OUTCOMES OF THE 21st SESSION OF THE SCIENTIFIC COMMITTEE

PREPARED BY: IOTC SECRETARIAT, 03 OCTOBER 2019

PURPOSE

To inform participants at the 21st Working Party on Tropical Tunas (WPTT21) of the recommendations arising from the 21st Session of the IOTC Scientific Committee (SC) held from 3 - 7 December 2018, specifically relating to the work of the WPTT.

BACKGROUND

At the 21st Session of the SC, the SC noted and considered the recommendations made by the WPTT in 2018 that included requests to address the deficiencies in data collection, monitoring and reporting by CPCs, as well as to carry out targeted research and analysis on tropical tuna species.

Tropical tunas caught in the IOTC area of competence and under the WPTT mandate

Common name	Species	Code
Bigeye tuna	*Thunnus obesus*	BET
Skipjack tuna	*Katsuwonus pelamis*	SKJ
Yellowfin tuna	*Thunnus albacares*	YFT

The recommendations on the deficiencies in data collection, monitoring and reporting by CPCs in relation to tropical tunas will be discussed under agenda item 4 and in paper IOTC–2019–WPTT21–08 and are therefore not presented in this paper.

Based on the recommendations arising from the WPTT20, the SC21 adopted a set of recommendations, provide at Appendix A of this paper.

The recommendations contained in Appendix A were provided to the Commission for consideration at its 23rd Session held in June 2019. A separate paper, IOTC–2019–WPTT21–04 addresses the responses and actions of the Commission.

In addition, the SC21 reviewed and endorsed a Program of Work (2019–2023) for the WPTT, including a revised assessment schedule, as detailed in Appendix B. A separate paper (IOTC–2019–WPTT21–09) will outline the review and development process for a *Program of Work* for the WPTT for the next five years.

DISCUSSION

In addition to the recommendations outlined in Appendix A, the following extracts from the SC21 Report (2018) are provided here for the consideration and action of the WPTT21:

Report of the 20th Session of the Working Party on Tropical Tunas (WPTT20)

Yellowfin tuna stock assessment and development of management advice

The SC noted that the 2018 yellowfin tuna assessment indicates that the species is overfished and subject to overfishing and catch reductions required as part of Resolution 18/01 have not been met. The SC further noted that there remain significant uncertainties around the stock assessment inputs and assumptions, such that caveats are required in the interpretation of management advice developed for the species. Acknowledging these concerns, the SC **RECOMMENDED** that funding be allocated for a workplan (Appendix 38) to systematically address these issues, beginning in January 2019.

The SC noted that status is currently defined in relation to the target reference point and suggested that it may be more useful to describe status in relation to the limit reference point. Acknowledging that this issue had been discussed in detail by the SC and WPM during previous meetings, the SC noted that a change to the definition of status in relation to the limit reference point would need to be agreed by the Commission. The SC noted that the WPM had requested the SC to display status on Kobe plots in relation to the limit reference point as well as the target reference point.

The SC noted the usefulness of retrospective analyses to inform management advice, and that informal protocols and expert judgement have been used in the past. However, the SC noted these analyses have not been done in much detail

due to a lack of time and resources and suggested that a formal protocol for how these should be undertaken would be beneficial. The SC noted its concern around the likelihood that the current assessment is overestimating F and underestimating B and noted the need to decide whether the retrospective error is significant enough to infer the reliability of B and F estimates. The SC **AGREED** that development of a protocol to decide whether retrospective errors need to be corrected would be useful.

Acknowledging that many improvements have been made over time, particularly with CPUE and joint CPUE analyses, the SC noted ongoing uncertainties with nominal catch, tagging, CPUE, growth and length composition data. The SC noted an activity by the Secretariat to review length composition data is to be completed before WPTT in 2019, with these activities expected to improve the analyses.

The SC noted that despite increasing model complexity over time, issues with uncertainty remain. The example of the surplus production model for longtail tuna provided in the WPNT08 report that had similar outcomes to the complex SS3 assessment was given. It was noted that these simpler models, including for example JABBA, a surplus production model, could be used in the attempt to compare or corroborate more complex models for tropical tuna species as well.

Noting the current status of the yellowfin tuna stock, the SC **ENCOURAGED** CPCs utilise the outcomes from the MSE work undertaken by the WPM to develop proposals for candidate Management Procedures for yellowfin tuna. In doing so, CPCs should follow the process outlined in the Commission's Schedule of Work for the development of management procedures, which describes the iterative process that needs to be followed, and the roles of the relevant IOTC committees and sub-committees, in developing Management Procedures.

The SC noted that the decrease in longline CPUE from 2007–2011 may have reflected the redistribution of fishing effort due to piracy and may be causing the model to estimate low recruitment. The SC noted sensitivity trials to test this hypothesis did not reveal the real cause for low recruitment estimates. The SC also noted the model sensitivity exploring PS CPUE included both FAD and free school CPUE rather than the free school CPUE alone as suggested. The SC **AGREED** that these (and other) uncertainties result in the need to be cautious in the development of management advice.

The SC noted paper IOTC–2018–SC21–15 which described requests to the joint CPUE standardization, including the following abstract provided by the authors:

"Japan requests four issues to the joint standardized CPUE (STD CPUE), (a) to create maps showing areas covered by the joint STD CPUE, (b) to produce STD CPUE by fleet to evaluate plausible ones and periods to be used for the joint CPUE, (c) to produce tempo-spatial aggregated joint CPUE and (d) to complete technical transfer for national scientists to be able to produce joint CPUE by themselves."

The SC suggested that more time and flexibility may be required for future joint CPUE analyses, and noted that consultant undertaking the joint CPUE analysis only had access to the data for five days and that it is not possible to replicate their analysis. The SC further noted that there are ongoing challenges with technical transfer and capacity building. The SC **AGREED** on the need to ensure that in future, sharing of relevant coding is enhanced and tutorials or manuals are produced or provided as part of the consultancy. The SC further **AGREED** that a protocol for joint CPUE is required for future iterations.

The SC **REQUESTED** to generate CPUEs for the whole of the Indian Ocean to be used in the current candidate management procedures that are being tested and that basing advice on CPUE that is intended to be representative of the entire stock would be very useful. The SC also **REQUESTED** the creation maps showing spatial coverage of the joint CPUE analyses.

The SC **AGREED** to the continuation of CPUE standardization analyses as this is a critical input to the bigeye tuna and yellowfin tuna stock assessments

The SC noted paper IOTC–2018–SC21–16 which provided the Indian Ocean yellowfin tuna SS3 model projections, including the following abstract provided by the authors:

"This document presents projections and K2SM for the 2018 Indian Ocean tuna Stock Synthesis assessment model. Deterministic projections were conducted for the 24 reference grid scenarios for 2018 – 2027 assuming a constant level of catch at 60%–120% of the 2017 catch level. The projection incorporates the range of uncertainty among model selection but does not describe uncertainty due to parameter estimation error, or stochastic future recruitment variability."

The SC noted the limitations with the use of deterministic runs out of 24 models with regards to the complexity of the yellowfin stock assessment and that confidence intervals had not been available for each model. As a result, the K2SM probabilities have only considered the structural uncertainty of the assessment but not the statistical uncertainty of the models.

The SC noted that examination of the projections from the last iteration of the assessment in 2015/2016 had not been used to evaluate performance of the current assessment, but that efforts had been made to ensure continuity of assessments over time and the process followed has allowed understanding of how updated data has influenced results. The SC noted that hindcasting and retrospective techniques could be used to look at predictive capacity but that it was difficult to meaningfully compare the two assessments. The SC further noted that the 2016 assessment trying to build a base case characterizing statistical uncertainty whereas the current assessment was based on a model grid capturing model uncertainties.

The SC noted the retrospective and hindcasting analysis appeared to suggest that the current assessment model has a poor predictive capacity. The SC noted that large uncertainty is also likely associated with biological reference points which are estimated from the same stock assessment models.

Future yellowfin tuna assessments: issues for consideration

Noting uncertainty in data and in some biological parameters in the yellowfin tuna assessment, some of which were not captured in the final grid for the assessment, the SC **REQUESTED** that future assessments capture a broader range of uncertainties.

The SC noted that in the interests of transparency and to enable further exploration of uncertainty, future WPTT reports need to explicitly list all major assumptions.

The SC **RECOMMENDED** that development of the next stock assessment of yellowfin tuna should include, or be associated with, a detailed review of the existing data sources, including:

i. Size frequency data: Evaluation of the reliability of length composition from the longline fisheries (including recent and historical data), review of anomalies in the (EU) PS length composition data, and the need for a thorough review of the size frequency data held by IOTC, in collaboration with the fleets involved, to improve the utilization of these data in tropical tuna stock assessments.

ii. Tagging data: Further analysis of the tag release/recovery data set.

iii. Alternative CPUE series: a review of the available data from the Indian tuna longline survey data.

Review of the implementation of Resolution 18/01 **On an interim plan for rebuilding the Indian Ocean yellowfin tuna stock**

The Commission has an interim plan for the rebuilding the yellowfin stock, with catch limitations based on 2014/2015 levels (Resolution 18/01). Some of the fisheries subject to catch reductions had fully achieved a decrease in catches in 2017 in accordance with the levels of reductions specified in the Resolution; however, these reductions were offset by increases in the catches from some CPCs exempt and some CPCs subject to limitations on their catches of yellowfin tuna (see table 3 below). Thus, while catches for fleets subject to Resolution 18/01 decreased by 1% in 2017 compared to the baseline (2014/2015), the total catches of yellowfin in 2017 increased by around 3% from 2014/2015 levels. The Commission should ensure that any revision of the management measure can effectively achieve any prescribed catch reduction to ensure the effectiveness of the management measure.

The SC noted that information on catches from coastal fisheries is particularly limited.

Table 3: Catches of YFT in relation to the implementation of Resolution 18/01

Purse seine fleets		Target: catch reduction from baseline	2014	2015*	2016	2017	% change from baseline
Subject to Resolution 18/01	EU	-15%	91,405	86,149	87,075	86,893	-5%
	Rep. of Korea		8,852	7,509	10,347	6,362	-28%
	Seychelles*		23,463	39,072	40,014	**41,694**	**7%**
	Sub-total		**123,720**	**132,730**	**137,437**	**134,949**	**-3%**
Not subject to Resolution 18/01	Egypt		-	-	0	-	-
	India		98	76	84	84	-15%
	Indonesia		5,598	5,493	5,214	5,214	-7%
	I.R. Iran		4,832	3,842	3,465	1,764	-63%
	Japan		433	338	422	657	52%
	Jordan		-	-	0	-	-
	Mauritius		4,844	5,448	7,404	7,681	59%
	Mozambique		-	-	126	-	-
	Philippines		-	-	-	73	-
	Sri Lanka		2,627	3,532	1,966	5,505	110%
	Sub-total		**18,432**	**18,729**	**18,682**	**20,978**	**14%**
Resolution 18/01: PS change in catches from baseline (*2015 Seychelles PS; 2014 all other PS fleets*)							**-1%**

Longline fleets		Target: catch reduction from baseline	2014	2015	2016	2017	% change from baseline
Subject to Resolution 18/01	Taiwan,China	-10%	12,285	13,921	16,958	9115	-26%
	Sri Lanka		8,625	5,933	3,939	6448	-25%
	Sub-total		**20,910**	**19,855**	**20,896**	**15,563**	**-26%**
Exempt from Resolution 18/01	Australia	N/A	19	73	66	65	-
	Belize		46	-	-	-	-100%
	China		1,078	1,793	1,812	2,962	175%
	EU		596	430	329	169	-72%
	EU,Reunion		298	302	322	200	-33%
	India		327	669	106	106	-68%
	Indonesia		4,009	5,077	2,826	2,353	-41%
	Japan		3,639	3,140	2,976	3,305	-9%
	Rep. of Korea		1,557	1,674	1,374	1,802	16%
	Madagascar		59	72	61	28	-53%
	Malaysia		77	144	156	370	379%
	Maldives		120	63	286	220	83%
	Mauritius		15	32	94	266	1675%
	Mozambique		1	56	21	89	6291%
	NEI.Fresh		4,065	3,009	418	-	-
	NEI.Frozen		417	451	693	-	-
	Oman		28	205	135	135	385%
	Philippines		69	-	-	-	0%
	Seychelles		1,616	2,395	3,247	3,963	145%
	South Africa		83	182	183	247	198%
	Tanzania		155	108	109	-	-
	Thailand		187	109	-	-	-
	Sub-total		**18,462**	**19,985**	**15,214**	**16,280**	**-12%**
Resolution 18/01: LL change in catches from baseline (*2014*)							**-19%**

Gillnet fleets		Target: catch reduction from baseline	2014	2015	2016	2017	% change from baseline
Subject to Resolution 18/01	India (offshore GN)	-10%	5,153	3,974	4,392	4392	-15%
	I.R. Iran (offshore GN)		24,401	26,780	31,079	32,347	33%
	Sub-total		**29,554**	**30,754**	**35,471**	**36,739**	**24%**
Exempt from Resolution 18/01	Australia	N/A	0	0	1	1	226%
	Bahrain		1	1	1	0	-55%
	Comoros		16	117	905	547	3295%
	Djibouti		37	31	51	26	-29%
	East Timor		0	1	1	0	-29%
	Egypt		-	6	5	3	-
	Indonesia		341	334	317	317	-7%
	I.R. Iran		16,925	11,632	4,031	13,204	-22%
	Jordan		12	9	8	5	-56%
	Kenya		54	82	82	82	52%
	Oman		2,268	8,145	6,914	9,646	325%
	Pakistan**		7,533	7,533	7,533	7,533	0%
	Qatar		110	133	120	77	-30%
	Sri Lanka		11,246	8,559	5,469	3,142	-72%
	Tanzania		3,210	3,814	3,814	3,814	19%
	Yemen		81	-	-	-	-
	Sub-total		**41,836**	**40,398**	**29,252**	**38,397**	**-8%**
Resolution 18/01: GN change in catches from baseline (*2014*)							**5%**

All other (coastal) gears		Target: catch reduction from baseline	2014	2015	2016	2017	% change from baseline
Subject to Resolution 18/01	Maldives (bait boats)	-5%	18,481	15,796	8,550	17500	-5%
	Maldives (hand-lines)		30,246	36,300	44,385	30563	1%
	Sub-total		**48,727**	**52,096**	**52,935**	**48,063**	**-1%**
Exempt from Resolution 18/01	Australia	N/A	0	0	0	1	63%
	Comoros		1,383	1,630	4,679	4259	208%
	East Timor		3	3	3	3	0%
	Egypt			10	10	12	0%
	EU		171	5	89	81	-52%
	EU,Reunion		120	357	476	363	203%
	India		27,849	12,440	14,662	14662	-47%
	Indonesia		15,327	15,041	14,278	14278	-7%
	I.R. Iran		57	345	6,535	8806	15252%
	Jordan		14	16	17	20	45%
	Kenya		17	27	27	27	52%
	Madagascar		675	675	675	675	0%
	Maldives		364	279	485	1078	196%
	Mauritius		50	50	87	69	39%
	Mozambique		4	13	27	80	1888%
	Oman		4,912	6,833	13,935	9693	97%
	Seychelles		0	0	0	0	-70%
	South Africa		0	-	-	-	-
	Sri Lanka		15,280	14,647	22,361	22883	50%
	Tanzania		76	90	90	90	19%
	UK,Territories		2	2	2	3	63%
	Yemen		29,093	24,576	21,100	21100	-27%
	Sub-total		**95,398**	**77,040**	**99,536**	**98,182**	**3%**
Resolution 18/01: Other gears change in catches from baseline (*2014*)							**1%**

Note: Some figures presented in table 3 may be subject to revision.

Review of new information on fisheries and associated environmental data

The SC acknowledged the importance of the proposed harmonisation of FOB types and FOB activity definitions and **REQUESTED** that the concept of harmonisation be taken up by the WPDCS in collaboration with the Scientific Committee with the aim of harmonising IOTC definitions with those used by other tRFMOs in the context of the joint tRFMO Working Group on FADs.

Review of the statistical data available for skipjack tuna

The SC noted that total catches in 2017 (524,282 t) were 12% higher than the catch limit generated by the Harvest Control Rule (470,029 t) which applies to the years 2018–2020, and that there has been an increasing trend in catches over the past 3 years. The SC **RECOMMENDED** that the Commission consider the urgent need to monitor catches of skipjack in the 2018–2020 period to ensure catches do not exceed the limit.

The SC noted that Resolution 16/02 does not define exceptional circumstances other than those caused by environmental influences (for example, increases in catch) and **REQUESTED** the MSE working group and WPM to review the range of exceptional circumstances that may be relevant for skipjack tuna as well as other species. The SC noted 15% implementation error of the TAC was evaluated in the skipjack tuna MSE.

RECOMMENDATION

That the WPTT:

1) **NOTE** paper IOTC–2019–WPTT21–03 which outlined the main outcomes of the 21st Session of the Scientific Committee, specifically related to the work of the WPTT.

2) **CONSIDER** how best to progress these issues at the present meeting.

APPENDICES

Appendix A: Consolidated set of recommendations of the 21st Session of the Scientific Committee to the Commission, relevant to the Working Party on Tropical Tunas.
Appendix B: Assessment schedule for the WPTT 2019–2023.

APPENDIX A

CONSOLIDATED SET OF RECOMMENDATIONS OF THE 19TH SESSION OF THE SCIENTIFIC COMMITTEE (1–5 DECEMBER 2016) TO THE COMMISSION

STATUS OF TUNA AND TUNA-LIKE RESOURCES IN THE INDIAN OCEAN AND ASSOCIATED SPECIES

Tuna – Highly migratory species

SC21.01 (para. 197) The SC **RECOMMENDED** that the Commission note the management advice developed for each tropical and temperate tuna species as provided in the Executive Summary for each species, and the combined Kobe plot for the four species assigned a stock status in 2018 (Fig. 4):

- Albacore (*Thunnus alalunga*) – Appendix 8
- Bigeye tuna (*Thunnus obesus*) – Appendix 9
- Skipjack tuna (*Katsuwonus pelamis*) – Appendix 10
- Yellowfin tuna (*Thunnus albacares*) – Appendix 11

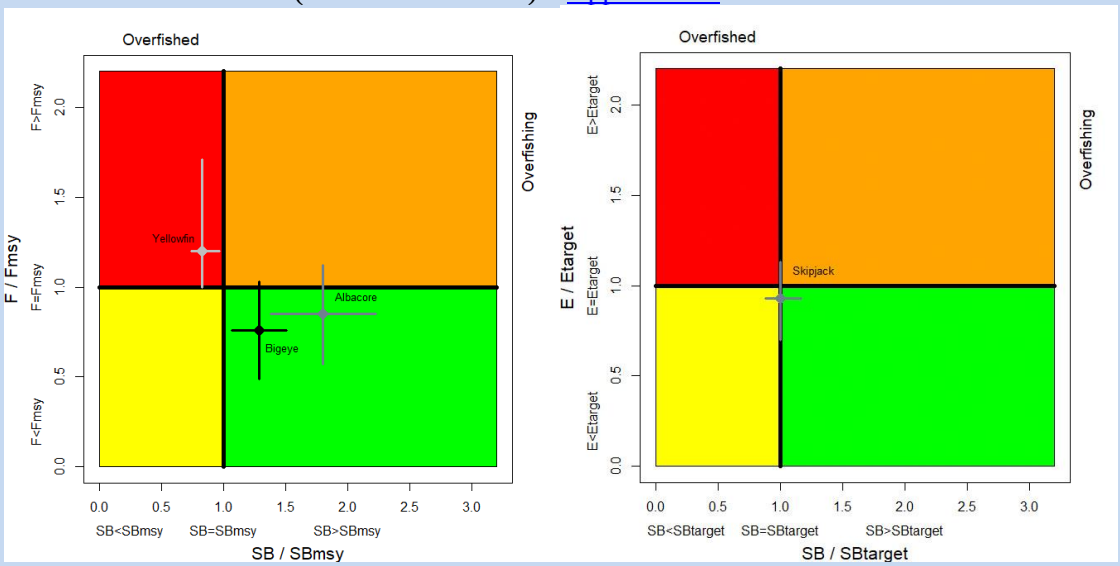

Fig. 2. (Left) Combined Kobe plot for bigeye tuna (black: 2015), yellowfin tuna (grey: 2017), and albacore tuna (dark grey: 2014) showing the estimates of current spawning stock size (SB) and current fishing mortality (F) in relation to SBtarget and Ftarget. (Right) Kobe plot for skipjack tuna (2016) showing the estimates of the current spawning stock status (SB) and exploitation rate in relation to SBtarget and Etarget. Numbers in brackets indicate the last year of data available at the time of the assessment. Cross bars illustrate the range of uncertainty from the model runs with 80% CI.

GENERAL RECOMMENDATIONS TO THE COMMISSION

Yellowfin tuna stock assessment and development of management advice

SC21.20 (para. 103) The SC noted that the 2018 yellowfin tuna assessment indicates that the species is overfished and subject to overfishing and catch reductions required as part of Resolution 18/01 have not been met. The SC further noted that there remain significant uncertainties around the stock assessment inputs and assumptions, such that caveats are required in the interpretation of management advice developed for the species. Acknowledging these concerns, the SC **RECOMMENDED** that funding be allocated for a workplan (Appendix 38) to systematically address these issues, beginning in January 2019.

Future yellowfin tuna assessments: issues for consideration

SC21.21 (para. 123) The SC **RECOMMENDED** that development of the next stock assessment of yellowfin tuna should include, or be associated with, a detailed review of the existing data sources, including:

i. Size frequency data: Evaluation of the reliability of length composition from the longline fisheries (including recent and historical data), review of anomalies in the (EU) PS length composition data, and the need for a thorough review of the size frequency data held by IOTC, in collaboration with the fleets involved, to improve the utilization of these data in tropical tuna stock assessments.

ii. Tagging data: Further analysis of the tag release/recovery data set.

iii. Alternative CPUE series: a review of the available data from the Indian tuna longline survey data.

Review of the statistical data available for skipjack tuna

SC21.22 (para. 127) The SC noted that total catches in 2017 (524,282 t) were 12% higher than the catch limit generated by the Harvest Control Rule (470,029 t) which applies to the years 2018–2020, and that there has been an increasing trend in catches over the past 3 years. The SC **RECOMMENDED** that the Commission consider the urgent need to monitor catches of skipjack in the 2018–2020 period to ensure catches do not exceed the limit.

SUMMARY DISCUSSION OF MATTERS COMMON TO WORKING PARTIES (CAPACITY BUILDING ACTIVITIES – STOCK ASSESSMENT COURSE; CONNECTING SCIENCE AND MANAGEMENT, ETC.)

Invited Expert(s) at the WP meetings

SC21.29 (para. 177) Given the importance of external peer review for working party meetings, the SC **RECOMMENDED** that the Commission continues to allocate sufficient budget for an invited expert to be regularly invited to all scientific WP meetings.

Meeting participation fund

SC21.30 (para. 178) The SC reiterated its **RECOMMENDATION** that the IOTC Rules of Procedure (2014), for the administration of the Meeting Participation Fund be modified so that applications are due not later than 60 days, and that the full Draft paper be submitted no later than 45 days before the start of the relevant meeting. The aim is to allow the Selection Panel to review the full paper rather than just the abstract, and provide guidance on areas for improvement, as well as the suitability of the application to receive funding using the IOTC MPF. The earlier submission dates would also assist with visa application procedures for candidates.

IOTC species identification guides: Tuna and tuna-like species

SC21.31 (para. 179) The SC reiterated its **RECOMMENDATION** that the Commission allocates budget towards continuing the translation and printing of the IOTC species ID guides so that hard copies of the identification cards can continue to be printed as many CPCs scientific observers, both on board and port, still do not have smart phone technology/hardware access and need to have hard copies on board.

IOTC Secretariat staffing

SC21.32 (para. 180) Noting the very heavy workload at the IOTC Secretariat and the ever increasing demands by the Commission and the Scientific Committee, and also the capacity to respond to requests for assistance by countries, the SC **RECOMMENDED** that the recommendation from the Performance Review PRIOTC02.07(g) is implemented, and that permanent staff of the IOTC Data and Science Section be increased by two (2) (1 x P4 and 1 x P3 level positions), supplemented by additional short-term consultants. Funding for these new positions should come from both the IOTC regular budget and from external sources to reduce the financial burden on the IOTC membership.

Chairpersons and Vice-Chairpersons of the SC and its subsidiary bodies

SC21.33 (para. 181) The SC **RECOMMENDED** that the Commission note and endorse the Chairpersons and Vice-Chairpersons for the SC and its subsidiary bodies for the coming years, as provided in Appendix 7.

PROGRESS ON THE IMPLEMENTATION OF THE RECOMMENDATIONS OF THE PERFORMANCE REVIEW PANEL

SC21.34 (para. 214) The SC **RECOMMENDED** that the Commission note the updates on progress regarding Resolution 16/03, as provided at Appendix 33.

PROGRAM OF WORK AND SCHEDULE OF WORKING PARTY AND SCIENTIFIC COMMITTEE MEETINGS

Consultants

SC21.35 (para. 234) Noting the highly beneficial and relevant work done by IOTC stock assessment consultants in previous years, the SC **RECOMMENDED** that the engagement of consultants be continued for each coming year based on the Program of Work. Consultants will be hired to supplement the skill set available within the IOTC Secretariat and CPCs.

IOTC SCIENTIFIC STRATEGIC PLAN

SC21.36 (para. 247) The SC **AGREED** that the draft IOTC Strategic Science Plan 2020–2024 will be distributed to Heads of Delegation from each CPC for comment during early 2019, following which time comments will be collated and consolidated and another version sent to CPCs for final review. Pending agreement of CPCs, and noting that the IOTC Strategic Science Plan would be a dynamic document that would change over time, the SC **RECOMMENDED** that the revised draft of the IOTC Strategic Science Plan 2020–2024 be tabled at the Commission meeting in 2019.

REVIEW OF THE DRAFT, AND ADOPTION OF THE REPORT OF THE 18TH SESSION OF THE SCIENTIFIC COMMITTEE

SC21.37 (para. 250) The SC **RECOMMENDED** that the Commission consider the consolidated set of recommendations arising from SC21, provided at Appendix 40.

APPENDIX B

SCHEDULE OF STOCK ASSESSMENTS FOR IOTC SPECIES AND SPECIES OF INTEREST FROM 2019–2023, AND FOR OTHER WORKING PARTY PRIORITIES

The SC **ADOPTED** a revised assessment schedule, ecological risk assessment and other core projects for 2019–23, 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. (IOTC–2018–SC21–R, Para. 232)

Extract of the Report of the 21st Session of the Scientific Committee

(IOTC–2018–SC21–R; Appendix 36, Pages 237 and 238)

Working Party on Tropical Tunas					
Species	**2019**	**2020**	**2021**	**2022**	**2023**
Bigeye tuna	**Full assessment**	Indicators	Indicators	**Full assessment**	Indicators
Skipjack tuna	Indicators	**Full assessment**	Indicators	Indicators	**Full assessment**
Yellowfin tuna	**Full Assessment***	Indicators	**Full assessment**	Indicators	Indicators

* According to the details provided by the workplan in Appendix 38 of the SC report

Note: the assessment schedule may be changed dependant on the annual review of fishery indicators, or SC and Commission requests.