

Summary of progress on Japanese flying squid



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6.1 Summary of progress on JFS

1st joint meeting of the Small Working Groups on NFS, JFS, JS, and BM (19th June)

1. Update and review Members' catch and effort data
2. Continue research on the spatial structure of the JFS life history and stock relative to the fishing footprint

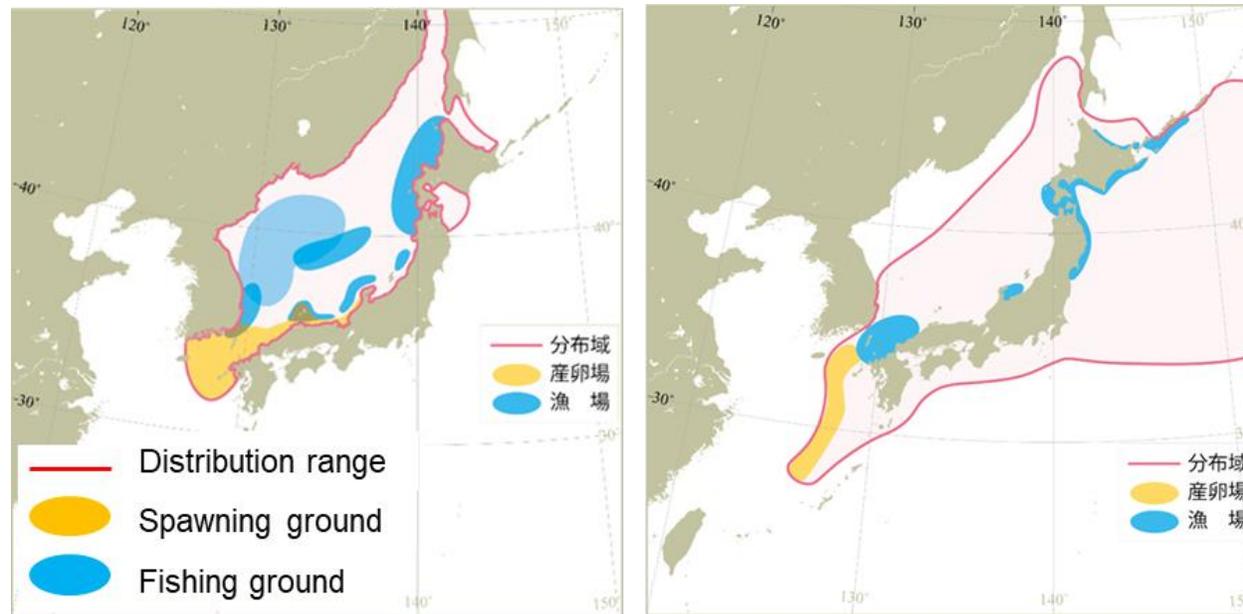
2nd joint meeting of the Small Working Groups on NFS, JFS, JS, and BM (8th August)

1. Overview of JFS stock assessment models and results by Japan and other Members
2. Spatial structure of JFS stocks
3. Species summary

1st joint meeting of the Small Working Groups

1. Update and review Members' catch and effort data

2. Continue research on the spatial structure of the JFS life history and stock relative to the fishing footprint



2nd joint meeting of the Small Working Groups

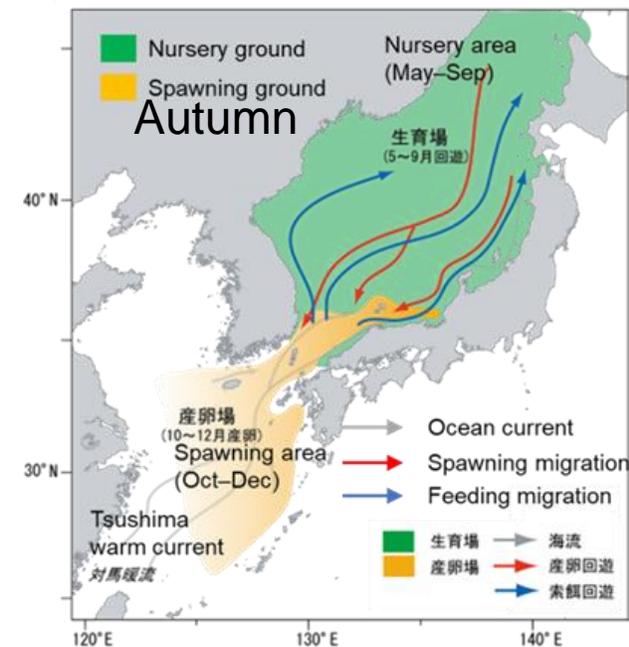
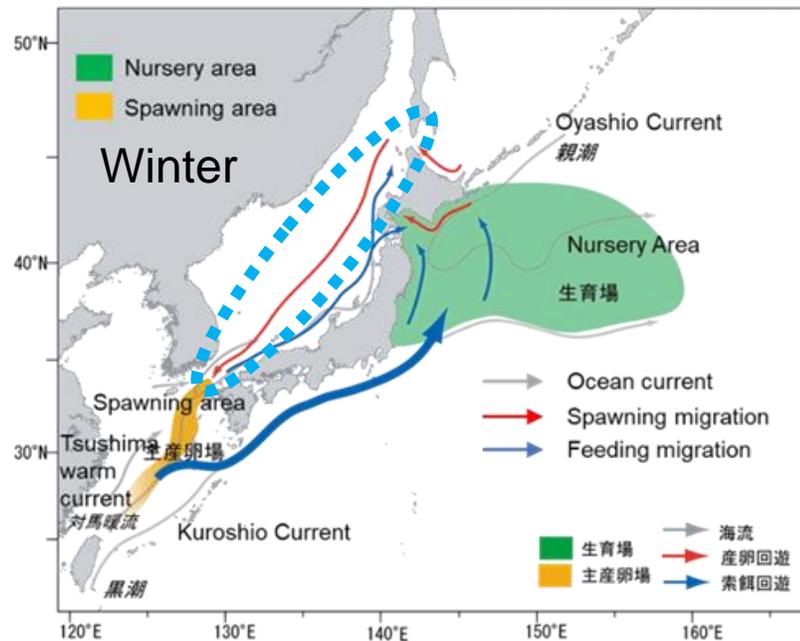
1. Overview of JFS stock assessment models and results by Japan and other Members, if available

- Discuss the possibility of sharing relevant existing stock assessment code for transparency when providing advice to the Commission
- ✓ The Lead explained overview of the domestic stock assessment of JFS by Japan
- ✓ The code for SAMUIKA (State-space Assessment Model Used for IKA, Nishijima et al. 2021) could be downloaded from GitHub (<https://github.com/ShotaNishijima/messir>).

2nd joint meeting of the Small Working Groups

1. Overview of JFS stock assessment models and results by Japan and other Members, if available

- Discuss other data needs to improve Japan's stock assessment of JFS

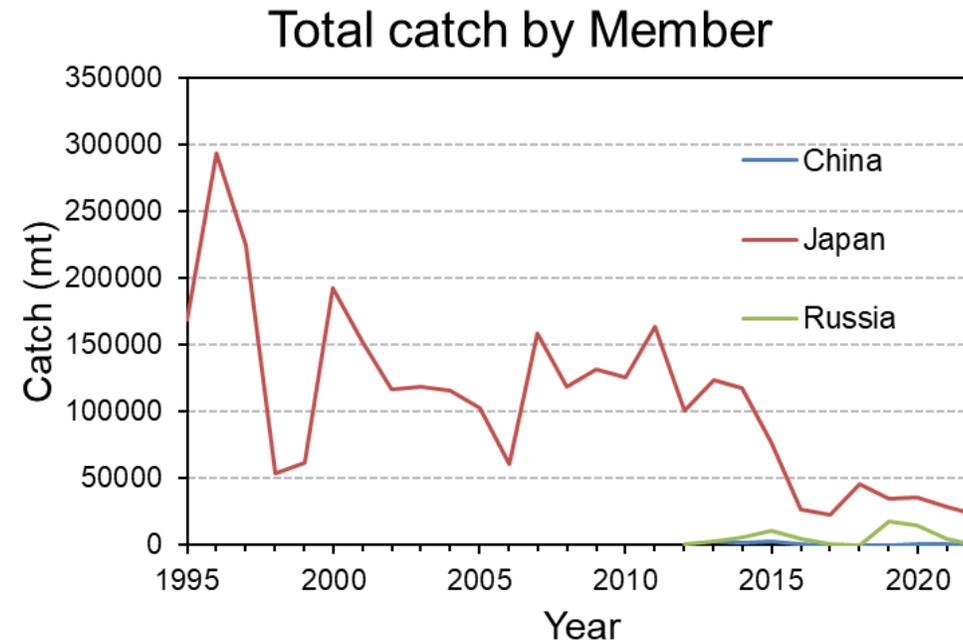
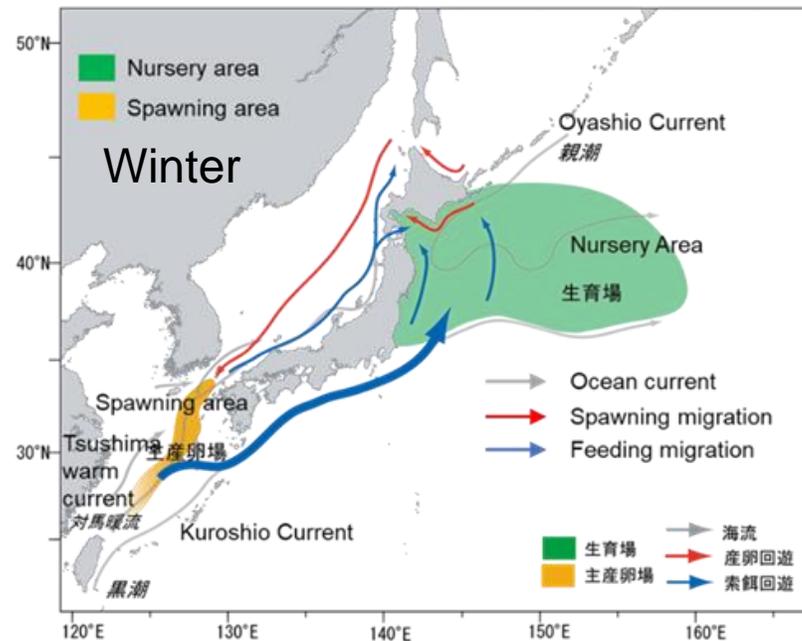


Although the Sea of Japan is out of interest to the NPFC, the availability of catch information from all states which have fished JFS there could improve Japan's stock assessment for both the winter and autumn spawning cohorts

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2. Spatial structure of JFS stocks

- Discuss the possibility of linking footprint and effort data using GIS tools



Catches of JFS in the NPFC Convention Area are low, as the majority of catches comes from Japanese and Russian national waters

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3. Species summary

- Evaluate environmental variables on recruitment, life history parameters, and fisheries population dynamics

Environmental variables examined	Life History Parameter examined	No. of papers
ENSO	Distribution	1
Luner cycle, Tidal condition, Wind direction	Catch condition	1
Salinity	Recruitment	1
Water mass	Distribution, Migration	1
Water temperature	Abundance	1
	Distribution, Migration	3
	Growth	1
	Maturation, Growth	1
	Maturation	1
	Recruitment	5
Water temperature, Chlorophyll a, Sea surface height, eddy kinetic energy	Distribution, Migration	1
Water temperature, Plankton density	Growth	1
Water temperature, Salinity	Distribution	2
	Distribution, Migration	1
Water temperature, Water mass	Migration	1

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3. Species summary

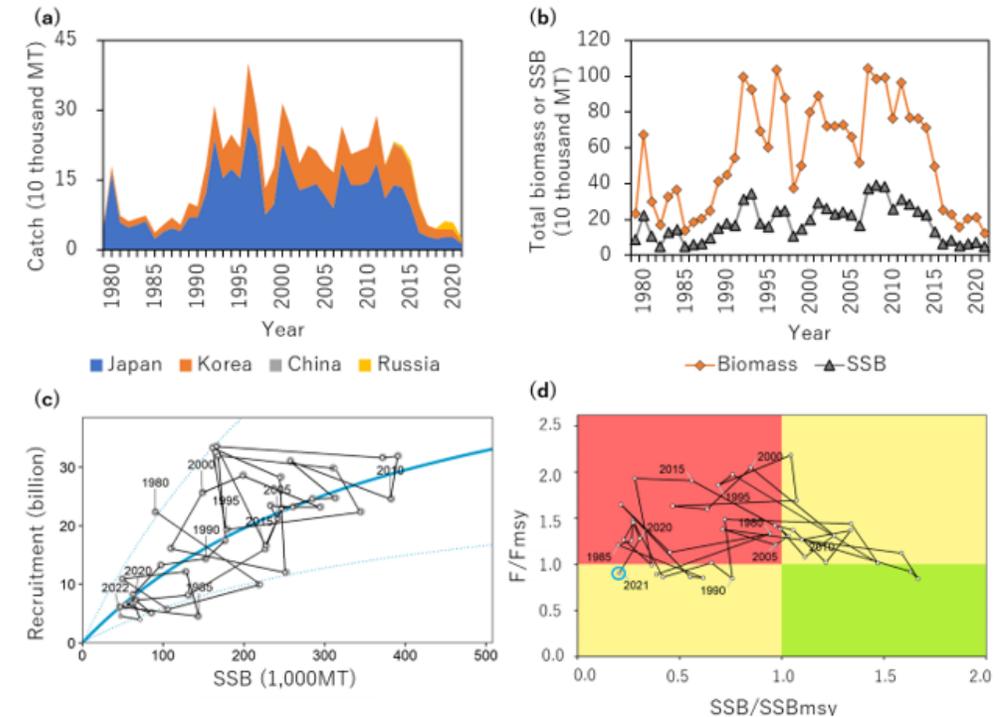
- Discuss including a time series of catch, time series of biomass, SSB and a Kobe plot

Stock Assessment[←]

No stock assessment has been conducted by NPFC for the Convention Area. [←]

Japan conducts annual stock assessments for the autumn-spawning stock and winter-spawning stock of JFS (Figure 1, Miyahara et al. 2023, Okamoto et al. 2023). The latest stock assessment for the winter-spawning cohort in Japan included overseas catch from Russia, China and Korea (Fig. 1a). Estimated biomass and spawning stock biomass (SSB) have decreased drastically since 2015 (Fig. 1b). Japan uses a Beverton–Holt stock-recruitment relationship (Fig. 1c). In 2021, SSB was estimated lower than SSB_{msy} and F was lower than F_{msy} (Fig. 1d).[←]

←



Future activities on JFS

Any anticipated activities during the coming year

- Update Members' catch and effort data
- Update the species summary