NPFC

North Pacific Fisheries Commission

1st Intersessional Meeting of the Technical Working Group on Chub Mackerel Stock Assessment
April 25-26, 2025 (9am – 1pm Tokyo time)
WebEx

Summary

Agenda Item 1. Opening of the Meeting

The 1st intersessional meeting of the Technical Working Group on Chub Mackerel Stock Assessment (TWG CMSA) in the 2025 operational year commenced at 9 AM on 25 April 2025, Tokyo time in the format of video conferencing via WebEx. The meeting was attended by Members from Canada (Janelle Curtis), China (Qiuyun Ma, Heng Zhang), the European Union (Karolina Molla Gazi), Japan (Kazuhiro Oshima, Shuya Nakatsuka, Shota Nishijima, Momoko Ichinokawa, Akihiro Manabe, Hiroshi Kubota, Shin-ichiro Nakayama, Yumiko Osawa), Russia (Vladimir Kulik, Igor Chernienko, Emilia Chernienko, Dmitrii Antonenko) and the USA (Erin Bohaboy, Don Kobayashi) as well as the Secretariat (Robert Day, Alex Zavolokin, Sungkuk Kang, Jumpei Hinata, 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 (1) to review input data for the 2025 stock assessment, (2) to review documents on data discrepancy and data revision, and (3) to discuss scenarios for base cases and sensitivity cases. He informed participants about chub mackerel-related tasks from the COM09 meeting. 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 with short summary of TWG CMSA10 meeting

The Chair reminded participants about the timeline for 2025 and outcomes of the 10th TWG CMSA meeting, including agreements and remaining issues. He thanked Members for sharing data for the 2025 stock assessment and noted that some data had not yet been received. He also pointed out that some Members who submitted data missed the deadline.

Agenda Item 4. Review of catch-at-length, age-length key, catch-at-age, weight-at-age and

maturity-at-age submitted by Members

Following the agreement made at TWG CMSA10, the Data Managers, Karolina Molla Gazi and Akihiro Manabe, developed an Rmarkdown script for data quality control. The script is available in the TWG CMSA github repository (TWG-CMSA/data_prep/code at main · The-North-Pacific-Fisheries-Commission/TWG-CMSA). An output check file can be found on the Collaboration site under Input Data and Codes for 2025 Chub Mackerel Stock Assessment.

4.1. Data validation and compilation by Data Managers

The Data Manager (Karolina Molla Gazi) introduced a process for data preparation. She stressed out the importance of following deadlines for data submission and data revision, when needed, for timely preparation of data for stock assessment by Data Managers.
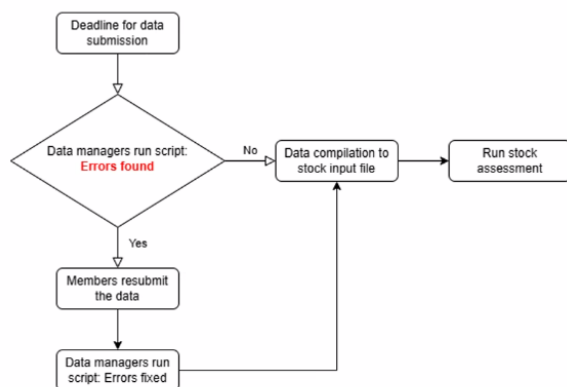
Ms. Gazi outlined decisions to be made at this meeting:

- Tolerance threshold for the Sum of Products (SOP) of catch at age multiplied by weight at age versus Annual summary footprint by Member (currently 5%)
- How to submit new data: it is proposed to append the most recent year to the previous year's dataset unless Members report the need for major revision and re-submission of historical data.

She encouraged participants to provide feedback with respect to any issues identified with the script/methodology, additional plots/checks and other suggestions.

Participants noted the need to distinguish between "data update" and "data revision" and agreed to consider drafting a protocol to address this issue. "Data update" usually implies adding the most recent year to the dataset, although previous years' datasets may also be updated as new data become available. "Data revision" is to be made when errors in submitted datasets are found. It is suggested that any change in previously submitted datasets requires explanation.

Ms. Gazi presented items #1-5 of the output check html file, including Data summary, Checks,

Biological data overview by Member, Comparison among Members and Comparison with 2024 submission.

The comparison of SOP with Annual summary footprint found three cases when the difference between these two metrics exceeded 5%, i.e. -6.2% and 6.2% for Japan in 2014 and 2015, respectively, and 6.7% for China in 2018.

Japan (Akihiro Manabe) explained that this difference in Japanese data occurred because of different time periods used for SOP (fishing year) and Annual summary footprint (calendar year). There is no difference in these two metrics when comparing them by calendar year (see agenda item 5.1). Japan suggested to retain its data for 2014 and 2015 as they are.

China was requested to check its data, report to the TWG CMSA the reason of the difference in SOP versus Annual summary footprint in 2018 and revise its data, if needed. After the meeting, China reported that it found an error in its data in quarter 4 2018. China fixed the error and uploaded the revised dataset on the Collaboration site ([Input Data and Codes for 2025 Chub Mackerel Stock Assessment](#)).

Participants noted that updated age-length key from China and updated CAL from Russia had been missing and **requested the Members** to submit the missing data. China and Russia provided the updated data during this meeting.

On the question about Japanese quarterly CAA data before 2014, Japan responded that currently this data cannot be made available.

Participants re-affirmed the last year's approach to apply Eastern JPN ALK to Russian data, as Russia does not have age-length key.

Comparison with 2024 submission
Participants noted significant difference in Russian CAL between the datasets submitted in 2024 and 2025. Russia explained that this difference was caused by inclusion of data from Japanese EEZ in 2025.

Ms. Gazi summarized that the proposed approach is that once the data quality html file is produced by the Data Managers, Members shall review the file and, if any errors are found, re-submit their input data. She **requested Members** to review the presented file, address any issues and re-submit data, if needed, **by 2 May**.

The Data Manager (Akihiro Manabe) presented items #6-10 of the output check html file,

including Treatment of the data into fishing year basis, Proposal for weighted WAA for stock assessment, Treatment of data with missing data, Finalized CAA and Notes as well as some other matters previously presented by Ms. Gazi.

Weight-at-age

Dr. Manabe suggested 3 options for calculating WAA to address inconsistency in WAA data by Member (Western Japanese WAA versus Chinese, Eastern Japanese, and Russian WAA). He explained that applying the method agreed by TWG CMSA08 in Niigata causes changes in historical calculations of WAA every time new year is added to the dataset.

Participants reviewed the options for calculating a single weight value for each age and **agreed** to continue to use the method developed in Niigata: the average, weighted by age-specific catch number with the same ratio across all years by Member, of the Chinese, Eastern Japanese, Western Japanese and Russian weight-at-age data.

Maturity-at-age

Upon request from TWG CMSA, Dr. Manabe made a graph to compare Japanese MAA with the updated Chinese MAA. Participants noted the similarity of Chinese and Japanese maturity ogives by age and potential use of Chinese MAA data for stock assessment, in addition to those from Japan used last year. However, concerns were raised regarding the lack of documentation on the updated Chinese MAA and calendar year as opposed to fishing year Chinese MAA.

China (Qiuyun Ma) explained that this data had been mostly collected in Quarter 3 and 4. This removes the concern about potential changes in data when converting them from the calendar year basis to fishing year basis.

China was requested to provide documentation on the updated Chinese MAA to the next intersessional TWG CMSA meeting. The decision about application of this data to stock assessment will be made after reviewing the documentation from China.

Missing ALK

Participants re-affirmed that missing ALK will be treated in accordance with the method agreed by TWG CMSA08 in Niigata.

Dr. Manabe reported that there are length classes for which no age information is available from Eastern ALK. He proposed to refer to adjacent length classes to fill this gap. Participants **agreed** with the proposed approach.

The EU (Karolina Molla Gazi) suggested that TWG CMSA may consider modelling ALK in

future.

Comparison with 2024 submission

Participants reviewed the updated CAL data submitted by Russia and found a significant difference in Russian CAL data for 2016-2022 in the updated dataset in comparison with the dataset submitted in 2024.

Russia was requested to submit a meeting document explaining this difference to the next TWG CMSA meeting.

4.2. Finalization of catch-at-age, weight-at-age and maturity-at-age for the 2025 stock assessment

CAA, WAA and MAA data will be finalized intersessionally after Members review the data quality html file and submit revised data, if needed, by 2 May. The final data will be reviewed at TWG CMSA 2025-02 at the end of May.

The Chair suggested that two documents should be submitted to TWG CMSA11 in Yantai: (1) Data updates including data discrepancy: documents from each Member will be compiled, and (2) Data preparation for stock assessment by the Data Managers. Participants **agreed** to this suggestion.

Participants noted the need to ensure reproducibility of historical stock assessments. For that, previous versions of data used for those stock assessments should be kept.

Agenda Item 5. Data discrepancy and data revision by Members
5.1. Review of the documents

Japan (Akihiro Manabe) presented an update of NPFC-2025-TWG CMSA10-IP08 to explain discrepancies in Japanese data. The discrepancies in 2014 and 2015 were caused by aggregation of age-0 fish in Quarter 1 and 2 into Quarter 3 when aggregating data on a fishing year basis (see ppt presentation for details: Input Data and Codes for 2025 Chub Mackerel Stock Assessment). Japan will finalize this document and share it with TWG CMSA Members.

A combined meeting document on data discrepancies from China, Japan and Russia will be submitted to TWG CMSA11.

Russia (Igor Chernienko) reported that the information about discrepancies in Russian data had been included in the CAA document submitted by Russia. He explained that the original dataset included only data from the Russia's EEZ, and adding catches by Russia in the Japan's EEZ resolved the discrepancies.

China (Heng Zhang) prepared a ppt presentation on the details of the calculation method and data discrepancies (see ppt presentation for details under Input Data and Codes for 2025 Chub Mackerel Stock Assessment). The potential reasons for data discrepancies were (1) aggregation and estimation process, (2) different sample size among quarters, (3) sampling on board is influenced by specific vessel operation, leading to mis-represent the length frequency of the total catch of all vessels, and (4) age-length key is also highly impacted by the small sample size of large individuals. To resolve these issues, it was proposed to calculate the ratio of calculated catch versus annual footprint, use the same weights-at-age and apply that ratio to catch number at age in order to match annual footprint and the shared CAA data.

5.2. Draft of data preparation protocol

The Chair reminded participants about the five points from the TWG CMSA10 meeting outlining data preparation protocol (see TWG CMSA10 report, p. 3-4). He encouraged participants to provide their comments and suggestions. The Chair and Data Managers **agreed** to draft a data preparation protocol and present it to TWG CMSA11.

Agenda Item 6. Abundance indices

6.1. Review of the Russian updated CPUE

Russia (Igor Chernienko) presented its updated CPUE standardization (available on the Collaboration site under Input Data and Codes for 2025 Chub Mackerel Stock Assessment).

Participants reviewed the document presented by Russia and suggested to use the Russian trawl fishery standardized CPUE as an abundance index for multiple age classes rather than SSB, as suggested in the document. Russia revised the document and re-submitted it through the Collaboration site.

The TWG CMSA **agreed** to use Russian standardized CPUE as an abundance index of multiple age classes.

6.2. Finalization of abundance indices for the 2025 stock assessment

The Chair summarized the abundance indices agreed to be used for the 2025 stock assessment of chub mackerel.

Abundance indices submitted by Members
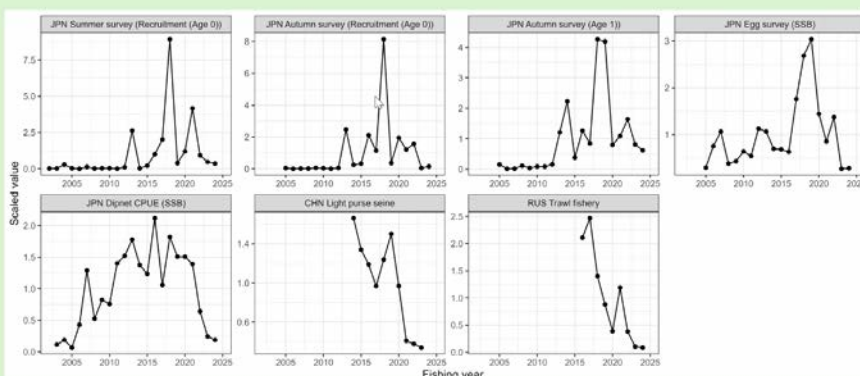
Overview of submitted abundance indices

Member	Gear/Survey	Ages	Starting year	Terminal year
CHINA	Lighting purse seine	Multiple ages	2014 FY	2023 FY
JAPAN	Summer trawl survey	Age 0 (Recruitment)	2002 FY	2024 FY
	Autumn trawl survey	Age 0 (Recruitment)	2005 FY	2024 FY
		Age 1	2005 FY	2024 FY
	Egg survey	SSB	2005 FY	2024 FY
	Dip net	SSB	2003 FY	2024 FY
RUSSIA	Trawl	Multiple ages	2016 FY	2024 FY

Agenda Item 7. Discussion on scenarios of base cases and sensitivity cases

Japan (Shota Nishijima) gave a presentation on SAM settings and specifications updated after TWG CMSA10.

Participants discussed settings and specifications for base case and sensitivity case scenarios. They noted the similarity of Japanese maturity ogives, previously used in the base case scenario, and the updated Chinese maturity ogives. They will consider using averaged Japanese and Chinese MAA data in the base case scenario at the next TWG CMSA meeting.

Dr. Nishijima will explore the application of the most recent abundance indices up to FY 2024 in the 2025 stock assessment and present this to Members for review. TWG CMSA11 will consider using the most recent abundance indices for the base case scenario.

Dr. Nishijima also presented a list of scenarios. Participants reviewed the list and noted the need

to remove some of scenarios in order to reduce workload. They **agreed** on the draft list of items to be prioritized for the base case, i.e. recruitment or SRR, abundance indices in FY2024 and maturity, as well as items for sensitivity scenarios, i.e. process error, nonlinearity of index and natural mortality.

The list of SAM settings and specifications and the list of scenarios updated at this meeting are available on the Collaboration site under Input Data and Codes for 2025 Chub Mackerel Stock Assessment.

Agenda Item 8. Discussion on how to respond to the COM's tasking
This agenda was deferred to the next meeting. Task #3 was addressed under Agenda Item 9.
  8.1. Brief explanation on background and points of the three tasks from COM09
    Task #1 Provision and analysis of gear specific data to explore whether there is a need to protect the immature portion of the stock and advice on options for achieving that, as appropriate. This includes also accessory devices used for fishing purposes, such as FADs, light devices, etc.
    Task #2 Clarification of the correspondence of fishing days and the level of catch in relevant fleets, such as the purse seine fleet.
    Task #3 Based on the next stock assessment, provide projections and associated probabilities, based on constant catch scenarios (e.g. increments of 5.000 mt) or constant F scenarios, aiming at reaching an appropriate MSY proxy (SSB and F) within 5 to 10 years [with a probability higher than 50%.]
  8.2. Task #1
  8.3. Task #2

Agenda Item 9. Future projection based on Task #3
  9.1. Consideration on MSY proxy
The Chair presented a list of reference points (RP) from the 2024 stock assessment and invited participants to suggest candidate RPs which can be considered as MSY proxy.

  9.2. Calculation of SSB_{MSY} proxy (= Target)
Japan (Shota Nishijima) presented its domestic stock assessment for chub mackerel (available on the Collaboration site under Input Data and Codes for 2025 Chub Mackerel Stock Assessment). The purpose of that presentation was to share the challenges in chub mackerel stock assessment, in particular in estimating and using MSY and the need to consider an MSY proxy for meeting the request from the Commission (task #3). Last year, Japanese scientists conducted stock assessment with the almost same data and model settings as used by TWG CMSA09, except for updated data. They estimated an MSY reference point, but didn't propose

to use it due to uncertainty of biological parameters in the future and low levels of recent growth. Instead, they proposed to use an MSY proxy based on %SPR as a robust and realistic reference point. F50%SPR was proposed in Japan's domestic stock assessment as F_{MSY} proxy, but F40%SPR was finally adopted by stakeholders.

Dr. Nishijima identified the following matters for consideration by participants.

Recruitment in SAM and future projection
- BH relationship (previously used)
- Smooth HS
- AR(1) or Random walk   * RW diverges and is not suitable for long-term forecasting

F reference point (MSY or its proxy)
- Fmsy estimated from BH or SHS SRR (deterministic or stochastic)
- F%SPR (30, 40, 50,...?)
- F0.1, Fmed

SSB point (MSY or its proxy)
- SSBmsy estimated from BH or SHS SRR (deterministic or stochastic)
- X%SSB0 (X = 40?)
- Equilibrium under F%SPR (deterministic or stochastic)
- The corner point of SHS SRR (~1,000 thousand MT in SSB)
- Historical SSB level (e.g., historical median, some quantile, or recent peak in FY2018: ~750 thousand MT)

Biological parameters
- Recent average in X years (FY2016-2023?) (base case?)
- Average in the whole period (FY1970-2023)
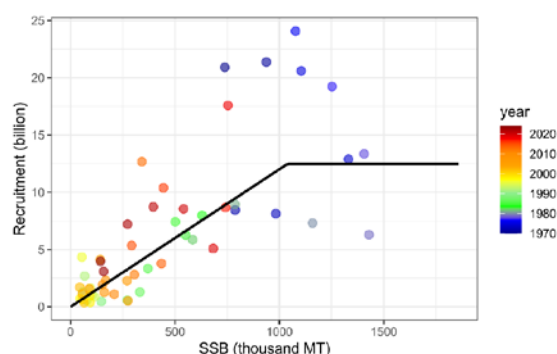
Stock-recruitment relationship
Participants agreed to keep the three options for stock-recruitment relationship giving priority to the first one, BH relationship. The decision will be made at the next TWG CMSA meeting.

Japan (Shuya Nakatsuka) pointed out that caution should be taken when using different periods for calculation of SR relationship and target levels.

MSY proxy
Japan (Shuya Nakatsuka) shared his thoughts about how to respond to the request from COM09 about MSY proxy and suggested using a graph where Y axis is fixed catch or F and X axis is probability of achieving MSY proxy in 5 / 10 years.

Japan (Momoko Ichinokawa) suggested calculating a candidate proxy as follows:
1. Describe the relationship between historical stock levels that will serve as management reference points and potential reference points
2. Generate a probability table showing the likelihood of exceeding historical stock levels

e.g. SSB_hist_max : XX%/SB0 or XX% of SBmsy when using historical average biology XX% of SB0 when using recent biology SSB_hist_2015 (recent peak): XX%/SB0 or XX% of when using historical average biology XX% of SB0 when using recent biology Then, create a decision matrix between various catch level versus the above historical SB.

TWG CMSA will further consider these suggestions at TWG CMSA11.

9.3. Settings of future projection

This agenda was deferred to the next meeting.

Agenda Item 10. Other matters

10.1. Update of the agreed timeline, if needed

Participants reviewed and updated the timeline towards the 2025 stock assessment.

		Catch@Age, Weight@Age and Maturity@Age	Abundance Indices	SAM/Future projection
May	Early	Catch@age and weight@age are finalized by Members no later than **2 May**.		Codes of SAM, calculation of BRP and future projections are shared in GitHub repository, if possible
	Mid	China submits a document on updated MAA and procedure to calculate MAA during **11-20 May**.		
	Late	Data discrepancy and data revision • Each Member sends a draft document on data discrepancy and data revision to Japan no later than **25 May**. • Japan integrates the drafts into a draft working paper for TWG CMSA11 and then circulates it to Members. 2nd intersessional meeting (30 May) • To check the finalized input data (Catch@Age, Weight@Age, Maturity@Age, Abundance Indices) prepared by Data Managers • To check progress of stock assessment and future projection works.		
June	Early				
	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)		

10.2. Others

None.

Agenda Item 11. Close of the meeting

The meeting closed at 12:45 PM on 26 April 2025, Tokyo time.