

OUTCOMES OF THE 27th SESSION OF THE SCIENTIFIC COMMITTEE

PREPARED BY: IOTC SECRETARIAT, 3 AUGUST 2025

PURPOSE

To inform participants at the 23rd Working Party on Billfish (WPB23) of the recommendations arising from the 27th Session of the IOTC Scientific Committee (SC) held from 2–6 December 2024, specifically relating to the work of the WPB.

BACKGROUND

At the 27th Session of the SC, the SC noted and considered the recommendations made by the WPB in 2024 that included requests to address the deficiencies in data collection, monitoring and reporting by CPCs, as well as to carry out targeted research and analysis on billfish species.

Billfish caught in the IOTC area of competence

IOTC code	English name	Scientific name
BLM	Black marlin	<i>Makaira indica</i>
BUM	Blue marlin	<i>Makaira nigricans</i>
MLS	Striped marlin	<i>Tetrapturus audax</i>
SFA	Indo-Pacific sailfish	<i>Istiophorus platypterus</i>
SWO	Swordfish	<i>Xiphias gladius</i>

Based on the recommendations arising from the WPB22, the SC27 adopted a set of recommendations, provided at [Appendix A](#) of this paper. The recommendations contained in [Appendix A](#) were provided to the Commission for consideration at its 29th Session held in May 2025.

In addition, the SC27 reviewed and endorsed a Program of Work (2025–29) for the WPB, including a revised stock assessment schedule, as detailed in [Appendix B](#). A separate paper (IOTC–2025–WPB23–08) will outline the review and development process for a Program of Work for the WPB for the next five years (2026–29).

DISCUSSION

In addition to the recommendations outlined in [Appendix A](#), [Appendix B](#) and the SC made several other comments relevant to the WPB, which participants are asked to consider:

Report of the 22nd Session of the Working Party on Billfish (WPB22)

48. The SC **NOTED** the report of the 22nd Session of the Working Party on Billfish ([IOTC–2024–WPB22–R](#)), including the consolidated list of recommendations provided as an appendix to the report. The meeting was attended by 47 participants (cf. 97 in 2023). Five participants received funding through the MPF.
49. The SC **THANKED** and **CONGRATULATED** the Chair and the WPB for their efforts and accomplishments during the 22nd session of the WPB.
50. The SC **NOTED** that, according to the FAO Global Capture Production Database, the Indian Ocean has accounted for more than 40% of the global billfish catch in recent years.
51. The SC **NOTED** that annual Indian Ocean billfish catches increased from approximately 5,500 tonnes in the 1950s to around 90,000 tonnes in the 2010s, representing less than 5% of the total catch of IOTC species in recent years.
52. The SC further **NOTED** that the contribution of gillnets has increased over the years, accounting for nearly 50% of the total billfish catch in the Indian Ocean in recent years.

7.2.1 Billfish reproductive biology workshop

53. The SC **NOTED** that a portion of the 22nd session of the WPB was dedicated to billfish reproductive biology, **ACKNOWLEDGING** the contribution of an invited expert, Dr. Robert Humphreys, who presented a comprehensive review of past and recent studies utilising gonad histology to define reproductive phases and maturity status in billfish species.

7.2.2 Striped marlin stock assessment

54. The SC **NOTED** with concern the status of the striped marlin stock in the Indian Ocean, despite the agreement to catch limits established in late 2018 through Resolution 18/05. Both a surplus production model using JABBA and an age-structured model using SS3 indicated that the stock was overfished and subject to overfishing in 2022 with a probability of 100%.
55. The SC **NOTED** that the stock status determination in the stock-specific tables of the report refers to the year 2024, despite the input data being available only up to 2022. The SC **AGREED** that the year of assessment could serve as the reference year in the management advice but **ACKNOWLEDGED** the importance of ensuring this approach is consistent across all assessments conducted by the IOTC for harmonisation purposes.
56. **NOTING** that information on stock abundance is derived from the longline fisheries of Japan and Taiwan, China, which have caught relatively small amounts of striped marlin in recent years, the SC **NOTED** the importance of better emphasising the major fishing nations targeting striped marlin.
57. The SC **ACKNOWLEDGED** that the fishing mortality levels (F_{2022}/F_{MSY}) estimated by the models were exceptionally high, with values of 9.26 and 3.95 according to SS3 and JABBA, respectively. The SC **NOTED** that the intensity of the depletion level has been primarily driven by the Japanese longline CPUE in a specific area historically, while the recent increase in catch contributed to the elevated fishing mortality levels.
58. The SC **AGREED** that the abundance indices derived from longline CPUE analyses will be critical for future assessments and **ENCOURAGED** all concerned CPCs to allocate adequate time and resources to support this work.

7.2.3 Black marlin stock assessment

59. The SC **ACKNOWLEDGED** the progress made on the assessment of black marlin, which could not be determined previously due to substantial uncertainties, primarily arising from conflicting information between CPUE and catch data.
60. The SC **NOTED** that the assessment model applied to the stock of black marlin indicated that the stock was not overfished but subject to overfishing in 2022 with a probability of 62.2%.
61. **NOTING** that a joint analysis of fleet specific CPUE based on a consistent statistical framework which accounts for differences in catchability between fleets could be useful for assessing species under the mandate of WPB, the SC **RECOMMENDED** that the Commission urge the CPCs to dedicate effort to harmonising the standardised methods for different fleets and to develop a joint analysis combining catch effort data from key fleets for major billfish species where feasible.

7.2.4 Revision of catch levels of marlins under Resolution 18/05

62. The SC **NOTED** that the catch levels of black marlin and Indo-Pacific sailfin shark have exceeded the catch limits established under Resolution [18/05](#), while the catches of blue marlin have remained well below the limit in recent years (**Fig. 1**).
63. For striped marlin, the SC **ACKNOWLEDGED** that the stock has remained subject to overfishing and overfished. While reported catches remained below the Resolution [18/05](#) limit of 3,260 t during 2018-2022, they have been above levels required to recover the stock to BMSY, as indicated by the most recent assessment based projections.
64. The SC **RECALLED** that the Resolution [18/05](#) catch limits were based on previous stock assessments and emphasised the need for their revision and update in light of the most recent data and stock status information.

65. The SC **RECOMMENDED** that the Commission reassess the effectiveness of the current measures within this resolution and to revise Resolution 18/05 to update the catch limits based on the latest stock assessments and projections for the billfish species.

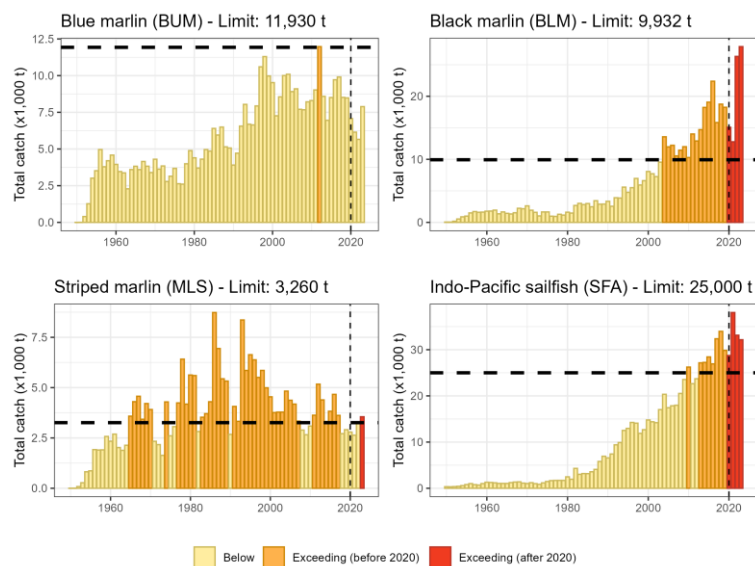


Fig. 1. Annual retained catches of blue marlin (top-left panel), black marlin (top-right panel), striped marlin (bottom-left panel), and Indo-Pacific sailfish (bottom-right panel)

RECOMMENDATION/S

That the WPB:

- 1) **NOTE** paper IOTC–2025–WPB23-03 which outlined the main outcomes of the 27th Session of the Scientific Committee (SC27), specifically related to the work of the WPB.
- 2) **CONSIDER** how best to progress these issues at the present meeting.

APPENDICES

- [Appendix A:](#) Consolidated set of recommendations of the 27th Session of the Scientific Committee to the Commission, relevant to the Working Party on Billfish.
- [Appendix B:](#) Schedule of stock assessments for the WPB (2025–2029).

APPENDIX A

CONSOLIDATED SET OF RECOMMENDATIONS OF THE 27th SESSION OF THE SCIENTIFIC COMMITTEE (2– 6 December 2024) TO THE COMMISSION RELEVANT TO THE WORKING PARTY ON BILLFISH

Extract of the Report of the 27th Session of the Scientific Committee

(IOTC–2024–SC27–R; Appendix 98)

STATUS OF TUNA AND TUNA-LIKE RESOURCES IN THE INDIAN OCEAN AND ASSOCIATED SPECIES

Billfish

SC27.03 (para. 178) The SC **RECOMMENDED** that the Commission note the management advice developed for each billfish species under the IOTC mandate, as provided in the Executive Summary for each species, and the combined Kobe plot for the five species assigned a stock status in 2024 (Fig. 4):

Black marlin (*Istiompax indica*) – [Appendix 18](#)

Blue marlin (*Makaira nigricans*) – [Appendix 19](#)

Striped marlin (*Kajikia audax*) – [Appendix 20](#)

Indo-Pacific sailfish (*Istiophorus platypterus*) – [Appendix 21](#)

Swordfish (*Xiphias gladius*) – [Appendix 22](#)

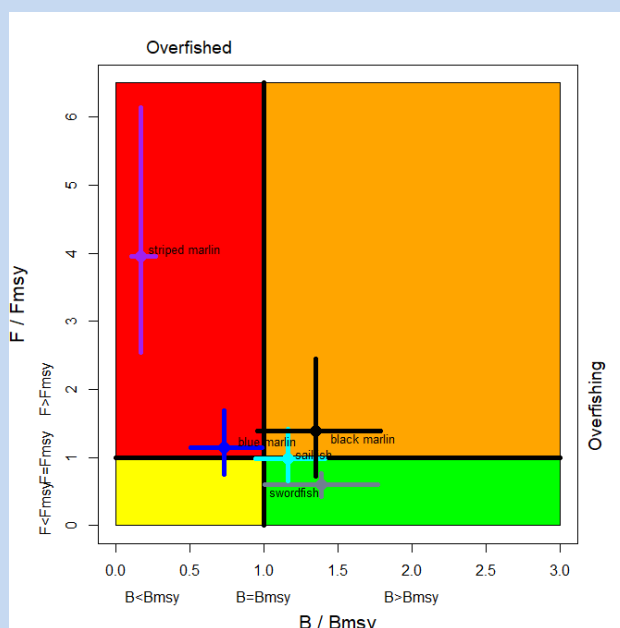


Fig. 4. Combined Kobe plot for swordfish (2021 with assessment conducted in 2023, grey), Indo-Pacific sailfish (2019 with assessment conducted in 2022, cyan), black marlin (2022 with assessment conducted in 2024, black), blue marlin (2020 with assessment conducted in 2022, blue) and striped marlin (2022 with assessment conducted in 2024, purple) showing the estimates of current stock size (SB or B, species assessment dependent) and current fishing mortality (F) in relation to optimal stock size and optimal fishing mortality. Cross bars illustrate the range of uncertainty from the model runs. Given unresolved uncertainty in the assessment, status for black marlin is uncertain.

GENERAL RECOMMENDATIONS TO THE COMMISSION, TO SPECIFIC CPCs AND/OR OTHER BODIES

SUMMARY DISCUSSION OF MATTERS COMMON TO WORKING PARTIES (CAPACITY BUILDING ACTIVITIES – STOCK ASSESSMENT COURSE; CONNECTING SCIENCE AND MANAGEMENT, ETC.)

REPORT OF THE 22ST SESSION OF THE WORKING PARTY ON BILLFISH (WPB22)

SC27.10 (para. 58) **NOTING** that a joint analysis of fleet specific CPUE based on a consistent statistical framework which accounts for differences in catchability between fleets could be useful for assessing species under the mandate of WPB, the SC **RECOMMENDED** that the Commission urge the CPCs to dedicate effort to harmonising the standardised methods for different fleets and to develop a joint analysis combining catch effort data from key fleets for major billfish species where feasible.

Revision of catch levels of marlins under Resolution 18/05

SC27.11 (para. 62) The SC **RECOMMENDED** that the Commission reassess the effectiveness of the current measures within this resolution and to revise Resolution 18/05 to update the catch limits based on the latest stock assessments and projections for the billfish species.

Swordfish tuna MP (Resolution 24/08)

SC27.21 (para. 124) The SC **RECOMMENDED** that the Commission implement a TAC for 2026-2028 for swordfish based on the amended and retuned MP1 if the Commission wishes to ensure that it achieves the current objective in Res 24/08 to be in the Kobe green zone with at least 60% probability during 2034-2038 period. This would require a minor amendment to the Target CPUE value in Annex I of Res 24/08 from 0.7125 to 0.75. The SC **NOTED** that should the Commission continue to implement the current MP1, without retuning, it has a lower probability (54%) of being in the Kobe green zone and higher TAC variability, but otherwise similar performance statistics (Table 1 of IOTC–204–WPM15–R). The TAC derived from running SWO MP1 with or without retuning is 30527 t (i.e. the same and therefore not a severe impact) because the max TAC change constrain is reached in both MPs.

SC27.22 (para. 125) Irrespective of the MP chosen by the Commission, the SC **RECOMMENDED** that the Commission endorse the resultant TAC of 30,527 t for swordfish for 2026-2028.

Invited Expert(s) at the WP meetings

SC27.25 (para. 159) Given the importance of external independent review for working party meetings, the SC **RECOMMENDED** the Commission continues to allocate sufficient budget for invited scientific experts to be regularly invited to scientific working party meetings.

IOTC species identification guides: Tuna and tuna-like species

SC27.26 (para. 165) The SC reiterated its **RECOMMENDATION** that the Commission allocates budget towards continuing the translation and printing of the IOTC species ID guides so that hard copies of the identification cards can continue to be printed as many CPC scientific observers, both on board and at port need to have hard copies.

Chairpersons and Vice-Chairpersons of the SC and its subsidiary bodies

SC27.27 (para. 170) The SC **RECOMMENDED** that the Commission note and endorse the Chairpersons and Vice-Chairpersons for the SC and its subsidiary bodies for the coming years, as provided in [Appendix 7](#).

Other matters

SC27.28 (para. 174) The SC **NOTED** the occasional need of technical workshops, corresponding to a request by the SC or Commission. The SC **RECOMMENDED** that:

- Technical workshops are not to be nested within Working Party meetings
- The terms of reference for such technical workshops should be established ahead of time to clarify their role and decision-making process, including whether they can make direct recommendations to the SC.

PROGRAM OF WORK AND SCHEDULE OF WORKING PARTY AND SCIENTIFIC COMMITTEE MEETINGS**Consultants**

SC27.29 (para. 199) **NOTING** the highly beneficial and relevant work done by IOTC stock assessment consultants in previous years, the SC **RECOMMENDED** that the engagement of consultants be continued for each coming year based on the Program of Work. Consultants will be hired to supplement the skill set available within the IOTC Secretariat and CPCs.

Data preparatory meetings and Hybrid meetings

SC27.30 (para. 201) **ACKNOWLEDGING** that holding data preparatory meetings prior to stock assessments is considered to be best practice (as identified by the yellowfin stock assessment external reviewer, the WPTT and the WPDCS) and noting that since 2019 data preparatory meetings were successfully held for the WPTmT, WPTT and WPEB, the SC **AGREED** to continue the practice of having data preparatory meetings in addition to stock assessment meetings for the major IOTC species. The SC **RECOMMENDED** that data preparatory meetings could continue to be held virtually so as not to increase the travel and costs required for the already full IOTC timetable of meetings.

SC27.31 (para. 202) The SC **NOTED** that there had been a few teething problems holding meetings in a hybrid format in 2023 and 2024, especially related to the costs associated with the audio-visual equipment required, as well as the issues associated with ensuring the equipment was suitable to ensure full participation of both those in person as well as those connecting virtually. However, the SC **AGREED** on the utility of facilitating both in-person and virtual participation at future meetings to ensure increased participation and reduce the logistical costs for many CPCs and observers. As such, the SC **RECOMMENDED** that future Scientific Committee meetings continue to be held in a hybrid format, as well as working parties if possible. The SC further **RECOMMENDED** that all presentations at these meetings be made in person to ensure the aforementioned issues did not adversely affect the quality of the advice being provided.

SC27.32 (para. 203) The SC **NOTED** all IOTC working party meetings this year (except the WPDCS and WPSE) were held in Seychelles, as there were no offers to host them. The SC meeting was originally planned in Seychelles but this was not possible due to unavailability of the venue. There has been an increasing reluctance for CPCs to offer to host IOTC scientific working party and SC meetings. This reluctance may be due to budget constraints, as well as the logistical burdens of Hybrid meetings. The SC **NOTED** that there has been a number of issues when hosting meetings in Seychelles (e.g., high cost). The SC **RECOMMENDED** this issue be discussed at the Commission in order to find a way forward.

IOTC Scientific Strategic Research Plan

SC27.33 (para. 208) The SC **AGREED** that the draft updated IOTC Strategic Science Plan 2025–2029 will be distributed to Heads of Delegation from each CPC for comment during early 2025. Thereafter comments will be collated and consolidated and another version sent to CPCs for final review. Pending agreement of CPCs, and noting that the IOTC Strategic Science Plan would be a dynamic document that would change over time, the SC **RECOMMENDED** that the revised draft of the IOTC Strategic Science Plan 2025–2029 be tabled at the Commission meeting in 2025.

REVIEW OF THE DRAFT, AND ADOPTION OF THE REPORT OF THE 25TH SESSION OF THE SCIENTIFIC COMMITTEE

SC27.34 (para. 214) The SC **RECOMMENDED** that the Commission consider the consolidated set of recommendations arising from SC25, provided at [Appendix 39](#).

APPENDIX B**ASSESSMENT SCHEDULE FOR IOTC SPECIES AND SPECIES OF INTEREST FROM 2025–2029***Extract of the Report of the 27th Session of the Scientific Committee**(IOTC–2024–SC27–R; Appendix 37)*

The SC **ADOPTED** a revised assessment schedule, ecological risk assessment and other core projects for 2025–2029, for the tuna and tuna-like species under the IOTC mandate, as well as the current list of key billfish species of interest.

<i>Working Party on Billfish</i>					
Species	2025	2026	2027	2028	2029
Black marlin			Full assessment		
Blue marlin	Full assessment			Full assessment	
Striped marlin			Full assessment		
Swordfish		Full assessment	Run MP		Full assessment
Indo-Pacific sailfish	Full assessment			Full assessment	