2nd joint meeting of the Small Working Groups on NFS, JFS, JS, and BM

August 8, 2023 (9 am – 1 pm Tokyo time)

WebEx

Summary

Agenda Item 1. Opening of the Meeting

The 2nd joint meeting of the Small Working Groups on NFS, JFS, JS, and BM in 2023 commenced at 9am on 8 August 2023 Tokyo time in the format of video conferencing via WebEx. The meeting was attended by Members from Canada, China, Japan, Korea, Russia, Chinese Taipei, and Vanuatu as well as the Secretariat. The list of participants is attached.

The meeting was opened by Dr. Janelle Curtis (SC Chair, Canada) who served as the Chair of this joint meeting and was supported by the Leads of the SWGs: Dr. Luoliang Xu (China), Dr. Hajime Matsui (Japan), and Dr. Shota Nishijima (Japan). Because the SWG JS Lead, Dr. Chris Rooper was not able to attend the meeting, the SWG JS discussion was led by Dr. Janelle Curtis.

Agenda Item 2. Adoption of Agenda

The Lead of the SWG BM, Dr. Shota Nishijima suggested to swap Agenda items 6.1 and 6.2 to first address BM catch and then continue with an overview of BM stock assessment models and results by Japan and other Members, if available.

Participants agreed with the suggestion and adopted the revised agenda.

Agenda Item 3. Neon Flying Squid

Dr. Luoliang Xu led discussions of the SWG NFS.

3.1 Overview of Neon Flying Squid stock assessment models and results by China and other Members, if available

3.1.1 Summarize and discuss stock assessment model candidates.

The Lead proposed five stock assessment models for consideration by Members:

- Surplus production model (employed for NFS by China for research purposes)
- Depletion model (employed for NFS by China for research purposes)
- SAM (in use for JFS by Japan)
- SS3

- CASAL2

China gave a presentation on the stock assessment using JABBA model. China pointed out that biological characteristics of squids make it difficult to use complex stock assessment models. The stock assessment was conducted for two cohorts (winter-spring and autumn) which were separated based on their geographic distribution, i.e. east of 170°E and west of 170°E. The presentation is available on the Collaboration website under SWG NFS.

Russia made a comment that there may be a mixture of two cohorts in the western and eastern areas, but Members recognized that one of the cohorts would dominate each area.

Members **agreed** to continue to use the current approach of separation of winter-spring and autumn cohorts by 170°E.

Members discussed the stock assessment models suggested by the Lead and **agreed** to give priority to the surplus production model.

Japan pointed out that applying SAM to NFS could be challenging but it was worth looking into this, and that stock assessment of NFS should be conducted in a collaborative manner, inter alia code of stock assessment models and relevant data should be shared by Members.

3.1.2 Discuss the possibility of sharing relevant existing stock assessment code (e.g. code used for NFS and JFS) for developing a stock assessment model of NFS.
China agreed to share the code of the surplus production model for NFS.

Japan informed participants that the SAM code used by Japan for JFS is available on Github (https://github.com/ShotaNishijima/messir).

3.2 Define spatial structure of NFS stocks
3.2.1 Review shared spatial information on catch and effort of NFS (monthly, 1 x 1 degree).
China, Japan, Korea and Chinese Taipei shared spatial data through the Collaboration website.

Russia commented that recently there was no catch of NFS by Russia. They have some data on historical catches but Russia will need to discuss sharing these data internally.

Vanuatu will submit data shortly after the meeting [update: data were uploaded on the

Collaboration website].

The Secretariat was **tasked** to map the catch and effort data for NFS shared by Members and make them available on the Members' domain of the NPFC website.

The Executive Secretary, Dr Robert Day brought to Members' attention the new Data Sharing and Data Security Protocol adopted by COM07. Publication of scientific data on the NPFC website should follow the Protocol.

The SC Chair agreed to discuss the Review Panel's recommendation to link the catch and effort data of NFS, JFS, and JS using GIS tools at SC08 in the context of Members' objectives and needs for these analyses.

3.3 Data needs and data preparation for stock assessment

Japan clarified that originally SAM is an age-structured model. But Japan modified the SAM model to be able to use it for the stock assessment of JFS because this species only lives for one year, as does NFS. This model which was named SAMUIKA does not require data on age or size compositions.

Participants summarized data requirements for the proposed models as follow:
- Surplus production model, Depletion model, SAM (a.k.a SAMUIKA) – Abundance index, Catch;
- SS3, CASAL2 - Abundance index, Catch, Age/size composition.

3.4 Progress on baseline stock assessment and CPUE standardization

Participants **agreed** to focus on surplus production model, depletion model and SAMUIKA. A surplus production model will be used as a baseline stock assessment.

China presented its CPUE standardization based on monthly 0.5 x 0.5 degree data using Generalized additive model, Random forest model and Extreme gradient boosting decision tree model. The presentation is available on the Collaboration website under SWG NFS.

3.5 Species summary
3.5.1 Evaluate environmental variables on recruitment, life history parameters, and fisheries population dynamics.

The Lead encouraged Members to keep uploading new scientific papers on the Mendeley site when they become available.

3.5.2 Discuss including a time series of catch, time series of biomass, SSB and recruits and a Kobe plot.

The Lead noted that catch and effort data are already included in the species summary for NFS although they require update. Time series of biomass, SSB and recruits and a Kobe plot will be added after stock assessment has been conducted.

Agenda Item 4. Japanese Flying Squid

Dr. Hajime Matsui led discussions of the SWG JFS.

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

The Lead gave an update on Japan's domestic stock assessment of JFS. The presentation is available on the Collaboration website under SWG JFS.

Russia noted that migration routes for both autumn and winter cohorts are important and changes to their migration patterns may lead to biomass underestimates.

4.1.1 Discuss the possibility of sharing relevant existing stock assessment code for transparency when providing advice to the Commission.

The code for SAMUIKA (State-space Assessment Model Used for IKA, Nishijima et al. 2020) used by Japan for the stock assessment of JFS can be downloaded from GitHub (https://github.com/ShotaNishijima/messir).

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

The Lead presented the distribution of the winter and autumn spawning cohorts of JFS. Although the Sea of Japan is out of interest of the NPFC, the catch information from all Members that fished for JFS in the Sea of Japan in the past could improve Japan's stock assessment for both cohorts.
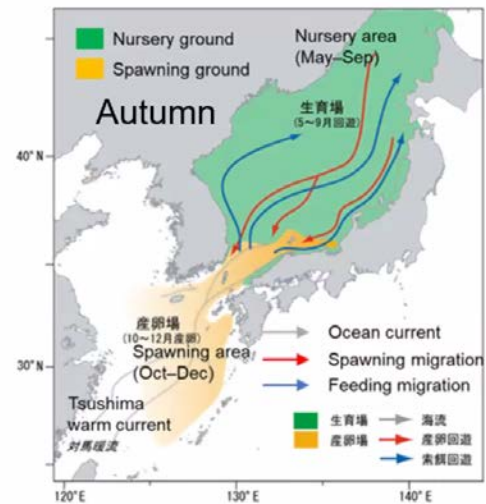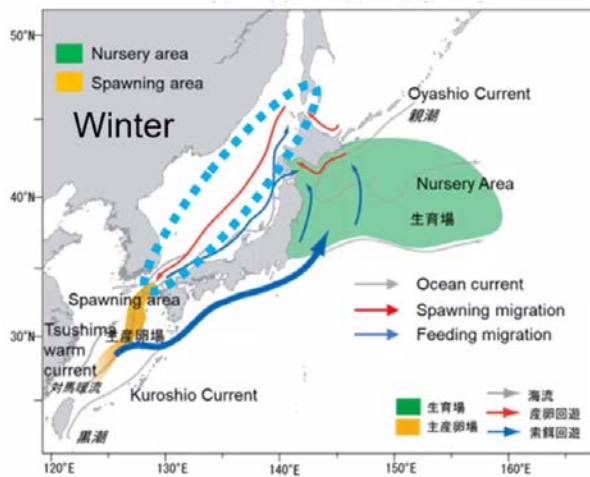
In line with the comment from Japan, Russia added that migration of the winter spawning cohort along the continental coast in the Sea of Japan may be underestimated.

4.2 Spatial structure of JFS stocks

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

Participants noted that catch of JFS in NPFC Convention Area is very small and fishing grounds are mostly located in the EEZ of Japan and Russia. They also noted that spatial data for JFS are not available at the moment.

4.3 Species summary

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

There was no update to the scientific papers shared on the Mendeley site since last year.

4.3.2 Discuss including a time series of catch, time series of biomass, SSB and recruits and a Kobe plot.

The Lead will add time series of biomass, SSB and recruits and a Kobe plot from Japan's domestic stock assessment to the species summary for JFS [update: the revised species summary document was posted on the Collaboration website].

Agenda Item 5. Japanese Sardine

Dr. Janelle Curtis led discussions of the SWG JS.

5.1 Overview of JS stock assessment models and results by Japan and other Members, if available

Japan reminded participants about the domestic stock assessment of JS presented at the previous meeting. The stock was assessed as of 2021, and Japan currently is in the process of updating the

stock assessment.

China informed participants that it had published a paper "Assessment and management recommendations for the status of Japanese sardine *Sardinops melanostictus* population in the Northwest Pacific" in the journal *Ecological Indicators* (available on the Collaboration website under SWG JS). The fisheries management advice in this journal article is based on preliminary research results. China concluded that Japanese sardine stock is in the recovery stage, and there is a possibility of resource fluctuations, because sardine are obviously affected by changes in the climate and marine environment, which may cause change in the suitable range of their habitats.

5.1.1 Discuss possibility of sharing relevant existing stock assessment code for transparency when providing advice to the Commission.

The Lead clarified that the purpose of sharing relevant existing stock assessment code is to be transparent when observing the stock assessment results and providing advice from SC to COM based on Japan's domestic stock assessment. Participants questioned if the code can be shared with all Members. Japan responded that currently the code is not published.

Japan and China will discuss internally and report to SC08 in December if the code of their stock assessment models can be shared with Members.

5.1.2 Discuss shared length frequency data and length-weight relationship data.

Japan reported that it had submitted data on length frequency data and length-weight relationship data and gave a brief presentation on length-frequency data and length-weight relationship.

China will prepare data and upload them to the Collaboration website within 2 weeks after this meeting [update: data were posted on the Collaboration website under SWG JS].

5.1.3 Identify other data needs to improve Japan's stock assessment of JS.

Data needs to improve Japan's stock assessment of JS will be discussed at the next SC meeting.

5.2 Spatial structure of JS stocks

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

The Lead suggested to defer discussions to future meetings and encouraged Members to propose objectives and needs for linking footprint and effort data using GIS tools.

5.3 Species summary

The Lead presented the revised species summary for JS drafted by Dr. Chris Rooper with input from Japan. Time series of biomass, SSB and recruits and a Kobe plot were added to the species summary.

Japan will provide an English version of Figure 3 to replace the current figure.

Agenda Item 6. Blue Mackerel

Dr. Shota Nishijima led discussions of the SWG BM.

6.1 BM Catch

No updates were made.

The Lead reported that Japan and China updated the proportion of BM and chub mackerel (CM) up to 2021 and 2022, respectively. The proportion of BM in the Japanese fisheries slightly increased from 11% in 2020 to 13% in 2021. The proportion of BM in China's catch had been kept at around 10% until 2021, but increased to 25% in 2022. The presentation is available on the Collaboration website under SWG BM.

Japan aggregates catch data by gear by prefecture. Calculating the proportion of BM and CM is possible but too complicated for Japan.

China started to collect samples from pelagic trawl this year (2023). Data from purse seine fisheries are available from 2014.

The Lead requested China to submit the proportion of BM and CM by gear for 2023.

Japan confirmed that it can share the data and code used for Japan's stock assessment of BM, if necessary, subject to internal approval.

6.2.2 Discuss shared length frequency data and length-weight relationship data.
Japan presented a summary of its length frequency data and length-weight relationship data.

China reported that it recently uploaded length-weight relationship data for BM to the Collaboration website.

Based on the comparison conducted by the Lead, the form of the length-weight relationship from the data submitted by Japan and China was almost identical.

China will share length frequency data for BM within two weeks after this meeting.

6.2.3 Collect data on size and/or age composition of BM, if possible.
6.2.4 Identify other data needs to improve Japan's stock assessment of BM.
No updates were made.

6.3 Species summary
6.3.1 Evaluate environmental variables on recruitment, life history parameters, and fisheries population dynamics.
6.3.2 Discuss including a time series of catch, time series of biomass, SSB and recruits and a Kobe plot.
The Lead revised the species summary for BM including (1) adding stock assessment results from Japan, (2) updating the information about the proportion of BM in the catch of China and Japan and catch by gear in Japan, (3) updating the data availability table from Japan (requires update from other Members), and (4) adding length-weight relationship.

The Lead uploaded the species summary to the Collaboration website and requested Members to review and update it (in particular data availability table from China and Japan).

Agenda Item 7. Focus and date of a 3rd intersessional meeting, if needed
7.1 Selection of date (sometime from October 3-7, October 11-13, or October 18-21)
Members agreed to continue working through the Collaboration website and email correspondence and decided not to have another intersessional meeting before SC08.

Agenda Item 8. Revise structure of SC's Subsidiary Bodies

8.1 Discuss establishment of a new SC subsidiary body to focus on NFS (e.g. SSC NFS)

Members discussed the establishment of a new standing SC subsidiary body to focus on NFS and expressed different views.

Some Members agreed on the need to establish a new subsidiary body to conduct stock assessment of NFS but recognized that SC has limited capacity. The Chair proposed to come back to this issue at SC08 in December. The Chair posed the following questions to Members: What the subsidiary body be called if it is established? Who would be chairing and vice-chairing it?

With respect to the capacity, the Chair reminded participants that the NPFC Performance Review had recommended that the SC and TCC develop proposals for funding consideration from funds set aside in the Special Projects Fund. As examples, the Chair suggested a few projects as follows: (1) to hire a contractor to propose candidate stock assessment models for NFS and identify data needed for those models, (2) to hire a contractor to separate the effort statistics of JFS and NFS, and (3) to develop a CPUE standardization protocol for NFS. Members were encouraged to develop other proposals for consideration by SC08.

8.2 Discuss future activities/roles of SWG JFS, SWG JS, and SWG BM

The activities/roles of SWG JFS, SWG JS, and SWG BM will be discussed at SC08.

Agenda Item 9. Process for monitoring Japanese stock assessments of JFS, JS, and BM and providing relevant advice to the Commission, as needed.

Participants **agreed** that the results of the domestic stock assessment of JFS, JS and BM conducted by Japan will be observed by SC at its annual meeting, incorporated in the species summary documents and submitted to the Commission (Japan noted that it does not undertake a domestic stock assessment of NFS). This will include the following steps:

- Japan will report the stock assessment results at SC meeting. The report will be observed by SC Members.
- The Leads will revise, if needed, the information about Japan's stock assessment in the species summary documents submitted to SC.
- The species summary documents will be attached to SC meeting report.

Agenda Item 10. Close of the Meeting

The meeting closed at 12:49pm on 8 August 2023 Tokyo time.
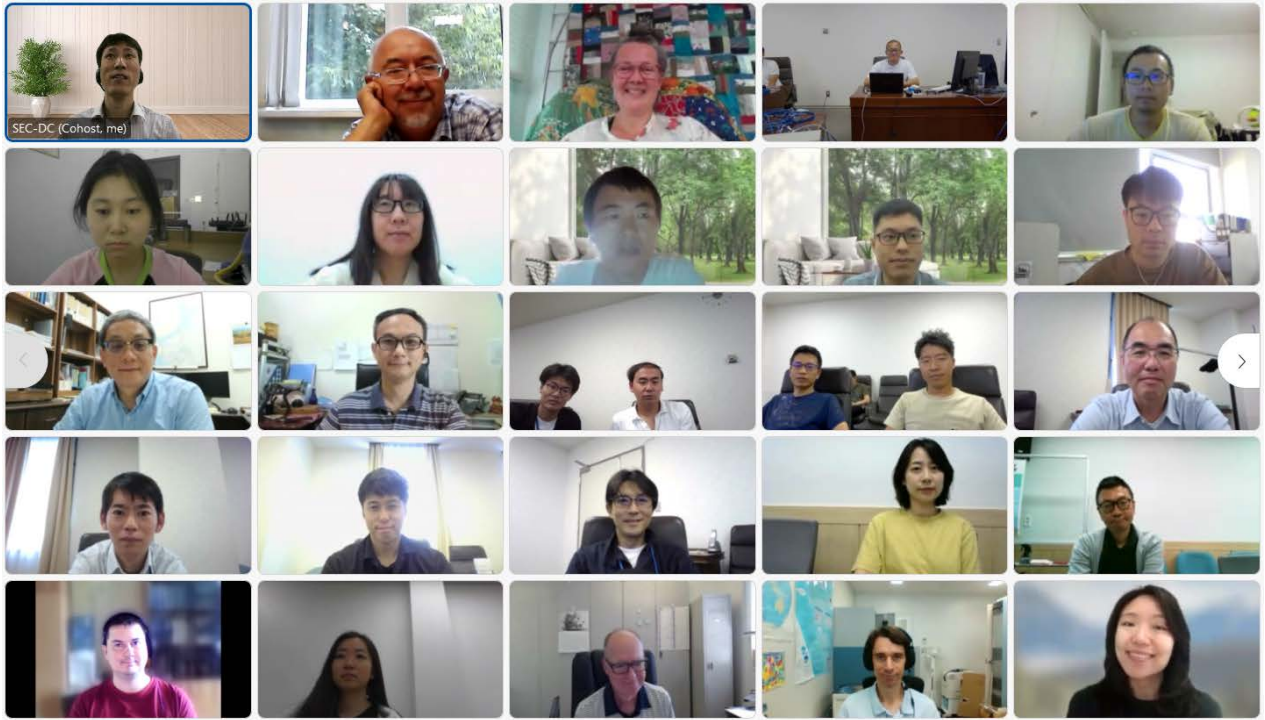
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