



North Pacific Fisheries Commission

NPFC-2025-TWG CMSA11-RP02

2nd Intersessional Meeting of the Technical Working Group on Chub Mackerel Stock

Assessment

May 30, 2025 (9am – 1pm Tokyo time)

WebEx

Summary

[**Agenda Item 1. Opening of the Meeting**](#)

The 2nd intersessional meeting of the Technical Working Group on Chub Mackerel Stock Assessment (TWG CMSA) in the 2025 operational year commenced at 9 AM on 30 May 2025, Tokyo time in the format of video conferencing via WebEx. The meeting was attended by Members from China (Libin Dai, Heng Zhang, Yongchuang Shi, Zhiwei Liu, Zhengyan Jiang, Yufei Zhou), the European Union (Karolina Molla Gazi), Japan (Kazuhiro Oshima, Shuya Nakatsuka, Shota Nishijima, Momoko Ichinokawa, Akihiro Manabe, Hiroshi Kubota, Shin-ichiro Nakayama, Yumiko Osawa, Kazunari Higashiguchi, Sayoko Isu), Russia (Vladimir Kulik, Igor Chernienko, Dmitrii Antonenko) and the USA (Erin Bohaboy, Don Kobayashi) as well as the Secretariat (Robert Day, Alex Zavolokin, Sungkuk Kang, Shinnosuke Kato, Jiyu Wang). Dr. Joel Rice attended the meeting as an invited expert. The meeting was opened by Dr. Kazuhiro Oshima (Japan), Chair of the TWG CMSA.

The Chair outlined the goals of this meeting which were to (1) check the finalized input data prepared by Data Managers (Karolina Molla Gazi and Akihiro Manabe), and (2) check progress of stock assessment and future projections. Chair's presentation is available on the Collaboration site under [TWG CMSA intersessional meetings](#).

[**Agenda Item 2. Adoption of Agenda**](#)

There were no amendments to the agenda.

[**Agenda Item 3. Review of timeline and short summary of 1st intersessional meeting**](#)

The Chair reminded participants about the timeline for 2025 and the outcomes of the TWG CMSA 2025-01 intersessional meeting, including agreements, progress and remaining issues. He thanked China and Japan for submitting a meeting paper on data discrepancy and data revision. He also thanked the Data Managers for preparing data for chub mackerel stock assessment.

Russia **was requested** to provide, at its earliest convenience, a document on data discrepancy and

data revision following the format from China and Japan.

Japan will compile the documents from China, Japan and Russia and submit the compiled working paper to TWG CMSA11.

The Chair informed participants that he had posted a csv file with the finalized abundance indices on the Collaboration site on 29 May 2025.

Agenda Item 4. Finalization of input data for the 2025 stock assessment

4.1. Catch-at-age

4.2. Weight-at-age

4.3. Maturity-at-age

4.4. Abundance indices

The Data Manager (Akihiro Manabe) gave an overview of the latest version of input data submitted by Members. Catch-at-age and weight-at-age were considered final. Maturity-at-age will be further discussed during this meeting. The presentation is available on the Collaboration site under [Input Data and Codes for 2025 Chub Mackerel Stock Assessment](#).

On the question about sharp decline in MAA after 2014-2015, the Data Manager responded that this was caused by the density-dependent effect due to the introduction of the strong year class in 2013 that affected fish growth and maturity.

China (Heng Zhang) presented a paper on the methods for determination of gonadal maturity and calculation of MAA for chub mackerel in China (available on the Collaboration site under [Input Data and Codes for 2025 Chub Mackerel Stock Assessment](#)). The document includes questions from Japan and responses from China that had been made before the meeting. China provided two options of MAA data, and after discussion during the meeting, recommended MAA data in Table 1.

Japan (Sayoko Isu) suggested to remove “Japanese fish egg maturation standard” from Fig. 1. The Chair noted that at TWG CMSA10 China and Japan had agreed to develop a standardized protocol on data maturity. This will be discussed at TWG CMSA11 in Yantai, China in July.

Participants **agreed** to use Japanese MAA for the base case scenario and the average of Chinese and Japanese MAA for sensitivity analysis.

Agenda Item 5. Review of progress of SAM

Japan (Shin-Ichiro Nakayama) presented candidate base cases for the stock assessment of chub mackerel (available on the Collaboration site under [TWG CMSA intersessional meetings](#)). A state-

space age-structured (assessment) model (SAM) was used to conduct the stock assessment. No major modifications to the model used for the 2024 stock assessment were made. Two candidate base case scenarios were developed (exclude/include the survey and fishery indices in 2024). These base cases showed almost identical results. The estimated total biomass and spawning stock biomass had two booms, in 1970s and 2010s. After 2020, the total biomass and spawning stock biomass decreased rapidly. The retrospective analysis showed a moderately large positive bias in total biomass, and there is room for further improvement on these issues. The retrospective bias was smaller when 2024 data was included. In conclusion:

- All inputs were updated by adding one year.
- Russian trawl CPUE was newly included.
- Two candidate base cases were developed, with and without the indices in 2024.
- Although retrospective biases were detected for the total biomass and recruitment, no other serious problems were found.
- The retrospective bias was smaller in scenario S02-Index24_1, with the 2024 indices.
- SSB increased since the occurrence of the strong year class in 2013, but then has declined to the historical low level from the peak in 2017.
- The stock has shown a continued downward trend, and the most recent spawning stock biomass was 16% of the recent peak of SSB in 2017. This was near the historical low.

China (Libin Dai) noted that there may be a need to set high natural mortality for the 2013 year class. In addition, he suggested to update the slide on process errors by adding lines connecting data points and also have more discussions on the choice of BRPs at the coming TWG CMSA11 meeting.

The EU (Karolina Molla Gazi) noted high Mohn's rho values indicating significant retrospective bias that should be further explored in the future.

On the question about the treatment of 2024 indices and missing CAA data, Japan clarified that SAM allows missing data, and 2024 CAA data were considered not available.

On the question about estimates of steepness, Japan responded that it was around 0.35 for 8-year average of biological parameters and around 0.5 for all-year average of biological parameters.

The Chair encouraged Members to review the presentation on the candidate base cases and provide comments and questions, if any.

The Chair requested Japan to upload the SAM code on GitHub. In response to this request, Japan uploaded the input data and R code of SAM for the 2025 stock assessment on the Collaboration site (<https://collaboration.npfc.int/node/188>) and the GitHub repository (<https://github.com/The->

North-Pacific-Fisheries-Commission/TWG-CMSA/tree/SA2025), respectively on 5 June.

Japan (Shota Nishijima) reported on the progress of sensitivity analysis in SAM (available on the Collaboration site under [TWG CMSA intersessional meetings](#)). He noted that using 2024 abundance indices requires some assumptions for biological parameters. Therefore, a sensitivity analysis was conducted with various assumptions for FY2024. The results showed that abundance estimates were highly robust to the assumptions. Therefore, he proposed to use the latest abundance indices up to 2024 for the base case scenario.

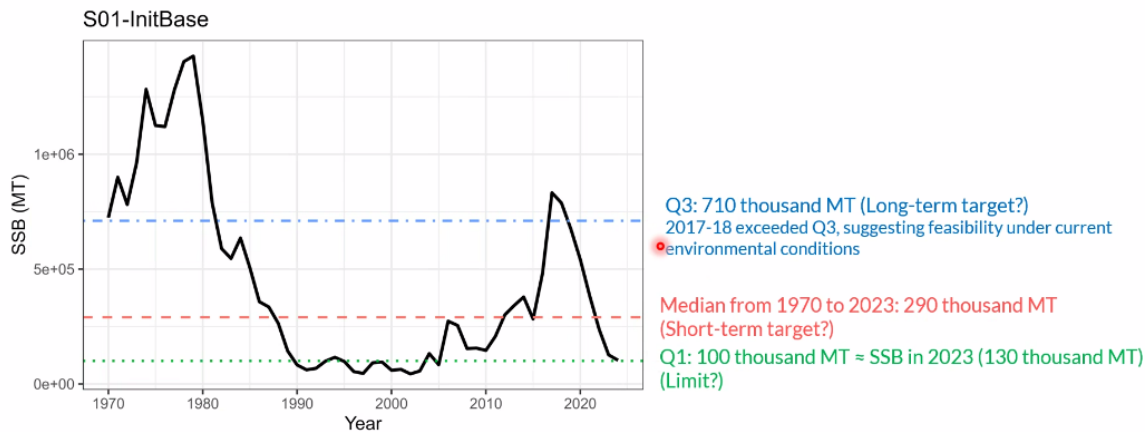
In addition to the scenario *Maturity-at-age (average of CHN and JPN)* identified by TWG CMSA, Japan (Shuya Nakatsuka, Momoko Ichinokawa) suggested the following three scenarios for other sensitivity analyses: *Natural mortality (length-specific M ? age-common M ?)*, *No process errors for age 1 and older*, and *Hockey-stick stock recruitment relationship*.

The EU (Karolina Molla Gazi) pointed out that age-common M is not a plausible scenario and suggested to remove it. Also, the EU expressed concerns about using the most recent indices with missing CAA data.

The USA (Erin Bohaboy) made a comment regarding possible mechanisms justifying estimating process error at older ages. She suggested that it may be time-variable mortality which likely affects all ages, not just age 0 and 1. This might also explain why retrospective bias was higher in this update than last year (the influence of the 2018 year class is greater in this updated analysis).

[Agenda Item 6. Review of progress of future projections](#)

Japan (Shota Nishijima) presented a preliminary analysis of future projection (available on the Collaboration site under [TWG CMSA intersessional meetings](#)). Future projections were performed using the current base cases of SAM. Generally, they followed the same methodology as last year, with the following two additions at the request of the Commission: (1) analyze not only constant catch scenarios but also constant F scenarios, and (2) compute the probabilities of achieving the historical median SSB, etc. It was proposed to use historical quantiles as temporary target and limit reference points.



Shota Nishijima outlined the following items for consideration by the TWG CMSA:

1. Assumption of F or catch in FY2024: Current F (average of 2021-23 predicts over 200,000 MT catch, which would be higher than actual catch)
2. Assumption of F or catch in FY2025: Harvest rules of constant catch and F were applied since FY2025 in this analysis, but the stock assessment this year will be used for catch quota in FY2026
3. Scenarios for biological parameters (weight-at-age, maturity-at-age): recent 8 years average, all year average, and any other additional or alternative scenarios?
4. Biomass reference points: Currently using quantiles of SSB because using MSY-based and B0-based reference points is difficult due to the lack of robustness of model settings and biological parameters
5. F reference points: Currently using F30-70%SPR
6. SAM scenario to be analyzed in future projection for base case and sensitivity cases: whether inclusion or exclusion of FY2024 indices and other settings
7. Outputted figures and tables: What are helpful figures and tables?

Participants made the following comments and suggestions:

#1 and #2: Assumption of F or catch in FY2024 and FY2025

There is a need to align advice made on the basis of FY with CY used by COM when revising CMM for Chub Mackerel.

Because fishermen do not distinguish chub and blue mackerels in catch, the TAC set in CMM 2025-07 for Chub Mackerel applies to the two species.

Catch in FY2024 – actual catch.

Catch in FY2025 – 100,000 tons for the Convention Area + EEZ.

#3: Scenarios for biological parameters (weight-at-age, maturity-at-age)

Same as in 2024 stock assessment.

#4: Biomass reference points

It was noted that reliable historical data should be used if the proposed approach of using quantiles of SSB is applied.

#5: *F* reference points

There may be a need to narrow down the range of F30-70%SPR.

#7: *Outputted figures and tables*

Catch information should be included.

The upper bound of SSB should be added.

The concrete catch corresponding to $F_{current}$ should be added.

Participants **agreed** that the proposed tables on probabilities for constant catch and F will be presented to SC.

Japan shared the R code of future projection in the GitHub repository (https://github.com/The-North-Pacific-Fisheries-Commission/TWG-CMSA/tree/main/sam_future) on 5 June.

Agenda Item 7. Other matters

7.1. Update of the agreed timeline, if needed

The Chair updated the timeline towards TWG CMSA11.

		Catch@Age, Weight@Age and Maturity@Age		Abundance Indices	SAM/Future projection
June	Early				- Codes of SAM, calculation of BRP and future projections are uploaded on GitHub repository - Proposal for additional model settings and specifications of SAM by June 6 - Discussion on settings of future projection by June 6
	Mid	Due date for documents other than stock assessment and future projection (16 June)			
	Late	Due data for working papers on stock assessment and future projection (30 June)			
July	Early				
	Mid	TWG CMSA11 meeting in China (15-18 July)			

The Chair **requested** participants to provide their comments and suggestions on the setting and specifications of SAM and the settings of future projections **by 6 June**.

7.2. Others

None.

Agenda Item 8. Close of the meeting

The meeting closed at 13:17 PM on 30 May 2025, Tokyo time.