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WCPFC SOUTH PACIFIC ALBACORE MONITORING STRATEGY

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Executive Summary

The South Pacific albacore (SPA) Management Procedure (MP) was adopted under CMM 2025-01. A monitoring strategy is required to ensure that the MP is routinely monitored and continues to perform as intended. Under the harvest strategy workplan (WCPFC22, attachment 24) WCPFC-SC22 is scheduled to provide advice on the monitoring strategy for the SPA MP.

This paper presents a proposed monitoring strategy for the SPA MP for consideration by the SC. The proposed monitoring strategy closely follows the framework adopted for the WCPO skipjack MP and outlines the minimum requirements for the routine monitoring and review of the SPA MP. It addresses three key components: MP performance, MP design, and management strategy evaluation (MSE). The paper also outlines the roles of the SC, TCC and the Commission in implementing and reviewing the monitoring strategy, together with the key data and information required to support routine monitoring.

As the implementation arrangements for the SPA MP have yet to be finalised, the monitoring strategy presented in this paper provides an initial framework for consideration by the Scientific Committee and may be refined at future meetings as implementation arrangements are agreed and additional information becomes available.

SC22 is invited to review the proposed monitoring strategy outlined here and to provide any further guidance or information as appropriate. In particular, the Scientific Committee may wish to consider:

- the contents and format of the proposed SPA MP monitoring strategy as outlined in Tables 1, 2 and 3, which follows the design of the adopted monitoring strategy for the WCPO skipjack MP;
- directions for strengthening data inputs to the estimation method;
- advancing integration of climate-related uncertainties, and
- provisions for accessing and utilising existing economic indicators and assess whether enhanced economic information is required to support the monitoring strategy.

1 Introduction

The South Pacific albacore (SPA) management procedure (MP) was formally adopted at WCPFC22 (CMM 2025-01, [WCPFC \(2025\)](#)). The MP applies to longline and troll fisheries operating south of 10°S, excluding the EEZs of Tokelau and Tuvalu, with an overall objective to maintain the stock around the target reference point (TRP) while minimizing the variability in catch and effort between management periods.

Although the MP has been formally adopted, implementing arrangements for the MP have yet to be agreed. Under the harvest strategy timetable (WCPFC22, attachment 24) the Scientific Committee (SC22) is scheduled to provide advice on the monitoring strategy in 2026, and the Commission is scheduled to adopt both the implementing arrangements for the MP and the monitoring strategy.

This monitoring strategy outlines the minimum requirements for the SC, TCC and Commission to adequately monitor the SPA fishery within the Western Central Pacific Fisheries Commission Convention Area (WCPFC-CA) in line with the mixed-fishery harvest strategy framework. The key role of the monitoring strategy is to ensure that the adopted MP for SPA is routinely monitored and that it is performing as expected with desired outcomes. All aspects of the harvest strategy approach should be considered in the monitoring strategy framework, including the management objectives (e.g. TRPs), procedures used for designing and evaluating candidate MPs, and the scenarios against which they are tested through the Operating Model (OM) grid. The monitoring strategy identifies where conditions may have changed from the assumptions made when developing and running the MP. It also highlights key areas where the current MP may require adjustments and where further work needs to be undertaken. The intention of the monitoring report is for routine review and update of the MP by the relevant Commission bodies, in particular the Scientific Committee (SC) and Technical Compliance Committee (TCC), allowing for iterative refinement and development as new information becomes available.

The proposed SPA MP monitoring strategy (as outlined in Tables 1, 2 and 3 below) closely follows that of the adopted monitoring strategy for the WCPO skipjack MP (SC22-MI-WP-09). Further information on the design of the monitoring strategy and its components is provided in [Scott et al. \(2023\)](#).

We note that the implementation of the SPA management procedure has yet to be agreed by WCPFC and that aspects of the implementing arrangement will influence the design of the monitoring strategy. The monitoring strategy outlined here is based on assumptions about what the implementation could be, but may be subject to change once the implementing arrangement is finalised.

2 Management Procedure Performance

The first component of the monitoring strategy relates to the performance of the management procedure. This includes the evaluation of key stock status metrics, the implementation of, and compliance with, the MP output, considerations of data availability, inclusion of on-going project results such as Close-Kin Mark Recapture (CKMR) and other new information, and suitable diagnostics of the estimation method.

2.1 Evaluation of predicted performance indicators

The management procedure was adopted based on the outcomes of seven performance indicators that relate to key management objectives (see Table 6 of CMM 2025-01 ([WCPFC, 2025](#))). Performance indicators should be calculated and evaluated from the actual stock and fishery as part of the monitoring strategy.

2.1.1 Catch and effort of fisheries under the control of the MP

To support monitoring of the MP, catch- and effort-based performance indicators for the longline and troll fisheries operating south of 10°S, excluding the EEZs of Tokelau and Tuvalu will be required. These performance indicators can be calculated for inclusion in reports routinely prepared for SC and TCC (e.g. [McKechnie et al. \(2026\)](#)) from which comparison of the predicted values from the management strategy evaluation (MSE) to observed catch, effort, catch variability and effort variability can be made.

2.1.2 Catch and effort implementing measure

Implementation and compliance represent an important component of the monitoring strategy not only because it provides the confirmation and reassurance that the MP has been implemented as intended, but also so that, in instances where the measures of the MP have not been followed, the reasons for non-compliance can be investigated and appropriate action taken. The TCC may consider aspects related to implementation and compliance of the catch prescribed by the MP output and implementing arrangement.

Additionally, if the implementation plan differs from conditions assumed when testing the MP (e.g. if implementation is in terms of effort, the reconciliation of under- and over-harvests, transferability of quota), the TCC may review the impacts of the arrangements to ensure catch levels do not deviate from the tested range during MP evaluations and that the selected MP still meets management objectives.

2.1.3 Stock status

Stock assessments are typically conducted on a rolling 3-year schedule according to the timetable outlined in CMM 2025-01 ([WCPFC, 2025](#)). The stock assessment is the main tool for addressing the

performance indicators relating to stock status. The stock assessments will produce an estimate or a range of estimates of $SB/SB_{F=0}$ and vulnerable biomass which will be examined for consistency with the predicted performance of the stock under the MSE testing scenarios, and the proximity of the estimated $SB/SB_{F=0}$ to the target reference point.

The most recent SPA stock assessment was conducted in 2024 (Teeb et al., 2024). An updated stock assessment of SPA is scheduled for 2027, including data up to 2025. Therefore, the first implementation of the management procedure will not yet be reflected in the results of the 2027 assessment and hence will not provide an indication of MP performance.

2.2 Data availability to run the MP

Two key sources of Pacific-wide fishery data used within the South Pacific albacore MP are the aggregate catch data, and the operational data. The aggregate catch data are used to determine fishery specific total removals, whilst the finer resolution operational data are used to generate region specific indices of abundance. With specific reference to the ‘rest of the EPO region’ component of these data sets:

- aggregate catch data are available through the IATTC,
- operational data used within the estimation method are provided to SPC by CCMs.

The coverage of aggregate catch data from IATTC is assumed to be complete, however, we note that there may be lags in the availability of these data through the IATTC website. The IATTC-WCPFC joint Working Group on South Pacific albacore may wish to consider mechanisms for more frequent exchange of these data.

The coverage of operational data available for the rest of the EPO has been identified as a key consideration for the monitoring strategy. During MP testing, the estimation method utilised the information for the ‘rest of the EPO’ area that was consistent with that used within the 2024 South Pacific albacore stock assessment. Implementation of the MP is consistent with its testing, and hence the performance is as expected.

Analyses show that the coverage of operational data available within the time series of the Chinese longline fleet has declined in recent years. Historically, China provided operational data to the SSP under an SSP/China-specific MOU (as developed for other specific CCMs) for the secure provision of historical operational data for specific assessment purposes. However, once China had begun providing historical operational data for the WCPFC Convention Area consistent with WCPFC scientific data requirements, provision of Pacific-wide data declined.

Separately, the SSP has entered a specific MOU with China to receive operational data for the region outside the WCPFC-CA. These data currently represent the majority of the SPA catch in the EPO and will be important for the further development of South Pacific-wide model scenarios. Ongoing monitoring of reported catches by flag/gear from the IATTC will be required to identify whether

additional fisheries develop in this region, and whether additional data submission arrangements will need to be put in place.

2.3 Additional data to inform MP performance

Alongside harvest strategy and stock assessment work, numerous scientific projects provide information to support the monitoring strategy. Ongoing analyses, such as CKMR, may inform stock status and the ecological impact of the fishery. The results of these studies may be reviewed and incorporated into the monitoring strategy as and when appropriate.

In addition, economic analyses may provide insight into the economic viability of the fishery and socio-economic consequences of the adopted MP. This is pertinent, since a key overarching objective of the adopted MP is to maintain the economic performance of dependent fisheries ([WCPFC, 2025](#))

We note that a summary of economic conditions for fisheries in the WCPFC-CA is provided in the overview of WCPO fisheries that is routinely submitted to the SC ([Vidal and Ruia, 2025](#)). The summary includes an index of economic conditions for the southern longline fishery determined from information on fishing costs (fuel prices), CPUE and average market prices. The index has been at or below the long-term average since 2021 although estimates for the COVID-affected years are considered uncertain.

The submission of economic data to the Commission is not part of the Scientific Data requirements. SC15-ST-WP-05 provided guidelines for the Voluntary submission of economic data by CCMs to the Commission ([MoF and FFA, 2019](#)). WCPFC16 considered that it was important to consider economic indicators as performance indicators (PIs) and encouraged CCMs to assist the Scientific Services Provider by providing economic and other data to assist in the development of PIs (WCPFC16 summary report, para 181; [WCPFC \(2019\)](#)). However, to date, no data have been received under this initiative. SC22 may wish to discuss the importance of this issue for the monitoring strategy.

2.4 Performance of the estimation method

Each time the management procedure is run, the SC should review the performance of the estimation method. The estimation method is a fixed algorithm that produces the stock status metric for the harvest control rule. Diagnostics should identify model failure and critical issues if they arise. Any changes to the estimation method should be reviewed through the monitoring strategy and will require re-testing through the MSE framework.

3 Management Procedure Design

The second component of the monitoring strategy is to assess the suitability of the management procedure design in terms of the management objectives, spatial scope, and the definition of ex-

exceptional circumstances.

3.1 Management objectives

The management objectives of the SPA fishery form the basis of the harvest strategy. The management objectives are quantified by the performance indicators. As part of the monitoring strategy, the Commission should review the management objectives and their associated performance indicators to ensure that the overall objectives of the MP remain appropriate.

3.2 Scope of the management procedure

This component of the monitoring strategy considers whether the fisheries under the control of the MP remain appropriate. Any change to the spatial scope of the MP or the fisheries subject to control by it will require re-testing of the MP through the MSE framework.

3.3 Exceptional circumstances

The definition of exceptional circumstances can be found in Annex IV of the SPA CMM ([WCPFC, 2025](#)). This Annex contains the general definition of exceptional circumstances, the process to determine if exceptional circumstances exist and actions that may be taken in the event that exceptional circumstances are identified. Full consideration of exceptional circumstances may be undertaken pending agreement on the implementing arrangement.

4 Management Strategy Evaluation

The third component of the monitoring strategy considers the technical MSE framework. The SC may periodically review and provide feedback on the suitability of the operating model grid, the calculation of the performance indicators, necessary modeling assumptions and data availability. Consideration of these issues may be aligned with the stock assessment.

4.1 Operating model grid

Ongoing analyses into the biology of the stock and dynamics of the fishery may inform the suitability of the operating model grid. The development of climate change scenarios for inclusion in the OM grid has been highlighted as a future requirement for the WCPO skipjack MP and might also be considered important for the SPA MP. The development of such scenarios may be informed by ongoing work to improve biological and fishery inputs ([Wakefield et al., 2026](#); [Pilling et al., 2026](#)) and work to further develop SEAPODYM applications to Pacific tuna species ([Senina et al., 2026](#)).

4.2 Calculation of performance indicators

As appropriate, the SC may review methods for the calculation of performance indicators. Managers may consider whether the performance indicators defined in Table 6 of CMM 2025-01 continue to

adequately reflect management objectives.

4.3 Modelling assumptions

The adopted MP (CMM 2025-01) is based on the following assumptions for the future catch of SPA in areas outside the control of the MP and for the interim years prior to MP implementation:

- 18,000 mt of SPA caught in the EPO (excluding the overlap area) per annum,
- 9,667 mt of SPA caught between the equator and 10°S, including the slivers of the EEZs of Tokelau and Tuvalu that are south of 10°S (TLL), per annum,
- 57,020 mt of SPA per annum on average during the transient period (2022-2025) for troll and longline fisheries operating south of 10°S, excluding the slivers of Tokelau and Tuvalu.

Catches of SPA in the EPO and TLL should be monitored through time to determine whether they deviate significantly from the levels assumed during the development and testing of the MP. Testing of the MP included a number of sensitivity analyses ([Scott et al., 2025](#)) to test the impact of alternative catches in these areas on MP performance. These sensitivity analyses can inform consideration of the extent of acceptable deviation from assumed levels.

In addition to the EPO and TLL assumptions, the level of catch in archipelagic waters should also be monitored. Fisheries operating in archipelagic waters are not subject to control by the MP. However, the proportion of SPA catch taken in archipelagic waters in the WCPFC-CA is currently very low (less than 1% of the total SPA WCPFC-CA catch). The monitoring strategy should evaluate the assumed proportion of catch in archipelagic waters and determine if the impact of these fisheries is of concern and the potential implications for the MP.

4.4 Data availability to support the MSE framework

The Scientific Committee should identify any improvements in data collection required to support the MSE framework. This may include but is not limited to:

- data to enhance the OM framework, such as reducing or increasing uncertainty in the OM grid,
- data to calculate performance indicators, or
- data to inform assumptions about fisheries outside of MP control, such as EPO catch and effort.

Alongside data availability, the MSE framework relies on software such as Multifan-CL, Docker and sdmTMB which must continue to be available and maintained in order for the MP to be run.

5 Monitoring Schedule

The monitoring schedule, as set out in CMM 2025-01, follows a 3-year repeating cycle (Table 4). Many elements of the monitoring report depend either on the outputs of an updated stock assessment or on the running and implementation of the MP itself. The MP is scheduled to be first implemented in 2026. An updated stock assessment of SPA will be conducted in 2027 and, subject to review by SC23, may be considered for the monitoring strategy, although as noted above, data for years under MP control will not be included in that assessment.

Some aspects of the monitoring report can be updated on a more frequent basis, such as annual estimates of catch and effort and corresponding inter-annual variations in catch and effort. In some cases these data may be available within-year, however, due to time lags in the reporting and processing of data, some delay in the reporting of these figures is likely without wider adoption of electronic reporting.

6 Recommendations

It is difficult to make specific recommendations for the development of the South Pacific albacore MP monitoring strategy at this stage given that several aspects of the implementing arrangement have yet to be agreed.

SC22 is invited to review the proposed monitoring strategy outlined here and to provide any further guidance or information as appropriate. In particular, the Scientific Committee may wish to consider:

- the contents and format of the proposed SPA MP monitoring strategy as outlined in Tables 1, 2 and 3, which follows the design of the adopted monitoring strategy for the WCPO skipjack MP;
- directions for strengthening data inputs to the estimation method;
- advancing integration of climate-related uncertainties, and
- provisions for accessing and utilising existing economic indicators and assess whether enhanced economic information is required to support the monitoring strategy.

1. Review of MP Performance		
Scientific Committee	Technical and Compliance Committee	Commission
a. Evaluation of predicted performance indicators		
Regularly review/check the performance and outputs of the MP, including the indicators set out in Table 6 of CMM 2025-01 and provide advice to the Commission on: a) The performance of the MP in managing South Pacific albacore to achieve defined objectives including relative to the TRP. b) The robustness of the MP to changes in the fishery and any exceptional circumstances consistent with Annex IV of CMM 2025-01, b) The application of the MP outputs to CMM 2025-01.	Regularly review/check the performance and outputs of the MP, including the indicators set out in Table 6 of CMM 2025-01 and provide advice to the Commission on: a) Catch and effort levels for all fisheries subject to the MP relative to maximum levels specified under the most recent output of the MP. b) Allocation of catch and effort through the implementing measure. c) Identify quality of information and gaps in available data that would affect ability to monitor the implementation of the MP relative to the MP outputs.	No input anticipated.
b. Data availability to run the MP		
Check availability, quantity and quality of data necessary to run the MP (e.g. the estimation method).	Identify quality of information and gaps in available data that would affect ability to monitor the implementation of the MP relative to the MP outputs.	No input anticipated.
c. Additional data to inform MP performance		
Identify any other data, as available, that might not be included in the MSE framework, that can inform on performance indicators (economic, social, ecosystem, etc.).	Identify any other data, as available, that might not be included in the MSE framework, that can inform on performance indicators (economic, social, ecosystem, etc.).	No input anticipated.
d. Performance of the estimation method		
Confirm the EM is performing well and not subject to estimation failure.	No input anticipated.	No input anticipated.

Table 1: Table of responsibilities (review of MP performance)

2. Review of MP Design		
Scientific Committee	Technical and Compliance Committee	Commission
a. Management objectives		
No input anticipated.	No input anticipated.	Review CMM 2025-01, taking account of the outputs of the SPA MP. Check that overall objectives of the MP remain appropriate. Revise catch and effort limits as necessary.
b. Scope of the MP		
Confirm the fisheries controlled by the MP, and the method of control, remains appropriate.	Confirm the fisheries controlled by the MP, and the method of control, remains appropriate.	Confirm the fisheries controlled by the MP, and the method of control, remains appropriate.
c. Exceptional circumstances		
Provide technical advice to identify the occurrence of exceptional circumstances (see CMM 2025-01 Annex IV (WCPFC, 2025)) and review, modify or replace the MP as appropriate.	Provide technical advice to identify the occurrence of exceptional circumstances (see CMM 2025-01 Annex IV (WCPFC, 2025)) and review, modify or replace the MP as appropriate.	Identify the occurrence of exceptional circumstances (see CMM 2025-01 Annex IV (WCPFC, 2025)) and review, modify, or replace the MP as appropriate.

Table 2: Table of responsibilities (review of MP design)

3. Review of MSE		
Scientific Committee	Technical and Compliance Committee	Commission
a. Operating model grid		
Ensure the most important sources of uncertainty are included in the OM grid.	No input anticipated.	No input anticipated.
b. Calculation of performance indicators		
Check that performance indicators adequately represent management objectives.	No input anticipated.	No input anticipated.
c. Modelling assumptions		
Consider the technical details of the simulation and testing framework. Review the catches in regions outside MP control relative to the levels assumed during MP testing.	Review the catches in regions outside MP control relative to the levels assumed during MP testing.	No input anticipated.
d. Data availability to support MSE framework		
Identify any improvements in data collection to either enhance the OM framework or reduce uncertainty included in the OM grid.	No input anticipated.	No input anticipated.

Table 3: Table of responsibilities (review of MSE)

Year	Scientific Services Provider	Scientific Committee	Commission
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.	Monitor performance of the MP.	Apply the SPA Management Arrangements CMM.
2029	Run the MP (using data to 2027) for application to the period 2030-2032.	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. Consider SC advice on the performance of the MP.
2031	Monitor performance of the MP.	Monitor performance of the MP.	Apply the SPA Management Arrangements CMM.
2032	Run the MP (using data to 2030) for application to the period 2033-2035.	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			

Table 4: Schedule for the implementation and review of the SPA MP (CMM 2025-01)

7 References

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