

## OUTCOMES OF THE 17<sup>th</sup> SESSION OF THE SCIENTIFIC COMMITTEE

PREPARED BY: IOTC SECRETARIAT<sup>1</sup>, 7 APRIL 2015

### PURPOSE

To inform participants at the 13<sup>th</sup> Working Party on Billfish (WPB13) of the recommendations arising from the 17<sup>th</sup> Session of the Scientific Committee (SC17) held from 8–12 December 2014, specifically relating to the work of the WPB.

### BACKGROUND

At the 18<sup>th</sup> Session of the SC, the SC noted and considered the recommendations made by the WPB in 2014 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

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

The recommendations on the deficiencies in data collection, monitoring and reporting by CPCs in relation to billfish will be discussed under agenda item 6 and in paper IOTC-2015-WPB13-07 and are therefore not presented in this paper.

Based on the recommendations arising from the WPB12, the SC17 adopted a set of recommendations, provide at [Appendix A](#) of this paper.

The recommendations contained in [Appendix A](#) were provided to the Commission for consideration at its 19<sup>th</sup> Session held in April/May 2015. A separate paper, IOTC-2015-WPB13-04 addresses the responses and actions of the Commission.

In addition, the SC17 reviewed and endorsed a Program of Work (2015–2019) for the WPB (*Research recommendation and priorities for IOTC Working Parties*), including a revised stock assessment schedule, as detailed in [Appendix B](#) and [Appendix C](#). A separate paper (IOTC-2015-WPB13-08) 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 following extracts from the SC17 Report (IOTC-2014-SC16-R) are provided here for the consideration and action of the WPB13:

#### *Recreational and sports fisheries for marlins and IP sailfish in the Indian Ocean*

**NOTING** that in 2011, the Chair of the WPB, in collaboration with the IOTC Secretariat, participating billfish foundations and other interested parties, commenced a process to facilitate the acquisition of catch-and-effort and size data from sport fisheries, by developing and disseminating reporting forms to Sport Fishing Centres in the region, the SC **REQUESTED** that the Chair and Vice-Chair of the WPB, 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 Appendix VI of the WPB12 Report. The aim of the project is to enhance data recovery from sports and other recreational fisheries in the western Indian Ocean region. The IOTC Secretariat shall circulate the concept note to

<sup>1</sup> [secretariat@iotc.org](mailto:secretariat@iotc.org); Dr. David Wilson: [david.wilson@iotc.org](mailto:david.wilson@iotc.org)

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. (SC17. Para. 35)

#### *Tier approach for providing stock status advice*

The SC **CONSIDERED** the proposal from the WPB to adopt a process to determine if a ‘Tier’ approach to providing stock status advice will likely enable the IOTC working parties to better communicate the levels of uncertainty present in the indicators used for monitoring the condition/status of IOTC stocks by categorising the types of assessments conducted, for the development of management advice/actions. Initial details of how a ‘Tier’ approach may be constructed are provided in Appendix XII of the WPB12 Report. The SC **REQUESTED** that the Chair of the WPM shall liaise with interested scientists to develop a revised proposal that includes the experience of other bodies, such as ICES, for consideration at the next SC meeting. (SC17. Para. 128)

#### *Executive summaries for billfish species*

The SC also adopted revised Executive Summaries for the five (5) billfish species that can be found as appendices to the SC17 report, and which can be downloaded from the IOTC website’s new **Stock Status Dashboard**, in English and French:

English: <http://iotc.org/science/status-summary-species-tuna-and-tuna-species-under-iotc-mandate-well-other-species-impacted-iotc>

French: <http://iotc.org/fr/science/r%C3%A9sum%C3%A9-de-l%C3%A9tat-des-stocks>

#### **RECOMMENDATION**

That the WPB:

- 1) **NOTE** paper IOTC–2015–WPB13–03 which outlined the main outcomes of the 17<sup>th</sup> Session of the Scientific Committee, 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 17<sup>th</sup> Session of the Scientific Committee (8–12 December 2014) to the Commission, relevant to the Working Party on Billfish.

**Appendix B:** Program of Work (2015–2019) for the IOTC Working Party on Billfish (WPB).

**Appendix C:** Schedule of stock assessments for billfish (2015–2019).

## APPENDIX A

**CONSOLIDATED SET OF RECOMMENDATIONS OF THE 17<sup>th</sup> SESSION OF THE SCIENTIFIC COMMITTEE (8–12 DECEMBER 2014) TO THE COMMISSION RELEVANT TO THE WORKING PARTY ON BILLFISH**

*Extract of the Report of the 17<sup>th</sup> Session of the Scientific Committee*

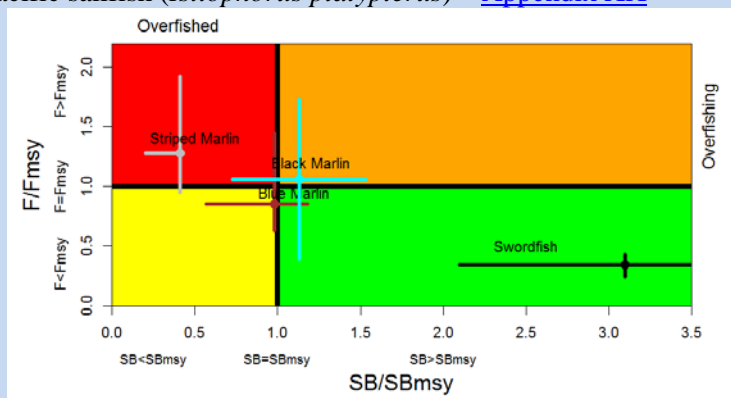
*(IOTC–2014–SC17–R; Appendix XLIII, PAGES 347–357)*

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

**Billfish**

SC17.02 (para. 147) 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 2014 (Fig. 5):

- Swordfish (*Xiphias gladius*) – [Appendix XVI](#)
- Black marlin (*Makaira indica*) – [Appendix XVII](#)
- Blue marlin (*Makaira nigricans*) – [Appendix XVIII](#)
- Striped marlin (*Tetrapturus audax*) – [Appendix XIX](#)
- Indo-Pacific sailfish (*Istiophorus platypterus*) – [Appendix XX](#)



**Fig. 5.** Combined Kobe plot for swordfish (black: 2014), black marlin (light blue: 2014), blue marlin (brown: 2013) and striped marlin (grey: 2013) 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**

**Report of the 12<sup>th</sup> Session of the Working Party on Billfish (WPB12)**

**Shortbill spearfish**

SC17.09 (para. 36) **NOTING** that one of the Indian Ocean billfish species (shortbill spearfish, *Tetrapturus angustirostris*) is currently not listed among the species managed by IOTC, and considering the ocean-wide distribution of this species, its highly-migratory nature, and that it is a common bycatch in IOTC managed fisheries, the SC **RECOMMENDED** that the Commission include it in the list of species to be managed by the IOTC.

*Summary discussion of matters common to Working Parties (capacity building activities – stock assessment course; connecting science and management, etc.)*

**Meeting participation fund**

SC17.33 (para. 118) **NOTING** that the MPF was used to fund the participation of a reduced number of national scientists to the Working Parties in 2014, 49 national scientists to the Working Party meetings and the SC in 2014 (58 in 2013; 42 in 2012), all of which were required to submit and present a working paper at the meeting, the SC **RECOMMENDED** that the Commission consider the following:

- The IOTC Meeting Participation Fund (MPF), adopted by the Commission in 2010 (Resolution 10/05 *On the establishment of a Meeting Participation Fund for developing IOTC Members and non-Contracting Cooperating Parties*), and now incorporated into the IOTC Rules of Procedure

(2014), was established for the purposes of supporting scientists and representatives from IOTC Contracting Parties who are developing States to attend and contribute to the work of the Commission, the Scientific Committee and its Working Parties.

- The Commission has made the following directives to the IOTC Secretariat:
  - a) The Commission had directed the IOTC Secretariat (via Resolution 10/05 and now via the IOTC Rules of Procedure (2014)) to ensure that: (para. 88 of the S18 Report)
    - i. the MPF be utilised, as a first priority, to support the participation of scientists from developing Contracting Parties in scientific meetings of the IOTC, including Working Parties, rather than non-science meetings.
    - ii. the MPF will be allocated in such a way that no more than 25% of the expenditures of the Fund in one year is used to fund attendance to non-scientific meetings.
    - iii. thus, 75% of the annual MPF shall be allocated to facilitating the attendance of developing Contracting Party scientists to the Scientific Committee and its Working Parties.
  - b) The Commission had directed the IOTC Secretariat that any cost savings made on the annual IOTC budget, shall also be used to further supplement the \$60,000 currently budgeted for the MPF.
- In accordance with para. 89 of the S18 Report, the IOTC Secretariat is actively seeking extra budgetary funding sources to supplement the MPF budget from individual Contracting Parties as well as other interested groups. However, the SC was informed by the IOTC Secretariat that other sources should actively be sought by interested candidates, including the UNFSA meeting fund, as well as through their own domestic budgetary processes.

SC17.34 ([para. 119](#)) The SC strongly **RECOMMENDED** that this fund be maintained into the future and increased back to its original allocation of \$200,000 per year.

SC17.35 ([para. 123](#)) The SC **RECOMMENDED** that the MPF rules of procedure be modified, so that a Draft working document, rather than an abstract, be submitted to the relevant Working Party MPF Selection Panel 45 days before the meeting, so that the Panel may review the full paper rather than just the abstract, and provide guidance on areas for improvement and the suitability of the application to receive funding using the MPF. The justification of this request is based upon the reduced funds available and the need to maximise benefits. The SC **AGREED** that until such time as the Commission revises the IOTC Rules of Procedure the MPF selection panels may choose to follow this proposal.

#### *Capacity building activities*

SC17.36 ([para. 126](#)) 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.

SC17.37 ([para. 127](#)) The SC **RECOMMENDED** that the Commission further increase the IOTC Capacity Building budget line so that capacity building workshops/training can be carried out in 2015, 2016 and future years on the collection, reporting and analyses of catch and effort data for IOTC species, with a special focus on neritic tuna and tuna-like species. Where appropriate these training sessions shall include information that explains the entire IOTC process from data collection to analysis and how the information collected is used by the Commission to develop Conservation and Management Measures.

#### *IOTC species identification cards*

SC17.38 ([para. 129](#)) **NOTING** the recent online survey distributed by the IOTC Secretariat, the SC strongly **RECOMMENDED** that the IOTC Secretariat ensure that hard copies of the identification cards continue to be printed as many CPCs scientific observers, both on board and port, still do not have smart phone technology/hardware access and need to have hard copies on board. At this point in time, electronic formats, including ‘applications or apps’ are only suitable for larger scale vessels, and even in the case of EU purse seine vessels, the use of hard copies is relied upon due to on board fish processing and handling conditions, as well as weather conditions.

#### *Invited Experts*

SC17.47 ([para. 181](#)) The SC **RECOMMENDED** that at least one ‘Invited Expert’ be brought to each of the science Working Parties in 2015 and in each subsequent year, so as to further increase the capacity of the Working Parties to undertake the work detailed in the Program of Work ([Appendix XL](#)). The IOTC regular budget shall include travel funds (flights, DSA) for this purpose. The Invited Expert for each

meeting will continue to be selected based on the process adopted by the Scientific Committee and provided at [Appendix XL](#).

### Consultants

SC17.48 ([para. 183](#)) **NOTING** the highly beneficial and relevant work done by IOTC stock assessment consultants in 2014 and in previous years, the SC **RECOMMENDED** that engagement by consultants be continued for each coming year based on the Program of Work ([Appendix XXXVIII](#)), to supplement the skill set available within the IOTC Secretariat and CPCs. An indicative budget is provided at [Table 6](#).

**TABLE 6.** Estimated budget required to hire a consultant to carry out stock assessments on tuna and tuna-like species under the IOTC mandate, sharks frequently caught by IOTC fisheries, and capacity building, in 2015 and 2016.

Description	Unit price	Units required	2015 Total (US\$)	2016 Total (US\$)	Priority
<b>WPNT</b>					
Neritic tuna data poor stock assessment and capacity building (fees)	450	15	6,750	6,750	Low
Neritic tuna data poor stock assessment and capacity building (travel)	5,000	1	5,000	5,000	Low
<b>WPB</b>					
Billfish data poor stock assessment (fees)	450	15	6,750	6,750	Med
Billfish data poor stock assessment (travel)	5,000	1	5,000	5,000	Med
<b>WPEB</b>					
Shark stock assessment (fees)	450	20	9,000	9,000	High
Shark stock assessment (travel)	5,000	1	5,000	5,000	High
Evaluation of the discards ban proposal	450	35	Nil	15,750	Med
<b>WPTT</b>					
Tropical tuna stock assessment (fees)	450	35	15,750	15,750	High
Tropical tuna stock assessment (travel)	5,000	1	5,000	5,000	High
<b>WPTmT</b>					
Temperate tuna stock assessment (fees)	450	35	Nil	15,750	High
Temperate tuna stock assessment (travel)	5,000	1	Nil	5,000	High
<b>WPM</b>					
External peer review of the albacore MSE	450	10	4,500	Nil	Med
External peer review of the skipjack tuna MSE	450	10	4,500	Nil	Med
<b>TOTAL</b>			<b>67,250</b>	<b>94,754</b>	

## APPENDIX B

## PROGRAM OF WORK (2015–2019) FOR THE SCIENTIFIC COMMITTEE AND ITS SUBSIDIARY BODIES

The SC **NOTED** the proposed Program of Work and priorities for each of the Working Parties and **AGREED** to a consolidated Program of Work as outlined in Appendix XXXVIII. The Chairs and Vice-Chairs of each working party shall ensure that the efforts of their working party is focused on the core areas contained within the appendix, taking into account any new research priorities identified by the Commission at its next Session. (IOTC–2014–SC17–R, Para. 177)

## Working Party on Billfish (WPB)

(Extracts from IOTC–2014–WPB12–R: Appendix XIII, Table 2)

## WPB: High priority topics, by project for billfish in the Indian Ocean

Topic	Sub-topic and project	Priority
Stock structure (connectivity)	<p>Research to describe the population structure and connectivity of billfish (swordfish and striped marlin) within the Indian Ocean (and adjacent Pacific and Atlantic waters as appropriate)</p> <ul style="list-style-type: none"> <li>➤ Next Generation Sequencing (NGS) to determine the degree of shared stocks for billfish (highest priority species: swordfish and striped marlin) in the Indian Ocean with the southern Atlantic Ocean and Pacific Ocean, as appropriate.</li> <li>➤ Nuclear markers (i.e. microsatellite) to determine the degree of shared stocks for billfish (highest priority species: striped marlin) in the Indian Ocean with the southern Atlantic Ocean and Pacific Ocean, as appropriate.</li> <li>➤ Tagging studies (P-SAT)</li> </ul>	High
Biological and ecological information (parameters for stock assessment)	<p>Age and growth research</p> <ul style="list-style-type: none"> <li>➤ 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.</li> </ul>	High
	<p>Age-at-Maturity</p> <ul style="list-style-type: none"> <li>➤ Quantitative biological studies are necessary for billfish throughout their range to determine key biological parameters including age/size-at-maturity and fecundity-at-age/length relationships, which will be fed into future stock assessments.</li> </ul>	High
	<p>Spawning time and locations</p> <ul style="list-style-type: none"> <li>➤ Collect gonad samples from billfish to confirm the spawning time and location of the spawning area that are presently hypothesized for each billfish species</li> </ul>	High
Historical data review	<p>Changes in fleet dynamics</p> <ul style="list-style-type: none"> <li>➤ 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.</li> </ul>	High
	<p>Species identification</p> <ul style="list-style-type: none"> <li>➤ 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.</li> </ul>	High
Sports/recreational fisheries	<p>Fishery trends</p> <ul style="list-style-type: none"> <li>➤ The catch and effort data for sports/recreational fisheries targeting marlins and sailfish in the Indian Ocean should be submitted to the IOTC</li> </ul>	High

	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.	
CPUE standardisation	Develop and/or revise standardised CPUE series for each billfish species and major fisheries/fleets for the Indian Ocean <ul style="list-style-type: none"> <li>➤ Swordfish: Priority LL fleets: Taiwan,China, EU(Spain, Portugal, France), Japan, Indonesia</li> <li>➤ Striped marlin: Priority fleets: Japan, Taiwan,China</li> <li>➤ Black marlin: Priority fleets: Taiwan,China</li> <li>➤ Blue marlin: Priority fleets: Taiwan,China</li> <li>➤ IP Sailfish: Priority fleets: Priority LL fleets: EU(Spain, Portugal, France), Japan, Indonesia; Priority GN fleets: I.R. Iran and Sir Lanka</li> </ul>	High
Stock assessment / Stock indicators	Develop and compare multiple assessment approaches to determining stock status for billfish	High
	Develop and investigate new methods for data poor stocks (marlins and IP sailfish)	High
Target and Limit reference points	To advise the Commission, by end of 2016 at the latest on Target Reference Points (TRPs) and Limit Reference Points (LRPs). <ul style="list-style-type: none"> <li>➤ Used when assessing billfish stock status and when establishing the Kobe plot and Kobe matrices</li> </ul>	High
Management measure options	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. <ul style="list-style-type: none"> <li>➤ 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.</li> </ul>	High

## APPENDIX C

**SCHEDULE OF STOCK ASSESSMENTS FOR IOTC SPECIES AND SPECIES OF INTEREST FROM  
2015–2019, AND FOR OTHER WORKING PARTY PRIORITIES**

The SC **ADOPTED** a revised assessment schedule, ecological risk assessment and other core projects for 2015–19, for the tuna and tuna-like species under the IOTC mandate, as well as the current list of key shark species of interest, as outlined in [Appendix XXXIX](#). (IOTC–2014–SC17–R, Para. 180)

*Extract of the Report of the 17<sup>th</sup> Session of the Scientific Committee*

*(IOTC–2014–SC17–R; Appendix XXXIX, PAGE 342)*

Species	2015	2016	2017	2018	2019
<i>Working Party on Billfish</i>					
Black marlin		<b>Full assessment*</b>		<b>Full assessment*</b>	
Blue marlin		<b>Full assessment*</b>			<b>Full assessment*</b>
Striped marlin	<b>Full assessment*</b>		<b>Full assessment*</b>		<b>Full assessment*</b>
Swordfish	Indicators	Indicators	<b>Full assessment</b>		
Indo-Pacific sailfish	<b>Full assessment*</b>			<b>Full assessment*</b>	

\*Including data poor stock assessment methods; Note: the assessment schedule may be changed dependant on the annual review of fishery indicators, or SC and Commission requests. ALB: albacore; BET: bigeye tuna; YFT: yellowfin tuna; SKJ: skipjack tuna.