Western and Central Pacific Fisheries Commission

CONSERVATION AND MANAGEMENT MEASURE ON A MANAGEMENT PROCEDURE FOR SOUTH PACIFIC ALBACORE

Conservation and Management Measure 2025-01

Interim South Pacific albacore Tuna Management Procedure

The Western and Central Pacific Fisheries Commission (WCPFC) adopts, in accordance with Article 10 of the Convention, the following Conservation and Management Measure.

Objective

1. The objective of the interim Management Procedure (MP) for South Pacific albacore, is to ensure that:

a) the spawning potential depletion[1]ratio of South Pacific albacore is maintained on average at a level consistent with the target reference point[2]; and
b) the spawning potential depletion ratio of South Pacific albacore tuna is maintained above the limit reference point with a risk of the limit reference point being breached no greater than 20 percent;

with a view to maintaining the economic performance of dependent fisheries together with reasonable levels of total catch, in a manner that achieves relative stability in fishing levels between management periods.

Reference Points

2. The target reference point for South Pacific albacore is specified as four percent below the estimated average spawning potential depletion of the stock over the period 2017-2019 ($0.96\ SB_{2017\text{-}2019}/SB_{F=0}$).[3] This supersedes an earlier decision of the Commission made by WCPFC20 (WCPFC21 Outcomes, paragraphs 29 to 32).

Scope and design of the MP

3. The MP applies to longline and troll fisheries taking albacore tuna within the WCPFC convention area Exclusive Economic Zones and high seas south of the latitude of 10 degrees South, but excluding the exclusive economic zones of Tokelau and Tuvalu. The MP (and this CMM) determines the total annual albacore catch to be taken within this region while a separate South Pacific Albacore Management Arrangements CMM will set out the implementation and management arrangements for achieving this.

[1] The limit reference point is specified as 20 percent of the estimated spawning potential in the absence of fishing, calculated as described in technical definitions within paragraph 2.
[2] With a 50% probability of being above the target reference point.

Elements of the MP

4. The MP includes:
   a) The Harvest Control Rule set out in Annex I;
   b) The Estimation Method using the settings set out in Annex II;
   c) Data Requirements and the Monitoring Strategy set out in Annex III;
   d) The procedure for Exceptional Circumstances set out in Annex IV.

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

5. 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:
   a) the performance of the MP as a basis for pre-defined rules that manage South Pacific albacore 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
   b) the application of the MP output to the relevant management implementing arrangements.

6. The Scientific Services Provider shall run the MP, perform the stock assessment, and support the Scientific Committee and Commission consideration of the MP.

[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 can be estimated for each model time step.
The method to be used in calculating spawning potential in the absence of fishing ($SB_{F=0}$) shall be:

a. $SB_{F=0}$, 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 South Pacific albacore stock assessment, where t1=y-10 to t2=y-1 where y is the year under consideration; and
b. The estimation of unfished spawning potential shall be based on the relevant estimates of recruitment that have been adjusted to reflect conditions without fishing according to the stock recruitment relationship.

7. The Commission shall review the South Pacific Albacore Management Arrangements in a repeating 3-year schedule as follows:

Year	Scientific Services Provider	Scientific Committee	Commission
2025	- Support SC and Commission consideration of the MP.	- Provide advice to the Commission on Candidate MPs.	- Develop the SPA Management Arrangements CMM, taking into account the nature of the MP.
2026	- Run the MP (using data to 2024) for application to the period 2027-2029.	Provide advice to the Commission on the MP outputs for the period 2027- 2029.	- Apply the output of the MP to the SPA Management Arrangements CMM for 2027-2029.
2027	- Perform full stock assessment (y_{last} = 2025).	- Monitor and review the performance of the MP, including potential exceptional circumstances, and advise Commission.	- Apply the SPA Management Arrangements CMM. - Consider SC advice on the performance of the MP.
2028		- Monitor performance of the MP.	- Apply the SPA Management Arrangements CMM.
2029	-Run the MP (using data to 2027).	-Monitor the performance of the MP. -Provide advice to Commission on the MP outputs for the next management period (2030-2032).	- Apply the output of the MP to the SPA Management Arrangements CMM for 2030-2032.
2030	- Perform full stock assessment (y_{last} = 2028).	- Monitor and review the performance of the MP, including potential exceptional circumstances, and advise Commission.	- Apply the SPA Management Arrangements CMM.
2031		- Monitor performance of the MP.	- Apply the SPA Management Arrangements CMM. - Consider SC advice on the performance of the MP.
2032	- Run the MP (using data to 2030).	- Monitor the performance of the MP. - Provide advice to Commission on the MP outputs for the next management period (2033-2035).	- Apply the output of the MP to the SPA Management Arrangements CMM for 2033-2035.
Etc. in a repeating 3-year cycle			

Management Strategy Evaluation

8. 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-SC20/MI-WP04. The results of the evaluations are outlined in WCPFC22-2025-21 and are available online at: https://ofp-sam.shinyapps.io/SPAMPLE/ .

Allocation

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

Review and Final Provisions

10. The Commission shall review this CMM in 2029 and 2032 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.

11. This measure shall come into effect on 16 February 2026 and shall remain in effect until 15 February 2033 unless replaced or amended by the Commission.

ANNEX I: HARVEST CONTROL RULE

1. The Specification of this HCR follows HCR 7 in WCPFC22-2025-21. It has the following baseline assumptions:
   a) Area: south of 10°S in the WCPFC-CA excluding the EEZs of Tokelau and Tuvalu (Figure 1)
   b) Applicable fisheries: longline and troll
   c) EPO (excluding overlap area) catch: 18,000 mt per annum
   d) Equator to 10°S catch: 9,667 mt per annum including slivers of the EEZs of Tokelau and Tuvalu that are south of 10°S

2. The harvest control rule is outlined in Figure 2 with parameters provided in Table 1. Features include:
   a) The input to the harvest control rule derives from the Estimation Method (Annex 2).
   b) For each 3-year management period, the harvest control rule uses the estimate of stock status as determined by the Estimation Method, to calculate a scalar that adjusts catches up or down relative to the baseline fishing conditions, subject to the +10% -5% constraint on maximum allowable change between management periods.
   c) The output from the harvest control rule is an annual, overall, unallocated annual Total Allowable Catch.

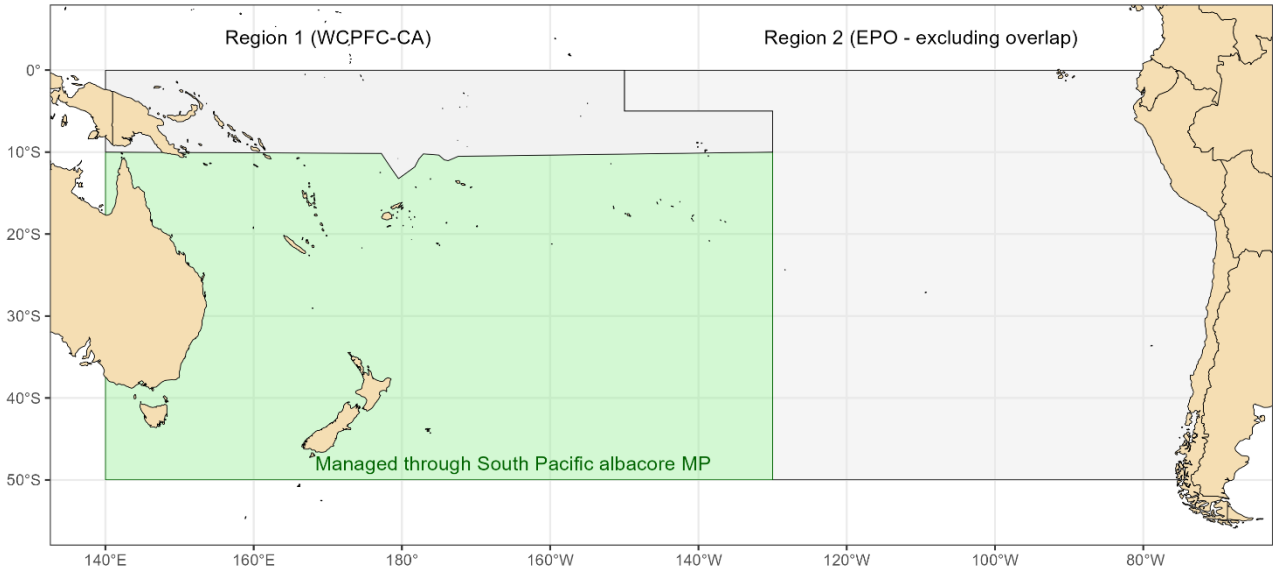

Figure 1: Area of application of the South Pacific albacore MP (in green).

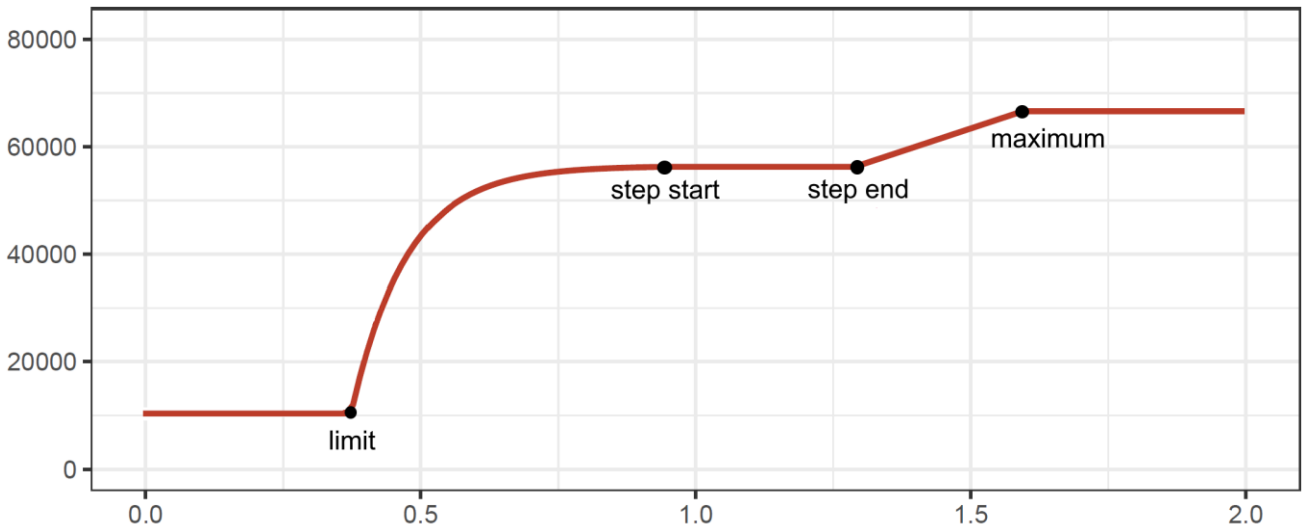

Figure 2. Harvest control rule.

Table 1. Harvest control rule parameters (see also WCPFC22-2025-21). Type = 'Asymptotic Hillary step'.

HCR 7	Parameter	Limit	Step start	Step end	Maximum
	Relative $SB/SB_{F=0}$	0.37	0.94	1.29	1.59
	HCR output	0.2	1.09	1.09	1.29
	Catch output (mt)	10,293	56,096	56,096	66,389

3. The maximum change in catch indicated by the HCR between any 3-year management period shall be a decrease of 5% and an increase of 10% relative to the catch levels specified by the MP for the previous three year period. For the first running of the MP, the maximum change in catch shall not exceed either a decrease of 5% or an increase of 10% relative to the last year of available catch data (i.e. 2023).

ANNEX II: ESTIMATION METHOD

1. Stock status is estimated within the MP using an Age-Structured Production Model implemented in MULTIFAN-CL.

2. The estimation method employs similar fishery definitions and model structure to that of the 2024 stock assessment, except that the troll fishery CPUE index is omitted from the estimation method (see Table 2).

3. The value of stock status returned from the estimation method is a relative measure, calculated as the mean depletion ($SB_y/SB_{F=0}$) in the last 3 years relative to the mean depletion for the period 2017-2019 ($SB_{2017\text{-}2019}/SB_{F=0}$). All quantities are calculated by the Estimation Method model. The calculation for $SB/SB_{F=0}$ is generally as described in Paragraph 2.

Table 2. Settings for the estimation method

Model Setting	Value
Regional structure	2 regions
Number of fisheries	19
Longline	13
Troll / Driftnet	4
Index	2 (longline only)
Steepness	0.8
Natural mortality	Lorenzen, M12 = 0.36
Growth	Fixed
ML1	45.538
ML2	100.115
K	0.3932
Movement rates	Fixed (2024 assessment)
Selection patterns	Fixed (2024 assessment)
Average recruitment	Last 2 years
Recruitment distribution	0.819, 0.181

Table 3: Model settings and post-processing steps used in the CPUE standardisation for South Pacific albacore estimation method. Two index fisheries are generated derived from; a global model used for fishery 20 (EPO) and a northern model used for fishery 18.

Model Setting	Description
Model Type	A spatiotemporal delta-gamma generalized linear mixed model (delta-GLMM), implemented in two model configurations: a global model and a north model.
Data Filtering	Global indices generated from data across entire assessment area North model generated from data for the WCPO between 5°S and 30°S
Spatial Knot Configuration	A mesh with 157 spatial knots for the global model and 85 knots for the northern model.
Model Equations	$$y_i \sim \text{Bernoulli}(p_i)$$ $$\log\left(\frac{p_i}{1-p_i}\right) = \text{Year}_i + s(\text{month}_i) + \omega_1(s_i) + \phi_1(s_i, t_i) + s(\text{HBF}_i) + \text{Flag}_i + \varepsilon_1$$ $$c_i \sim \Gamma(\log\mu_i, \sigma^{-2}, \eta_i\sigma^2)$$ $$\log\eta_i = \text{Year}_i + s(\text{month}_i) + \omega_2(s_i) + \phi_2(s_i, t_i) + s(\text{HBF}_i) + \text{Flag}_i + \varepsilon_2$$ where σ is the coefficient of variation for positive catch rate measurement errors, y is the encounter probability, c is the CPUE, and i indexes individual records. $Year$ is the year effect; $s(month)$ is a spline function for month effect; ω is the spatial random effect at location x; ϕ is the spatiotemporal random effect at location x and time t; $s(HBF)$ is a spline function for hook-based fishing effort; and $Flag$ is the additive effect of the flag group. The spatial variation terms $\omega_2(x_i)$ are modeled as a Gaussian random field with a Matérn covariance function to account for spatial autocorrelation.
HBF Imputation	Missing HBF values are predicted using a random forest approach (Breiman 2001) implemented via the `randomForest` R package (Liaw and Wiener 2002). The model uses predictors including year, month, latitude, longitude, number of hooks fished, vessel flag, the proportional catch of the four main species (albacore, yellowfin, bigeye, swordfish), and total catch value, with 500 trees.
Implementation Platform	`sdmTMB` version 0.3.0 (R package).
Normalisation Method	CPUE values are mean-centered using absolute values.
Penalty Term Calculation	Penalty terms are applied as the coefficient of variation (CV) for the catch-conditioned model.

ANNEX III: DATA REQUIREMENTS AND MONITORING STRATEGY

Table 4. 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 and generate performance indicators.

Data requirement	Monitoring Considerations
MP: estimation model	
Annual catch estimates.	Obligatory under WCPFC scientific data submission standards.
Aggregate catch/effort data.	Obligatory under WCPFC scientific data submission standards.
Longline operational catch/effort data.	Obligatory under WCPFC scientific data submission standards.
Standardised CPUE indices for longline fisheries	Continuation of ongoing arrangements.
Monitoring Strategy: performance indicators	
Catch and effort data as above	Calculation of performance indicators listed in table 6 for comparison with MSE outputs.
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.

Table 5. Aspects to 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 sets.	SC	Ensure that the most important sources of uncertainty are included in the OM sets.
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 OM sets	SC	Improvements to data collection to either enhance the OM sets and/or better represent uncertainty in the OM sets.
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	Check availability, quantity, quality of data necessary to run the MP (e.g. the estimation model, see table 3).
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	In accordance with para 8, periodically check that the overall objectives of the MP remain appropriate.
Consider Exceptional Circumstances		
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 6. Performance Indicators Examined within the Management Strategy Evaluation

Indicator 1	Stock status ($SB/SB_{F=0}$)
Indicator 2	Probability $SB/SB_{F=0}$ < LRP
Indicator 3	Expected albacore catch in the WCPFC convention area, south of 10°S
Indicator 4	Expected albacore catch of fisheries managed through the MP
Indicator 5	Expected vulnerable biomass (VB - a proxy for catch rates) in the WCPFC convention area, south of 10°S, relative to the level in 2020-2022.
Indicator 6	Albacore catch variability (annual absolute change in catch in the WCPFC convention area, south of 10°S)
Indicator 7	Effort variability (of longline fisheries in the WCPFC convention area, south of 10°S)

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, beyond the levels assumed in the development and testing of the MP, that substantially impact MP performance against the Objective;
   - Failure of reported catch and effort to be within an acceptable range around the levels indicated by the MP; and
   - Persistent or strong negative outcome in indicators calculated under the monitoring strategy.

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.