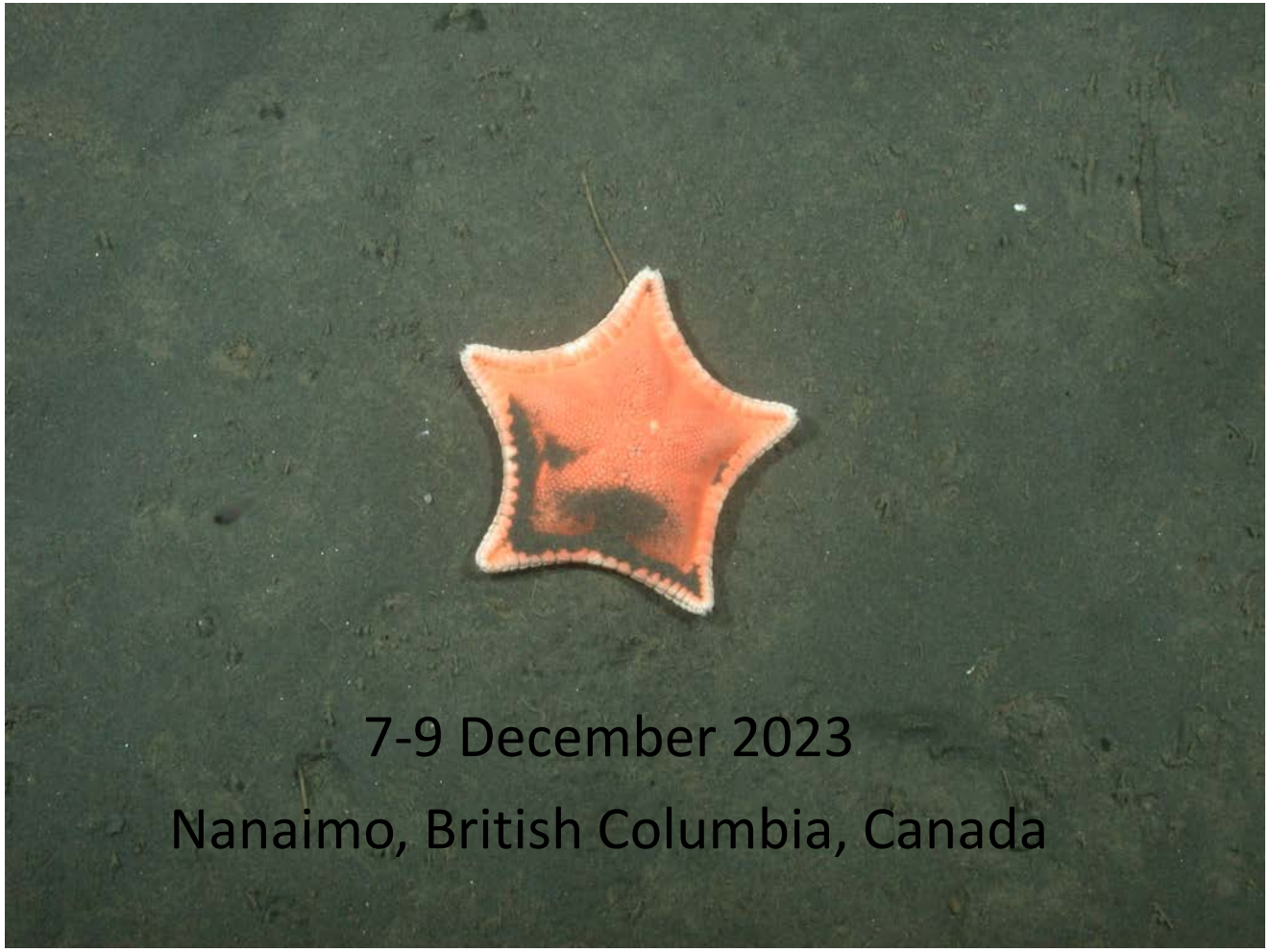
4th Meeting of BFME

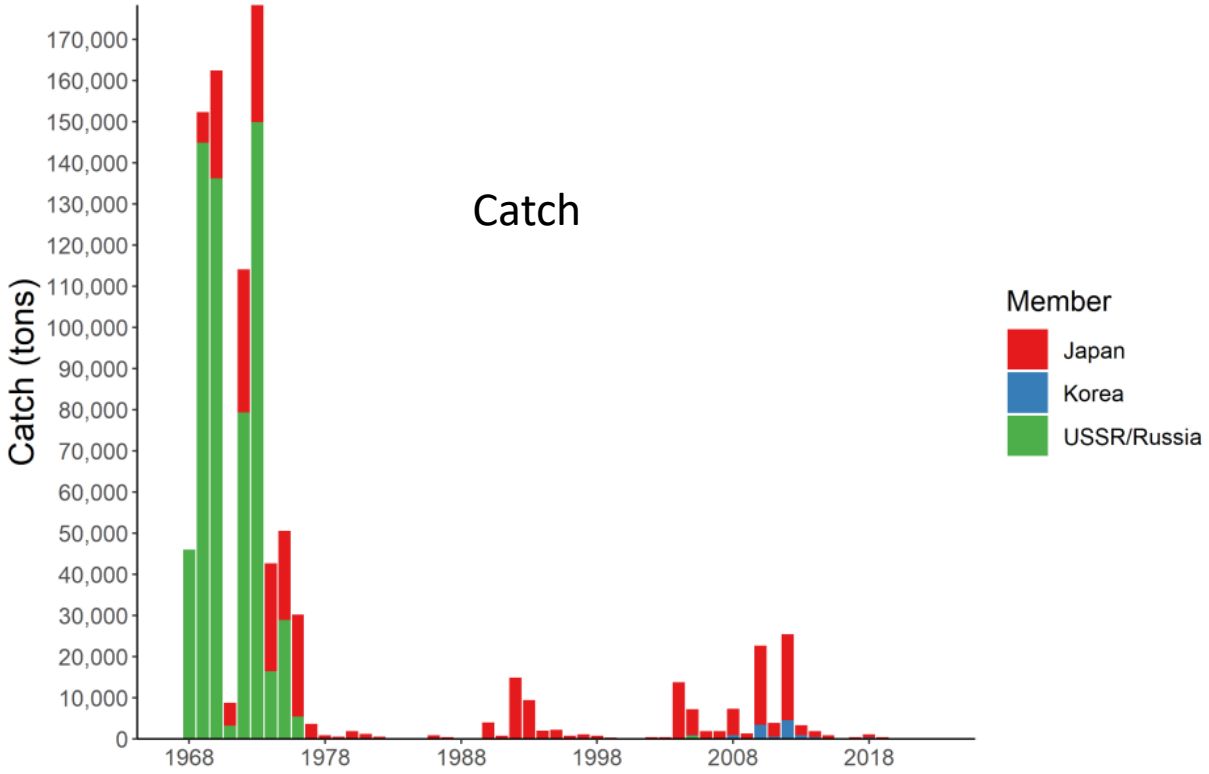


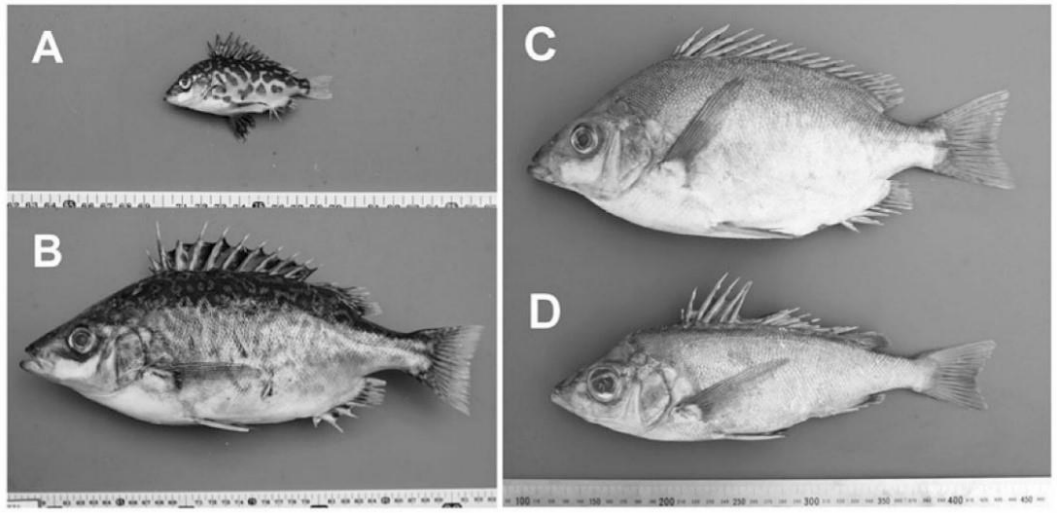
7-9 December 2023

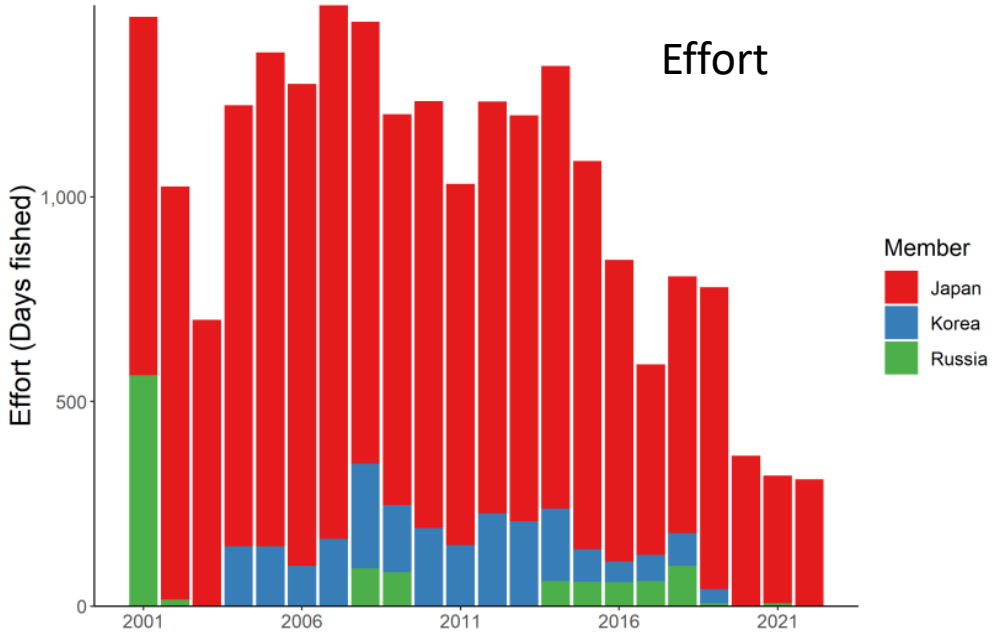
Nanaimo, British Columbia, Canada

Summary of Data and Status for Targeted Bottom Fish

North Pacific Armorhead

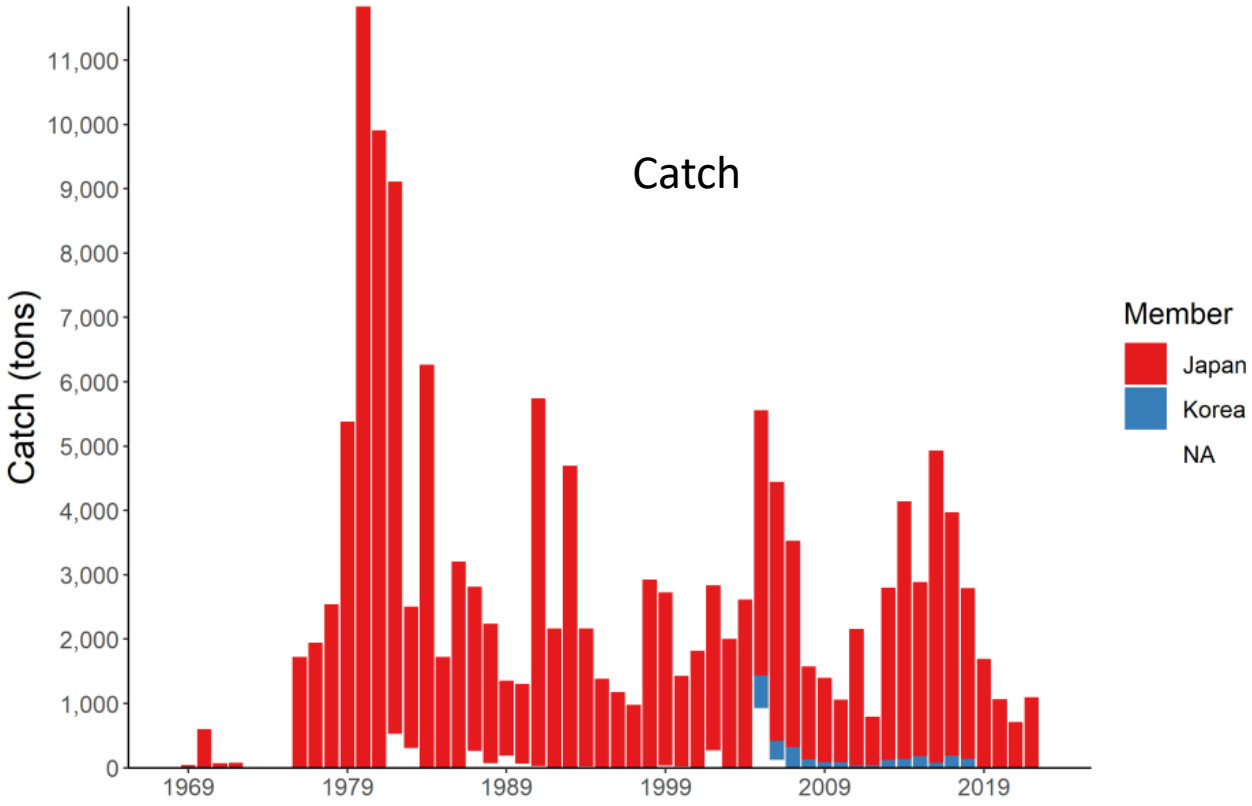


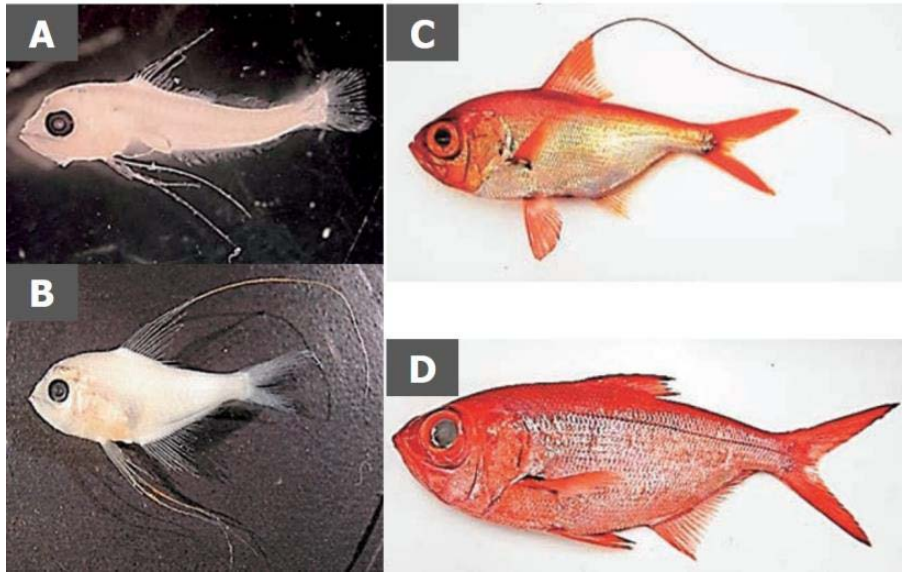


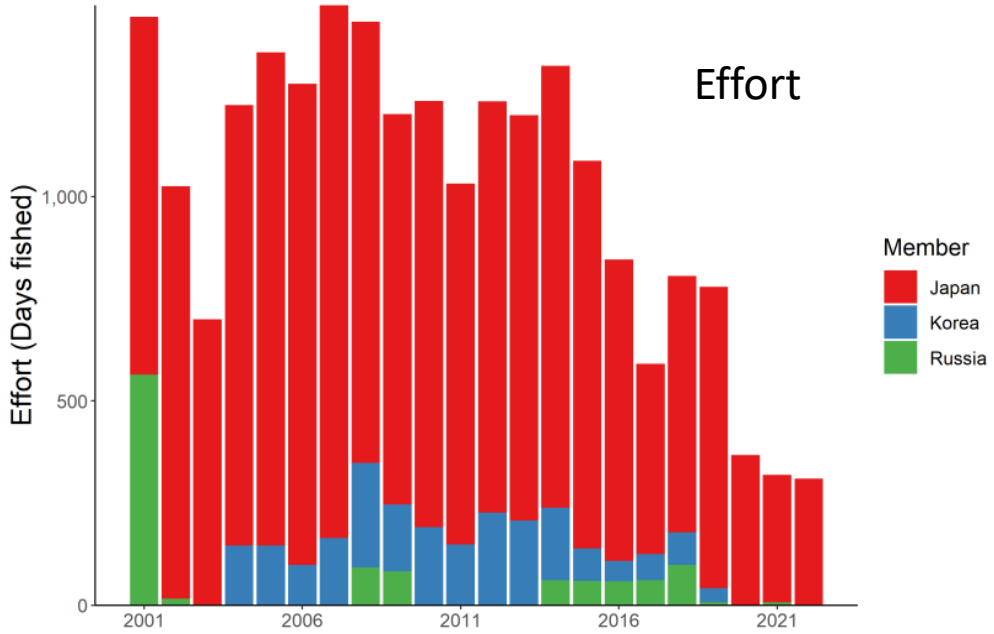


- Catch slightly higher in 2022 v. 2021
- Second lowest in time series
- No indication of strong recruitment
- Effort remained low (1 gillnet, 1 trawl)
- Some indication that fishers avoiding NPA

Splendid Alfonsino

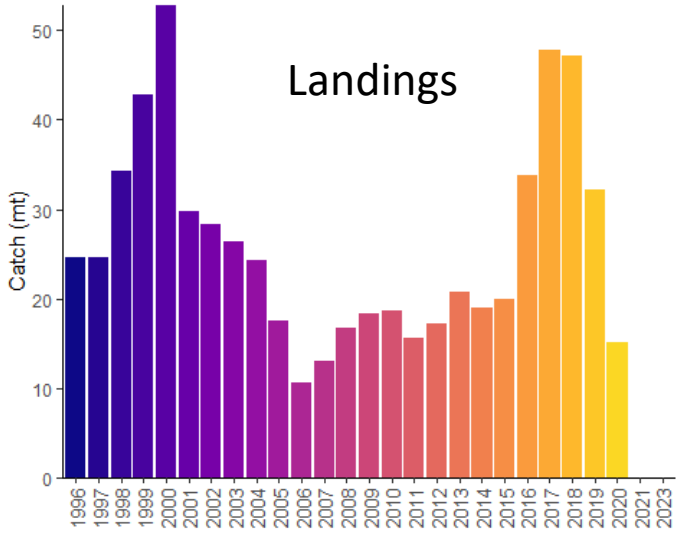


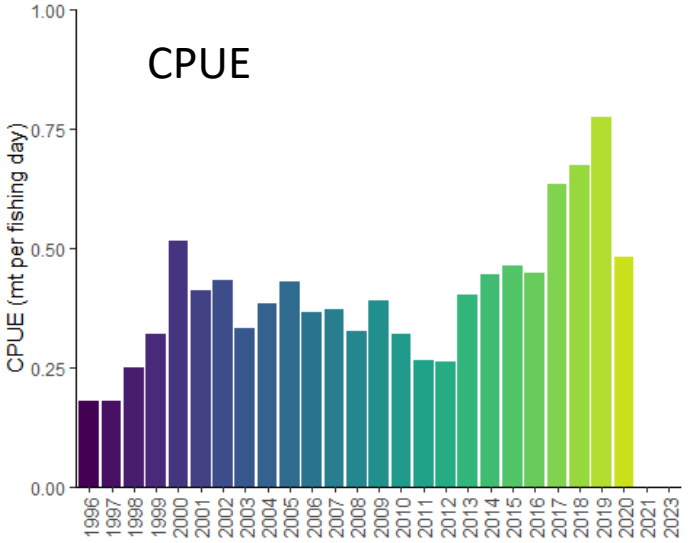




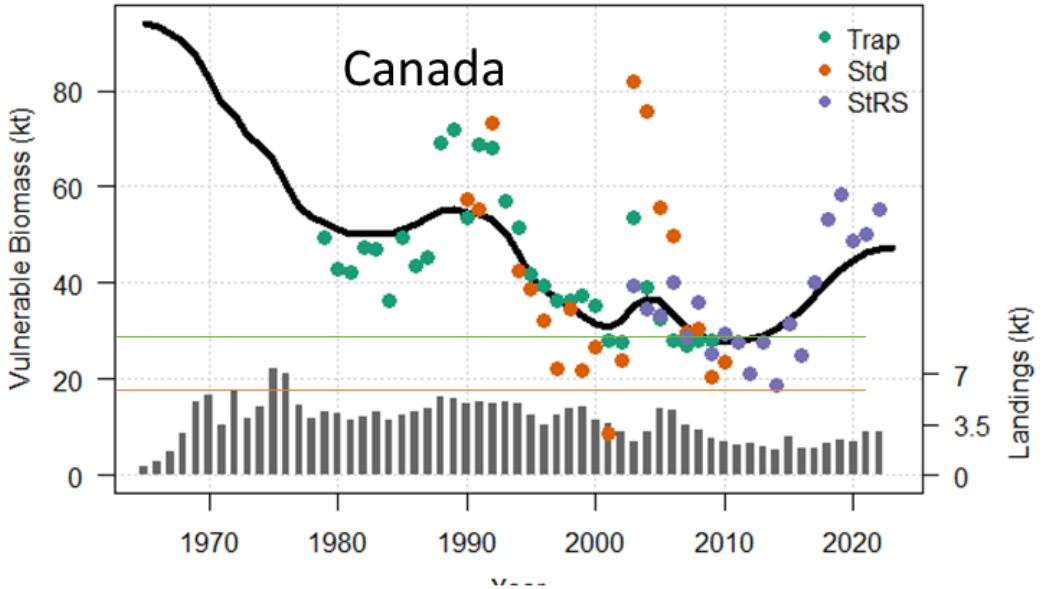
- Catch slightly improved from 2021
- Still low relative to historical catch
- Effort remained low (1 gillnet, 1 trawl)

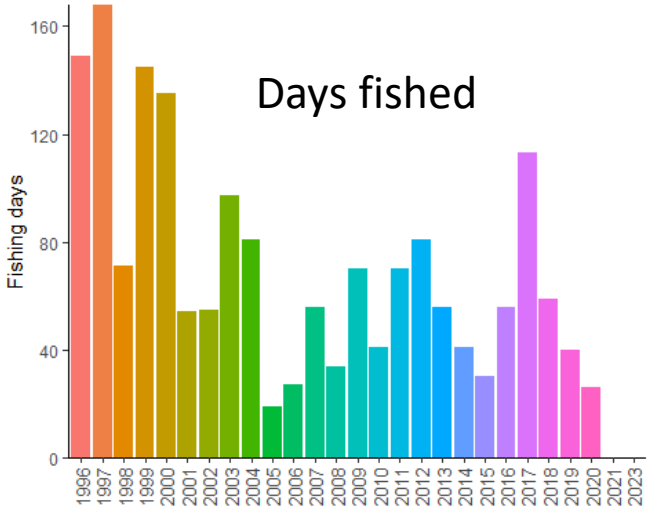
Sablefish



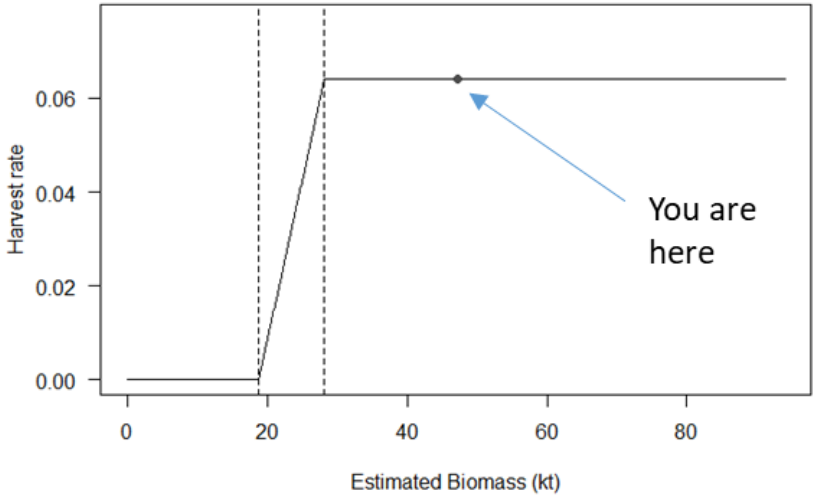


Status of stock (Canada domestic)





- No fishing in 2022 or 2023
- Fish stock healthy
- Economically not profitable



Summary of conditions (from Species Summaries)

North Pacific Armorhead

a) NPA catch was slightly **higher** in 2022 than 2021, the catch **remains at low levels** relative to historical values, although Japanese fishers may be been **avoiding NPA** due to voluntary catch limit

b) there has been **no indication of high recruitment** of NPA detected in the monitoring survey

c) Only a **single** trawl and a **single** gillnet vessel from Japan have been fishing

Splendid Alfonsino

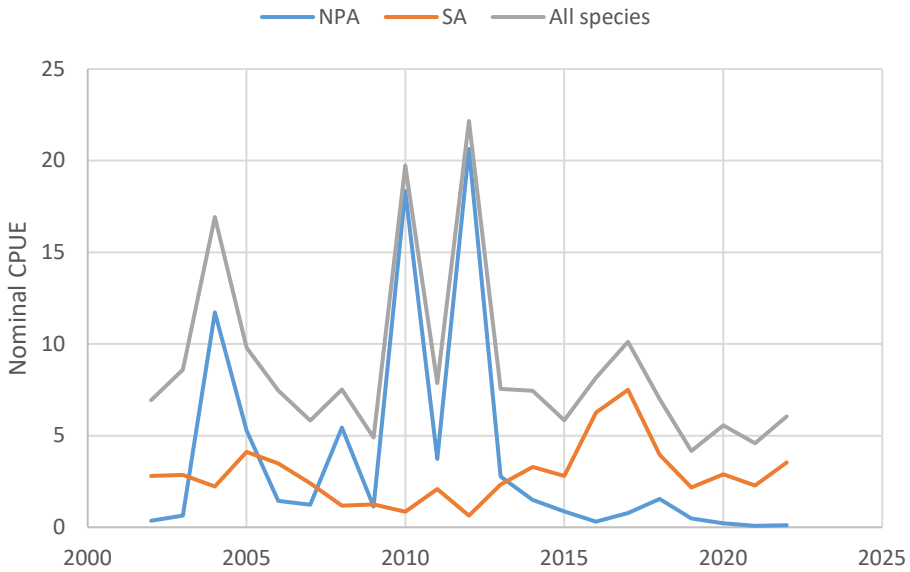
a) SA catch has been **about 1/2 of the mean** for the last 10 years, but nominal CPUE is only slightly lower than the 10 year average

b) Only a **single** trawl and a **single** gillnet vessel from Japan have been fishing

Sablefish

a) Coastwide Sablefish stock is **healthy**

b) No vessels have fished for Sablefish since 2020 (for **economic** reasons)



Research Activities on Bottom Fish

Progress by SWG NPA-SA

Joint work on life history based approach to stock assessment for SA

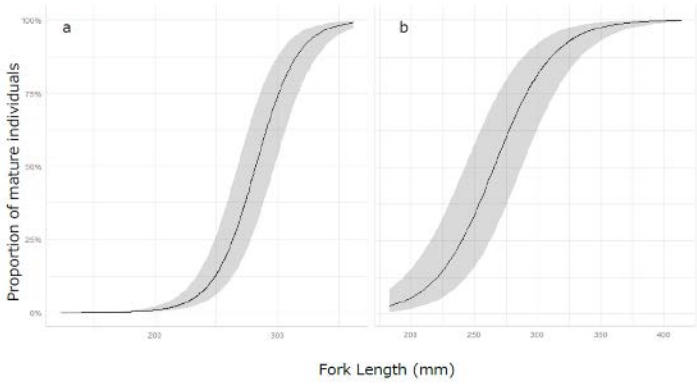
- Developed growth curve for SA (with seamount as factor)
- Generated maturity ogive for SA
- General agreement that status for SA can be reported at SC09

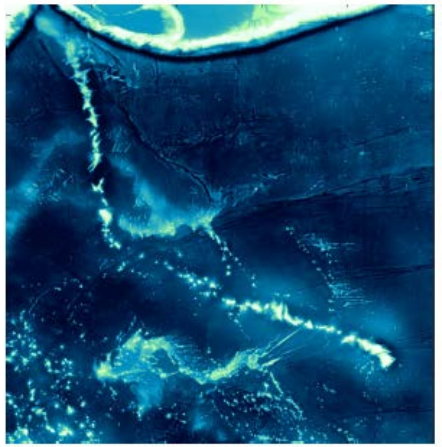
Joint work on life history based approach to stock assessment for NPA

- Agreed to look at two approaches (depletion method and bioenergetics model for assessing status of NPA
- Generated data requirements and implemented data sharing TOR and template
- Agreed to evaluate the effectiveness of current management measures for bottom fish using depletion method

Updated Species Summary for NPA and SA

Final review and approval of Fish ID guide





The Field Guide for Identifications of Fishes of the Emperor Seamount Chain Captured by Bottom Fisheries

Pacific branch («TINRO») of Russian Federal «Research Institute of Fisheries and Oceanography» («VNIRO»)

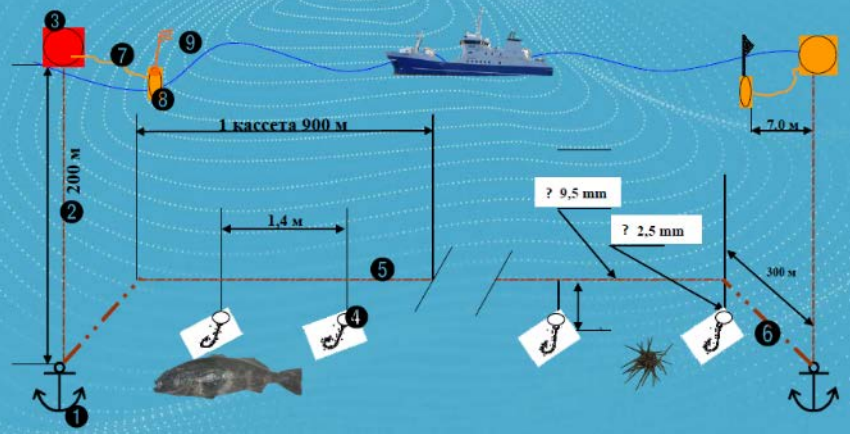
NPFC-2023-SSC BFME04-IP04

Photo by Igor Maltsev

Skilfish

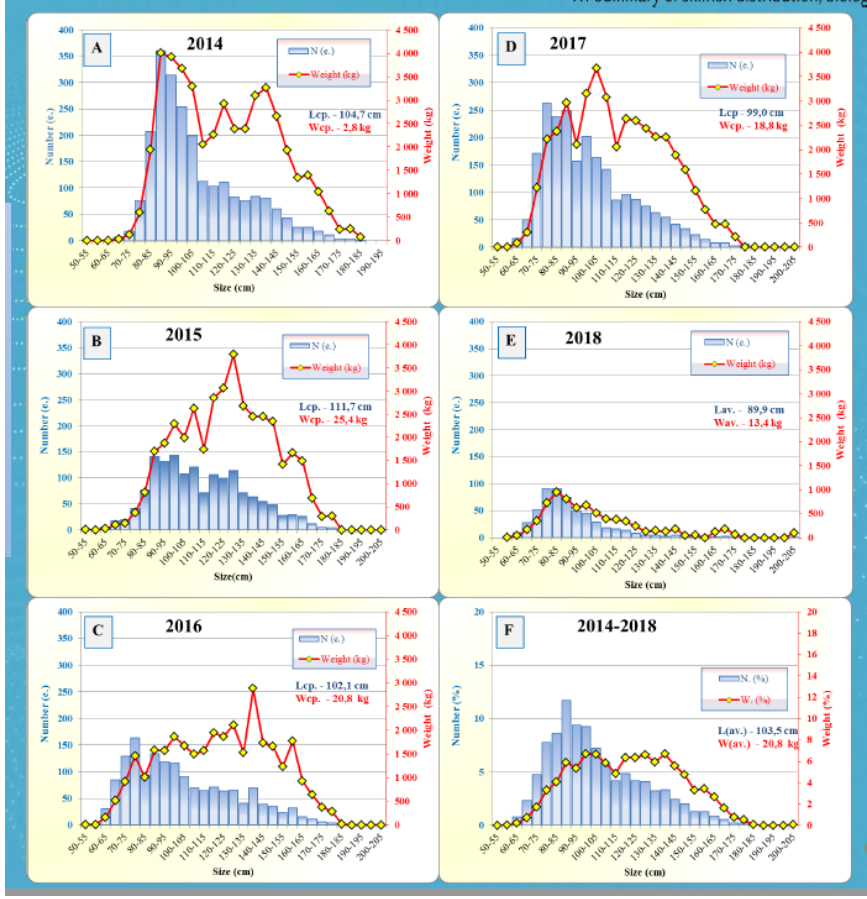
Erilepis zonifer (Lockington, 1880)

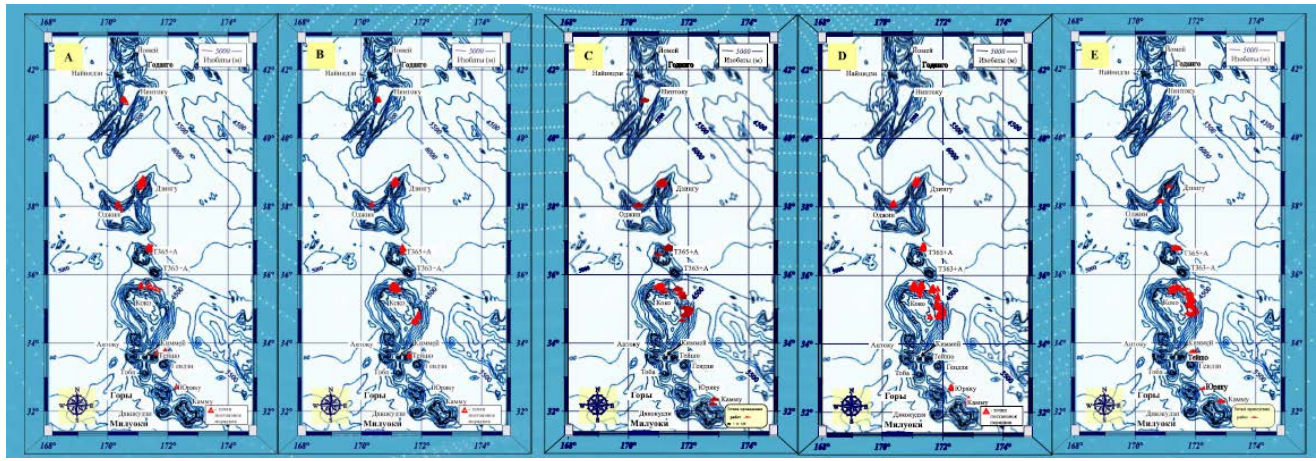
Pacific branch («TINRO») of Russian Federal «Research Institute of Fisheries and Oceanography» («VNIRO»)



The Catches of skilfish (*Erilepis zonifer*) in the Convention Area by years

Year	2014*	2015*	2016*	2017	2018**	2019	2020	2021
Tons	190.6	158.3	118.4	90.1	53.0	0	0	126.5



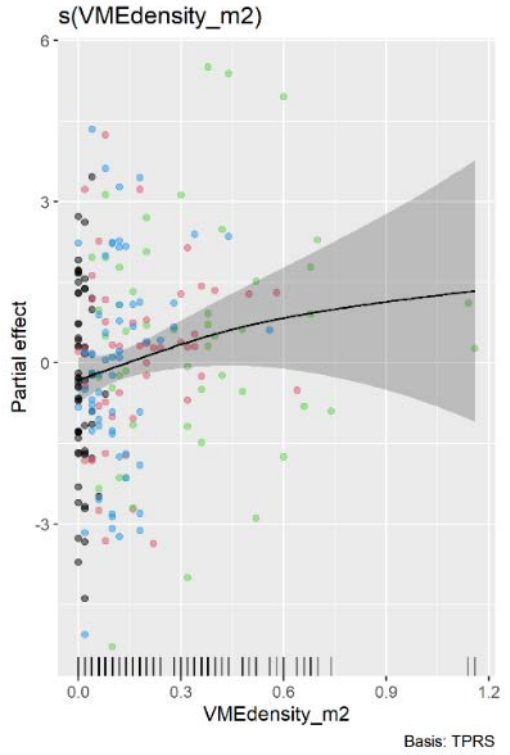


VME Identification and Management

Definitions of VME

Canada method of VME identification

1. Visual survey – estimate density of VME and richness of associated organisms
2. Identify density where diversity peaks and use as density designating VME

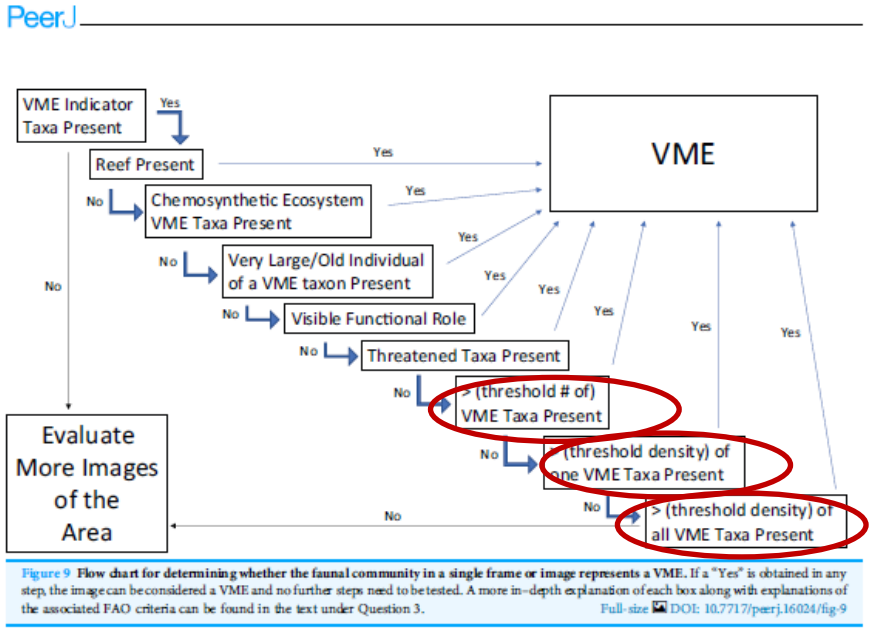


Japan method of VME identification

1. Visual survey – classification by density into high, medium, low, zero classes
2. Application of FAO criteria –
3. Mapping the interaction between fishing and potential VME –
4. Mapping the extent of VME patches –
5. Propose closure where high density of confirmed VME and high potential fishing overlap

Baco-Taylor et al method of VME identification

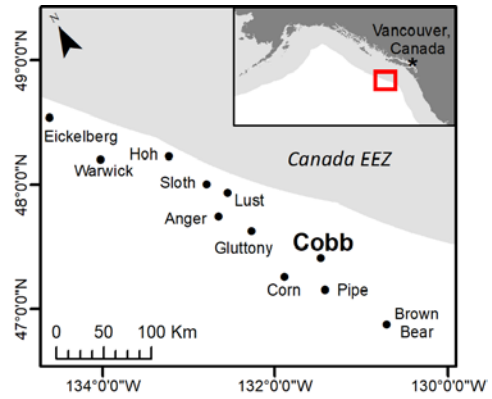
1. Flow chart
2. Relies on expert opinion
3. Developed by many experts on VME

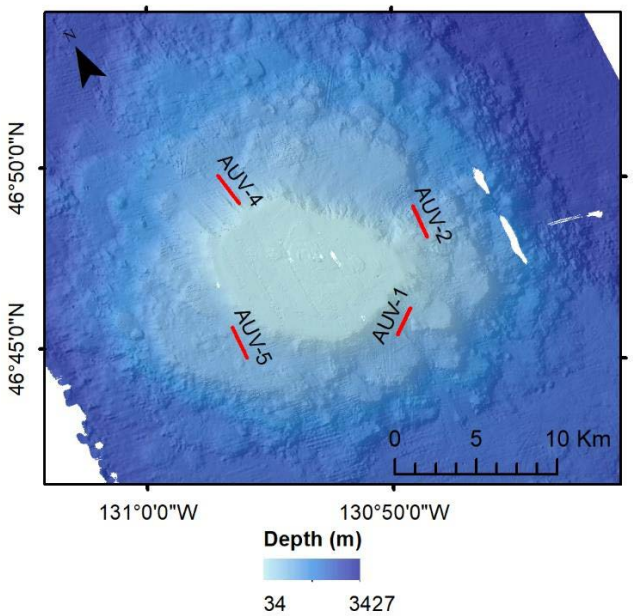


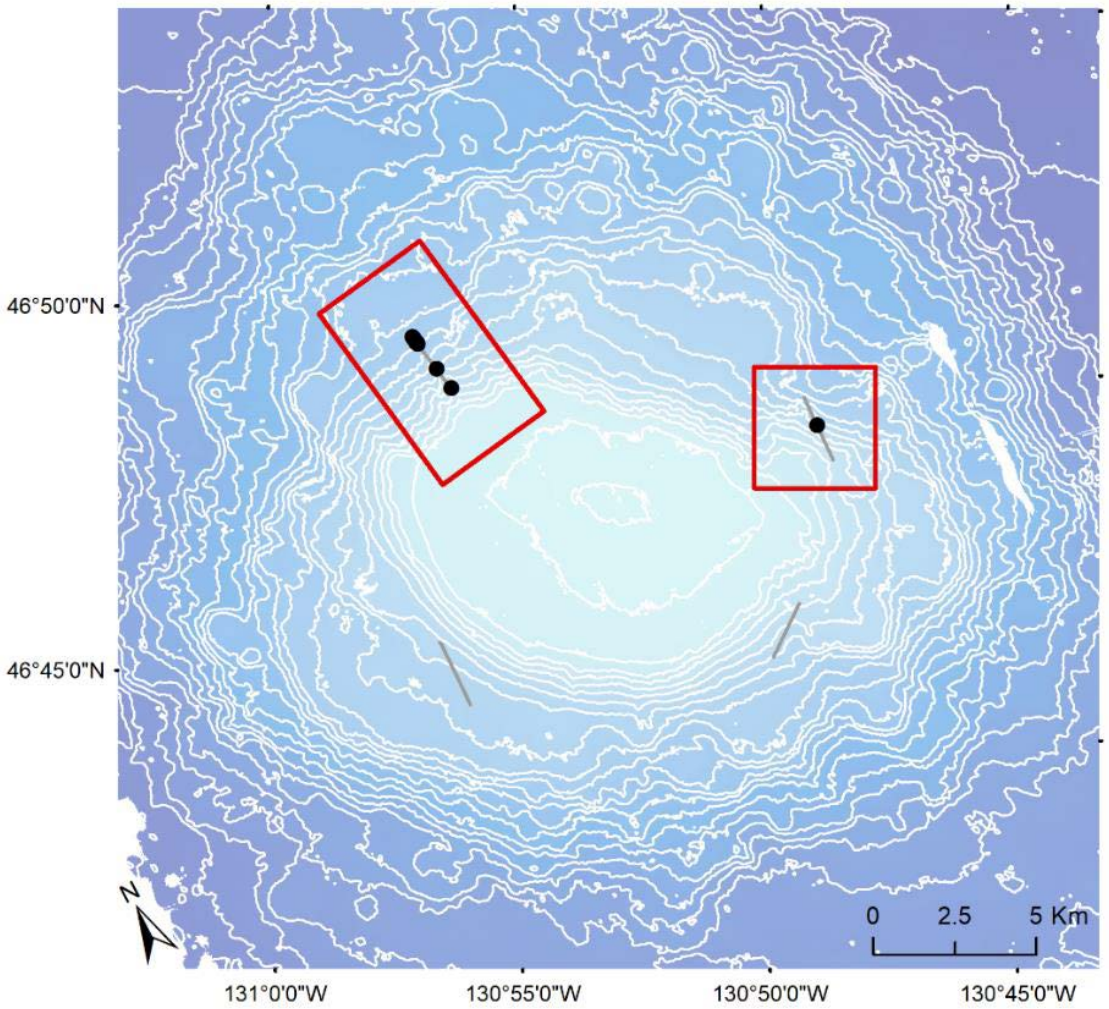
- Endorsed Japan's method (already in use)
- Agreed to continue evaluation of other methods that rely
  - Specifically methods that use other FAO characteristics than density

Identification of VME

- Application of Canada method to Cobb Seamount



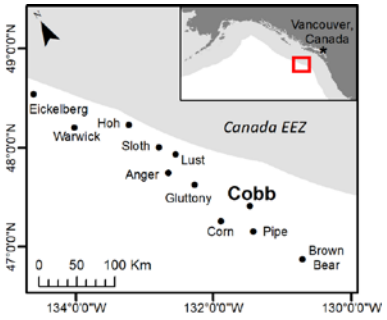




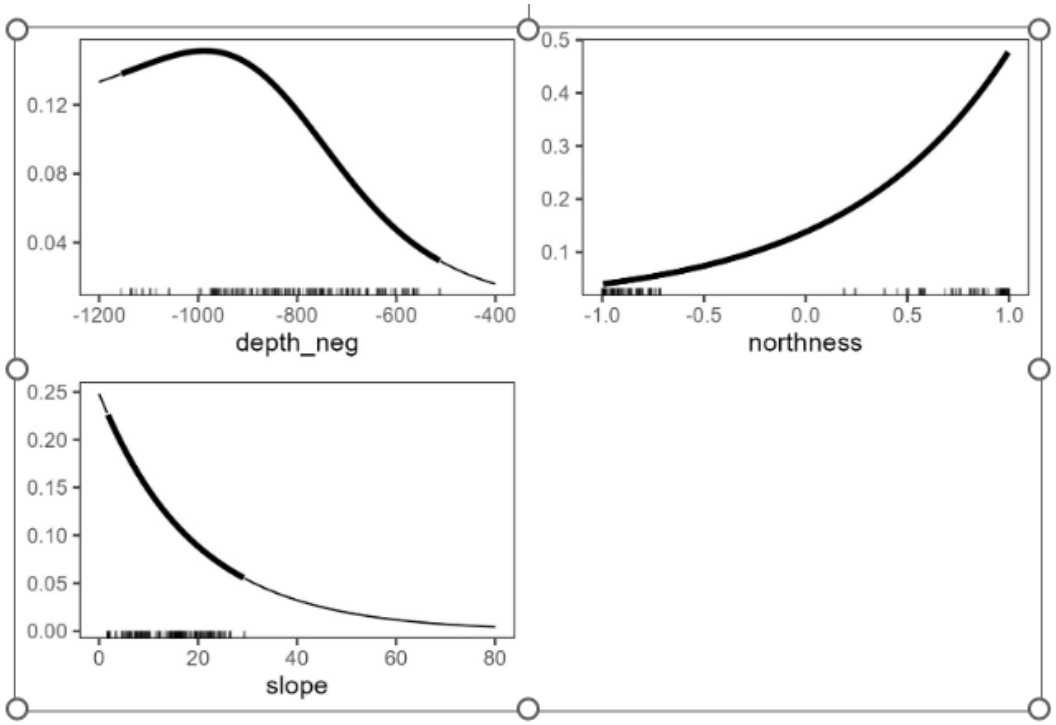
- Two proposed closed areas (1 nm around identified VME)
- 15% of historical Sablefish landings
- Total area = 38.4 km^2

Identification of VME

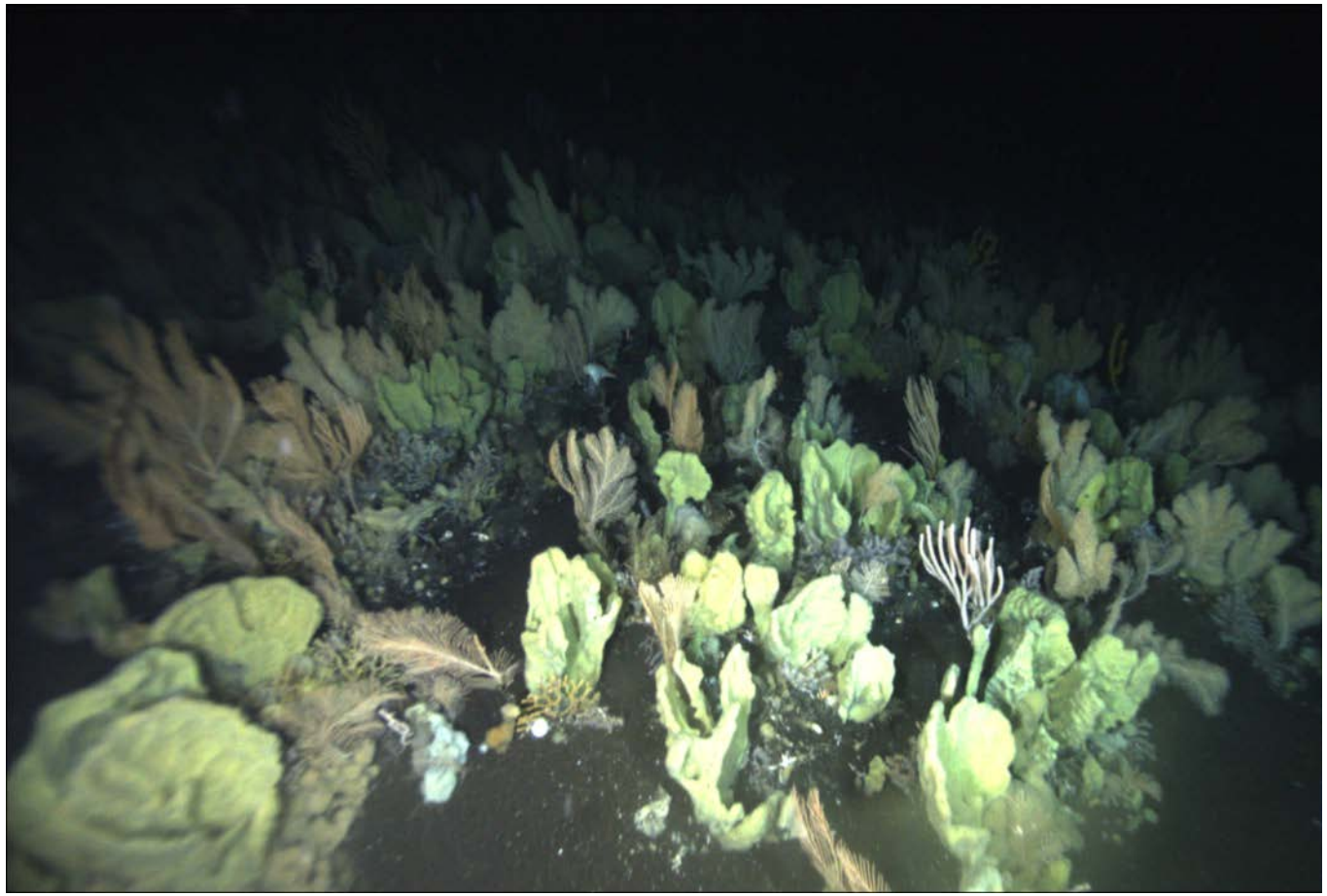
- Modeling VME distribution in NE Pacific



- VME predicted to occur on all seamounts
- On north side and at depths below 600 m
- Area robust to threshold method



Other progress from SWG VME



Progress from SWG VME

I. Review the basis for gear specific and taxa specific encounter thresholds from other RFMOs

II. Review VME indicator taxa from coral relative to taxonomy revisions for Octocorallia and review the appropriateness of adding Pennatulaceans to the list of VME indicator taxa

III. Bring together observation data on VME from visual survey sources

IV. Synchronize and refine approaches to defining SAI so that one method can be applied to the eastern and western North Pacific Ocean
    I. Both Japan and Canada are using a similar method to assess risk of SAI
    II. Agreed to continue to use this approach and define the data and spatial resolution of data needed

Gear and taxa specific encounter thresholds

- Bottom trawl, longline, pot, gillnet (same value)
- Alcyonaceans, gorgonians, Antipatharia, Scleractinians = 50 kg
- glass sponges, demosponges = 500 kg (default)

VME Encounter thresholds

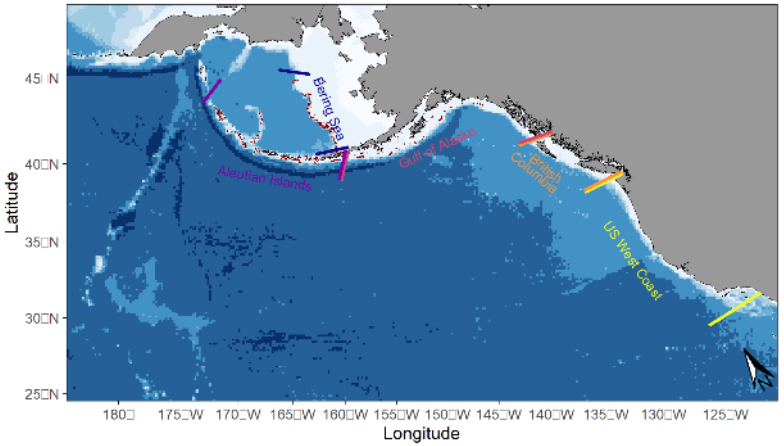
- Review of other RFMO's by Dr. Keith Reid
- "Regulatory diffusion"

RFMO	Trawl tow
NPFC	50 kg of live coral, 500 kg of sponges
NAFO	7 kg of sea pens, 60 kg of other live corals, 300 kg of sponges
NEAFC	30 kg of live coral, 400 kg of live sponge
SEAFO	Existing fishing area: 60 kg of live coral, 600 kg of live sponges New fishing area: 60 kg of live coral, 400 kg of live sponges
SIOFA	60 kg of live coral, 300 kg of live sponges
CCAMLR	Bottom Trawling Ban
SPRFMO	Single taxa threshold - 25 kg Porifera (Phylum) Sponges, 15kg Gorgonacea (Order) Sea fans , 60 kg Scleractinia (Order) Stony corals, 5 kg Antipatharia (Order) Black corals, 35 kg Actiniaria (Order) Anemones, 15 kg Alcyonacea (Order) Soft corals. Biodiversity threshold - 3 or more of any of 5 kg Porifera (Phylum) Sponges, 1kg Gorgonacea (Order) Sea fans , 5 kg Scleractinia (Order) Stony corals, 1kg Antipatharia (Order) Black corals, 5 kg Actiniaria (Order) Anemones, 1 kg Alcyonacea (Order) Soft corals, 1 kg Stylasteridae (Family) Hydrocorals, 1 kg Pennatulacea (Order) Sea pens, 1kg Crinoidea (Class) Sea lilies, 1 kg Brisingida (Order) 'Armless' stars

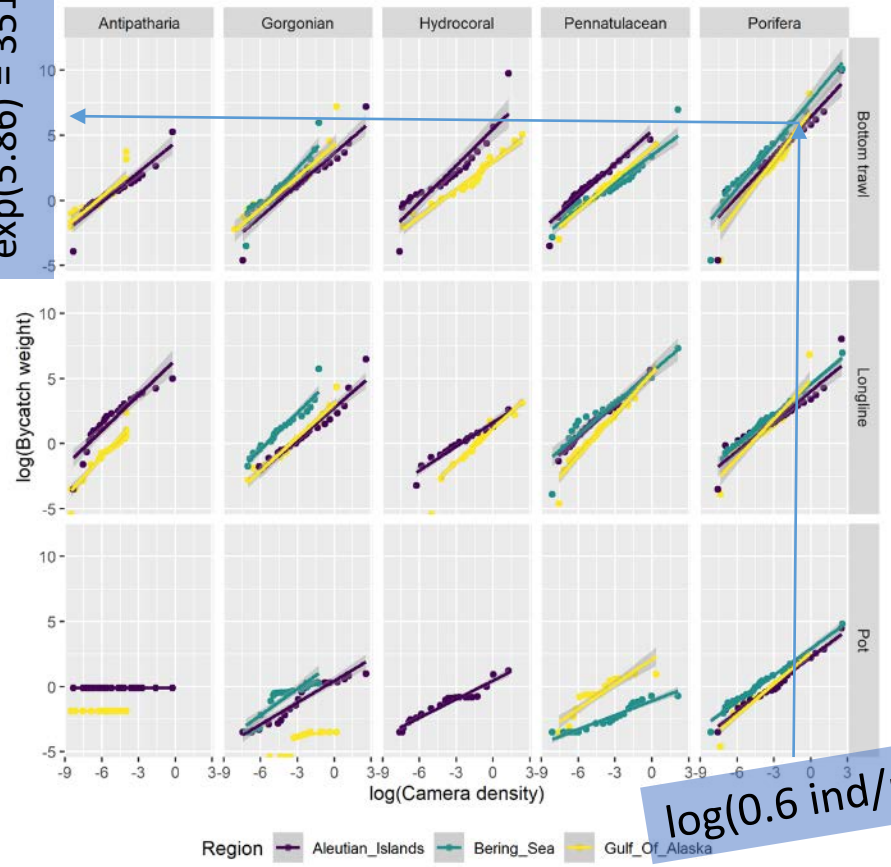
VME Encounter thresholds

Bycatch data and visual observations of density

- 2002 – 2022 observed bycatch
- 5 regions
- 5 VME indicator taxa (plus Pennatulaceans, Stylasterids)
- 3 gear types
- Visual data from ~750 transects in Alaska



exp(5.86) = 351 kg



log(0.6 ind/m^2) = -0.51

Predicted thresholds from percentile regression

VME taxa	Gear type	Threshold catch (kg)
Antipatharia	Bottom trawl	152
	Longline	47
	Pot	2
Gorgonian	Bottom trawl	38
	Longline	12
	Pot	1
Porifera	Bottom trawl	351
	Longline	110
	Pot	5

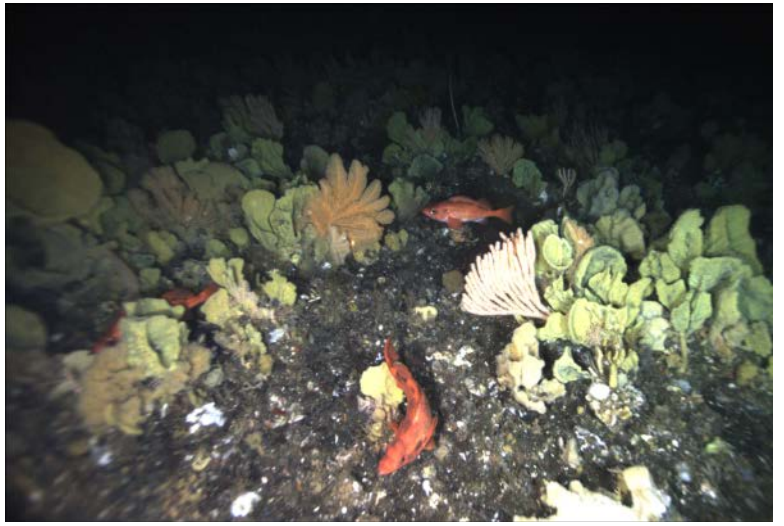
Review list of VME indicator taxa

- Agreed to add Pennatulaceans to list of VME indicator taxa
  - rare in the Emperor seamounts (FAO criteria)
  - correlation with Sablefish density in other areas

- Discussed adding Hydrocorals (further to SWG VME)

- Reviewed taxonomy nomenclature
  - Decided to use combination of scientific and common names
  - Will work towards defining common names in SWG

Share VME observation data



- Data shared (~10,000 data points) among Members

- Objectives for VME data from visual survey sources

Objective 1. Use the data to learn where VME indicator taxa are known to be present and absent.

- Map the **known distribution** of VME indicator taxa in the Emperor Seamounts and Cobb-Eickelberg Seamount Chain (this would essentially involve taking all of the presence observations and putting them on a map).
- If possible, map the **absence observations** for VME indicator taxa in the Emperor Seamounts and Cobb-Eickelberg Seamount Chain.

Objective 2. Use the data to determine where there are elevated densities (hotspots) of VME indicator taxa.

- Map the **densities** (where they can be calculated with some accuracy, recognizing that for some surveys/data sets this may be difficult)
- Use the data and tools like kernel density estimation to try to **estimate where high density areas** might be located.
- Use the new data to **validate existing models**.

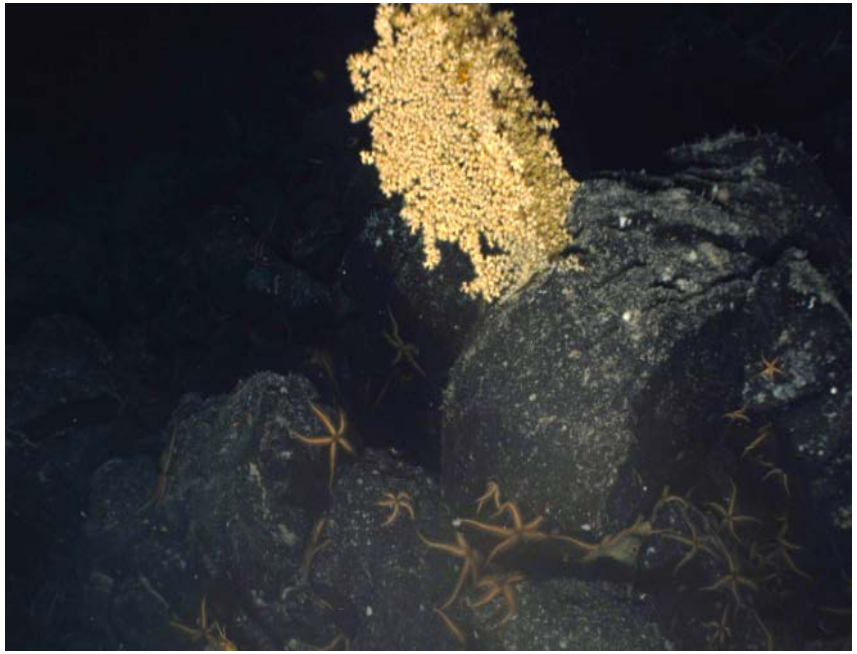
Objective 3. Use the data to update or develop models that predict the presence or absence or density of VME indicator taxa for further visual survey planning.

- Use the data and other sources of data (such as environmental variables, bathymetry, etc.) to **update** existing species distribution models with the new data or to **develop new** species distribution models for presence or absence or density of VME indicator taxa.
- Use the models, as appropriate, to **prioritize further visual surveys** or sample collection as shown in the flow chart on Annex 2.3 of CMM 2023-05 and CMM 2023-06 *for scientific purposes*.

Research on VME

Other and future research conducted by Members

- Summary of Japanese visual seafloor survey in 2023
- Plans for 2024



Fisheries and Oceans Canada | Pêches et Océans Canada

NOAA FISHERIES

Distribution, abundance and size structure of deep-sea coral and sponge communities on seamounts in international waters of the NE Pacific Ocean

Chris Rooper – DFO, Pam Goddard – NOAA, Cynthia Wright – DFO, Christina Conrath – NOAA, Kim Rand – NOAA, Vanessa Lowe – NOAA

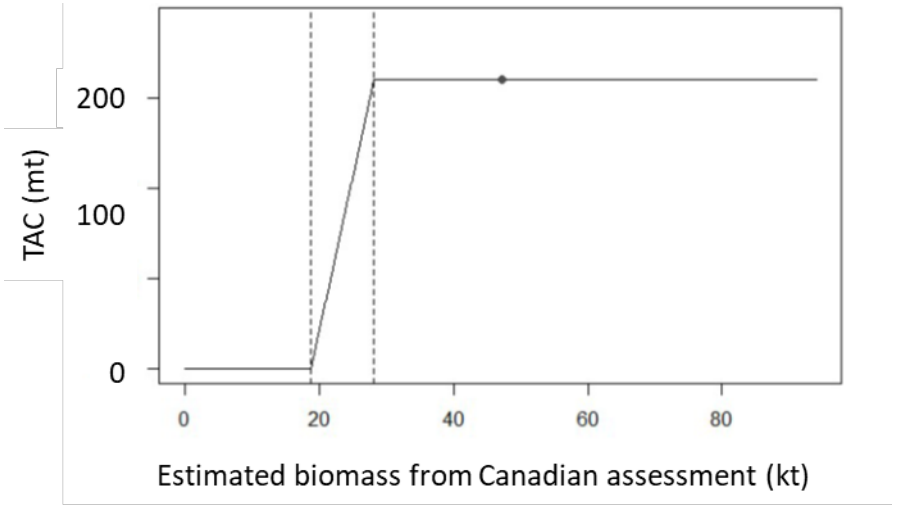
Photos – Paul Hillman, NOAA

PICES S14
Oct. 26, 2023

Recommendations

Other recommendations for ourselves – BFME05

- Prepare a Species Summary Document for Skilfish
- Design HCR specific to NPFC Sablefish
- Continue work on proposed framework for monitoring VME recovery



Recommended changes to CMMs 2023-05 and 2023-06

2023-05
NW Pacific

Standards and Criteria (Annex 2), which are consistent with the FAO International Guidelines for the Management of Deepsea Fisheries in the High Seas.¶

¶

E.→Any determinations, by any flag State or pursuant to any subsequent arrangement for the management of the bottom fisheries in the areas covered by these measures, that fishing activity would not have SAIs on marine species or any VMEs, shall be made publicly available through agreed means.¶

¶

F.→Prohibit its vessels from engaging in directed fishing on the following taxa: ~~Alcyonacea,~~ black corals (Antipatharia), ~~Gorgonacea~~gorgonians, ~~and~~ sea pens (Pennatulacea), stony corals (Scleractinia), soft corals, the classes of Demospongiae and Hexactinellida in the phylum Porifera as well as any other indicator species for VMEs as may be identified from time to time by the SC and approved by the Commission.¶

¶

G.→Further, considering accumulated information regarding fishing activities in the western part of the Convention Area, in areas where, in the course of fishing operations, cold water corals more than 50Kg or sponges more than ~~[350~~1500~~]~~Kg are encountered in one gear retrieval, Members of the Commission shall require vessels flying their flag to cease bottom fishing activities in that location. In such cases, the vessel shall not resume fishing activities until it has relocated a sufficient distance, which shall be no less than 1 nautical mile, so that additional encounters with VMEs are unlikely. All such encounters, including the location, gear type, date, time and name and weight of the VME indicator species, shall be reported to the Secretariat, through the Member, within one business day. The Executive Secretary shall, within one business day, notify the other Members of the Commission and at the same time implement a temporary closure in the area to prohibit bottom fishing vessels from contacting the sea floor with their trawl nets. Members shall inform their fleets and enforcement operations within one business day of the receipt of the notification from the Executive Secretary. It is agreed that the VME indicator taxa include four groups of cold water corals, ~~specifically Alcyonacea,~~ black corals (Antipatharia), ~~Gorgonacea~~gorgonians, sea pens (Pennatulacea), ~~and~~ stony corals (Scleractinia), and soft corals., The VME indicator taxa also include ~~and~~ the classes of Demospongiae and Hexactinellida in the phylum Porifera.¶

¶

H.→Based on all the available data, including data on the VME encounter and distribution received from the fishing vessel(s), research survey data, visual survey data, and/or model results, the Scientific Committee (SC) shall assess and conclude if the area has a VME. If so, the SC shall recommend to the Commission that the temporary closure be made permanent, although the boundary of the closure may be adjusted, or suggest other appropriate measures. Otherwise, the Executive Secretary shall inform the Members that they may reopen the area to their vessels.¶

¶

I.→C-H seamount and Southeastern part of Koko seamount, specifically for the latter seamount, the area South of 34 degrees 57 minutes North, East of the 400m isobaths, East of 171 degrees 54 minutes East, North of 34 degrees 50 minutes North, are closed precautionary for potential VME conservation. Fishing in these areas requires exploratory fishery protocol (Annex 1).¶

¶

- **Add Pennatulacea**
- **Reword taxa specifications**
- **350 kg threshold for sponge**

2023-06
NE Pacific

f. Further ensure that they will only authorize fishing activities on the basis of such assessments and any comments and recommendations from the SC;¶

g. Prohibit its vessels from engaging in directed fishing on the following taxa: ~~*Alcyonacea,*~~ black corals (Antipatharia), ~~Gorgonacea~~gorgonians, ~~and~~ sea pens (Pennatulacea), stony corals (Scleractinia), soft corals, the classes of Demospongiae and Hexactinellida in the phylum Porifera as well as any other indicator species for vulnerable marine ecosystems as may be identified from time to time by the SC and approved by the Commission;¶

h. In respect of areas where vulnerable marine ecosystems are known to occur or are likely to occur, based on the best available scientific information, ensure that bottom fishing activities do not proceed unless conservation and management measures have been established to prevent significant adverse impacts on vulnerable marine ecosystems;¶

i. Limit fishing effort in bottom fisheries on the Eastern part of the Convention Area to the level of a historical average (baseline to be determined through consensus in the SC based on information to be provided by Members) in terms of the number of fishing vessels and other parameters which reflect the level of fishing effort, fishing capacity or potential impacts on marine ecosystems dependent on new SC advice;¶

j. Further, considering accumulated information regarding fishing activities in the Eastern part of the Convention Area, in areas where, in the course of fishing operations with pot gear, cold water corals that exceed 2~~50~~Kg or sponges (Demospongiae and Hexactinellida) that exceed ~~500~~5Kg ~~of *Hexactinellida* and *Demospongiae*~~ are encountered in one gear retrieval, Members of the Commission shall require vessels flying their flag to cease bottom fishing activities in that location. In the course of fishing operations with all other gears, cold water corals that exceed 50Kg or sponges (Demospongiae and Hexactinellida) that exceed [350~~1~~]Kg are encountered in one gear retrieval, Members of the Commission shall require vessels flying their flag to cease bottom fishing activities in that location. In such cases, the vessel shall not resume fishing activities until it has relocated a sufficient distance, which shall be no less than 1 nautical mile, so that additional encounters with VMEs are unlikely. All such encounters, including the location, gear type, date, time and name and weight of

the VME indicator species, shall be reported to the Secretariat, through the Member, within one business day. The Executive Secretary shall notify the other Members of the Commission and at the same time implement a temporary closure in the area to prohibit its bottom fishing vessels from contacting the sea floor with their trawl nets. Members shall inform their fleets and enforcement operations within one business day of the receipt of the notification from the Executive Secretary. It is agreed that the VME indicator taxa include cold water corals ~~*Alcyonacea,*~~ black corals (Antipatharia), ~~Gorgonacea~~gorgonians, sea pens (Pennatulacea), ~~and~~ stony corals (Scleractinia), and soft corals. The VME indicator taxa also include ~~and~~ the classes of Demospongiae and Hexactinellida in the phylum Porifera. ¶

k. Based on all the available data, including data on the VME encounter and distribution

they may reopen the area to their vessels. ¶

~~k.~~l. Prohibit bottom fishing vessels from fishing in the following areas in order to achieve sustainable protection of VMEs in the eastern part of the Convention Area: ¶

¶

Area	Latitude	Longitude
Northwestern Cobb Seamount	46.8178 N	130.872 W
	46.7703 N	130.861 W
	46.8277 N	130.825 W
	46.7802 N	130.814W
Northeastern Cobb Seamount	46.7759 N	130.735 W
	46.7675 N	130.694 W
	46.7482 N	130.756 W
	46.7399 N	130.716 W

¶

¶

4. All assessments and determinations by any Member as to whether fishing activity would have significant adverse impacts on vulnerable marine ecosystems, as well as measures adopted in

- **Add Pennatulacea**
- **Reword taxa specifications**
- **350 kg threshold for sponge**
- **2 kg for coral, 5 kg for sponge in pot gear**
- **Specify closure boxes**

USA Recommendation for CMM 2023-05 changes

- Submitted on Day 1 of the meeting, with supporting material later on Day 2
- Suggested change was in essence a temporary (2 year) closure of NW Pacific to bottom contacting gear (with some additional details)
- Basis: Widespread distribution of VME and SAI from the scientific literature and current condition of bottom fish stocks
- The documents were not submitted in time to be considered fully given the scope of the proposed changes
- An initial discussion was held to provide some feedback to the USA
- Some members recognized that there was potential value for bottom fish stocks in the closure and the approach was precautionary
- The USA thanked the BFME for its discussion and expressed interest in presenting a revised proposal to COM08
- More details can be found in the BFME meeting report

SWG NPA & SA (prioritized list of tasks)

1) Deliver science advice on the status of SA to SC09 using life history based approach
    1) Maturity estimation and SPR approach
    2) YPR approach
    3) Include assumptions of the approach

2) Analysis the impact of mesh size change on SA catch size composition

3) Work towards completing approaches using depletion or IBM for NPA

4) Evaluate trend in directed effort relative to NPA catch

5) Update species summaries (SA and NPA)

6) Standardize CPUE (lower priority)

SWG VME (prioritized list of tasks)

1) 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

2) Address the discrepancy between common names and scientific names of VME indicator taxa in the CMM (e.g. provide a table that translates between common and scientific names that can be updated as taxonomic changes are implemented)

3) Work toward completing objectives of VME data sharing

4) Use data-based methods applied to Japan and Korea's indicator taxa bycatch to further refine encounter thresholds that are taxon and gear specific

5) Revisit other methods for identifying VME using additional criteria

6) Consider adding Hydrocorals to the VME indicator taxa list, and if necessary develop science based encounter thresholds

Recommendations to the Scientific Committee – Bottom Fish

1. Adopt the updated species summaries of North Pacific armorhead, splendid alfonsino, sablefish, and blackspotted and rougheye rockfishes

2. Adopt the Terms of Reference for Data Sharing of Catch and Effort Data for Depletion Analysis of North Pacific Armorhead and template for data sharing

3. Communicate to the Commission that:
   a) although NPA catch was slightly higher in 2022 than 2021, the catch remains at low levels relative to historical values
   b) there are some indications that Japanese fishers have been avoiding catching NPA since the voluntary catch limit was introduced in 2019
   c) there has been no indication of high recruitment of NPA detected in the monitoring survey.
   d) SA catch has been about 1/2 of the mean for the last 10 years, but nominal CPUE is only slightly lower than the 10 year average

4. Hire an external expert to support the work of the SWG NPA-SA (ToR with Secretariat)

Recommendations to the Scientific Committee -VME

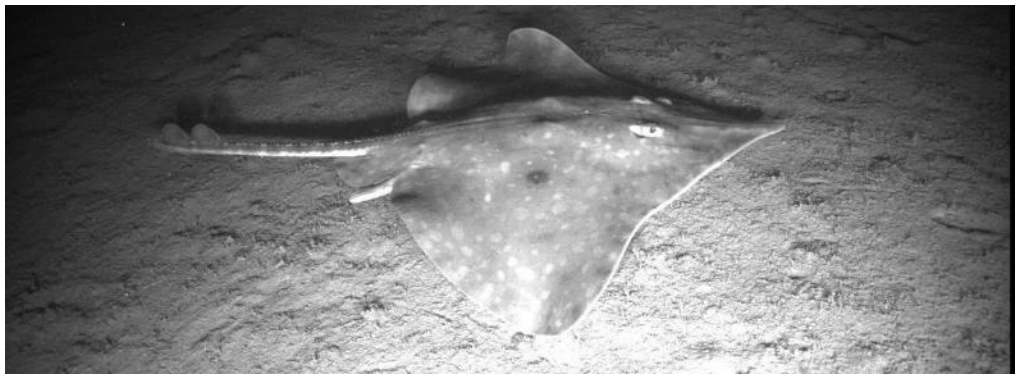
1) Endorse the method proposed by Japan (NPFC-2019-SSC VME04-WP02) as one framework for identifying VMEs, noting that the density thresholds should be further explored

2) Recommend that the Commission close two new areas as VME protection sites on Cobb Seamount

3) Endorse a new interim encounter threshold for **sponges** of **350 kg**

4) Endorse encounter thresholds **for pot gear** of **2 kg** for corals and **5 kg** for Hexactinellida and Demospongiae in the NE Pacific

5) Endorse **pennatulaceans** as a VME indicator taxa and include pennatulaceans in the encounter threshold of 50 kg for corals



Recommendations to the Scientific Committee - Other

1) Endorse the updated 2023-2027 SSC BF-ME 5-Year Rolling Work Plan

2) Consider the SSC BF-ME's comments on the NPFC Performance Review recommendations that concern bottom fishing and marine ecosystems

3) Look for opportunities for collaboration with other organizations such as the FAO ABNJ Deep-sea Fisheries Project, PICES or NPAFC to collect new data (such as biomass estimates from fishery-independent surveys or biological data collections) that would help with stock assessments for bottom fisheries and outstanding issues on VME such as VME recovery

4) Consider, in cooperation with TCC and the Commission, amending CMM 2023-05 to address the ambiguity around the referenced effort limits agreed in February 2007 in Paragraph 4A and amending CMM 2023-06 to determine the level of a historical average in Paragraph 3, i.

5) Endorse the revised CMM 2023-05 and CMM 2023-06

6) ****Consider amending the TOR for the BFME to include routine updates of CMM as a method to transmit science advice to the Commission****

- The SSC BF-ME recommended holding a **3-day** meeting of the SSC BF-ME in 2024 and requested the guidance of the SC and Commission for determining the date, format and location of the meeting

- The SSC BF-ME recommends holding **intersessional meetings** of the SWG NPA-SA and SWG VME

THANK YOU!