
REVISION OF THE WPTT PROGRAM OF WORK

PREPARED BY: IOTC SECRETARIAT, 12 OCTOBER 2024

PURPOSE

To ensure that the participants at the 25th Working Party on Tropical Tunas (WPTT25) revise the Program of Work for the WPTT by taking into consideration the specific requests of the Commission and Scientific Committee.

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.

Commission

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

Resolution 15/10 On target and limit reference points and a decision framework

Interim Target and Limit Reference Points (TRPs and LRPs)

(para. 1) When assessing stock status and providing recommendations to the Commission, the IOTC Scientific Committee should, where possible, apply MSY-based target and limit reference points for tuna

and tuna-like species and in particular the interim reference points agreed by the Commission in 2013 for albacore, swordfish and the three (3) tropical tunas (Bigeye tuna, Skipjack tuna, Yellowfin tuna) (per Resolution 13/10 *On interim target and limit reference points and a decision framework*) [[superseded by Resolution 15/10](#)]), as listed in **Table 1**. B_{MSY} refers to the biomass level for the stock that would produce the Maximum Sustainable Yield; F_{MSY} refers to the level of fishing mortality that produces the Maximum Sustainable Yield.

Table 1. Interim target and limit reference points.

Stock	Target Reference Point	Limit Reference Point
Albacore		
Yellowfin tuna	$B_{TARGET} = B_{MSY}$;	$B_{LIM} = 0.40 B_{MSY}$
Swordfish	$F_{TARGET} = F_{MSY}$	$F_{LIM} = 1.40 F_{MSY}$
Bigeye tuna	$B_{TARGET} = B_{MSY}$ $F_{TARGET} = F_{MSY}$	$B_{LIM} = 0.50 B_{MSY}$ $F_{LIM} = 1.30 F_{MSY}$
Skipjack tuna	$B_{TARGET} = B_{MSY}$ $F_{TARGET} = F_{MSY}$	$B_{LIM} = 0.40 B_{MSY}$ $F_{LIM} = 1.50 F_{MSY}$

Alternate interim Target and Limit Reference Points

(para. 2) Where the IOTC Scientific Committee considers that MSY-based reference points cannot be robustly estimated, biomass limit reference points will be set at a rate of B_0 . Unless the IOTC Scientific Committee advises the Commission of more suitable limit reference point for a particular species, by default, the interim B_{LIM} will be set at $0.2 B_0$ and fishing mortality rate limit reference point at $F_{0.2 B_0}$ (the value corresponding to this biomass limit reference point). These interim limit reference points will be reviewed no later than 2018.

(para. 3) Where the IOTC Scientific Committee considers that MSY-based reference points cannot be robustly estimated, target reference points based on the depletion proportion (i.e. reference points with respect to the ratio of current biomass to B_0 , B_0 being the virgin biomass estimate) should be used as a basis for B_{TARGET} and F_{TARGET} , as follows:

- a) the interim biomass target reference point B_{TARGET} could be set at a ratio of B_0 , the virgin biomass;
- b) the interim fishing mortality rate target reference point F_{TARGET} could be set at a level consistent with the target biomass reference point, the fishing mortality rate corresponding then to the adopted ratio of B_0 , the virgin biomass).

(para.4) These target and limit reference points, referred to in paragraphs 1, 2 and 3, shall be further reviewed by the IOTC Scientific Committee according to the program of work at **Annex 1** and in accordance with paragraph 6. The results shall be presented to the Commission for adoption of species-specific reference points.

(para. 5) The IOTC Scientific Committee shall continue to provide advice on the status of stocks and on recommendations for management measures in relation to the reference points referred to in paragraphs 1, 2 and 3, where available, until the Commission adopts other reference points that achieve the IOTC's conservation and management objectives and are consistent with paragraph 6.

(para. 6) The IOTC Scientific Committee shall recommend to the Commission for its consideration options for harvest control rules for IOTC species in relation to agreed reference points and, in doing so, shall take into account:

- c) the provisions set forth in the UNFSA and in Article V of the IOTC Agreement;

- d) the following objectives and any other objective identified through the Science and Management Dialogue process designed in Resolution 14/03 [superseded by [Resolution 16/09](#)] (or any revision thereof) and agreed thereafter by the Commission:
- i. Maintain the biomass at or above levels required to produce MSY or its proxy and maintain the fishing mortality rate at or below F_{MSY} or its proxy;
 - ii. Avoid the biomass being below B_{LIM} and the fishing mortality rate being above F_{LIM} ;
- e) the following guidelines:
- i. For a stock where the assessed status places it within the lower right (green) quadrant of the Kobe Plot, aim to maintain the stock with a high probability within this quadrant;
 - ii. For a stock where the assessed status places it within the upper right (orange) quadrant of the Kobe Plot, aim to end overfishing with a high probability in as short a period as possible;
 - iii. For a stock where the assessed status places it within the lower left (yellow) quadrant of the Kobe plot, aim to rebuild these stocks in as short a period as possible;
 - iv. For a stock where the assessed status places it within the upper left quadrant (red), aim to end overfishing with a high probability and to rebuild the biomass of the stock in as short a period as possible.

Final Clauses

(para 7.) Bearing in mind Article 64 of UNCLOS and Article 8 of UNFSA, the entirety of this Resolution is subject to Article XVI (Coastal States' Rights) of the IOTC Agreement for the Establishment of the Indian Ocean Tuna Commission, and Articles 87 and 116 of the UN Convention of the Law of the Sea regarding the right to fish on the high seas;

(para. 8) The IOTC Scientific Committee is requested to evaluate the performance of any harvest control rules with respect to the species specific target and limit reference points adopted for IOTC species, but not later than 10 years following their adoption, and the Commission will consider, as appropriate and consistent with the scientific advice, these harvest control rules.

(para 9.) As soon as advice from the IOTC Scientific Committee regarding the appropriateness of TRPs and LRPs, as required under **Annex 1**, is available to the Commission, and where possible no later than at the IOTC Commission meeting in 2020, this Resolution will be reviewed with the view to adopting revised TRPs and LRPs.

Resolution 19/01 *On an interim plan for rebuilding the Indian Ocean Yellowfin tuna stock in the IOTC area of competence*

(para 22) CPCs are encouraged to increase their observer coverage or field sampling in gillnet fishing vessels by 10% using alternative data collection methodologies (electronic or human) verified by the IOTC Scientific Committee by 2023.

(para 28) The Scientific Committee via its Working Party on Tropical Tunas shall implement the “Workplan to improve current assessment of yellowfin tuna” and shall advise the Commission the financial and administrative requirements to further strengthen the work undertaken to minimize the issues and complexities regarding yellowfin tuna stock assessment.

Resolution 19/02 *Procedures on a fish aggregating devices (FADs) management plan*

- (para. 19) CPCs are encouraged to conduct trials using biodegradable materials to facilitate the transition to the use of only biodegradable material for DFADS construction by their flagged vessels. The results of such trials shall be presented to the Scientific Committee who shall continue to review research results on the use of biodegradable material on FADs and shall provide specific recommendations to the Commission as appropriate
- (para. 23) The IOTC Scientific Committee will analyse the information, when available, and provide scientific advice on additional FAD management options for consideration by the Commission, including recommendations on the number of FADs to be operated, the use of biodegradable materials in new and improved FADs design. When assessing the impact of FADs on the dynamic and distribution of targeted fish stocks and associated species and on the ecosystem, the IOTC Scientific Committee will, where relevant, use all available data on abandoned FADs (i.e. FADs without a beacon or which have drifted outside the fishing zone).
- (para.27) This resolution shall be reviewed by the Commission, at the latest, at its session in 2022, based on recommendations from the Scientific Committee.

Resolution 21/01 *On an interim plan for rebuilding the Indian Ocean Yellowfin tuna stock in the IOTC area of competence*

(Para 17). The tropical tuna data submitted by CPCs in accordance with Resolution 15/01 “On the recording of catch and effort data by fishing vessels in the IOTC area of competence” and Resolution 15/02 “Mandatory statistical reporting requirements for IOTC Contracting Parties and Cooperating Non-Contracting Parties (CPCs)” shall be reviewed by the Secretariat and discussed by the Scientific Committee for possible inconsistencies. In such cases, the Scientific Committee shall provide the rationale of the detected inconsistencies and justify the choice of the best solution available with regard the scientific analysis to be carried out. Data used for catch limit calculations shall be based on the data reviewed, including possible estimates, by the Secretariat.

(Para 23). CPCs are encouraged to increase their observer coverage or field sampling in gillnet fishing vessels by 10% using alternative data collection methodologies (electronic or human) verified by the IOTC Scientific Committee by 2023.

(Para 30). The IOTC Scientific Committee via its Working Party on Tropical Tunas shall implement the “Workplan to improve current assessment of yellowfin tuna” and shall advise the Commission the financial and administrative requirements to further strengthen the work undertaken to minimize the issues and complexities regarding yellowfin tuna stock assessment.

(Para 31). The IOTC Scientific Committee and its Working Parties shall prioritise the work on the yellowfin tuna management procedure and to provide advice to the Technical Committee on Management Procedures and to enable the Commission to adopt the yellowfin tuna management procedure at the earliest opportunity.

(Para 32). The Scientific Committee via its Working Party on Tropical Tunas shall undertake evaluation of the effectiveness of the measures detailed in this Resolution, taking into account all sources of fishing mortality possible aiming at returning and maintaining biomass levels at the Commission’s target level.

Resolution 22/03 On a Management Procedure for Bigeye Tuna in the IOTC Area of Competence

- (para. 4) The Scientific Committee shall run the MP and advise the Commission of the outcome, including a recommended TAC and any advice on exceptional circumstances in accordance with the Commission endorsed Guidelines for the Provisions of Exceptional Circumstances for IOTC MPs as documented in Appendix 6a of IOTC-2021-SC24-R.
- (para. 12) The Scientific Committee is requested to review, and if necessary, further develop and refine (not later than 2024), the exceptional circumstances guidelines (adopted by SC24 and S26), taking into account, inter alia, the need for an appropriate balance between specificity versus flexibility in defining exceptional circumstances, and the appropriate level of robustness to ensure that exceptional circumstances are triggered only when necessary.

Resolution 23/01 On Management of Anchored Fish Aggregating Devices (AFADs)

- (para. 16) The IOTC Executive Secretary in consultation with the Scientific Committee shall develop a best practice guideline for construction of AFADs and submit it to the Commission for adoption no later than the 29th Annual Session of the IOTC.
- (para. 17) The IOTC Scientific Committee shall analyse further information, when available, and provide advice on existing, additional or alternative AFAD management options for sustainable fisheries.
- (para. 18) The IOTC Scientific Committee shall, no later than at its annual session in 2025, provide a set of relevant indicators that would allow monitoring the effects of AFAD fisheries and assessing the efficiency of existing/additional/alternative AFAD management options.
- (para. 19) The IOTC Scientific Committee shall provide scientific advice by assessing the impact of fishing using AFADs on juvenile tuna mortality and provide advice to the Commission.

Resolution 23/03 On Establishing a Voluntary Fishing Closure in the Indian Ocean for the Conservation of Tropical Tuna's

- (para. 3) The IOTC Scientific Committee shall provide advice and recommendations no later than 31st December 2023 on appropriate fishing closures applicable to all fishing gears. These recommendations need to consider the area, closure period and any other details, with the objective of achieving a high probability of reducing fishing mortality of juvenile tropical tuna, in particular bigeye and yellowfin tuna. If the IOTC Scientific Committee concludes that it does not currently possess access to sufficient scientific data to provide recommendations to the Commission, the SC shall provide recommendations relating to the data necessary for science-based recommendations for the information of the Commission.
- (para. 4) In producing its advice and recommendations, the IOTC Scientific Committee shall take into account, inter alia:
- a) available IOTC fisheries data;
 - b) fishing behaviours/ patterns in the Indian Ocean, both historically and those anticipated as a consequence of the implementation of the closure or any new management measures.

Resolution 23/04 On Establishing Catch Limits for Bigeye Tuna in the IOTC Area of Competence

- (para. 13) The IOTC Scientific Committee shall conduct a comparative analysis of the contribution of all fishing gears to the mortality of bigeye tuna, which shall include both absolute and relative contributions to mortality and stock depletion.
- (para. 14) The IOTC Scientific Committee shall develop a table as shown in Annex 2 that quantifies the expected impact on maximum sustainable yield (MSY) and SSB_{msy} for bigeye tuna resulting from replacing fishing mortality/catches of any major fishing gear/fishery (e.g., Longline, DFAD fisheries, AFAD fisheries, Purse seine on free school, other fisheries) for consideration by the Commission at its 2025 Session. The IOTC Scientific Committee shall also provide advice on FAD management options, including on, limits on FADs sets, that may be necessary to achieve a replacement of fishing mortality of FAD fisheries with free school fisheries. This analysis shall be conducted for DFADs and AFADs fleets separately.

Resolution 24/02 On Management of Drifting Fish Aggregating Devices (DFADs) in the IOTC Area of Competence.

- (para. 48) The IOTC Scientific Committee shall analyse further information, when available, and provide scientific advice on existing, additional or alternative DFAD management options for sustainable fisheries to be submitted for consideration by the Commission.
- (para. 49) The IOTC Scientific Committee shall provide scientific advice to the Commission by:
- (a) assessing the impact that fishing gears or fishing using DFADs have on juvenile mortality and provide adequate advice to the Commission. This assessment shall include, but not be limited to a comparative analysis of the contribution of all fishing gears to the juvenile mortality of targeted tunas, related impacts on the MSY levels and any other advice to recover or maintain stock size above levels which can produce the MSY and keep the risk of violating/exceeding limit reference points to a low probability;
 - (b) and b) providing an analysis of the efficiency of current active buoy limits and examining the potential efficiency of alternative/complementary options to limit the number of DFADs at sea. This will include, among other options, an advice on
- (para. 50) In producing its advice and recommendations, the IOTC Scientific Committee shall take into account, inter alia:
- (a) available IOTC fisheries data;
 - (b) experiences of implementing similar management measures with similar objectives, including DFAD closures, DFAD Register, and DFAD-MS from other RFMOs, if any; and
 - (c) fishing behaviors/patterns in the Indian Ocean, both historically and those anticipated as a consequence of the implementation of any new management measures, including a DFAD closure.

Resolution 24/06 On a Ban on Discards of Bigeye Tuna, Skipjack Tuna, Yellowfin Tuna, and Non-Targeted Species Caught by Vessels in the IOTC Record of Authorisation that Operate in the IOTC Area of Competence.

- (para. 7) The IOTC Scientific Committee, the IOTC Working Party on Tropical Tunas, and the IOTC Working Party on Ecosystems and Bycatch shall as a matter of priority act on its recommendation in the Report of the 18th Session of the IOTC Scientific Committee and undertake work to examine the benefits of retaining non-targeted species catches, other than those prohibited via IOTC Resolution, and present its recommendations to the 29th Annual Session of the Commission. The work should take into account all species that are usually discarded on all major gears, and should look at fisheries that take place both on the high seas and in coastal countries and the feasibility of both retraining on-board and processing of the associated landings.
- (para. 8) This Resolution will be revised, according to the advice of the IOTC Scientific Committee resulting from the review of the IOTC Working Party on Tropical Tunas (for bigeye tuna, skipjack tuna and yellowfin tuna) and of the IOTC Working Party on Ecosystems and Bycatch (for non-target species).

Resolution 24/07 On a Management Procedure for Skipjack in the IOTC Area Of Competence.

- (para. 7) The Scientific Committee shall run the MP and advise the Commission of the outcome, including a recommended TAC and any advice on exceptional circumstances in accordance with the Commission endorsed Guidelines for the Provisions of Exceptional Circumstances for IOTC MPs as documented in Appendix 6a of IOTC-2021-SC24-R.
- (para. 15) The Scientific Committee is requested to review, and if necessary, further develop and refine (not later than 2026), the exceptional circumstances guidelines (adopted by SC27 and S30), taking into account, inter alia, the need for an appropriate balance between specificity versus flexibility in defining exceptional circumstances, and the appropriate level of robustness to ensure that exceptional circumstances are triggered only when necessary.
- (para. 16) As part of the annual evaluation of exceptional circumstances, including the review of relevant new or updated information pertaining to Skipjack tuna, the SC is requested to monitor and evaluate the

available indicators of skipjack tuna recruitment and productivity, to inform its advice to the Commission as to the potential need for bringing forward the review of the MP. This will ensure the Commission can take account of changes in recruitment/productivity that might not have been tested specifically by the MSE.

- (para. 17) The Scientific Committee is requested to specifically consider if catches exceed the TAC, as part of the annual evaluation of exceptional circumstances.
- (para. 18) The SC is also requested to investigate approaches to incorporate a multi-species framework into future candidate management procedures and if possible, wider impacts in the ecosystem such as the mortality on associated and dependant species affected by tuna fishing operations i.e. marine turtles, marine mammals, seabirds, sharks and fish species caught incidentally (bycatch).

DISCUSSION

Participants at the WPTT26 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 to match those priorities.

RECOMMENDATION/S

That the WPTT:

- 1) **NOTE** paper IOTC–2024–WPTT24–05, which encouraged the WPTT to further develop and refine its Program of Work for 2025–2029 to align with the requests and directives from the Commission and Scientific Committee.
- 2) **RECOMMEND** a revised Program of Work for 2025–2029 to the Scientific Committee for its consideration and potential endorsement.

APPENDICES

[Appendix A](#): DRAFT: Working Party on Tropical Tunas Program of Work (2024–2028) – to be revised during the meeting

APPENDIX A**DRAFT: WORKING PARTY ON TROPICAL TUNAS PROGRAM OF WORK (2024–2028)**

The following is the Draft WPTT Program of Work (2024–2028) and is based on the specific requests of the Commission and Scientific Committee, and will need to be modified to incorporate topics identified during the WPTT26. 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:** Priority topics for obtaining the information necessary to develop stock status indicators for tropical tunas in the Indian Ocean;
- **Table 2:** Stock assessment schedule.

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

Topic in order of priority	Sub-topic and project	TIMING				
		2024	2025	2026	2027	2028
Stock assessment priorities	Address the issues identified as priorities by the yellowfin tuna peer review panel (February 2023)					
Abundance indices development	In view of the coming assessments of yellowfin, bigeye, and skipjack develop abundance time series for each tropical tuna stock for the Indian Ocean <ul style="list-style-type: none"> 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 Sri Lanka) 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 					
Analysis of tagging data	Analyze data from IOTC tagging programs outside stock assessment models and evaluate its utility and impact on stock assessments.					
Analyse recommendations from independent review	Carry out analyses recommended by the independent review of the yellowfin tuna stock assessment. Explore options, for example, for spatial structure, recruitment trends, movement dynamics, data weighting, selectivity before the 2024 WPTT Data Preparatory meeting.					
Analysis of environmental factors	Evaluate the impact of environmental factors on the dynamics of tropical tuna stocks					

Other Future Research Requirements (not in order of priority)

1. Fisheries Independent Monitoring	1.1 Use of Close Kin Mark Recapture (CKMR) methods to study fishery independent methods of generating spawner abundance estimates 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				
2	Stock structure (connectivity and diversity)	2.1 Genetic research to determine the connectivity of tropical tuna species throughout their distribution (including in adjacent Pacific Ocean waters as appropriate) and the effective population size.			
		2.2 Population genetic analyses to decipher intraspecific connectivity, levels of gene flow, genetic divergence and effective population sizes based on genome-wide distributed Single Nucleotide Polymorphisms (SNPs).			
		Connectivity, movements and habitat use			
		2.3 Connectivity, movements, and habitat use, including identification of hotspots and investigate associated environmental conditions affecting the tropical tuna species distribution, making use of conventional and electronic tagging (P-SAT).			
	2.4 Investigation into the degree of local or open population in main fishing areas (e.g., the Maldives and Indonesia – archipelagic and open ocean) by using techniques such flux in FAD arrays or used of morphological features such as shape of otoliths.				
3	Biological and ecological information (incl. parameters for stock assessment)	3.1 Biological sampling			
		3.1.1 Design and develop a plan for a biological sampling program to support research on tropical tuna biology. The plan would consider the need for the sampling program to provide representative coverage of the distribution of the different tropical tuna species within the Indian Ocean and make use of samples and data collected through observer programs, port sampling and/or other research programs. The plan would also consider the types of biological samples that could be collected (e.g. otoliths, spines, gonads, stomachs, muscle and liver tissue, fin clips, etc.), the sample sizes required for estimating biological parameters, and the logistics involved in collecting, transporting and processing biological samples. The specific biological parameters that could be estimated include, but are not limited to, estimates of growth, age at maturity, fecundity, sex ratio, spawning season, spawning fraction and stock structure.			
		3.1.2 Collect gonad samples from tropical tunas to confirm the spawning periods and location of the spawning area that are presently hypothesized for each tropical tuna species.			

<p>4 Historical data review</p>	<p>4.1 Changes in fleet dynamics need to be documented by fleet</p> <p>4.1.1 Provide an evaluation of fleet-specific fishery impacts on the stock of bigeye tuna, skipjack tuna and yellowfin tuna. Project potential impact of realizing fleet development plans on the status of tropical tunas based upon most recent stock assessments.</p>	<p></p>	<p></p>	<p></p>	<p></p>	<p></p>
<p>5</p>	<p>5.1 That methods be developed for standardising purse seine catch species composition using operational data, so as to provide alternative indices of relative abundance (see Terms of Reference, Appendix IXb IOTC-2017-WPTT19-R).</p> <p>5.2 Investigate the potential to use the Indian longline survey as a fishery-independent index of abundance for tropical tunas.</p>					
<p>6 Stock assessment stock indicators</p>	<p>6.1 Develop and compare multiple assessment approaches to determine stock status for tropical tunas</p> <p>6.2 Scoping of ongoing age composition data collection for stock assessment</p> <p>6.3 Develop a high resolution age structured operating model that can be used to test the spatial assumptions including potential effects of limited tags mixing on stock assessment outcomes (see Terms of Reference, Appendix IXa IOTC-2017-WPTT19-R).</p>	<p></p>	<p></p>	<p></p>	<p></p>	<p></p>
<p>7 Fishery monitoring</p>	<p>7.1 Develop fishery independent estimates of stock abundance to validate the abundance estimates of CPUE series.</p> <p>All of the tropical tuna stock assessments are highly dependent on relative abundance estimates derived from commercial fishery catch rates, and these could be substantially biased despite efforts to standardise for operational variability (e.g. spatio-temporal variability in operations, improved efficiency from new technology, changes in species targeting). Accordingly, the IOTC should continue to explore fisheries independent monitoring options which may be viable through new technologies. There are various options, among which some are already under test. Not all of these options are rated with the same priority, and those being currently under development need to be promoted, as proposed below:</p> <p>Acoustic FAD monitoring, with the objective of deriving abundance indices based on the biomass estimates provided by echo-sounder buoys attached to FADs</p>					

	<p>7.2 Longline-based surveys (expanding on the Indian model) or “sentinel surveys” in which a small number of commercial sets follow a standardised scientific protocol</p> <p>7.3 Aerial surveys, potentially using remotely operated or autonomous drones</p> <p>7.4 Studies (research) on flux of tuna around anchored FAD arrays to understand standing stock and independent estimates of the stock abundance.</p> <p>7.5 Investigate the possibility of conducting ongoing ad hoc, low level tagging in the region</p>					
8	<p>Target and Limit reference points</p> <p>8.1 To advise the Commission, on Target Reference Points (TRPs) and Limit Reference Points (LRPs). Used when assessing tropical tuna stock status and when establishing the Kobe plot and Kobe matrices</p>					
9	<p>Fisheries Indicators</p> <p>9.1 Examination of additional fisheries indicators and their discussion at WP meetings. Perhaps a section in report to accommodate these. See how this is being addressed in other RFMOs.</p>					

Table 2. Assessment schedule for the IOTC Working Party on Tropical Tunas (WPTT)

Species	2024	2025	2026	2027	2028
Bigeye tuna	Indicators MP to be run	Data preparatory meeting Full assessment	Indicators	Indicators	Data preparatory meeting Full assessment
Skipjack tuna	Indicators	Indicators	Data preparatory meeting Full assessment	Indicators	Indicators
Yellowfin tuna	Data preparatory meeting Full assessment	Indicators	Indicators	Data preparatory meeting Full assessment	Indicators