
REVISION OF THE WPB PROGRAM OF WORK (2018–2022)

PREPARED BY: IOTC SECRETARIAT, 16TH AUGUST 2017

PURPOSE

To ensure that participants at the 15th Working Party on Billfish (WPB15) revise the Program of Work for the WPB by taking into consideration the specific requests of the Commission and Scientific Committee.

BACKGROUND

Scientific Committee

At the 19th Session of the SC:

- (Para. 169) The SC **NOTED** paper IOTC–2016–SC19–09 which provided the Scientific Committee (SC) with a proposed Program of Work for each of its Working Parties (WP), including prioritisation of the elements requested by each WP.
- (Para. 170) 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 XXXIVa-g](#). 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.
- (Para. 172) The SC **AGREED** on the consolidated table of priorities across all Working Parties, as developed by each WP Chair, and **REQUESTED** that the IOTC Secretariat, in consultation with the Chair and vice-Chair of the SC and relevant Working Parties, develop ToRs for the specific projects to be carried out ([Table 4](#)).
- (Para. 175) The SC **NOTED** information paper IOTC-2016-SC19-INF04 that outlines a proposed schedule of work for the development of management procedures in the IOTC which will be presented to the Technical Committee on Management Procedures (TCMP) and Commission meeting (S21).

Commission

At Sessions of the Commission, Conservation and Management Measures adopted contained elements that call on the Scientific Committee, via the WPB, to undertake specific tasks. These requests will need to be incorporated into a revised Program of Work for the WPB:

Resolution 15/05 On conservation measures for striped marlin, black marlin and blue marlin

Para. 3: The IOTC Scientific Committee shall request that the Working Party on Billfish continue their work on assessing and monitoring the status of the above mentioned species until such time as comprehensive assessments are possible. The IOTC Scientific Committee shall also evaluate the catch trends of the mentioned species and recommend Conservation and Management Measures as appropriate.

Para. 5: The Scientific Committee shall annually review the information reported by CPCs on these species and, as necessary, provide recommendations to the Commission on ways to strengthen the conservation and management of these species.

Resolution 15/11 On the implementation of a limitation of fishing capacity of contracting parties and cooperating non-contracting parties

Para. 2: In notifying their vessels fishing for tropical tunas in the area in 2006, and for swordfish and albacore in 2007, the CPCs shall confirm that they have verified the effective presence and fishing activities of their

vessels in the IOTC area of competence in 2006 and in 2007, through their VMS records, catch reports, port calls, or other means. The IOTC Secretariat shall have access to such information upon request.

Current Conservation and Management Measures that require action by the Commission in 2017

(para. 12) The Commission noted Resolution 15/11 (*On the implementation of a limitation of fishing capacity of contracting parties and cooperating non-contracting parties*), which required the Commission to review the implementation of Resolution 15/11 at its annual sessions since 2015.

(para.13) The Commission **AGREED** to extend the applicability of Resolution 15/11 for an additional year; however, the Commission also **AGREED** that Resolution 15/11, as it currently stands, may not be extended beyond 2018. Some CPCs highlighted that they would work to table a resolution proposal on capacity in 2018.

DISCUSSION

Participants at the WPB15 are requested to consider the priorities set by the Commission and the Scientific Committee, via Conservation and Management Measures, and revise its Program of Work (previously outlined in paper IOTC–2017–WPB15–03) to match those priorities.

RECOMMENDATION/S

That the WPB:

- 1) **NOTE** paper IOTC–2017–WPB15–08, which encouraged the WPB to further develop and refine its Program of Work for 2017–2021 to align with the requests and directives from the Commission and Scientific Committee.
- 2) **RECOMMEND** a revised Program of Work for 2018–2022 to the Scientific Committee for its consideration and potential endorsement.

APPENDICES

[Appendix A](#): Working Party on Billfish Program of Work (2018–2022)

APPENDIX A

WORKING PARTY ON BILLFISH PROGRAM OF WORK (2018–2022)

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:** High priority topics for obtaining the information necessary to develop stock status indicators for billfish in the Indian Ocean; and
- **Table 2:** Stock assessment schedule.

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

| Topic | Sub-topic and project | Priority ranking | Est. budget and/or potential source | Timing | | | | |
|---|--|------------------|-------------------------------------|--------|------|------|------|------|
| | | | | 2018 | 2019 | 2020 | 2021 | 2022 |
| 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) | | | | | | |
| | | High (1) | | | | | | |

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| | 1.1.3 | Develop a close-kin mark recapture method (<i>Bravington et al. 2016</i>) on marlins to estimate population size and other important demographic parameters. This method includes the sampling of juveniles and adult fish and genetic parenting analyses to estimate the population size from mark-recapture models. | | | | | | |
| | 1.2 | Tagging research to determine connectivity, movement rates and mortality estimates of billfish. | High (2) | US\$100,000 | | | | |
| | 1.2.1 | Tagging studies (PSAT) | | (TBD) | | | | |
| 2. Biological and ecological information (incl. parameters for stock assessment) | 2.1 | Age and growth research | High (7) | | | | | |
| | 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. | | CPCs directly | | | | |
| | 2.2 | Age-at-Maturity | High (8) | | | | | |
| | 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 (9) | | | | | |
| | 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 | High (6) | (CPCs directly) | | | | |

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| | characteristics to assist the WPB understand the current fluctuations observed in the data. | | | | | |
| | 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 (5) | (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 (Ongoing) | Consultant US\$54,000 | | | |
| 5. CPUE standardization | 5.1 Develop and/or revise standardized 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 (10) | (CPCs directly) | | | |
| | 5.1.2 Striped marlin: Priority fleets: Japan, Taiwan,China | High (11) | (CPCs directly) | | | |
| | 5.1.3 Black marlin: Priority fleets: Longline: Taiwan,China; Gillnet: I.R. Iran, Sri Lanka | High (13) | (CPCs directly) | | | |
| | 5.1.4 Blue marlin: Priority fleets: Japan, Taiwan,China | High (14) | (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 (12) | (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 (15) | US\$?? | | | |

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| | 6.2 Stock assessment on billfish species in 2017 and 2018 | High (3) | Consultant/ US\$16,250 | | | | | |
| | 6.3 Workshops on techniques for assessment including CPUE estimations for billfish species from gillnet fisheries in 2017 and 2018. | High (4) | 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 (16) | 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 (17) | WPM | | | | |
| | | | | | 8.1.1 These management measures will therefore have to ensure the achievement of the conservation and optimal utilization 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. | | | |



Table 2. Assessment schedule for the IOTC Working Party on Billfish (WPB) **Note:** 2017 to 2021 already agreed to by the SC and Commission.

| Species | 2018 | 2019 | 2020 | 2021 | 2022 |
|-----------------------|-----------------|------------------|-----------------|-----------------|-----------------|
| Black marlin | Full assessment | | Full assessment | | Full assessment |
| Blue marlin | Full assessment | | Full assessment | | Full assessment |
| Striped marlin | | Full assessment | | Full assessment | |
| Swordfish | | | | Full assessment | |
| Indo-Pacific sailfish | | Full assessment* | | | |

*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.