

## OUTCOMES OF THE 26<sup>th</sup> SESSION OF THE SCIENTIFIC COMMITTEE

PREPARED BY: IOTC SECRETARIAT, 3 AUGUST 2024

### PURPOSE

To inform participants at the 22<sup>nd</sup> Working Party on Billfish (WPB22) of the recommendations arising from the 26<sup>th</sup> Session of the IOTC Scientific Committee (SC) held from 4–8 December 2023, specifically relating to the work of the WPB.

### BACKGROUND

At the 26<sup>th</sup> Session of the SC, the SC noted and considered the recommendations made by the WPB in 2023 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 WPB21, the SC25 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 28<sup>th</sup> Session held in May 2024.

In addition, the SC25 reviewed and endorsed a Program of Work (2023–27) for the WPB, including a revised stock assessment schedule, as detailed in [Appendix B](#). A separate paper (IOTC–2023–WPB21–08) will outline the review and development process for a Program of Work for the WPB for the next five years (2024–28).

### 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 21<sup>st</sup> Session of the Working Party on Billfish**

48. The SC **NOTED** the report of the 21<sup>st</sup> Session of the Working Party on Billfish (IOTC–2023–WPB21–R), including the consolidated list of recommendations provided as an appendix to the report. The meeting was attended by 97 participants (cf. 51 in 2022). Eight participants received funding through the MPF.
49. The SC **NOTED** that the WPB had reviewed evidence that shortbill spearfish (*Tetrapturus angustirostris*) is being caught in IOTC fisheries and that the species population size may be declining. The SC **ACKNOWLEDGED** that the addition of shortbill spearfish in the official list of IOTC species may require a review of the IOTC Agreement, which would be a complex administrative process and unlikely to occur in the near future. The SC **AGREED** that a way to move forward may be for the Commission to adopt the same approach as for the main pelagic sharks caught in tuna and tuna-like fisheries (e.g., blue shark) and mandate the SC with collating information on this species and providing scientific advice for its management. As such the SC **RECOMMENDED** that the Commission endorse the SC's approach to address the captures of shortbill spearfish in IOTC fisheries.

#### **7.2.1 Swordfish stock assessment**

50. The SC **NOTED** that a new stock assessment was conducted in 2023 using SS3, an integrated age-structured model. The SC **ENDORSED** the results of the assessment model which indicated that the stock is not overfished and not subject to overfishing with a high probability (97%).
51. However, the SC **NOTED** that there was some key uncertainty in the assessment, particularly in one of the regions of the assessment where the Japanese longline CPUE time series showed some spikes over the last decade at a time when the catches were at a historically high level. The SC **NOTED** that this issue was considered to some extent in the assessment but **AGREED** that it would be useful to further explore it in the future.
52. The SC **NOTED** that an additional population model (i.e., ASPIC) was used for the assessment of the swordfish stock status, providing consistent results with SS3, and **ACKNOWLEDGED** that the use of multiple assessment models constitutes a good practice that should be continued in future Working Parties as much as possible.

### 7.2.2 Revision of catch levels of marlins under Resolution 18/05

53. The SC **RECALLED** that Resolution [18/05](#) *On management measures for the conservation of billfish, striped marlin, black marlin, blue marlin and Indo-Pacific sailfish* encourages CPCs to “...ensure that the overall catches, of the Indian Ocean Striped Marlin, Black Marlin, Blue Marlin and Indo Pacific Sailfish in any given year do not exceed either the MSY level or, in its absence, the lower limit of the MSY range of central values as estimated by the Scientific Committee...”. Moreover, Resolution 18/05 also requires the SC to “...annually review the information provided and assess the effectiveness of the fisheries management measures reported by CPCs on striped marlin, black marlin, blue marlin and Indo-Pacific sailfish and, as appropriate, provide advice to the Commission”.
54. The SC **NOTED** that the catch limits stipulated in Res. 18/05 are based on estimates of MSY from older assessments that have subsequently been updated in 2021 (black marlin and striped marlin) and 2022 (blue marlin and Indo-Pacific sailfish), resulting in revised estimates of MSY.
55. The SC **NOTED** that for blue marlin and striped marlin, which are both assessed as overfished and subject to overfishing, the recent (2022) catches are significantly below (for blue marlin) or just above (for striped marlin) the Res 18/05 catch limits. However, the 2021 assessments have also generated K2SM projections which have indicated that recent catches for both species have substantially exceeded the levels that would return those stocks into the Kobe green quadrant by year 2029 for striped marlin and 2030 for blue marlin.
56. The SC **NOTED** that for black marlin and Indo-Pacific sailfish, reported catches continue to exceed the limits set out in Resolution 18/05 since 2020. While K2SM projections have not been undertaken for either stock, recent catches have exceeded the most recent median estimates of MSY (from the 2022 assessments for blue marlin and Indo-Pacific sailfish and the 2021 assessment for black marlin). The SC further **NOTED** that catches of both species are predominantly taken by gillnet which have increased substantially in recent years.
57. Subsequently, the SC **RECOMMENDED** that Resolution 18/05 be urgently revised and updated so as to reflect MSY based catch limits for each species based on the most recent stock assessment and projections information available, and to contain provisions to ensure that catches do not exceed such limits. The SC **REQUESTED** that for Indo-Pacific sailfish, K2SM projections be provided based on the most recent assessment so as to inform revised limits for that stock, and that further work is undertaken to improve the black marlin assessment to generate status and catch limit information.

## RECOMMENDATION/S

That the WPB:

- 1) **NOTE** paper IOTC–2024–WPB22-03 which outlined the main outcomes of the 26<sup>th</sup> Session of the Scientific Committee (SC26), 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 26<sup>th</sup> Session of the Scientific Committee to the Commission, relevant to the Working Party on Billfish.
- [Appendix B](#): Schedule of stock assessments for the WPB (2024–28).

## APPENDIX A

**CONSOLIDATED SET OF RECOMMENDATIONS OF THE 26<sup>th</sup> SESSION OF THE SCIENTIFIC COMMITTEE (4– 8 December 2023) TO THE COMMISSION RELEVANT TO THE WORKING PARTY ON BILLFISH**

*Extract of the Report of the 26<sup>th</sup> Session of the Scientific Committee*

*(IOTC–2023–SC26–R; Appendix 38)*

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

**Billfish**

SC26.04 (para. 162) 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 2022 (Fig. 3):

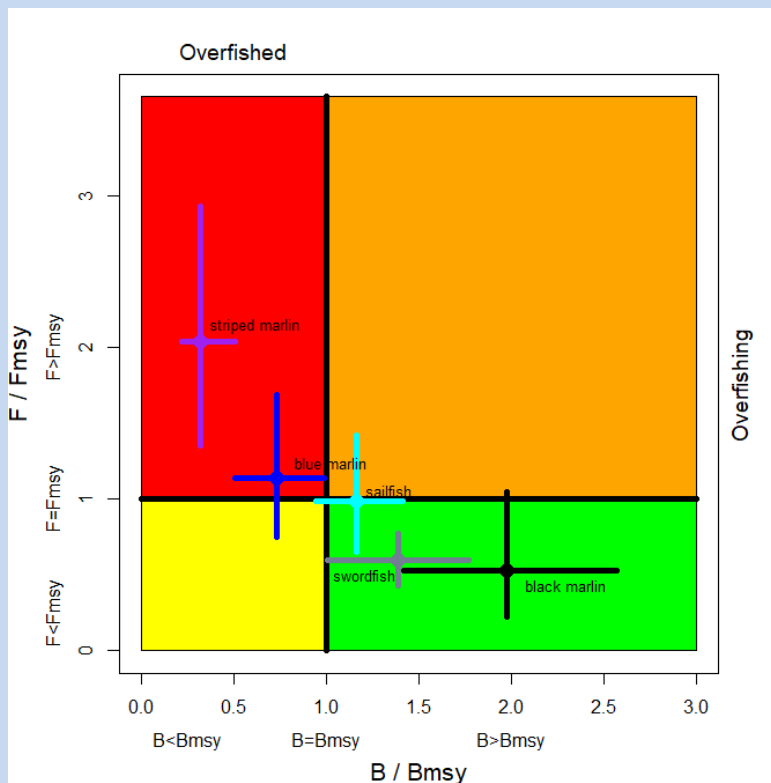
Black marlin (*Istiompax indica*) – [Appendix 18](#)

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. 3.** Combined Kobe plot for swordfish (2021 with assessment conducted in 2023, grey), Indo-Pacific sailfish (2019 with assessment conducted in 2022, cyan), black marlin (2019 with assessment conducted in 2021, black), blue marlin (2020 with assessment conducted in 2022, blue) and striped marlin (2019 with assessment conducted in 2021, 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 21<sup>ST</sup> SESSION OF THE WORKING PARTY ON BILLFISH (WPB21)*

SC26.09 (para. 49) The SC **NOTED** that the WPB had reviewed evidence that shortbill spearfish (*Tetrapturus angustirostris*) is being caught in IOTC fisheries and that the species population size may be declining. The SC **ACKNOWLEDGED** that the addition of shortbill spearfish in the official list of IOTC species may require a review of the IOTC Agreement, which would be a complex administrative process and unlikely to occur in the near future. The SC **AGREED** that a way to move forward may be for the Commission to adopt the same approach as for the main pelagic sharks caught in tuna and tuna-like fisheries (e.g., blue shark) and mandate the SC with collating information on this species and providing scientific advice for its management. As such the SC **RECOMMENDED** that the Commission endorse the SCs approach to address the captures of shortbill spearfish in IOTC fisheries.

#### *Revision of catch levels of marlins under Resolution 18/05*

SC26.10 (para. 57) Subsequently, the SC **RECOMMENDED** that Resolution 18/05 be urgently revised and updated so as to reflect MSY based catch limits for each species based on the most recent stock assessment and projections information available, and to contain provisions to ensure that catches do not exceed such limits. The SC **REQUESTED** that for Indo-Pacific sailfish, K2SM projections be provided based on the most recent assessment so as to inform revised limits for that stock, and that further work is undertaken to improve the black marlin assessment to generate status and catch limit information.

#### *Invited Expert(s) at the WP meetings*

SC26.21 (para. 153) Given the importance of external independent review for working party meetings, the SC **RECOMMENDED** the Commission continue 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*

SC26.22 (para. 155) 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*

SC26.23 (para. 157) The SC **RECALLED** its recommendation in 2022 that the Commission revise the current Rules of Procedure (if necessary) to allow Chairs to serve an additional year or years beyond two terms if no suitable candidates are available to replace them once their terms are completed. The SC **NOTED** that the Commission endorsed the SC recommendations as its own and that therefore this recommendation was approved. In light of this recommendation the terms of several Working Party Chairs as well the SC Chair was extended beyond their two terms and the SC **RECOMMENDED** that this be noted and endorsed by the Commission.

SC26.24 (para. 158) 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](#).

#### *IMPLEMENTATION OF THE REGIONAL OBSERVER SCHEME*

SC26.25 (para. 175) The SC **ACKNOWLEDGED** that the estimated levels of coverage provided in Appendix B.1 of IOTC-2023-SC26-07\_rev1 are based on the number of hooks (observed and total), as this effort unit is the only one generally available to the IOTC Secretariat. The SC further **NOTED** that the issue had been previously raised during SC25 and therefore **REITERATED** its **RECOMMENDATION** (SC25.34 (Para. 172)) that at the next revision of Res.

15/02 this is amended to include the mandatory reporting of sets/operations as a additional unit of effort for longline fisheries.

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

***Consultants***

SC26.26 (para. 187) 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***

SC26.27 (para. 189) **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..

SC26.28 (para. 190) The SC **NOTED** that there had been a few teething problems holding meetings in a hybrid format in 2023, 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.

***REVIEW OF THE DRAFT, AND ADOPTION OF THE REPORT OF THE 25<sup>TH</sup> SESSION OF THE SCIENTIFIC COMMITTEE***

SC26.29 (para. 196) The SC **RECOMMENDED** that the Commission consider the consolidated set of recommendations arising from SC25, provided at [Appendix 38](#).

**APPENDIX B****ASSESSMENT SCHEDULE FOR IOTC SPECIES AND SPECIES OF INTEREST FROM 2024–2028***Extract of the Report of the 26<sup>th</sup> Session of the Scientific Committee**(IOTC–2023–SC26–R; Appendix 36, Page 197)*

The SC **ADOPTED** a revised assessment schedule, ecological risk assessment and other core projects for 2024–28, for the tuna and tuna-like species under the IOTC mandate, as well as the current list of key billfish species of interest.

<b>Working Party on Billfish</b>					
Species	2024	2025	2026	2027	2028
Black marlin	Full assessment			Full assessment	
Blue marlin		Full assessment			Full assessment
Striped marlin	Full assessment			Full assessment	
Swordfish		Indicators**	Full assessment		Indicators**
Indo-Pacific sailfish		Full assessment*			Full assessment*

\* Including data poor stock assessment methods; Note: the assessment schedule may be changed depending on the annual review of fishery indicators, or SC and Commission requests.

\*\* Including biological parameters, standardized CPUE, and other fishery trends