



**SCIENTIFIC COMMITTEE
TWENTIETH REGULAR SESSION**

Manila, Philippines
14 – 21 August 2024

**ISSUES ARISING FROM THE COMMISSION
(from SC19 and WCPFC20)**

**WCPFC-SC19-2023/GN-IP-01
30 July 2024**

WCPFC Secretariat and SPC-OFP

ISSUES ARISING FROM SC19 AND WCPFC20

Theme	SC19 Outcomes Document	WCPFC20 Summary Record	SC20 (Agenda/Papers)																		
Data and Statistics Theme																					
ST	<p><i>Operational longline data fields</i></p> <p>3. SC19 acknowledged the scientific value of the additional longline operational data fields in Table ST-01 and that these fields be considered for inclusion in the “Scientific Data to be Provided by the Commission (SciData)”.</p> <p>4. However, SC19 noted broad implementation concerns of CCMs with respect to the collection of these data, that TCC and the Regular Session of the Commission take account of these concerns, and suggested a possible option would be to include them as voluntary reporting items.</p> <p>Table ST-01. Additional longline operational data fields for CPUE standardization and related analyses</p> <table border="1" data-bbox="220 743 1192 1481"> <thead> <tr> <th data-bbox="220 743 514 781">DATA FIELD</th> <th data-bbox="516 743 1192 781">Suggested PROTOCOL for data collection</th> </tr> </thead> <tbody> <tr> <td data-bbox="220 782 514 846">Target species for the set</td> <td data-bbox="516 782 1192 846">Record the primary target species, or group of species, for this set.</td> </tr> <tr> <td data-bbox="220 847 514 911">Number of lightsticks used in set</td> <td data-bbox="516 847 1192 911">Record the total number of lightsticks used in the set.</td> </tr> <tr> <td data-bbox="220 912 514 1114">Bait type used in set</td> <td data-bbox="516 912 1192 1114">Record the FAO code for type of bait used for the set. Example types: <ul style="list-style-type: none"> • Squid (class Cephalopoda) • Sardine or Pilchard (family Clupeidae) • Mackerel (family Scombridae) • Mixed Mackerel and Sardine ... </td> </tr> <tr> <td data-bbox="220 1115 514 1179">Mainline length</td> <td data-bbox="516 1115 1192 1179">Record the mainline length (in kilometres) used in the trip or set, as appropriate.</td> </tr> <tr> <td data-bbox="220 1180 514 1276">Length of branch line</td> <td data-bbox="516 1180 1192 1276">Record the average length in metres of the branch lines in the trip or set. (The total length from the mainline to the hook).</td> </tr> <tr> <td data-bbox="220 1278 514 1341">Length of float line</td> <td data-bbox="516 1278 1192 1341">Record the average length in metres of the float lines in the set. (The total length from the float to the mainline).</td> </tr> <tr> <td data-bbox="220 1343 514 1406">Vessel speed during setting</td> <td data-bbox="516 1343 1192 1406">Record the average speed in knots of vessel during line setting.</td> </tr> <tr> <td data-bbox="220 1408 514 1481">Speed of the line setter</td> <td data-bbox="516 1408 1192 1481">Record the speed in knots of the line setter (i.e. the line shooter speed).</td> </tr> </tbody> </table>	DATA FIELD	Suggested PROTOCOL for data collection	Target species for the set	Record the primary target species, or group of species, for this set.	Number of lightsticks used in set	Record the total number of lightsticks used in the set.	Bait type used in set	Record the FAO code for type of bait used for the set. Example types: <ul style="list-style-type: none"> • Squid (class Cephalopoda) • Sardine or Pilchard (family Clupeidae) • Mackerel (family Scombridae) • Mixed Mackerel and Sardine ... 	Mainline length	Record the mainline length (in kilometres) used in the trip or set, as appropriate.	Length of branch line	Record the average length in metres of the branch lines in the trip or set. (The total length from the mainline to the hook).	Length of float line	Record the average length in metres of the float lines in the set. (The total length from the float to the mainline).	Vessel speed during setting	Record the average speed in knots of vessel during line setting.	Speed of the line setter	Record the speed in knots of the line setter (i.e. the line shooter speed).	<p>595. The Commission supported the need for further work on information and data requirements to support management decisions and referred the issue to TCC20 for further consideration.</p>	<p>Source: SC19-ST-WP-03 SC20-ST-WP-08</p>
DATA FIELD	Suggested PROTOCOL for data collection																				
Target species for the set	Record the primary target species, or group of species, for this set.																				
Number of lightsticks used in set	Record the total number of lightsticks used in the set.																				
Bait type used in set	Record the FAO code for type of bait used for the set. Example types: <ul style="list-style-type: none"> • Squid (class Cephalopoda) • Sardine or Pilchard (family Clupeidae) • Mackerel (family Scombridae) • Mixed Mackerel and Sardine ... 																				
Mainline length	Record the mainline length (in kilometres) used in the trip or set, as appropriate.																				
Length of branch line	Record the average length in metres of the branch lines in the trip or set. (The total length from the mainline to the hook).																				
Length of float line	Record the average length in metres of the float lines in the set. (The total length from the float to the mainline).																				
Vessel speed during setting	Record the average speed in knots of vessel during line setting.																				
Speed of the line setter	Record the speed in knots of the line setter (i.e. the line shooter speed).																				

ST	<p><i>Additional code for the ACTIVITY field</i></p> <p>5. SC19 acknowledged that the proposal for the addition of a new activity code for any day when a "transshipment at sea occurs" would allow the WCPFC's Scientific Services Provider (SSP) to define 'trips' within the operational data submitted to the Commission.</p> <p>6. SC19 also noted the explanation from the SSP that aggregating the catch by species in the longline operational data at the trip level (when the trip is terminated by an at-sea transshipment) is fundamental for the validation processes using other independent sources of data (e.g. transshipment observers and carrier declarations) to provide more certainty in the data used in assessments and other work of the Commission.</p> <p>7. SC19 recommended that this proposal be considered further by TCC and the Regular Session of the Commission.</p>	595. The Commission supported the need for further work on information and data requirements to support management decisions and referred the issue to TCC20 for further consideration	Source: SC19-ST-WP-03
ST	<p><i>Inconsistencies between SciData and CMM operational data reporting requirements</i></p> <p>8. SC19 acknowledged the review by the WCPFC SSP of inconsistencies in the data reporting requirements between the Scientific Data to be Provided by the Commission (SciData), and other WCPFC reporting obligations (e.g., in CMMs)</p> <p>9. This review identified a reporting requirement under CMM 2018-04 (<i>Conservation and Management of Sea Turtles</i>) that does not appear to be specifically covered in operational data requirements of the SciData (refer to CMM 2018-04 paragraph 5 (c)¹ and 7(e)²).</p> <p>10. After discussion and consideration, SC19 noted that the reporting requirement under CMM 2018-04 does not explicitly require operational data. SC19 recommended that TCC19 consider whether it is necessary to clarify the reporting requirements in the CMM 2018-04, while noting the difficulty of logbook-based data collection for sea turtles.</p> <p><u>TCC19 Summary Report:</u></p> <p>511. The third group of reporting requirements had come up in the Audit Points SWG at this TCC19 session, and this related to an inconsistency that had been identified between the Sea Turtle CMM 2018-04 and the rules that are set out for operational catch and effort data and the scientific data to be provided to the Commission. As mentioned during the SWG, there had been an attempt during SC19 to work on some draft amendment text, but in the course of those discussions it was clear that there were differences around whether or not this</p>	754.e. SC20 and TCC20 review the SciData requirements to capture turtle interaction reporting requirements under CMM 2018-04, paragraphs 5c and 7e.	A3.1.5 See SC20-ST-WP-01, noting that SSP sometimes receives catch data for species that are not explicitly listed in the SciData, noting that sea turtles are not explicitly included in the logbook minimum data reporting requirements.

¹ PS: all incidents involving sea turtles

² LL: all incidents involving sea turtles

	<p>was data that should be provided at the operational trip by set level, or whether it was something that was provided in summary form. As a result of that, SC19 had not been able to finalise those particular reporting and had asked TCC19 for assistance in trying to clarify this reporting requirement. The Audit Point small working group had some discussion of this item, but concluded that perhaps this was an issue that could not be resolved through interpretation. Rather, it needed to be considered as an amendment either to the CMM or to the scientific data rules, or both.</p>		
ST	<p><i>Inconsistent reporting of Set Start Time</i></p> <p>11. The SC19 working paper on the proposed Billfish Research Plan 2023 - 2027 (SC19-SA-WP-16) noted in a review of available operational data for future billfish research that, <i>"...some fleets record time as ships time, others at UTC and some as country capital time. Clarifying this at a fleet level will be needed before this analysis can be completed with any certainty."</i></p> <p>12. The SciData indicates that <i>"the date of start of set and time of start of set: The date and start of set time should be GMT/UTC"</i>. Reporting date/time in the GMT/UTC standard is not a binding SciData requirement, so SC19 recommended that the WCPFC CCMs, with assistance from the WCPFC SSP where required, indicate:</p> <ul style="list-style-type: none"> (a) the date/time standard used in their historical operational data submissions to the Commission, and (b) the date/time standard in their operational data, when they are submitted each year in the future. <p>Information to ensure the date/time standard is linked back to GMT/UTC shall also be provided.</p>	<p>699. The Commission agreed that CCMs submit information to the Secretariat and SSP by February 2024 to indicate the date/time standard that was used in their <i>historical</i> operational longline data submissions to the Commission.</p> <p>700. The Commission agreed that CCMs are expected and required to submit information about the date/time standard that can be linked back to GMT/UTC in their operational data for <i>future</i> data submissions.</p>	<p>The SSP contacted CCMs in early 2024 to request this information. Eight CCMs replied with the date/time zone for reporting their operational data. The SSP is in the process of adding a UTC date/time field to the operational data sets to provide a standardized time for all fleets.</p>
ST	<p><i>Additional Billfish Species</i></p> <p>13. SC19 noted the need for data on short-billed spearfish and sailfish catches, as highlighted in the Billfish Research Plan, and that TCC19 determine how to best accommodate the inclusion of these two species into the Science Data to be Provided to the Commission.</p>	<p>702. Recognising the importance of catch and effort data related to short-billed spearfish and sailfish species, and the Commission tasked the Secretariat, with the assistance of the SSP, to make the necessary amendment to the Scientific Data to be Provided to the Commission.</p>	<p>SciData amended</p>
ST	<p><i>FAD Data fields</i></p> <p>14. SC19 recognised the scientific value of the PNA's proposal on <i>"Minimum Data Fields to be Recorded by WCPFC Vessel Operators"</i> (SC19-ST-WP-05).</p> <p>15. Noting the current workload of observers, and some FAD data may be more effectively</p>	<p>385. In the development of 2024-2026 FADMO-IWG Workplan, the FADMO-IWG shall incorporate the following:</p> <p>c. To develop a FAD logbook for vessel operators and to review the IWG workplan accordingly to action recent developments</p>	<p>A3.1.5 A6.2.2 SC20-ST-WP-06 SC20-ST-IP-09 SC20-EB-WP-04 SC20-EB-IP-02</p>

	<p>provided by vessel operators, SC19 agreed on the need for developing a FAD logbook for vessel operators as a priority.</p> <p>16. SC19 noted that the PNA has developed the Standard Operating Procedures (SOPs) for the provision of FAD data by vessel operators for licensed vessels from January 2022 and IATTC have also adopted a FAD logbook, currently used for vessels operating in the EPO and in the overlap area. SC19 noted both could be used as the basis for discussion at FADMO-IWG.</p> <p>17. SC19 recommended WCPFC20 considers this work be progressed intersessionally within the FADMO-IWG.</p>		
ST	<p>Bycatch estimates of longline fisheries</p> <p>19. SC19 noted that the adopted level of 5% observer coverage, which has been in place for over a decade, has not provided good estimates of longline bycatch. Therefore, SC19 recommended that the Commission explore options to expand the observer coverage on longline vessels through both human and electronic approaches in the WCPO so that the SC can provide better estimates of bycatch levels and other metrics from these fleets.</p>	The increase in longline observer coverage is partially reflected in Table 3, CMM 2023-01	
ST		<p>Strengthening monitoring: observer coverage on LL fleets and development of electronic monitoring</p> <p>618. The Commission noted the Report of the ER&EM WG (WCPFC20-2023-ERandEM-IWG-02) and agreed to adopt the Schedule of Work set out in Appendix 1 of the report (Attachment 5, WCPFC20 Summary Record).</p> <p>619. The Commission tasked the ER&EM WG to develop a set of interim EM standards for adoption at WCPFC21 in 2024.</p> <p>620. The Commission noted the need for cooperation with IATTC in the development of EM procedures for WCPFC.</p>	A3.4.1 SC20-ST-WP-05
Stock Assessment Theme			
SA	<p>Improvement of MULTIFAN-CL software</p> <p>24. SC19 supported ongoing development of MULTIFAN-CL by the SSP but noted that the</p>	P123 (Scoping the next generation of tuna stock assessment software)	A4.1.2 SC20-SA-WP-01

	<p>next generation of assessment models for tuna assessments in the WCPFC should be considered. SC19 noted that a TOR for work towards the development of the next generation of tuna assessment models was submitted to SC19.</p>		
SA	<p>Yellowfin stock assessment</p> <p>27. The 2023 WCPO yellowfin tuna assessment provides stock status based upon a 54-model structural uncertainty grid with four axes: steepness with three levels, tag mixing period with two levels, and size and age composition data with three levels each, as illustrated in table YFT-01. SC19 recommended that the proposed axes of uncertainty be accepted and that all models should be weighted equally. SC19 noted that an important improvement in the characterization of uncertainty was the inclusion of estimation uncertainty for each of the models in the grid.</p> <p>37. SC19 recommends stochastic projections based on the adopted yellowfin tuna grid be undertaken by the SSP and provided to the Commission for their consideration.</p> <p>39. SC19 also noted a continuous downward trend in spawning potential ratio over the recent decade in Region 2 in the westernmost equatorial region, mainly due to the miscellaneous gear fisheries within this region, whereas other regions have been relatively stable over this period. This is the impact of artisanal (small-scale) fisheries other than longline and purse seine within this region. SC19 recommends that the Commission note the need for clear limits for these.</p>	<p>Provided at WCPFC20-2023-15_Rev01 (<i>Evaluation of CMM 2021-01: tropical tuna measure</i>)</p>	<p>See also SC20-SA-WP-07</p>
SA	<p>Yellowfin research recommendations</p> <p>41. SC19 noted several research recommendations for the further development and improvement of the WCPO yellowfin tuna assessment:</p> <ol style="list-style-type: none"> a) Exploration into the conflict between the length and weight composition data; if unresolved this conflict should be reflected within future structural uncertainty grids; b) Exploration of a simplification of the spatial structure by using a single area, with “areas-as-fleets”; c) Exploration of alternative approaches to modeling of tagging data, including consideration of the most appropriate mixing periods for different regions and development of stand-alone tagging (mark-recapture) models; d) Exploration of which parameters are most sensitive to initial model starting values, and taking steps to reduce the impact of starting values on the results in future assessments; this could include simplification of models and/or systematic use of jittering; e) Further research to improve estimates of catches (both historical and recent) in the fisheries of Indonesia, the Philippines and Vietnam through the continued funding of the WPEA monitoring project; f) An exploration of seasonal and regional growth traits for the stock assessment; 		<p>Will reflect in 2026 YFT assessment</p>

	g) A study on longline CPUE standardization process considering effort creep; and Developing alternative CPUE scenarios with different implied regional weightings.		
SA	<p>2023 Bigeye stock assessment</p> <p>46. SC19 accepted the 2023 WCPO bigeye tuna stock assessment with a 9-region spatial structure (Figure BET-01) and adopted the full unweighted grid in Table BET-01 to provide stock status and management advice, however, future projection results were not provided at SC19. SC19 recommended that those stock projection analyses to be provided for the Commission consideration for management advice prior to the Commission meeting.</p> <p>48. The 2023 WCPO bigeye tuna assessment provides stock status based upon a 54-model structural uncertainty grid with four axes: steepness with three levels, tag mixing period with two levels, and size and age composition data with three levels each, as illustrated in Table BET-01. SC19 recommended that the proposed axes of uncertainty be accepted and that all models should be weighted equally. The SC19 noted that an important improvement in the structural uncertainty grid was the inclusion of estimation uncertainty for each of the models in the grid.</p> <p>63. SC19 adopted several research recommendations for the further development and improvement of the WCPO bigeye tuna stock assessment, and suggested these be considered for potential inclusion in the Tuna Assessment Research Plan (TARP):</p> <ol style="list-style-type: none"> 1) Continued collection of more representative biological data (e.g., age composition) and tagging data. 2) Develop additional CPUE index series testing key uncertainties about the analysis (e.g., regional vs. global model, classification of catchability vs. abundance covariates, etc.) and explore those as one-off sensitivities to the stock assessment. 3) Consideration of options to account for effort creep in CPUE standardization and/or the assessment model. 4) Simulation study to explore appropriate spatial structure of the stock assessment with a focus on simplifying the spatial structure (e.g., areas-as-fleets and/or 6 region structure) given the estimates of limited movement rates among regions. 5) Investigation of the 2023 model specifications with respect to the increase in unfishable SSB over time for the tropical regions (3, 4, 7 and 8). 6) Yield per recruit analyses comparing fishery sectors with different selectivity patterns. 7) Evaluation of the variability and plausibility of estimated growth and mortality-at-age relationship across the structural uncertainty grid. 8) Additional one-off sensitivities exploring key uncertainties in biological assumptions, model specification, and data inputs (e.g., tag mixing, data weighting, and growth). 9) Identification of key parameters that are either highly correlated or highly sensitive to the jittering procedure to inform possible changes in model specification with the 	<p>Provided at WCPFC20-2023-15_Rev01 (Evaluation of CMM 2021-01: tropical tuna measure)</p>	<p>46: See also SC20-SA-WP-07</p> <p>63: A4.6.6.1 SC20-SA-IP-08</p>

	<p>aim to decrease model complexity and/or sensitivity to starting conditions.</p> <p>10) Exploration of seasonal and regional growth traits for the stock assessment.</p> <p>11) Comprehensive review of the representativeness of the size composition data given conflicts identified in the likelihood profiles.</p> <p>12) Investigation of the 2023 model specifications that lead to the inversion of the effect of the weight vs. tagging data signal on the total biomass, as shown in the likelihood profile.</p> <p>13) Further exploration of the advantages and disadvantages of strategies to decrease model sensitivity to starting conditions, including but not limited to multi-start approaches.</p> <p>14) Pursue development of tag mixing diagnostics and approaches, and investigate the impacts of tag mixing assumptions.</p>		
SA	<p>South Pacific albacore tuna</p> <p>78. SC19 recommended that the 2024 assessment of South Pacific albacore be South Pacific-wide. Noting the need to provide management advice specifically for the WCPFC-CA and the ongoing developments relating to the Harvest Strategy process, if a fleets-as-areas approach is considered for the 2024 assessment, SC19 recommends retaining a separate area for the IATTC. SC19 noted that a WCPFC-CA only model might also be considered as a one-off sensitivity analysis. If results from the one-off sensitivity analysis for the WCPFC-CA-only model are different from the WCPFC-CA results from the Pacific-wide model, additional analyses should be conducted with a view to understanding which spatial structure is more reliable when considering future assessment development.</p>		<p>A4.2.1 SC20-SA-WP-02 SC20-SA-IP-01 SC20-SA-IP-03 SC20-SA-IP-04 SC20-SA-IP-05 SC20-SA-IP-18 SC20-SA-IP-20</p>
SA	<p>Silky shark</p> <p>100. SC19 recommended that an integrated assessment for silky shark be attempted and that alternative assessment methods such as data-limited methods or a risk analysis be developed concurrently.</p>	<p>714. The Commission endorsed that in 2024 an integrated assessment for silky shark be attempted and that alternative assessment methods such as data-limited methods or a risk analysis be developed concurrently.</p>	<p>A4.5.1 SC20-SA-WP-04</p>
SA	<p>North Pacific striped marlin stock assessment</p> <p>103. SC19 recommended having more consistency in the stock assessment metrics used between assessments across the WCPO stocks, as in SC19-SA-WP-12.</p>	<p>694. The Commission noted the less than healthy state of North Pacific Striped Marlin, SC19s management advice and the precautionary approach, and the planned independent peer review of the North Pacific Striped Marlin stock assessment in 2024 and agreed to await the outcome of the peer review with a view to considering potential revisions to CMM 2010-01 at WCPFC21.</p>	<p>A4.4.2 SC20-SA-WP-12 SC20-SA-WP-13</p>
SA	<p>Characterization of stock assessment uncertainty (Project 113)</p>		<p>A4.6.1 SC20-SA-WP-10</p>

	<p>117. SC19 recommended that this project (Project 113b) be included in the 2024 SC workplan and added to the Tuna Assessment Research Plan.</p> <p><u>Note</u> “this project” refers to a new Project 113b proposed by SC19-SA-WP-12 (<i>Addressing uncertainty in WCPFC stock assessments: Review and recommendations from WCPFC Project 113</i>).</p>		
SA	<p>Options to provide information to the Scientific Committee</p> <p>120. Noting the need for the SSP to have more time to complete the work required to conduct annual stock assessments and other analyses reviewed by the SC each year, SC19 recommended that:</p> <ol style="list-style-type: none"> 1) the data manager at the SSP liaise and consult with CCMs about the possibility of bringing forward the data submission deadline for fleets, especially historical data updates, 2) the Secretariat explore options for moving the dates of the SC meeting to a later period in the calendar year, 3) the Secretariat and SSP explore options for the WCPFC website to include a portal for CCMs to enter/edit/manage their ACE data submissions, and 4) the SSP develop guidelines for standardised structure/file layouts for Annual Catch Estimates and aggregate catch/effort data that can be used by CCMs to submit these data. <p>121. Noting the need for further resources to assist the SSP in conducting annual stock assessments and other analyses related to the work of the Commission, SC19 recommended that the Commission consider increasing the SSP’s budget so that the number of full-time assessment scientists can be increased to four or five.</p>		A11.1 SC20-GN-WP-05
SA	<p>Billfish Research Plan (Project 112)</p> <p>124. Noting that SC17 agreed a framework for selecting LRPs for billfish species, SC19 seeks general guidance from the Commission on whether in the case of non-targeted species it is acceptable to have a higher level of risk to the stock and a lower biomass LRP compared with the equivalents for target species.</p>	676. The Commission did not achieve consensus on the guidance to be provided to SC20 on the interpretation of Article 10.1.c of the Convention for application in the SC17 framework for selecting Limit Reference Points for billfish species.	A4.6.6.2 SC20-SA-IP-09
SA	<p>Reproductive biology of yellowfin tuna</p> <p>127. SC19 agreed that the project should be expanded to include bigeye and skipjack tuna.</p> <p>128. SC19 endorsed the project and that the WCPFC co-finance EU 40,000 so that funding from the European Maritime, Fisheries and Aquaculture Fund could be accessed.</p>		A4.2.3.3 SC20-SA-IP-11

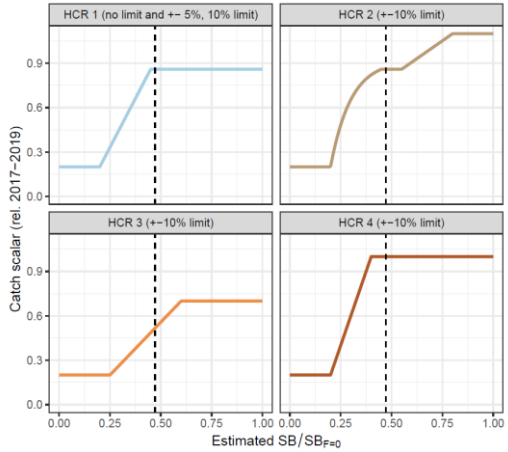
Management Issues Theme			
MI	<p>Skipjack tuna MP</p> <p>136. Noting that with maximum effort and catches now by the MP for respective fisheries for the next three years, this provides a time window for further work, and SC19 recommends that a re-evaluation of the skipjack estimation method needs to be undertaken prior to the next implementation of the MP.</p> <p>137. SC19 recommended that the Commission take into consideration the successful running of the skipjack MP as outlined in SC19-MI-WP-01 and its output, which indicates that maximum effort in the purse seine and pole-and-line fisheries and maximum catches in all other fisheries should be set to their respective baseline levels (specified in CMM 2022-01) for the period 2024-2026, when implementing CMM 2022-01.</p>	<p>301. The Commission noted the successful running of the skipjack Management Procedure as outlined in SC19-MI-WP-01.</p> <p>302. The Commission also noted that a re-evaluation of the skipjack estimation method needs to be undertaken prior to the next implementation of the Management Procedure.</p>	A5.1.1.1 SC20-MI-WP-01
MI	<p>Monitoring strategy for WCPO skipjack tuna</p> <p>146. Noting that the Commission is scheduled to adopt a monitoring strategy for skipjack tuna in 2023, SC19 supported the proposed monitoring strategy as outlined in SC19-MI-WP-02 and that it be considered for adoption following further discussion by TCC and the Commission.</p> <p>147. SC19 recommended that the Commission take note of the initial review of the skipjack MP under the proposed monitoring strategy as outlined in SC19-MI-WP-02 and consider the proposed monitoring strategy summary report drafted by SC and TCC and advise accordingly.</p>	<p>313. The Commission noted that it was not in a position to adopt a monitoring strategy for skipjack tuna at this time but there was a need for intersessional work, led by the SC and TCC Chairs, to facilitate the development by SSP of a monitoring strategy for adoption at WCPFC21, using the information in Attachment B of WCPFC20-2023-14 as a reference.</p>	A5.1.1.2 SC20-MI-WP-02
MI	<p>SP albacore TRP</p> <p>155. SC19 recommended that WCPFC20 reviews the list of candidate TRPs outlined in SC19-MI-WP-03 when adopting a TRP for SP albacore tuna and consider a TRP that is based on a set of reference years instead of a specific level based on a biomass depletion percentage</p>	<p>238. The Commission agreed on an interim target reference point (iTRP) for south Pacific albacore specified as four percent below the estimated average spawning potential depletion of the stock over the period 2017-2019 (0.96 SB2017- 2019/SBF=0)³. This supersedes an</p>	A5.1.2.1 SC20-MI-WP-03

³ Technical definitions: “Spawning potential depletion” refers to the estimated South Pacific albacore spawning potential as a percentage of the estimated spawning potential in the absence of fishing (i.e., the unfished spawning potential). The metric is dynamic and is estimated for each model time step.

The method to be used in calculating spawning potential in the absence of fishing (SBF=0) shall be:

- a. SBF=0, t1-t2 is the average of the estimated spawning potential in the absence of fishing for a time window of ten years based on the most recent South Pacific albacore stock assessment, where t1=y-10 to t2=y-1 where y is the year under consideration; and
- b. The estimation shall be based on the relevant estimates of recruitment that have been adjusted to reflect conditions without fishing according to the stock recruitment relationship.

		<p>earlier decision of the Commission made at WCPFC 15 (paragraphs 207 to 212).</p> <p>239. The Commission shall amend or develop appropriate conservation and management measures to implement a management procedure, developed in accordance with CMM 2022-03, with the ultimate objective of maintaining the south Pacific albacore stock at the interim target reference point, on average.</p> <p>240. The Scientific Committee shall refer to this iTRP in its assessment of the status of the WCPO south Pacific albacore tuna stock and in reporting to the Commission on management advice and implications for this stock.</p> <p>241. In recognition of some outstanding scientific issues, this iTRP shall be subject to review by the Commission following the 2024 stock assessment and further development of candidate management procedures. Subsequent to this review, the confirmed or amended iTRP will again be adopted by the Commission within a Conservation and Management Measure that specifies a management procedure for South Pacific albacore tuna.</p> <p>242. The Commission tasked the SSP to undertake:</p> <ul style="list-style-type: none">• evaluations of some selected candidate Management Procedures for South Pacific albacore where the output of the HCR is total allowable effort and alternatively where the output of the same or similar HCR is total allowable catch;• evaluation of a range of alternative candidate South Pacific albacore target reference points between SB/SBF=0 0.42 – 0.56 (long-term avg SB/SBF=0 (WCPF-CA), or preferably equivalent levels defined in terms of a reference period.) that will be considered in the context of the review of the adopted iTRP.	
--	--	--	--

<p>MI</p>	<p>South Pacific Albacore operating models</p> <p>165. SC19 recommended the use and development of the reference OM set provided in Table 1 of SC19-MI-WP-04 over the next year to allow the continued progress and evaluation of candidate MPs for SPA.</p> <p>Table 1. South Pacific albacore OM uncertainty grid. Scenarios shown in bold are proposed for the reference set. ‡denotes those scenarios for which a dedicated fit of MULTIFAN-CL is required.</p> <table border="1"> <thead> <tr> <th rowspan="2">Axis</th> <th colspan="2">Levels</th> <th colspan="3">Options</th> </tr> <tr> <th>Reference</th> <th>Robustness</th> <th>0</th> <th>1</th> <th>2</th> </tr> </thead> <tbody> <tr> <td colspan="6">Process Error</td> </tr> <tr> <td>Recruitment variability</td> <td>1</td> <td></td> <td colspan="3">1960-2017</td> </tr> <tr> <td colspan="6">Observation Error</td> </tr> <tr> <td>Catch and effort</td> <td>1</td> <td></td> <td colspan="3">25%</td> </tr> <tr> <td colspan="6">Model Error</td> </tr> <tr> <td>Steepness ‡</td> <td>3</td> <td></td> <td>0.8</td> <td>0.65</td> <td>0.95</td> </tr> <tr> <td>Growth ‡</td> <td>2</td> <td></td> <td>otolith data</td> <td>length freq data</td> <td></td> </tr> <tr> <td>Size comp. wtg ‡</td> <td>3</td> <td></td> <td>10</td> <td>25</td> <td>50</td> </tr> <tr> <td>Movement ‡</td> <td>2</td> <td></td> <td>MFCL</td> <td>SEAPODYM</td> <td></td> </tr> <tr> <td>Recruitment distbn ‡</td> <td>2</td> <td></td> <td>SEAPODYM</td> <td>fixed</td> <td></td> </tr> <tr> <td colspan="6">Implementation Error</td> </tr> <tr> <td>Longline effort creep</td> <td>2</td> <td></td> <td>0%</td> <td>2%</td> <td></td> </tr> </tbody> </table> <p>166. Further SC19 that SC20 again consider formally adopting the reference OM set for SPA noting the ongoing investigations that might require a reconditioning of the reference set ahead of SC20, and the potential for other changes in light of the 2024 SPA stock assessment.</p>	Axis	Levels		Options			Reference	Robustness	0	1	2	Process Error						Recruitment variability	1		1960-2017			Observation Error						Catch and effort	1		25%			Model Error						Steepness ‡	3		0.8	0.65	0.95	Growth ‡	2		otolith data	length freq data		Size comp. wtg ‡	3		10	25	50	Movement ‡	2		MFCL	SEAPODYM		Recruitment distbn ‡	2		SEAPODYM	fixed		Implementation Error						Longline effort creep	2		0%	2%		<p>262. The Commission noted that SC will further develop the reference Operating Model set over the next year to allow the continued progress and evaluation of candidate Management Procedures for South Pacific albacore, and SC20 will consider formally adopting the reference set of the Operating Model, noting the potential for other changes in light of the 2024 South Pacific albacore stock assessment.</p>	<p>A5.1.2.2 SC20-MI-WP-04</p>
Axis	Levels		Options																																																																																			
	Reference	Robustness	0	1	2																																																																																	
Process Error																																																																																						
Recruitment variability	1		1960-2017																																																																																			
Observation Error																																																																																						
Catch and effort	1		25%																																																																																			
Model Error																																																																																						
Steepness ‡	3		0.8	0.65	0.95																																																																																	
Growth ‡	2		otolith data	length freq data																																																																																		
Size comp. wtg ‡	3		10	25	50																																																																																	
Movement ‡	2		MFCL	SEAPODYM																																																																																		
Recruitment distbn ‡	2		SEAPODYM	fixed																																																																																		
Implementation Error																																																																																						
Longline effort creep	2		0%	2%																																																																																		
<p>MI</p>	<p>SP albacore MP</p> <p>182. SC19 recommended that WCPFC20 review the current set of 6 candidate MPs for initial consideration, noting the diverse range of MP configurations provided by the SSP is sufficient to support discussions on desirable features and design priorities.</p> 	<p>183: no guidance was provided and refer to SPA-SWG outcomes in Attachment 18 of the WCPFC20 Record: <i>“WCPFC20 SPA-SWG agreed that the work to develop management procedures applying to the area south of the equator, and an allocation framework, be progressed in 2024.”</i></p> <p>263. The Commission noted the importance and need for a Science-Management Dialogue to expedite the progress of implementation on the <i>Indicative Workplan for the Adoption of Harvest Strategies under CMM 2022-03</i>.</p> <p>264. The Commission agreed to hold a Science-Management Dialogue in 2024 (SMD-02) focused on:</p> <ol style="list-style-type: none"> South Pacific albacore management procedures (including review of the iTRP); 	<p>A5.1.2.3 SC20-MI-WP-05 SC20-MI-WP-06</p> <p>SMD-02 will be convened from 10-12 September 2024.</p>																																																																																			

	<p>183. SC19 further recommended that the Commission provide guidance based on these exploratory MPs on features to be further developed by the SSP, including performance indicators, controlled fisheries and control mechanisms, and HCR shape and design.</p>	<p>b. Development of BET and YFT TRPs; c. Issues pertaining to the application of the SKJ management procedure, and d. Harvest strategy capacity-building for CCMs (SPC-facilitated).</p> <p>265. The Commission agreed that, similar to SMD-01 (2022), SMD-02 would be co-chaired by the WCPFC and SC Chairs.</p> <p>266. The Commission agreed that SMD-02 would be held online between SC20 and TCC20, with possible dates 10-12 September 2024 (Pohnpei time).</p> <p>267. The Commission tasked the WCPFC and SC Chairs to develop an agenda based on the above-listed topics, in consultation with the Secretariat and the Scientific Services Provider.</p> <p>268. Noting the importance of the application of compatible measures between WCPFC and IATTC to enhance the effectiveness of collective conservation and management efforts, the Commission agreed to invite representatives from the IATTC secretariat, and CPCs2 as appropriate, to participate as observers in SMD-02.</p>	
MI	<p>Mixed fisheries MSE framework</p> <p>191. SC19 supported continuing the work on the development of the mixed fishery MSE framework and that WCPFC20 take note of the progress to date and provide feedback.</p>		<p>A5.1.3.2</p> <p>See also SC20-MI-WP-07</p>
MI	<p>Progress of the WCPFC Harvest Strategy Workplan</p> <p>192. SC19 noted the adoption by WCPFC19 of the updated Indicative Workplan for the Adoption of Harvest Strategies under CMM 2014-06 (Attachment M, WCPFC19 Summary Report).</p> <p>193. SC19 also noted the presentation made by Australia on behalf of FFA which outlined proposed changes that will be presented to WCPFC20, including the following two</p>	<p>Revision of HS Work Plan: Attachment 18, WCPFC20 Summary Record</p>	<p>A5.1.4</p>

	<p>'high-level' changes: i) as a contingency allow for a potential one-year delay in the adoption of a MP for SP-albacore, noting potential issues with the operating models, and ii) reschedule the adoption of a MP for bigeye and yellowfin to 2026 to avoid subsequent running of the MP in the same year the stock assessment is conducted.</p> <p>194. SC19 was informed that the Marine Stewardship Council Conformity Assessment Bodies are developing milestones for harvest strategies that will apply to MSC certified fisheries in the WCPO. However, SC19 also noted that the place for this important planning is within the Commission and its subsidiary bodies.</p> <p>195. SC19 noted that the second of these proposed revisions would result in the adoption of the MP for bigeye and yellowfin in the same year that the updated stock assessments are provided to the SC. The presenter noted that the optimal timing of these items can often be difficult, but this proposal would result in a similar process to that undertaken for skipjack and would avoid the longer-term issue of coinciding running the MP with the stock assessment.</p> <p>196. Several CCMs articulated their strong commitment to the successful implementation of the remainder of the Harvest Strategy Work Plan. They also encouraged continued capacity-building initiatives as they greatly assist CCMs, particularly SIDS, to participate fully in this complex process and have the confidence in the harvest strategy development process, and its outcomes when implemented. They suggested that such activities focus on topics such as agreeing to a management objective, the selection of a target reference point, management procedure design and performance indicators.</p> <p>197. SC19 recommended that the Commission take note of the above views when updating the Harvest Strategy Workplan at WCPFC20.</p>		
MI	<p>Implementation of CMM 2021-01 (TTM)</p> <p>203. SC19 recommended that the updates to SC19-MI-WP-08 be forwarded to both TTMW4 and the Commission for their consideration in reviewing the Tropical Tuna Measure.</p>	<p>WCPFC20 adopted CMM 2023-01 Para 52 of the TTM, SC will review the effectiveness of various provisions.</p>	<p>A5.2 SC20-MI-WP-09</p>
Ecosystem and Bycatch Mitigation Theme			
EB	<p>Ecosystem and Climate Indicators</p> <p>204. SC19 noted that the SSP has completed a first screening of a subset of potential indicators for adoption and based on this experience that the criteria identified at SC12 are appropriate for the initial screening of candidate indicators. However, more specific criteria are needed for testing and adoption.</p> <p>205. SC19 recommended adoption of the proposed workplan (in SC19-EB-WP-01) for</p>	<p>217. The Commission noted with appreciation the Ecosystem and Climate Indicator Report Card (Attachment 1 of WCPFC20-2023-12).</p> <p>218. The Commission requested that the Ecosystem and Climate Indicator Report Card be updated and presented annually to the</p>	<p>A6.1.1 SC20-EB-WP-01</p> <p>A6.1.2 SC20-EB-WP-07 SC20-EB-WP-02</p>

	<p>the development and testing of ecosystem and climate indicators for the period 2024-2027.</p>	<p>Commission and its subsidiary bodies.</p> <p>219. The Commission recognised that there is increased importance for the Commission to ensure relevant information and data collection is adequate to support improved and updated understanding by the Commission on the impacts of climate change and implications for management of WCPFC fisheries.</p> <p>220. The Commission tasked SC and TCC to include as part of the standing agenda item on climate change a review of available data to inform the Commission on climate change impacts to stocks and ecosystems in the WCPO, and the potential effects of climate change on related fishing activities.</p> <p>221. The Commission tasked the Secretariat with continuing to provide a brief that summarises updates on international and regional fishery bodies (RFB) developments.</p> <p>222. The Commission requested the Secretariat with the SSP explore the scope and feasibility of undertaking an assessment of active CMMs and to determine specific CMM provisions that may be susceptible to be impacted by climate change, and present the findings to the Science Committee, the Technical and Compliance Committee and the Commission.</p> <p>223. The Commission co-leads are identified to develop a Commission workplan for addressing climate change on WCPFC fisheries in the Convention Area. The co-leads would use the WCPFC Convention and Resolution 2019-01 as guides for that work. The draft workplan would be discussed and considered by each subsidiary body in 2024, with a view to</p>	
--	--	--	--

		<p>taking this to WCPFC21 for consideration. The work plan will include, but not be limited to:</p> <ul style="list-style-type: none">a. the scoping and feasibility study of an assessment of CMMs and their susceptibility to be affected by climate changeb. tasking for the SC to explore:<ul style="list-style-type: none">i. how to capture potential effects of climate change on WCPFC fisheries and fish stocks.ii. mechanisms to test the robustness of existing and candidate management procedures under plausible climate change scenarios within the MSE framework.c. Engagement with other Regional Fisheries Management Organizations and the Food and Agriculture Organization and their members to discuss shared challenges, leverage available resources, and identify potential pathways for cooperation on addressing climate change effect on fisheries. <p>224. The co-leads on Climate Change will initially be one representative from the SIDS and one from the USA. The co-leads (RMI and the USA) seek to ensure the workplan addresses the risks of climate change to CMMs and other obligations, taking into account relevant Scientific Committee recommendations and the results of the scoping exercise regarding the assessment of active CMMs' susceptibility to be impacted by climate change.</p> <p>225. In developing the Commission's Climate Change Work Plan, WCPFC20 requested that the co-leads work with members to incorporate ongoing efforts on climate change impact on fisheries from each of the subsidiary bodies and also provide a framework for coordinating Commission-wide work on climate change.</p>	
--	--	---	--

<p>EB</p>	<p>FAD Impacts</p> <p>207. SC19 recommended that further studies are implemented to quantify the effectiveness and the entanglement frequency of Species of Special Interest (SSI) in the WCPO on dFAD designs, including Low Entanglement Risk dFADs, Non-Entangling dFADs and Biodegradable dFADs.</p> <p>213. SC19 recommended that the FADMO-IWG and TCC review the timelines for the stepwise introduction of biodegradable dFADs considering the expected outcomes of projects related to the design, cost-effectiveness and performance of biodegradable dFADs (e.g., jelly FADs) in the WCPO and other oceans.</p> <p>216. SC19 recommended the FADMO-IWG and TCC consider incentivising the use of biodegradable dFADs.</p> <p>220. SC19 noted that, based on the information available, no vessel monitored more than 350 active buoys per day (the current buoy number limit under CMM 2021-01), with 90% of the vessels monitoring less than 130 buoys per day. It was noted these results were limited to the fleets that have provided tracking information since January 2023 and some differences for at least one fleet have been noted. SC19 recommended that the FADMO-IWG and TCC further discuss the active FAD buoy limit and provide advice to TTMW4 and the Commission on this issue.</p> <p>221. SC19 recommended that options should be developed by the FADMO-IWG and TCC for reporting the number of active buoys per vessel (paragraph 21 of CMM 2021-01); and to develop processes to i) report the number of dFADs and buoys deployed and retrieved per year; ii) report lost and abandoned dFAD; and iii) to eventually abandon and deactivate buoy communication (paragraph 22 of CMM 2021-01).</p> <p>222. SC19 highlighted the need for in-situ data collection to better quantify FAD stranding events and the impacts of FADs on marine and coastal environments; and encouraged the expansion of the in-country stranded FAD data collection programs to other CCMs.</p> <p>223. SC19 highlighted the need to promote FAD retrieval, preferably by the owner of the buoy attached, and eventually through dedicated programs, before FADs are abandoned or lost and ultimately reach coastal areas. SC19 recommended that options for increased FAD detection and retrieval should be considered, including economic aspects and standards required for programs to be effective. SC19 recommended that a FAD recovery program/strategy be an agenda item for the FADMO-IWG.</p> <p>312. TCC19 noted the update from the FAD Management Options IWG on priority tasks for 2023 (WCPFC-TCC19-2023-16).</p>	<p>382. The Commission noted the report and recommendations of the Chair of the FAD Management Options IWG (WCPFC20-2023-FADMOIWG).</p> <p>383. The Commission considered the outcomes of SC19 and TCC19 related to the updates of FAD Management Options IWG tasks in 2023 in developing a revised tropical tuna conservation and management measure.</p> <p>384. The Commission further tasks the FADMO-IWG to consider ways to implement FAD recovery programs/strategies, including economic aspects and standards required for programs to be effective, to be a standing agenda item for the FADMO-IWG in 2024.</p> <p>385. In the development of 2024-2026 FADMO-IWG Workplan, the FADMO-IWG shall incorporate the following:</p> <ul style="list-style-type: none"> a. Provide advice to WCPFC23 on the implementation of stepwise introduction of bio-degradable dFADs; b. Provide advice to WCPFC23 on the effectiveness of the limit on the number of dFADs deployed as set in paragraph [21] of the CMM 2023-01 and; c. To develop a FAD logbook for vessel operators and to review the IWG workplan accordingly to action recent developments <p>551. The Commission tasked the FADMO-IWG to consider requirements for the transmission of satellite buoy data from drifting FADs in 2024 to promote effective and sustainable FAD management in the WCPFC.</p>	<p>A6.2.2 SC20-EB-WP-04 SC20-EB-IP-02</p>
-----------	--	---	---

EB	<p>Sharks</p> <p>225. SC19 recommended that, given the reduction in observer coverage over the COVID years and the amendments made to the shark CMM in 2022, it would be more effective to postpone the review of CMM 2022-04 to 2027, and this is proposed in the Shark Research Plan.</p> <p>227. SC19 agreed to extend the current shark research plan (SRP) to 2030 to encompass two assessment cycles.</p> <p>228. SC19 agreed to the changes in Table 5 of the SC19-EB-WP-06 <i>Shark Research Plan Mid-term Review</i> (reproduced as Table SHK-1 below), as discussed by the Informal Small Group (ISG05), and continuation of the ISG-Sharks at future SC meetings for annual ongoing review and amendment of the SRP. The ISG-05 report is contained in Attachment 4.</p> <p>229. Noting that integrated stock assessments for elasmobranchs are challenging and can sometimes not succeed, SC19 recommended that, to the extent possible, integrated shark assessments projects undertaken within the WCPFC should also include a data-poor component so that advice on stock status can still be provided even if the integrated assessment approach fails.</p>	<p>Review of CMM for sharks</p> <p>715. The Commission endorsed SC19's recommendation that it would be more effective to postpone the review of CMM 2022-04 to 2027.</p> <p>716. The Commission noted a need to support better data collection, particularly for less commonly caught species interactions, and the utility of electronic technologies to complement monitoring and estimation of their interactions.</p> <p>Mid-term Review of 2021-2025 Shark Research Plan (Project 97b)</p> <p>718. The Commission endorsed, to the extent possible, that integrated shark assessments projects should also include a data-poor component so that advice on stock status can still be provided even if the integrated assessment approach fails.</p>	<p>A4.5.1 SC20-SA-WP-04</p> <p>A4.5.2 SC20-SA-WP-11</p> <p>A4.6.6.3 SC20-SA-IP-10</p>
EB	<p>CMM for Sharks</p> <p>CMM 2022-04, Para 28: <i>28. In 2024, and commencing periodically thereafter, the SC shall review the impact of fishing gear on sharks that are not retained, including oceanic whitetip shark and silky shark, inside and outside of the area between 20 N and 20 S, and provide advice on potential mitigation measures that would benefit such shark species.</i></p>		<p>A6.4.1 SC20-EB-WP-05</p>
EB	<p>Seabirds</p> <p>231. SC19 noted that Aotearoa New Zealand was offering to lead a review of CMM 2018-03 "To ensure that effective mitigation methods are required and applied across the Convention Area where there is bycatch risk to vulnerable seabirds from longline fishing" and that its proposed scope would include I) the spatial extent of required mitigation methods, II) the Southern Hemisphere mitigation options and specifications, and III) the</p>	<p>728. The Commission noted that New Zealand will lead informal intersessional meetings with interested CCMs to review the latest scientific evidence on seabird bycatch mitigation and gather views on the review of CMM 2018-03 with an aim to draft a revision of CMM 2018-03 for submission to SC20, TCC20, and</p>	<p>A6.5.2 SC20-EB-WP-06</p>

	Northern Hemisphere mitigation options and specifications. To ensure a meaningful and collaborative review of CMM 2018-03, Aotearoa New Zealand was also offering to establish and lead informal intersessional meetings with interested CCMs to review the latest scientific evidence on seabird bycatch mitigation and gather views on the review of CMM 2018-03. Aotearoa New Zealand would aim to draft a revision of CMM 2018-03 for submission to SC20, TCC20, and WCPFC21. SC19 supported this approach to the review of CMM 2018-03.	WCPFC21.	
EB	<p>Sea turtles</p> <p>232. SC19 suggests development of a best practices and guidelines to minimize the impact of FADs on sea turtles to inform CCMs of potential impacts. Ideally this would include detailed information on Fully Non-entangling FADs and ideas related to a “FAD WATCH” program.</p>		A6.6 SC20-EB-IP-09 SC20-EB-IP-31
General			
GN	<p>SC Work Program and budget</p> <p>241. Based on the outputs of Informal Small Group 6 (ISG06), SC19 recommended the proposed work program and budget for 2024 and indicative budget for 2025 – 2026 together with CCM’s priority scores to the budgeted projects in Table WP-01 (below) to the Commission.</p>		A10.1
GN	<p>Future operation of the SC</p> <p>243. SC19 recommended that the options outlined in the Table to Attachment 7 be further explored by the Secretariat, SC Chair, Vice-Chair and Convenors in order to develop recommendations for improving the structure and functioning of the SC, to be presented to SC20.</p>	831. The Commission did not change the current scheduling of SC20 and TCC20, but requested that the Secretariat, SC Chair, SC Vice-Chair, SC Convenors, TCC Chair, and TCC Vice-Chair further explore and consider options discussed at SC19 and TCC19 and report the intersessional discussions to WCPFC21 for its consideration.	A11.1 SC20-GN-WP-05