REVISION OF THE PROGRAM OF WORK (2025–29) FOR THE IOTC SCIENCE PROCESS

PREPARED BY: IOTC SECRETARIAT, SC CHAIR AND WP CHAIRS, 01 NOVEMBER 2024

PURPOSE

To provide the Scientific Committee (SC) with a proposed Program of Work for each of its Working Parties (WP), including preliminary prioritisation of the elements requested by each WP. The aim is to develop an overall Program of Work for 2025–29 which will deliver the information the Commission has requested to meet the objectives of the IOTC.

BACKGROUND

Scientific Committee

At the 26th Session of the SC:

(Para. 181)	The SC **NOTED** IOTC–2023–SC26–08 which provided the SC with a proposed Program of Work for each of its working parties, including prioritisation of the elements requested by each working party.
(Para. 182)	The SC **NOTED** the proposed Program of Work and priorities for the SC and each of the working parties and **AGREED** to a consolidated Program of Work as outlined in Appendix 35a-g and in accordance with the IOTC Strategic Science Plan 2020-2024. The Chairpersons and Vice-Chairpersons of each working party will ensure that the efforts of their respective working parties 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. 184)	The SC **AGREED** on the consolidated table of priorities across all working parties, as developed by each working party Chairperson, and **REQUESTED** that the IOTC Secretariat, in consultation with the Chairpersons and vice-Chairpersons of the SC and relevant working parties, develop ToRs for the specific projects to be carried out.
(Para. 185)	The SC **NOTED** that the consolidated table of priorities does not replace the full programme of work of each working party (Appendix 35a-g) and that adequate attention and focus should still be allocated to those activities where possible. The SC further **NOTED** that Table 3 has been developed by the SC and working party Chairs to provide more specific direction to the IOTC Secretariat and the SC Chair as to the priorities of the SC so that, if and when external funding becomes available intersessionally, it is possible to clearly prioritise across all working parties based on the objectives of the SC (as agreed in IOTC–2014–SC17–R, para. 179).
(Para. 186)	The SC **ADOPTED** a revised assessment schedule, ecological risk assessment and other core projects for 2024–28, for the tuna and tuna-like species under the IOTC mandate, as well as the current list of key shark species of interest, as outlined in Appendix 36.

DISCUSSION

The SC is requested to consider the priorities set by the Commission, via Conservation and Management Measures, and consider and revise as necessary, its Program of Work to match those priorities.

The draft schedule of stock assessments for IOTC species and species of interest from 2025–2029, and for other working party priorities is provided in Appendix I. The highest three (3) priority projects by each Working Party are presented in Appendix II and all the priority projects agreed to by each WP meeting in 2024 are referenced in Appendix III.

RECOMMENDATION

That the Scientific Committee:

1) **NOTE** paper IOTC–2024–SC27–08, which encouraged the SC to further develop and refine its Program of Work for 2025–29, which is based on those of its Working Parties, to ensure it is aligned with the requests and directives from the Commission.
2) **ADOPT** a revised Program of Work for 2025–29.

APPENDIX I
DRAFT: SCHEDULE OF STOCK ASSESSMENTS FOR IOTC SPECIES AND SPECIES OF INTEREST FROM 2025–2029, AND FOR OTHER WORKING PARTY PRIORITIES

Working Party on Neritic Tunas					
Species	**2025****	**2026***	**2027***	**2028**	**2029***
Bullet tuna	Data preparation	Data preparation	**Assessment**	Data preparation	Data preparation
Frigate tuna	Data preparation	Data preparation	**Assessment**	Data preparation	Data preparation
Indo-Pacific king mackerel	Data preparation	Data preparation	**Assessment**	Data preparation	Data preparation
Kawakawa	Data preparation	**Assessment**	Data preparation	Data preparation	**Assessment**
Longtail tuna	Data preparation	**Assessment**	Data preparation	Data preparation	**Assessment**
Narrow-barred Spanish mackerel	Data preparation	**Assessment**	Data preparation	Data preparation	**Assessment**

* Including data-limited stock assessment methods.
** Including species-specific catches, CPUE, biological information and size distribution as well as identification of data gaps and discussion of improvements to the assessments (stock structure); one day may be reserved for capacity building activities.

Working Party on Billfish					
Species	**2025**	**2026**	**2027**	**2028**	**2029**
Black marlin			**Full assessment**		
Blue marlin	**Full assessment**			**Full assessment**	
Striped marlin			**Full assessment**		
Swordfish		**Full assessment**	**Data Prep for MP**		**Full assessment**
Indo-Pacific sailfish	**Full assessment**			**Full assessment**	

Working Party on Tropical Tunas					
Species	**2025**	**2026**	**2027**	**2028**	**2029**
Bigeye tuna	**Data preparatory meeting** **Full assessment**	Indicators	**Data Prep for MP**	**Data preparatory meeting** **Full assessment**	Indicators
Skipjack tuna	Indicators **Data Prep for MP**	**Data preparatory meeting** **Full assessment**	Indicators	**Data Prep for MP**	Indicators
Yellowfin tuna	Indicators	Indicators	**Data preparatory meeting** **Full assessment**	Indicators	**Data preparatory meeting** **Full assessment**

Working Party on Methods					
Species	**2025**	**2026**	**2027**	**2028**	**2029**
Bigeye tuna	Review of Exceptional Circumstances **Run the MP[1]**	Review of Exceptional Circumstances	Review of Exceptional Circumstances **Run the MP**	Review of Exceptional Circumstances	Review of Exceptional Circumstances
Skipjack tuna	Review of Exceptional Circumstances **Run the MP**	Review of Exceptional Circumstances	Review of Exceptional Circumstances	Review of Exceptional Circumstances **Run the MP**	Review of Exceptional Circumstances
Swordfish	Review of Exceptional Circumstances	Review of Exceptional Circumstances	Review of Exceptional Circumstances **Run the MP**	Review of Exceptional Circumstances	Review of Exceptional Circumstances

Working Party on Ecosystems and Bycatch					
Species	**2025**	**2026**	**2027**	**2028**	**2029**
Blue shark	Data preparatory meeting Full assessment	-	–	–	–
Oceanic whitetip shark	Indicator analysis	-	Data preparation	–	Data preparation
Scalloped hammerhead shark	–	Data preparatory meeting Assessment*	–	–	–
Shortfin mako shark	–	-	Data preparatory meeting Full assessment		Data preparatory meeting Full assessment
Silky shark	–	Assessment*	-	Assessment*	-
Bigeye thresher shark	–	Assessment*	–	-	–
Pelagic thresher shark	–	Assessment*	–	-	–
Porbeagle shark	–	-	– Assessment*		–
Mobulid Rays	–	-	Interactions/ Indicators	-	Interactions/ Indicators
Marine turtles	Indicators	-	–	Indicators	–

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[1] Due to exceptional circumstances identified in 2024

Seabirds	Development of draft workplan	Review of mitigation measures in Res. 23/07	–	–	Development of draft workplan
Marine Mammals		-	–	–	
Ecosystem Approach to Fisheries Management (EAFM) approaches	Ecoregions pilot study ongoing				
Series of multi-taxa bycatch mitigation workshops	Focus: tbd	Focus: tbd	Focus: tbd	Focus: tbd	Focus: tbd
Shark research plan update		Shark research plan update workshop			

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

Working Party on Temperate Tunas					
Species	**2025**	**2026**	**2027**	**2028**	**2029**
Albacore	Data preparatory Meeting (4 days) (April/May/June) Stock assessment meeting (5 days) (July/August)	–	–	-	**TBC**

APPENDIX II

TOP THREE PRIORITY PROJECTS FOR EACH IOTC WORKING PARTY

All priorities come from the 2024 reports of each WP except for the WPDCS which comes from the 2023 report and will be updated for the SC report.

Priority	1	2	3
WPTT	**Stock assessment priorities** Address the outstanding issues identified as priorities by the yellowfin tuna peer review panel (February 2023). Address the additional recommendations made by the WPTT in 2024.	**Abundance indices development** Address the additional recommendations made by the WPTT in 2024 regarding the CPUE indices for yellowfin. In view of the coming assessments of yellowfin, bigeye, and skipjack develop abundance time series for each tropical tuna stock for the Indian Ocean • Continue to develop CPUE indices from Longline, PS, Pole and line fisheries, and fishery independent indices of abundance such as those derived from echosounder buoys. • Explore and support the development of gillnet CPUE indices for fleets (e.g., Iran, Pakistan and Oman) • Evaluate effect of changes of spatial coverage on the longline CPUE through the Joint CPUE workshop and estimate spatial temporal abundance distribution through VAST modelling approach	**Fisheries Independent Monitoring** Use of Close Kin Mark Recapture (CKMR) methods which can provide estimates of absolute spawning biomass, mortality, stock structure, and connectivity based on genotyping individuals to a level that can identify close relatives (e.g. parent-offspring or half-siblings). Plan for a staged approach for implementation of a YFT CKMR project **Analysis of tagging and size frequency data** Analyze data from IOTC tagging programs outside stock assessment models and evaluate its utility and impact on stock assessments. Standardization of size frequency data. **Analysis of environmental factors** Evaluate the impact of environmental factors on the dynamics of tropical tuna stocks and the possible role of climate change on changes to selectivity, recruitment deviates and fishing productivity.
WPEB	**Connectivity, movements, habitat use and post release mortality[2]** Electronic tags (PSATs, SPOT, Splash MiniPAT) to assess the efficiency of management resolutions on non-retention species (BSH in LL, marine turtles and rays in GIL and PS, whale sharks) and to determine	**Fisheries data collection and development of alternative abundance indices** 1.1 Catch composition reconstruction (initial focus Sri Lanka, Pakistan and Indonesia) 1.1.2 Historical data mining for the key species and IOTC fleets (e.g., as artisanal gillnet and longline coastal fisheries) including workshops:	**Shark research and management strategy** 2.1 Implementation of work suggested by shark work plan consultancy 2.2 Prioritising shark research based on previous work and including analysing gaps in knowledge

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[2] This item is a top priority for the WPEB; however, completing it will require substantial funding, which the WPEB recognizes is unlikely to be provided through the IOTC Scientific budget

	connectivity, movement rates, mortality estimates and genetic studies	1.1.3 Historical data mining for the key species, including the collection of information about catch, effort and spatial distribution of those species and fleets catching them 1.1.4 CPUE standardisation and review of additional abundance indicators series for each key shark species and fishery in the Indian Ocean 1.2 Exploring different indices of abundance for sharks such as CKMR	2.3 Workshop to update and revise shark research plan with a small working group
WPNT	**Stock structure (connectivity)** Genetic research to determine the connectivity of neritic tunas throughout their distributions (This should build on the stock structure work conducted in other previous studies): 1. Review of stock structure methodologies with genetic expert during WPNT15 in order to determine the best approach to regional stock structure studies. Based on discussions develop and implement regional genetic sampling collection programme: • Sampling of tissue samples • DNA extraction and storage for preservation • Carry out genetic sequencing on extracted DNA	**Stock assessment / Stock indicators** Explore alternative assessment approaches and develop improvements where necessary based on the data available to determine stock status for longtail tuna, kawakawa and Spanish mackerel 1) The Weight-of-Evidence approach should be used to determine stock status, by building layers of partial evidence, such as CPUE indices combined with catch data, life-history parameters and yield-per recruit metrics, as well as the use of data poor assessment approaches (e.g. CMSY, OCOM, LB-SPR, Risk based methods). 2) Exploration of priors and how these can be quantifiably and transparently developed. 3) Review size data and their suitability for monitoring stock status Improve the presentation of management advice from different assessment approaches to better represent the uncertainty and improve communication between scientists and managers in the IOTC.	**Data mining and collation** Collate and characterize operational level data for the main neritic tuna fisheries in the Indian Ocean to investigate their suitability to be used for developing standardised CPUE indices. The following data should be collated and made available for collaborative analysis: ➢ catch and effort by species and gear by landing site; ➢ operational data: stratify this by vessel, month, and year for the development as an indicator of CPUE over time; and ➢ operational data: collate other information on fishing techniques (i.e. area fished, gear specifics, depth, environmental condition (near shore, open ocean, etc.) and vessel size (length/horsepower)). ➢ Reconstruction of historical catch by CPCs using recovered or captured information. ➢ Re-estimation of historic catches (with consultation and consent of concerned CPCs including India, Pakistan, Bangladesh, Mozambique, Tanzania, Madagascar) for assessment purposes (taking into account updated identification of uncertainties and knowledge of the history of the fisheries)
WPTmT	**Biological information (parameters for stock assessment)**	**Size frequency data**	**CPUE standardisation** 3.1 Continue the development of standardized CPUE series for each albacore fishery for the Indian

	2.1 Biological research (collaborative research to improve understanding of spatio-temporal patterns in age and growth and reproductive parameters) 2.1.1 Age and growth studies: Uncertainty about the growth curve is a primary source of uncertainty in the stock assessment. A preliminary growth curve was developed in 2019, but there is substantial work to be done to ensure that growth curves include data from smaller size classes, and that spatio-temporal patterns in growth are quantified for use in the stock assessment. Collaborative sampling programs, involving a combination of observer- and port-based sampling, are required to ensure that adequate samples are collected. 2.1.2 Quantitative biological studies are necessary for albacore throughout its range to determine spatio-temporal patterns in key reproductive parameters including sex ratio; female length- and age-at-maturity; spawning location, periodicity and frequency; batch fecundity at length and age; spawning fraction and overall reproductive potential, to inform future stock assessments.	4.1 Further investigate the size information provided by CPCs in order to better understand the stock dynamics and inputs into the assessment models. This is particularly necessary for the purse seine data.	Ocean, with the aim of developing appropriate CPUE series for stock assessment purposes. 3.1.1 Spatio-temporal structure and target changes need to be considered carefully, as fish density and targeting practices can vary in ways that affect CPUE indices. Developments may include changes to fishery spatial structure, new approaches for area weighting, time-area interactions in the model, and/or indices using VAST.
WPB	**CPUE standardization** 1.1 Develop and/or revise standardized CPUE series for each billfish species and major fisheries/fleets in the Indian Ocean and develop Joint CPUE series where feasible 1.1.1 Swordfish: Priority LL fleets: Taiwan,China, EU(Spain, Portugal, France), Japan, Indonesia, South African 1.1.2 Striped marlin: Priority fleets: Japan, Taiwan,China 1.1.3 Black marlin: Priority fleets: Longline: Taiwan,China; Gillnet: I.R. Iran, Sri Lanka, Indonesia 1.1.4 Blue marlin: Priority fleets: Japan, Taiwan,China, Indonesia 1.1.5 I.P. Sailfish: Priority fleets: Priority gillnet fleets: I.R. Iran and Sri Lanka; Priority longline fleets: EU(Spain, Portugal, France), Japan, Indonesia;	Biological and ecological information 2.1 Age and growth research 2.1.1 CPCs to provide further research 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, port sampling or other research programs. (Priority: all billfishes: swordfish, marlins and sailfish) 2.2 Spawning time and locations 2.2.1 Collect gonad samples from billfish or utilise any other scientific means to confirm the spawning time and location of the spawning areas that are presently hypothesized for each billfish species. This will also provide advice to the Commission on the request for alternative management measures (Res. 18-05, paragraph 6). Partially supported by EU, on-going support and collaboration from CPCs are required. 2.3 Literature review of biological parameters for billfish 2.3.1 Conduct a literature review of biological parameters for billfish through a consultancy	**Billfish bycatch mitigation** WPB and CPCs scientists to firstly, review and summarise existing information on billfish bycatch mitigation, including also factors influencing at-haul and post-release mortality of billfish, and secondly to undertake further research to inform gaps in understanding on potential effective mitigation approaches, to provide options for the Commission to reduce fishing mortality for species where that is required (e.g. Black Marlin, Striped Marlin and Sailfish) focusing on gillnet and longline fisheries but also including recreational and sport fishing activities ..

		and update the supplementary information that companies with species Executive Summaries.	
WPDCS	**Coastal fisheries data collection** Data support missions to assist the implementation of data collection and sampling activities for fisheries insufficiently sampled. Recommended actions include: designing sampling guidelines for IOTC fisheries. Priority to be given to the following countries / fisheries: • Indonesia • Pakistan • I.R. Irian • Keyna • Tanzania • Comoros • Madagascar	**Data access and dissemination** Ocean-climate information: develop an online digital ocean atlas for the IOTC area of competence, linked by the IOTC website; develop indicators on ocean-climate status to be linked to the atlas portal, along with educational resources	**Compliance with IOTC data reporting requirements** Workshops to clarify data reporting requirements[3] and support preparation of annual submissions
WPM	**MSE** Continuation of Management Strategy Evaluation for Albacore Yellowfin tunas as well as Blue shark		

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[3] Recommended by the CoC; regular annual webinars / workshops to be held from 2025 onwards with each CPCs (or group of CPCs) prior to the approaching of the data reporting deadline

APPENDIX III
REFERENCES TO THE INDIVIDUAL IOTC WORKING PARTY PROGRAMS OF WORK

Report number	Report title
IOTC–2024–WPNT14–R	Report of the 14th Session of the Working Party on Neritic Tunas
IOTC–2024–WPB22–R	Report of the 22st Session of the Working Party on Billfish
IOTC–2024–WPEB20–R	Report of the 20th Session of the Working Party on Ecosystems and Bycatch
IOTC–2024–WPM15–R	Report of the 15th Session of the Working Party on Methods
IOTC–2023–WPDCS19–R*	Report of the 19th Session of the Working Party on Data collection and Statistics
IOTC–2024–WPTT26–R	Report of the 26th Session of the Working Party on Tropical Tunas

*2024 report not available at the time of drafting the document.