



Overview of the outcomes of SWG MSE PS07

Co-chairs: Derek Mahoney (Canada) and Toshihide Kitakado (Japan)

Short-Term Objectives: within one to two years (completed in April 2024) :

- a) **develop draft interim management objectives** and a **draft interim harvest control rule (HCR)** that meets such objectives to report to the Commission (preferably before the 8th Commission annual meeting); and
- b) **evaluate the robustness of the draft interim harvest control rule** with consideration of possible uncertainties including effects of **climate changes**.

Mid-Term Objectives: within three to five years (to be completed in April 2028):

- a) **develop draft mid- to long-term management objectives** by setting the **target and limit reference points** for the population status as well as by defining “overfishing” and “overfished” for the sustainable use of the Pacific saury stock;
- b) assess the feasibility of **establishing a management procedure through an MSE**

[39 participants] (NPFC-2026-SWG MSE PS 07 – Final Report)

Item 1. Introductory items

- 1.1 Opening of the meeting
- 1.2 Adoption of agenda
- 1.3 Meeting logistics

Item 2. Overview of the outcomes of previous NPFC meetings

- 2.1 SWG MSE PS06
- 2.2 COM09
- 2.3 SSC PS15 and 16

Item 3. Review of the adopted HCR and its results

- 3.1 TAC for 2025
- 3.2 HCR-generated catch level for 2026
- 3.3 Review of the adopted HCR

Item 4. Discussion toward development of management procedures (MPs) as a mid-term goal

- 4.1 Management objectives
- 4.2 Operating models
- 4.3 Management procedures
- 4.4 Performance indicators

Item 5. Other matters

Item 6. Timeline and future process

- 6.1 Timeline
- 6.2 Future process with assistance of SSC PS
- 6.3 Workplan till SSC PS17&18 and SWG MSE PS08 meetings

Item 7. Recommendations to the Commission

Item 8. Adoption of report

Item 9. Close of the meeting

ITEM 2. REVIEW OF THE ADOPTED HCR AND ITS RESULTS

2.1 SWG MSE PS06

2.2 COM09

2.3 SSC PS15 AND 16

ITEM 3. REVIEW OF THE ADOPTED HCR AND ITS RESULTS

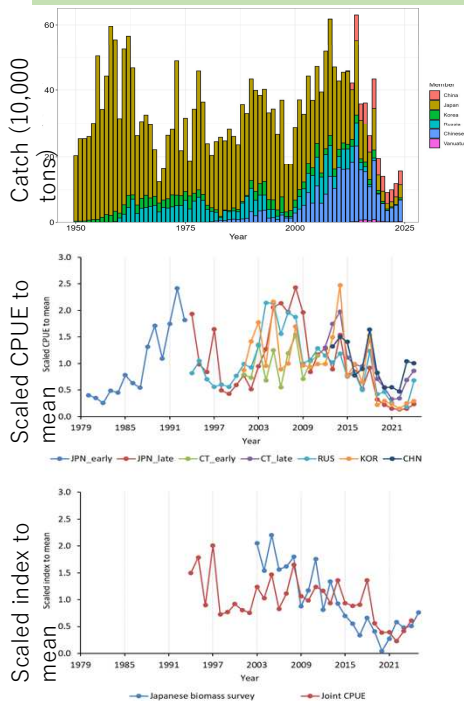
3.1 TAC FOR 2025

3.2 HCR-GENERATED CATCH LEVEL FOR 2026

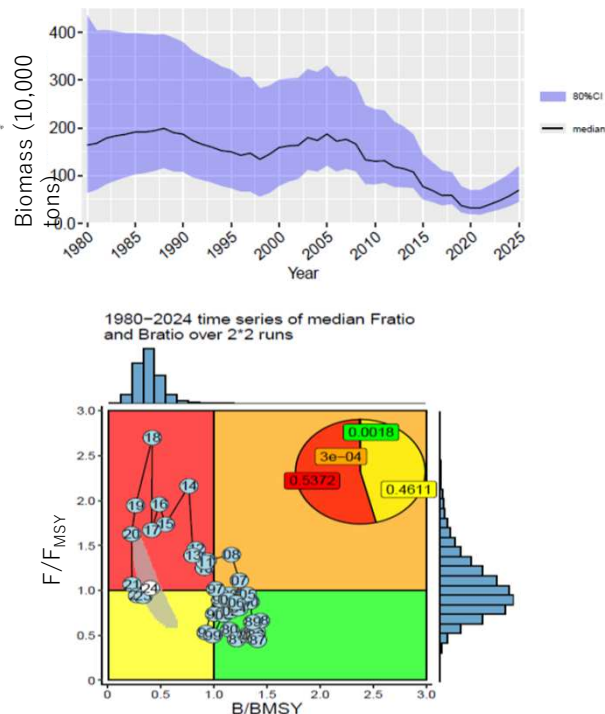
3.3 REVIEW OF THE ADOPTED HCR

Summary of results of the interim assessment in 2025

Time series of catch and abundance indices



Stock status based on an interim assessment model



Comments on stock status

- Stock assessment was conducted using survey data up to 2025 and fisheries data up to 2024
- The 2025 stock assessment results are based on **Japanese and Chinese Taipei's analyses (lack of consensus)**
- Even though biomass may have increased modestly during 2020-2025, the stock biomass remains at low levels
- High likelihood of stock being overfished

On Pacific saury stock assessment (BSSPM)



[Para 10] **Chinese Taipei highlighted its concerns** ... the mismatch between the stock assessment results and fisheries observation, noting ... that the latest assessment does not include fisheries data from the latest fishing season (2025) due to the current SSC PS meeting timing. ...

[Para 12] **China echoed the concerns raised by Chinese Taipei ... pointed out** that fisheries observations suggest that the stock status is much better than the stock assessment results... **China expressed particular concern** with the choice of reference points, especially BMSY,...

[Para 13] **Japan ... emphasized** that the current stock assessment results using BSSPM represent the best available information. **Japan also pointed out** that the Commission has agreed on using this interim HCR until an age-structured model is developed or the Commission decides otherwise, ...



North Pacific Fisheries Commission

CMM 2025-08

[Para 6 of CMM 2025-08]

- **The interim HCR is applied until the establishment of a management procedure to be recommended through an MSE process** by the Joint SC-TCC-COM Small Working Group on Management Strategy Evaluation for Pacific Saur (SWG MSE PS), **or unless otherwise decided by the Commission.**
- **The SWG MSE PS and the SC** shall review the performance of the interim HCR every year based on the best scientific information available, particularly the latest stock assessment results, and **provide a recommendation for the Commission, as necessary.**



CMM 2025-08

(Entered into force 1 May 2025)

CONSERVATION AND MANAGEMENT MEASURE FOR PACIFIC SAURY

CATCH LIMIT

[Para 5] The interim harvest control rule (HCR) for Pacific saury is as attached in Annex I.

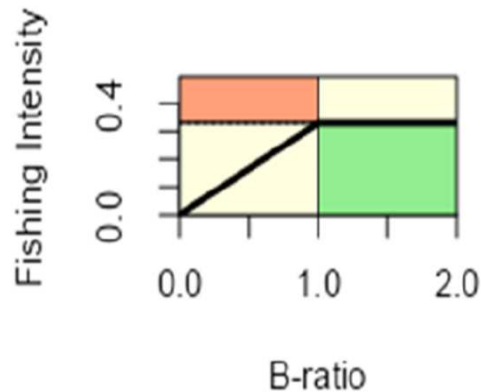


Figure 1. Illustration of the interim HCR.

2. Interim Harvest Control Rules (HCRs)

Based on the latest base-case results of stock assessment of Pacific saury, annual catch level in the entire area $y = a_{y-1} * F_{MSY} * \hat{B}_{y-1}$, where $a_{y-1} = \min(1, \hat{B}_{y-1} / \hat{B}_{MSY})$

(as shown in Figure 1).

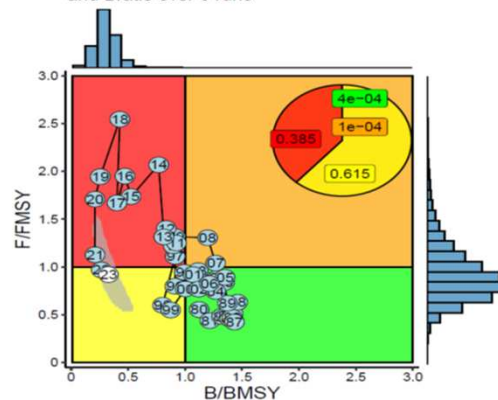
It reduces fishing intensity at biomass levels below B_{MSY} . Maximum allowable change of the annual catch level in the entire area is restricted to 10%.

2024 assessment

Median

C_2023 (10000 t)	11.836
AveC_2021_2023	10.352
AveF_2021_2023	0.328
F_2023	0.297
FMSY	0.330
MSY (10000 t)	39.440
F_2023/FMSY	0.920
AveF_2021_2023/FMSY	1.008
K (10000 t)	248.067
B_2023 (10000 t)	39.875
B_2024 (10000 t)	52.763
AveB_2022_2024	41.563
BMSY (10000 t)	120.100
BMSY/K	0.485
B_2023/K	0.161
B_2024/K	0.212
AveB_2022_2024/K	0.169
B_2023/BMSY	0.328
B_2024/BMSY	0.435
AveB_2022_2024/BMSY	0.345

1980–2023 time series of median Fratio and Bratio over 6 runs



[Unconstrained]

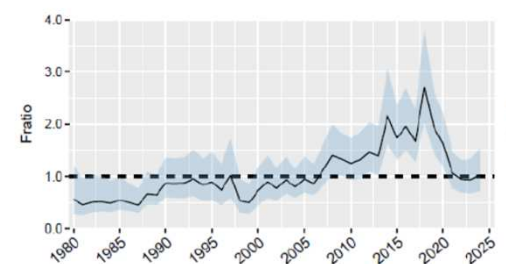
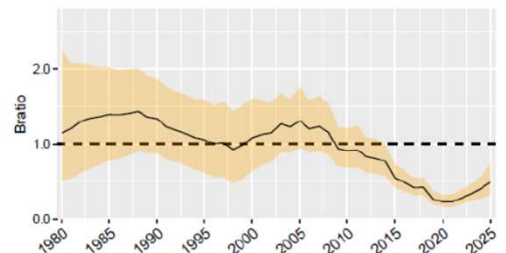
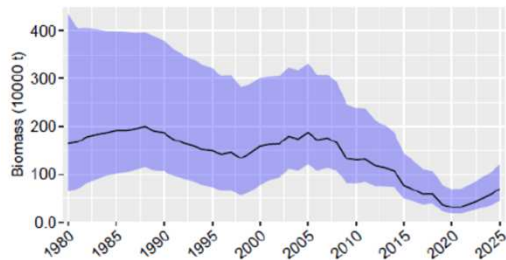
$$\text{TAC}_{2025} = (B_{2024} * F_{\text{MSY}} * (B_{2024}/B_{\text{MSY}})) = 75,741 \text{ mt.}$$

[Constrained within 10% change]

$$\text{TAC}_{2025} = 0.9 \times 225,000 = 202,500 \text{ mt.}$$

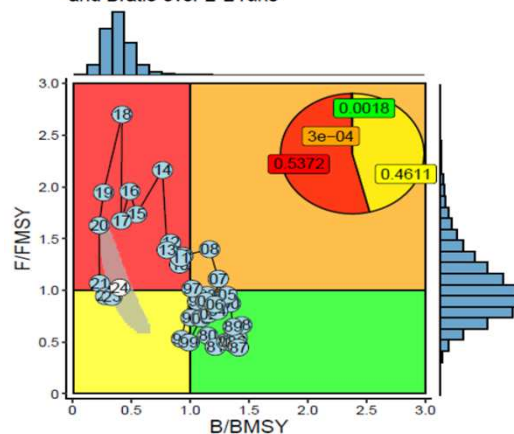
HCR-generated catch level for 2026

2025 assessment



	Median
C_2024 (10000 t)	15.556
AveC_2022_2024	12.463
AveF_2022_2024	0.258
F_2024	0.272
FMSY	0.269
MSY (10000 t)	38.165
F_2024/FMSY	1.027
AveF_2022_2024/FMSY	0.971
K (10000 t)	294.397
B_2024 (10000 t)	57.200
B_2025 (10000 t)	69.460
AveB_2023_2025	58.238
BMSY (10000 t)	142.100
BMSY/K	0.486
B_2024/K	0.197
B_2025/K	0.238
AveB_2023_2025/K	0.202
B_2024/BMSY	0.403
B_2025/BMSY	0.488
AveB_2023_2025/BMSY	0.411

1980–2024 time series of median Fratio and Bratio over 2*2 runs



[Unconstrained]

$$\text{TAC}_{2026} = (B_{2026} * F_{\text{MSY}} * (B_{2025}/B_{\text{MSY}})) = 91,180 \text{ mt.}$$

[Constrained within 10% change]

$$\text{TAC}_{2026} = 0.9 \times 202,500 = 182,250 \text{ mt.}$$

On “HCR-generated catch level for 2026”

[Para 15] **China noted** ... the model exhibits instability and considerable uncertainty in key parameter estimates and does not adequately capture the non-stationary population dynamics driven by environmental variability. In light of these unresolved scientific concerns, **China considered** that the current stock assessment results are not sufficiently robust to be used as inputs to the HCR for the calculation of TAC, and therefore cannot support their application for management advice at this stage.

[Para 16] **Japan reiterated** that the current stock assessment represents the best available scientific information. Japan also reminded the SWG MSE PS that the current interim HCR represented a compromise, as Japan would have preferred a larger maximum allowable change (MAC) than 10%. **Japan emphasized** that the process described in the HCR for generating catch levels for 2026 should be followed.

AGENDA ITEM 3. REVIEW OF THE ADOPTED HCR AND ITS RESULTS

3.1 TAC FOR 2025

3.2 HCR-GENERATED CATCH LEVEL FOR 2026

3.3 REVIEW OF THE ADOPTED HCR

[Para 18] **Chinese Taipei noted that** ... in recent years, the unconstrained catch level based on the stock assessment has been much lower than the median value in the simulations. Given this trend, the HCR is expected to reduce the TAC by 10% every year for many years, ...

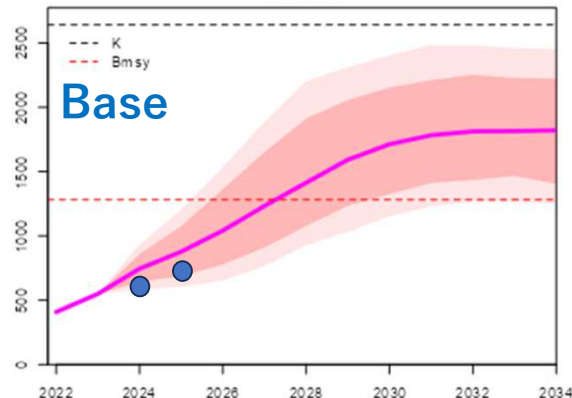
[Para 19] **China shared Chinese Taipei's concern** explained that it too had agreed to the current interim HCR based on the belief that the TAC trend would be turning upwards after years of decline, as the simulations seemed to suggest.

[Para 20] **The co-Chair explained** that the numbers in the table that Chinese Taipei referred to were the median results of base case simulations. ...

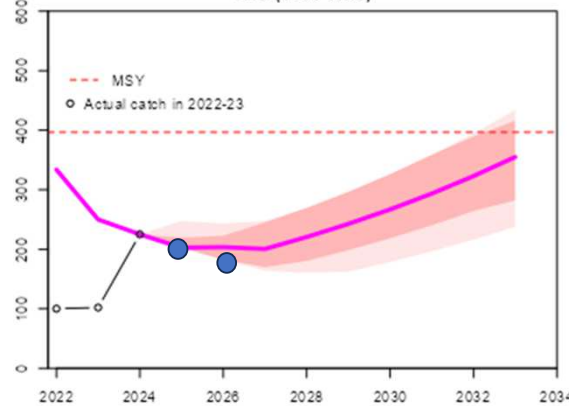
[Para 21] **Japan ... noted** that although the stock assessment results ... were still within these uncertainty ranges and within what scientists considered to be plausible...

Simulation trajectories of biomass and TAC (base & robustness)

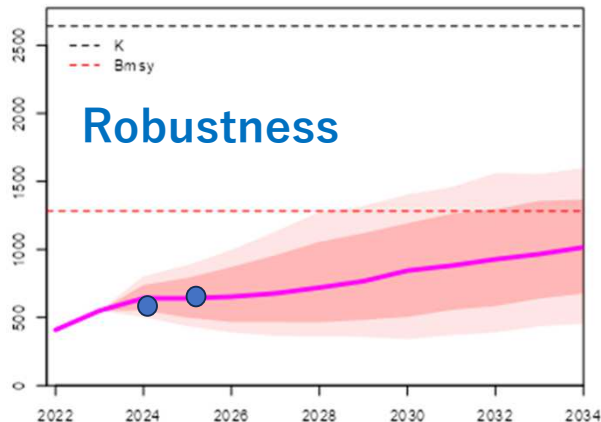
Biomass



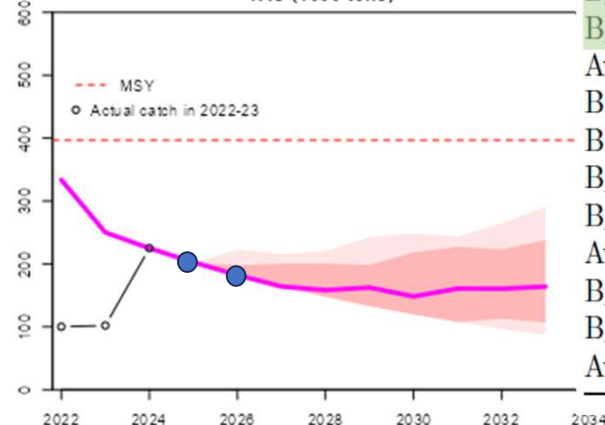
TAC (1000 tons)



Biomass



TAC (1000 tons)



	Median
C_2024 (10000 t)	15.556
AveC_2022_2024	12.463
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AveB_2023_2025/BMSY	0.411

[Para 22] **Canada noted** Chinese Taipei's point ... **pointed out** that it could be one of the concrete management objectives to ensure annual catch levels are above 200,000 MT, and that the SWG MSE PS could design management procedures and evaluate their ability to meet this objective in MSE simulation...

[Para 24] **The United States ... pointed out** that during discussions that led to the adoption of the interim HCR, it had supported a MAC of 40% to allow the quicker recovery of the Pacific saury stock. The United States also noted that, nevertheless, the current HCR is working in aiding the recovery of the stock.

[Para 25] **Pew reiterated** its view that the overall objective of ensuring the recovery of the Pacific saury stock has not yet been achieved. Pew ... encouraged the SWG MSE PS to discuss and explore these issues further as part of the process of developing a full MSE. ...

[Para 26] **The co-Chair**

- suggested that the SWG MSE PS focus on addressing these concerns as part of its current task of developing a full MSE and work towards developing an age-structured operating model, which could better account for the biological characteristics of Pacific saury and consider environmental perspectives.
- explained that the existing interim HCR could be tested in the full MSE and that other management procedures (MPs) could also be considered, such as other model-based MPs (e.g., using BSSPM) or empirical MPs.
- pointed out that under the newly proposed meeting schedule for the SSC PS, future assessments would be able to include not only the most up-to-date fisheries-independent data, but also the most up-to-date fisheries-dependent data, which would decrease the data lag between assessment time period and annual advice.

ITEM 4. DISCUSSION TOWARD DEVELOPMENT OF MANAGEMENT PROCEDURES (MPs) AS A MID-TERM GOAL

4.1 MANAGEMENT OBJECTIVES

4.2 OPERATING MODELS

4.3 MANAGEMENT PROCEDURES

4.4 PERFORMANCE INDICATORS

Items	Development of interim HCR	Development of full MP
Management objectives	• Primary (recovery) • Secondary (avoid risk) • Tertiary (catch)	The three main objectives will be used as previously agreed. Members may also consider additional objectives relating to the following. • Categories: Stock Status (e.g. B, PGK, Abundance), Safety (Avoiding Blim), Yield (catch) stability, socio-economic (incl. consideration of aspirations of SIDS) and ecological/ecosystem • Achieve robustness under climate changes.
Operating models	BSSMP • Age: aggregated over life • Space: combined over EEZ & CA • Time: annual	Age-structured models (SS3, other state-space models) • Age: 0/1 • Space: so far combined • Time: so far annual (seasonal/monthly) • Include key uncertainties (M, S-R, selectivity...) May consider some spatial elements (i.e. distribution shift) for investigating spatial management (depending on progress on new modelling)

Items	Development of interim HCR	Development of full MP
HCRs and MPs	- Set an annual TAC - Just HCR assuming availability of unbiased estimates	- Set an annual TAC - Model-based (incl. assessment) or empirical MPs or combined - May need to consider spatial allocation particularly for juvenile protection - Evaluate advantages and disadvantages of constraints such as existing MAC and a minimum TAC (particularly in light of scale and climate uncertainties)
Main input (incl. assessment)	Estimates of key reference points from BSSPM analyses	- Estimates of key reference points from BSSPM or others - Address uncertainty in estimates

Items	Development of interim HCR	Development of full MP
Time lag btw data & implementation	1-yr (survey) 2-yrs (fisheries CPUE)	- Use the most recent CPUE and survey information from the current fishing year? - Consider the use of an in-season adjustment if possible
Climate impacts	Considered as robustness case	- Routinely use as part of reference models or robustness testing - Explicitly link climate effects and biological parameters that affect stock size & productivities
Meta rules and others	No definition of exceptional circumstances	Develop definition of exceptional circumstances

[Para 29-32]

- **The SWG MSE PS considered** potentially extending the timelines of the draft management objectives for the full MSE.
- **The SWG MSE PS agreed** that the final MP should include an exceptional circumstances protocol.
- **Chinese Taipei suggested** changing the order of priority among the draft management objectives and elevating “Avoiding unsustainable state of the stock” above “Recovery of the stock.”
- **Japan and the United States expressed** their preference for maintaining the current order of priority.
- **Canada reiterated** its suggestion that a potential additional management objective could be to maintain annual catch levels above 200,000 MT to reflect Chinese Taipei’s concerns about the viability of its Pacific saury fishery.

ITEM 6. TIMELINE AND FUTURE PROCESS

6.1 TIMELINE

6.2 FUTURE PROCESS WITH ASSISTANCE OF SSC PS

6.3 WORKPLAN TILL SSC PS17&18 AND SWG MSE PS08 MEETINGS

[Para 34-36]

- The SWG MSE PS prepared two schedules, with future tasks, for developing a full MSE (Annex D). One schedule follows the original timeline set by the Commission (2026–2027). The other schedule follows a longer timeline (2026–2028). s consideration.

Schedule (version 1, 2026-27)

Meeting	Date	Task	Note
COM10	Apr 14-17	- Recommend 2026 catch level based on the adopted HCR - Review outcomes and recommendations from SWG MSE PS 07 (including timeline of full MSE)	Hybrid
SWG NSAM	Jun / July	- Review progress of age-structured modelling (finalize specification) - Review issues arisen for the BSSPM	Hybrid
SWG MSE PS 08	Sep / Oct	Finalize the management objectives Finalize conditioning of OMs (based on age-structured models with consideration of uncertainty of parameters and climate impacts, base and robustness cases) Data-guillotine Develop a list of candidate MPs (model-based, empirical) Finalize performance indicators Discuss definitions of exceptional circumstances	Hybrid?
SSC-PS-17	Dec 15-17	- Prepare data for 2026 assessment (BSSPM, SS3) Review results of conditioning of OMs Review results of preliminary runs of MPs	Virtual
SSC-PS-18	Jan 19-22, 2027	- Review results of BSSPM and application of the adopted HCR for computing 2027 CL (back-up) - Review results of age-structured models Review progress of MSE	Hybrid
	Jan / Feb	Running MSE and prepare results of performance of MPs	
SWG MSE PS 09	Late Feb	Finalize evaluation of performance of candidate MPs Recommendations of a few MPs (including EC definitions) to COM11	Hybrid
COM11	April 12-15	- Adoption of CMM on MP? - First implementation of MP for 2027 TAC	Hybrid

Schedule (version 2, 2026-2028)

Meeting	Date	Task	Note
COM10	Apr 14-17	- Recommend 2026 catch level based on the adopted HCR - Review outcomes and recommendations from SWG MSE PS 07 (including timeline of full MSE)	Hybrid
SWG NSAM	Jun / July	- Review progress of age-structured modelling (finalize specification) - Review issues arisen for the BSSPM	Hybrid
SWG MSE PS 08	Sep / Oct	Re-start discussion on objectives, conditioning of OMs (based on age-structured models with consideration of uncertainty of parameters and climate impacts) and possible types of MPs	Virtual
SSC-PS-17	Dec 15-17	- Prepare data for 2026 assessment (BSSPM, SS3) Review results of conditioning of OMs	
SSC-PS-18	Jan 19-22, 2027	- Review results of BSSPM and application of the adopted HCR - Review results of age-structured models (completed) Review progress of MSE	Hybrid
SWG MSE PS 09	Feb	Finalize management objectives Review conditioning of OMs Develop a list of candidate MPs (model-based, empirical)	Virtual
COM11	April 12-15	Review progress of MSE	Hybrid
SWG MSE PS 10	Summer	Finalize conditioning of OMs (based on age-structured models with consideration of uncertainty of parameters and climate impacts, base and robustness cases) Data-guillotine Finalize a list of candidate MPs (model-based, empirical) Finalize performance indicators Discuss definitions of exceptional circumstances Running MSE and prepare results of performance of MPs (SSC will review in its meeting)	Hybrid
SWG MSE PS 11	Jan / Feb, 2028	Finalize evaluation of performance of candidate MPs Recommendations of a few MPs (including EC definitions) to COM12	Hybrid
COM12	April ?	Adoption of CMM on MP?	Hybrid

[Para 34-36]

- The SWG MSE PS prepared two schedules, with future tasks, for developing a full MSE (Annex D). One schedule follows the original timeline set by the Commission (2026–2027). The other schedule follows a longer timeline (2026–2028).
- **Some Members** expressed their initial preference for the longer timeline, noting the heavy workload required and Members' time and capacity constraints. One Member acknowledged the concerns raised by **other Members** but expressed initial preference for adhering to the original timeline set by the Commission. **There was general agreement that a decision of the Commission would be required to lengthen the currently agreed timeline, which will end in 2026–27.**
- The SWG MSE PS agreed to forward both schedules to the Commission for its consideration.

Recommendations to the Commission (SWG-MSE-PS 07)

39. The SWG MSE PS recommends that the Commission note the following regarding the annual catch level calculated for the 2026 fishing year:

- (a) The interim HCR for Pacific saury under CMM 2025-08 was used to calculate the annual catch level in the 2026 fishing year, although there was lack of endorsement from China.
- (b) Based on assessment inputs from Japan and Chinese Taipei, the unconstrained annual catch level for 2026 = $(B_{2025} * F_{MSY} * (B_{2025} / B_{MSY})) = 91,180$ MT.
- (c) Based on the adopted HCR, the constrained 2026 catch level would be $0.9 \times 202,500 = 182,250$ MT

40. The SWG MSE PS recommends the hiring of an invited expert to support future meetings of the SWG MSE PS and the technical work to develop a full MSE.

41. The SWG MSE PS recommends that the Commission endorse one of the schedules prepared by the SWG MSE for full MSE development and to endorse the holding of meetings of the SWG MSE PS accordingly (Annex D).

42. The SWG MSE PS recommends that the Commission reaffirm the importance of including scientists, managers, and stakeholders at future meetings to facilitate communication and completion of this important work.

Acknowledgements

- All the participants for their constructive and dedicated discussion
- Quang Huynh (invited expert)
- Alex Meyer (rapporteur)
- NPFC Secretariat team for excellent preparation and assistance