



COMMISSION
NINETEENTH REGULAR SESSION
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**CONSERVATION AND MANAGEMENT MEASURE ON A MANAGEMENT
PROCEDURE FOR WCPO SKIPJACK TUNA**

Conservation and Management Measure 2022-01

Interim Skipjack Tuna Management Procedure

Objective

1. The objective of the interim Management Procedure (MP) for skipjack tuna, is to ensure that:
 - a) the spawning potential depletion¹ ratio of skipjack tuna is maintained on average at a level consistent with the target reference point; and
 - b) the spawning potential depletion ratio of skipjack tuna is maintained above the limit reference point with a risk of the limit reference point being breached no greater than 20 percent;

in a manner that achieves the objective of relative stability in fishing levels between management periods and in the longer term.

Reference Points

2. The reference points are:
 - a) Target reference point: Calculated on the basis of two spawning potential depletion values:
 - The first value represents the estimated average depletion of the skipjack tuna stock over the period 2018-2021 ($SB_{2018-2021}/SB_{F=0}$).
 - The second value represents the long-term median equilibrium stock depletion that would be reached under the agreed baseline fishing conditions for skipjack tuna (purse seine effort at 2012 levels, pole and line effort at average 2001-04 levels, and the domestic fisheries in assessment region 5 at average 2016-18 levels).

Both values are expressed as a percentage of the estimated average spawning potential in the absence of fishing ($SB_{F=0}$), calculated as described in paragraph 3. Values are calculated as medians based upon the grid of assessment models as agreed by the WCPFC Scientific Committee.

The target reference point is the average of these two values (weighting of 50/50). -

¹ Spawning potential depletion refers to the estimated 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.

- b) Limit reference point: 20 percent of the estimated recent average spawning potential in the absence of fishing, calculated as described in paragraph 3.
3. The method to be used in calculating spawning potential in the absence of fishing ($SB_{F=0}$) shall be:
- $SB_{F=0, t1-t2}$ 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 skipjack tuna stock assessment, where $t1=y-10$ to $t2=y-1$ where y is the year under consideration; and
 - 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.

Scope of the MP

4. The MP applies to the catch and effort of purse seine and pole and line fisheries, and other commercial fisheries referred to in paragraph 47 of CMM 2021-01 taking more than 2,000 tonnes of tropical tunas (bigeye, yellowfin and skipjack) in the Exclusive Economic Zones and high seas.

Elements of the MP

5. The MP includes:
- The Harvest Control Rule set out in Annex I;
 - The Estimation Model using the settings set out in Annex II;
 - Data Requirements and the Monitoring Strategy set out in Annex III;
 - The procedure for Exceptional Circumstances set out in Annex IV; and
 - The provision for Special Circumstances set out in Annex V.

Roles of the Commission, the Scientific Committee and the Scientific Services Provider

6. The Scientific Committee shall regularly review the performance and outputs of the MP, including the indicators set out in Annex III, and provide advice to the Commission on:
- the performance of the MP as a basis for pre-defined rules that manage skipjack tuna in order to achieve biological, ecological, economic and social objectives, including the robustness of the MP to changes in the fishery and any exceptional circumstances consistent with Annex IV; and
 - the application of the MP outputs to CMM 2021-01: CMM for Bigeye, Yellowfin and Skipjack Tuna in the Western and Central Pacific Ocean or any successor Measure (Tropical tuna CMM).
7. The Scientific Services Provider shall run the MP, perform the full assessment, and support Scientific Committee and Commission consideration of the MP.
8. The Commission shall review the Tropical Tuna CMM in a repeating 3-year schedule as follows:

Year	Scientific Services Provider	Scientific Committee	Commission
2023	-Run the MP (using data to 2022). -Support SC and Commission consideration of the MP.	-Provide advice to the Commission on the MP outputs for the period 2024-2026.	-Review the Tropical Tuna CMM, taking into account the output of the MP. -Revise catch and effort related limits for 2024-2026.
2024		-Data to monitor performance of the MP not available in first year of implementation.	-Apply Tropical Tuna CMM.

Year	Scientific Services Provider	Scientific Committee	Commission
2025	-Perform full stock assessment (y _{last} = 2024).	-Review the performance of the MP, including potential exceptional circumstances, and advise Commission.	-Apply the Tropical Tuna CMM. -Review the performance and use of the MP.
2026	-Run the MP (using data to 2025). -Support SC and Commission consideration of the MP.	-Monitor the performance of the MP using available data to 2025. -Provide advice to Commission on the MP outputs for the next management period (2027-2029).	-Review the Tropical Tuna CMM, taking into account the output of the MP. -Revise catch and effort related provisions for 2027-2029.
2027		-Monitor the performance of the MP using available data to 2026.	Apply the Tropical Tuna CMM.
2028	-Perform full stock assessment (y _{last} = 2027).	-Review the performance of the MP, including potential exceptional circumstances, and advise Commission.	-Apply the Tropical Tuna CMM. -Review the performance and use of the MP.
2029	-Run the MP (using data to 2028). -Support SC and Commission consideration of the MP.	-Monitor the performance of the MP using available data to 2028. -Provide advice to the Commission on catch and effort related provisions for the next management period (2030-2033).	-Review the Tropical Tuna CMM, taking into account the output of the MP. -Review catch and effort related provisions for 2027-2029.

Management Strategy Evaluation

9. The MP has been simulation tested to determine its likely performance against a range of plausible scenarios. These scenarios and the details of the testing procedure are provided in WCPFC-2022-SC18/-MI-WP-03. The results of the evaluations are outlined in WCPFC-SC18-2022/-MI-WP-02 and are available online at: https://ofp-sam.shinyapps.io/PIMPLE_WCPFC19/.

Allocation

10. Allocation is not included in, or affected by, the MP.

Review and Final Provisions

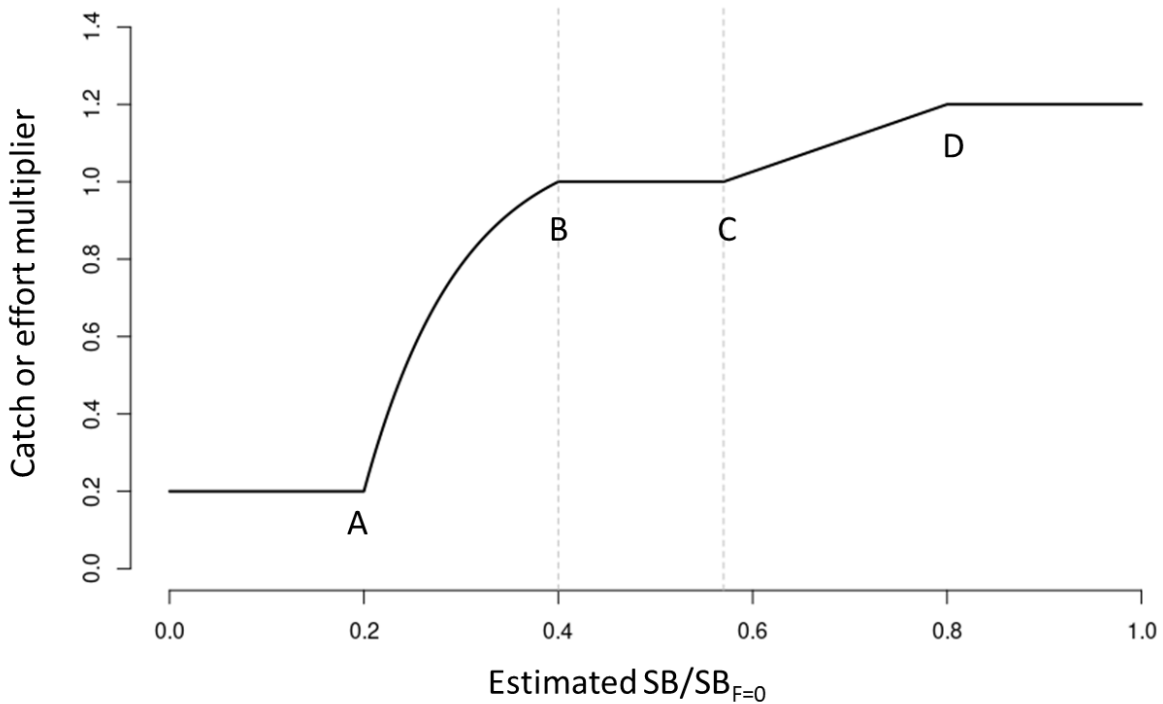
11. The Commission shall review this CMM in 2025 and 2028 to ensure that the various provisions are having the intended effect. The Commission may amend the CMM at any point to fully apply the MP.

12. This measure shall come into effect on 16 February 2023 and shall replace CMM 2015-06 at that time. It shall remain in effect until 15 February 2030 unless replaced or amended by the Commission.

ANNEX I: HARVEST CONTROL RULE

1. The harvest control rule is outlined in Figure 1. Features include:
 - a) The input to the harvest control rule is the estimated spawning potential depletion ratio for the latest estimation year ($SB_{\text{latest}}/SB_{F=0, t1-t2}$), where SB_{latest} is the estimated spawning potential in the last year of data within the estimation model and $SB_{F=0, t1-t2}$ is the same time period as described in 3 a) above;
 - b) The output from the harvest control rule is a scalar (multiplier) that adjusts future catch or effort relative to baseline fishing conditions (purse seine effort at 2012 levels, pole and line effort at average 2001-04 levels, and the domestic fisheries in assessment region 5 at average 2016-18 levels);
 - c) All fisheries are scaled equally. Scalars apply to effort for purse seine and pole and line fisheries, and to catch for all other fisheries; and
 - d) For each 3-year management period, the harvest control rule uses the estimate of stock status ($SB_{\text{latest}}/SB_{F=0, t1-t2}$), as determined by the Estimation Model, to calculate a scalar that adjusts catches or effort up or down relative to the baseline fishing conditions.

Figure 1. Harvest control rule



2. The harvest control rule formulation is provided in WCPFC-SC18-2022/MI-WP-03. The parameters are as follows:

Type = 'asymptotic_Hillary_step_constrained'

	Label	SB/SB _{F=0}	Output multiplier	Value
SB/SB _{F=0} min	A	0.2	0.2	
SB/SB _{F=0} max	D	0.8	1.2	
Step min	B	0.40	1	
Step max	C	0.57	1	
Curve				10
Max change up				1.1
Max change down				0.9

3. The maximum increase or decrease in effort indicated by the HCR between any 3-year management period shall be 10% relative to the catch and effort levels specified by the MP for the previous three years period.

ANNEX II: ESTIMATION MODEL

1. Stock status ($SB/SB_{F=0}$) is estimated within the MP from a MULTIFAN-CL Estimation Model (Annex II) detailed in WCPFC-SC18-2022-MI-WP02 Attachment A. The parameters of the Estimation Model are as follows:

Model Setting		Value
Regional Structure		8 regions
Steepness		0.8
Length comp. wtg.		100
Tag mixing period		1 qtr
VonB growth params	Lmin	25.7051
	Lmax	78.0308
	K	0.212
Hyperstability in CPUE		0

ANNEX III: DATA REQUIREMENTS AND MONITORING STRATEGY

Table 1. Data requirements under the WCPO MP and considerations for the monitoring strategy with respect to the collection, provision, coverage, and quality of data necessary to run the MP. Data prioritisation is considered here with specific regard to the monitoring strategy.

Data requirement	Priority	Monitoring Considerations
MP: estimation model		
Annual catch estimates.	High	Obligatory under WCPFC scientific data submission standards.
Aggregate catch/effort data.	High	Obligatory under WCPFC scientific data submission standards.
Operational catch/effort data.	High	Obligatory under WCPFC scientific data submission standards.
Standardised CPUE indices for important index fisheries (e.g. pole and line fisheries).	High	Continuation of ongoing arrangements.
Species composition data for purse seine catches.	High	Dependent on observer coverage.
Size composition data.	High	Obligatory under WCPFC scientific data submission standards.
Tagging data	High	Dependent on ongoing WCPFC funding.
Monitoring Strategy: stock assessment		
As above for MP.	High	As a minimum, the data listed above will be required to run the stock assessment.
Additional data to inform the stock assessment.	Low	Where available, additional data will be used to improve the stock assessment e.g. growth, maturity, effort creep, population structure and movement.
Monitoring Strategy: performance indicators		
Other data as available to calculate performance indicators – this may include:	The frequency and scope of these data may vary depending on data availability and collection procedures. Performance indicators calculated from them may represent only a subset of the fishery.	
Economic data.	Medium	e.g. voluntarily submitted economic information
Ecosystem data.	Medium	e.g. bycatch and discards (mandatory) information
Social information.	Medium	e.g. industry/employment, household surveys

Table 2. Aspects of the Management Procedure that may be considered for inclusion in the monitoring strategy and the Commission body at which those considerations can be made.

MP Element	Commission Body	Monitoring Considerations
Review the MSE framework		
OM grid.	SC	Ensure that the most important sources of uncertainty are included in the OM grid.
Calculation of performance indicators.	SC	Appropriate representation of objectives by performance indicators.
Modelling assumptions.	SC	Consider the technical details of the simulation and testing framework.
Data availability to support the MSE framework.	SC/TCC	Improvements to data collection to either enhance the OM framework and/or reduce the uncertainty included in the OM grid.
Review performance of the MP		
Comparison of MP performance against latest stock assessment.	SC	Check that the MP is performing as expected.
Data availability to run the MP.	SC/TCC	Check availability, quantity, quality of data necessary to run the MP (e.g. the estimation model).
Other sources of data to monitor performance not included in the MSE framework.	SC/TCC	Identify other data as available to inform calculation of performance indicators (economic, social, ecosystem, etc).
Review of the MP		
Management objectives.	Commission	Check that the overall objectives of the MP are still appropriate.
Exceptional circumstances.	SC/TCC/ Commission	Drawing on all of the above, have events (unexpected, extra-ordinary) occurred such that remedial action is required to either review, modify or replace the MP

Table 3. Performance Indicators Examined

Indicator 1	Maintain SKJ, YFT, BET biomass at or above levels that provide fishery sustainability throughout their range.
Indicator 3	Maximise economic yield from the fishery (average expected catch).
Indicator 4	Maintain acceptable CPUE.
Indicator 6	Catch stability.
Indicator 7	Effort stability: effort variation relative to a reference period.
Indicator 8	Proximity of SB/SB _{F=0} to the average SB/SB _{F=0} in 2018-21.

ANNEX IV: EXCEPTIONAL CIRCUMSTANCES

1. Exceptional circumstances are defined as the occurrence of events that are outside the range of scenarios considered for testing the MP. In the case of such events, it may be necessary to re-evaluate the MP or, in severe cases where there is considered to be a risk to the stock, take remedial action. Exceptional circumstances are not a mechanism for making regular, small adjustments to the MP, but rather should be invoked where, through an agreed process, the operation of the MP has been demonstrated to be highly risky or inappropriate. This Annex provides guidance on the process for determining whether exceptional circumstances exist and the necessary actions but does not provide firm definitions of all possible exceptional circumstances.

Process to determine if exceptional circumstances exist

2. SC to implement and conduct a monitoring strategy and to advise the Commission on the occurrence of exceptional circumstances based on the results of:
 - Routine annual evaluation of potential exceptional circumstances based on information presented to and reviewed by SC; and
 - Detailed evaluation of potential exceptional circumstances every 3 years coincident with the stock assessment.
3. Examples of what might constitute exceptional circumstances include, but are not limited to:
 - Persistent low recruitment outside the range for which the MP was tested;
 - Substantial improvements in knowledge, or new knowledge, concerning the dynamics of the population which would have an appreciable effect on the operating models used to test the MP;
 - Non-availability of important input data resulting in an inability to run the MP;
 - Stock assessment biomass estimates that are substantially outside the range of simulated stock trajectories considered in the MP evaluations, calculated under the reference set of operating models;
 - significant increases in the contribution of fisheries not affected by the MP impacting stock depletion;
 - Failure of reported catches and effort to be within an acceptable range around the levels indicated by the MP; and
 - Persistent or strong negative outcome in indicators in Annex III.

Process for action in the event of exceptional circumstances

4. Having determined that there is evidence for exceptional circumstances, the SC will, in the same year, provide advice to the Commission including, but not limited to:
 - the nature and considered severity of the exceptional circumstances;
 - the necessary action required:
 - where the severity is considered to be high, the recommendation may be for a change to the catch/effort limits; and
 - where the severity is considered to be low, the recommendation may be that the Scientific Committee review the MP earlier than scheduled.

ANNEX V: SPECIAL REQUIREMENTS OF DEVELOPING STATES

1. The application of the MP shall not result in transferring, directly or indirectly, a disproportionate burden of conservation action onto developing States Parties, and territories and possessions.