sensitivity analyses to assess their utility and their potential conflict with the main indices.

99. The WPTT **NOTED** that several diagnostic analyses were applied to the reference model, including an age-structured production model (ASPM), likelihood profiles and retrospective analyses. The WPTT also **NOTED** a range of exploratory models, including runs investigating different configurations of the relative abundance indices, uncertainty in the catch data, uncertainty in biological parameters (growth and natural mortality), alternative model structures and alternative catchability assumptions

100. The WPTT **NOTED** that the exploratory analyses examined the effect of effort creep by applying a 1.25% annual increase in catchability, a value based directly on a study presented in 2018 (IOTC-2018-WPTT20-32). The WPTT **NOTED** that, while 1.25% is unlikely to be an accurate estimate, it could capture a plausible range of the effort creep known to have taken place in the fishery and should therefore be considered in the assessment. The WPTT also **POINTED** OUT that it would not be appropriate to assess the effect of effort creep in a model with conflicting indices, and that effort creep should be examined in models that include an individual index.

Sensitivities and final model grid

101. Based on the discussions, the WPTT **AGREED** that the following additional sensitivity analyses be conducted (changes are made with respect to the reference model):

- a model including the PSLS index only;
- a model including the PL index only;
- a model including the PSLS index only, with a 1.25% annual effort creep (catchability increase);
- a model including the PL index only, with a 1.25% annual effort creep (catchability increase);
- a model including both the PSLS and BAI indices (noting that they are conflicting); and
- a model including both the PL and ABBI indices (noting that they are conflicting).

102. The WPTT **DISCUSSED** the estimates of recruitment deviates from the models that included only the PL or the PSLS index, and **NOTED** the contrast in the estimates in recent years between the two models (Figure 1).

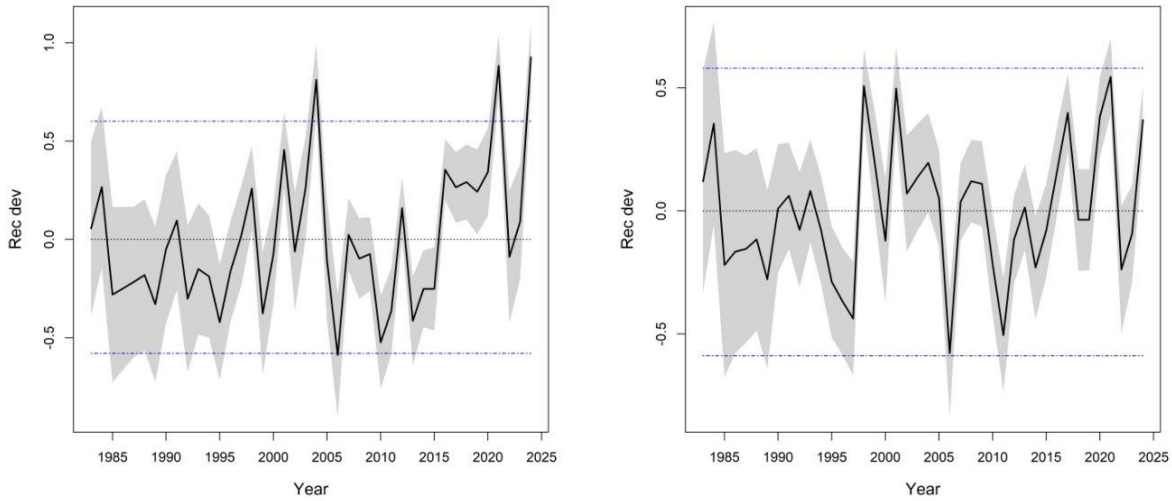

Figure 1. Estimates of recruitment deviates from the model that included only the PL index (left) or only the PSLS index (right).

103. The WPTT **AGREED** on the model ensemble to quantify stock status, which included alternative CPUE indices (PL or PSLS), alternative assumptions on CPUE catchability trends (annual increase of 0% or 1.25%), alternative values of stock–recruitment steepness (0.7, 0.8 or 0.9), alternative growth parameter options (Linf fixed or estimated) and alternative natural mortality options (Lorenzen functional form or fixed). A description of the model options is provided in **Table 2**. Estimates of stock status were combined across the 48 models using a multivariate normal approximation and are summarised in **Table 3**.

Table 2. Final model grid configuration.

Model options	Description
Steepness (h) in SRR	h70: h = 0.70
	h80: h = 0.80
	h90: h = 0.90
Growth	L^{∞} estimated in the model (with increased sample size from LL fleet)
	L^{∞} fixed at 70.3509 cm
Natural Mortality	Lorenzen functional form M with reference ages 1-7 yrs, and maximum age of 8 years.
	Fixed M of 0.80 for all ages
CPUE	Only PL index included
	Only PSLS index included
Catchability	q0: No catchability change
	q1: annual catchability increases of 1.25 % (both PL and PSLS)

Table 3. Estimated Status (with 80% CI) of skipjack tuna in the Indian Ocean from the model ensemble

Catch in 2025 (t):	732,675
Average catch 2021–2025:	670,815
MSY (t)	570 (505-683)
F_{MSY}	0.94 (0.64-1.4)
SB_0 (t):	2376 (1816-2865)
SB_{2025} (t):	1099 (805-1522)

SB_{MSY} (t)	520 (351-753)
SB_{2025} / SB_{MSY}	2.2 (1.28-3.64)
F_{2025} / F_{MSY}	0.59 (0.37-1.01)
$F_{40\%SSB}$	0.5 (0.41-0.6)
$Catch_{40\%SSB}$	506 (461-595)
$SB_{40\%SSB}$ (t)	949 (724-1153)
SB_{2025} / $SB_{40\%SB0}$	1.25 (0.71-1.77)
F_{2025} / $F_{40\%SB0}$	1.09 (0.79-1.77)
SB_{2025}/SB_0:	0.5 (0.29-0.71)

Further research work

104. The WPTT **NOTED** the request from the Commission in paragraph 16 of Resolution 24/07 in relation to SKJ productivity and the adopted Management Procedure.

105. The WPTT **NOTED** the intention to conduct some analysis based on the SKJ stock assessment completed during this meeting to help address this request, and the intention that this work be presented during the WPM meeting.

106. The WPTT **NOTED** that the BAI and ABBI indices were explored in the assessment but not included in the final models. However, as these methods are developed further, such indices are likely to become increasingly important for tropical tuna assessments. The WPTT **NOTED** that both indices are derived from echosounder buoy data from the same fishery and use similar methodologies, yet they show quite different trends. The WPTT **AGREED** that a detailed review of the methods is needed to understand these differences. The WPTT **NOTED** that the 2027 WPTT meeting will focus on yellowfin tuna and **AGREED** that, if the indices are to be developed for yellowfin tuna, the methods should be presented at the WPTT data preparatory meeting in 2027. The WPTT also **REQUESTED** that the WPM discuss and review the methods in detail. The WPTT **NOTED** that the Chair will liaise with the scientists involved in developing the indices to facilitate this review.

107. The WPTT also **REQUESTED** that the following aspects of the model be investigated in future iterations of the assessment:

- seasonality of catchability (q) for the abundance indices;
- increased CVs for the abundance indices, or estimation of additional process error;
- alternative maximum ages for the Lorenzen M (informed by biological studies);
- model self-testing using data simulated from the model estimates;
- dynamic MSY;
- time-varying selectivity for selected fisheries; and
- a multi-region model to address the recent CPUE divergence.

108. The WPTT **NOTED** paper IOTC-2026-WPTT28-27 describing an application of fishblicc model to the Indian Ocean Skipjack Tuna, including the following summary provided by the author:

> "This paper presents an example analysis of Indian Ocean skipjack tuna (Katsuwonus pelamis) length-frequency data using fishblicc, a Bayesian length-based catch curve model. fishblicc can accommodate fisheries with length-frequency data from multiple gears with different selectivities, and offers several alternative model formulations, including flexible selectivity functions that allow for gears targeting different sizes of fish. The model estimates fishing mortality by length bin and gear, as well as the spawning potential

ratio (SPR) for the population. Using length-frequency data alone, the four models implemented estimated SPR of approximately 49-71% for 2021-2025. By comparison, the SB/SB0 estimate for 2025 from the full stock assessment ranged from approximately 34% to 71%."

109. The WPTT **NOTED** the flexibility of fishblicc (https://github.com/PaulAHMedley/fishblicc) and its ability to model multi-gear fisheries with complex length-frequency distributions (e.g. multimodal). The WPTT further **NOTED** that this modelling framework could replace the traditional LB-SPR analyses for catch curve analyses, particularly given its inclusion of Bayesian uncertainty, its handling of mixed gear types and its flexibility in selectivity.

110. The WPTT **NOTED** that the choice of selectivity function for a length-frequency dataset (e.g. the form of the function, or the combination of function types in a mixture selectivity) is a modelling decision made by the user and generally requires an understanding of the processes that affect the vulnerability and availability of the fish population to the fishery. The WPTT further **NOTED** that model diagnostics can help in selecting the function.

4.4 Selection of stock status indicators for skipjack tuna

111. The WPTT **NOTED** IOTC-2026-WPTT28-26Presentation: "Is my red the same as your red?", which discusses the management framework for Indian Ocean skipjack, with the following abstract provided by the author:

"Fisheries management is based on the status of fish stocks and the scientific advice developed from stock assessments. Scientific advice is communicated using tables and figures and is often summarized using colours, which are a powerful tool to communicate information and trigger decision-making. However, a common understanding of what colours and stock status categories represent is necessary to ensure the adoption of scientifically sound management measures. We show that the characterization of the status of Indian Ocean skipjack tuna stock is flawed due to the inconsistent combination of overarching fishery principles (maximum use of stocks' productivity and reduction of risk) and the inaccurate representation of the scientific evidence available from recent stock assessments. Furthermore, we discuss how the general principles of fisheries management are applied in tuna RFMOs and propose a way forward for improving the communication of the status of tuna stocks in general. This discussion paper is specifically focused on Indian Ocean skipjack and aims at improving the management framework of the Indian Ocean Tuna Commission. However, our conclusions are applicable to fisheries management worldwide"

112. The WPTT **NOTED** that the paper recommends the adoption of Target Reference Points for tuna stocks at levels higher than BMSY. **NOTING** that there are additional considerations (e.g. ecosystem and associated species impacts, socio-economic factors) that can support setting higher biomass targets in tuna fisheries, the WPTT **NOTED** the general support not to modify the Target and Limit Reference Points adopted for Indian Ocean skipjack in Resolution 24/07.

113. The WPTT **NOTED** the recommendation from the Scientific Committee in 2025 not to use the target 40% SSB0 to determine stock status for skipjack tuna, **NOTING** that the SC is still in discussion regarding appropriate ways to define the status of this species. The WPTT **NOTED** that skipjack is a very productive species, and while it is not possible to produce robust estimates of BMSY for this species, the WPTT (taking account of that uncertainty) considers B40 to be above the biomass depletion points associated with BMSY and with recruitment impairment. Furthermore, WPTT **NOTED** that stock status should not be determined using the same reference point that is used as a target reference point in the skipjack management procedure.

114. The WPTT **NOTED** that the document recommends using BMSY (or a proxy) and FMSY (or a proxy) to categorize the status of Indian Ocean skipjack as it is done for the other tropical tuna stocks using the four quadrant Kobe diagram.

115. The WPTT **RECOMMENDED** that the SC report the status of Indian Ocean skipjack using the Kobe plot (MSY based) for consistency with the approach used for the other tropical tuna stocks in the IOTC.

116. The WPTT **NOTED** that the application of MSY has changed over time in global fisheries and while BMSY remains a sustainability benchmark (for delineating stock status) in many fisheries, management procedures can set targets at higher levels to meet other objectives (i.e., beyond sustainability). The WPTT **AGREED** to include probabilities of the stock being above MSY benchmarks but also Target (40% B0) and Limit (20% B0) Reference Points.

117. In agreeing to represent stock status for skipjack using BMSY and FMSY, for consistency with other tropical tuna species in the IOTC, the WPTT **RECOGNISED** however that there remains for skipjack significant uncertainty

around the estimates of MSY based reference points, due to factors that are not fully accounted for by the assessment grid approach. These include uncertainty in total catches and catch history trends, time varying fishery selectivity, the lack of any abundance index for the Eastern Indian Ocean where significant catches of skipjack are taken, and environmentally driven stochasticity in recruitment. With respect to the latter, the WPTT **NOTED** that consideration might be given to the use of dynamic reference points but this should take account of both potential benefits (e.g., taking advantage of periods of higher production) and risks (e.g., associated with implementation lags).

118. The WPTT **NOTED** that both the issues raised in the paper and in the subsequent discussion (in particular relating to catch estimates, selectivity and variable recruitment) have implications that extend beyond the management framework of skipjack, to the application of reference points in the assessment and management of other IOTC stocks.

119. The WPTT **RECOMMENDED** that the SC oversee a review of Resolution 15/10 and its application of the target and limit reference points and how they are used for the purposes of categorizing stock status and implementing management procedures for IOTC stocks.

120. The WPTT **REQUESTED** that the IOTC Secretariat update the draft stock status summary for skipjack tuna with the latest 2025 catch data, if necessary. The WPTT **RECOMMENDED** that the SC develop the stock status advice as part of the Executive Summary, following the review of the final assessment results:

- Skipjack tuna (*Katsuwonus pelamis*) – Appendix V

4.5 Consideration of exceptional circumstances of skipjack tuna management procedure

121. The WPTT **NOTED** the presentation IOTC-2026-WPTT28-19 which provides a summary of the review of exceptional circumstances for IO skipjack in 2026, with the following abstract provided by the author:

> "The IOTC adopted a Management Procedure for skipjack tuna during its Annual Meeting in 2024. This MP was used for the first time in 2025 to set catch limits for this important stock for the period 2027-2029. This document reviews recent data to help the IOTC's Scientific Committee evaluate if the implementation of the TAC for the period 2027-2029 may pose a risk to the sustainability of skipjack. The document highlights that the TAC for the period 2024-2026 (628,606 tons) was exceeded by 16% (excess of 100 th tons). The document also notes that the Maldivian Pole and Line and EU purse seine CPUEs indices remain within the simulated ranges in the MSE".

122. The WPTT **NOTED** that, with the latest data submission, the 2025 catch notably exceeded the TAC for the period 2024–2026. The 2025 catch was reported at 729,283 t, which is 16% above the TAC (628,606 t) and is considered an Exceptional Circumstance.

123. The WPTT **EMPHASIZED** the importance of the Commission ensuring that the catch limits set under the Management Procedure for this and other stocks are respected.

124. The WPTT **NOTED** that the two abundance indices remain within the range of values simulated in the MSE and that, if anything, the Maldives pole-and-line index is at the higher end of the simulated values.

125. The WPTT **NOTED** that the document reviewed only the catch and CPUE data, as required by the Commission in Resolution 24/07, and did not follow the three-stage process for evaluating Exceptional Circumstances (IOTC–2021–SC24, Appendix 6A), which comprises: (i) examining the evidence for exceptional circumstances; (ii) determining their severity and impact; and (iii) recommending any management or research action that should be taken.

126. Based on information reviewed to date, the WPTT did not identify any exceptional circumstances that warrant the change of the implementation of the skipjack tuna MP. However, the WPTT **RECOMMENDED** that the Commission ensure catches remain within the levels set under the adopted Management Procedure for this stock.

127. The WPTT **NOTED**, from this review and the stock assessment (IOTC-2026-WPTT28-18), that the productivity of the stock may have increased in recent years, and **REQUESTED** that the reasons for this (e.g. a positive recruitment phase, climate change or other factors) be investigated.

128. The WPTT **NOTED** that the CPUE input for running the skipjack MP is the mean of the PSLS and PL CPUEs, and not the individual CPUE series from each fishery, and that the mean CPUE should be compared with the mean used

in the MSE when reviewing evidence for exceptional circumstances. The WPTT therefore **REQUESTED** that the developer provide the data for the mean (and variance) of the PSLS and PL indices that were used in the MSE to allow the WPTT and WPM to complete the review of exceptional circumstances.

5. BIGEYE TUNA

5.1 Consideration of exceptional circumstances of bigeye tuna management procedure

129. The WPTT **NOTED** paper IOTC-2026-WPTT28-20 which reviewed the evidence available in 2026 for exceptional circumstances for the bigeye tuna MP with the following abstract provided by the author:

> *"As part of the implementation schedule of the Bigeye Tuna Management Procedure (Res 23/04), the Commission adopted an annual review of evidence for exceptional circumstances, i.e., issues that could make the application of the TAC advice risky to the stock or fishery. A three-stage process is followed: (i) examining evidence for exceptional circumstances, (ii) determining severity and impact, and (iii) recommending any management or research action that should be taken. This scientific process for developing appropriate management responses to exceptional circumstances provides transparency in TAC decision making by the Commission. This year, 2 new, and 2 existing, exceptional circumstances were identified".*

130. Based on information reviewed to date, the WPTT did not identify any exceptional circumstances that warrant the change of the implementation of the bigeye tuna MP. The WPTT **NOTED** that catch in 2024 and 2025 exceeded the agreed TAC in Resolution 23/04, which may negatively impact the stock. The WPTT further **NOTED** the uncertainty in catches and changes in catch reporting. The WPTT **RECOMMENDED** that the Commission and Compliance Committee review the catches, enact the relevant mechanisms in Resolution 23/04, and ensure total catches are below the TAC.

131. The WPTT **NOTED** that the 2025 stock assessment estimates of SSB depletion differ from OMs and previous assessment, primarily from changes to natural mortality parameters used in the 2025 assessment. The WPTT NOTED that severity and impact on the stock and fishery are considered low given that: i) SSB depletion is close to the lower end of the range of the MSE OMs for most of the time series, and within that range for the projections period, ii) stock assessment models will continue to evolve and changes are expected, and iii) the stock is approaching a non-overfished state and is not subject to overfishing. The WPTT **NOTED** that natural mortality and growth parameters used in the 2025 assessment are not used in operation of the MP. There is no impact on TAC advice and, therefore, no action is recommended. The natural mortality parameters will be reviewed at the next stock assessment scheduled for 2028.

132. The WPTT **NOTED** that two exceptional circumstances identified in 2025 also remain: 1) small differences between the 2025 CPUE standardisation and the method specified for the bigeye tuna MP, and 2) updated catch information compared with the data used in the MP. The WPTT **NOTED** that neither of these has an impact on the TAC advice.

133. The WPTT **NOTED** that the BET joint CPUE series would be needed in 2027 to run the BET MP. The WPTT also **RECALLED** the 2025 SC recommendation for development of fixed code for the CPUE standardisation for the MP.

6. YELLOWFIN TUNA

6.1 Update of yellowfin tuna management procedure

134. The WPTT **NOTED** an update on the ongoing management strategy evaluation (MSE) for yellowfin tuna (IOTC-2026-WPM17-17), focusing on the development of the operating models (OMs). The WPTT **NOTED** that the work was based on decisions taken at the MSE Taskforce meeting in 2026, and that FLBEIA (Garcia 2017) was the chosen modelling framework for the MSE simulations. The current stock assessment model (SS3) was the basis for the OMs presented, and its outputs were converted using the ss3om package in R.

135. The WPTT **NOTED** that, to date, 12 OMs have been set up using a range of input data and parameter options, including different values of stock–recruitment steepness, splitting of the CPUE index and the inclusion of technological creep in the CPUE index. These OMs were used for sanity checks, such as comparing model outputs and changes in stock status between FLBEIA and SS3. The WPTT **NOTED** that a few trial projections were run with the 12 OMs under different fishing regimes: no catches, fishing at status quo levels and fishing at FMSY.

136. The WPTT **NOTED** that, in addition to the 12 OMs, a SPiCT model was parameterised as a potential candidate estimation model, assuming that the stock was at virgin biomass in 1950 (the start of the time series). The WPTT **NOTED** that the SPiCT results were similar to the range of the OMs.

137. The WPTT **NOTED** that the use of SPiCT can complicate the conversion of outputs back to the absolute scale, but also **ACKNOWLEDGED** that using a different model avoids self-checking of the existing assessment model.

138. The WPTT **NOTED** that no uncertainties were included in the current simulations and **AGREED** that future work will require guidance on which sources of uncertainty should be included. The WPTT **NOTED** that the intention to use the recruitment deviations estimated in the model runs is a good starting point.

139. The WPTT **AGREED** that the forums for providing further input on specific aspects of the MSE would be, first, the WPM and then the MSE Taskforce meeting.

140. The WPTT **NOTED** that the application of the management procedure (MP) resulting from the MSE is likely to be restricted to the calculation of TACs and catch limits, and **AGREED** that any extension to management decisions that would change fleet or gear composition is a matter for the Commission or the TCMP.

6.2 Other

141. The WPTT **NOTED** paper IOTC-2026-WPTT28-21 which provides an update of the schedule for a close-kin mark-recapture study on Indian Ocean yellowfin tuna, with the following abstract provided by the author:

> "A close-kin mark-recapture (CKMR) design study completed in 2022 estimated that the collection of approximately 30,000 samples per year from Indian Ocean yellowfin tuna, over a five-year period, would provide an estimate of absolute abundance of spawning adults with an acceptable level of precision. In 2023, the Scientific Committee recommended that pursuing a CKMR project for yellowfin tuna should be a high priority for the Commission, and a staged approach for implementing the project was proposed. Since 2023, sampling activities have commenced through a pilot program in Pakistan, but broader implementation of the proposed staged approach has otherwise remained limited. This paper summarises progress to date and provides an updated schedule for the implementation of a CKMR project for yellowfin tuna, building on the staged approach proposed in 2023. The Working Party on Tropical Tunas is invited to provide feedback and support on the updated schedule."

142. The WPTT **NOTED** that existing national sampling programmes, such as that of India, could provide opportunities to establish CKMR sampling, which could then be scaled up where required. The WPTT ENCOURAGED the authors to engage with other CPCs and organisations to identify similar opportunities.

143. The WPTT **NOTED** that no preliminary results are yet available on the level of DNA contamination in samples collected from the Pakistan pilot sampling programme, but that previous sampling in Pakistan produced relatively low levels of sample contamination.

144. The WPTT **NOTED** concerns that the number of samples proposed for yellowfin tuna appears similar to that used for other species such as southern bluefin tuna and albacore, despite the yellowfin tuna population being roughly ten times larger. However, the WPTT **NOTED** that the number of samples collected in other programmes does not necessarily reflect the number required by their designs, and that sampling periods also differ (e.g. three years compared to five years). Furthermore, because doubling the sample size quadruples the number of pairwise comparisons, the required sample size does not scale linearly with population size. The WPTT also **NOTED** that the southern bluefin tuna sampling relates to the juvenile gene-tagging programme rather than the CKMR programme.

145. The WPTT **NOTED** that the scoping budget presented when the project was first identified as a priority was approximately USD 1.2 million, and that the total cost of the project would be considerably higher. The WPTT **NOTED** that the authors are not seeking funding from the IOTC, but are pursuing external funding opportunities.

146. The WPTT **NOTED** that, although the design is based on a five-year sampling period, the analysis would provide annual estimates of abundance, with differing levels of precision.

147. The WPTT **NOTED** that once a CKMR programme is started there may be pressure to continue it to provide an ongoing index of abundance. However, the WPTT **ACKNOWLEDGED** that the appropriate duration of the programme depends on its purpose, i.e. whether it is intended to provide a point estimate in time to anchor the stock assessment or to provide ongoing monitoring of abundance.

148. The WPTT **NOTED** that, although samples are collected over a five-year period, CKMR can also provide information on abundance in earlier years, given that the estimates are based on the years in which juveniles in each POP were born.

149. The WPTT **NOTED** that either fresh or frozen samples can be used to extract suitable quality DNA for CKMR.

150. The WPTT **NOTED** that more distant kin relationships, such as grandparent–grandchild pairs, could in principle provide additional information, but that these are difficult to distinguish from half-sibling pairs. The WPTT **NOTED** that POPs and HSPs currently provide the most informative data.

151. The WPTT **NOTED** that meeting sampling targets in every region is not critical to estimating abundance, but that regional sampling is useful for understanding the spatial structure of the population, and that some information on these aspects can still be obtained if targets are not met in all regions. The WPTT **WELCOMED** the offer from the Maldives to participate in the sampling.

152. The WPTT **NOTED** that several related sampling initiatives are about to commence, and that their objectives include identifying CPCs to implement sampling for genetic analyses, providing opportunities to support the CKMR project.

153. The WPTT **NOTED** the challenges of establishing and maintaining biological sampling programmes, including achieving adequate spatial and temporal coverage and sustaining funding and staff over time, which can cause breaks in data collection. The WPTT **AGREED** that coordination of biological data collection across programmes within the IOTC, for all purposes, would be beneficial, and **NOTED** that the common tissue bank in the Pacific provides a useful model.

154. The WPTT **NOTED** paper IOTC-2026-WPTT28-22 which summarises the results from the implementation of a pilot study in Pakistan for the collection of tissue samples to support a CKMR project for yellowfin tuna, with the following abstract provided by the authors:

> "WWF-Pakistan carried out a pilot project to test whether sampling of Indian Ocean yellowfin tuna (*Thunnus albacares*) for close-kin mark-recapture can be sustained from commercial landings in the northern Arabian Sea. The project was implemented with technical guidance from CSIRO and institutional support from the Marine Fisheries Department (MFD), Government of Pakistan. It responds to the staged approach to yellowfin CKMR set out in IOTC scientific work, which calls for sampling logistics, traceability, tissue preservation and contamination control to be tested before any large multi-year programme"

155. The WPTT **NOTED** that the paper was presented by means of a pre-recorded video, as the author was unable to attend the meeting in person. Dr Ashley Williams (author of paper IOTC-2026-WPTT28-21) then led the discussion of the paper.

156. The WPTT **NOTED** that otoliths were collected during the Pakistan sampling for ageing, but that alternative approaches will also be required given the large sample sizes required for CKMR and the difficulties in collecting otoliths from all fish. The WPTT **NOTED** that proxies for age, such as length, can be used for the smaller fish, but that alternative methods, such as epigenetic ageing, may be a better alternative to provide age estimates for all fish.

157. The WPTT **NOTED** that the 50 cm length threshold used to distinguish juveniles in the modelling was chosen for convenience, on the basis that fish below this size are unlikely to have moved far from where they were spawned. The WPTT also **NOTED** that fish of all sizes are useful for CKMR, including those between the size thresholds used to distinguish between adults (>75 cm) and juveniles (<50 cm).

158. The WPTT **NOTED** that precise capture locations were not available for the sampled fish and are unlikely to be available in future. While more precise location information would be preferable, the WPTT **NOTED** that the capture area can still be identified with sufficient resolution to be useful.

159. The WPTT **NOTED** that the total cost of the study, including whether it covered the purchase of fish and staff costs, was not known at the time of the meeting.

160. The WPTT **NOTED** that sampling should include mature fish (e.g. larger than 100 cm) and **ENCOURAGED** future sampling to ensure adequate coverage of mature size classes.

161. The WPTT **NOTED** paper IOTC-2026-WPTT28-23 which provides an update of the tagging data analysis of yellowfin tuna, with the following abstract provided by the author:

"This report presents progress on the collaborative IOTC–DTU project to estimate movement, mortality and abundance of yellowfin tuna in the Indian Ocean from tagging data. The project responds to the recommendation of the 2023 independent review of the yellowfin assessment to analyse the tagging data outside the assessment with a fine-scale spatio-temporal model. Movement is described by an advection–diffusion model with three components: diffusion, taxis towards preferred habitat defined by environmental fields, and advection by ocean currents. The model is fitted with a continuous-time Markov chain on a projected grid and is implemented in the R package admove. Several developments were needed to fit the Indian Ocean data. The main ones are uniformisation for the matrix exponential, shared calculations for tags released together, ocean currents as an advection field, and spline-based preference functions. Eight model configurations were fitted to 3389 recaptured tags. Most of these tags were released off Tanzania and Kenya and recaptured by purse seiners. The effect of currents is the most robust result: about a third of the current velocity in the upper 75 m is transferred to the fish. The estimated habitat preferences are not robust. They change when diffusion depends on temperature and when the grid is refined, and a temperature field mirrored east–west fits better than the real one. The recaptures stop where purse-seine effort stops, so the preference functions largely describe the distribution of fishing effort. The next step is to include fishing effort, tag reporting rates and tag loss in the likelihood, before the Part I report at the end of 2026."

162. The WPTT **THANKED** the authors for commencing this comprehensive analysis of the yellowfin tuna tagging data outside the assessment model, as recommended by the 2023 independent review of the yellowfin tuna stock assessment.

163. The WPTT **NOTED** that the purpose of the tagging model is not to evaluate the appropriateness of the spatial structure of the assessment model, but to evaluate whether the tagging data can be used to provide an index of abundance.

164. The WPTT **NOTED** that a further advantage of the tagging model is that natural mortality and fishing mortality can be included as estimated parameters.

165. The WPTT **NOTED** that the authors plan to include length classes in the model, to account for the high proportion of juveniles in the tagging data and for differences in recapture rates among size classes.

166. The WPTT **NOTED** that yellowfin tuna undertake diurnal vertical migrations, but that the model is not intended to capture dynamics at this fine temporal scale.

167. The WPTT **NOTED** that the stock assessment currently groups fleets according to selectivity, and that these groupings could provide a starting point for defining fleets in the tagging model.

168. The WPTT **NOTED** that tag reporting rates are likely to vary among fleets and regions. While no dedicated studies have estimated reporting rates, some model-based estimates are available. The tagging model can also estimate reporting rates to some extent, but not separately for each of the approximately 20 fisheries.

169. The WPTT **NOTED** that piracy affected the distribution of fishing effort during the period and in the area in which fish were tagged and recaptured, but that this can be accounted for in the tagging model by using the effort data held by the IOTC Secretariat.

170. The WPTT **NOTED** that the tagging programme was conducted over a relatively short period, some time ago, and that the population estimates from the tagging model will therefore be limited to that period. However, the WPTT **ACKNOWLEDGED** that an independent estimate of abundance at a fixed point in time would still be of considerable value, for example as a reference point for the stock assessment.

7. FAD RELATED TOPICS

7.1 Update from the FAD Working Group

171. The WPTT **NOTED** that the 8th Working Group on FADs meeting (WGFAD08) was held online 9th to 10th June.

172. The WPTT **NOTED** the summary by WGFAD Chair of the discussions and agreements that were achieved during the WGFAD08 meeting.

173. The WPTT **NOTED** the WGFAD main conclusions to (i) prioritize the development of practical and scalable DFAD marking guidelines in support of Resolution 24/02, drawing on operational experience and existing international initiatives, (ii) to review Form 3DA through standardized reporting formats and clearer definitions, to develop a

harmonized buoy ID coding system for the FAD Register, and to strengthen data collection and management systems for AFADs.

174. The WGFAD **AGREED** to assess the feasibility, cost-effectiveness, and environmental performance of different FAD recovery programs, including their carbon footprint, and to evaluate potential improvements to biodegradable FAD designs to minimize ecological impacts, including impacts on coral reefs. The WPTT **NOTED** that it will be required to also address economic implications and indicators in addition to the ecological indicators when FAD recovery options are discussed. The WPTT further noted the benefits of biodegradable FADs and recommended continued improvements in design, recovery potential, coral reef impact reduction, and the application of life cycle assessment and biodegradability standards. However, the WPTT also **NOTED** that biodegradable materials durability and availability should also be discussed when biodegradable FAD implementation is evaluated.

175. The **WPTT NOTED** that for biodegradable DFADs experiments are ongoing in the IOTC area to test the performance of new biodegradable DFAD designs and that there are still no biodegradable alternatives to replace all parts of the DFAD and obtain a fully biodegradable DFAD with adequate functional lifetime, particularly for the floats that are indispensable to assure the floatability and functionality of the device.

176. The WPTT **NOTED** that the current FAD register only allows corrections to registered information within 24 hours of the initial registration of a new FAD. The WPTT further **NOTED** that errors in buoy identification codes, particularly when buoys are replaced or transferred between owners, may prevent the correct recording of such transfers. Consequently, these events often need to be recorded as new FAD deployments, potentially resulting in inaccuracies in the monitoring of FAD deployments, ownership changes and the tracking of individual FAD structures.

177. The WPTT **REQUESTED** that the Working Group on FADs (WGFAD), in collaboration with the IOTC Secretariat and developers of the DFAD register, evaluate the implications of these limitations and explore the feasibility of introducing a mechanism to correct or update registered information beyond the current 24-hour period. Such a mechanism would facilitate the accurate recording of buoy replacements and transfers of ownership while maintaining the traceability of individual FAD structures and avoiding the erroneous registration of new deployments.

178. The WPTT further **NOTED** that these issues are primarily related to compliance and AGREED that they should also be brought to the attention of the IOTC Compliance Committee and the Commission for their consideration, as appropriate.

179. The **WPTT NOTED** that the entangling material is nowadays forbidden for DFAD construction. The group discussed whether the 3DA should maintain this data collection field. The Secretariat and the WPTT clarified that this information is used to evaluate the entangling potential of the devices in the water and to assess the effectiveness of the mitigation measure implemented on reducing the entanglement risk for ETP species.

7.2 Commission requests to the SC on FADs (all)

7.2.1 Resolution 24/02 On Management of Drifting Fish Aggregating Devices (DFADs) in the IOTC Area of Competence

180. The WPTT **NOTED** paper IOTC-2026-WPTT28-24 which provides a summary of the progress towards the Development of FAD Marking Guidelines in the IOTC, with the following abstract provided by the authors:

> "*IOTC Resolution 24/02 requires that all DFADs deployed from 1 January 2026 carry a permanent unique identifier and mandates the development of standards for DFAD marking. These standards are to be developed by the Scientific Committee, following preparatory work by the WGFAD and in close collaboration with the IOTC Secretariat. In addition, Resolution 23/01 requests the marking of AFADs and provides interim guidance pending the operationalization of the FAO Voluntary Guidelines on the Marking of Fishing Gear. In response, this document reviews existing marking guidelines and previous DFAD marking initiatives, identifies operational challenges in the IOTC area, and proposes options to support the development and adoption of practical IOTC DFAD marking guidelines. Given that DFAD structures frequently remain submerged and that buoy exchanges occur regularly during fishing operations, the authors propose locating the mark on the surface, specifically on the first float after the echosounder buoy, using a simple physical tag with printed or handwritten waterproof inscriptions. In addition to the FAD identifier, the inclusion of a QR code is suggested*

as an alternative means of accessing the DFAD identification number. A second marking point is also proposed on the deepest section of the DFAD to facilitate identification in the event that components become detached. The feasibility of these and alternative marking options should be evaluated by DFAD users through intersessional work and reported to the next WGFAD. The paper further recommends that the WGFAD initiate work on marking guidelines for AFADs"

181. The WPTT **NOTED** that DFADs operating in the IOTC area should be marked using the unique DFAD identifier (UDI) assigned through the IOTC DFAD Register, and that any marking scheme should incorporate this identifier. The Group agreed that markings should be placed on the surface to enable vessels to identify DFADs without interacting with submerged components. The WPTT further **NOTED** that the link between the DFAD identifier and the buoy identifier should be maintained in order to ensure traceability throughout the DFAD lifecycle, including identification of the deploying purse seiner that is assigned to the instrumented buoy and successive users. The Group **NOTED** that the last user of a DFAD should be considered the last responsible user.

182. The **WPTT NOTED** that DFAD identifiers are often assigned shortly before deployment and that operational and logistical constraints prevent the routine production of QR codes at sea. In practice, identifiers are generally inscribed manually. Consequently, while QR codes could provide additional support for data collection and traceability, their implementation is currently not considered operationally feasible.

183. The **WPTT NOTED** that Seychelles have experience with the NAOs beacons and will present the results during the WGFAD meeting. The **WPTT NOTED** that the financial implications of alternative marking schemes should be taken into account when evaluating and recommending marking options. The **WPTT REQUESTED** that proposed guidelines should focus on addressing the marking requirements set out in Resolution 24/02, providing a practical framework for DFAD identification while maintaining a clear focus on marking rather than tracking or other management measures.

184. The **WPTT NOTED** that DFAD marking may require the inclusion of a durable component during the transition towards biodegradable DFADs. The **WPTT NOTED** that the mark could be installed in a visible location attached to the float, which remains at the sea surface throughout the functional lifetime of the DFAD. The WPTT **QUESTIONED** whether the rope linking the DFAD to the echosounder buoy should be made of durable material as a precautionary measure to ensure the continued connection between the buoy, the mark, and the DFAD.

185. The WPTT **RECOMMENDED** the establishment of an intersessional expert group, comprising DFAD users and other interested stakeholders, to co-develop DFAD marking guidelines through dedicated virtual meetings and correspondence. Interested participants are encouraged to contact the IOTC Secretariat and the Chair of the WGFAD. A draft set of DFAD marking guidelines should be presented at the next session of the WGFAD for review and consideration.

7.2.2 Resolution 23/01 on the management of anchored fish aggregating devices (AFADs)

186. The WPTT **NOTED** presentation IOTC-2026-WPTT28-25Presentation: Anchored FADs: relevance of the use and overall impact on juvenile tuna and the environment, with the following abstract provided by the authors:

"*The work provides a global overview of anchored FAD (AFAD) fisheries, with a particular focus on the Indian Ocean, assessing their distribution, socio-economic importance, impacts on tuna behaviour and juveniles, environmental effects, and existing management measures. AFAD fisheries are mainly concentrated in tropical and subtropical regions and are increasingly used, particularly by small-scale fisheries, although information on deployment numbers and locations remains scarce and often inconsistent with reported data. In the Indian Ocean, at least 10 IOTC CPCs are known to deploy AFADs, but reporting remains incomplete. While AFADs clearly aggregate tuna, their contribution to juvenile tuna catches remains unknown due to a lack of distinguishing the catch coming from free to AFAD schools. Bycatch, and ETP species interaction remain poorly quantified due to limited monitoring and observer coverage. The report highlights substantial knowledge gaps and uncertainties, particularly regarding ecological impacts and socio-economic benefits, and recommends strengthening data collection, monitoring programmes, and management frameworks to support evidence-based AFAD governance, including development AFAD register, increasing observer coverage and increasing biodegradable material proportion in AFAD*"

187. The WPTT **NOTED** that the report considers that "the influence of AFADs on the sustainability of commercial tuna populations remains highly uncertain, mainly due to the lack of operational data detailing set-by-set activity,

including information on whether sets are made on AFADs or free school and estimates approximately 18% of juvenile bigeye tuna and 11% of juvenile yellowfin tuna are taken on anchored FADs (AFADs)".

188. The WPTT **NOTED** that the report estimates approximately 18% of juvenile bigeye tuna and 11% of juvenile yellowfin tuna are taken on anchored FADs (AFADs). It was further **NOTED** that all baitboat catches may have been treated as AFAD-associated catches. While the report acknowledges this likely overestimates AFAD juvenile catch, it was **FURTHER NOTED** that these figures should be presented as upper-bound estimates rather than average estimates.

189. The **WPTT** also **NOTED** that both anchored and drifting-FAD purse-seine fisheries contribute to juvenile bigeye and yellowfin catches and, thus, the relative scale of all gears' juvenile mortality should be reflected in the interpretation of the results. The WPTT also noted that although drifting FADs' contribution is larger, the reporting and monitoring are much more comprehensive compared to anchored FADs.

190. The **WPTT** further **HIGHLIGHTED** that the study's principal finding is a data gap concentrated in a single AFAD fishery in the IOTC area for which significant AFAD-associated catches are not currently monitored. This finding in turn HIGHLIGHTED the need to better document and monitor AFAD fisheries to ensure their sustainable management. It was **NOTED** that AFAD arrays in the Maldives, Mauritius, Réunion and Mayotte are government-managed, comprise relatively small numbers of devices, and operate under established management plans, whereas Comoros has approximately 16 AFADs deployed but has not yet submitted a management plan or associated data to the IOTC. The **WPTT** therefore **REQUESTED** that conclusions at the Indian Ocean scale reflect these differences in both scale and data availability.

191. The **WPTT NOTED** the importance of Indonesian AFAD catch which can be as high as 72% of the total catch of Indonesia. This is very important to consider during the stock assessment as more than one gear (PL, PS, etc…) catch using AFADs and it will be very important to identify the catch that is coming from AFAD for selectivity purposes.

192. The WPTT **NOTED** that the paper concludes with several recommendations including regarding AFAD management plans and data reporting. The **WPTT NOTED** that the submission of catch and effort data by fishing mode (i.e., AFAD - schools in association with floating objects vs free swimming schools) is already a requirement based on Resolution 15/02 and the submission of catch data from AFAD is a requirement in Resolution 23/01 on AFAD Management, and hence, the **WPTT REQUESTED** those CPCs with anchored FAD fisheries that haven't been submitting catch and effort by fishing mode to submit these data to improve data available for IOTC science processes and assessments.

193. The WPTT **ACKNOWLEDGED** that the presentation of the paper at the working party is the first communication at the IOTC of this report and **AGREED** that further work on AFADs and the recommendations of this report should be undertaken within the WGFAD, where managers and relevant stakeholders are expected to participate. The WPTT **REQUESTED** the WGFAD to include the review of this report and its recommendations on its agenda for 2027.

194. The **WPTT** also **NOTED** that the AFAD resolution requests the SC to develop some AFAD indicators, the **WPTT NOTED** that this has not been done and that this should be done in priority. The **WPTT REQUESTED** the WGFAD to include also this task on its agenda for 2027.

195. The WPTT **NOTED** that although the paper is presented as a global assessment of FAD fisheries, approximately 80% of its content focused on one particular IOTC CPC. As such, the WPTT NOTED Indonesia's clarification that national regulations governing FAD use are already in place, including provisions concerning environmentally appropriate construction materials. The **WPTT further NOTED** that assessments of FAD-related environmental impacts should consider the existing regulatory framework and distinguish between regulatory requirements, their implementation and potential non-compliance issues. The **WPTT** further **NOTED** the comment from Indonesia on the socioeconomic importance of FADs, particularly for small-scale fisheries and coastal communities, and the need to balance environmental sustainability with the livelihoods of fishing communities.

196. The WPTT WAS **INFORMED** about Indonesia's ongoing efforts to strengthen FAD management, minimise environmental impacts and promote responsible and sustainable fishing practices. It was **FURTHER INDICATED** that further information on regulatory developments, management measures and implementation progress would be provided through the relevant IOTC processes, including the Compliance Committee and the Working Group on FADs, as appropriate.

197. The WPTT **NOTED** the challenges associated with the use of biodegradable materials in anchored Fish Aggregating Devices (AFADs), given that these devices are intended to remain operational for extended periods. However, the WPTT **UNDERLINED** that certain components of AFADs could potentially be constructed using biodegradable materials (e.g., ropes, buoys, etc.) without compromising their durability and functionality.

8. WPTT PROGRAM OF WORK

8.1 Revision of the WPTT Program of Work (2027–2031)

198. The WPTT **NOTED** paper IOTC-2026-WPTT28-05, which provided an opportunity to consider and revise the WPTT Program of Work (2027–2031), by taking into account the specific requests of the Commission, Scientific Committee, and the resources available to the IOTC Secretariat and CPCs.

199. The WPTT **RECALLED** that the SC, at its 18th Session, made the following request to its working parties:

> *"The SC REQUESTED that during the 2016 Working Party meetings, each group not only develop a Draft Program of Work for the next five years containing low, medium and high priority projects, but that all High Priority projects are ranked. The intention is that the SC would then be able to review the rankings and develop a consolidated list of the highest priority projects to meet the needs of the Commission. Where possible, budget estimates should be determined, as well as the identification of potential funding sources." (SC18. Para 154).*

200. The WPTT **REQUESTED** that the Chairperson and Vice-Chairperson of the WPTT, in consultation with the IOTC Secretariat, develop Terms of Reference (TOR) for each of the high priority projects that are yet to be funded, for circulation to potential funding sources and the SC for consideration.

201. The WPTT **RECOMMENDED** that the SC consider, amend as necessary, and then endorse the WPTT Program of Work (2027–2031), as provided in Appendix VII.

8.2 PLAN FOR YFT ASSESSMENT IN 2027

202. The WPTT **NOTED** that the Secretariat presented the proposed plan for the next yellowfin tuna stock assessment. The presentation reviewed the previous assessment, conducted by AZTI using Stock Synthesis (SS3), which concluded that the stock was neither overfished nor subject to overfishing.

203. The WPTT **NOTED** that the proposed timeline for the next assessment includes the provision of CPUE indices to the assessment team by the end of June 2027 and the submission of catch data, including data for 2026, by the end of August 2027. The WPTT **NOTED** that the Secretariat's stock assessment expert will lead the implementation of the assessment using SS3, and that interested participants were invited to contribute to the work.

204. The WPTT **NOTED** that alternative modelling approaches are also being developed, including the OPAL stock assessment model, which is being investigated by Philipp Neubauer of Dragonfly Data Science, and an additional model under development by a team at the University of Cambridge.

205. The WPTT **SUGGESTED** that the assessment work consider including a state-space model, such as WHAM, building on work presented at previous WPTT meetings (IOTC-2025-WPTT27-23). The WPTT also **SUGGESTED** incorporating any relevant mortality or abundance indices derived from the RTTP-IO spatial modelling project (IOTC-2026-WPTT28-23), if available at the time of the assessment.

206. The WPTT **NOTED** that improvements to the use of length-frequency data in the assessment are needed. In this regard, the WPTT **NOTED** that Paul Medley is reviewing the Seychelles length-frequency data, while Philipp Neubauer is examining approaches to standardising length-frequency data.

207. The WPTT **NOTED** the work led by Philipp Neubauer, funded under the EU SWIOP1.2 project, also included a component of standardisation of length-composition data.

208. The WPTT **NOTED** that OPAL is an integrated stock assessment model developed using RTMB, and that it has already been applied in the WCPFC, providing some precedent for its use in tuna stock assessments. The WPTT **NOTED** that OPAL is being developed within a broader international effort to establish a modern modelling platform that could provide an alternative to existing assessment frameworks, including Multifan-CL and SS3. The WPTT **REQUESTED** that the model be presented in greater detail at the WPM meeting, allowing participants to discuss and evaluate its potential application.

8.3 Development of priorities for an Invited Expert at the next WPTT meeting

209. The WPTT **AGREED** to the following core areas of expertise and priority areas for contribution that need to be enhanced for the next meeting of the WPTT in 2027, by an Invited Expert:

o **Expertise**: Stock assessment; including from regions other than the Indian Ocean; and CPUE standardization, familiarity with the Indian Ocean yellowfin stock assessment.

o **Priority areas for contribution**: Providing expert advice on stock assessments; refining the input information base, historical data series and indicators for tropical tuna species for stock assessment purposes.

9. OTHER BUSINESS

9.1 Date and place of the 29th and 30th Sessions of the WPTT

210. The Secretariat will continue to liaise with CPCs to determine their interest in hosting these meetings in the future. The WPTT **RECOMMENDED** the SC consider late October 2027 as a preferred time period to hold the WPTT29 meeting in 2027. It was also **AGREED** that the WPTT Assessment meeting should continue to be held back-to-back with the WPM.

9.2 General discussions

211. The WPTT **DISCUSSED** potential approaches to improving participation in WPTT meetings (and IOTC working party meetings in general). The WPTT **SUGGESTED** that countries hosting meetings explore low-cost, intermediate options for supporting hybrid participation, with the aim of facilitating broader involvement.

212. The WPTT **SUGGESTED** that presentations not directly essential to the stock assessment process should, where appropriate, be scheduled during the full WPTT meeting rather than the data preparatory meeting. This would preserve time in the data preparatory meeting for activities directly related to the assessment, while increasing participation in the full WPTT meeting.

213. The WPTT **NOTED** that the possibility of (re)introducing a prize for the best presentation was also raised as a means of encouraging participation and recognising high-quality scientific contributions.

214. The WPTT **REMINDED** participants that Meeting Participation Fund (MPF) resources are available to support scientists from developing countries in attending IOTC meetings.

10. REVIEW OF THE DRAFT, AND ADOPTION OF THE REPORT OF THE 28TH SESSION OF THE WPTT

215. The WPTT **RECOMMENDED** that the Scientific Committee consider the consolidated set of recommendations arising from WPTT28, provided at Appendix VIII, as well as the management advice provided in the draft resource stock status summary for each of the three tropical tuna species under the IOTC mandate, and the combined Kobe plot for the three species assigned a stock status in 2026 (Figure 2):
    - Bigeye tuna (*Thunnus obesus*) – Appendix IV
    - Skipjack tuna (*Katsuwonus pelamis*) – Appendix V
    - Yellowfin tuna (*Thunnus albacares*) – Appendix VI

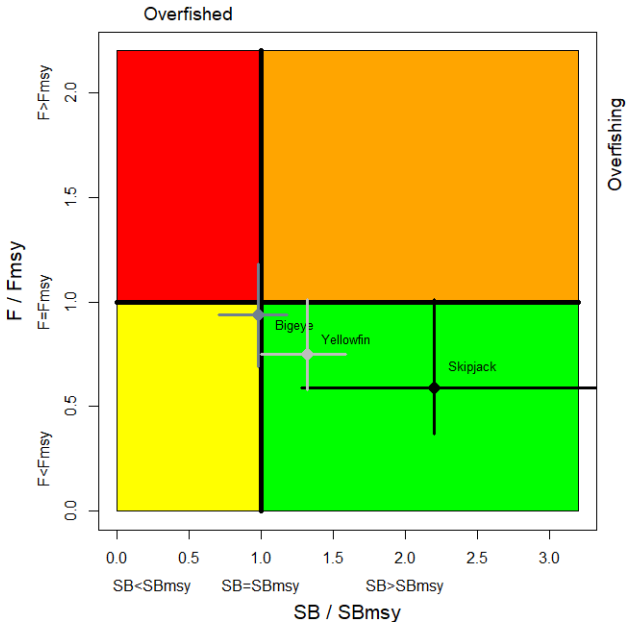

Figure 2. Combined Kobe plot for skipjack tuna (black: 2026), bigeye tuna (dark grey: 2025), and yellowfin tuna (grey: 2024) showing the estimates of current stock size (SB) and current fishing mortality (F) in relation to the MSY-based spawning biomass and fishing mortality reference points. Cross bars illustrate the range of uncertainty from the model runs with an 80% CI.

216. The report of the 28th Session of the Working Party on Tropical Tunas Meeting (IOTC-2026-WPTT28-R) will be adopted by correspondence.

APPENDIX I
LIST OF PARTICIPANTS

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APPENDIX II

AGENDA FOR THE 28TH WORKING PARTY ON TROPICAL TUNAS, ASSESSMENT MEETING

Date: 20– 24 October 2026

Location: Tenerife, Spain

Time: 09:00 – 17:00

Chair: Dr David Kaplan (European Union); **Vice-Chair:** Mr Mohamed Shimal

1. OPENING OF THE MEETING (Chair)

2. ADOPTION OF THE AGENDA AND ARRANGEMENTS FOR THE SESSION (Chair**)**

3. UPDATE OF ANY NEW DATA AVAILABLE AT THE SECRETARIAT FOR TROPICAL TUNA SPECIES SINCE THE DATA PREPARATORY MEETING (IOTC Secretariat**)**

3.1 Data available at the Secretariat

3.2 Fishery Indicators

4. SKIPJACK TUNA (ALL)

4.1 Review any new information on skipjack tuna biology, stock structure, fisheries and associated environmental data including climate change issues since the data preparatory meeting (all)

4.2 Update on the nominal and standardised CPUE indices presented at the data preparatory meeting.

4.3 Stock assessments results

- Stock Synthesis (SS3)
- Other models

4.4 Selection of stock status indicators

4.5 Consideration of exceptional circumstances of skipjack tuna management procedure

4.6 Other

5. BIGEYE TUNA (ALL)

5.1 Consideration of exceptional circumstances of bigeye tuna management procedure

5.2 Other

6. Yellowfin TUNA (ALL)

6.1 Update of yellowfin tuna management procedure

6.2 Other

7. FAD RELATED TOPICS

7.1 Update from the FAD working group

7.2 Commission requests to the SC on FADs (all)

7.2.1 Resolution 24/02 On Management of Drifting Fish Aggregating Devices (DFADs) in the IOTC Area of Competence

7.2.2 Resolution 23/01 on the management of anchored fish aggregating devices (AFADs)

8. WPTT PROGRAM OF WORK

8.1 Revision of the WPTT Program of Work (2027–2031)

8.2 Plan for the yellowfin assessment in 2027

8.3 Development of priorities for an Invited Expert at the next WPTT meeting

9. OTHER BUSINESS

9.1 Date and place of the 29th and 30th Sessions of the WPTT (Chair and IOTC Secretariat)

10. ADOPTION OF THE REPORT

10.1 Review of the draft, and adoption of the Report of the 28TH Session of the WPTT (Chair)

APPENDIX III

LIST OF DOCUMENTS FOR THE 28TH WORKING PARTY ON TROPICAL TUNAS

Document	Title
IOTC-2026-WPTT28-01a	Draft: Agenda of the 28th Working Party on Tropical Tunas
IOTC-2026-WPTT28-01b	Draft: Annotated agenda of the 28th Working Party on Tropical Tunas
IOTC-2026-WPTT28-02	Draft: List of documents for the 28th Working Party on Tropical Tunas
IOTC-2026-WPTT28-05	Revision of the WPTT program of work (IOTC Secretariat)
IOTC-2026-WPTT28-06	Review of the Statistics for Indian Ocean Tropical Tuna Fisheries, 1950-2025
IOTC-2026-WPTT28-07	Review of the statistical data available for skipjack tuna (1950-2025)
IOTC-2026-WPTT28-08	Port-in entry authorization processes and import statistics for tropical tuna in Thailand in 2025 (Prasertsook O, Sanboonpeng J)
IOTC-2026-WPTT28-09	Composition and spatio-temporal distribution of tropical tuna catches in the Madagascar fishing zone in 2024 and 2025 (Fanazava R)
IOTC-2026-WPTT28-11	Strengthening sustainable tuna fisheries in India: research, policy, and livelihood goals (Joe S)
IOTC-2026-WPTT28-12 (withdrawn)	Bait selection and target–non target catch trade-offs in the Sri Lankan yellowfin tuna longline fishery (Gunasekara S, Jayasinghe R)
IOTC-2026-WPTT28-15	Explore ocean patterns and trends at your fingertips with the newly released Indian Ocean Digital Atlas(IODA) (Marsac F, Noel E)
IOTC-2026-WPTT28-16	Preliminary study of the age and growth of skipjack tuna (Katsuwonus pelamis) in the Southern Waters of Java, Indonesia (Jatmiko I, Sadiyah L, Satria F)
IOTC-2026-WPTT28-17	Opposite effects of positive and negative Indian Ocean Dipole events on skipjack tuna abundance and purse seine catch rates (Marsac F)
IOTC-2026-WPTT28-18	Stock Assessment of Indian Ocean skipjack tuna (Katsuwonus pelamis) using Stock Synthesis (2026) (Phillips G)
IOTC-2026-WPTT28-19	Evaluation of exceptional circumstances for IO skipjack in 2026 (Merino G, Urtizberea A, Correa G)
IOTC-2026-WPTT28-20	Consideration of Exceptional Circumstances for the Bigeye Tuna MP 2026 (Preece A, William A)
IOTC-2026-WPTT28-21	Updated schedule for a close-kin mark-recapture study on Indian Ocean yellowfin tuna (William A)
IOTC-2026-WPTT28-22	Evaluating Sampling Logistics in the North Arabian Sea for Implementation of Close-Kin Mark-Recapture for Indian Ocean Yellowfin Tuna (Razzaque S)
IOTC-2026-WPTT28-23	Methods and initial results of the tagging data analysis of Yellowfin tuna in the Indian Ocean (Mildenberger T, Nielsen A)
IOTC-2026-WPTT28-24	Towards the Development of FAD Marking Guidelines in the IOTC (Maitane Grande M, Gala Moreno G, Ramos M, Kaplan D, Murua J, Murua H, Déniz S, Taha Imzilen T, Esther Mollier E, Baéz J, Zudaire I)
IOTC-2026-WPTT28-25Presentation	Anchored FADs: relevance of the use and overall impact on juvenile tuna and the environment (Pearce J)
IOTC-2026-WPTT28-26Presentation	Is my red the same as your red? Improving the communication of stock status and support for management in the Indian Ocean Tuna Commission with specific recommendations for Indian Ocean skipjack (Merino G)
IOTC-2026-WPTT28-27	An application of the FISHBLICC model to the Indian Ocean skipjack tuna (Fu D)
IOTC-2026-WPTT28-28	Consolidating catch and effort data from IOTC national reports, a prototype interactive tool(Tidd A, Tolotti M, Lebranchu J, Kaplan D, Guillotreau P)

APPENDIX IV
DRAFT RESOURCE STOCK STATUS SUMMARY
BIGEYE TUNA (BET : THUNNUS OBESUS)

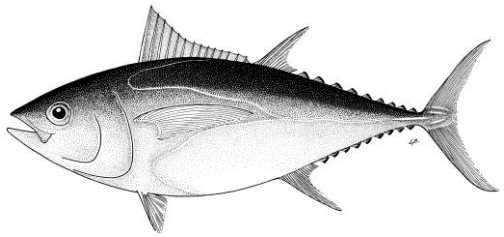

Table 1. Status of bigeye tuna (*Thunnus obesus*) in the Indian Ocean

Area[1]	Indicators		2025 stock status determination[3]
Indian Ocean	Catch 2025 (t) Mean annual catch 2021-2025 (t)	96,950[2] 91,934	**15.9%*** **OVERFISHED (54%)** **BUT** **NOT SUBJECT TO OVERFISHING (62%)**
	MSY (1,000 t) (80% CI) F_{MSY} (80% CI) SB_{MSY} (1,000 t) (80% CI) F_{2024}/F_{MSY} (80% CI) SB_{2024}/SB_{MSY} (80% CI)	100 (94 – 106) 0.27 (0.21 – 0.33) 276 (143 – 409) 0.94 (0.69-1.18) 0.98 (0.71 – 1.25)	
[1]Boundaries for the Indian Ocean stock assessment are defined as the IOTC Area of Competence			
[2]Proportion of 2024 catch fully or partially estimated by IOTC Secretariat: 0.2%			
[3]2024 is the final year that data were available for this assessment			
*Estimated probability that the stock is in the respective quadrant of the Kobe Plot (Table 2), derived from the confidence intervals associated with the current stock status. Yellow (overfished and not subject to overfishing) also corresponds to two marginal probabilities ($p(SB<SB_{MSY}) = 54\% > 50\%$, thus overfished) and ($p(F<F_{MSY})=62\% > 50\%$, thus not subject to overfishing)			

Table 2. Probability of stock status with respect to each of four quadrants of the Kobe plot. Percentages are calculated as the proportion of model terminal values that fall within each quadrant with model weights taken into account

	Stock overfished (SB_{2024} / SB_{MSY}<1)	Stock not overfished (SB_{2024} / SB_{MSY}≥ 1)
Stock subject to overfishing (F_{2024} / F_{MSY}≥ 1)	38 %	0 %
Stock not subject to overfishing (F_{2024} / F_{MSY}≤ 1)	16 %	46 %
Not assessed / Uncertain / Unknown		

INDIAN OCEAN STOCK – MANAGEMENT ADVICE

Stock status. No new stock assessment was conducted in 2026. The stock status for yellowfin tuna was estimated based on the stock assessment carried out in 2025. The 2025 stock assessment was built on the 2022 assessment model structure and incorporated new growth and natural mortality estimates. The model was fitted to regional joint longline CPUE indices, and the European Union (EU) purse seine index. The reported stock status is based on a grid of 36 model configurations designed to capture the uncertainty on stock recruitment relationship, longline selectivity, natural mortality and catchability dynamics.

Overall, the stock assessment results suggest that bigeye biomass has nearly recovered to the target SBMSY level. Considering the characterized uncertainty, the assessment indicates that:

- there is a 54% probability that SB_{2024} is below SBMSY, with median spawning biomass in 2024 estimated at 0.98 (0.71-1.25) times the level that can support MSY.
- there is a 62% probability that F_{2024} is below F_{MSY}, with median fishing mortality (in 2024) estimated at 0.94 (0.69-1.18) times the F_{MSY} level.

On the weight-of-evidence available in 2025, the bigeye tuna stock is determined to be overfished and not subject to overfishing.

As IOTC adopted on a bigeye Management Procedure (Res. 22/03), it should be noted that the stock assessment is used to provide current stock status advice and to monitor the performance of the MP, but is not used to provide a recommendation on the TAC.

Management Procedure. A management procedure for Indian Ocean bigeye tuna was adopted under Resolution 22/03 by the IOTC Commission in May 2022 and was applied to determine a recommended TAC for bigeye tuna of 80,583 t for 2024 and 2025 (adopted in Resolution 23/04). The MP was run in early 2025 to determine a TAC of 92,670 t per year for the period 2026-2028, which was adopted by the Commission in 2025 (Resolution 25-04). A review of evidence for exceptional circumstances, was also conducted following the adopted guideline (IOTC-2021-SC24-R Appendix 6A) as per the requirements of Resolution 22/03. The review covered information pertaining to i) new knowledge about the stock, population dynamics or biology, ii) changes in fisheries or fisheries operations, iii) changes to input data or missing data, and iv) inconsistent implementation of the MP advice. The 2024 catch (87,040 t) exceeded the 2024 TAC (80,583 t), which is considered an exceptional circumstance and, therefore, the Commission should ensure that the appropriate provisions of 23/04 are implemented to ensure catches remain below the TAC, conditional on the allowances and requirements of those provisions.

Outlook. Catch in 2021 (90,844 t), 2022 (90,832 t), 2023 (94,598 t) and 2024 (87,040) of bigeye tuna were above the recommended TAC for 2024, 2025 from the application of the bigeye tuna MP. Achieving the objectives of the Commission for this stock will require effective implementation of the MP TAC advice by the Commission going forward, a requirement further emphasised by the current status of the stock estimated from the stock assessment to be overfished but not subject to overfishing.

Management advice. The TAC adopted by the Commission for 2024 and 2025 is 80,583 t per year (Resolution 23/04) and the TAC for 2026-2028 is 92,670 t per year (Resolution 25/04).

The following key points should also be noted:

- **Main fisheries (mean annual catch 2021-2025)**: bigeye tuna are caught using purse seine (42.9%), followed by longline (35.2%) and line (15.2%). The remaining catches taken with other gears contributed to 6.8% of the total catches in recent years (**Fig. 1**).
- **Main fleets (mean annual catch 2021-2025)**: the majority of bigeye tuna catches are attributed to vessels flagged to Indonesia (19.7%) followed by Seychelles (15%) and EU (Spain) (14.2%). The 30 other fleets catching bigeye tuna contributed to 50.8% of the total catch in recent years(**Fig. 2**).

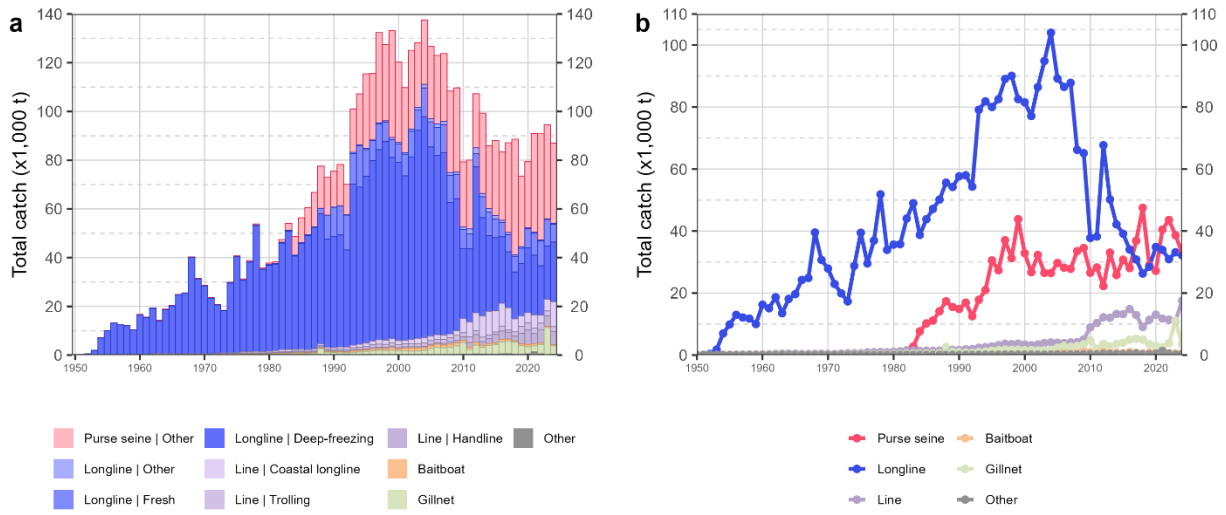

Fig. 1. Annual time series of (a) cumulative retained catches (metric tonnes; t) by fishery and (b) individual retained catches (metric tonnes; t) by fishery group for bigeye tuna during 1950-2024. Purse seine | Other: coastal purse seine, large-scale purse seine, and ring net; Longline | Other: swordfish and sharks-targeted longlines; Other: all remaining fishing gears

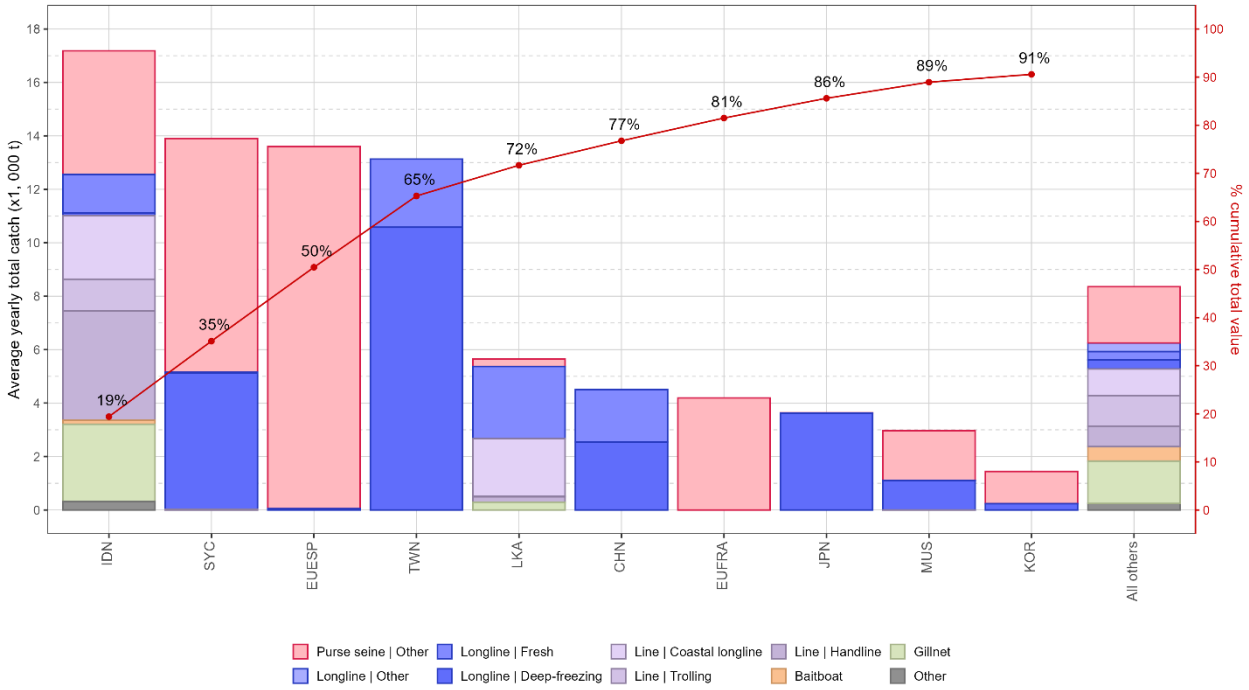

Fig. 2. Mean annual retained catches (metric tonnes; t) of bigeye tuna by fleet and fishery between 2020 and 2024, with indication of cumulative catches by fleet. Purse seine | Other: coastal purse seine, large-scale purse seine, and ring net; Longline | Other: swordfish and sharks-targeted longlines; Other: all remaining fishing gears

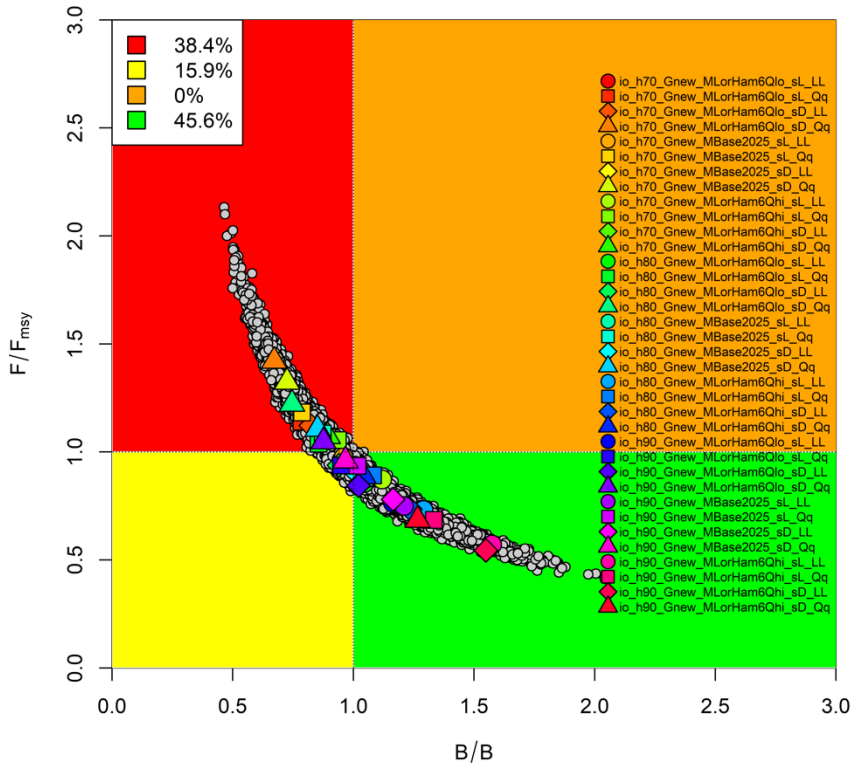

Fig. 3. Bigeye tuna: SS3 Aggregated Indian Ocean assessment Kobe plot. The coloured points represent stock status estimates from the 36 model options. Coloured symbols represent Maximum Posterior Density (MPD) estimates from individual models which varied in terms of steepness (h), natural mortality (M), selectivity on the LL2+LL3 fleets (sL *vs* sD), and gear creep applied to the LL CPUE indices (LL *vs* Qq, where Qq represents 0.5% of effort creep ajustment on the indices).

APPENDIX V
DRAFT RESOURCE STOCK STATUS SUMMARY
SKIPJACK TUNA (SKJ: KATSUWONUS PELAMIS)

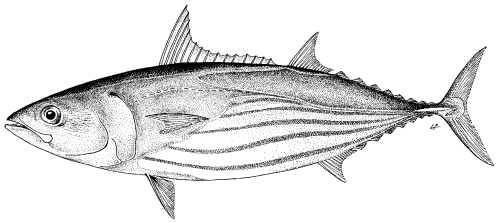

Table 1. Status of skipjack tuna (*Katsuwonus pelamis*) in the Indian Ocean

Area[1]	Indicators		2025 stock status determination[3]
Indian Ocean	Catch 2025 (t) Mean annual catch 2021-2025 (t)	732,675[2] 670,815	**92.1 % ***
	$F_{40\%SB0}$ [4] (90% CI) SB_0 (1000 t) (90% CI) SB_{2025} (1000 t) (90% CI) SB_{2025} / SB_0 (90% CI) SB_{2025} / $SB_{40\%SB0}$ (90% CI) SB_{2025} / SB_{MSY} (90% CI) F_{2025} / F_{MSY} (90% CI) F_{2025} / $F_{40\%SSB0}$ (90% CI) MSY (1000 t) (90% CI)	0.5 (0.41–0.6) 2 376 (1,816–2,865) 1 099 (805-1522) 0.5 (0.29–0.71) 1.25 (0.71–1.77) 2.20 (1.28–3.64) 0.59 (0.37–1.01) 1.09 (0.79–1.77) 570 (505-683)	

[1]Boundaries for the Indian Ocean stock assessment are defined as the IOTC area of competence
[2] Proportion of 2025 catch fully or partially estimated by IOTC Secretariat: 1 %
[3]2025 is the final year that data were available for this assessment
[4] $F_{40\%SB0}$ is the equilibrium annual exploitation rate (F_{targ}) associated with the stock at B_{targ}, and is a key control parameter in the skipjack harvest control rule as stipulated in Resolution 21/03. Note that Resolution 23/03 did not specify the exploitation rate associated with the stock at B_{lim}
*Estimated probability that the stock is in the respective quadrant of the Kobe plot (defined in resolution 21/03 and shown below), derived from the confidence intervals associated with the current stock status

Table 2. Probability of stock status with respect to each of four quadrants of the Kobe plot. Percentages are calculated as the proportion of model terminal values that fall within each quadrant with model weights taken into account, as defined in resolution 21/03

	Stock overfished (SB_{2025} / SB_{MSY}<1)	Stock not overfished (SB_{2025} / SB_{MSY}≥ 1)
Stock subject to overfishing (F_{2025} / F_{MSY} ≥ 1)	1.6 %	6.3 %
Stock not subject to overfishing (F_{2025} / F_{MSY} ≤ 1)	0 %	92.1 %
Not assessed / Uncertain / Unknown		

INDIAN OCEAN STOCK – MANAGEMENT ADVICE

Stock status. A new stock assessment was carried out for skipjack tuna in 2026 using Stock Synthesis with data up to the end of 2025. An ensemble of 48 models was used to generate stock status. Forty-seven models converged. The agreed stock status from the 2026 stock assessment model is the same as the previous assessment (2023) despite the high catches recorded in the period 2022-2025, which exceeded the catch limits established in 2020 for this period.

The final assessment indicates that:

iv) The stock is above the adopted target for this stock (40% SB_0). Current spawning biomass relative to unexploited levels is estimated at 50%.
v) The probability of the stock being above SB_{MSY} and below F_{MSY} at the same time is estimated to be 92.1 % (see KOBE plot).
vi) All the models in the ensemble estimate that the SB_{2025} is above the limit reference point (20 % SB_0) in 2025.

Based on the weight-of-evidence available in 2026, the skipjack tuna stock is determined to be **not overfished** and **not subject to overfishing**.

Fishery Overview There has been a substantial increase within the fishery dependent abundance indices in recent years: the CPUE from the Maldives pole-and-line (PL) fishery increased by 23 % from 2020 to 2025, however the floating object associated purse seine fishery (PSLS) only increased by 9 % between 2020 and 2025.

The Skipjack Harvest Control Rule (HCR; Resolution 16/02) was first applied in 2017, resulting in a recommended catch limit of 470,029 t for 2018–2020. It was run again in 2020 to provide a catch limit of 513,572 t for 2021–2023, and in 2023 to recommend a catch limit of 628,606 t for 2024–2026. In 2024, IOTC adopted a Management Procedure (MP) for skipjack tuna (Resolution 24/07). The MP replaces the previously adopted HCR for skipjack tuna. The MP was run in 2025 which recommended a TAC of 565,745t for 2027-2029. In 2025, the Commission also adopted Resolution 25/03, which allocates the TAC to major skipjack harvesting countries according to specified rules and provides provisions for the administration of catch limits

Total catches in 2025 (732,675 t) were 104,069 t (16.5 %) greater than the catch limit for the skipjack calculated by the HCR for the period 2024–2026 (628,606 t). In 2025, catch was well above MSY (570,000 t). The estimated increase in stock abundance despite catches exceeding the recommended limits may have been driven by an increase in recent recruitment. In models which included just the Maldive pole-and-line index, recruitment was estimated to be above the long-term average in recent years. However, in models including just the PSLS index, recruitment was estimated to be similar to the long-term average, therefore there is some conflict in terms of knowledge of current recruitment trends.

Environmental conditions (such as sea surface productivity (chlorophyll-a)) are believed to significantly influence the recruitment of skipjack tuna and can produce high variability in recruitment levels between years. The high recruitment anomalies estimated in 2022 and 2025 by the Maldives pole-and-line index appear to be supported by the strong increasingly positive phase of sea surface productivity which began from a below average level in 2015. Climate model predictions in 2022 suggested that the positive productivity phase will end by the start of 2024 resulting in a period of lower productivity. Indeed, 2024 did show lower than average recruitment, however there was an increase in estimated recruitment in 2025.

There is also some uncertainty in the stock assessment due to the potential caveats of using PL and PSLS CPUE as indices of basin-level abundance and uncertainty in stock productivity parameters of skipjack tuna (e.g., steepness and growth, natural mortality). The model runs within the grid incorporate a wide range of stock status (SB_{2025} / SB_0) with estimates of depletion ranging from 29 – 71 %.

Management Procedure. Skipjack tuna is currently subject to a Total Allowable Catch (TAC) of 628,606 t for 2024–2026. This TAC was determined by applying the skipjack Harvest Control Rule (HCR) as prescribed in Resolution 21/03 in 2023. The current TAC has been distributed to CPCs that account for highest skipjack catches according to the rules specified in Resolution 25/03. In May 2024, the Commission adopted a management procedure (MP) for Indian Ocean skipjack tuna under Resolution 24/07, replacing the previous HCR. This MP was applied in 2025 to determine the recommended TAC for skipjack for 2027–2029. As required by Resolution 24/07, a review of evidence for exceptional circumstances was conducted following the adopted guidelines (IOTC-2021-SC24-R Appendix 6A). The evaluation

concluded that there were no exceptional circumstances requiring further research or management action regarding the TAC calculated by the MP.

Management advice. The application of the skipjack tuna management procedure as per Resolution 24/03 generated an annual TAC of 565,745 t for 2027–2029. The 2026 stock assessment estimated higher recruitment deviates in recent years, but similar to earlier estimates. Higher recruitment within the population could be due to skipjack life history characteristics and favorable environmental conditions. The stock level was also estimated to be above the target reference point. As environmental conditions along with ocean productivity can vary substantially inter-annually, and skipjack recruitment responds quickly to such variability, it is important that the Commission ensures that catches of skipjack do not exceed the TAC. In addition, the SC recognizes the potential impact on other associated stocks (bigeye tuna and yellowfin tuna) of exceeding the TAC of skipjack tuna.

The following key points should also be noted:

- **Reference points**: Commission in 2016 agreed to Resolution 16/02 on *harvest control rules for skipjack tuna in the IOTC area of competence (superseded by Resolution 21/03)*.
- **Biomass**: Current spawning biomass was considered to be above the target reference point of 40% of SB_0, and above the limit reference point of $0.2*SB_0$ as per Resolution 16/02 (**Fig. 3**).
- **Main fisheries (mean annual catch 2021-2025):** skipjack tuna are caught using purse seine (52.9%), followed by baitboat (18.7%) and gillnet (18.4%). The remaining catches taken with other gears contributed to 10% of the total catches in recent years (**Fig. 1**).
  Main fleets (mean annual catch 2021-2025): the majority of skipjack tuna catches are attributed to vessels flagged to Indonesia (21.3%) followed by Maldives (17%) and EU (Spain) (12.4%). The 32 other fleets catching skipjack tuna contributed to 49.3% of the total catch in recent years (**Fig. 2**).

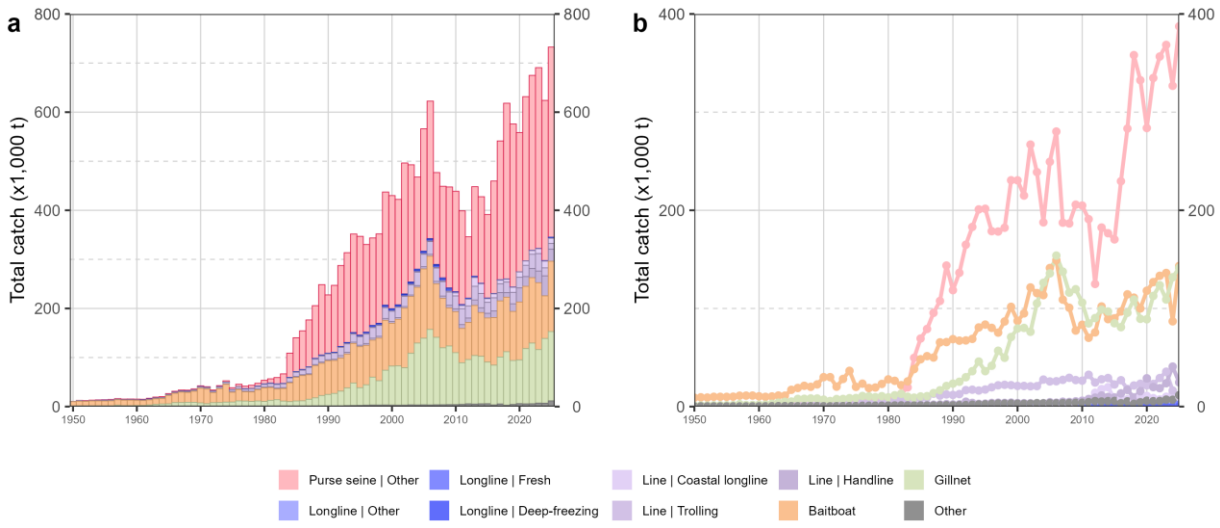

Fig. 1. Annual time series of (a) cumulative retained catches (metric tonnes; t) by fishery and (b) individual retained catches (metric tonnes; t) by fishery group for skipjack tuna during 1950-2025. Purse seine | Other: coastal purse seine, large-scale purse seine, and ring net; Longline | Other: swordfish and sharks-targeted longlines; Other: all remaining fishing gears

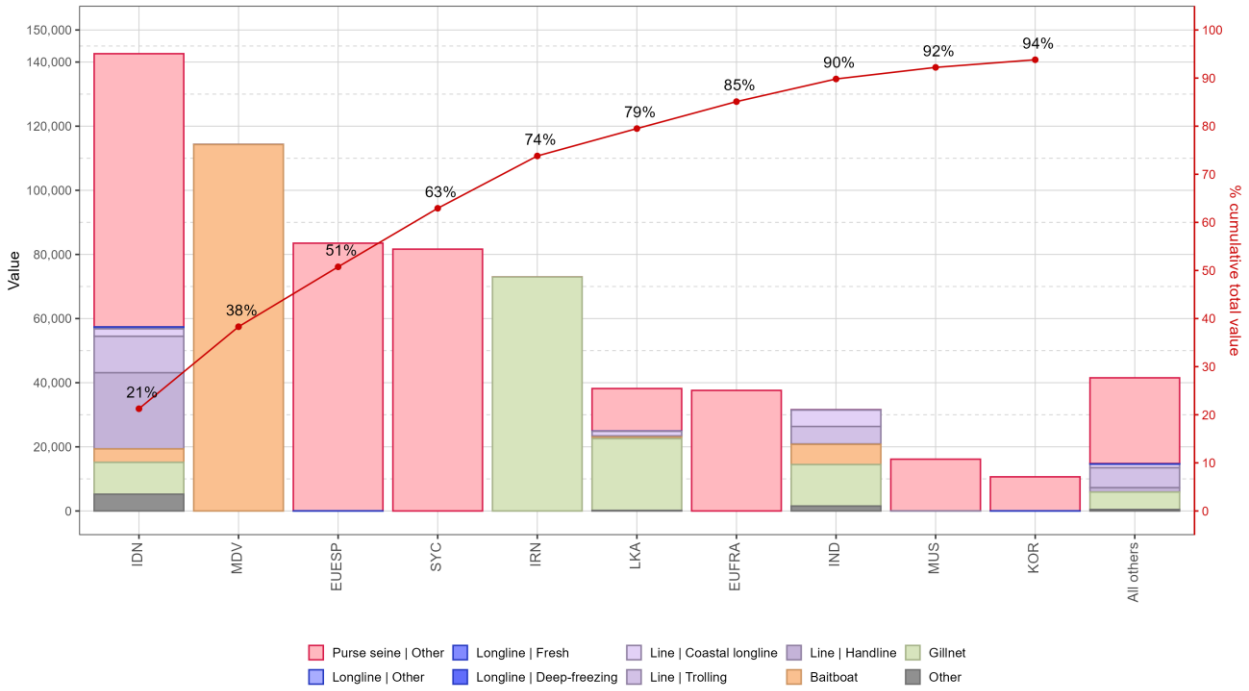

Fig. 2. Mean annual retained catches (metric tonnes; t) of skipjack tuna by fleet and fishery between 2021 and 2025, with indication of cumulative catches by fleet. Purse seine | Other: coastal purse seine, large-scale purse seine, and ring net; Longline | Other: swordfish and sharks-targeted longlines; Other: all remaining fishing gears

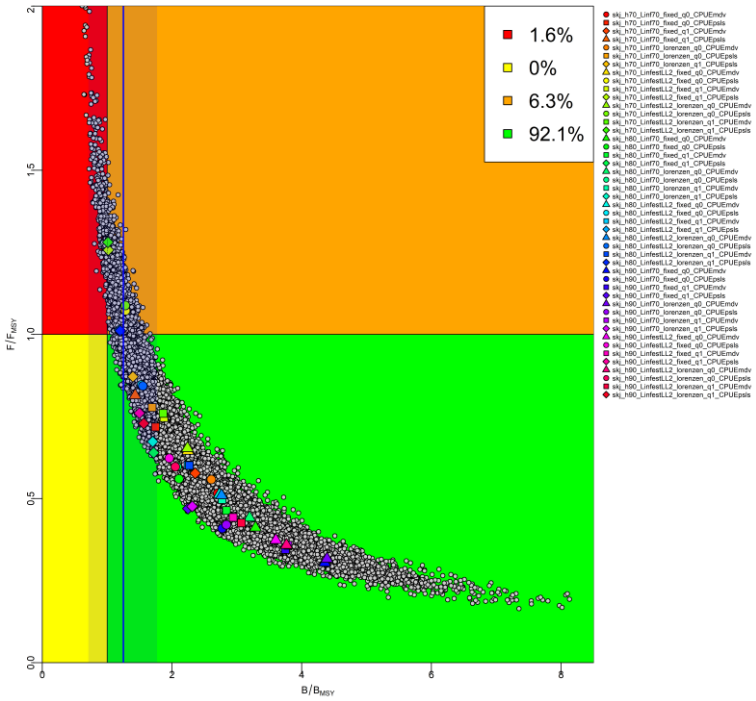

Fig. 3. Skipjack tuna: SS3 Aggregated Indian Ocean assessment Kobe plot of the 2026 uncertainty grid: current stock status, relative to B/B_{MSY} and F/F_{MSY}. The vertical line with shading indicates 40 % of SSB_0. Coloured symbols represent Maximum Posterior Density estimates fr

APPENDIX VI
DRAFT RESOURCE STOCK STATUS SUMMARY
YELLOWFIN TUNA (YFT: *THUNNUS ALBACARES*)

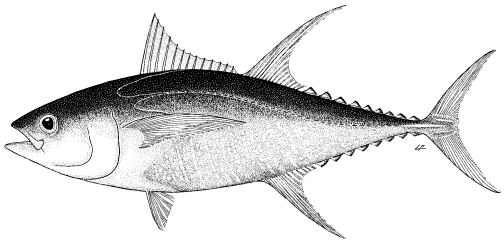

Table 1. Status of yellowfin tuna (*Thunnus albacares*) in the Indian Ocean

Area[1]	Indicators		2024 stock status determination[3]
Indian Ocean	Catch 2025 (t) Mean annual catch 2021-2025 (t)	517,726[2] 457,425	**89%***
	MSY_{recent}[4] (1,000 t) (80% CI)	421 (416-430)	
	F_{MSY} (80% CI)	0.2 (0.16-0.26)	
	SB_{MSY_recent}[4] (1,000 t) (80% CI)	1,063 (890-1,361)	
	F_{2023} / F_{MSY} (80% CI)	0.75 (0.58-1.01)	
	SB_{2023} / SB_{MSY_recent} (80% CI)	1.32 (1.00-1.59)	
	SB_{2023} / SB_0 (80% CI)	0.44 (0.40-0.50)	

[1]Boundaries for the Indian Ocean stock assessment are defined as the IOTC area of competence

[2]Proportion of 2024 catch fully or partially estimated by IOTC Secretariat: 13.9%

[3]2023 is the final year that data were available for this assessment

[4] Recent refers to the most recent 20 years (2003-2022)

Colour key	Stock overfished (SB_{2023} / SB_{MSY}<1)	Stock not overfished (SB_{2023} / SB_{MSY}≥ 1)
Stock subject to overfishing (F_{2023} / F_{MSY}≥ 1)	7.9%	3.3%
Stock not subject to overfishing (F_{2023} / F_{MSY}≤ 1)	0%	88.8%
Not assessed / Uncertain / Unknown		

INDIAN OCEAN STOCK – MANAGEMENT ADVICE

Stock status. No new stock assessment was conducted in 2025. The stock status for yellowfin tuna was estimated based on the stock assessment carried out in 2024. The 2024 stock assessment was carried out using Stock Synthesis III (SS3), a fully integrated model that is currently used to provide scientific advice for the three tropical tunas stocks in the Indian Ocean. The model grid from this assessment was re-run in 2025 in light of errors identified and subsequent revisions to the standardised CPUE input data. However, none of the figures or tables have been updated, because a full stock assessment with the corrected CPUE has not been conducted.

The model used in 2024 is based on the model developed in 2021 with a series of revisions that were discussed during the WPTT in 2024. The new model represents a marked improvement over the previous model available in 2021, as demonstrated using a number of statistical diagnostic analyses. These revisions addressed many of the recommendations of the independent review of the yellowfin stock assessment carried out in 2023. The model uses four types of data: catch, size frequency, tagging and CPUE indices. The proposed final assessment model options correspond to a combination of model configurations, including alternative assumptions about the selectivity of longline fisheries (2 options on size frequency data prior and post 2000), longline catchability (effort creep (0% and 0.5% per year)) and steepness values (0.7, 0.8, and 0.9). The model ensemble (a total of 12 models) encompasses a range of plausible hypotheses about stock and fisheries dynamics.

A number of sensitivity runs were conducted to understand additional uncertainties not captured in the model grid, including two alternative natural mortalities (based on maximum age of 18 years and the natural mortality used in 2021), the CPUE used in 2021, a model that started in 1975, the influence of the tagging data and the revised catch information for Indonesia. In general, the sensitivity runs did not suggest that other parameters should be included in the reference grid and the group decided not to include any additional axes of uncertainty.

The model estimates of current stock status are predominantly informed by the new abundance index derived from the Joint CPUE estimated for longline fleets. It was noted that the new index was significantly different to the index used in 2021 (**Fig. 6**), especially for the Northwestern region of the Indian Ocean for the periods 2005-2015 and 2019-2020 (this is further discussed, below). In addition, the new index suggests a marked increase of abundance for yellowfin in the last three years (2021-2023).

With regards to the differences in the modelling choices, the new SS3 model includes a new growth model, natural mortality and maturity. All these have been updated from recent biological studies, as agreed by the WPTT in the 2024 data preparatory meeting.

For the 2024 model, a new approach was applied to the derivation of the MSY and associated biomass-based reference point (SB_{MSY}) based on the magnitude of recruitment estimated for the recent 20-year period (see Para 89–100 of IOTC-2024-WPTT26-R for details). The derivation of MSY is in line with the recommendations of the 2023 review. MSY was estimated to be 421,000 t. Catch in 2024 is estimated to be well above the MSY-range (489,742 t). Differences in the estimates of MSY and B_{MSY} using recent and long-term recruitment levels introduce additional uncertainty in the estimates of stock status relative to B_{MSY}. This is highlighted in Tables 2 and 3 which indicate, for example, that while SB/SB_{MSY} is estimated to be higher (1.47) under long-term recruitment assumption, MSY is estimated to be lower (374,000 t). However, fishing mortality-based estimates of stock status are insensitive to those assumptions.

Table 2. Reference points for yellowfin tuna (*Thunnus albacares*) in the Indian Ocean based on long term and 20-year conditions

Long term MSY (t)	Recent 20 yr MSY (t)	Long term SB_{MSY} (t)	Recent 20 yr SB_{MSY} (t)
374,421	420,623	986,599	1,094,844

Table 3. Status of yellowfin tuna (*Thunnus albacares*) in the Indian Ocean using equivalent (i.e. long-term) recruitment trends

Indicators	
Catch 2023 (t)	400,950
Mean annual catch 2019-2023 (t)	423,142
MSY_{eq} (1,000 t) (80% CI)	374 (350-411)
SB_{MSY_eq} (1,000 t) (80% CI)	987 (791-1,247)
SB_{2023} / SB_{MSY_eq} (80% CI)	1.47 (1.21-1.65)

The recent 20-year period was selected for the estimation of recent benchmarks (SB_{MSY} and MSY) on the basis that the period encompassed the most reliable series of catch and size composition data and, as such, provided the best available information regarding the prevailing productivity of the stock.

According to the information available to the 2024 assessment, the total catch has remained within the estimated recent (20-year average) MSY since 2007 (i.e., between 402,000 t and 427,000 t), with the exception of, 2018 (443,252 t) and 2019 catch (450,586 t).

Overall stock biomass declined substantially during the 1980s and 1990s. The stock is estimated to have been in an overfished state from 2007 to 2019 (**Fig. 4**). Spawning biomass increased considerably after 2021 following recent strong recruitment (informed by the recent increase in LL CPUE). Correspondingly, overfishing was occurring from 2003 until 2020. Fishing mortality was estimated to be below the F_{MSY} level in 2021-2023. The recent strong recruitments also contribute to a continued increase in projected biomass in the forthcoming years. The magnitude of the recent annual recruitments (2020-2022) is unprecedented in the time series.

Overall stock status estimates differ substantially from the previous assessment. Spawning biomass in 2023 was estimated to be on average 44% of the initial (1950) levels (**Table 1**). Spawning biomass in 2023 was estimated to be 32% higher than the level that supports the maximum sustainable yield (SB_{2023}/SB_{MSY} = 1.32). Current fishing mortality is estimated to be 25% lower than F_{MSY} (F_{2023}/F_{MSY} = 0.75). The probability of the stock being in the green Kobe quadrant in 2023 is estimated to be 89%.

It is noted that the uncertainties identified in relation to the CPUE standardisation in 2024 were addressed in 2025. The methodology used to standardise the 2024 index underwent review, during which an error was discovered and corrected through a number of methodological adjustments, following feedback from SC and WPTT, to ensure greater consistency with the previously agreed standardisation approach. During WPTT27, the revised CPUE was used to rerun the 2024 stock assessment model grid to assess the likely impact on key management quantities. The estimated median biomass and fishing mortality relative to MSY were SB_{2023}=1.18 $SB_{MSY,recent}$ and F_{2023}=0.83 F_{MSY} respectively, and the probability for being in the green quadrant of the Kobe plot was estimated to be at 76.6%. Therefore, the updated results did not change the 2024 status qualitatively. The median estimated stock depletion level was 0.37. The estimated median MSY (420,000 t) was nearly identical to the value estimated in 2024 (421,000 t). As the revision carried out did not represent a new full stock assessment and that it only aimed at corroborating the advice provided in 2024, the SC considered not to change the summary table (**Table 1**) with the revised values. Based on 2024 evidence and a 2025 review, yellowfin tuna is estimated to be **not-overfished and not-subject to overfishing** (**Table 1** and **Fig. 5**).

During the review of the revised model grid outputs, a number of uncertainties were considered by the SC, including a) CPUE index data in the late 1970s and the impact of these on the model's ability to derive plausible population dynamics over time; and b) uncertainty related to whether estimated higher recent recruitment will be maintained. Further consideration of these issues to resolve associated uncertainties should be undertaken as part of the next assessment

It is noted that there is also considerable uncertainty in the reported catches by some fisheries. In particular, catch estimates for several artisanal fisheries have increased substantially in recent years, the implication of which should also be further investigated.

Outlook. Assumptions on recent productivity were used to make 10-year projections and evaluate the impact of alternative catch levels. The results of these projections are shown in **Fig. 7** and summarized in the K2SM (**Table 3**). For each catch scenario, the probability of the biomass being below the SB_{MSY} level and the probability of fishing mortality being above F_{MSY} were determined over the projection horizon using the delta-MVLN estimator (Walter & Winker 2020), based on the variance-covariance derived from estimates of SB/SB_{MSY} and F/F_{MSY} across the model grid.

The revised model was projected with the advice provided in 2024 (421,000 t) and it was estimated that with that level of catch, the stock would be above SB_{MSY_recent} with 89.7% of probability by 2026 and 83% probability by 2033.

Management advice

The review of the 2024 assessment grid in 2025 was deemed sufficient to extend the management advice provided in 2024. As such, the following advice was recommended:

- If catches are maintained within the estimated MSY range (416,000-430,000 tons) there is more than a 50% probability that the stock will remain above SB_{MSY} in 2033.
- Higher levels of catch are predicted to lead the stock to an overfished state in the long term.
- The probability of breaching the biological limit reference point ($0.4SB_{MSY}$) with recent catches is 0% by 2033. The probability of breaching the F limit reference point ($1.4\ F_{MSY}$) with recent catch is 0% by 2033However, in order to account for the uncertainty of the projections (e.g., relating to whether estimated high recruitment will be maintained) and uncertainty not captured in the assessment grid (e.g. relating to the new CPUE indices), the Commission should set a TAC that does not exceed the median recent MSY estimate.
- Results of the K2SM generated from the 2024 assessment (**Table 3**) is not used as catch advice

Noting these points, it is recommended that the Commission sets a TAC for the period 2026, 2027 and 2028 that does not exceed the median recent MSY estimate (421,000 t). The SC noted the catch level in 2024 (489,742 t), and urged the Commission to ensure that the recommended TAC is not exceeded.

The SC does not consider the need to advance the next yellowfin stock assessment, scheduled for 2027.

The following key points should also be noted:

- Maximum Sustainable Yield (MSY): estimate for the Indian Ocean stock is 421,000 t with a range between 416,000 and 430,000 t (**Table 1**). The catch in in 2024 (489,742 t) was above the estimated MSY level.
- **Interim reference points**: Noting that the Commission in 2015 adopted Resolution 15/10 on target and limit reference points and a decision framework, the following should be noted:
- **Fishing mortality**: 2023 fishing mortality is considered to be 25% below the interim target reference point of F_{MSY}, and below the interim limit reference point of $1.4*F_{MSY}$ (**Fig. 4**).
- **Biomass**: 2023 spawning biomass is considered to be 32% above the interim target reference point of SB_{MSY} and above the interim limit reference point of $0.4*SB_{MSY}$ (**Fig. 4**).
- **Catch data uncertainty:** the overall quality of the nominal catches of yellowfin tuna shows some large variability between 1950 and 2024. In some years, a large portion of the nominal catches of yellowfin tuna had to be estimated, and catches reported using species or gear aggregates had to be further broken down. The data quality was particularly poor between 1994 and 2002 when less than 70% of the nominal catches were fully or partially reported, with most reporting issues coming from coastal fisheries. The reporting rate has generally improved over the last decade however detailed information on data collection procedures, which determines the quality of fishery statistics, is still lacking**.**

- **Main fisheries (mean annual catch 2021-2025)**: yellowfin tuna are caught using line (42.3%), followed by purse seine (29.9%) and gillnet (15.2%). The remaining catches taken with other gears contributed to 12.6% of the total catches in recent years **Fig. 8**.
- **Main fleets (mean annual catch 2021-2025)**: the majority of yellowfin tuna catches are attributed to vessels flagged to Sultanate of Oman (17.1%) followed by Indonesia (11.3%) and I. R. Iran (9.4%). The 34 other fleets catching yellowfin tuna contributed to 62.1% of the total catch in recent years(**Fig. 2**).

References

Walter, J., Winker, H., 2020. Projections to create Kobe 2 Strategy Matrices using the multivariate log-normal approximation for Atlantic yellowfin tuna. Collect. Vol. Sci. Pap. ICCAT, 76(6): 725-739

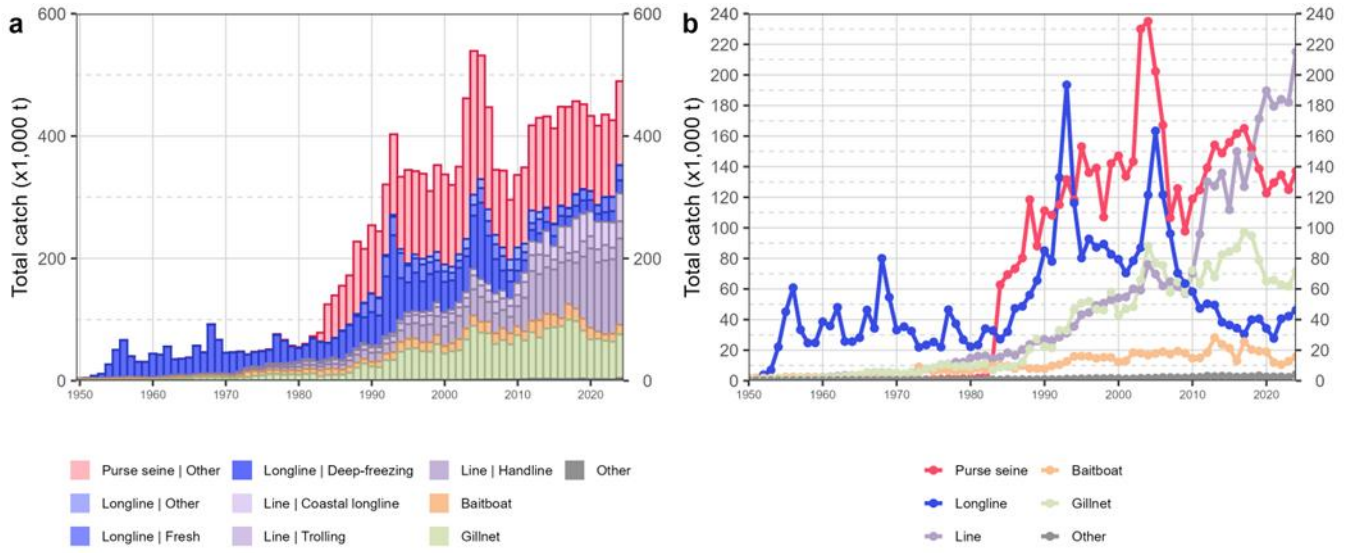

Fig. 1. Annual time series of (a) cumulative retained catches (metric tonnes; t) by fishery and (b) individual retained catches (metric tonnes; t) by fishery group for yellowfin tuna during 1950-2024. Purse seine | Other: coastal purse seine, large-scale purse seine, and ring net; Longline | Other: swordfish and sharks-targeted longlines; Other: all remaining fishing gears

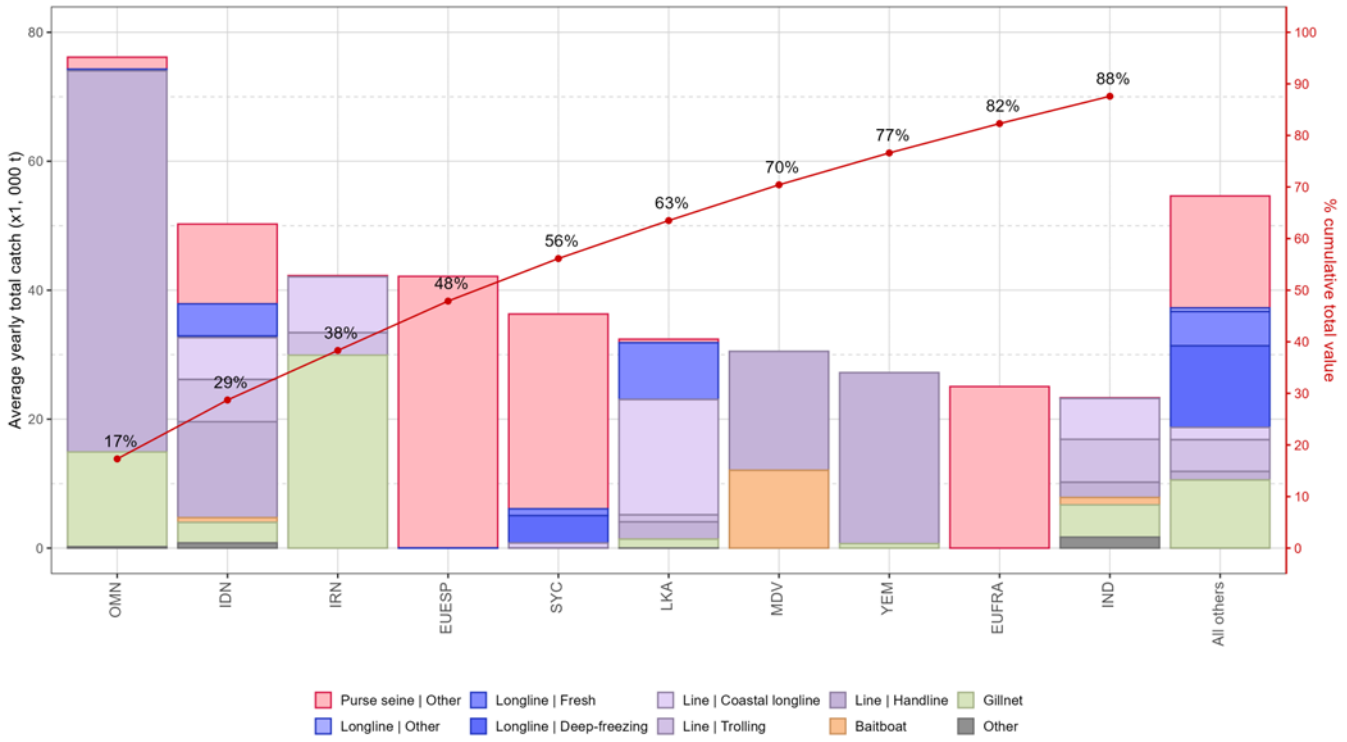

Fig. 2. Mean annual catches (metric tonnes; t) of yellowfin tuna by fleet and fishery between 2019 and 2024, with indication of cumulative catches by fleet. Purse seine | Other: coastal purse seine, large-scale purse seine, and ring net; Longline | Other: swordfish and sharks-targeted longlines; Other: all remaining fishing gears

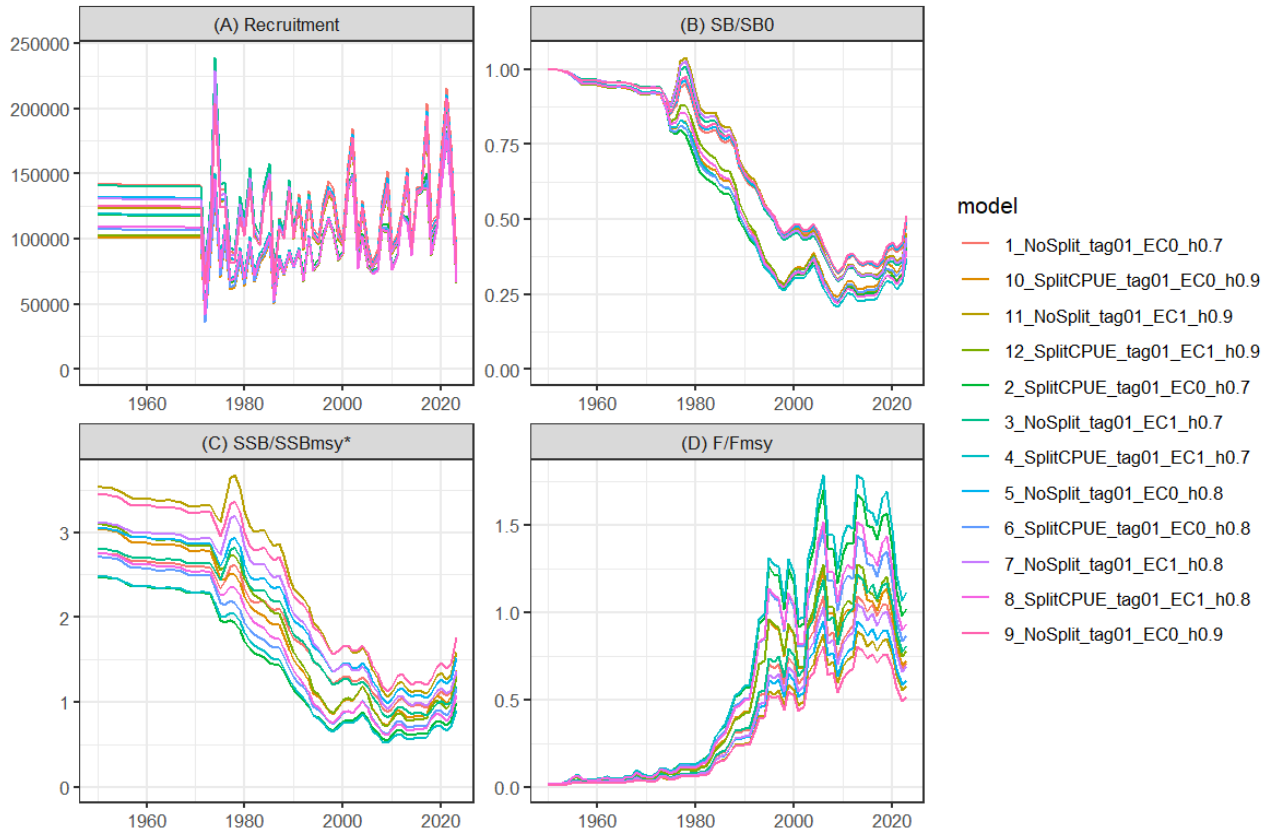

Fig 3. Estimated time series (1950-2023) of recruitment, spawning stock biomass relative to virgin biomass and to spawning stock biomass at MSY and fishing mortality relative to fishing mortality at MSY of yellowfin tuna from the reference models of the 2024 assessment

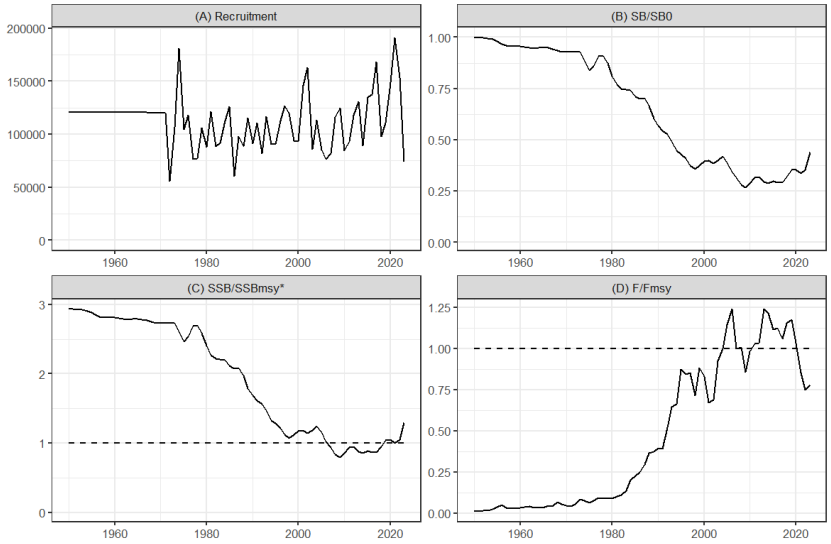

Fig 4. Estimated time series (1950-2023) of recruitment, spawning stock biomass and fishing mortality of yellowfin tuna from the reference model of the 2024 assessment.

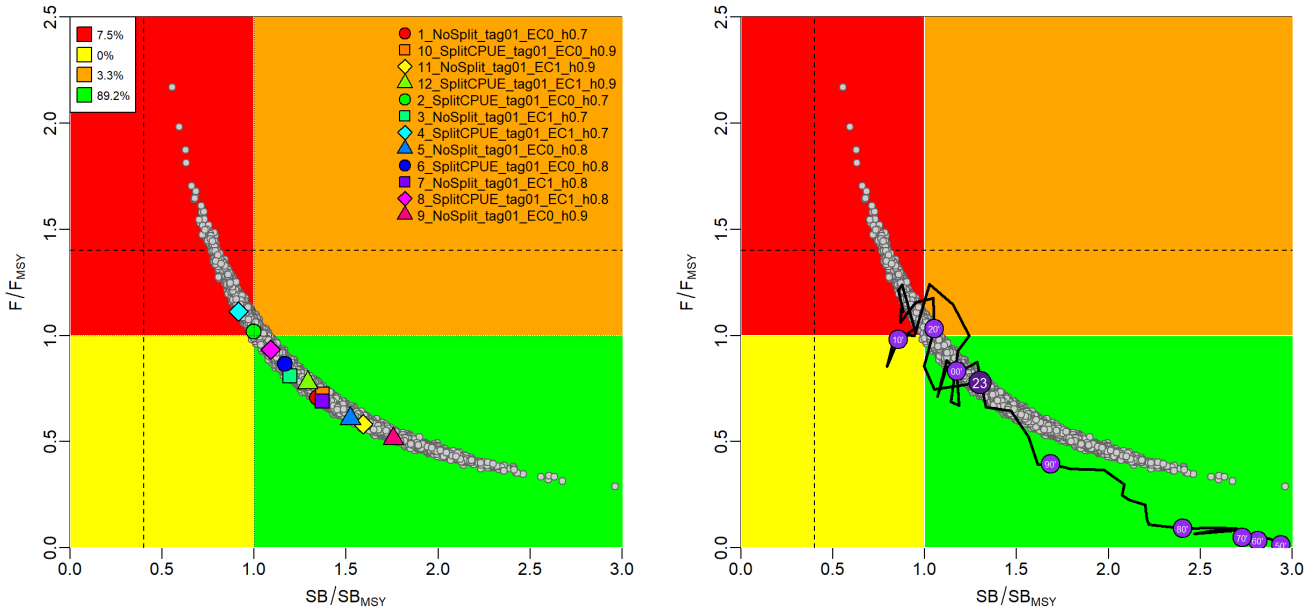

Fig. 5. Yellowfin tuna: SS3 Indian Ocean assessment Kobe plot: (left): current (2023) stock status, relative to SB_{MSY} (x-axis) and F_{MSY} (y-axis) reference points for the final model options. Coloured symbols represent Maximum posterior density (MPD) estimates from individual models. Grey dots represent the statistical uncertainty from individual models (20,000 replicates from each). The dashed lines represent limit reference points for IO yellowfin tuna (SBlim = 0.4 SB_{MSY} and Flim = 1.4 F_{MSY}); (right) mean stock trajectory from the model grid



Fig 6. Standardised Catch Per Unit Effort (CPUE) indices used in the final assessment models: Joint longline CPUE indices by region 1975-2023 (the red lines are indices used in 2021 assessment 1975 – 2020)

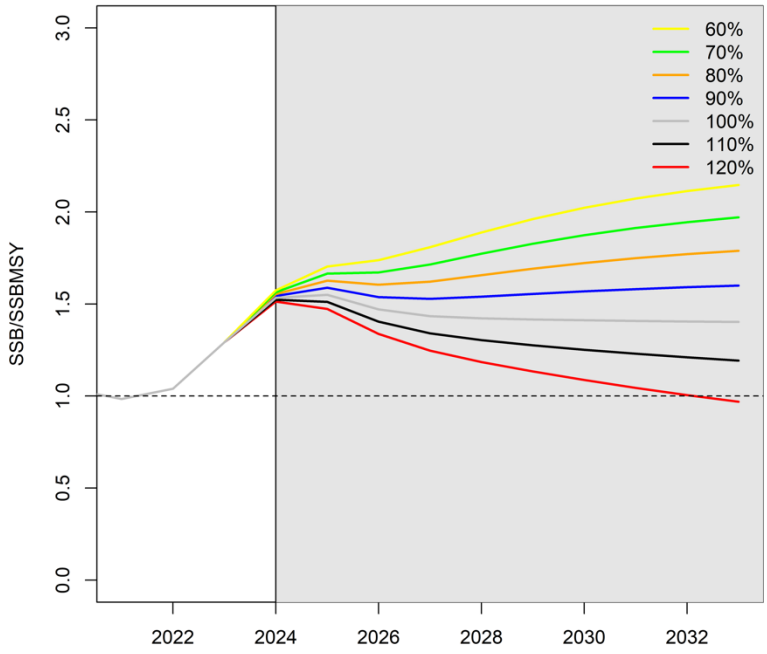

Fig 7. Trajectory showing the impact of alternative catch levels on spawning stock biomass (SSB or SB) relative to spawning stock biomass at MSY relative to the catch level from 2023

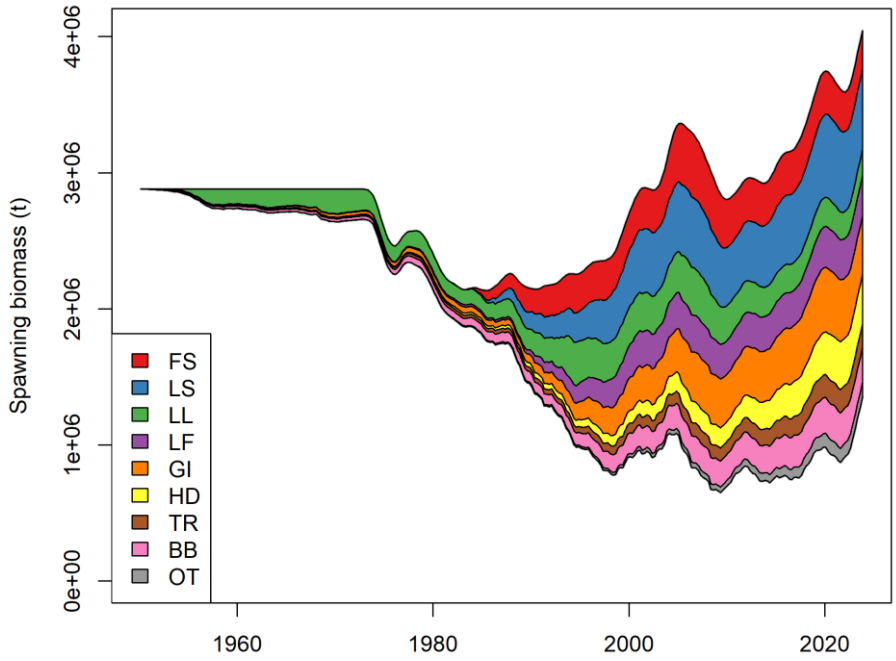

Fig 8. Fishery Impact Plot: Estimates of reduction in spawning biomass due to fishing over all regions attributed to various fishery groups for the assessment model. Fishery group definition: FS, Purse seine free school; LS, Purse seine associated school; LL, longline; LF, fresh tuna longline; GI, gillnet; HD, handline; TR, trolling; BB, Bait boat; OT, others.

TABLE 4. Yellowfin tuna: Stock synthesis assessment Kobe II Strategy Matrix. Probability of violating the MSY-based target (top) and limit (bottom) reference points for constant catch projections (relative to the catch level from 2023 -40%, - 30%, -20%, -10%, 0%, +10%, +20%) projected for 3 and 10 years

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TABLE 3. Yellowfin tuna: Stock synthesis assessment Kobe II Strategy Matrix. Probability of violating the MSY-based target (top) and limit (bottom) reference points for constant catch projections (relative to the catch level from 2023 -40%, - 30%, -20%, -10%, 0%, +10%, +20%) projected for 3 and 10 years

Alternative catch projections (relative to the catch level from 2023) and probability of violating MSY-based target reference points ($SB_{targ} = SB_{MSY}$; $F_{targ} = F_{MSY}$)							
Reference point and projection timeframe	60%	70%	80%	90%	100%	110%	120%
$SB_{2026} < SB_{MSY}$	0	0	0.1	0.1	0.6	1.3	4
$F_{2026} > F_{MSY}$	0	0	0	0	2.5	11.2	30.9
$SB_{2033} < SB_{MSY}$	0	0	0	0	0.1	13.1	66.7
$F_{2033} > F_{MSY}$	0	0	0	0	1.3	31.6	84.9
Alternative catch projections (relative to the catch level from 2023) and probability of violating MSY-based limit reference points ($SB_{lim} = 0.4\ SB_{MSY}$; $F_{Lim} = 1.4\ F_{MSY}$)							

Reference point and projection timeframe	60%	70%	80%	90%	100%	110%	120%
$SB_{2026} < SB_{Lim}$	0	0	0	0	0	0	0
$F_{2026} > F_{Lim}$	0	0	0	0	0	0.1	0.9
$SB_{2033} < SB_{Lim}$	0	0	0	0	0	0	0
$F_{2033} > F_{Lim}$	0	0	0	0	0	0.3	24.1

APPENDIX VII
WORKING PARTY ON TROPICAL TUNAS PROGRAM OF WORK (2027–2031)

The following is the Draft WPTT Program of Work (2027–2031) and is based on the specific requests of the Commission and Scientific Committee. The Program of Work consists of the following, noting that a timeline for implementation would be developed by the SC once it has agreed to the priority projects across all of its Working Parties:

- **Table 1**: Priority topics for obtaining the information necessary to develop stock status indicators for tropical tunas in the Indian Ocean;
- **Table 2**: Stock assessment schedule.

Table 1. Priority topics for obtaining the information necessary to develop stock status indicators for tropical tuna species in the Indian Ocean.

Topic in order of priority	Sub-topic and project	TIMING				
		2027	2028	2029	2030	2031
Fisheries Dependent Abundance indices	Continue to address the recommendations made by the WPTT in 2024 regarding the CPUE indices for yellowfin. In view of the coming assessments of yellowfin, bigeye, and skipjack develop abundance time series for each tropical tuna stock for the Indian Ocean • Continue to develop CPUE indices from Longline, purse seine, Pole and line Gillnet fisheries (e.g., Indonesia, Iran, Pakistan and Oman), and • Evaluate effect of changes of spatial coverage on the longline CPUE through the Joint CPUE workshop and estimate spatial temporal abundance distribution through Spatial Temporal modelling approach					
Fisheries Independent Abundance indices	Fishery independent indices of abundance such as those derived from echosounder buoys. Investigate the potential to use the Indian longline survey as a fishery-independent index of abundance for tropical tunas. Use of Close Kin Mark Recapture (CKMR) methods which can provide estimates of absolute spawning biomass, mortality, stock structure, and connectivity based on genotyping individuals to a level that can identify close relatives (e.g. parent-offspring or half-siblings). Progress the staged approach for implementation of a YFT CKMR project					
Biological and ecological information (incl. parameters for stock assessment)	Support the biological sampling program (funded by the EU grant) to support research on tropical tuna biology. The plan would consider the need for the sampling program to provide representative coverage of the distribution of the different tropical tuna species within the Indian Ocean and make use of samples and data collected through observer programs, port sampling and/or other research programs. The plan would also consider the types of biological samples that could be collected (e.g. otoliths, spines, gonads, stomachs, muscle and liver tissue, fin clips, etc.), the sample sizes required for estimating biological parameters, and the logistics involved in collecting, transporting and processing biological samples. The specific biological parameters that could be estimated include, but are not limited to, estimates of growth, age at maturity, fecundity, sex ratio, spawning season, spawning fraction and stock structure.	.				

Analysis of environmental factors	Evaluate the impact of environmental factors on the dynamics of tropical tuna stocks and the possible role of climate change on changes to selectivity, recruitment deviates and fishing productivity.					

Other Future Research Requirements (not in order of priority)

		2027	2028	2029	2030	2031
1 Stock structure (connectivity and diversity)	1.1 Genetic research to determine the connectivity of tropical tuna species throughout their distribution (including in adjacent Pacific Ocean waters as appropriate) and the effective population size.					
	1.2 Population genetic analyses to decipher intraspecific connectivity, levels of gene flow, genetic divergence and effective population sizes based on genome-wide distributed Single Nucleotide Polymorphisms (SNPs).					
	1.3 Connectivity, movements, and habitat use, including identification of hotspots and investigate associated environmental conditions affecting the tropical tuna species distribution, making use of conventional and electronic tagging (P-SAT).					
	1.4 Investigation into the degree of local or open population in main fishing areas (e.g., the Maldives and Indonesia – archipelagic and open ocean) by using techniques such flux in FAD arrays or used of morphological features such as shape of otoliths.					
2 Historical data review	2.1 Changes in fleet dynamics need to be documented by fleet					
	2.1.1 Provide an evaluation of fleet-specific fishery impacts on the stock of bigeye tuna, skipjack tuna and yellowfin tuna. Project potential impact of realizing fleet development plans on the status of tropical tunas based upon most recent stock assessments.					
3 Stock assessment stock indicators	3.1 Address the outstanding issues identified as priorities by the yellowfin tuna peer review panel (February 2023). Address any recommendations made by the WPTT or SC in 2025.					

		3.2 Develop and compare multiple assessment approaches to determine stock status for tropical tunas 3.3 Scoping of ongoing age composition data collection for stock assessment 3.4 Develop a high resolution age structured operating model that can be used to test the spatial assumptions including potential effects of limited tags mixing on stock assessment outcomes (see Terms of Reference, Appendix IXa IOTC-2017-WPTT19-R).					
4	Target and Limit reference points	4.1 To advise the Commission, on Target Reference Points (TRPs) and Limit Reference Points (LRPs). Used when assessing tropical tuna stock status and when establishing the Kobe plot and Kobe matrices					
5	Fisheries Indicators	5.1 Examination of additional fisheries indicators and their discussion at WP meetings. Perhaps a section in report to accommodate these. See how this is being addressed in other RFMOs.					

Table 2. Assessment schedule for the IOTC Working Party on Tropical Tunas (WPTT)

Species	2027	2028	2029	2030	2031
Bigeye tuna	**Data Prep and MP to be run**	**Data preparatory meeting** **Full assessment**	Indicators	**Data Prep and MP to be run**	**Data preparatory meeting** **Full assessment**
Skipjack tuna	Indicators	**Data Prep for MP and MP to be run**	**Data preparatory meeting** **Full assessment**	Indicators	**Data Prep and MP to be run**
Yellowfin tuna	**[Data preparatory meeting]** **[Full assessment]**	Indicators	Indicators	**Data preparatory meeting** **Full assessment**	Indicators

APPENDIX VIII
CONSOLIDATED RECOMMENDATIONS OF THE 28TH SESSION OF THE WORKING PARTY ON TROPICAL TUNAS

The following are the recommendations from the WPTT28 to the Scientific Committee:

Update of Any New Data Available at the Secretariat for Tropical Tuna Species Since the Data Preparatory Meeting

WPTT28.01 (para 17): The WPTT **NOTED** that deficiencies in data quality and consistency can significantly compromise stock assessment results and reduce confidence in management advice. The WPTT **RECOMMENDED** that the Commission encourage CPCs to improve the quality and transparency of fisheries data by: providing comprehensive documentation of estimation methodologies; reviewing and validating historical datasets; and addressing outstanding data gaps.

WPTT28.02 (para 18): The WPTT **RECOMMENDED that the Commission encourage** CPCs to work with the Secretariat, through the WPDCS, to develop and implement a standardised data quality evaluation framework to assess the consistency of reported data over time. This framework should facilitate the identification and documentation of substantial changes in datasets and determine whether such changes reflect actual trends in fisheries performance or are attributable to modifications in estimation procedures, data processing methods, or data management systems.

Selection of stock status indicators for skipjack tuna

WPTT28.03 (para 115): The WPTT **RECOMMENDED** that the SC report the status of Indian Ocean skipjack using the Kobe plot (MSY based) for consistency with the approach used for the other tropical tuna stocks in the IOTC.

WPTT28.04 (para 119): The WPTT **RECOMMENDED** that the SC oversee a review of Resolution 15/10 and its application of the target and limit reference points and how they are used for the purposes of categorizing stock status and implementing management procedures for IOTC stocks.

WPTT28.05 (para 120): The WPTT REQUESTED that the IOTC Secretariat update the draft stock status summary for skipjack tuna with the latest 2025 catch data, if necessary. The WPTT **RECOMMENDED** that the SC develop the stock status advice as part of the Executive Summary, following the review of the final assessment results.

- Skipjack tuna (*Katsuwonus pelamis*) – Appendix V

Consideration of exceptional circumstances of skipjack tuna management procedure

WPTT28.06 (para 126): Based on information reviewed to date, the WPTT did not identify any exceptional circumstances that warrant the change of the implementation of the skipjack tuna MP. However, the WPTT **RECOMMENDED** that the Commission ensure catches remain within the levels set under the adopted Management Procedure for this stock.

Consideration of exceptional circumstances of bigeye tuna management procedure

WPTT28.07 (para 130): Based on information reviewed to date, the WPTT did not identify any exceptional circumstances that warrant the change of the implementation of the bigeye tuna MP. The WPTT NOTED that catch in 2024 and 2025 exceeded the agreed TAC in Resolution 23/04, which may negatively impact the stock. The WPTT further NOTED the uncertainty in catches and changes in catch reporting. The WPTT RECOMMENDED that the Commission and Compliance Committee review the catches, enact the relevant mechanisms in Resolution 23/04, and ensure total catches are below the TAC.

Resolution 24/02 On Management of Drifting Fish Aggregating Devices (DFADs) in the IOTC Area of Competence

WPTT28.08 (para 185): The WPTT **RECOMMENDED** the establishment of an intersessional expert group, comprising DFAD users and other interested stakeholders, to co-develop DFAD marking guidelines through dedicated virtual meetings and correspondence. Interested participants are encouraged to contact the IOTC Secretariat and the Chair of the WGFAD. A draft set of DFAD marking guidelines should be presented at the next session of the WGFAD for review and consideration.

Revision of the WPTT Program of Work (2027–2031)

WPTT28.09 (para 201): The WPTT **RECOMMENDED** that the SC consider, amend as necessary, and then endorse the WPTT Program of Work (2027–2031), as provided in Appendix VII.

Date and place of the 29th and 30th Sessions of the WPTT (Chair and IOTC Secretariat)

WPTT28.10 (para 210): The Secretariat will continue to liaise with CPCs to determine their interest in hosting these meetings in the future. The WPTT **RECOMMENDED** the SC consider late October 2027 as a preferred time period to hold the WPTT29 meeting in 2027. It was also **AGREED** that the WPTT Assessment meeting should continue to be held back-to-back with the WPM.

Review of the draft, and adoption of the Report of the 28th Session of the WPTT

WPTT28.11 (para 215): The WPTT **RECOMMENDED** that the Scientific Committee consider the consolidated set of recommendations arising from WPTT28, provided at Appendix VIII, as well as the management advice provided in the draft resource stock status summary for each of the three tropical tuna species under the IOTC mandate, and the combined Kobe plot for the three species assigned a stock status in 2026 (Figure 2):

- Bigeye tuna (*Thunnus obesus*) – Appendix IV
- Skipjack tuna (*Katsuwonus pelamis*) – Appendix V
- Yellowfin tuna (*Thunnus albacares*) – Appendix VI

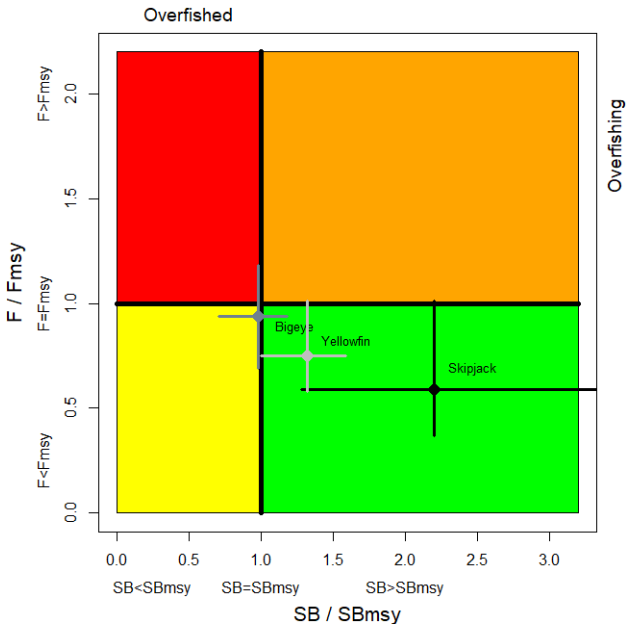

Figure 2. (Left) Combined Kobe plot for skipjack tuna (black: 2026), bigeye tuna (dark grey: 2025), and yellowfin tuna (grey: 2024) showing the estimates of current stock size (SB) and current fishing mortality (F) in relation to the MSY-based spawning biomass and fishing mortality reference points. Cross bars illustrate the range of uncertainty from the model runs with an 80% CI.