APPENDIX A

DRAFT: WORKING PARTY ON TROPICAL TUNAS PROGRAM OF WORK (2027–2031)

The following is the Draft WPTT Program of Work (2027–2031) and is based on the specific requests of the Commission and Scientific Committee. 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				
		2027	2028	2029	2030	2031
Fisheries Dependent Abundance indices	Continue to address the 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, purse seine, Pole and line Gillnet fisheries (e.g., Indonesia, Iran, Pakistan and Oman), and • Evaluate effect of changes of spatial coverage on the longline CPUE through the Joint CPUE workshop and estimate spatial temporal abundance distribution through Spatial Temporal modelling approach					
Fisheries Independent Abundance indices	Fishery independent indices of abundance such as those derived from echosounder buoys. Investigate the potential to use the Indian longline survey as a fishery-independent index of abundance for tropical tunas. 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). Progress the staged approach for implementation of a YFT CKMR project					
Biological and ecological information (incl. parameters for stock assessment)	Support the biological sampling program (funded by the EU grant) 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.					
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.					

Other Future Research Requirements (not in order of priority)						
		2027	**2028**	**2029**	**2030**	**2031**
1 Stock structure (connectivity and diversity)	1.1 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.					
	1.2 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).					
	1.3 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).					
	1.4 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.					
2 Historical data review	3.1 Changes in fleet dynamics need to be documented by fleet					
	3.1.1 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.					

3	Stock assessment stock indicators	3.1 Address the outstanding issues identified as priorities by the yellowfin tuna peer review panel (February 2023). Address any recommendations made by the WPTT or SC in 2025. 3.2 Develop and compare multiple assessment approaches to determine stock status for tropical tunas 3.3 Scoping of ongoing age composition data collection for stock assessment 3.4 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).					
4	Target and Limit reference points	4.1 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					
5	Fisheries Indicators	5.1 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.					

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

Species	2027	2028	2029	2030	2031
Bigeye tuna	**Data Prep and MP to be run**	**Data preparatory meeting** **Full assessment**	Indicators	**Data Prep and MP to be run**	**Data preparatory meeting** **Full assessment**
Skipjack tuna	Indicators	**Data Prep for MP and MP to be run**	**Data preparatory meeting** **Full assessment**	Indicators	**Data Prep and MP to be run**
Yellowfin tuna	**[Data preparatory meeting]** **[Full assessment]**	Indicators	Indicators	**Data preparatory meeting** **Full assessment**	Indicators