

## DRAFT: REPORT OF THE SECRETARIAT – ACTIVITIES IN SUPPORT OF THE IOTC SCIENCE PROCESS IN 2019

PREPARED BY: IOTC SECRETARIAT, 06 NOVEMBER 2019

### PURPOSE

To inform the Scientific Committee (SC) of work undertaken by the IOTC Secretariat in 2019 in support of the IOTC Science process, endorsed by the Commission.

### DISCUSSION

#### *Staffing*

Fisheries Officer, Ms. Cynthia Fernandez Diaz, started at the IOTC Secretariat in January 2019.

Fisheries officers Dr Sarah Martin and Mr James Geehan left the IOTC secretariat in May and October 2019 respectively.

#### *IOTC meetings – Working parties*

In 2019, eight (8) Working Party meetings were organised and facilitated by the IOTC Secretariat (Table 1). The current Chairs and Vice-Chairs for each Committee and Working Party are provided in [Appendix I](#).

[Appendix II](#) lists the documents produced by the IOTC Secretariat in support of Working Party meetings held in 2019. In addition, the IOTC Secretariat produced revised Executive Summaries for all of the IOTC stocks, as well as for sharks, seabirds, marine turtles and cetaceans in association with various experts, totalling 26 Executive Summaries.

The IOTC Secretariat facilitated the participation of invited experts that were selected to attend each of the Working Party meetings in 2019. The names and affiliations of each of the Invited Experts are provided in Table 1.

**Table 1.** Working party meetings and Invited Experts in 2019

Working Party	Date and place	Name	Affiliation
Temperate tunas (Data preparatory)	14-17 January, Malaysia	Nil	Nil
Neritic Tunas	1–5 July, Seychelles	Dr. Shijie Zhou	CSIRO, Australia
Temperate tunas (Assessment)	23–26 July, Japan	Nil	Nil
Ecosystems and Bycatch	3–7 September, La Reunion	Dr Clay Porch	NOAA, USA
Billfish	9–12 September, La Reunion	Nil	Nil
Methods	17–19 October, Spain	Nil	Nil
Tropical Tunas	21-26 October, Spain	Dr Rishi Sharma	FAO
Data Collection and Statistics	27-30 November, Pakistan	Nil	Nil

#### **IOTC meetings – Meeting Participation Fund**

The IOTC Meeting Participation Fund (MPF) was utilised for the indicated scientific meetings and/or Working Parties indicated in [Table 1](#). Noting that the intention of the MPF was to utilise the funds, as a first priority, to support the participation of scientists from developing Members in scientific meetings of the IOTC, including Working Parties, in 2019, the Secretariat facilitated the participation of 77 individuals from developing Members of the IOTC to the eight (8) Working Party meetings held in 2019 as detailed in Table 2.

The total level of participation (including the Scientific Committee) by MPF recipients was 77 in 2019, compared with 2018(46), 2017(64), 2016 (67), 2015 (53), 2014 (50), and 2013 (58). Previously there were 46 in 2012, 33 in 2011 and 19 in 2010 (Table 2).

**Table 2.** Scientific Meetings held in 2019, prior to the 22<sup>nd</sup> Session of the IOTC Scientific Committee meeting. Numbers in brackets represent numbers for the previous Working Party meetings.

Working Party	Date and place of most recent meeting	No. of participants							Meeting Participation Fund							No. of documents (and for the previous meeting)
		2013	2014	2015	2016	2017	2018	2019	2013	2014	2015	2016	2017	2018	2019	
Neritic Tunas	1–5 July, Seychelles	42	37	31	20	26	18	18	11	13	9	8	8	6	6	Total: 19 (19) Working papers: 19 (17) Information papers: 1 (2)
Temperate Tunas	14-17 January, Malaysia	-	27	-	29	-	-	19	-	3	-	4	-	-	1	Total: 43 (29)
	23–26 July, Japan							23							4	Working papers: 38 (29) Information papers: 5 (0)
Billfish	9–12 September, La Reunion	24	21	23	18	25	20	25	10	4	9 <sup>1</sup>	6	8	5	9	Total: 29 (28) Working papers: 28 (27) Information papers: 1 (1)
Ecosystems and Bycatch	3–7 September, La Reunion	32	37	38	37	39	40	41	11	5	8 <sup>2</sup>	8	7	7	13	Total: 68 (53) Working papers: 51 (46) Information papers: 17 (7)
Methods	17–19 October, Spain	-	34	26	29	27	23	37	-	3 <sup>3</sup>	6 <sup>4</sup>	9	5	2	7	Total: 28 (21) Working papers: 25 (15) Information papers: 3 (6)
Tropical Tunas	21-26 October, Spain	46	53	44	47	48	57	68	10	6	6	6	10	7	13	Total: 60 (57) Working papers: 55 (51) Information papers: 5 (6)
Data Collection and Statistics	27-30 November, Pakistan	23	30	20	32	45	52	TBD	5	1	4	6	10	7	9	Total: X (44) Working papers: X (37) Information papers: X (7)
Scientific Committee	2 – 6 December, Pakistan	75	62	71	78	63	73	TBD	11	15	13	18	13	12	15	Working papers: X (20) Executive Summaries: X (26) Information papers: X (5)

<sup>1</sup> 2 scientists attended both the WPB and WPEB;

<sup>2</sup> 2 scientists attended both the WPB and WPEB

<sup>3</sup> 3 scientists attended both the WPM and SC

<sup>4</sup> Funded by the ABNJ tuna project

\* Refers to year 2008

## Data-related activities – General

A large proportion of the IOTC Data Section staff time is devoted to the acquisition and editing of the data required under the IOTC Resolutions. These data are utilised in monitoring compliance or in scientific analyses necessary for the assessment of the status of stocks. The IOTC databases are constantly revised and updated.

Integrated IOTC database: the migration of the main IOTC datasets has been completed and the development is now focusing on aspects related to data dissemination (through the IOTC website and through dedicated, remote services for the integration of data extraction and processing within third-party code) as well as the inclusion of additional support for improved stock assessment procedures and further integration with the Regional Observer Database.

The regular suite of datasets has been produced and supplied to all scientists engaged in stock assessment activities, reports on the status of all IOTC databases were produced for the relevant Working Parties and SC and for the preparation of the Country Reports of the Compliance Committee. No new information has been incorporated in the RTTP tagging dataset.

## Data-related activities – Capacity building and other initiatives

The IOTC Secretariat continues to facilitate or provide direct support to developing coastal states using funds from the IOTC capacity building budget or other collaborating agencies. In particular, the Overseas Fishery Cooperation Foundation of Japan (OFCF) has provided resources and advice for the strengthening of data collection systems in more than 20 countries in the region since its inception in 2002.

The IOTC Secretariat has also cooperated with COI-*SmartFish*, the BOBLME Project, the ABNJ Project, the ISSF, and other initiatives in recent years in the coordination and execution of capacity building activities in developing coastal states of the Indian Ocean. In addition, the IOTC Secretariat is also working collaboratively with NOAA, CMS, IOSEA, WWF-Pakistan, WWF-USA and SIOTI on capacity building activities to support the implementation of the Regional Observer Scheme in developing coastal states.

Table 3 provides a summary of the main capacity building activities undertaken since the end of SC21<sup>5</sup>, which can be broadly categorised into the following activities:

- a) Data compliance and support missions: aimed at facilitating improvements in the validation and reporting of core IOTC datasets to the IOTC Secretariat (i.e., nominal catches, catch-and-effort, and size data); also to assess current shortcomings concerning the collection and management of fisheries data, and to agree a plan of action with the CPC required to deliver improvements on the levels of reporting. In 2019 support has been provided to Oman, for the production of IOTC-compliant reports from the information collected by their land-based sampling programme and for the dissemination of biological information collected by national scientific institutions, and further to Pakistan in terms of evaluation of the crew-based data collection pilot project with a follow-up mission expected for November 2019.
- b) Technical assistance missions: capacity building in data collection, support for the development of national fisheries databases and statistical systems, or other issues related to fisheries data management. Examples in 2019 included continued support to Kenya for the evaluation of its Catch Assessment Survey, to I.R. Iran for the provision of standardized CPUE series for its gillnet fisheries, and Tanzania for the evaluation of their newly developed artisanal fisheries electronic data collection system.

The IOTC-OFCF collaborative project has also been implementing a project to identify appropriate socio-economic indicators to support the integrated management of the IOTC resources and fisheries and its long-term sustainability including the social and economic aspects. The project focuses on i.) reviewing the existing information and ii.) evaluating the feasibility and utility of a Fishery Satellite Account through experimental compilations.

- c) Support for implementation of the Regional Observer Scheme and implementation of the ROS Pilot Project: capacity building activities cover a number of components, including the development of the IOTC's

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<sup>5</sup> For more information on these activities refer to *IOTC capacity building activities in support of developing coastal IOTC CPCs: 2019 activities*, IOTC–2019–WPDCS15-08, or email: [IOTC-secretariat@fao.org](mailto:IOTC-secretariat@fao.org).

electronic reporting tools, and feasibility study implementing electronic monitoring systems (EMS) on small-scale fisheries. In 2019, a training workshop for the ROS e-tools was delivered to Mauritius; while procurement of EMS for 6 gillnet/longline vessels in Sri Lanka was finalized, part of the equipment delivered and the results of the first tests are expected by end-2019.

Below is a non-exhaustive (provisional) list of the capacity building activities planned for 2020<sup>6</sup>:

- a) Support to the implementation of the IOTC Regional Observer Scheme (on-going), and development of the Regional Observer Scheme Pilot Project, including provisions of support to the service provider that started implementing the observer training programme in six pilot countries since mid-2019.
- b) Regional Observer Scheme e-monitoring in Sri Lanka: on-going. The formal commencement of EMS monitored trips was in September 2019.
- c) Regional Observer Scheme e-tools: follow-up workshop scheduled for Sri Lanka and other target CPCs in early to mid-2020.
- d) Development of an observer-based Albacore sampling program across the Indian Ocean, with collaboration of key CPCs important for catches of the species (e.g., Japan, Taiwan, China, Indonesia, Mauritius). Subject to confirmation of funds and availability of CPCs.
- e) Data compliance and support missions (priority countries to be confirmed).

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<sup>6</sup> *Ditto* 5

**Table 3.** Activities of the IOTC Secretariat in relation to science and data related capacity building activities in the Indian Ocean in 2019.

Country	Date	Executing Agencies / Staff	Description of activities
Mauritius	Apr 2019	IOTC Data Coordinator; IOTC Data Assistant	<u>ROS Pilot Project activities (ROS e-tools):</u> Hands-on training for the adoption of the IOTC ROS electronic tools for data collection, reporting and management.
I.R. Iran	Jun 2019	IOTC Stock Assessment Expert	<u>Development of standardized gillnet CPUE:</u> Collaboration with Shilat (Iranian Fisheries Organization) to explore the feasibility and options for developing a standardized CPUE series for neritic tuna species using data collected from gillnets by port sampling program.
Tanzania	Jul 2019	IOTC Data Assistant; MRAG (Consultants)	<u>Assessment of data collection and reporting systems in place for artisanal fisheries (Country visit 1):</u> i) Discuss current arrangements in Tanzania for the monitoring, collection and reporting of artisanal fisheries to the IOTC with fisheries research institutions, the Ministry of Fisheries and DSFA. ii) Follow-up on data issues regarding the mandatory submission of IOTC data by Tanzania.
Sultanate of Oman	Sep 2019	IOTC Data Coordinator; IOTC Data Assistant; FAO Official Consultant	<u>Small-scale fisheries workshop:</u> Delivery of a technical workshop to improve reporting of IOTC statistics, and assessment of the status of small-scale fisheries data collection in the country, including current procedures to estimate total catches by species on the basis of sampling protocols at landing sites.
Sri Lanka	Sep 2019	IOTC Fisheries Statistician; Marine Instruments; Azti-Tecnalia	<u>ROS Pilot Project activities (EMS):</u> Implementation of the feasibility study trialing electronic monitoring systems on-board selected small-scale coastal gillnet/longline vessels: i) Installation of EMS onboard 4 (of 6) vessels selected for the pilot trials ii) Conduct EMS training workshops on Beluga/Medusa EMS processing software.
Indonesia	Sep 2019	IOTC Fisheries Statistician; MRAG (Consultants); OFCF Fisheries Expert	<u>Assessment of data collection and reporting systems in place for artisanal fisheries (Country visit 2):</u> Evaluation of the status of coastal fisheries data collection in Indonesia. Recommendations on short term and long term strategies for improving the acquisition of data and capacity building for artisanal fisheries.

**Other data activities (2019)**

CLAV: The IOTC Secretariat is responsible for the coordination of activities concerning the global Consolidated List of Authorized Vessels (CLAV), a regularly updated list including the authorized vessels of the five t-RFMOs. Collaboration between the IOTC Secretariat and FAO-FIPS continued in 2019. Since 2015, the CLAV has been further enhanced using funds from the FAO Common Oceans/ABNJ Tuna Project. The main objective of the CLAV component of the Project is ensuring that updates of the CLAV occur in as close-to real time as possible in the future.

Regional Observer Scheme: A full update on progress with the implementation of the ROS Pilot Project is provided in paper IOTC-2019-SC22-07. Key areas of progress this year include:

- A project Steering Committee has been established to oversee all project components

- A consultancy project and expert peer review workshop was held to review the standards. The outcomes were presented to the SC in 2018 and Draft standards were endorsed by the Commission in 2019.
- A substantial amount of data has now been entered into the Regional Observer Database through the support of two consultancy projects.
- Further training in the *electronic data collection and management interface* has been carried out in Mauritius and Sri Lanka.
- Equipment has been procured for the Electronic Monitoring Systems for small-scale fisheries
- A contract has been awarded for the development of training materials and supporting national observer schemes in six IOTC CPCs between 2019 and 2020.

## Science activities (2019)

CPC contributions to the Scientific Work of the IOTC: These contributions, as requested in Para 16 of IOTC-2018-SC21-R are provided in [Appendix III](#)

Neritic tuna data poor assessment methods workshop: Due to the limited availability of data, the management advice for neritic tunas has been based on catch-only methods. In July 2019 a training workshop was held during the WPNT09 to support scientists in the use of data poor assessment techniques. The full workshop report is available in IOTC-2019-WPNT09-R.

IOTC Species ID guides: Work is ongoing to translate, typeset, format and print the IOTC Species ID guides into the priority languages identified by the SC. The current set of identification guides available is provided here: [www.iotc.org/science/species-identification-cards](http://www.iotc.org/science/species-identification-cards).

Cetacean ID guide: A consultant (Dr Gill Braulik) worked closely with the WPEB to develop an identification guide for cetaceans in the Indian Ocean. These have been made available on the IOTC and FAO websites ([www.fao.org/documents/card/en/c/CA1893EN/](http://www.fao.org/documents/card/en/c/CA1893EN/)) and are currently being printed in English and French. The guides have been translated into languages used by the main fleets thought to be interacting with cetaceans in the Indian Ocean: Japanese, Chinese (Mandarin and Taiwanese), French and Spanish for species names and French, Spanish, Persian, Urdu, Sinhalese and Tamil, Hindi, Bahasa Indonesian, Arabic and Swahili for the entire booklet. These are currently under review by CPC scientists.

Bigeye thresher shark tagging: A consortium has been established to work jointly on a tagging project to evaluate the post-release mortality of bigeye thresher sharks and the effectiveness of the no retention measure in Resolution 12/09. Scientists are working with observers to deploy tags on sharks release according to routine practices from the fleets of Japan, China, Taiwan, China, EU, Portugal, EU, France and South Africa. Fifty four pop-up archival satellite tags have been purchased and are in the process of being deployed. An update is provided in IOTC-2019-WPEB15-16.

Collaborative longline CPUE: A stock assessment consultant (Dr. Simon Hoyle), funded by the EU Science grant, provided the results on joint CPUE analysis through a workshop participated by national scientists from Japan, Taiwan, China, and Korea, and developed abundance indices to be included in the stock assessment of the major tropical species and albacore tuna. The consultant worked closely with scientists from the three fleets to understand and resolve the inconsistencies between the fleets; several papers on the results of developments in the collaborative CPUE were presented at WPTT21 and WPM10.

Bigeye and yellowfin tuna stock assessment: The IOTC stock assessment scientist carried out a stock assessment of bigeye tuna (1950-2018) using stock synthesis III. Given the substantial uncertainties associated with the input parameters, a reference grid of 18 models was used. The results indicated that the stock is currently not overfished but is subject to overfishing. The IOTC Stock assessment scientists also provided input into the updated yellowfin tuna assessment carried out using SS3 although he was not the principle modeller in this case. The updated yellowfin assessment was not considered for management advice in 2019.

Indo-Pacific sailfin stock assessment: The IOTC stock assessment scientist carried out a stock assessment of Indo-Pacific sailfin tuna (1950-2018) using data poor assessment techniques including a revised Catch-MSY method and stochastic stock reduction analysis.

Yellowfin and bigeye tuna MSE: A Stock Assessment consultant (Dale Kolody) funded by CSIRO and the Common Oceans ABNJ tuna project conducted MSE for yellowfin and bigeye tuna. A voluntary contribution by Australia has provided ongoing funding for this work through to 2021.

Swordfish MSE: A PhD student partially funded by an EU grant administered by the IOTC secretariat continued the work on swordfish MSE.



**MSE workshop:** The 8<sup>th</sup> IOTC MSE workshop was held in Ispra, Italy in March 2019 to discuss and review the progress for IO yellowfin, bigeye and albacore tuna MSE work. The workshop focused on the technical aspect of the OM development and MP evaluations. The workshop also set out the workplan for the 3<sup>rd</sup> TCMP meeting.

**Socio-economic scoping study:** A consultancy was awarded to conduct work on a scoping study to assess the state of socio-economic information available for the development of indicators based on the ToRs outlined in Resolution 18/09. This project report was presented to the Commission in June 2019.

**Population Structure of IOTC species in the Indian Ocean:** Phase I of the data collection was completed in early 2019 and Phase II was initiated. Data analysis has also been conducted for many of the samples. The work has been conducted by a consortium lead by CSIRO and managed by the IOTC Secretariat.

**Other Scientific work funded by EU Grants:** In addition to several of the components described above, the IOTC secretariat managed several additional scientific initiatives funded by EU grants. These included –

- Direct estimations of abundance for tropical tunas using acoustic buoys – Report presented at the WPTT in 2019
- Spatially Explicit Operating Models and Biological Parameters (using tagging data) – Ongoing
- Data poor modelling techniques – Report presented to the WPNT in 2019
- Albacore growth studies – Report provided to the WPTmT Data Preparatory meeting in 2019.
- Review of data collection and processing systems for size data from longline fleets in the Indian Ocean – Ongoing
- Implementation for the ROS as well as E-Monitoring (See document IOTC-2019-SC22-07).
- A contract was signed with AZTI Tecnalia to continue and expand the work of the FAD Watch project, as well as undertake a scoping study for the application of CKMR for a shark species in the Indian Ocean.
- The IOTC Secretariat has initiated a project with two key objectives, namely to: (i) identify where and by which gears mobulid rays are most likely to be caught in IOTC fisheries, and (ii) develop awareness materials on best practices for the safe handling and release of mobulid rays. This is being conducted through an external consultancy.
- MSE for skipjack tuna – the IOTC secretariat is in an advanced stage of signing an external consultant to develop a fully specified MP for skipjack.

## **Joint tRFMO activities**

**2019 Joint Tuna RFMO FAD working group meeting:** In May 2019 the IOTC secretariat attended the 2nd session of the Joint Tuna RFMO FAD working group meeting. The second meeting provided the stakeholders from across the world's oceans to discuss a range of topics of mutual interest to all tuna RFMOs. These included progress in the RFMOs since the last meeting, reviews of current management measures related to FADs and FAD fishing, definitions of terms related to FAD fishing, minimum standards for the collection of FAD data, harmonisation of data collection systems across oceans, marking and tracking of FADs, FAD fishery indicators, research on FADs, the impacts of FADs on marine ecosystems, current and future initiatives to ensure FAD fishing sustainability as well as areas for future cross RFMO collaboration on FAD matters.

**Joint tuna RFMO Bycatch Working Group meeting:** In December 2019 the IOTC Secretariat will attend and chair the next meeting of this working group. The aim of the workshop is to provide advice and support for issues of common interest related to elasmobranch research and management.

## **IOTC publications and information products**

### ***Documents***

In 2019, the Secretariat produced 71 (62 in 2018, 59 in 2017, 74 in 2016, 59 in 2015, 61 in 2014) papers/reports ([Appendix II](#)) in support of the IOTC Science process, not including the reports of the various working parties (6) or the species Executive Summaries (26).

### ***IOTC Website***

The IOTC website continues to be a portal for communicating science related information to a variety of audiences. The Secretariat completed development of a new website in 2015, as requested by the Commission, which include:

- **Stock assessment:** Input and output files for yellowfin tuna stock assessments.
- **Species ID guides:** translated versions are being made available online, as they are produced.

and is in the process of linking the publicly disseminated executive summaries of all IOTC species with the corresponding entries in the FAO / FIRMS stocks and fisheries map viewer as well as with the FAO / FIRMS Global Record of Stocks and Fisheries (GRSF) to enhance information sharing and standardized access to stock statuses and related resources.

### **Recommendation**

That the Scientific Committee **NOTE** paper IOTC–2019–SC22–05 which provides the report of the IOTC Secretariat for 2019, including the updates provided on the Recommendations and Requests directed to the IOTC Secretariat for implementation in 2019.

### **Appendices**

**Appendix I:** [List of Chairs, Vice-Chairs and their respective terms for IOTC Science meetings.](#)

**Appendix II:** [Papers from the IOTC Secretariat \(or co-authorship\) submitted to the IOTC Working Parties or Scientific Committee in 2019.](#)

**Appendix III:** [IOTC Extra-Budgetary Funded Projects related to Science](#)



## APPENDIX I

## List of Chairs, Vice-Chairs and their respective terms for the IOTC Scientific Committee and its subsidiary bodies

Group	Chair/Vice-Chair	Chair	CPC/Affiliation	1 <sup>st</sup> Term commencement date	Term expiration date (End date is until replacement is elected)	Comments
SC	Interim Chair	Dr Shiham Adam	Maldives, Rep. of	28–Nov–15	End of SC in 2019	2 <sup>nd</sup> term
	Vice-Chair	Vacant	Vacant			
WPB	Chair	Dr Denham Parker	South Africa	12–Sept–19	End of WPB in 2021	1 <sup>st</sup> term
	Vice-Chair	Dr Jie Cao	China	12–Sept–19	End of WPB in 2021	1 <sup>st</sup> term
WPTmT	Chair	Dr Jiangfeng Zhu	China	26–July–19	End of WPTmT in 2022	2 <sup>nd</sup> term
	Vice-Chair	Dr Toshihide Kitakado	Japan	26–July–19	End of WPTmT in 2022	2 <sup>nd</sup> term
WPTT	Chair	Dr Gorka Merino	EU, Spain	03–Nov–18	End of WPTT in 2020	1 <sup>st</sup> term
	Vice-Chair	Dr Shiham Adam	Maldives, Rep. of	13–Nov–18	End of WPTT in 2020	1 <sup>st</sup> term
WPEB	Chair	Dr Sylvain Bonhommeau	EU, France	08–Sept–17	End of WPEB in 2021	2 <sup>nd</sup> term
	Vice-Chair	Dr Mohamed Koya; Dr Mariana Tolotti	India / EU France	7–Sept–19	End of WPEB in 2021	1 <sup>st</sup> term
WPNT	Chair	Ms Ririk Sulistyaningsih	Indonesia	5–July–19	End of WPNT in 2019	1 <sup>st</sup> term
	Vice-Chair	Dr Farhad Kaymaram	I.R. Iran	5–July–19	End of WPNT in 2021	1 <sup>st</sup> term
WPDCS	Chair	Mr Stephen Ndegwa	Kenya	28–Nov–17	End of WPDCS in 2019	1 <sup>st</sup> term
	Vice-Chair	Dr Julien Barde	EU, France	28–Nov–17	End of WPDCS in 2019	1 <sup>st</sup> term
WPM	Chair	Dr Hilario Murua	ISSF	19–Oct–19	End of WPM in 2021	1 <sup>st</sup> term
	Vice-Chair	Ms Daniela Rosa	EU, Portugal	19–Oct–19	End of WPM in 2021	1 <sup>st</sup> term

## APPENDIX II

## Papers from the IOTC Secretariat (or co-authorship) submitted to the IOTC Working Parties or Scientific Committee in 2019

Document number	Title
<b>7th Working Party on Temperate Tuna (WPTmT): Data preparatory meeting</b>	
IOTC–2019–WPTmT07(DP)–03	Outcomes of the 21st Session of the Scientific Committee (IOTC Secretariat)
IOTC–2019–WPTmT07(DP)–04	Outcomes of the 23rd Session of the Commission (IOTC Secretariat)
IOTC–2019–WPTmT07(DP)–05	Review of current Conservation and Management Measures relating to temperate tuna species (IOTC Secretariat)
IOTC–2019–WPTmT07(DP)–06	Progress made on the recommendations and requests of WPTmT06 (IOTC Secretariat)
IOTC–2019–WPTmT07(DP)–07	Review of the statistical data available for the neritic albacore (IOTC Secretariat)
IOTC–2019–WPTmT07(DP)–08	Revision of the WPTmT Program of Work (2020–2024) (IOTC Secretariat)
IOTC–2019–WPTmT07(DP)–19	Collaborative study of albacore tuna CPUE from multiple Indian Ocean longline fleets in 2019 (Hoyle S, Chassot E, Fu D, Kim D N, Lee S I, Matsumoto T, Satoh K, Wang S-P, Yeh Y-M, and Kitakado T.)
<b>9th Session of the IOTC Working Party on Neritic Tunas</b>	
IOTC–2019–WPNT09–03	Outcomes of the 21 <sup>st</sup> Session of the Scientific Committee (IOTC Secretariat)
IOTC–2019–WPNT09–04	Outcomes of the 23 <sup>rd</sup> Session of the Commission (IOTC Secretariat)
IOTC–2019–WPNT09–05	Review of current Conservation and Management Measures relating to neritic tuna species (IOTC Secretariat)
IOTC–2019–WPNT09–06	Progress made on the recommendations and requests of WPNT08 and SC21 (IOTC Secretariat)
IOTC–2019–WPNT09–07	Review of the statistical data available for the neritic tuna species (IOTC Secretariat)
IOTC–2019–WPNT09–08	Revision of the WPNT Program of Work (2020–2024) (IOTC Secretariat)
IOTC–2019–WPNT09–15	Improving data limited methods for assessing Indian Ocean neritic tuna species ( Zhou S, Fu D, De Bruyn P and Martin S)
IOTC–2019–WPNT09–17	CPUE Standardisations for Neritic Tuna Species Using Iranian Gillnet Data 2008–2017 (Fu D, Nergi S K, Rejaei F)
<b>7th Working Party on Temperate Tuna (WPTmT): Assessment meeting</b>	
IOTC–2019–WPTmT07(AS)–03	Revision of the WPTmT Program of Work (2020–2024) (IOTC Secretariat)
IOTC–2019–WPTmT07(AS)–10	Collaborative study of albacore tuna CPUE from multiple Indian Ocean longline fleets in 2019. (Hoyle S D, Fu D, Kim D-N, Lee S-I, Matsumoto T, Satoh K, Wang S-P, and Kitakado T)
IOTC–2019–WPTmT07(AS)–INF02	Allometric curve for the Indian Ocean albacore. (Kitakado T, Fiorellato F. and de Bruyn P)
<b>15th Session of the Working Party on Ecosystems and Bycatch</b>	
IOTC–2019–WPEB15–03	Outcomes of the 21 <sup>st</sup> Session of the Scientific Committee (IOTC Secretariat)
IOTC–2019–WPEB15–04	Outcomes of the 23 <sup>rd</sup> Session of the Commission (IOTC Secretariat)
IOTC–2019–WPEB15–05	Review of Conservation and Management Measures relevant to ecosystems and bycatch (IOTC Secretariat)
IOTC–2019–WPEB15–06	Progress made on the recommendations and requests of WPEB14 and SC21 (IOTC Secretariat)
IOTC–2019–WPEB15–07	Review of the statistical data and fishery trends for ecosystems and bycatch species (IOTC Secretariat)
IOTC–2019–WPEB15–08	Update on the implementation of the IOTC Regional Observer Scheme (IOTC Secretariat)
IOTC–2019–WPEB15–09	Status of development and implementation of National Plans of Action for seabirds and sharks, and implementation of the FAO guidelines to reduce marine turtle mortality in fishing operations (IOTC Secretariat)
IOTC–2019–WPEB15–10	Revision of the WPEB Program of Work (2020–2024) (IOTC Secretariat & Chairperson)
IOTC–2019–WPEB15–16	The second progress report on the implementation of the IOTC bigeye thresher shark post-release mortality study project (IOTC BTH PRM Project)
IOTC–2019–WPEB15–INF02	Draft ecoregions for the IOTC convention area, proposed in preparation for the 2019 IOTC Ecoregions Workshop: “Identification of regions in the IOTC convention area to inform the implementation of the ecosystem approach to fisheries management” (Nieblas, A-E, Juan Jorda M-J, Murua H, Fiorellato F and de Bruyn P.)
<b>17th Session of the IOTC Working Party on Billfish</b>	
IOTC–2019–WPB17–03	Outcomes of the 21 <sup>st</sup> Session of the Scientific Committee (IOTC Secretariat)
IOTC–2019–WPB17–04	Outcomes of the 23 <sup>rd</sup> Session of the Commission (IOTC Secretariat)

IOTC–2019–WPB17–05	Review of Conservation and Management Measures relevant to billfish (IOTC Secretariat)
IOTC–2019–WPB17–06	Progress made on the recommendations and requests of WPB16 and SC21 (IOTC Secretariat)
IOTC–2019–WPB17–07	Review of the statistical data and fishery trends for billfish species (IOTC Secretariat)
IOTC–2019–WPB17–08	Revision of the WPB Program of Work (2020–2024) (IOTC Secretariat)
IOTC–2019–WPB17–24	Assessment of Indian Ocean Indo-Pacific Sailfish ( <i>Istiophorus platypterus</i> ) using catch-only methods. (Fu D)
<b>10<sup>th</sup> Working Party on Methods</b>	
IOTC–2019–WPM10–03	Outcomes of the 21 <sup>st</sup> Session of the Scientific Committee (IOTC Secretariat)
IOTC–2019–WPM10–04	Outcomes of the 23 <sup>rd</sup> Session of the Commission (IOTC Secretariat)
IOTC–2019–WPM10–05	Review of Conservation and Management Measures relating to methods (IOTC Secretariat)
IOTC–2019–WPM10–06	Progress on the recommendations of WPM09 and SC21 (IOTC Secretariat)
IOTC–2019–WPM10–07	Revision of the WPM Program of Work (2020–2024) (IOTC Secretariat & Chairpersons)
IOTC–2019–WPM10–12	Updates on the Indian Ocean swordfish management strategy evaluation: initial testing of candidate management procedures (Rosa D, Mosqueira I, Fu D and Coelho R)
IOTC–2019–WPM10–16	Collaborative study of bigeye and yellowfin tuna CPUE from multiple Indian Ocean longline fleets in 2019, with consideration of discarding (Hoyle S et al.)
IOTC–2019–WPM10–17	Application of a multivariate lognormal approach to estimate uncertainty about the stock status and future projections for Indian Ocean Yellowfin tuna (Winker H, Walter J, Cardinale M and Fu D)
<b>21<sup>st</sup> Session of the Working Party on Tropical Tunas</b>	
IOTC–2019–WPTT21–03	Outcomes of the 21 <sup>st</sup> Session of the Scientific Committee (IOTC Secretariat)
IOTC–2019–WPTT21–04	Outcomes of the 23 <sup>rd</sup> Session of the Commission (IOTC Secretariat)
IOTC–2019–WPTT21–05	Review of Conservation and Management Measures relevant to tropical tunas (IOTC Secretariat)
IOTC–2019–WPTT21–06	Progress made on the recommendations of WPTT20 (IOTC Secretariat)
IOTC–2019–WPTT21–07	Outcomes of the 3 <sup>rd</sup> Session of the Technical Committee on management Procedures (IOTC Secretariat)
IOTC–2019–WPTT21–08	Review of the statistical data and fishery trends for tropical tunas (IOTC Secretariat)
IOTC–2019–WPTT21–09	Revision of the WPTT Program of Work (2020–2024) (IOTC Secretariat)
IOTC–2019–WPTT21–47	Evaluation of the potential impact of catch underreporting on yellowfin stock assessment using exploratory scenarios of catch history (Merino G, Fu D, Geehan J, Urtizberea A, Santiago J, Murua H)
IOTC–2019–WPTT21–50	Preliminary Assessment of Indian Ocean Yellowfin Tuna 1950-2018 (Stock Synthesis, v3.30). (Urtizberea A, et al.)
IOTC–2019–WPTT21–61	Preliminary Indian Ocean Bigeye Tuna Stock Assessment 1950-2018 (Stock Synthesis). (Fu D).
<b>15<sup>th</sup> Working Party on Data Collection and Statistics</b>	
IOTC–2019–WPDCS15–03	Outcomes of the 21 <sup>st</sup> Session of the Scientific Committee (IOTC Secretariat)
IOTC–2019–WPDCS15–04	Outcomes of the 23 <sup>rd</sup> Session of the Commission (IOTC Secretariat)
IOTC–2019–WPDCS15–05	Review of current Conservation and Management Measures relating to the WPDCS (IOTC Secretariat)
IOTC–2019–WPDCS15–06	Progress on the recommendations of WPDCS14 (IOTC Secretariat)
IOTC–2019–WPDCS15–07	Report on IOTC Data Collection and Statistics (IOTC Secretariat)
IOTC–2019–WPDCS15–08	IOTC capacity building activities in support of developing coastal IOTC CPCs (IOTC Secretariat)
IOTC–2019–WPDCS15–09	Revision of the WPDCS Program of Work (2020–2024) (IOTC Secretariat, Chairperson & Vice-Chairperson)
IOTC–2019–WPDCS15–10	Alternative approaches to the revision of official species composition for the Spanish log-associated catch-and-effort data for tropical tuna species in 2018 (IOTC Secretariat)
IOTC–2019–WPDCS15–11	Assigning DOIs to publically-accessible IOTC documents and their publication on the open-access data repository Zenodo (Nieblas A-E, Fiorellato F, Blondel E, de Bruyn P and Barde J)
<b>21<sup>st</sup> Session of the Scientific Committee</b>	
IOTC–2019–SC22–03	Outcomes of the 23 <sup>rd</sup> Session of the Commission (IOTC Secretariat)
IOTC–2019–SC22–04	Previous decisions of the Commission (IOTC Secretariat)
IOTC–2019–SC22–05	Report of the Secretariat – Activities in support of the IOTC science process in 2019 (IOTC Secretariat)

IOTC–2019–SC22–06	Status of development and implementation of national plans of action for seabirds and sharks, and implementation of the FAO guidelines to reduce marine turtle mortality in fishing operations (IOTC Secretariat)
IOTC–2019–SC22–07	2019: Update on the implementation of the regional observer scheme (IOTC Secretariat)
IOTC–2019–SC22–08	2019: Update on progress regarding Resolution 09/01 – on the performance review follow-up (IOTC Secretariat)
IOTC–2019–SC22–09	Revision of the program of work (2020–2024) for the IOTC science process (IOTC Secretariat)
IOTC–2019–SC22–10	Proposed schedule of Working Party and Scientific Committee meetings for 2020 and 2021 (IOTC Secretariat)
IOTC–2019–SC22–11	Progress on recommendations from SC21 (IOTC Secretariat)

**APPENDIX III**  
**IOTC Extra-Budgetary Funded Projects related to Science**

<b>Project No.</b>	<b>Area of Work</b>	<b>Donor</b>	<b>Description</b>	<b>Total Funding Amount US\$</b>	<b>Start Date</b>	<b>End date</b>
GCP/INT/233/EC	Stock Assessment	EC	Population structure of IOTC species in the Indian Ocean: Estimation with next generation sequencing technologies and Otolith micro-chemistry	1,529,487	01/03/2015	30/06/2020
GCP/INT/256/EC	Capacity Building	EC	Assistance to foster compliance-technical assistance to developing countries to improve implementation of at-sea observer scheme and data collection	159,515	22/12/2015	31/12/2017
GCP/INT/258/EC	Science	EC	Support to the Scientific Committee Programme of Work	634,872	01/06/2016	30/04/2018
GCP/INT/305/EC	Science	EC	Support to the Scientific Committee Programme of Work (2018)	721,153	01/01/2018	31/12/2020
GCP/INT/322/EC	Science	EC	Support to the implementation of the IOTC ROS (2018)	850,682	01/10/2018	31/03/2021
GCP/GLO/983/EC	Science	EC	Support to the Scientific Committee Programme of Work (2019)	392,136	01/01/2019	30/06/2020
MPF Extra-budgetary	Meetings	China	Extra funds for meeting participation	20,000	01/01/2018	31/12/2018
MPF Extra-budgetary	Meetings	Australia	Extra funds for meeting participation	30,842	01/01/2018	31/12/2018
Extra-budgetary	Science	Australia	Australia's contribution to IOTCs management strategy evaluation	205,000	01/07/2019	31/12/2020