North Pacific Fisheries Commission

NPFC-2022-SC07-WP06

2nd Joint Meeting of the Small Working Groups on NFS, JS, JFS, and BM
August 23, 2022 (9 am – 1 pm Tokyo time)
Webex

Meeting Summary

Agenda Item 1. Opening of the Meeting

The 2nd joint meeting of the Small Working Groups on NFS, JS, JFS, and BM in 2022 commenced at 9 AM on 23 August 2022 Tokyo time, in the format of video conferencing via WebEx. The meeting was attended by Members from Canada (Janelle Curtis, Chris Rooper), China (Luoliang Xu, Qiuyun Ma, Libin Dai, Heng Zhang, Richard Kindong, Wei Yu, Fang Zhou), Japan (Kazuhiro Oshima, Shota Nishijima, Masa-aki Fukuwaka, Sho Furuichi, Taro Ichii, Hajime Matsui, Suguru Okamoto, Taketsugu Moriyama), Korea (Kyumjoon Park, Haewon Lee, Sangdeok Chung), Russia (Dmitriy Antonenko, Victor Zamyatin), Chinese Taipei (Wen-Bin Huang, Chih-Shin Chen), and Vanuatu (Mei-chin Juan) as well as the Secretariat (Alex Zavolokin, Sungkuk Kang, Mervin Ogawa).

The meeting was opened by Dr. Janelle Curtis (SC Chair) who served as the Chair of this joint meeting and was supported by the Leads of the four SWGs: Dr. Luoliang Xu (China), Dr. Chris Rooper (Canada), Dr. Kazuhiro Oshima (Japan), and Dr. Shota Nishijima (Japan).

Agenda Item 2. Adoption of Agenda

Participants adopted the agenda without amendments.

Agenda Item 3. Review of overarching SWG intersessional commitments

The Chair reminded participants that the SC had tasked the SWGs on NFS, JS, JFS, and BM to improve understanding of biology and ecology of these four target species, and to begin to identify opportunities for their stock assessments. Fisheries-related tasks were to share and review data, compile CPUE data and agree on CPUE indices, review member's approaches to stock assessment, discuss potential strategies for effective management, and summarize any potential challenges to conducting a stock assessment.

Agenda Item 4. Discussion of the work plan for SWG on Neon Flying Squid

Dr. Luoliang Xu led discussions of the SWG NFS.

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4.1 New insights about species ecology and spatial structure from exchange of papers, reports, and other relevant information

The Lead recalled the spatial structure and species ecology of NFS being a short-lived species with two cohorts: fall and winter-spring, distinguished by spawning time. Participants did not present any other new information for NFS.

4.2 The influence of environmental variables on life history and biology

The Lead thanked Japan for providing a summary of their published research from 1983 to 2020. It was posted on the NPFC Collaboration website (https://collaboration.npfc.int/node/77).

4.3 Review and update species summary

The Lead noted that there were no updates except for the new catch data provided to the Secretariat by members for the year 2021.

4.4 Discuss sharing latitude and longitude information in the data-sharing template for NFS

The Lead informed everyone that after circulating the data-sharing template to members, China had suggested the removal of the spatial information (latitude and longitude) from the template. The Lead also mentioned that during the email correspondence, Japan had asked members if they could provide monthly CPUE for NFS if spatial information would be removed. Canada expressed concern that spatial information was important in tracking species distribution and asked if there was any other way to include spatial location in a less specific manner, similar to the reporting of Pacific saury using 1 x 1 degree resolution. China agreed that spatial information is important but were not comfortable with sharing spatial information until specific objectives for stock assessment or other analyses were identified and agreed on by members. Canada reminded the group that it was tasked by the SC to provide useful information to the Commission members and managers, and that the information was not limited to stock assessments but could be in the form of species summary, e.g., annual or monthly data. The Lead recalled that China had conducted a lot of research about this topic and mentioned that China could share their research with members but without sharing spatial data at this point in time. The Lead also encouraged China to share spatial information with the group in the future, for stock assessment and other analyses. Japan commented that NFS had multiple stocks having different distribution and migration and that there was a need to gather more biological information about seasonal distribution before sharing such data. The lead reminded Members that spatial information could be used to inform future decisions on the type of spatial stock assessment model to use for NFS.

Participants agreed to use the template but entries for latitude and longitude columns would be optional and would use 1 x 1 degree resolution. The group also agreed to add another column specifying National Waters or Convention Area. Japan requested that monthly CPUE data be shared with Members. Participants agreed to submit CPUE data up to 2021 (using the data-sharing template

(Annex A)) **by 23 September 2022**. The Lead clarified that in the future, members could specify the objectives of using spatial information as a basis for requiring the submission of such data.

4.5 Discuss CPUE data and CPUE indices

Japan (Hajime Matsui) reported on the results of their NFS research survey with drift nets in 2022. Size composition of NFS was different between samples from the western North Pacific (144°00'E and 155°00'E) and central North Pacific (175°30'E), which was mainly the winter-spring cohort in the NW Pacific, and mainly female autumn cohort and winter-spring cohort in the central North Pacific. Horizontal distribution of NFS was different between each spawning cohort and hatching date distribution in the western North Pacific in 2018 showed varying distributions at each latitude. It was also reported that the nominal CPUE of the winter-spring cohort in the western North Pacific had remained low in recent years and that the CPUE in 2022 had been similar to the previous year. The CPUE of the autumn cohort in the central North Pacific had been fluctuating in recent years, and CPUE in 2022 had registered lower than the previous year.

The Lead asked Japan about the possibility of using the data for future stock assessments and Japan responded that since the research area was set west of the dateline, the autumn spawning cohort was only partly covered by the survey and thus they needed more information regarding its abundance that could be provided by commercial fisheries. On the other hand, the survey had fully covered the habitat of the winter-spring cohort, and thus could help in understanding the abundance of NFS stocks.

4.6 Review Members' approaches to stock assessment in domestic waters and the NPFC Convention Area

The Lead cited a survey conducted by Japanese scientists and mentioned three NFS stock assessment methods that had been used: swept area, DeLury depletion and non-equilibrium surplus-production methods.

Japan mentioned that one of their scientists, Shota Nishijima, had published a stock assessment of JFS using SAM model, which could also be used for NFS.

4.7 Discuss potential strategies for effective management

The Lead recalled CMM 2021-11 (https://www.npfc.int/active-conservation-and-management-measures) and pointed out that a management measure was already in place for NFS. The Science Manager informed everyone that the TCC expressed concern about this management measure, stating that the number of authorized fishing vessels might not be an effective indicator of fishing effort, and suggested that the Commission and the SC might discuss some other options, like having the number of active fishing vessels as an indicator.

Japan and Canada commented that the role of the SC was to provide advice to the Commission based on stock assessments or other science-based recommendations and that the management of fishing effort, as well as the issue of authorized and active fishing vessel might be out of its jurisdiction.

4.8 Summarize potential challenges to conducting a stock assessment in the NPFC CA

The Lead summarized potential challenges to conducting a stock assessment of NFS, namely, the data availability and sharing, complexity of the species (e.g., two cohorts, short-lived species, vertical migration) and technical capacity (e.g., modelling and coding).

Agenda Item 5. Discussion of the work plan for SWG on Japanese Sardine

Dr. Chris Rooper led discussions of the SWG JS.

5.1 New insights about species ecology and spatial structure from exchange of papers, reports, and other relevant information

The Lead did not receive any new information from members.

5.2 The influence of environmental variables on life history and biology

Using the template circulated to members after the last meeting, the Lead presented an Excel table (https://collaboration.npfc.int/node/80) compiling the biological studies done on JS that had been shared on the Mendeley website for JS. The Lead also encouraged participants to add English summaries of research not written in the English language.

5.3 Review and update the species summary

The Lead updated the JS summary with new catch and effort data and noted that Japan has yet to submit effort data for 2021. The Lead also added the same table described in the preceding agenda item to the JS summary and posted it on the NPFC Collaboration website (https://collaboration.npfc.int/node/80).

5.4 Discuss sharing latitude and longitude information in the data-sharing template for JS

The Lead asked participants if they would take the same approach as NFS with the data-sharing template for JS (i.e., optional entries for latitude and longitude columns, additional column for National Water/Convention Area).

Participants expressed agreement in providing monthly CPUE data and the option to include latitude and longitude.

5.5 Discuss data template and sharing fisheries data in the NPFC CA

Participants agreed to submit monthly JS historical CPUE data using the data-sharing template (Annex A) **by 23 September 2022**.

5.6 Discuss CPUE data and CPUE indices

The Lead explained that once the data-sharing for JS was completed, the group might be able to start with the development of the CPUE indices. The Lead also offered to write a draft proposal based on

the data to be submitted. The SC Chair suggested to discuss the draft with SWG members via email before presenting it to the SC07. The Lead also suggested to include future CPUE indices to the species summary, especially in the absence of stock assessments for those species.

5.7 Review Members' approaches to stock assessment

Japan delivered a short presentation about their domestic stock assessment that they had been conducting since 1976 using catch-at-age data and three time series of abundance indices: recruitment (for age 0), juvenile (for age 1) and egg abundance (for SSB) utilizing the ridge VPA model (a variant of tuned VPA to minimize the retrospective bias). After 2015, both stock biomass and SSB had increased.

The Lead asked if JS was a single stock species and Japan responded that there were actually two kinds of stock: Pacific Stock and East China Sea Stock based on spatial distribution, but they focused on the Pacific Stock for NPFC.

The Lead asked if the catch-at-age used for VPA also accounted for the catch-at-age data from Russian EEZ. Japan responded that in the latest stock assessment, the catch from Russia and China had been included in the data. Japan also expressed hope to receive size and age composition data from other members in future research.

China asked if the stock assessment for JS had been used for management in Japan's domestic fisheries. Japan replied that a Total Allowable Catch (TAC) had been set based on their scientific recommendation resulting from the recent stock assessment.

Canada asked why the exploitation rate had been high in the 1990s to 2000s. Japan responded that a management measure had been in place, but the stock status of JS had been depleted during that period due to their low production (stock biomass and SSB).

China asked Japan why there was a higher proportion of older fish (age 3-4) in recent years and Japan responded that JS recruitment had improved after 2010, so the survival rate of younger fish had increased in recent years.

China and Russia agreed to share biological information of JS with members using a data-sharing template to be circulated by the Lead.

5.8 Summarize potential challenges to conducting a stock assessment in the NPFC CA

The Lead noted that most of the catch for JS were from the national waters of members (e.g., Japan and Russia) and that the Pacific stock is transboundary in nature and not targeted in the Convention Area. The Lead also suggested to focus more on other priority species due to the considerable amount of research already being conducted for JS (i.e., Japanese domestic stock assessment). Participants discussed the potential to simply monitor JS and include monitoring data in the species summary.

Agenda Item 6. Discussion of the tasks for SWG on Japanese Flying Squid

Dr. Kazuhiro Oshima led discussions of the SWG JFS.

6.1 Review and updates to the species summary

Noting that the annual report summary table for squids had been updated up to 2021, the Lead promised to update the graph of the Total Catch by Members in the species summary for JFS. The Lead also reported that he had updated the figures depicting the seasonal migration of autumn-spawning stocks in the Sea of Japan and winter-spawning stocks in the Pacific side as shown on the species summary.

6.2 New insights about species ecology and spatial structure from exchange of papers, reports, and other relevant information

The Lead presented a list of biological research about JFS retrieved from the Mendeley website for JFS.

6.3 The influence of environmental variables on life history and biology

Japan (Taketsugu Moriyama) presented on the effects of environmental variability on JFS (ecology and biomass) that were taken from 22 reports from Japan (20), China (1) and Russia (1) conducted in the Sea of Japan, East China Sea, NW Pacific, Nemuro Strait and in laboratory settings. Japan summarized the effect of water temperature and discussed survival rate of larvae, maturation and lifespan, and the age distribution by temperature. Japan also reported on the effects brought about by other sea conditions, such as the effect of salinity on survival rates of larvae, the effects of SST, SSH, and eddy kinetic energy on growth, and the effects of the Kuroshio Current, ENSO events, regime, lunar cycle on CPUE and distribution.

6.4 Review Members' approaches to stock assessment in domestic waters and/or the NPFC Convention Area

The Lead presented the approaches taken by Japan in conducting stock assessments of JFS. The duration used for the autumn-spawning stock was from 1981 to 2021 while the winter-spawning stock was from 1979 to 2021. The data used for both stocks were from the catch data from Japan, Korea and China, and the recruitment abundance index. Russia's catch data was used only for the winter-spawning stock. The annual recruitment estimates were calculated with standardized indices derived from the recruitment survey and commercial fisheries for the autumn- and winter-spawning stocks, respectively. Fishing mortality and SSB were estimated through Pope's equation. The Lead noted that the total catch of winter-spawning stocks had decreased remarkably in recent years and the annual catch of autumn-spawning stocks by Japan and Korea had also decreased in the same period. China commented about the high catch of JFS in the Yellow Sea in 2021. Japan expressed their wish to exchange catch information with China, but suggested to continue discussion bilaterally, since the area of interest is outside the NPFC Convention Area.

6.5 Summarize potential challenges to conducting a stock assessment in the NPFC CA

The Lead showed a graph of annual catch of JFS in National Waters and Convention Area and pointed out that the very minimal catch in the Convention Area would be a potential challenge for conducting a stock assessment.

Agenda Item 7. Discussion of the work plan for SWG on Blue Mackerel

Dr. Shota Nishijima led discussions of the SWG BM.

7.1 Catch composition in Chinese and Japanese fisheries

The Lead acknowledged the receipt of catch composition data from China and Japan, as agreed upon during the last meeting. Russia also submitted a short report on species identification using survey data. The Lead pointed out that the priority issue for BM was the exchange of information on species identification in mackerel catch. The Lead presented a table of historical catch data (2014-2021 for China and 2014-2020 for Japan) showing the proportion of blue mackerel and chub mackerel from the total mackerel catch. It was reported that the catch proportion of BM by China was remained around 10% and that the catch proportion of BM by Japan decreased from 2014 – 2016 but was kept at 10% thereafter. Data also showed no correlation between the BM catch data of China and Japan.
Russia delivered a short presentation about species differentiation of chub mackerel and BM using survey data from R/V TINRO. Russia examined 2,796 specimens of mackerel using the species identification method proposed by Japan and identified 102 (3.6%) as BM and 2,691 (96.4%) as chub mackerel.

7.2 Review and update the species summary

The Lead pointed out that the catch statistics in the annual summary table combines chub mackerel and BM, so there would be no updates on that table. Participants agreed to update the Fishery section of the species summary and add the sentence “The proportion of blue mackerel catch in the total mackerel catch was around 10% from 2016 to 2020” for Japan. Participants also confirmed that the proportion of BM in mackerel catch of China was around 10% and the proportion of BM of mackerel catch in Russian national waters was considered to be less than 1%.

7.3 Review Members’ approaches to stock assessment in domestic waters and the NPFC Convention Area

Japan (Kazuhiro Oshima) presented the method used by Japan in conducting a stock assessment of BM. Japan surveyed the period from 1995 to 2020 using catch at age data and two time series abundance indices: recruitment (age 0) and egg abundance (for SSB). The estimation method used was a tuned VPA model. From 2011, a decreasing trend was observed in the stock biomass and SSB.

7.4 Summarize potential challenges to conducting a stock assessment in the NPFC CA

The Lead acknowledged the difficulty of sharing CPUE data due to the lack of spatio-temporal CPUE data that differentiate chub mackerel and BM. Other potential challenges could be the effect of BM on

chub mackerel assessment and sharing of biological information (i.e., size, age data and others). The Lead also recognized the fact that BM has a lower priority in stock assessment due to its low catch proportion, demand, and difficulty in species identification.

Agenda Item 8. Prioritization of NFS, JFS, JS, and BM.

8.1 Top-down prioritization for stock assessment of NFS, JFS, JS, and BM

8.2 Capacity for stock assessment of NFS, JFS, JS, and BM

8.3 Funding availability for stock assessment of NFS, JFS, JS, and BM

Participants agreed to discuss agenda items 8, 8.1, 8.2, and 8.3 at SC07.

Agenda Item 9. Identify additional activities to support objectives of SWG NFS, SWG JFS, SWG JS, and SWG BM

9.1 Identify available data, data gaps, and data needs

Participants agreed to discuss agenda items 9 and 9.1 at SC07.

Agenda 10. Future joint meeting of the SWGs on JFS, NFS, SM, and JS

10.1 Identify topics and dates for future intersessional meetings

Participants agreed not to have any more intersessional meetings until SC07.

Agenda Item 11. Other matters

No other matters were discussed.

Agenda Item 12. Close of the Meeting

The meeting closed at 1:01 PM on 23 August 2022, Tokyo time.

Data template for sharing data

Neon flying squid

Member	Year	Month	Duration	Area	Latitude*	Longitude*	Longitude E or W	Grid size, °	Fishing method	Operational days	Effort unit	Effort number	Catch, ton
Japan	2021	January	Month	CA	48.5	136.5	E	1	Jigging	1	# machines	5	100
Japan	2021	February	Month	CA	49.5	137.5	E	1	Jigging	5	# hand jigging	10	50
Japan	2021	March	Month	NW	50.5	138.5	W	1	Jigging	10	# hooks	3	210

Japanese sardine

Member	Year	Month	Duration	Area	Latitude*	Longitude*	Longitude E or W	Grid size, °	Fishing method	Operational days	Effort unit	Effort number	Catch, ton
China			Month	CA			E	1	Purse seine		# net hauls		
China			Month	CA			E	1	Pelagic trawl		# hauls (perhaps not)		
Japan			Month	CA			E	1	Purse seine		# net hauls		
Japan			Month	NW			E	1	Set net				
Russia			Month	NW			E	1	Pelagic trawl		# hauls (perhaps not)		
Russia			Month	NW			E	1	Purse seine		# net hauls (perhaps not)		

* optional