SCIENTIFIC COMMITTEE
SEVENTEENTH REGULAR SESSION

Electronic Meeting
11-19 August 2021

ISSUES ARISING FROM THE COMMISSION (SC16 and WCPFC17)

WCPFC-SC17-2021/GN-IP-05

WCPFC Secretariat and SPC-OFP

ISSUES ARISING FROM SC16 (Summary Report paragraphs indicated below)		
Issues	**References**	**Outputs/Comments**
Data gaps	34. SC16 recommended that updated versions of SC16-ST-WP-01 (Data gaps) and SC16-ST-IP-02 (ROP data management) be forwarded to TCC16 for consideration.	• WCPFC-TCC16-2020-IP02 (Scientific data available to the western and Central Pacific Fisheries Commission) • WCPFC-TCC16-2020-IP02 (Status of observer data management)
Recommendations on bigeye tuna	57. SC16 recommended that the Scientific Services Provider should take full advantage of the possible pan-Pacific bigeye stock assessment being planned by IATTC, in order to obtain further insights for the stock.	On-going; IATTC exploratory Pacific-wide bigeye assessment currently scheduled for 2022.
	98. SC16 recommends as a precautionary approach that the fishing mortality on bigeye tuna stock should not be increased from the level that maintains spawning biomass at 2012-2015 levels until the Commission can agree on an appropriate target reference point.	According to the HS work plan, the Commission agrees a TRP for bigeye tuna in 2021.
Recommendations on yellowfin tuna	138. SC16 recommends as a precautionary approach that the fishing mortality on bigeye tuna stock should not be increased from the level that maintains spawning biomass at 2012-2015 levels until the Commission can agree on an appropriate target reference point.	According to the HS work plan, the Commission agrees a TRP for yellowfin tuna in 2021.
Structural uncertainty grid and projections	179. For species that have assessments that consider axes of uncertainty in a grid approach, the Scientific Services Provider and CCMs should develop objective criteria to quantitatively evaluate the inclusion of axes and respective weighting within each axis to characterize stock status uncertainty. These should be	SPC will consider this over the coming years, but they will introduce SC17-SA-WP-05 (A framework for incorporating uncertainty in biological parameters in model ensembles of integrated stock assessments).

	discussed at the SPC pre-assessment workshop. 180. The Scientific Services Provider and CCMs should develop criteria to illustrate a relevant sub-set of diagnostics for all assessment models within the relevant uncertainty grid. 181. For stock assessment projections, provide median estimates of F/FMSY, SB/SBF=0, the risk of breaching an adopted LRP and the probability of being below any interim TRP, at 10 year increments from the beginning of the projection time period. 182. SC16 recommends that the Scientific Services Provider and CCMs should develop criteria to illustrate a relevant sub-set of diagnostics for all assessment models within the relevant uncertainty grid. The Scientific Services Provider and CCMs should develop objective criteria to quantitatively evaluate the inclusion of axes and respective weighting within each axis to characterize stock status uncertainty. This includes the development of standard protocols for weighting alternative models in the ensemble model approach used for stock assessments and management advice. The goal is to develop an objective procedure to down-weigh poorly fitting models and up-weight well-predicting models. To accomplish this, SC16 recommends that the Scientific Services Provider and CCMs hold workshop(s) to develop standard protocols for model weight calculations for assessments that use an uncertainty grid.	See also SC17-SA-IP-01
Peer Review	188. SC16 supports an external expert peer review of the yellowfin stock assessment. This would also allow several components of the bigeye tuna assessment to be reviewed given the similar data input structure. This review would examine a number of issues such as model complexity, weighting of data sources, spatial approaches and the extreme sensitivity to assumptions on growth amongst a range of other issues. 189. SC16 provides the following provisional time-line for an external expert peer review. a) Year 1 would be set aside to allow the SSP to conduct an initial range of testing and analysis internally focused on YFT and report these findings to SC17. SC17 to finalize ToRs for the external expert review. b) Year 2 would be set aside for the SSP to conduct further testing and analysis internally focused on BET and YFT, following SC17 input, and for the external expert review (commencing at the start of 2022) with the review reporting to SC18. c) Year 3 would provide updated YFT and BET stock assessments which respond to the review. The two assessments would be reported to SC19. 190. In accordance with this, SC16 identified the external review as a project in the budget (provisionally estimated at $USD 50,000) but with no funding commitment until 2022 and 2023. 191. SC16 also tasked the SSP with preparing a draft terms of reference for the external expert review for the consideration of SC17 which would be informed	Three reviewers were selected: Andre Punt, Jim Ianelli and Mark Maunder. SC17 will review and adopt SC17-SA-WP-06 (Draft Terms of Reference for WCPO yellowfin assessment peer review).

<table>
<tr><td></td><td>by their analyses during 2021. The draft terms of reference would give consideration to including the bigeye stock assessment in the external review process.
192. Further, SC16 noted that peer review experts of the required calibre may not be easy to secure, thus efforts should be made during late 2020/early 2021 to have them express interest and availability.</td><td></td></tr>
<tr><td>Stock Assessment Schedule</td><td>198. SC16 recommended inquiring with the IATTC regarding the potential scheduling for a collaborative Pacific-wide bigeye tuna, south Pacific albacore and south Pacific swordfish assessment. Initial correspondence from the IATTC indicated that their scheduling of stock assessments would occur during the 2020 Scientific Advisory Committee.</td><td>IATTC has a workplan as follows:
1) 2021-2022: Pacific-wide exploratory assessment for bigeye tuna, collaborating with SPC
2) 2021: SPC and IATTC joint assessment for South Pacific albacore
3) SP swordfish – no plan yet for the collaborative South Pacific-wide stock assessment
• WCPO: Southwest Pacific swordfish stock assessment in 2021
• EPO: Southeast Pacific swordfish stock assessment in 2022</td></tr>
<tr><td>Target reference points for Yellowfin and bigeye tuna</td><td>211. Noting the request from WCPFC16 for the Scientific Committee to provide advice on the formulation of TRPs for bigeye and yellowfin tuna, and for the Scientific Service Provider to conduct an analysis for bigeye and yellowfin tuna similar to that undertaken in working paper WCPFC16-2019-14 (Current and projected stock status of WCPO skipjack tuna to inform consideration of an updated target reference point), as outlined in para. 273-275 of the WCPFC16 Summary Report, SC16 reviewed SC16-MI-WP-01 and requested the Scientific Services Provider undertake the analyses for bigeye and yellowfin tuna according to the criteria outlined in the table below:
<table>
<tr><th>Issue</th><th>Requested Scenario</th></tr>
<tr><td>Model settings and the uncertainty grid</td><td>The SC16 agreed structural uncertainty grid.</td></tr>
<tr><td>Additional scenarios</td><td>To use both short- and long-term recruitment for bigeye tuna.</td></tr>
<tr><td>The range of candidate TRPs to be explored:</td><td>There are some advantages to defining candidate target stock depletion relative to the average biomass within a recent time period. This is consistent with the approach taken for development of the South Pacific Albacore interim TRP and serves to “future proof” the candidate TRP from changes in the biomass time series that have been noted with updated assessments. Specifying a time period also allows reference to some fisheries performance metrics within that period, such as CPUE. The following candidate TRPs are specified:</td></tr>
</table></td><td>Refer to WP: WCPFC17-2020-12_rev1 (SC16-requested analyses to inform WCPFC17 discussions on candidate target reference points for WCPO bigeye and yellowfin tuna)</td></tr>
</table>

	• Average SB/SBF=0 for 2012-2015 (consistent with the Aims of CMM2018-01) • 10% above Average SB/SBF=0 for 2012-2015 • 10% below Average SB/SBF=0 for 2012-2015 • TRPs at intermediate steps between the candidates outlined above (e.g. at 5% intervals) were also recommended. • An alternative TRP based on the average SB for 2000-2004 should also be explored. • Additional candidate TRPs can be identified in terms of the risk of breaching the LRPs; in particular: the SB/SBF=0 levels associated with 10% and 20% risks of breaching the LRP based on an updated analysis using the SC16 adopted structural uncertainty grid.
Time period of the projections	30 years, consistent with the earlier skipjack analyses. Intervals of 10 years will be presented within this period. The rationale is to have a period to allow the population to reach equilibrium.
Use of catch or effort	• purse seine– effort • longline – catch • Other fisheries – catch SC16 noted that this is for the purposes of these analyses and without prejudice to preferred management arrangements.
The baseline catch and effort levels	A recent period is preferable because it is more relevant to recent activity levels and also a more realistic reflection of IND/PHI fisheries catches.
Limits to the range of the fishery scalars	SC16 noted that if scalars are too constrained then it might not be possible to achieve the different biomass TRP levels and some guidance on this issue was sought from the SSP. Scalars would be applied equally to purse seine effort and longline catch. For other fleets, recent catch levels would be assumed. SC16 also noted that this is an exploratory exercise to see what the consequences could be for different TRP choices and not a management recommendation that sets up any kind of precedent.
Reporting the output of the analysis:	Similar outputs to the skipjack work reported in WCPFC16-2019-14.

	In addition, SC16 recommended reporting against the Aims of CMM2018-01 paras 12 and 14 being "average SB/SBF=0 for 2012-2015". SC16 also noted the request from one CCM that the Scientific Service Provider produce information on the projected yield per recruit and spawning biomass per recruit under the various harvest scenarios.	
Target reference points for Yellowfin and bigeye tuna	212. Noting the large number of scenarios included in the above request, possible analytical challenges that may arise, and the heavy workload of the Scientific Service Provider due to other requests, the following priority was placed on the TRPs to be evaluated. a) The initial average and +/- 10% proposal (3 scenarios) b) The additional runs for 10% and 20% risk and the average SB for 2000-2004 (3 scenarios) c) Intermediate values based upon the results of the above work (e.g., 2-5 scenarios)	Refer to WP: *WCPFC17-2020-12_rev1* (SC16-requested analyses to inform WCPFC17 discussions on candidate target reference points for WCPO bigeye and yellowfin tuna)
Target reference points for Yellowfin and bigeye tuna	213. SC16 recommends that the above analyses be completed by the Scientific Service Provider and a paper summarizing both the analyses undertaken and the tentative results be forwarded to the TCC16 and final results to WCPFC17.	Refer to WP: *WCPFC17-2020-12_rev1* (SC16-requested analyses to inform WCPFC17 discussions on candidate target reference points for WCPO bigeye and yellowfin tuna)
	223. Noting the additional requests from WCPFC16 for advice on the formulation of TRPs for skipjack tuna and effort creep estimated in relation to the TRPs (para. 258 of the WCPFC16 Summary Report), SC16 noted that advice pertaining to these requests are also contained in SC16-MI-WP-02. 224. SC16 recommends that SC16-MI-WP-02 be revised to include the additional analyses requested in (ii) and (iii) above, and that this revised paper be forwarded to WCPFC17. 225. SC16 recommends that the Commission take into consideration the information contained in this revised paper when discussing a TRP for skipjack tuna.	Refer to *WCPFC17-2020-11*: Updates to WCPO skipjack tuna projected stock status to inform consideration of an updated target reference point
	254. Noting the key findings and challenges summarised above, SC16 provides the following advice and recommendations to the Scientific Services Provider (SSP) and the Commission: b) Noting that the virtual SC16 meeting had not provided enough time to consider the ten information papers (SC16-MI-IP-01 to SC16-MI-IP-10) related to the progress of developing the WCPFC harvest strategy framework, and the ongoing needs of the SSP to get further feedback from CCMs on this work, SC16 agreed to continue discussions on these ten papers through the WCPFC Online Discussion Forum (ODF). The purpose of the ODF would be to: i) facilitate feedback on technical aspects related to the issues covered by the ten information papers presented to SC16;	b) Harvest Strategy ODF was established. d) The proposed workshop was not supported by PNA members because of their concerns about their effective participation (Para 278, WCPFC17 Summary Report). e) Refer to Para 275, WCPFC17 Summary Report: "*The Commission acknowledged the utility of a science-management dialogue in progressing the implementation of the Indicative Workplan for the Adoption of Harvest Strategies but was unable to*

	ii) enable CCMs to make suggestions to the SSP on alternative HCRs to consider; iii) get benefit from participant's feedback on the progress on the SSP's work; iv) assist with the mutual understanding of this work; and v) assist with capacity building of the participants. The ODF should remain open for as long as required. d) SC16 also noted that given the large range of technical issues included in the ongoing development of the WCPFC harvest strategy framework, and limitations for the SC to undertake a thorough review of these issues, that progress on many of the technical aspects related to this framework would be enhanced through an intersessional workshop, which could be held in conjunction with the annual Pre-Assessment Workshop (PAW) hosted by the SSP. Like the PAW, the aim is for this workshop to be a technical meeting of scientists who have a common interest in providing feedback to the SSP on technical issues related to the development of the harvest strategy framework. The outcomes of the meeting would be documented, and the report of the meeting and other analyses would be submitted to the WCPFC Scientific Committee either as a stand-alone paper or within other relevant papers. SC16 requests the Commission to consider the utility of holding such a workshop. e) Finally, noting that the development of the WCPFC harvest strategy framework is reaching a mature stage, and the increasing number of issues that require the attention of, and feedback from, managers in order to progress the Harvest Strategy Workplan, SC16 again reiterates its previous recommendations for a Science-Management Dialogue to be convened. In addition, SC16 calls attention to the importance of such a dialogue to ensure the input of managers and stakeholders to the MSE process and to ensure timely execution of the Commission's harvest strategies workplan.	*agree on the staging of such a dialogue. The Commission agreed to continue to explore in 2021 options to convene a science-management dialogue*."
Implementation of CMM 2018-01	255. To provide additional information to the Commission on options for CMM2018-01, SC16 recommends that the Scientific Services Provider provide to the Commission as early as reasonable, the following: (i) Any updates to SC15-MI-WP-01, "minimum target reference points for WCPO yellowfin and bigeye tuna consistent with alternative LRP risk levels, and multispecies implications," and the following additions to the deterministic projections in Figure 3a and 3b for bigeye tuna (and to Figures 2a and 2b for yellowfin tuna if possible) (as in the original paper, the purse seine scalar should scale overall	Refer to *WCPFC17-2020-16* (Additional analysis to inform WCPFC17 discussion on CMM 2018-01 requested by SC16)

	purse seine fishing effort, including both associated and unassociated fishing effort): a) Inclusion on the x axis (purse seine scalar) and y axis (longline scalar) of the absolute quantities that correspond to the scalars (for purse seine scalar, numbers of both associated sets and unassociated sets, and for longline scalar, longline catch in mt). b) Inclusion on the x axis and y axis of the expected fishery impact of the sector on SSB (SB2045/SBF=0) that correspond to the scalars, assuming the other sectors' (e.g., pole-and-line and other) impacts are as they were in 2013-2015, on average. c) Extension of the ranges of the x and y axes to scalars as high as 2.0 (from 1.5). d) Indications of the expected purse seine scalars for the purse seine management regime under CMM 2018-01. (ii) One or more tables showing as long a time series as possible, of fishery impact on WCPO bigeye tuna SSB, by fishery sector (for just the diagnostic case, and including at a minimum: longline, purse seine associated, purse seine unassociated, pole-and-line, and other).	
Review of project progress in 2020	261. SC16 adopted the *2021-2025 Shark Research Plan* and recommended it to the Commission for endorsement.	Adopted by WCPFC17
	275. SC16 agreed that the 2021 scientific services from SPC would comprise (i) the South Pacific albacore stock assessment; (ii) the Southwest Pacific swordfish stock assessment; and (iii) additional analyses related to yellowfin tuna in preparation for the stock assessment peer review.	Endorsed by WCPFC17 and SPC produced: (i) SC17-SA-WP-02 Stock assessment of South Pacific albacore (ii) SC17-SA-WP-04 Stock assessment of Southwest Pacific swordfish (iii) SC17-SA-WP-06 Draft Terms of Reference for WCPO yellowfin assessment peer review
Streamlining Annual Reporting	294. SC16 noted the updates on streamlining of annual reporting requirements implemented in 2020 that were provided in SC16-GN-IP-07 *Update on Streamlining of Annual Reporting Initiatives*. 295. SC16 also noted that SC16-GN-IP-07 reviewed the experiences and outcomes of the trial Annual Catch and Effort Estimate (ACE) Tables and has provided information that the cost and resources implications of this trial were modest. 296. SC16 recommends to WCPFC17 that the approach of publishing the ACE tables based on the April 30 Scientific Data submissions and subsequent updates and revisions from CCMs is continued. 297. SC16 recommends that the Scientific Services Provider is tasked to review the feasibility of expanding the ACE Tables, to include additional estimates of effort where it is practicable to be derived based on the April 30 scientific data submissions from CCMs and provide an update to SC17.	Refer to *SC17-GN-IP-07* (Update on streamlining of annual reporting initiatives)

ISSUES/INFORMATION ARISING FROM WCPFC17 (Summary Report paragraphs indicated below)		
Issues	**References**	**Outputs/Comments**
TRP for skipjack	157. The Commission noted the presentation by SPC of the results of analyses it undertook to assist WCPFC17 in its review of the performance of the interim skipjack tuna TRP. 158. The Commission agreed to continue intersessional work to review and revise, as appropriate, a TRP for skipjack in the future. 159. The Commission requested SPC to update the skipjack TRP work by including additional candidates, including 36%, 38% and 40% in the median depletion table.	Refer to *SC17-MI-WP-02* (Further updates to WCPO skipjack tuna projected stock status to inform consideration of an updated target reference point)
TRP for bigeye and yellowfin	165. The Commission noted the presentation by SPC of the results of analyses it undertook on candidate TRPs for bigeye and yellowfin. 166. The Commission agreed it would be difficult to identify TRPs for bigeye and yellowfin during WCPFC17 and to continue its consideration in the future. 167. The Commission requested SPC to include skipjack equivalent depletion levels and to provide separate TRP presentations for bigeye and yellowfin in the future to aid the Commission's consideration of candidate TRPs for bigeye and yellowfin.	Refer to *SC17-MI-WP-01* (Updated bigeye and yellowfin TRP evaluations)
Other commercial fisheries	198. The Commission noted that in recommending a status of "CMM Review" to paragraph 51 of CMM 2018-01, TCC16 had recognized the difficulty of the application of this paragraph in terms of the scope of "other commercial fisheries" in Indonesia and the Philippines. 199. The Commission noted that Indonesia and the Philippines had submitted delegation papers to SC16, TCC16 and WCPFC17 (WCPFC17-2020-DP04 and WCPFC17-2020-DP05) in response to the request from TCC15 to inform a Commission discussion on the application of paragraph 51 of CMM 2018-01. However, the virtual format of these meetings made it difficult to consider these papers at SC16 and TCC16. 200. The Commission agreed to task SC17 and TCC17 to review these papers and provide advice to the Commission to facilitate a decision by WCPFC18 on the application of paragraph 51 of CMM 2018-01.	Covered by SC17 Agenda 2.2. Refer to: • SC17-ST-WP-02 (Summary of information available for SC17 to consider in addressing the WCPFC17 recommendation on the CMM for Tropical Tuna, Para 51 (Other commercial fisheries)) • SC17-ST-IP-08 (Estimates of annual catches of tropical tuna by the Philippines relevant to WCPFC CMM on Tropical Tunas "other commercial fisheries") • SC17-ST-IP-09 (Availability of catch estimates from the other commercial fisheries in Indonesia)
Interim Rebuilding Plan (North Pacific striped marlin)	250. The Commission requested the ISC to: i. examine differences between ISC stock assessment catch estimates by CCM and WCPFC catch estimates, and work with the Scientific Services Provider to provide an assessment of the shortcomings; ii. provide explanation why the striped marlin stock decreased and the fishing mortality increased after a drastic decrease in fishing effort by high seas driftnet fisheries in the early 1990s; and iii. develop a roadmap to address the issues identified in the latest stock assessment by ISC.	Refer to *SC17-SA-IP-16* (Report of the Billfish Working Group Workshop)
Terms of Reference	275. The Commission acknowledged the utility of a science-management dialogue	Refer to Agenda Item 4.1.6.

for a Science-Management Dialogue	in progressing the implementation of the Indicative Workplan for the Adoption of Harvest Strategies but was unable to agree on the staging of such a dialogue. The Commission agreed to continue to explore in 2021 options to convene a science-management dialogue.	
FAD Management Options WG	347. The Commission noted the Report of the FAD Management Options IWG and accepted its recommendations to continue to engage intersessionally to progress outstanding work (WCPFC17-2020-FADMgmtOptions). 348. The Commission noted that the FAD Management Options WG had prepared a revised set of draft guidelines for non-entangling and biodegradable FADs as reflected in the FADMO-IWG-04-2020/WP-02 (Attachment K). 349. Noting that the SC16 and TCC16 could not complete the task in paragraph 22 of CMM 2018-01 due to the limited agenda resulting from COVID-19, the Commission tasked SC17 and TCC17 to review the draft guidelines for non-entangling and biodegradable FADs prepared by the FAD Management Options IWG (Attachment K). The FAD Management Options IWG should revisit the draft guidelines based on input from those bodies as well as any additional scientific and technical information on non-entangling and bio-degradable FADs.	Refer to *SC17-EB-IP-07* Guidelines for Non-entangling and Biodegradable FAD Materials (FADMO-IWG-04-2020-WP-02). Feedback on the guidelines will be made on the SC17 online discussion forum.
Cetacean release guidelines	96. Mindful that WCPFC16 tasked SC16 to develop and recommend best handling practices for the release of cetaceans but SC16 was unable to progress this task amongst other tasks due the disruptive impacts of the COVID-19 pandemic, the Commission requested the Scientific Committee to consider managing these outstanding tasks at SC17.	Refer to SC17 Agenda 5.2 and *SC17-EB-WP-02* (Best handling practices for the release of cetaceans).