The data description for **the base case stock assessment** of chub mackerel *Scomber japonicus* in the northwestern Pacific Ocean

Agenda Item 5.2

NPFC 2024 TWG CMSA09 WP01

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Input data for the base case assessment

- Data used for the stock assessment of CM
  - Fishing year-based data
  - Catch-at-age from China, Japan, and Russia
  - Maturity-at-age
  - Weight-at-age
- Methodology and datasets were discussed in CMSA 08 and finalized

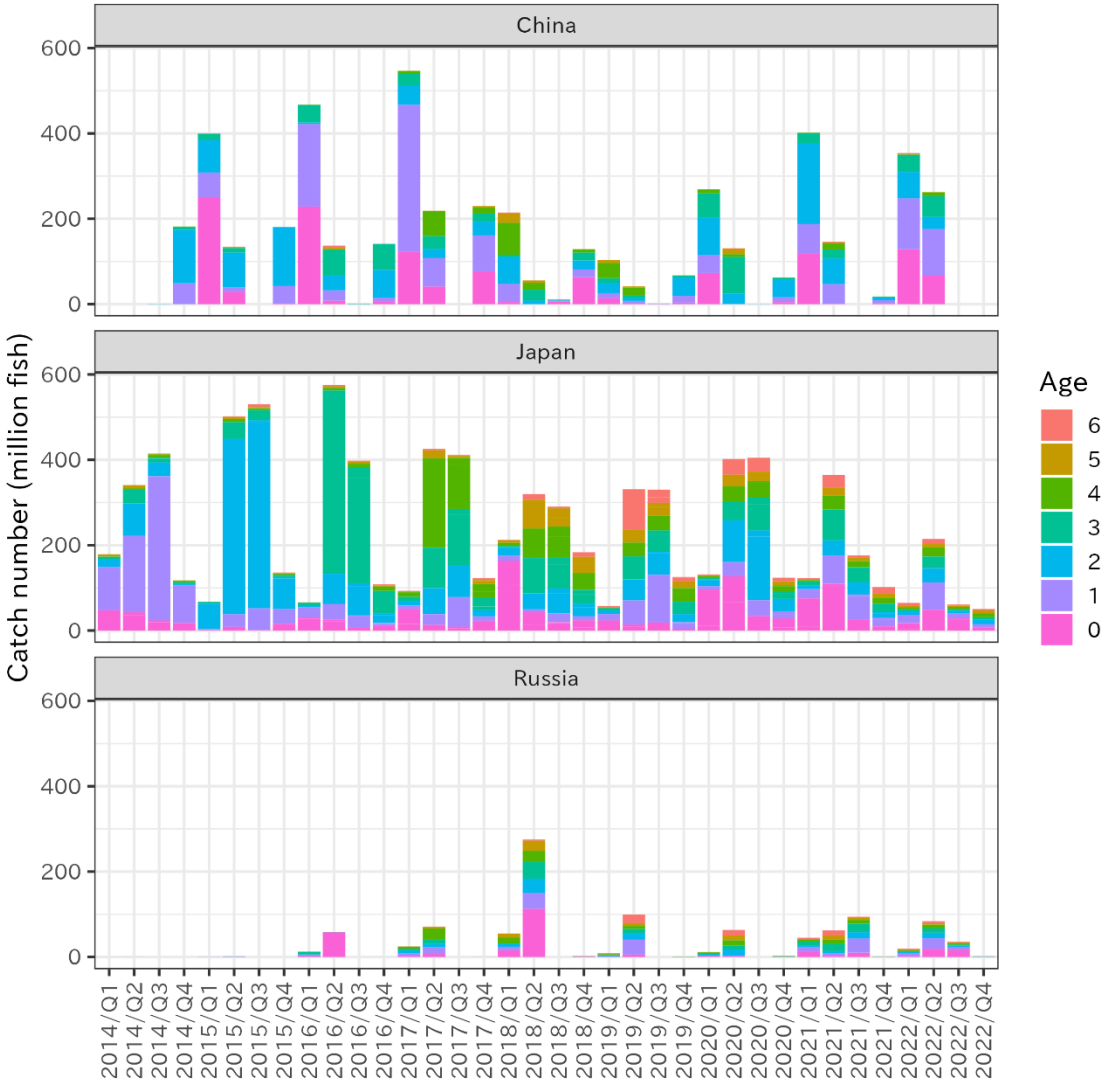
Catch-at-age

- Quarterly catch-at-age from each member is calculated using catch-at-length and ALK
- For the missing CAL and ALK

Year (calendar)	Quarter	Member	Unavailable data	Solution
2015	Q2-Q4	China	Catch-at-length ALK	Use mean catch-at-length of China CY2016-2018 Use Eastern Japanese ALK of the equivalent quarter/year
2016-2017	Q2-Q4	China	ALK	Use Eastern Japanese ALK of the equivalent quarter/year
2014-2015	Q2-Q4	Russia	Catch-at-length ALK	Use mean catch-at-length of Russia CY2016-2018 Use Eastern Japanese ALK of the equivalent quarter/year
2022-2023	Q1-Q4	Russia	Catch-at-length ALK	Use mean catch-at-length and ALK from Eastern Japan of the equivalent quarter/year

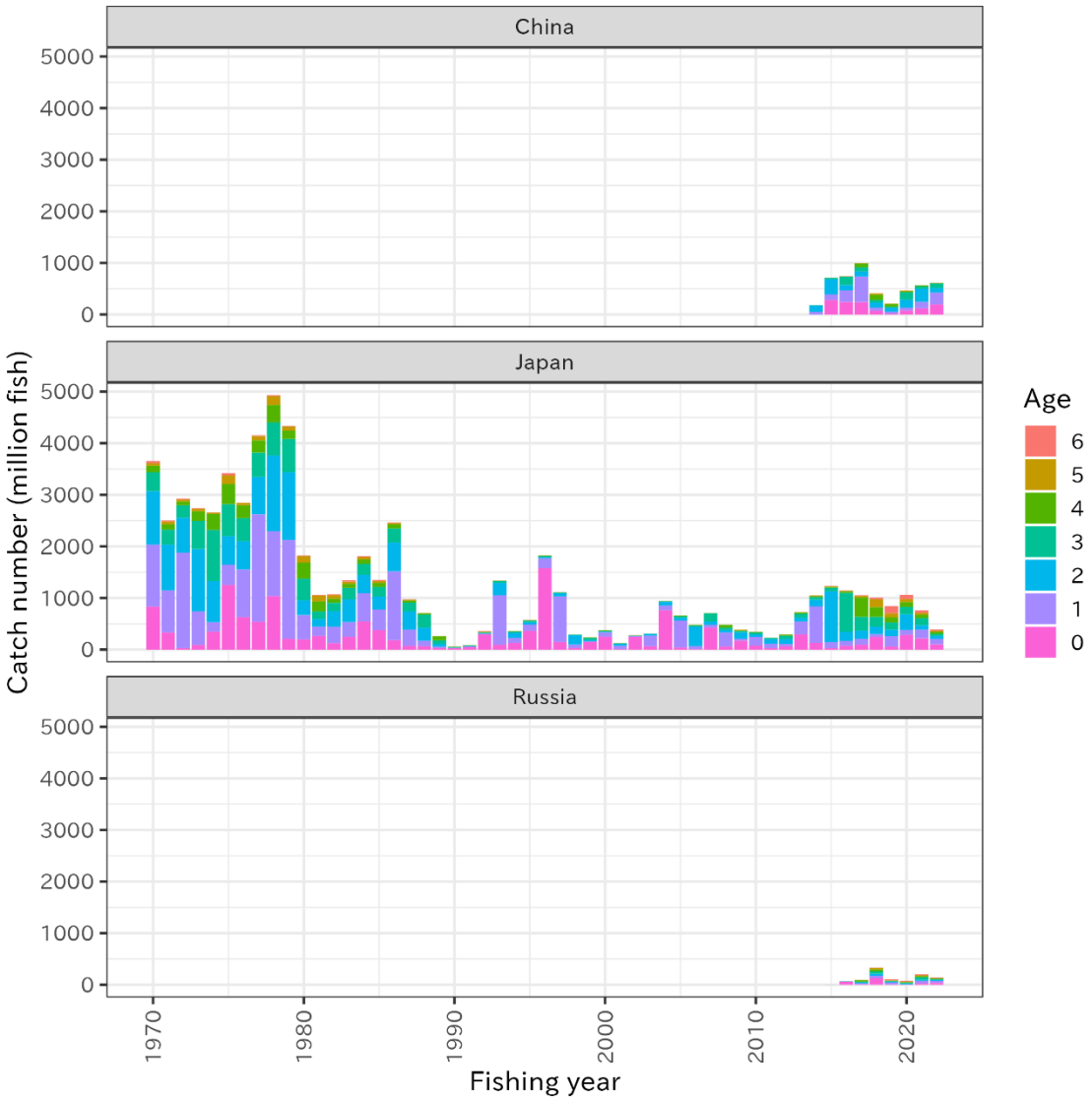
Catch-at-age

- Quarterly catch-at-age from each member
- Chinese catch mainly consist of age 0, 1, and 2
- Recent Japanese and Russian catches consist of older fish (age 3+)



Annual catch-at-age

- Annual catch-at-age data from FY1970
- For FY1970-2013, data is obtained from the domestic stock assessment report of Japan
- Russian catch is included in FY1967-1988 as Japanese catch due to difficulty of separation



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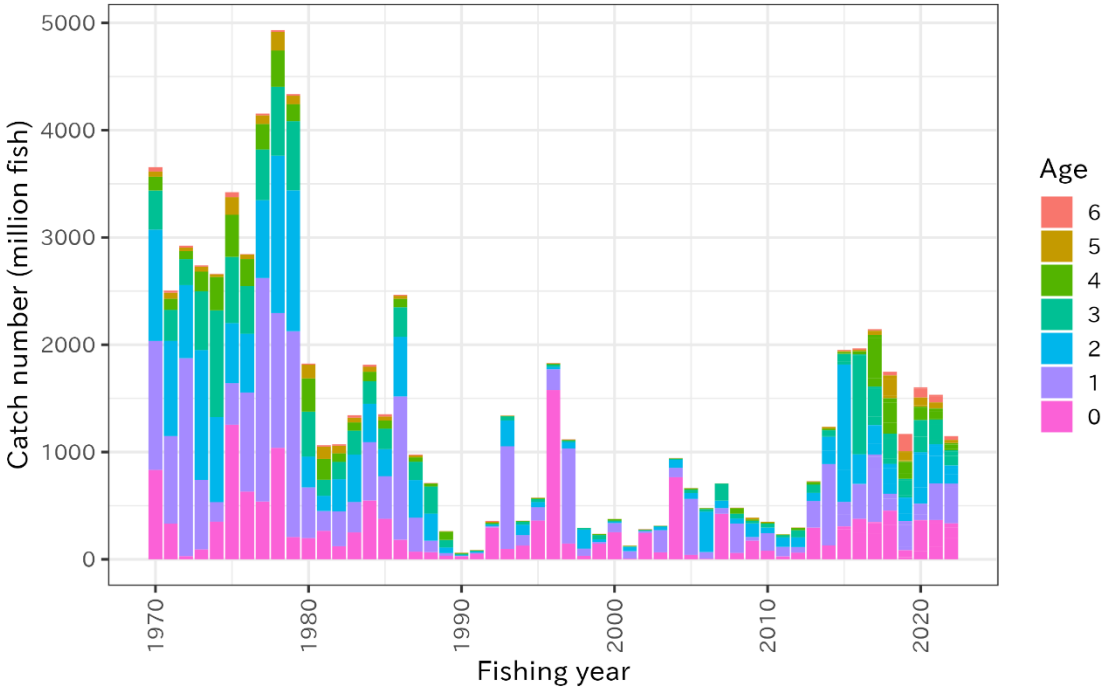


Weight at age

- China, Japan, and Russia had submitted quarterly weight at age
- Due to the difference among members, TWG CMSA has agreed to use **weighted average** of WAA from each member/region

34. The TWG CMSA considered Japan's recommendation and held further discussions. The TWG CMSA tested a number of options for calculating a single weight value for each age for converting stock number into biomass in the forthcoming stock assessment and compared the results. Specifically, it tested the arithmetic average with or without Western Japanese data, the average weighted by catch weight, and the age-specific average weighted by the catch number. Based on the results, the TWG CMSA agreed to use the average, weighted by age-specific catch number with the same ratio across all years (FY2014–FY2022) by Member, of the Chinese, Eastern Japanese, Western Japanese and Russian weight-at-age data.

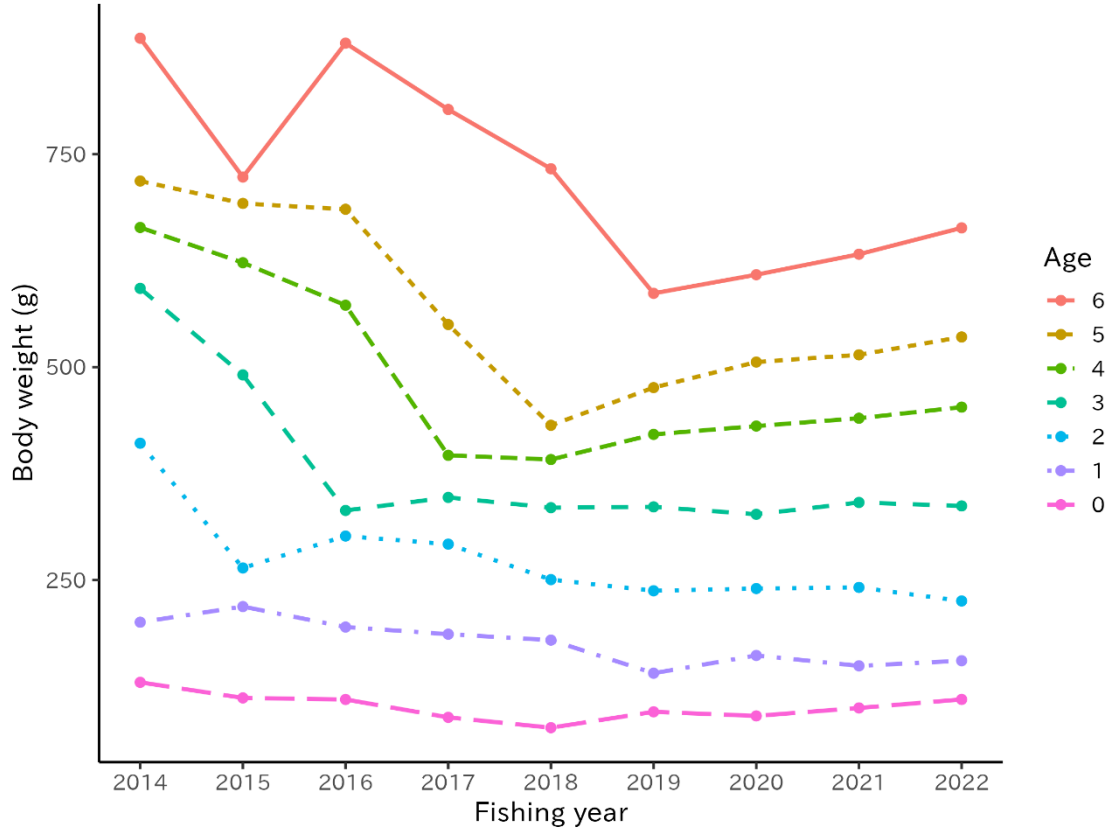
Weight at age

Method

- The WAA is weighted by the catch number of each age from each member, with the same ratio across the years (FY2014-2022)

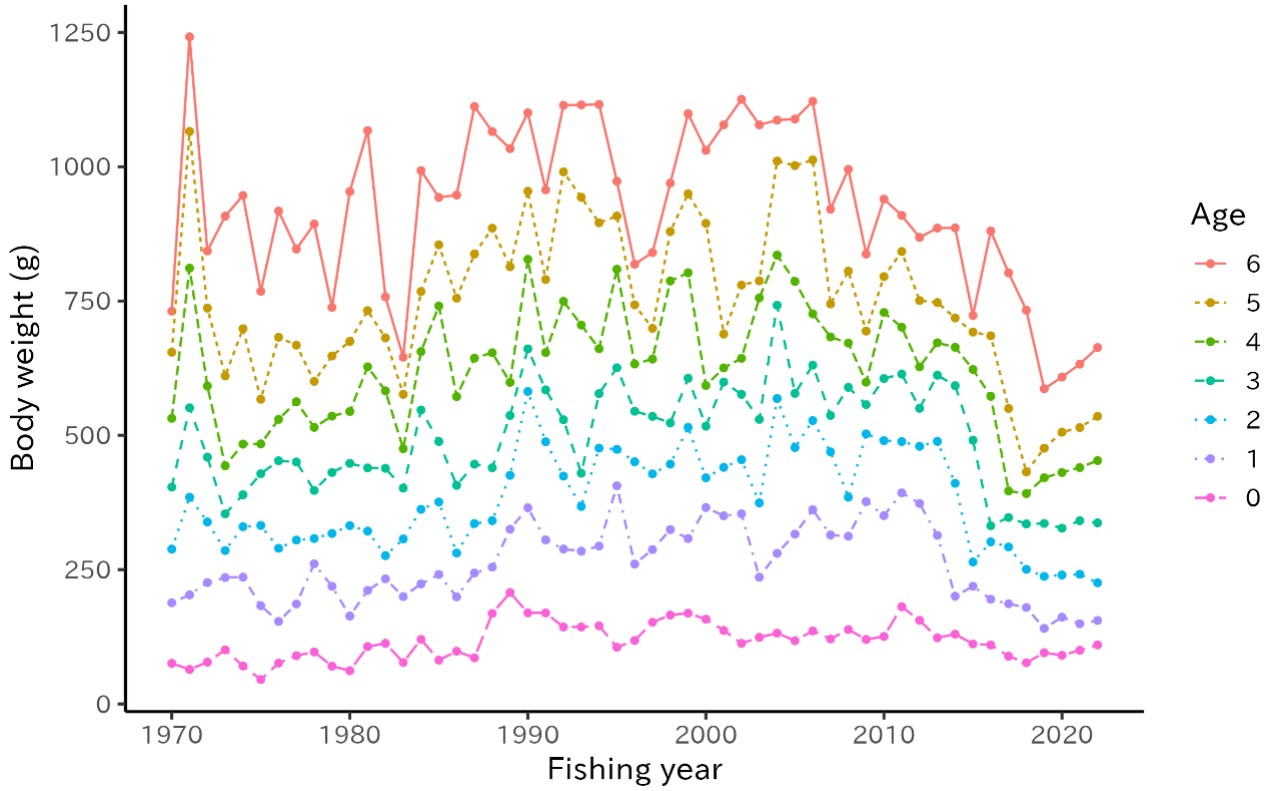
Result

- WAA became lighter after 2013 year-class and remained light-weight
- Slightly recovering WAA for age 4+



Weight at age

- Annual weight-at-age since FY1970
- For FY1970-2013, the data is obtained from the domestic stock assessment report of Japan



Maturity-at-age

25. The TWG CMSA agreed to use Japanese maturity-at-age data from 1970 to 2023 as an input for the base case of the stock assessment. The TWG CMSA also agreed to consider other options when China resubmits its data.

- TWG CMSA08 has agreed to use the annual maturity-at-age data from Japanese domestic stock assessment for all year (FY1970-2022)
- Maturity-at-age data is derived from the observation of catch from the spawning ground based on previous studies

(Watanabe and Yatsu, 2006; Watanabe, 2010)