North Pacific Fisheries Commission

NPFC-2022-SC07-WP05

1st joint meeting of the Small Working Groups on NFS, JFS, JS, and BM
June 3, 2022 (9 am – 1 pm Tokyo time)
WebEx

Meeting Summary

Agenda Item 1. Opening of the Meeting

The 1st joint meeting of the Small Working Groups on JFS, NFS, BM, and JS in 2022 commenced at 9 AM on 3 June, Tokyo time in the format of video conferencing via WebEx. The meeting was attended by Members from Canada (Chris Rooper, Janelle Curtis), China (Libin Dai, Qiuyun Ma, Luoliang Xu, Heng Zhang, Haibin Han, Han Peiwu, Fang Zhou), Japan (Kazuhiro Oshima, Shota Nishijima, Masa-Aki Fukuwaka, Sho Furuichi, Jun-Ichi Abo, Hajime Matsui), Korea (Kyumjoon Park, Haewon Lee), Russia (Oleg Katugin, Vladimir Kulik, Emilya Chernienko, Igor Chernienko), Chinese Taipei (Wen-Bin Huang, Chih-Shin Chen), the USA (Felipe Carvalho) and Vanuatu (Mei-chin Juan) as well as the Secretariat (Alex Zavolokin, Sungkuk Kang).

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. Kazuhiro Oshima (Japan), Dr. Chris Rooper (Canada), and Dr. Shota Nishijima (Japan).

Agenda Item 2. Adoption of Agenda

There were no amendments to the agenda.

Agenda Item 3. Review of 2022 tasks for the SWGs on NFS, JFS, JS, and BM

The Chair informed participants that the SC had tasked the SWGs on NFS, JFS, JS, and BM to improve understanding of biology and ecology of these four species, and more specifically to develop data sharing templates, evaluate the spatial structure of life history stages and stocks relative to fisheries and evaluate the influence of environmental variables on life history and biology. Also, the SWGs were tasked to begin work toward stock assessment which will be addressed at the next joint meeting.

Agenda Item 4. Discussion of tasks related to sharing data about the biology and ecology of these four priority species

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4.1 Neon Flying Squid

Dr. Luoliang Xu led discussions of the SWG NFS.

4.1.1 Develop data template to share data

Participants drafted a template for data sharing based on the format developed by the SSC PS for Pacific saury (Annex A). Members will further review the draft template and submit their suggestions to the Secretariat by 16 June 2022.

Members provided information on the fishing gears for their NFS fisheries. Japan usually uses jigging machines but some vessels rarely operate a hand-jigging fishery. China mainly uses hand jigging fishing method. Russia operated driftnet fishery for NFS in 1980s and 1999-2011 but terminated the fishery after 2011. Participants agreed to focus on developing a CPUE index based on jigging by Japan and China.

4.1.2. Evaluate the spatial structure of life history stages and stocks relative to fisheries

The Lead pointed out the complex spatial structure of NFS with at least two cohorts. Understanding of spatial structure of life history stages and stocks is important for stock assessment of NFS.

Participants agreed to continue to share relevant literature on spatial structure of NFS on the Mendeley site and hold further discussion on this matter in the future.

4.1.3. Evaluate the influence of environmental variables on life history and biology

Participants noted the attempts of the SSC PS to incorporate environmental variables into stock assessment models for Pacific saury. They also noted that the SWG NFS has not yet decided on an approach for stock assessment of NFS.

Dr. Chris Rooper volunteered to draft a template to facilitate the identification of environmental variables which may affect NFS's life history and biology (Annex B). The Lead and Members will list potential environmental variables based on the literature shared on the Mendeley site and from other sources and distribute the draft list to Members for review. Some papers not written in English (e.g., Chinese, Japanese, Russian) would need corresponding members to do summaries.

4.2 Japanese Flying Squid

Dr. Kazuhiro Oshima led discussions of the SWG JFS.

4.2.1. Evaluate the spatial structure of life history stages and stocks relative to fisheries

The Lead presented seasonal migrations of two cohorts of JFS. The winter cohort migrates from its spawning grounds in the East China Sea to the nursery area in the western North Pacific and then moves back for spawning. Japanese fishing vessels follow the squid's seasonal migration. The autumn cohort inhabits the Sea of Japan and waters south of South Korea which is not within the NPFC Convention Area.

The Lead encouraged Members to provide their information on the spatial structure of JFS.

Russia added that the autumn cohort may also migrate to the Pacific Ocean but its abundance in the western North Pacific is probably small.

China informed participants that it does not target JFS but reports data on bycatch of this species from other fisheries.

4.2.2. Evaluate the influence of environmental variables on life history and biology

Participants agreed to use the same template for evaluating the influence of environmental variables on life history and biology developed by Dr. Chris Rooper (Annex B). The Lead and Members will list potential environmental variables based on the literature shared on the Mendeley site and from other sources and distribute the draft list to Members for review. Some papers not written in English (e.g., Chinese, Japanese, Russian) would need corresponding members to do summaries.

Participants re-affirmed that, at this stage, there is no need to share additional data for JFS other than annual catch and effort already provided to the Secretariat due to small catch of this species in the NPFC Convention Area. Participants also recognized that there is limited value of developing a stock assessment for this species compared to other NPFC priority species.

4.3 Japanese Sardine

Dr. Chris Rooper led discussions of the SWG JS.

4.3.1 Develop data template to share data

Participants discussed the template for data sharing (Annex A) and agreed that they will use the same data template for NFS and JS with minor variations if needed.

Participants decided not to share biological data on JS but to re-visit this issue in the future after the SWG JS determines the structure of a stock assessment model.

Members provided information on the fishing gears for their JS fisheries. China operates purse seine and pelagic trawl fisheries in the Convention Area. The main fishing gear used by Japan is purse seine although it also operates a set net fishery. Both fisheries are in the EEZ of Japan. Most of Russia's JS catches come from a pelagic trawl fishery in Russia's EEZ, followed by relatively small catches from purse seiners.

China presented a report on its JS fishery in 2020-2021. The report is available on the Collaboration website.

4.3.2. Evaluate the spatial structure of life history stages and stocks relative to fisheries

The Lead reminded participants about the migration pattern of JS described in the JS species summary document.

4.3.3. Evaluate the influence of environmental variables on life history and biology

Participants agreed to use the same template for evaluating the influence of environmental variables on life history and biology developed by Dr. Chris Rooper (Annex B). The Lead and Members will list potential environmental variables based on the literature shared on the Mendeley site and from other sources and distribute the draft list to Members for review. Some papers not written in English (e.g., Chinese, Japanese, Russian) would need corresponding members to do summaries.

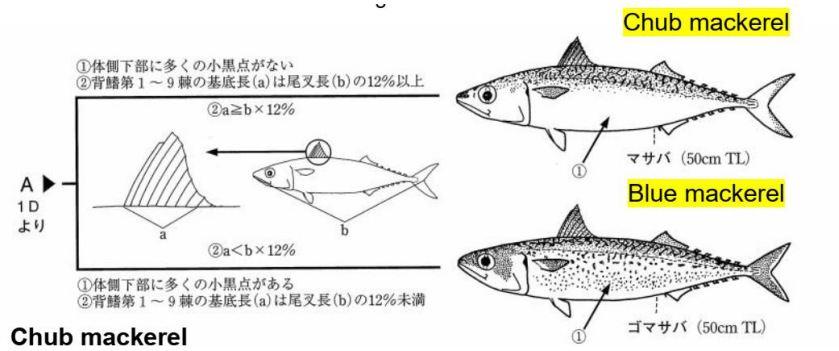
4.4 Blue Mackerel

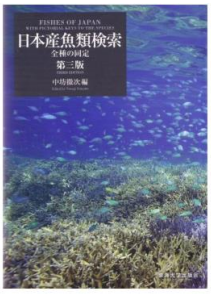
Dr. Shota Nishijima led discussions of the SWG BM.

4.4.1. Share information and papers on species identification of blue mackerel and chub mackerel

The Lead presented on species identification of blue mackerel and chub mackerel from *Fishes of Japan with Pictorial Keys to the Species (Third Edition), 2013, Tetsuji Nakabo Ed, Tokay University Press (In Japanese)*. He noted that the second edition of this publication is available in English.

According to the publication, there are two criteria for species identification of blue mackerel and chub mackerel as follows:





Chub mackerel

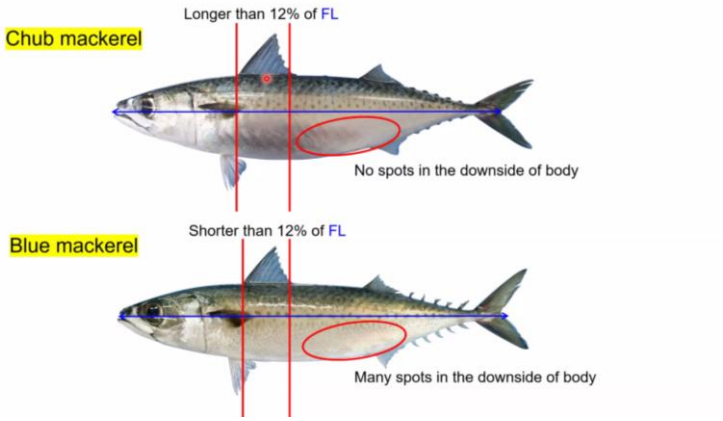
① No small black spots in the downside of body

② Basal length between first and ninth spines of dorsal fins (a) is equal to or longer than 12% of fork length (b)

Blue mackerel

① Many small black spots in the downside of body

② Basal length between first and ninth spines of dorsal fins (a) is shorter than 12% of fork length (b)



The Lead also presented a paper *Microsatellite and mitochondrial haplotype differentiation in blue mackerel (Scomber australasicus) from the western North Pacific* (Tzeng et al 2009, ICES JMS 66: 816-825).

The Lead explained that black spots on the downside of the body are not always visible on blue mackerel and thus this method alone is not a reliable method to differentiate the two species, especially in younger fish. China suggested to use one more method to distinguish chub mackerel and blue mackerel by the number of spines in the first dorsal fin (<10 for CM, > 10 for BM).

4.4.2 Develop data template to share data

Members agreed that currently they are unable to share catch and effort data on BM fisheries because of difficulties with species identification.

Members noted that fishers are unable to distinguish blue mackerel from chub mackerel. Samples are collected in ports and identified by experts, which makes it

difficult to estimate a commercial CPUE for blue mackerel. Russia explained that <1% of their mackerel catches are blue mackerel. China noted that approximately 5-10% of their mackerel catches were blue mackerel, and that the proportion of blue mackerel varies among years. In response to a question about stock assessment of chub mackerel, Japan explained that it collects information on biological parameters for CM and BM separately through surveys at landing ports and did not propose to use fishery-dependent abundance indices of Japan. China explained that the fishery-dependent abundance index of China represents combined catch per effort. China and Japan will share information about their catch composition of CM and BM in their mackerel fisheries based on in-port observations by 9 August, two weeks before the next meeting.

Agenda Item 5. Identification of intersessional activities to address any outstanding tasks related to the biology and ecology of these species

Following the discussion under the previous agenda item, participants identified intersessional activities to address outstanding tasks related to the biology and ecology of NFS, JFS, JS and BM:

- Feedback from members on the draft data template for sharing data for NFS and JS (Annex A) **by 16 June**
- Continue to share information about the spatial structure of NFS, JFS and JS on the Mendeley site
- Fill in the template for evaluating the influence of environmental variables on life history and biology (Annex B)
- Update the species summary documents based on the information presented at the meeting
- Share information about catch composition of CM and BM in their mackerel fisheries based on in-port observations **by 9 August** (China and Japan)

Some Members noted that data sharing requires approval by their government. Timelines for data sharing will be determined later.

Agenda Item 6. Consideration of top-down prioritization and capacity of conducting of stock assessment of NFS, JFS, JS, and BM

The Chair invited participants to share their thoughts on top-down prioritization and capacity of conducting stock assessment of NFS, JFS, JS, and BM.

Japan gave a presentation on the geographical distribution and catch of NFS, JFS, JS, and BM. Compared to the other three species, NFS is more abundant in the high seas than in coastal waters.

Fishing grounds of NFS fisheries are located in the NPFC Convention Area while JFS, JS, and BM are mainly harvested in the national waters. Japan agreed to share its informative presentation.

Participants discussed NFS and JS as potential priorities for stock assessment among these four pelagic species. China added that a significant portion of the JS's total catch comes from the Convention Area in recent years. Members will hold further discussions of top-down prioritization of NFS, JFS, JS, and BM at the next meeting. They will also talk about capacity and funding availability for stock assessment of these species.

Agenda Item 7. Focus and date of 2nd intersessional meeting

7.1. Selection of date (sometime from 16-29 August?)

The next meeting will be held on 23 August from 9am – 1pm, Tokyo time.

7.2. Identification of intersessional activities to address fisheries-related tasks

7.2.1. Exchange and review relevant data

7.2.2. Compile CPUE data and agree on CPUE indices

7.2.3. Review Members' approaches to stock assessment

7.2.4. Discuss potential strategies for effective management (NFS)

7.2.5. Summarize any potential challenges to conducting a stock assessment

Participants reviewed fisheries-related tasks which will be discussed at the next meeting.

Agenda Item 8. Summary of activities/analyses/discussion to report to SC07.

A summary of activities/analyses/discussion to report to SC07 will be made at the next meeting.

Agenda Item 9. Close of the Meeting

The meeting closed at 01:40 PM on 3 June 2022, Tokyo time

Data template for sharing data

Neon flying squid

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

Japanese sardine

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

Annex B

Template for identification of environmental variables which may affect life history and biology of priority species (and example)

Reference	Year	Report type	Country of study	Ocean	Region studied	Focus species Common Name	Life stage studied	Life History Parameter examined	Environmental variables examined	Effect of environment	Study method (correlation, time-series analysis, multivariate analysis, etc.)	Comment
Kodama, T, Wagawa T, Ohshimo S, Morimoto H, Iguchi N, Fukudome KI, Goto T, Takahashi T, Yasuda T. 2018. Improvement in Recruitment of Japanese Sardine with Delays of the Spring Phytoplankton Bloom in the Sea of Japan. Fisheries Oceanography 27 (4): 289–301. https://doi.org/10.1111/fog.12252.	2018	journal paper	Japan	Pacific	Sea of Japan	Japanese sardine	Larvae	Recruitment	Sea surface chlorophyl a	delay in start and end dates of spring bloom were positively correlated with recruitment	Correlation, empirical orthoganal function	