

OUTCOMES OF THE 18th SESSION OF THE SCIENTIFIC COMMITTEE

PREPARED BY: IOTC SECRETARIAT, 11 AUGUST 2016

PURPOSE

To inform participants at the 14th Working Party on Billfish (WPB14) of the recommendations arising from the 18th Session of the IOTC Scientific Committee (SC) held from 23-27 November 2015, specifically relating to the work of the WPB.

BACKGROUND

At the 18th Session of the SC, the SC noted and considered the recommendations made by the WPB in 2015 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 WPB13, the SC18 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 20th Session held in May 2016. A separate paper, IOTC–2016–WPB14–04 addresses the responses and actions of the Commission.

In addition, the SC18 reviewed and endorsed a Program of Work (2016–20) for the WPB, including a revised stock assessment schedule, as detailed in [Appendix B](#) and [Appendix C](#). A separate paper (IOTC–2016–WPB14–08) will outline the review and development process for a Program of Work for the WPB for the next five years.

DISCUSSION

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

Report of the 13th Session of the Working Party on Billfish (WPB13)

Sports fishery data collection

The SC **NOTED** that the current state of data collection for most recreational fisheries for marlin in the Indian Ocean is limited, although several key NGOs, including the African Billfish Foundation (ABF) have been working with sports fishers for many years to encourage a willingness to collect sports fishery data.

The SC **RECOMMENDED** that the Chairperson and Vice-Chairperson continue to work in collaboration with the IOTC Secretariat and the African Billfish Foundation to find a suitable funding source and lead investigator to undertake the project outlined in the Report of the WPB13. The aim of the project is to enhance data recovery from sports and other recreational fisheries in the western Indian Ocean region, from which alternative abundance indices could be developed for marlins and I.P. sailfish. The Chairperson shall circulate the concept note to potential funding bodies on behalf of the WPB. A similar concept note could be developed for other regions in the IOTC area of competence at a later date.

*Data input for stock assessments***Table 1.** Estimated budget required to hire a consultant to carry out stock assessments on billfish species under the IOTC mandate in 2017 and 2018, noting that the 2016 budget has already been approved by the Commission.

Description	Unit price	Units required	2017 Total (US\$)	2018 Total (US\$)
WPB				
Billfish data poor stock assessment, including the development of CPUE series for coastal gillnet and fisheries other than industrial longline (fees)	450	25	11,250	11,250
Billfish data poor stock assessment (travel)	5,000	1	5,000	5,000

Executive summaries for billfish species

The SC also adopted revised Executive Summaries for each of the billfish species that can be found as appendices to the SC18 report, and which can be downloaded from the IOTC website in English and French:

English: <http://iotc.org/science/scientific-committee>

French: <http://iotc.org/fr/science/comit%C3%A9-scientifique>

These Executive Summaries are also available via the IOTC **Stock Status dashboard**:

www.iotc.org/science/status-summary-species-tuna-and-tuna-species-under-iotc-mandate-well-other-species-impacted-iotc

RECOMMENDATION/S

That the WPB:

- 1) **NOTE** paper IOTC–2016–WPB14–03 which outlined the main outcomes of the 18th Session of the Scientific Committee (SC18), 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 18th Session of the Scientific Committee to the Commission, relevant to the Working Party on Billfish.

Appendix B: Program of work (2016–2020) for the IOTC Working Party on Billfish (WPB).

Appendix C: Schedule of stock assessments for the WPB (2016–20).

APPENDIX A

CONSOLIDATED SET OF RECOMMENDATIONS OF THE 18th SESSION OF THE SCIENTIFIC COMMITTEE (23-27 November 2015) TO THE COMMISSION RELEVANT TO THE WORKING PARTY ON BILLFISH

Extract of the Report of the 18th Session of the Scientific Committee

(IOTC-2015-SC18-R; Appendix XXXVII, PAGES 168-170)

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

Billfish

SC18.02 (para. 123) 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 three species assigned a stock status in 2015 (Fig. 5):

- Swordfish (*Xiphias gladius*) – Appendix XII
- Black marlin (*Makaira indica*) – Appendix XIII
- Blue marlin (*Makaira nigricans*) – Appendix XIV
- Striped marlin (*Tetrapturus audax*) – Appendix XV
- Indo-Pacific sailfish (*Istiophorus platypterus*) – Appendix XVI

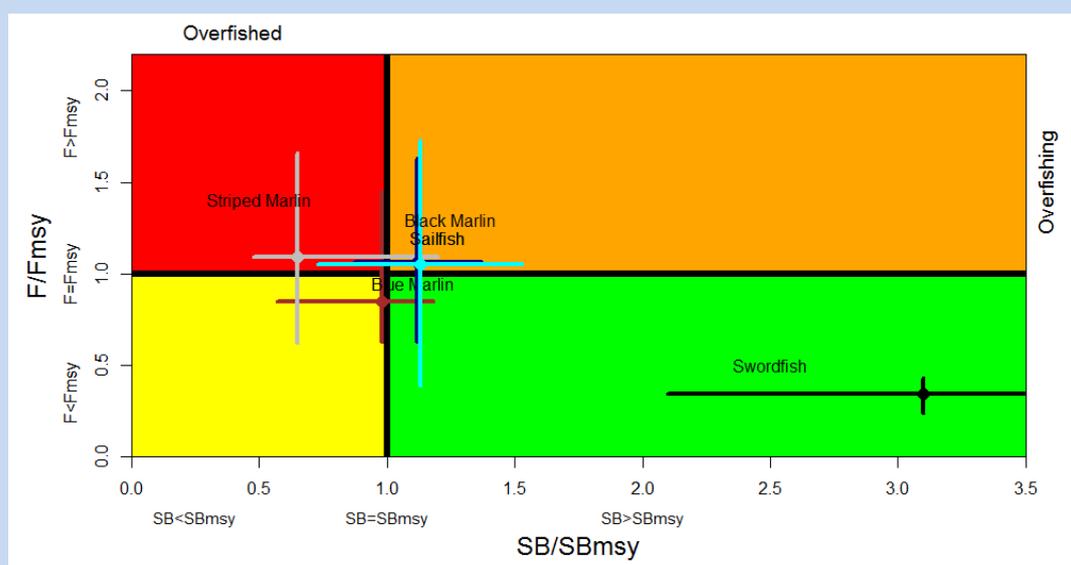


Fig. 5. Combined Kobe plot for swordfish (black: 2014), black marlin (light blue: 2014), blue marlin (brown: 2013), striped marlin (grey: 2015) and Indo-Pacific sailfish (black: 2015) showing the estimates of current stock size (SB or B, species assessment dependent) and current fishing mortality (F) in relation to the interim target spawning stock size and interim target fishing mortality. Cross bars illustrate the range of uncertainty from the model runs.

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

Report of the 13th Session of the Working Party on Billfish (WPB13)

SC18.11 (para. 36) The SC **RECOMMENDED** that the Chairperson and Vice-Chairperson continue to work in collaboration with the IOTC Secretariat and the African Billfish Foundation to find a suitable funding source and lead investigator to undertake the project outlined in the Report of the WPB13. The aim of the project is to enhance data recovery from sports and other recreational fisheries in the western Indian Ocean region, from which alternative abundance indices could be developed for marlins and I.P. sailfish. The Chairperson shall circulate the concept note to potential funding bodies on behalf of the WPB. A

similar concept note could be developed for other regions in the IOTC area of competence at a later date.

Summary discussion of matters common to Working Parties

Meeting participation fund

SC18.24 (para. 98) The SC **RECOMMENDED** that the IOTC Rules of Procedure (2014), for the administration of the Meeting Participation Fund be modified so that applications are due not later than 60 days, and that the full Draft paper be submitted no later than 45 days before the start of the relevant meeting. The aim is to allow the Selection Panel to review the full paper rather than just the abstract, and provide guidance on areas for improvement, as well as the suitability of the application to receive funding using the IOTC MPF. The earlier submission dates would also assist with Visa application procedures for candidates.

Capacity building activities

SC18.25 (para. 99) The SC **AGREED** that, while external funding is helping the work of the Commission, funds allocated by the Commission to capacity building are still too low, considering the range of issues identified by the SC and its Working Parties, and **RECOMMENDED** that the Commission consider allocating more funds to these activities in the future.

SC18.26 (para. 100) The SC **RECOMMENDED** that Commission further increases the IOTC Capacity Building budget line so that capacity building training on data analysis and applied stock assessment approaches, with a priority being data poor approaches, can be carried out in 2016.

IOTC species identification guides: Marine mammal and Best practice guidelines for the safe release and handling of encircled cetaceans

SC18.27 (para. 102) The SC **RECOMMENDED** that the Commission allocate funds in its 2016/2017 budget, to produce and print the IOTC best practice guidelines for the safe release and handling of encircled cetaceans. The guidelines could be incorporated into a set of IOTC cetacean identification cards: “*Cetacean identification for Indian Ocean fisheries*”.

IOTC Secretariat staffing

SC18.28 (para. 106) **NOTING** the very heavy and constantly increasing workload on the IOTC Secretariat, and the current staffing capacity to respond to requests for assistance by countries, the SC strongly **RECOMMENDED** that at least three (3) additional staff (Science/Data) be hired to join the IOTC Secretariat to work on tasks including but not limited to 1) science and capacity building to improve understanding of IOTC processes; and 2) data quality/exchange improvement, to commence work by 1 January 2017. Funding for these new positions should come from both the IOTC regular budget and from external sources to reduce the direct financial burden on the IOTC membership.

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

SC18.29 (para. 107) 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 VII.

Implementation of the Regional Observer Scheme

SC18.30 (para. 138) **NOTING** that training of observers and crew is long-term and necessarily meticulous work that should be done in a recurrent way in order to optimise the efficiency of observers, the SC **RECOMMENDED** that the IOTC Secretariat increases its effort in training observers, including species identification. This would only be possible if the Commission were to increase staffing at the IOTC Secretariat and allocate specific funding for the Regional Observer Scheme implementation.

Resolution 11/04 On a regional observer scheme

SC18.31 (para. 145) **NOTING** that the objective of the Regional Observer Scheme contained in Resolution 11/04, and the rules contained in Resolution 12/02 *On data confidentiality policy and procedures* makes no reference to the data collected not being used for compliance purposes, the SC **RECOMMENDED** that at the next revision of Resolution 11/04, it be clearly stated that the data collected within the Regional Observer Scheme shall not be used for compliance purposes.

Progress on the Implementation of the Recommendations of the Performance Review Panel

SC18.32 (para. 151) The SC **RECOMMENDED** that the Commission note the updates on progress regarding Resolution 09/01 *on the performance review follow-up*, as provided at Appendix XXXIII.

Program of work and schedule of Working Party and Scientific Committee meetings***Consultants***

SC18.33 (para. 157) **NOTING** the highly beneficial and relevant work done by IOTC stock assessment consultants in 2015 and 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. The draft budget provided in Table 5, shall be incorporated into the overall IOTC Science budget for the consideration of the Commission.

Schedule of meetings for 2016 and 2017

SC18.34 (para. 160) The SC **RECOMMENDED** that the Commission discuss the merits of moving the annual Scientific Committee meeting to February each year. This would allow the species working parties to be moved later in the year, thus ensuring that the most recent data is available for assessment purposes. If the Commission were to approve a February date, it may wish to fix its own meeting date in June each year, thus allowing sufficient consultation time between the Scientific Committee and the Commission meeting.

Review of publication deadlines for IOTC data summaries and other datasets for use by Working Parties

SC18.35 (para. 165) The SC **RECOMMENDED** that the reporting deadline for stock assessment inputs (index of abundance, catch reconstructions, size data, etc.) be 45 days prior to the meeting in which the species is to be assessed.

APPENDIX B**PROGRAM OF WORK (2016–2020) FOR THE SCIENTIFIC COMMITTEE AND ITS
SUBSIDIARY BODIES**

Extract of the Report of the 18th Session of the Scientific Committee

(IOTC-2015-SC18-R; Appendix XXXIV, PAGE 136 & 142)

The SC **NOTED** the proposed Program of Work and priorities for the Scientific Committee and each of the Working Parties and **AGREED** to a consolidated Program of Work as outlined in Appendix XXXIV. The Chairpersons and Vice-Chairpersons of each working party shall ensure that the efforts of their working party are focused on the core areas contained within the appendix, taking into account any new research priorities identified by the Commission at its next Session.

The SC **REQUESTED** that during all future 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.

Working Party on Billfish (WPB)

WPB:

Table 2. High priority topics by project for billfish in the Indian Ocean

Topic	Sub-topic and project	Priority ranking	Est. budget and/or potential source	Timing				
				2016	2017	2018	2019	2020
1. Stock structure (connectivity and diversity)	1.1 Genetic research to determine the connectivity of billfish throughout their distribution (including in adjacent Pacific and Atlantic waters as appropriate) and the effective population size.	High (1)	1.3 m Euro: (European Union)					
	1.1.1 Next Generation Sequencing (NGS) to determine the degree of shared stocks for billfish in the Indian Ocean with the southern Atlantic Ocean and Pacific Ocean, as appropriate. Population genetic analyses to decipher inter- and intraspecific evolutionary relationships, levels of gene flow (genetic exchange rate), genetic divergence, and effective population sizes.	High (1)						
	1.1.2 Nuclear markers (i.e. microsatellite) to determine the degree of shared stocks for billfish (highest priority species: blue, black, striped marlin and sailfish) in the Indian Ocean with the southern Atlantic Ocean and Pacific Ocean, as appropriate.	High (1)						
	1.2 Tagging research to determine connectivity, movement rates and mortality estimates of billfish.	High (4)	US\$50,000					
	1.2.1 Tagging studies (PSAT)		(TBD)					
2. Biological and ecological information (incl. parameters for stock assessment)	2.1 Age and growth research	High (8)	CPCs directly					
	2.1.1 CPCs to provide further research reports on billfish biology, namely age and growth studies including through the use of fish otolith or other hard parts, either from data collected through observer programs or other research programs.							
	2.2 Age-at-Maturity	High (9)						

	2.2.1	Quantitative biological studies are necessary for billfish throughout its range to determine key biological parameters including age-at-maturity and fecundity-at-age/length relationships, age-length keys, age and growth, which will be fed into future stock assessments.		(CPCs directly)					
	2.3	Spawning time and locations	High (10)						
	2.3.1	Collect gonad samples from billfish to confirm the spawning time and location of the spawning area that are presently hypothesized for each billfish species.		(CPCs directly)					
3.	Historical data review	3.1 Changes in fleet dynamics							
	3.1.1	Japan and Taiwan,China to undertake an historical review of their longline fleets and to document the changes in fleet dynamics. The historical review should include as much explanatory information as possible regarding changes in fishing areas, species targeting, gear changes and other fleet characteristics to assist the WPB understand the current fluctuations observed in the data.	High (7)	(CPCs directly)					
	3.2	Species identification							
	3.2.1	The quality of the data available at the IOTC Secretariat on marlins (by species) is likely to be compromised by species miss-identification. Thus, CPCs should review their historical data in order to identify, report and correct (if possible) potential identification problems that are detrimental to any analysis of the status of the stocks.	High (6)	(CPCs directly)					
4.	Sports/recreational fisheries	4.1 Fishery trends							
	4.1.1	The catch and effort data for sports/recreational fisheries targeting marlins and sailfish in the Indian Ocean should be submitted to the IOTC Secretariat to assist in future assessments for these species. CPCs with active sports/recreational fisheries targeting marlins and sailfish should undertake a comprehensive analysis for provision to the WPB.	High (2)	Consultant US\$54,000					
5.	CPUE standardisation	5.1 Develop and/or revise standardised CPUE series for each billfish species and major fisheries/fleets for the Indian Ocean.							

	5.1.1 Swordfish: Priority LL fleets: Taiwan,China, EU(Spain, Portugal, France), Japan, Indonesia	High (11)	(CPCs directly)					
	5.1.2 Striped marlin: Priority fleets: Japan, Taiwan,China	High (12)	(CPCs directly)					
	5.1.3 Black marlin: Priority fleets: Longline: Taiwan,China; Gillnet: I.R. Iran, Sri Lanka)	High (14)	(CPCs directly)					
	5.1.4 Blue marlin: Priority fleets: Taiwan,China	High (15)	(CPCs directly)					
	5.1.5 I.P. Sailfish: Priority fleets: Priority gillnet fleets: I.R. Iran and Sri Lanka; Priority longline fleets: EU(Spain, Portugal, France), Japan, Indonesia;	High (13)	(CPCs directly)					
6. Stock assessment / Stock indicators	6.1 Develop and compare multiple assessment approaches to determining stock status for swordfish (SS3, ASPIC, etc.).	High (16)	US\$??					
	6.2 Data poor stock assessment on billfish species in 2016 and 2017	High (3)	Consultant / US\$16,250					
	6.3 Workshops on data poor techniques for assessment including CPUE estimations for billfish species from gillnet fisheries in 2016 and 2017.	High (5)	Consultant US\$11,750					
7 Target and Limit reference points	7.1 To advise the Commission, by end of 2016 at the latest on Target Reference Points (TRPs) and Limit Reference Points (LRPs).	High (17)	WPM					
	7.1.1 Assessment of the interim reference points as well as alternatives: Used when assessing the Swordfish stock status and when establishing the Kobe plot and Kobe matrices. = Agreed to pass this task temporarily to WPM.							
8 Management measure options	8.1 To advise the Commission, by end of 2016 at the latest, on potential management measures having been examined through the Management Strategy Evaluation (MSE) process.	High (18)	WPM					
	8.1.1 These management measures will therefore have to ensure the achievement of the conservation and optimal utilisation of stocks as laid down in article V of the Agreement for the establishment of the IOTC and more particularly to ensure that, in as short a period as possible and no later than 2020, (i) the fishing mortality rate does not exceed the fishing mortality rate allowing the stock to deliver MSY and (ii) the spawning biomass is maintained at or above its MSY level. = Agreed to pass this task temporarily to WPM.							

APPENDIX C

ASSESSMENT SCHEDULE FOR IOTC SPECIES AND SPECIES OF INTEREST FROM 2016–2020

Extract of the Report of the 18th Session of the Scientific Committee

(IOTC–2015–SC18–R; Appendix XXXV, PAGE 165)

The SC **ADOPTED** a revised assessment schedule, ecological risk assessment and other core projects for 2016–20, for the tuna and tuna-like species under the IOTC mandate, as well as the current list of key billfish species of interest, as outlined in Appendix XXXV (IOTC–2015–SC18–R, Para. 155).

<i>Working Party on Billfish</i>					
Species	2016	2017	2018	2019	2020
Black marlin	Full assessment*			Full assessment*	
Blue marlin	Full assessment*			Full assessment*	
Striped marlin		Indicators	Full assessment*		
Swordfish	Indicators	Full assessment			Full assessment
Indo-Pacific sailfish		Indicators	Full assessment*		