



North Pacific Fisheries Commission

NPFC-2025-COM09-IP04

Information Paper submitted by Japan

Japan Chub Mackerel Stock Assessment

Abstract

Japan is sharing four domestic stock assessments - blue mackerel (IP03), chub mackerel (IP04), Japanese flying squid (IP05), and Japanese sardine (IP06) for information sharing purpose.



Chub mackerel (Pacific stock)

Chub mackerel is widely distributed around Japan, with Pacific stock occurring in the Pacific Ocean. Fishing year used in this report starts from July and ends in June of the following year.

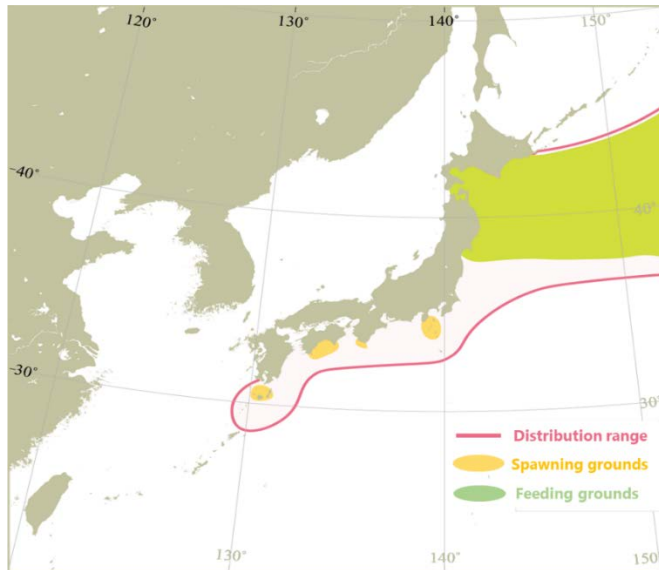


Figure 1 Distribution

Chub mackerel is widely distributed along the Pacific coast of Japan. Its spawning grounds form around the Kuroshio Current off the southern coast of Japan.

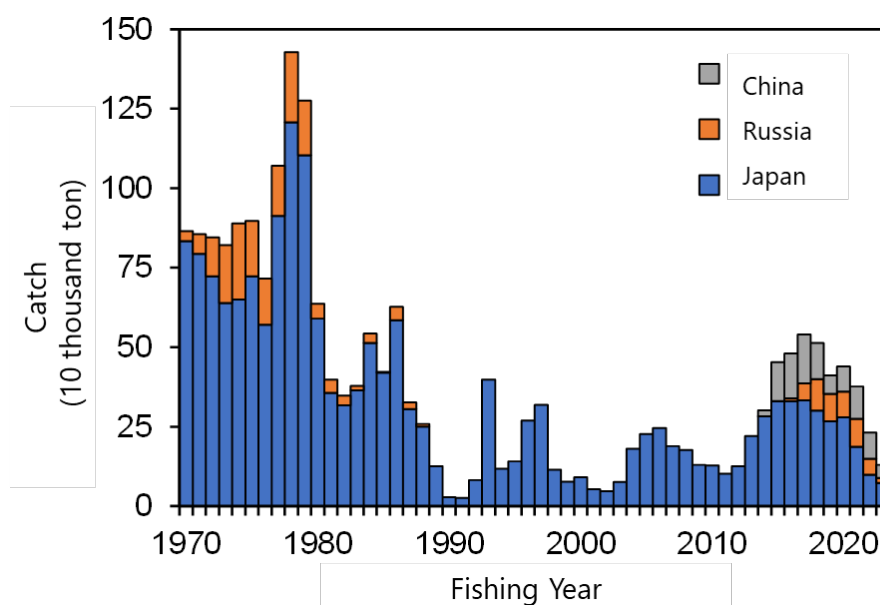


Figure 2 Total catch by country

Japan's catch remained high in the 1970s, declined in the 1980s, and stayed low in the 1990s and 2000s. It increased after the 2012 fishing year but began decreasing after 2020, reaching 73 thousand tons in 2023. In the 2023 fishing year, catches by Russian and Chinese vessels were 16 thousand and 41 thousand tons, respectively. Catches from China and Russia have been included since 2018 and 2016, respectively.

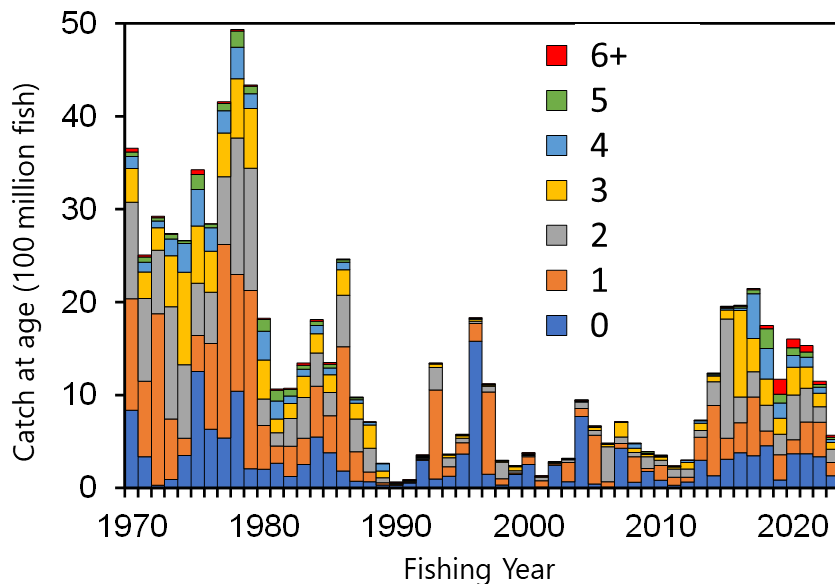


Figure 3 Catch at age

Ages 0 and 1 fish were predominant, but the proportion of age-2 and older fish increased during the 2015–2020 fishing years. The proportion of ages 0 and 1 fish was increased after 2019.

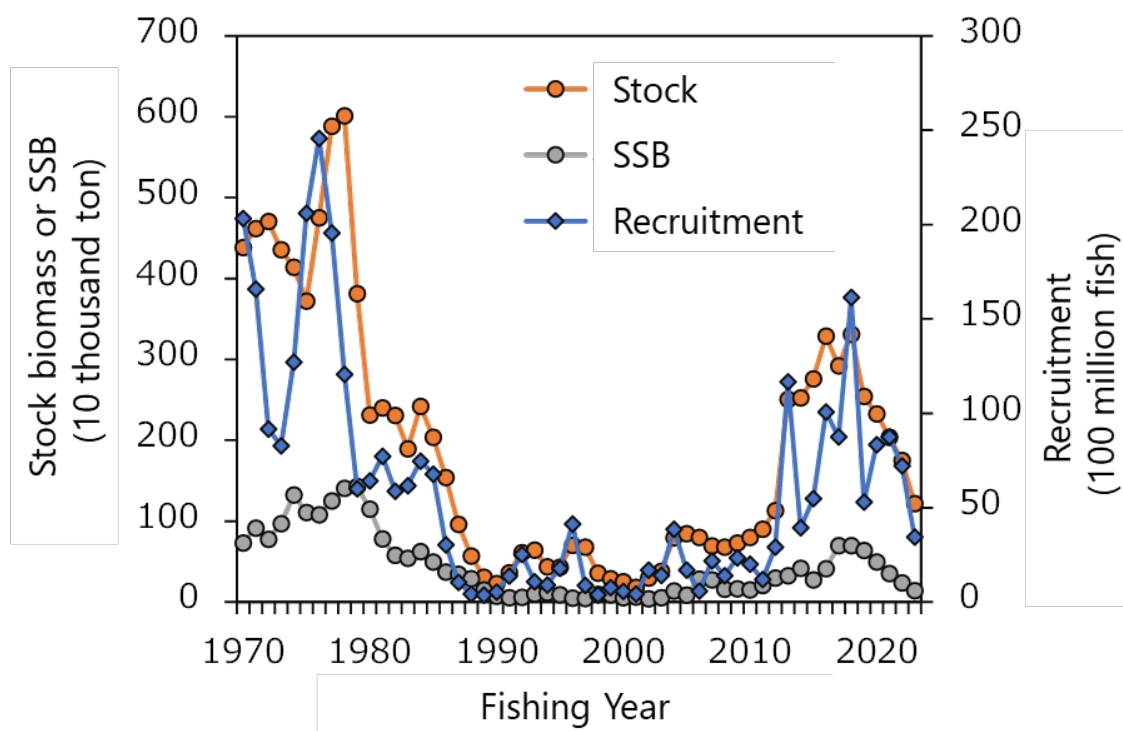


Figure 4 Trends in stock biomass, spawning stock biomass (SSB), and recruitment
 Stock biomass remained high in the 1970s, declined sharply after the 1980s, and remained low in the 2000s. It increased rapidly in the 2013 fishing year but declined after 2019, reaching 1.22 million tons in the 2023 fishing year. SSB followed a similar trend, increasing in the 2017 fishing year but trending downward over the last five years (2019–2023), reaching 140 thousand tons in 2023. Recruitment (number of age-0 fish) was high in the 2013 and 2018 fishing years but has shown a decreasing trend since 2019.

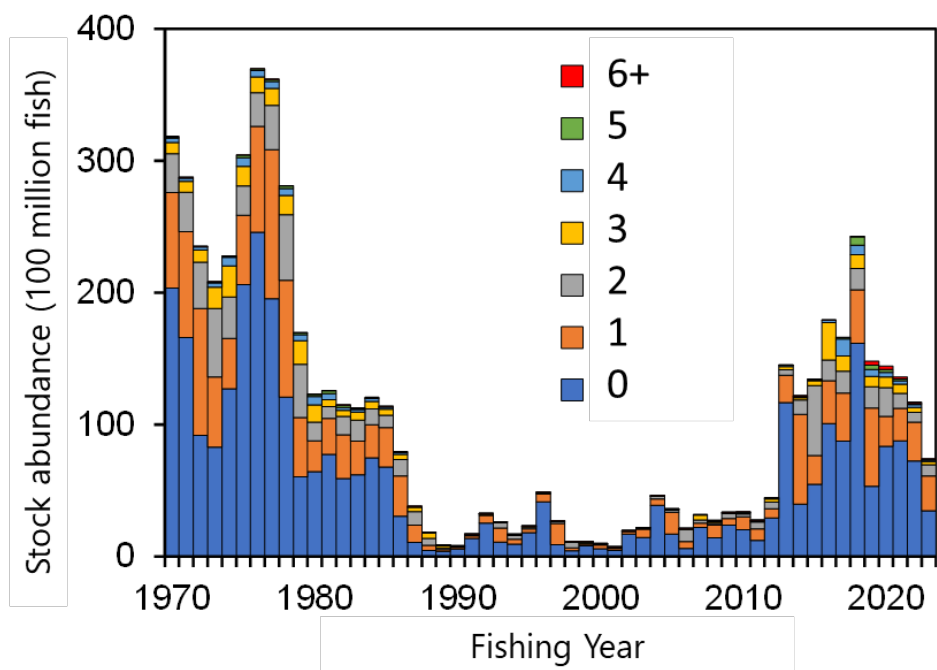


Figure 5 Numbers at age

The age composition of the stock is primarily made up of age 0 (blue) and 1 (orange) fish, with a low percentage of age 2 and older fish.

Table 1 Reference points, estimated values and total catch

Given the high uncertainty in biological parameters, MSY-based reference points were not applied for this stock. A reference point of F50%SPR was employed as a proxy of Fmsy for this stock. A proxy of SSBmsy as target reference point (TRP) was estimated at 626 thousand tons with a MSY proxy of 194 thousand tons under F50%SPR. The limit reference point (LRP) was set at 10% of the pristine spawning stock biomass under a no-fishing mortality scenario. The SSB level of fishing ban was tentatively set at 0 tons.

TRP	LRP	Ban level	SSB in 2023 FY	MSY proxy	Total catch in 2023
626 thousand t	142 thousand t	0 t	144 thousand t	194 thousand t	130 thousand t

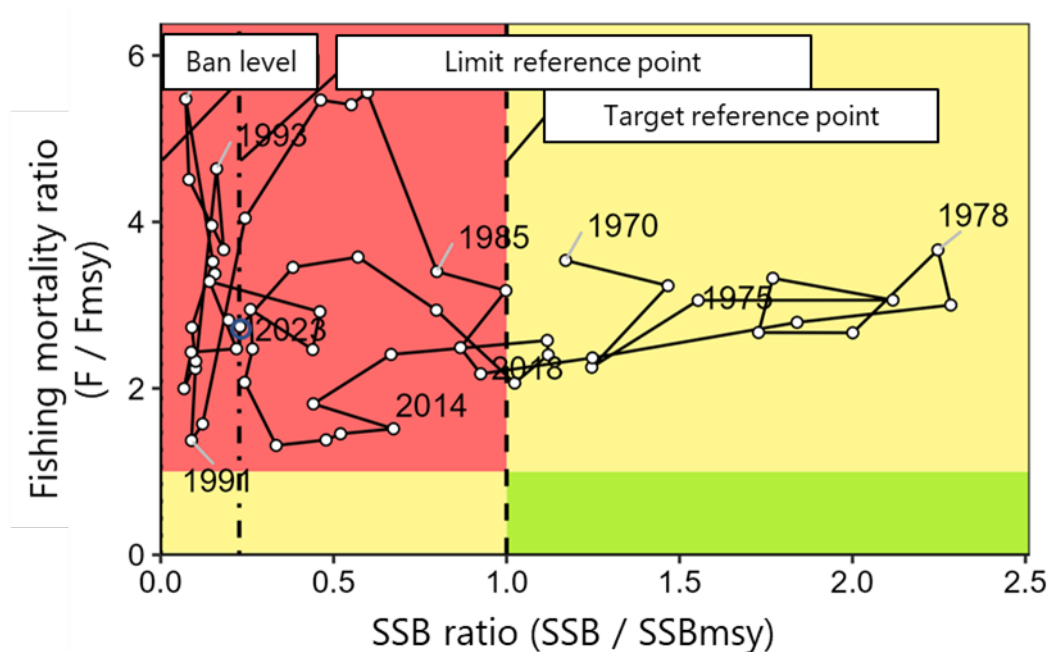


Figure 8 Kobe plot

Fishing mortality (F) exceeded the fishing mortality required to achieve maximum sustained yield (Fmsy) in all periods. The spawning biomass (SSB) was below the spawning biomass that achieves MSY (SSBmsy), except during the 1970–1981 and 2017–2019 fishing years.