

# Species Summary

## Japanese Sardine

*NPFC Japanese Sardine Small Working Group*

*2021-07-19*

### Japanese sardine (*Sardinops melanostictus*)

**Common names:** (Chinese); Japanese Sardine; (Japanese); (Korean); (Russian) - Need names in each language

**Other common names:**

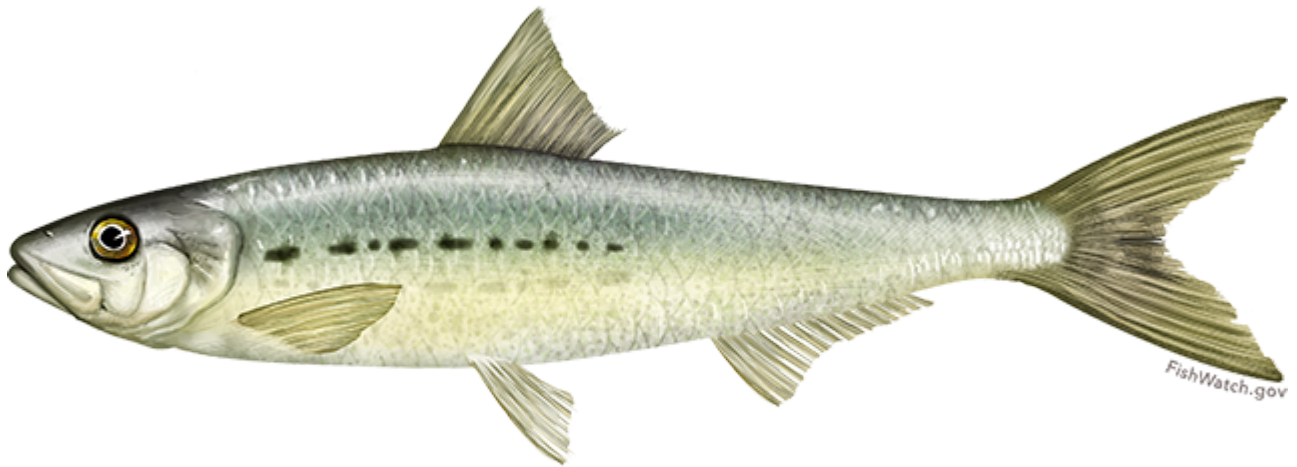


Figure 1: Figure 1. Placeholder picture of Pacific Sardine.

Table 1: <font size= "5">Management Summary</font>

Convention or Management Principle	Status	Comment or Consideration
Biological reference point(s)	Not accomplished	Not established
Stock status	Unknown	Status determination criteria not established
Catch limit	Intermediate	Recommended catch, effort limits
Harvest control rule	Not accomplished	Not established
Other	Intermediate	No expansion of fishing beyond established areas

## Management

### Active NPFC Management Measures

The following NPFC conservation and management measure (CMM) pertains to this species:

- CMM 2021-11 For Japanese Sardine, Neon Flying Squid and Japanese Flying Squid

Available from <https://www.npfc.int/active-conservation-and-management-measures>

### Management Summary

The current management measure for Japanese Sardine does not specify catch or effort limits. The CMM states that Members and Cooperating non-Contracting Parties currently harvesting Japanese Sardine should refrain from expansion of the number of fishing vessels authorized to fish Japanese Sardine in the Convention Area. New harvest capacity should also be avoided until a stock assessment has been completed.

A stock assessment for Japanese Sardine is conducted by Japan within their EEZ and used for management of the domestic fishery.

## Assessment

There is currently no stock assessment for Japanese Sardine conducted by NPFC for the convention area.

Japan conducts an assessment of the Japanese Sardine stock using VPA and a number of data sources described below (Hiroshi and Nishida 2005).

## Data

### Surveys

Japan conducts three surveys that estimate recruitment for a number of pelagic species, including Japanese Sardine (Table 1). The surveys target pre-recruits and juveniles to determine an index of recruitment. Japan also conducts a monthly egg and larval survey that is used to estimate spawning stock biomass. Surveys are conducted in spring (1995-2020), summer (2001-2020) and fall (2005-2020) at 30-80 stations per year. The survey protocol can be found at [website?]. Russia has conducted a summertime acoustic-trawl survey since 2010 that examines mid-water and upper epipelagic species including Japanese Sardine.

## Fishery

China, Japan and Russia catch Japanese sardine. China does not target the species, but is captured as bycatch in other fisheries (e.g. chub mackerel). Catches are primarily by purse seine, with a smaller component of the catch taken by pelagic trawl. China's catch of Japanese Sardine is taken exclusively from the Convention Area from April to December. China's existing catch records are from 2016 to 2020 and show increasing catches during that time period as the stock has been increasing. The historical catches (prior to 2016) are unknown, thought to be low and likely need to be confirmed.

Japan's fishery for Japanese Sardine occurs inside their EEZ and is mostly conducted by large purse seine vessels (>90% of the catch). Additional components of the fishery include set nets, dip nets and other gears. The fishery experienced very high catches in the 1980's and early 1990's, a decline to very low catches from 1995 to ~2010 and has been recovering since then. The fishery is conducted year round, but mainly during the summer season.

The Russian fishery occurs inside their EEZ and is prosecuted primarily by pelagic trawling (>90% of the catch), with a smaller component of the catch coming from purse seines. The success of Russian fishery depends on the migration patterns and overall abundance of Japanese Sardine, as the sardine move into Russian waters when their abundance is high. For this reason, there was no catch from 1994-2011 when the stock abundance was low, but in recent years (since 2016) as the stock has recovered and water temperatures have been warm there have been increasing catches in Russia. The Russian fishery occurs primarily from June to November

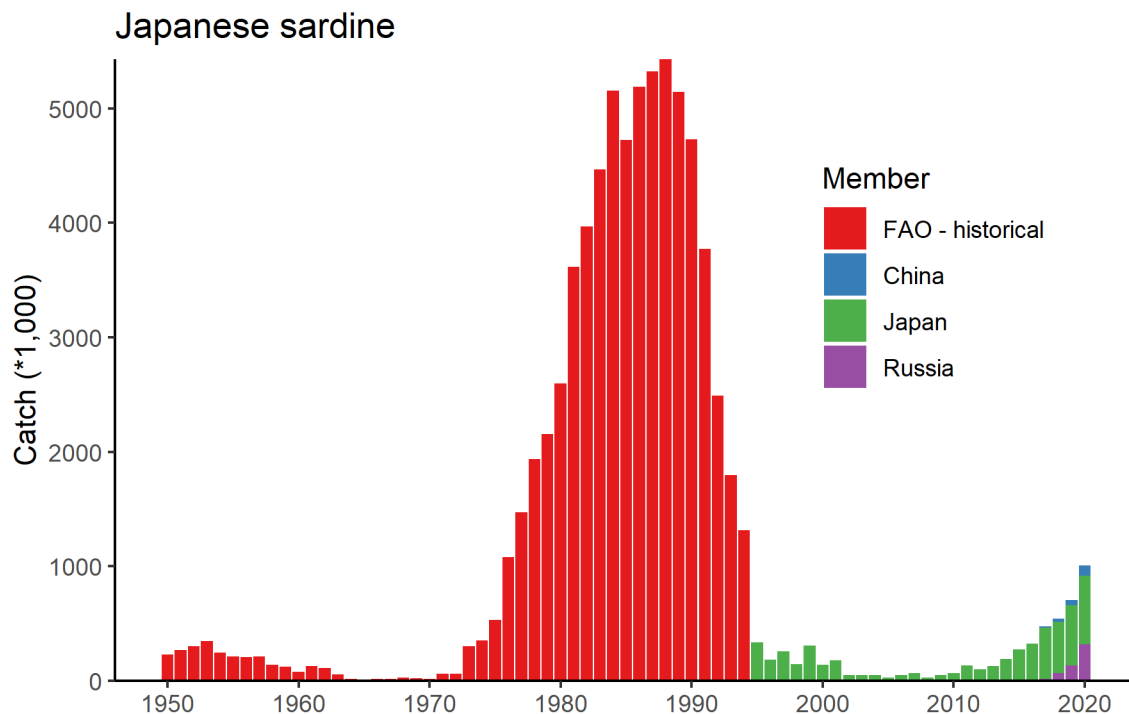


Figure 2: Figure 2. Historical catch of Japanese Sardine.

Vanuatu, Korea and Chinese Taipei do not target Japanese Sardine. Chinese Taipei has some historical records of Japanese Sardine bycatch in the Pacific Saury fishery (~100 mt) and Korea has a small amount of historical bycatch data from the bottom trawl fishery. Vanuatu has no record of Japanese Sardine catches.

Fishery catch data is available for Members from the NPFC website (<https://www.npfc.int/system/files/2021-04/NPFC-2021-AR-Annual%20Summary%20Footprint%20-%20Japanese%20Sardine.xlsx>) since 2001.

Prior years fishery catch data was downloaded from FAO data collections at <https://www.npfc.int/system/files/2021-04/NPFC-2021-AR-Annual%20Summary%20Footprint%20-%20Japanese%20Sardine.xlsx> using rfisheries package.

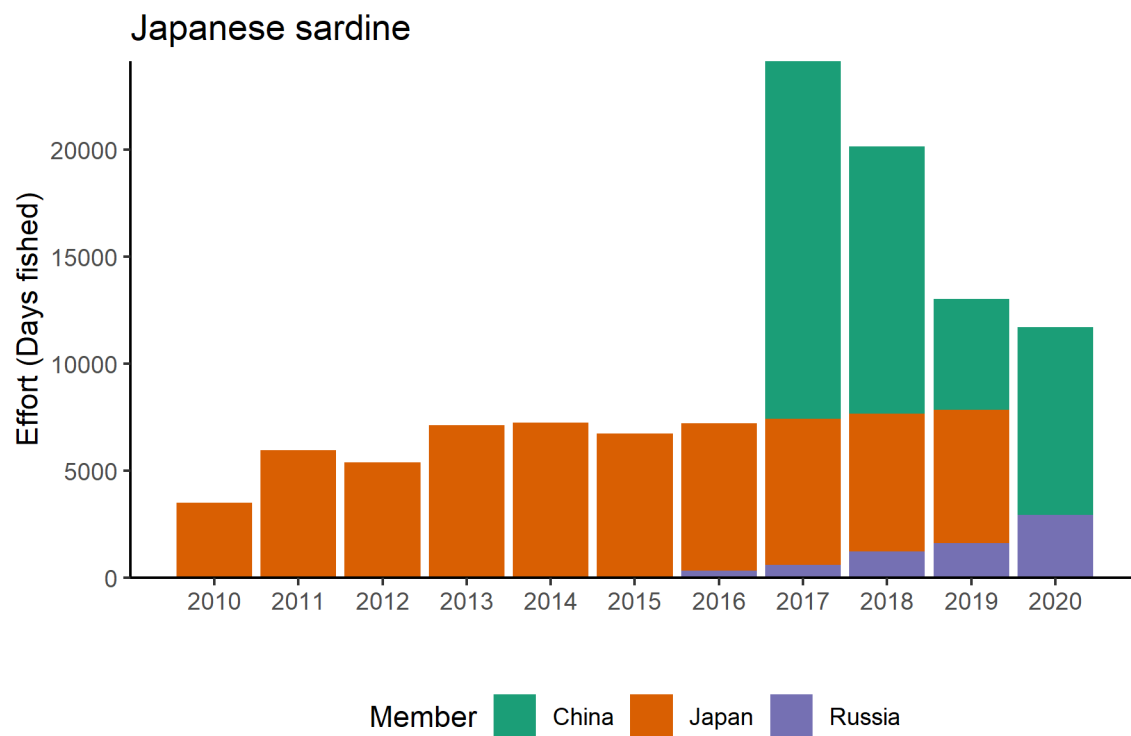


Figure 3: Figure 3. Historical fishing effort for Japanese Sardine.

### Biological collections

China collected biological data from fishery catches of Japanese Sardine in 2020. These collections included length data as well as maturity and age structures.

Russia collects length and weight data, age structures (scales) and maturity data from both commercial catches and surveys.

Japan also collects length, weight, maturity and age data from the survey and fishery to support their stock assessment.

Table 1. Data availability from Members regarding Japanese Sardine

Data	Source	Years	Comment
Catch	China	2016-present	Catches from convention area
	Chinese Taipei		Minor bycatch in Pacific saury fishery
	Japan	1995-present	Historical catch data from 1968 available, catches in national waters
	Korea		Minor bycatch in bottom trawl fishery
	Russia	2016-present	Catches primarily in national waters, not convention area
CPUE			not developed
Survey	Japan		Pre-recruit survey
	Japan		Juvenile survey
	Japan		Monthly egg and larval survey
	Russia	2010-present	Acoustic-trawl survey
Age data	China	2020	Commercial catch
	Japan		Commercial and survey catches
	Russia		Commercial and survey catches
Length data	China	2020	Commercial catch
	Japan		Commercial and survey catches
	Russia		Commercial and survey catches
Maturity/fecundity	China	2020	Commercial catch
	Japan		Commercial and survey catches
	Russia		Commercial and survey catches

## Special Comments

None

## Biological Information

### Distribution

Japanese sardine (*Sardinops melanostictus*; Figure 1) are a pelagic species that occurs in large migratory schools in the coastal waters of China, Chinese Taipei, Japan, Korea and Russia (Figure 2). They generally migrate from the south to the north during summer, returning to inshore areas in the south to spawn in the winter. Japanese sardine feed mainly on zooplankton and phytoplankton.

### Life history

Japanese sardine are short-lived and fast growing, maturing early at 2-years old. Their maximum length is ~24 cm and their maximum reported age is 25 years (**Whitehead1985?**). Their growth rates and spawning patterns are highly influenced by the environment (Niino et al. 2021)

Taxonomically, the Japanese sardine are closely related to other species around the globe including *Sardinops* from southern Africa, Australia, South America and California.

[Insert additional text here]

## Literature cited

Kaschner, K., Kesner-Reyes, K., Garilao, C., Segschneider, J., Rius-Barile, J. Rees, T., & Froese, R. 2019. AquaMaps: Predicted range maps for aquatic species. Data retrieved from <https://www.aquamaps.org>.  
Karthik Ram, Carl Boettiger and Andrew Dyck (2013). rfisheries: R interface for fisheries data. R package version 0.1. <http://CRAN.R-project.org/package=rfisheries>

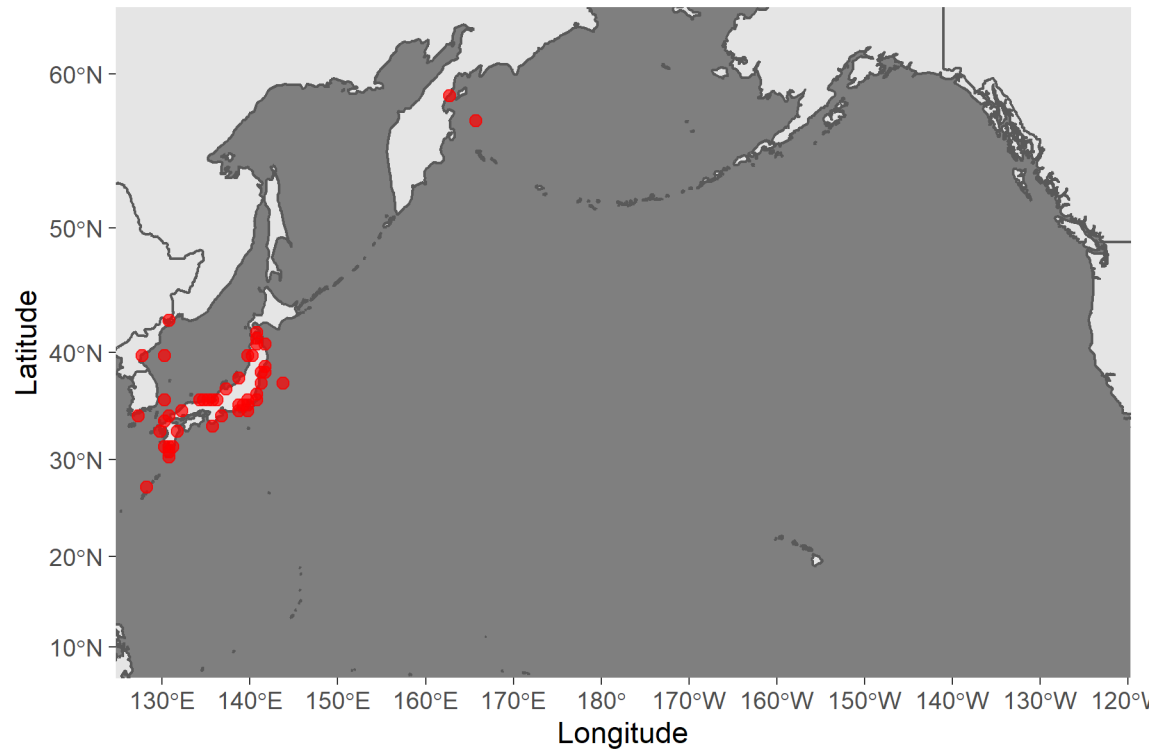


Figure 4: Figure 4. Map of distribution of Sardine species in the North Pacific.

Hiroshi, and Nishida. 2005. “Stock Assessment and ABC Calculation for Japanese Sardine (*Sardinops Melanostictus*) in the Northwestern Pacific Under Japanese TAC System.” In.

Niino, Yohei, Sho Furuichi, Yasuhiro Kamimura, and Ryuji Yukami. 2021. “Spatiotemporal spawning patterns and early growth of Japanese sardine in the western North Pacific during the recent stock increase.” *Fisheries Oceanography*, no. April: 1–10. <https://doi.org/10.1111/fog.12542>.