North Pacific Fisheries Commission

NPFC-2025-SSC BFME06-RP02

2nd meeting of the Small Working Group on VME
October 2, 2025 9 AM – 1 PM Tokyo (October 1, 2025 5 PM – 8 PM PDT)
WebEx

Summary

Item 1. Opening of the meeting

The 2nd intersessional meeting of the Small Working Group on Vulnerable Marine Ecosystems (SWG VME) in the 2025 operational year commenced at 9 am on 2 October 2025, Tokyo time in the format of video conferencing via WebEx. The meeting was attended by Members from Canada (Chris Rooper), China (Xiaoxue Du), Japan (Kota Sawada, Yumiko Osawa, Mai Miyamoto, Moto-omi Yamaguchi, Satoi Arai, Chris Ayer), and Korea (Hyejin Song) as well as the Secretariat (Robert Day, Alex Zavolokin, Sungkuk Kang). Amy Baco-Taylor and Lissette Victorero attended as observers from the Deep Sea Conservation Coalition (DSCC). The meeting was opened by Chris Rooper (Canada) who served as the SWG VME Lead.

Item 2. Adoption of agenda

There were no amendments to the agenda.

The presentation from the Lead for this and following agenda items is available on the Collaboration site under SWG VME.

Item 3. Review outstanding tasks for SWG VME for 2025 (see list below)

The Lead updated participants on the progress in accomplishing tasks assigned by SSC BF-ME05 to the SWG VME:

1. Continue working on visual data objectives (~~Objective 2b and~~ Objective 3)
    a. ~~Identify high density VME areas on each fished seamount~~
    b. Develop new species distribution (presence/absence and abundance) models for VME taxa on all seamounts
2. ~~Prepare to~~ update fishing impacts assessment
3. ~~Continue to work to develop a synchronized approach for assessing and managing the risk of SAI and determine data requirements and spatial/temporal resolution for SAI assessment~~
4. Develop or research alternative methods to apply to Japan and Korea's indicator taxa bycatch to further refine encounter thresholds that are taxon and gear specific
5. Consider and explore other methods for identifying VME

6. ~~Discuss value of using fisheries VME indicator taxa bycatch data for managing VME and develop TOR if sharing is necessary~~
7. Literature review of connectivity, recruitment and recovery of VME indicator taxa among seamounts

Note: Struck through tasks have been addressed.

Item 4. Fishing impacts assessments update

- Updates from Members on progress

Japan

Japan (Yumiko Osawa) introduced a methodology for updating SAI risk assessment (presentation is available on the Collaboration site under SWG VME). Updated fishing impact assessment will be conducted in accordance with NPFC-2017-SSC VME02-WP03 (Rev. 1) that involves four steps: (1) Characterization of the benthic communities, (2) Fine-scale overlap with fishing efforts, (3) Risk scoring of the underwater survey locations, and (4) Identification of VME sites. It will be based on seafloor images taken at 407 locations by drop camera surveys of R/V Kaiyo-maru from 2009-2024 and fishing operation data collected by Japanese scientific observers from June 2009 through October 2024. For analyzing fine-scale overlap with fishing efforts, likelihood cross validation will be applied to select a smoothing bandwidth for kernel estimation of point process intensity. Risk assessment in survey limited areas/seamounts will be conducted using sparr package for R that provides functions to estimate fixed and adaptive kernel-smoothed spatial relative risk surfaces.

In response to the question about density of VME indicator taxa, Japan shared a link to NPFC-2024-SSC BFME05-WP12 titled *Preliminary evaluation of density levels of VME indicator taxa to define VMEs*.

Participants noted that climate change effects will not be addressed in this fishing impacts assessment update. They also noted that impacts of fishing operations on associated (non-VME bycatch) species will be conducted as part of analyses on the functional significance of the habitat which is one of the FAO criteria for VME identification.

The Lead suggested that Japan provide actual numbers for cumulative frequency curves and the total number of cells where fishing occurred.

The Lead also proposed that Japan add visual observation data shared by other Members to the kernel density plot. Japan responded that they may explore this in future, although they think that results from this combined dataset should be consistent with those based on Japanese data as Japan designed their research surveys using other Members' information about high coral density. Additionally, other Members' studies will be used as supplementary documents when assessing the risk of SAI.

Canada

Canada re-affirmed their intension to update fishing impacts assessment this year and present it to SSC BF-ME06 in December.

Other Members (Korea, Russia) will provide updated assessments in 2026.

- Issues to be resolved?

Participants discussed the issue of historical impacts of bottom fisheries, including coral fishery, on VMEs and noted that:

- Although this impact assessment update will be based on relatively recent data which are available for analyses (e.g. since 2009 for Japan), literature about historical impacts will be also considered.
- The template for reports on identification of VMEs and assessment of impacts caused by individual fishing activities on VMEs or marine species lacks a section on cumulative impacts, historical SAI and potential areas for VME recovery.
- Habitat suitability modelling is a possible way to fill this gap, although there are uncertainties that should be addressed when translating results of such analyses into management advice.
- Members may consider convening a second VME workshop to address the above issues. This idea will be discussed by SSC BF-ME in December.

  - Any revisions needed to template (See template below)

  Members determined that no revisions to the template are currently needed.

  On the question about presenting an SAI assessment to SSC BF-ME by a third party that does not operate a bottom fishery in the NPFC Convention Area (e.g. by observers), Members noted that such assessment may be conducted using fishery-independent data and literature. As there is no agreed template for this type of assessment, it may follow the template for Members (Annex) to the extent possible.

Item 5. Update on visual data objectives (Chris Rooper)

The Lead updated participants on the progress in archiving visual data sharing objectives. Objectives 1 (*Use the data to learn where VME indicator taxa are known to be present and absent*) and 2 (*Use the data to determine where there are elevated densities (hotspots) of VME indicator taxa*) were completed. The work is now centered around Objective 3 *Use the data to update or develop models that predict the presence or absence or density of VME indicator taxa for further visual survey planning*.

- Objective 3 – creating new models

Canada (Chris Rooper) presented on a joint Canada-USA seamount survey conducted in 2024 and updated participants on modelling of coral presence/absence, density and height in the eastern North Pacific. He also presented a Shiny application simulating coral distribution and density in Cobb seamount, as an example, using different methods. This work conducted with ICES may be presented to SSC BF-ME in December.

- Updates/revisions to other objectives

No updates or revisions were made.

Item 6. Gear Specific Thresholds analysis (Japan and Korea)

- Updates

Japan (Yumiko Osawa) updated participants on the progress in the task from SSC BF-ME05 to develop or research alternative methods to apply to Japan and Korea's indicator taxa bycatch to further refine encounter thresholds that are taxon and gear specific. Following up with its previous research (NPFC-2024-SSC BFME05-WP13) in 2024 based on the method proposed by Canada (NPFC-2023-SSC BFME04-WP04), Japan revised estimated VME encounter thresholds using corrected code and conducted initial data preparatory analysis to explore the possibility of using combined Japanese and Korean data. Two issues with combining data were identified: (1) Data limitation: dissimilarity/discrepancy in Japanese and Korean data that raises a question if they can be treated equally, and (2) Spatial mismatch between survey and fishing data. The first issue may be caused by either different taxonomic background/viability determination process (dead versus alive samples) between the two Members or by differences in the catchability (different mesh size, operation depth, etc.). Japan concluded that data refinement/clarification of the cause of data discrepancy might be required before putting data together.

Korea (Hyejin Song) suggested that because Korean data are limited it may be better not to combine them with Japanese data in this analysis.

The Lead pointed out that the revised threshold estimates presented by Japan are comparable in scale with those estimated in the eastern North Pacific. Regarding the discrepancy between the Japanese and Korean data, he suggested that it may be not too influential on the results. The benefit of using combined dataset is that the estimated thresholds will be applicable to both Members as opposed to just one of them.

Japan (Yumiko Osawa and Kota Sawada) responded that their main concern that requires further clarification is about coral taxa identification and reporting dead corals as bycatch.

Regarding spatial mismatch between survey and fishing data, the Lead suggested that the reason may be low coral abundance inside the footprint caused by fishing in the same locations for a long

time. Coral density in a survey would match bycatch density from a fishery in a new location only in first several tows.

Japan (Kota Sawada) replied that Japanese research surveys are focused on high coral density areas, while fishing vessels tend to operate in low coral density areas. As a result, data collected from these two sources are biased in opposite directions.

Participants noted that the nature of bycatch extraction by bottom fisheries may make data more amenable to a "depletion analysis", but the coarse spatial and temporal resolution of early fishing (pre-2000's) might make this type of analysis difficult.

Japan plans to present the results of this analysis to SSC BF-ME06.

Item 7. Literature review on connectivity

As no progress was made on this task, the Lead suggested carrying it over to the next year.

Item 8. Other matters

- New work to explore methods for identifying VME?

The observers suggested that Members try the method for identifying VME from imagery presented by Amy Baco-Taylor last year (Baco et al., 2023).

They presented a flowchart for determining whether the faunal community from a single frame or image represents a VME.

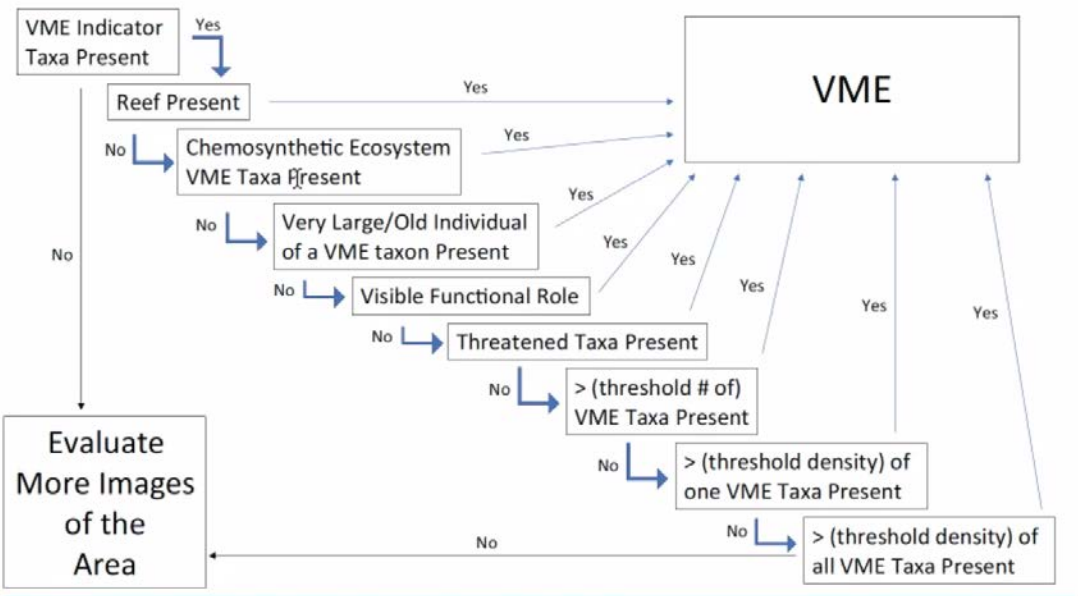

Figure 9 Flow chart for determining whether the faunal community in a single frame or image represents a VME. If a "Yes" is obtained in any step, the image can be considered a VME and no further steps need to be tested. A more in-depth explanation of each box along with explanations of the associated FAO criteria can be found in the text under Question 3. Full-size DOI: 10.7717/peerj.16024/fig-9

Amy Baco-Taylor will present this method for identifying VME at SSC BF-ME06 in December for consideration by Members.

- New PICES WG on Seamount Connectivity?

Participants were informed that a proposal to form a new Working Group on Seamount Connectivity will be submitted at PICES' BIO committee virtual meeting in September and then at the PICES annual meeting in November. The literature review on connectivity will be one of the components of this WG's workplan. Several PICES countries, including Canada, Korea, and Russia, expressed interest in participation in the new WG. It was noted that all SWG VME participants were invited to join this initiative.

The SWG VME supported these efforts and is looking forward to any updates from Members at SSC BF-ME06 in December.

- Other Proposals related to CMM 2025-05

Under this agenda item, the Lead reminded participants of the USA intention to submit a revised proposal for fishery closure in the Emperor Seamounts. The proposal may include a mechanism where one seamount is closed, at NPFC discretion, per year.

Participants suggested that, from a scientific perspective, it would make sense to have a scientific basis for choice of a seamount to be closed, e.g. base on the VME indicator taxa density.

Item 9. Proposed meeting schedule/workplan for 2025

- Updated list of things to deliver to SSC BFME06

The Lead summarized the outputs from the intersessional work of the SWG VME in 2025 to be delivered to SSC BFME06 as follows:

- Fishing impacts assessment (Canada and Japan in 2025, Korea and Russia in 2026)
- Complete visual data objectives (Chris Rooper and others)
- Update gear specific thresholds (Japan and Korea)
- Submit final SAI document (Janelle Curtis)
- Draft literature review on connectivity (in 2026, potentially in cooperation with PICES)

Item 10. Close of the Meeting

The meeting closed at 12:00 pm on 2 October 2025, Tokyo time.

Annex

Template for reports on identification of VMEs and assessment of impacts caused by individual fishing activities on VMEs or marine species

1. Name of the member of the Commission
2. Name of the fishery (e.g., bottom trawl, bottom gillnet, bottom longline, pot)
3. Status of the fishery (existing fishery or exploratory fishery)
4. Target species
5. Bycatch species
6. Recent level of fishing effort (every year at least since 2002)
    (1) Number of fishing vessels
    (2) Tonnage of each fishing vessel
    (3) Number of fishing days or days on the fishing ground
    (4) Fishing effort (total operating hours for trawl, # of hooks per day for long-line, # of pots per day for pot, total length of net per day for gillnet)
    (5) Total catch by species
    (6) Names of seamounts fished or to be fished
7. Fishing period
8. Analysis of status of fishery resources
    (1) Data and methods used for analysis
    (2) Results of analysis
    (3) Identification of uncertainties in data and methods, and measures to overcome such uncertainties
9. Analysis of status of bycatch species resources
    (1) Data and methods used for analysis
    (2) Results of analysis
    (3) Identification of uncertainties in data and methods, and measures to overcome such uncertainties
10. Analysis of existence of VMEs in the fishing ground
    (1) Data and methods used for analysis
    (2) Results of analysis
    (3) Identification of uncertainties in data and methods, and measures to overcome such uncertainties
11. Impact assessment of fishing activities on VMEs or marine species including cumulative impacts, and identification of SAIs on VMEs or marine species, as detailed in Section 5 above, Assessment of SAIs on VMEs or marine species
12. Other points to be addressed
13. Conclusion (whether to continue or start fishing with what measures, or stop fishing).