North Pacific Fisheries Commission

NPFC-2024-TWG CMSA08-RP01

**3rd Intersessional Meeting of the Technical Working Group on Chub Mackerel Stock Assessment**
**November 15, 2023 (9am – 1pm Tokyo time)**
**WebEx**

# Summary

## Agenda Item 1. Opening of the Meeting

The 3rd intersessional meeting of the Technical Working Group on Chub Mackerel Stock Assessment (TWG CMSA) in the 2023 operational year commenced at 9 AM on 15 November 2023, Tokyo time in the format of video conferencing via WebEx. The meeting was attended by Members from Canada (Chris Rooper), China (Qiuyun Ma, Heng Zhang, Yongchuang Shi), European Union (Karolina Molla Gazi), Japan (Kazuhiro Oshima, Shuya Nakatsuka, Shota Nishijima, Momoko Ichinokawa, Akihiro Manabe, Ryuji Yukami, Ken Ishida) and USA (Erin Bohaboy) as well as the Secretariat (Robert Day, Alex Zavolokin). Dr. Joel Rice attended the meeting as invited expert. The meeting was opened by Dr. Kazuhiro Oshima (Japan), Chair of the TWG CMSA.

The Chair outlined the goals of this meeting: (1) to check the progress of data preparation, and (2) to identify remaining works towards TWG CMSA08 meeting in Niigata. Chair's presentation is available on the Collaboration website 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 CMSA07 meeting

The Chair reminded participants about the outcomes of TWG CMSA07 and presented the timeline and activities for intersessional work from TWG CMSA07 to February 2024.

## Agenda Item 4. Review of age-specific data and biological parameters for chub mackerel stock assessment submitted by Members

The Chair informed participants about the data submitted by China and Japan in accordance with the agreements made at TWG CMSA07.

Japan gave a presentation on the comparison input data for chub mackerel stock assessment (agenda items 4.1-4.5). The presentation is available on the Collaboration website under TWG CMSA

intersessional meetings).

### 4.1. Catch-at-length/size data

Summary of catch-at-length data:

- Chinese catch consists of smaller catch (mainly 15~35cm FL)
- Japanese catch has broad length (15~45cm FL) with multiple peaks
- Chinese catch became more wire-ranged in age-length composition after 2021

### 4.2. Age determination rule and age-length key (ALK)

Summary of ALK comparison:

- Japanese Eastern and Western ALK are different
  - Due to different nature of target (migrating and local population)
- Chinese and Eastern ALK are slightly different
  - Due to the difference in the date of age incrementation
  - Although the pattern of age stratification/gradient is similar
- Why Japanese ALK is filled up throughout the size range?
  - < 15cm FL as age-0, > 45cm FL as age-7+
  - Gap where age proportion at length is not obtained – use historical average (default ALK) but the usage is minimal

### 4.3. Discussion towards finalization of catch-at-age data for stock assessment, with emphasis on any possible improvements

Summary of catch at age data:

- Generally, Chinese catch is comprised of Q2 to Q4
- Japanese catch is mostly Q1, Q2, and Q4
- Nearly half of catch is age 0-3 for both China and Japan
- Japan harvests more age 4+ fish
- Calendar year and Fishing year conversion affect greatly for Japan but not substantially for China?

### 4.4. Discussion on usage of weight-at-age data to estimate biomass in SAM

### 4.5. Discussion on setting of maturity-at-age data in SAM

Summary of weight and maturity at age data:

- Japan uses maturity at age based on Yatsu and Watanabe (2010) with empirical observations
- China uses maturity at age based on gonadosomatic index?
- The importance of using quarter-based maturity
  - Is it important?
- Weight at age is different among regions
  - Which value to be used for the future forecasting

China presented a review of its age-specific data and biological parameters for chub mackerel stock assessment. The presentation is available on the Collaboration website under TWG CMSA intersessional meetings).

### 4.6. Weight-length relationship and its usage

The TWG CMSA will work intersessionally on this topic.

China and Japan will provide data to estimate weight-length relationship.

### 4.7. Natural mortalities

The Chair presented the estimates of natural mortality referring to Takahashi et al (2019, NPFC-2019-TWG CMSA02-WP01) and Nishijima et al (2021, NPFC-2021-TWG CMSA04-WP05).

### 4.8. Specification of remaining works towards the TWG CMSA08 meeting

The Chair wrapped up the discussion on 4.1-4.7 as follows:

Catch-at-age (C@A)

- Data (C@A, C@L) from Russia have not been shared.
- Gaps were found in ALK between China and Japan
  - Standardization of age-determination method (future work (short/mid term))
- How to prepare fishing-year-based Chinese data for 2014 to 2017
- Chinese quarterly data will be converted into fishing-year basis
  - This treatment is expected to reduce the gap
  - Age increment timing will be set at July 1st
- Dr Ichinokawa's code, shown in NPFC-2023-TWG CMSA07-WP08, can be used for the conversion

Weight-at-age (W@A)

- W@A from Russia have not been shared.
- Gaps were found in W@A between China and Japan
  - Standardization of age-determination method (future work (short/mid term))
- Member-specific W@A can be used to prepare respective catch data
- Conversion of Chinese quarterly W@A into fishing year basis
- How to define W@A representing stock in SAM

Maturity-at-age (M@A)

- Any information on M@A from Russia?
- How do we fill gaps in M@A among Members

- How do we set M@A in SAM
  - Annual M@A
    - China provided whole year M@A
    - Japan provided annual M@A
    - Use one or both
- Age increment timing will be set at July 1st
- Use Jpn annual M@A as 1st step
  - Explore effects of Chn M@A

Natural mortalities

- Do we update natural mortalities provided by Dr Nishijima?
- How do we set natural mortalities in SAM
  - Age-common
  - Age-specific
  - Both
- Growth parameters provided by China, to be submitted to TWG CMSA08
  - Growth parameters are available.
  - Russia? Japan?

Participants agreed to update the estimates of natural mortality based on the updated growth parameters intersessionally.

The Chair will reach out to Russia to request the missing data.

## Agenda Item 5. Abundance Indices

### 5.1. Brief review of CPUE Standardization Protocol

No revisions were made.

### 5.2. Review on CPUE document template

The Chair presented the revised CPUE document template including suggestions provided by Members after TWG CMSA07.

Participants reviewed the CPUE document template and finalized it. The final CPUE standardization protocol and CPUE document template are available on the website under Science/ TWG on Chub Mackerel Stock Assessment (link).

Members were requested to follow the CPUE document template when submitting their documents on CPUE standardization.

### 5.3. Specification of remaining works and assignments towards finalization of abundance indices provided by Members

The Chair outlined the expected documents to be provided by China, Japan and Russia for TWG CMSA08:

| China | Japan | Russia |
|---|---|---|
| Lighting PS CPUE | Summery survey (age-0 index) | Trawl CPUE |
| | Autumn survey (ages 0&1 indices) | CPUE from old Russian VMS submitted TWG CMSA01 |
| | Egg survey (SSB) | |
| | Dipnet CPUE (SSB) | |

China, Japan and Russia will share their CPUE standardization code through the Collaboration website.

## Agenda Item 6. Other matters

### 6.1. Model setting and specification of SAM, if possible

No changes have been made to the model settings and specifications agreed at TWG CMSA07.

Participants will discuss intersessionally about what age (growth stage) each CPUE index indicates.

### 6.2 Others

The Chair presented a list of documents to be submitted to TWG CMSA08.

| | China | Japan | Russia |
|---|---|---|---|
| Input data (CAA, WAA, MAA) | Joint document | | |
| Abundance indices | Lighting PS CPUE | Summer survey (age 0 index) | Trawl CPUE |
| | | Autumn survey (ages 0&1 indices | CPUE from old Russian VMS submitted TWG CMSA01 |
| | | Egg survey (SSB indices) | |
| | | Dipnet CPUE (SSB indides) | |
| Biological parameter (especially, M) | Growth parameters and M | | |
| Preliminary run of SAM | Shota (Japan) will submit a paper<br>(After data submission, Shota will try to conduct SAM) | | |

Participants discussed the dates of TWG CMSA09 meeting. The meeting was tentatively scheduled for 16-19 July 2024. The tentative venue is the Fisheries Resources Institute, Japan Fisheries Research and Education Agency, Yokohama, Japan.

Participants will share data, code and documents through the following TWG CMSA group topic

on the Collaboration website:

1. The group topic "Catch-at-age, weight-at-age, maturity-at-age data based on a quarterly calendar" can be used for data sharing of age-specific data. You can find those data provided by China and Japan in this group topic <https://collaboration.npfc.int/node/123>.
2. To upload your CPUE standardization codes, please access the group topic "Development and improvement of stock abundance indices" <https://collaboration.npfc.int/node/140>.
3. Presentations made at this meeting are uploaded on the group topic "TWG CMSA intersessional meetings" <https://collaboration.npfc.int/node/136>. On this page, you can find agendas, meeting summaries and other documents from the past intersessional meetings.

## Agenda Item 7. Closing of the Meeting

The meeting closed at 12:40 PM on 15 November 2023, Tokyo time.