

Northwest Atlantic Fisheries Organization



**Report of the NAFO Joint Commission-Scientific Council Working Group on the  
Ecosystem Approach Framework to Fisheries Management (WG-EAFFM) Meeting**

16-18 July 2019  
NAFO Secretariat  
Dartmouth, Nova Scotia, Canada

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2019

WG-EAFFM,  
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### **1. Opening by the co-Chairs, Andrew Kenny (European Union) and Elizabethann Mencher (USA)**

The meeting was opened by the co-Chairs, Andrew Kenny (European Union) and Elizabethann Mencher (USA), at 09:30 hours on Tuesday, 16 July 2019 at the NAFO Headquarters in Dartmouth, Nova Scotia, Canada.

The co-Chairs welcomed representatives from Canada, European Union, Iceland, Japan, Russian Federation, and United States of America. Two delegates participated via teleconference WebEx (Annex 1).

### **2. Appointment of Rapporteur**

The NAFO Secretariat (Senior Fisheries Management Coordinator and Scientific Council Coordinator) were appointed co-Rapporteurs of this meeting.

### **3. Adoption of Agenda**

The provisional agenda was adopted, as previously circulated (Annex 2).

### **4. Review of Commission response to recommendations of the 2018 WG-EAFFM meeting**

The five recommendations from the 2018 meeting pertain to:

1. Impact of scientific trawl surveys on VMEs closed areas,
2. Implementation of the Ecosystem Approach Roadmap and the Ecosystem Summary Sheets,
3. Review of closed areas including area 14,
4. FAO criteria in assessing significant adverse impacts (SAI) on Vulnerable Marine Ecosystems (VMEs), and
5. FAO three-alpha codes for VME indicator species (See COM-SC Doc. 18-03).

These recommendations were adopted during the Joint Commission-Scientific Council (SC) session of the Annual Meeting in September 2018 (COM Doc. 18-28).

In response, the Commission requested advice from SC on these matters (requests 5, 8-11 in COM Doc. 18-20). At its meeting in June 2019, SC formulated its response to the Commission request (see SCS Doc. 19-20).

Review of the implementation of the recommendations are reflected in agenda item 6 below. Follow-up recommendations were made, and they are reflected in agenda item 9.

### **5. Report from the Secretariat on ongoing global processes**

#### **a. Intergovernmental Conference on Biodiversity Beyond National Jurisdiction (BBNJ)**

The Executive Secretary informed the WG-EAFFM of progress in the UN Preparatory Committee to study issues relating to the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction (BBNJ). The Intergovernmental Conference is scheduled to meet for four sessions. The first session was held in September 2018 and the second during March/April 2019. Further sessions will take place in August 2019 and the first half of 2020.

Draft text of an agreement under the United Nations Convention on the Law of the Sea has been prepared and will be further developed during the coming meetings.

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Four main elements are expected to be addressed in these negotiations:

- marine genetic resources, including questions on the sharing of benefits;
- measures such as area-based management tools, including marine protected areas;
- environmental impact assessments; and
- capacity-building and the transfer of marine technology.

WG-EAFFM thanked the Executive Secretary for his presentation, noting that there is considerable overlap between this process and other initiatives already underway. While the current draft contains alternative text that provides a broad scope, it is clear that the final agreement could have important implications for NAFO. WG-EAFFM noted that this was a state-led process and suggested that flag state participants should inform their respective NAFO delegations.

#### **b. International Seabed Authority**

The Executive Secretary informed WG-EAFFM of recent communication with the International Seabed Authority (ISA).

During the 2015 Annual Meeting of NAFO, the Secretariat was instructed “*to explore the establishment of mechanisms for dialogue and engagement*” between NAFO and the ISA. To this end, the Executive Secretary initiated communication with the ISA, who responded with suggestions for further cooperation through ‘*an informal dialogue and exchange of non-confidential information on matters of mutually beneficial interest to promote a better understanding of each organization’s activities.*’

Suggestions from the ISA included:

- meeting, where practicable, on the sidelines of international conferences and meetings;
- an invitation to NAFO to participate in relevant ISA-workshops, meetings and conferences; and
- informal notification to NAFO of relevant new applications for exploration for polymetallic nodules, polymetallic sulphides and cobalt-rich ferromanganese crusts in the Area.

WG-EAFFM thanked the Executive Secretary for his presentation and agreed that work to develop informal coordination mechanisms should continue. It was suggested that SC might consider inviting ISA to participate in WG-ESA or something similar. It was agreed that the Secretariat should move forward with the informal coordination mechanisms proposed by the ISA. It was further agreed that the Commission, through the WG-EAFFM, should consider the development of communication channels between ISA and NAFO, including for example development of a Memorandum of Understanding (MOU), with the understanding that any mechanism not be overly cumbersome or costly.

#### **c. Other regional and global processes**

The Executive Secretary informed WG-EAFFM of recent actions by the Secretariat to maintain dialogue with relevant organizations and explore mechanisms to improve the exchange of information.

The Secretariat has used meetings organized under the Areas Beyond National Jurisdiction (ABNJ) Deep Seas Project to further dialogue with Project partners, including the Convention on Biological Diversity (CBD) Secretariat. The Executive Secretary attended the Project’s Fourth Steering Committee (PSC) Meeting in La Reunion, France (23 – 25 January 2019), as well as the Project’s Deep Sea Meeting in Rome (07-09 May). NAFO’s Senior Fisheries Management Coordinator also gave a presentation on NAFO’s practices on quota allocation and quota transfer to a workshop on rights-based management organized by the Project in Rome (10-12 April 2019).

The ABNJ Deep Seas Project has presented opportunities for the Secretariats of all the so-called ‘*deep sea RFMOs*’, namely General Fisheries Commission for the Mediterranean (GFCM), NAFO, North-East Atlantic Fisheries Commission (NEAFC), North Pacific Fisheries Commission (NPFC), South-East Atlantic Fisheries Organization (SEAFO), South Indian Ocean Fisheries Agreement (SIOFA) and South Pacific Regional Fisheries management Organization (SPRFMO), as well as Convention for the Conservation of Antarctic Marine Living Resources (CCAMLR), to meet and discuss issues of common concern in the margins of both COFI and PSC

meetings. The Project has also recently supported some exchanges amongst deep sea RFMOs, including sending the Science Manager of the NPFC to observe the June 2019 meeting of the NAFO Scientific Council and sending NAFO's Fisheries Information Administrator to assist the SIOFA Secretariat and to train rapporteurs at SIOFA's Compliance Committee Meeting and Sixth Meeting of the Parties (27 June – 05 July 2019).

The Executive Secretary also attended the fourteenth round of Informal Consultations concerning the United Nations Fish Stocks Agreement (UNFSA) organized by United Nations Division for Ocean Affairs and the Law of the Sea (UN-DOALOS), focusing on the topic of "*Performance reviews of regional fisheries management organizations and arrangements*", in New York, New York, USA (02 – 03 May 2019) and gave a presentation on NAFO's 2018 performance review process. The Executive Secretary also gave presentations on NAFO at a meeting organized by the Sargasso Sea Commission, entitled "*Next steps for stewardship of the Sargasso Sea*", in Bermuda (13-14 March 2019) and at a meeting organized by the Western Central Atlantic Fishery Commission (WECAFC) at its first preparatory meeting concerning the transformation of WECAFC into a RFMO in Bridgetown, Barbados (25-26 March 2019).

## **6. Presentation and discussion on Scientific Council response to Commission request for advice in 2019:**

### **VME related**

#### **a. Evaluation of the impact of scientific trawl surveys on VME in closed areas, and the effect of excluding surveys from these areas on stock assessments (request #5 in COM. Doc. 18-20)**

*The Commission requests that Scientific Council continue its assessment of scientific trawl surveys on VME in closed areas, and the effect of excluding surveys from these areas on stock assessment metrics.*

Scientific Council Response:

*SC notes that work planned to complete this task did not occur as a result of other work commitments. Based on previous analysis, SC reiterates its ongoing recommendation that until this issue is fully resolved scientific bottom trawl surveys in existing closed areas be avoided if possible and additional work be expedited to complete the evaluation of excluding RV surveys in closed areas on stock assessment metrics.*

WG-ESA co-Chair Andrew Kenny informed WG-EAFFM of work that has been completed and previously presented to WG-EAFFM in 2017. Work already completed includes analysis of the impacts of surveys in closed areas and analysis of the effects of removing surveys on stock assessment (for the Canadian Spring and Autumn RV surveys only). Further work is required to extend this analysis to EU surveys.

It was noted by several WG-EAFFM participants that the numbers of tows in the closed areas appear to be decreasing, possibly as a result of an informal agreement by Contracting Parties to avoid surveying in closed areas. WG-EAFFM endorsed the Scientific Council's recommendation that until this issue is fully resolved scientific bottom trawl surveys in existing closed areas be avoided if possible and additional work be expedited to complete the evaluation of excluding RV surveys in closed areas on stock assessment metrics (see section 9 recommendation 2). WG-EAFFM agreed that the European Union and Canada will examine recent survey data and evaluate the extent to which trawls have impinged on closed VME areas in recent years and the number of trawl survey sets which have recorded significant concentrations of VME indicator species from closed areas. These results will be presented at the 2019 Annual Meeting.

#### **b. Progress towards the 2020 re-assessment of VME closures and the 2021 re-assessment of the impacts of NAFO bottom fisheries (request #9 and #11 in COM. Doc. 18-20)**

##### **i) re-assessment of VME closures**

*The Commission requests Scientific Council to conduct a re-assessment of VME closures by 2020, including area #14 irrespective of a decision to continue or not-continue this closure after 2018.*

Scientific Council Response:

*SC has agreed to a workplan to review the VME fishery closures to be concluded by 2020. This review will provide the basis for the reassessment of bottom fishing activities with respect to impacts on VMEs currently scheduled for 2021.*

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*SC notes that changes in the availability of CP resources directed to undertake this work are likely to impact SC's capacity to fully address the planned activities in support of the review of VME fishery closures.*

WG-ESA co-Chair Andrew Kenny informed WG-EAFFM of the workplan for the reassessment of VME fishery closures that was agreed by SC in its June 2019 meeting (SCS Doc. 19-20).

WG-EAFFM thanked Dr. Kenny for his presentation and noted that the reassessments will still be completed and analyzed even if not all of the elements of the ambitious workplan are finalized. WG-EAFFM noted that reassessment would be considered under the larger discussion at the Annual Meeting on the SC's work plan and prioritization process and further suggested that this work be a priority within those discussions, with the understanding that NAFO has other priorities. WG-EAFFM noted the importance of understanding the Commission's expectations (i.e. what material is needed to allow for/ensure informed decisions).

## ii) re-assessment of the impacts of NAFO bottom fisheries

*In relation to the assessment of NAFO bottom fisheries, the Commission endorsed the next re-assessment in 2021 and that SC should:*

- a. *Assess the overlap of NAFO fisheries with VME to evaluate fishery specific impacts in addition to the cumulative impacts;*
- b. *Consider clearer objective ranking processes and options for objective weighting criteria for the overall assessment of significant adverse impacts and the risk of future adverse impacts;*
- c. *Maintain efforts to assess all of the six FAO criteria (Article 18 of the FAO International Guidelines for the Management of Deep-Sea Fisheries in the High Seas) including the three FAO functional SAI criteria which could not be evaluated in the current assessment (recovery potential, ecosystem function alteration);*
- d. *Continue to work on non-sponge and coral VMEs (for example bryozoan and sea squirts) to prepare for the next assessment.*

Scientific Council Response:

*SC made further progress in assessing the overlap of NAFO fisheries with VME through an analysis of haul-by-haul log-book data in combination with VMS data for 2017. Such analysis significantly improves the spatial definition of specific fishing areas within the NAFO footprint. This approach will be used for re-assessment for years for which haul by haul data logbook are available, otherwise the previously adopted approach will be applied.*

*Furthermore, SC has made progress in developing models and methodological approaches which assess the functional significance of VMEs and the estimation of recovery rates of different VME indicator species. This provides valuable insight to assess the level of VME connectivity between different areas.*

*Updated analysis (including new data) has been performed on non-coral and non-sponge VME indicator species and further work is planned.*

*SC notes that changes in the availability of CP resources directed to support this work are likely to impact SCs capacity to fully address the planned activities in support of the reassessment of bottom fisheries by 2021.*

In relation to part a) of the request, Mar Sacau (IEO, European Union) presented recent work developed under the EU-funded NERIEDA project to assess the overlap of NAFO fisheries with VME to evaluate fishery specific impacts in addition to the cumulative impacts using VMS data combined with fishing start and end times from haul-by-haul logbook data. It was noted that the meaning of the start and end times recorded in the logbooks is ambiguous: it is unclear whether these refer to the time the gear enters the water or when it reaches the seabed. For the purposes of this and any other SC analysis, it should be the latter. WG-EAFFM encouraged SC to continue its analysis of logbook and VMS data to clarify if any fishing activity is occurring within closed areas, and if so to send that information to STACTIC.

In relation to part c) Mariano Koen-Alonso (Fisheries and Oceans, Canada) presented WG-ESA's recent work on Agent-Based Modelling (ABM) of sea pen communities, and Andy Kenny (CEFAS, European Union) presented work carried out under the NEREIDA project on Sea Pen Empirical-Based Modelling (EBM) and VME Functional Analysis.

WG-EAFFM noted the ongoing work to look at the functional aspect of VMEs, *e.g.* sea pens, in relation to the reassessment will further advance the work toward a full evaluation of the FAO criteria for Significant Adverse Impacts on VMEs. One Contracting Party questioned the rationale for including non-sponge and non-coral VMEs in the 2020/2021 reassessments as the two new taxa – byozoans and sea squirts – have distinct characteristics from the other VME indicators used for the reassessment as they occur mainly in shallow water. In response, other Contracting Parties noted that NAFO has listed these taxa as VME indicator species.

**c. Revisions to VME taxa in CEM Annex I.E, Part VI (request #10 in COM. Doc. 18-20)**

*Review the proposed revisions to Annex I.E, Part VI as reflected in COM-SC EAFFM-WP 18-01, for consistency with the taxa list annexed to the VME guide and recommend updates as necessary.*

Scientific Council Response:

*SC noted the last VME indicator species list was compiled in 2011 and in preparation for the review of closures in 2020, an update of the Annex I.E list of VME indicator species is required, including the addition of the three letter FAO species codes where appropriate.*

*The nomenclature of some species has also been revised, and several large sponges have now been described at the species level. SC recommends that Annex I.E, Part VI, list of VME indicator species be replaced with the list provided here (with the addition of FAO codes where they are currently lacking, provided by the Secretariat prior to the 2019 annual Meeting if possible).*

WG-EAFFM endorsed the recommendation of SC with a view that the updated list as reflected in SCS Doc. 19-20 and in Annex 3 of this report replaces Annex I.E, Part VI of the NCEM (COM Doc. 19-01). It was agreed that the Secretariat would request the FAO produce new three-alpha codes for VME indicator species, as necessary.

**Roadmap**

**d. Work under the Ecosystem Approach road map, including testing the reliability of the ecosystem production potential model and other related models (request #8 in COM. Doc. 18-20)**

WG-ESA co-Chair, Pierre Pepin presented progress in the development of Ecosystem Summary Sheets and the development of draft ecosystem-level objectives.

Ecosystem Summary Sheets (ESS) are analogous to current Stock Summary Sheets and intended to provide a synoptic perspective on the state of NAFO ecosystems and their management regime. They are based on the general principles adopted by NAFO in the chapter III of its Convention and it is intended that they be updated every 3-5 years. The goal of ESS is to inform decision making for both managers and industry as well as help identify objective hazards. Their development will apply a modular approach and will consider additional information as it becomes available.

ESS were initially drafted by WG-ESA in 2017, further developed by SC in June 2018 and presented to WG-EAFFM in August 2018. In response to a recommendation from WG-EAFFM in 2018, Scientific Council revised the terminology used in Ecosystem Summary Sheets in order to avoid potential confusion with standard terminology in fisheries management, review their structure to address concerns raised by WG-EAFFM, as well as consider their potential to inform management decisions and responses (WG-EAFFM recommendation 2018). SC has redrafted the ESS accordingly (SCS Doc. 19-20). In particular, the term “*Total Catch Ceiling*” is replaced with “*Total Catch Indices*” to make clear that it is not intended to be a hard limit.

WG-EAFFM thanked Dr. Pepin and SC for addressing their concerns over language in the ESS. WG-EAFFM voiced support for the changes to the language as provided by SC.

In relation to ecosystem-level objectives, WG-EAFFM agreed that it is necessary for managers and scientists to engage in the development and practical implementation of these objectives. Issues to be addressed should include how best to operationalize the ecosystem principles detailed in the amended Convention, a vision for how current and future ecosystem and stock scientific advice would inform possible management actions and

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how this advice is integrated and presented to the Commission. It is expected that the presentation of advice may evolve based on those objectives.

Development of objectives will benefit from feedback from experts that have already implemented these types of management strategies (*e.g.* Norway, USA, and possibly other countries). One Contracting Party noted that it has initiated a domestic process to develop and implement an ecosystem approach and this work will inform its position in NAFO. In order to advance the development of objectives, it was suggested that a workshop be held prior to WG-EAFFM's meeting in 2020, where invited experts, as well as managers and scientists, would address the issues detailed above with the goal of drafting ecosystem-level objectives and any related guidance that may be required.

WG-EAFFM noted the challenges inherent in multi-national, multi-stock, fisheries negotiations, but highlighted the benefits of the roadmap process to informing not only decision makers but also industry in providing long-term understanding of stock/ecosystem trends.

### Other issues

#### e. Update on relevant research related to the potential impact of activities other than fishing in the Convention Area (request #15 in COM. Doc. 18-20)

Pablo Durán Muñoz (IEO, European Union) presented work completed under the Atlas project, a Trans-Atlantic assessment and deep-water ecosystem-based spatial management plan for Europe. Case study 11 under this project was a theoretical exercise in marine spatial planning (MSP) based on the Flemish Cap and Flemish Pass area (NAFO Divisions 3LM). The goals and objectives set for this plan were to develop 'blue growth' in the spatially managed area (SMA). Information on existing activities within the SMA was collated and mapped using GIS tools and the impact of these on natural ecosystem components assessed. This was used to inform the analysis of the spatial overlap of the distribution of human activities and ecosystem components and enable the identification of existing or potential conflicts.

An additive spatial model was developed. This involved identification of relevant ecosystem components and anthropogenic stressors and mapping them on a common rectangular grid. Semi-quantitative sensitivity weightings were applied, and the sum of their products used to provide an estimate of cumulative impacts. The value of this work is very useful to address Commission request #15 in COM Doc 18-20).

The WG-EAFFM noted the SC response to request #15. SC has advised that they are unable to address the request on other activities without significant additional resources. SC participants clarified that the key concern is the lack of expertise in areas such as oil and gas. To help address these issues, Contracting Parties noted the need for greater clarity on what is being asked of SC. The WG-EAFFM reiterated the importance of focusing on scientific cooperation as well as understanding the impacts of other activities, such as oil/gas, shipping, mining, etc. on VMEs and other NAFO resources.

One Contracting Party reminded parties of existing and ongoing information exchange mechanisms regarding activities on the Extended Continental Shelf, and opportunities for additional engagement. Other Contracting Parties requested additional scientific information, in particular on impact assessments of these activities. The Secretariat will continue establishing/strengthening lines of communication with relevant organizations within established mandates.

### 7. Discussion on other matters: Scope and direction of WG-EAFFM for 2020-2023

#### a. Preparations for the Review of Vulnerable Marine Ecosystems (VMEs) in Chapter II of the NAFO CEM

It was discussed whether and how the WG-EAFFM will review Chapter II of the CEM. It was noted that the purpose of the review would not be to impact or override existing processes (such as the review of closed areas or the review of VMEs) but rather to consider the effectiveness of the chapter as a whole. It was suggested that the first step will be to check whether the existing language is still sufficient to address the objectives of the chapter.

Some Contracting Parties commented that the review would present an opportunity to:

- revisit the Terms of Reference of the WG-EAFFM;
- develop a document that summarizes existing deliverables and timelines;

- identify gaps and develop objectives, deliverables and timelines that help progress the operationalization of the ecosystem approach to management in alignment with the amended Convention; and
- consider if the CEM should reflect the ongoing work under the Roadmap.

However, one Contracting Party has raised concerns over the mandate of the WG to engage in such revision in particular the mandate of the Working Group who are members of the Scientific Council. It was agreed that the co-Chairs of the WG-EAFFM will draft a document for consideration of the Working Group laying out a workplan for the review of Chapter II, per Article 24. The document will be developed and reviewed prior to the 2019 Annual Meeting. The co-Chairs will coordinate with Chairs of other relevant bodies, including STACTIC and SC on the development of this workplan. As part of the presentation on the WG-EAFFM meeting to the Commission, the co-Chairs will solicit additional direction from the Commission on the goal of this review process.

#### **b. Other (discussion)**

The WG-EAFFM referred to the April 2019 meeting report of the Working Group to Address the Recommendations of the 2018 Performance Review Panel (WG-PR) (COM Doc. 19-03). The WG-EAFFM took note of the specific recommendations, namely recommendations 1, 14, 15, 32, and an additional un-numbered one (adopted by the Commission, but not a recommendation of the Performance Review Panel report, pertaining to non-fishing anthropogenic activities in the NRA), where WG-EAFFM was preliminarily identified as the lead body in implementing the recommendations of the Panel.

Regarding the non-fishing anthropogenic activities, representatives of SC noted the need for additional guidance on what is being asked of them, as noted earlier. There were discussions as to whether WG-EAFFM would need a stronger mandate to be able to address the recommendation.

### **8. Other Business**

#### **a. ABNJ Global Oceans Project**

Two FAO initiatives were presented to inform the WG-EAFFM.

Daniela Octaviani (FAO) presented a PowerPoint *Economic Valuation of Ecosystems Severs from the Deep Sea* (COM-SC EAFFM-WP 19-05 Rev. 2). The initiative is one of the components of the FAO ABNJ Deep Sea Project. The presentation centered on how the economic valuation can be used as a tool in the cost-benefit analysis and trade-off assessment and help in the discussion on ecosystem management. The presentation provided an example of economic valuation of deep-sea sponges, particularly the joint research effort on the ecology and economic assessment of deep-sea sponge removal by bottom trawling in the Flemish Cap. A scientific paper on this was recently submitted to a peer-reviewed journal for publication consideration.

Tony Thompson (FAO) presented via WebEx a PowerPoint *ABNJ Deep Seas Project (September 2014-August 2019) and Development of next phase* (COM-SC EAFFM-WP 19-06 Rev.). Dr. Thompson highlighted the accomplishments in the first phase and the concepts in the development of the next phase. The Executive Secretary also informed the WG-EAFFM that NAFO has been a collaborating partner on this project from the outset, with “*in-kind*”, contributions from NAFO scientists and Secretariat members in sharing expertise in the field of fisheries science and fisheries management with FAO and other deep-sea RFMOs. The implementation of the second phase is expected to commence in 2021.

The WG-EAFFM thanked FAO for its reporting. Regarding the next phase of the ABNJ project, the Secretariat was requested to clarify with FAO the timelines and opportunities for NAFO’s engagement.

#### **b. OSPAR Commission proposal ‘North Atlantic Current and Evlanov Seamount Marine Protected Area’**

The Executive Secretary relayed the communication from OSPAR seeking views from NAFO pertaining to the Evlanov Seamount, particularly on the provision of additional information concerning seabird ecosystems, current or potential future activities and management actions (COM-SC EAFFM-WP 19-07).

The WG-EAFFM suggested that the Executive Secretary contacts OSPAR for additional information on the proposal itself, including timeframes and deadlines. The Executive Secretary was requested to reach out to

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relevant Contracting Parties so that they have the opportunity to comment. The Secretariat shall post the OSPAR response and any other related information to the WG-EAFFM SharePoint website. It was noted that while the proposed Marine Protected Area lies outside the NAFO Regulatory Area, there may be overlap in the range of certain shared species.

## **9. Recommendations to forward to the Commission and/or Scientific Council**

The WG-EAFFM recommends that:

1. In relation to coordination with the International Seabed Authority (ISA), the Secretariat move forward with the informal coordination mechanisms proposed by the ISA. The Commission, through the WG-EAFFM, consider the development of communication channels between ISA and NAFO, including the possible development of a Memorandum of Understanding (MOU) or other appropriate tools, while avoiding any overly cumbersome or costly processes.
2. In relation to scientific surveys in VME closed areas, Contracting Parties are encouraged to continue to avoid closed areas in their scientific trawl surveys, as far as practicable. Further, that SC finalize its work to determine the effect of excluding surveys from these areas on stock assessments as soon as practicable, in accordance with Scientific Council's workplan, and contracting parties should be encouraged to ensure the correct scientific expertise supports this SC process.
3. In relation to the 2020 re-assessment of VME closures and the 2021 re-assessments of the impacts of NAFO bottom fishing, Contracting Parties support the necessary participation of relevant experts to ensure these processes are completed in a timely fashion, bearing in mind resource needs and constraints.
4. In relation to data required under CEM Article 28, reported in accordance with Annex II.N Fishing Logbook Information by Haul, STACTIC clarify how start and end time are defined for bottom contact gear
5. The CEM Annex I.E. Part VI is amended to reflect the correct taxa names and FAO alpha codes.
6. Commission request that the Scientific Council present the Ecosystem Summary Sheet for 3LNO to the Commission at the 2020 Annual Meeting, with a view of informing decision-making processes.
7. Commission develop ecosystem level objectives to inform the Scientific Council's development of the EAF Roadmap, including through a possible intersessional workshop.
8. Commission request that the Scientific Council continues its work to develop the EAF Roadmap.
9. Contracting Parties strongly support participation by the necessary scientific expertise in these processes.

## **10. Adoption of Report**

The report was adopted via correspondence.

## **11. Adjournment**

The meeting was adjourned at 13:00 hours on Thursday, 18 July 2019.

## Annex 1. List of Participants

### CO-CHAIRS

Kenny, Andrew. CEFAS, Lowestoft Laboratory, Pakefield Road, Lowestoft, Suffolk NR33 0HT, United Kingdom  
Tel: +44 (0) 1502562244 – Email: [andrew.kenny@cefas.co.uk](mailto:andrew.kenny@cefas.co.uk)

Mencher, Elizabethann. Senior Policy Advisor, National Marine Fisheries Service, Office of International Affairs and Seafood Inspection, National Oceanic and Atmospheric Administration, (NOAA), 1315 East-West Hwy., Silver Spring, MD 20910, USA  
Tel: +1 301 427 8362 – Email: [Elizabethann.Mencher@noaa.gov](mailto:Elizabethann.Mencher@noaa.gov)

### CANADA

Chapman, Bruce. President, Atlantic Groundfish Council. 1362 Revell Dr., Manotick, Ontario K4M 1K8 Canada  
Tel: +1 613 692 8249 – Email: [bchapman@sympatico.ca](mailto:bchapman@sympatico.ca)

Fagan, Robert. Senior Resource Manager. Fisheries Management, Fisheries and Oceans Canada, Northwest Atlantic Fisheries Centre, 80 East White Hills Road, St. John's, NL, A1C 5X1  
Tel: +1 709 772 2920 – Email: [Robert.Fagan@dfo-mpo.gc.ca](mailto:Robert.Fagan@dfo-mpo.gc.ca)

Kenchington, Ellen, Fisheries and Oceans Canada, Bedford Institute of Oceanography (BIO), P. O. Box 1006, Dartmouth, N.S. B2Y 4A2  
Tel: +1 902-426-2030 – Email: [ellen.kenchington@dfo-mpo.gc.ca](mailto:ellen.kenchington@dfo-mpo.gc.ca)

Koen-Alonso, Mariano. Science Advisor, Fisheries and Oceans Canada, Northwest Atlantic Fisheries Centre, 80 East White Hills Road, St. John's, NL, A1C 5X1  
Tel: +1 709 772 2047 – Email: [Mariano.Koen-Alonso@dfo-mpo.gc.ca](mailto:Mariano.Koen-Alonso@dfo-mpo.gc.ca)

Milburn, Derrick. Senior Advisor, International Fisheries Management and Bilateral Relations, Fisheries and Oceans Canada, 200 Kent Street, Ottawa, ON K1A 0E6 Canada  
Tel: +1 613 867 9818 – Email: [Derrick.Milburn@dfo-mpo.gc.ca](mailto:Derrick.Milburn@dfo-mpo.gc.ca)

Pepin, Pierre. Senior Research Scientist, Fisheries and Oceans Canada, Northwest Atlantic Fisheries Centre, 80 East White Hills, St. John's, NL A1C5X1 Canada  
Tel: +1 709 772 2081 – Email: [Pierre.pepin@dfo-mpo.gc.ca](mailto:Pierre.pepin@dfo-mpo.gc.ca)

Thompson, Susan. Science Advisor, Fish Population Science. Fisheries and Oceans Canada, Government of Canada  
Tel: +1 343-998-3982 – Email: [Susan.Thompson@dfo-mpo.gc.ca](mailto:Susan.Thompson@dfo-mpo.gc.ca)

### EUROPEAN UNION (EU)

Alpoim, Ricardo. Instituto Portugues do Mar e da Atmosfera, Rua Alfredo Magalhães Ramalho, nº6, 1495-006 Lisboa, Portugal  
Tel: +351 213 02 70 00 – Email: [ralpoim@ipma.pt](mailto:ralpoim@ipma.pt)

Blazkiewicz, Bernard (via WebEx). NAFO Desk Officer, European Commission, Law of the Sea and Regional Fisheries Organisations, DG-MARE B2, Rue Joseph II, 99, B-1049, Brussels, Belgium  
Tel: +32-2-299.80.47 – Email: [Bernard.BLAZKIEWICZ@ec.europa.eu](mailto:Bernard.BLAZKIEWICZ@ec.europa.eu)

Durán Muñoz, Pablo. Instituto Español de Oceanografía (IEO), Centro Oceanográfico de Vigo, Subida a Radio Faro, 50, 36390 Vigo, Spain  
Tel: +34 986 492 111 – Email: [pablo.duran@ieo.es](mailto:pablo.duran@ieo.es)

Granell, Ignacio (via WebEx). International Relations Officer, Regional Fisheries Management Organizations, European Commission, Rue Joseph II, 99, B-1049, Brussels, Belgium  
Tel: +32 2 296 74 06 – Email: [ignacio.granell@ec.europa.eu](mailto:ignacio.granell@ec.europa.eu)

WG-EAFFM,  
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Ribeiro, Cristina. Policy Officer. European Commission. Directorate-General for Maritime Affairs and Fisheries  
DG MARE, Unit C.3 – Scientific Advice and Data Collection, Rue Joseph II, 99, B-1049, Brussels, Belgium  
Brussels/Belgium  
Tel: +32 229-81663 – Email: [Cristina-RIBEIRO@ec.europa.eu](mailto:Cristina-RIBEIRO@ec.europa.eu)

Sacau, Mar. Instituto Español de Oceanografía (IEO), Centro Oceanográfico de Vigo. C.P: 36390 Vigo, Spain  
Tel: +34 986 4921 11 – Email: [mar.sacau@ieo.es](mailto:mar.sacau@ieo.es)

Sepúlveda, Pedro. Secretaría General de Pesca, Subdirección General de Acuerdos y Organizaciones Regionales  
de Pesca, Velazquez 144, 28006 Madrid, Spain  
Tel: +34 913 476 137 – Email: [psepulve@mapama.es](mailto:psepulve@mapama.es)

Teixeira, Isabel. Head of External Resources Division, Ministry of the Sea, Directorate General for Natural  
Resources, Safety and Maritime Services (DGRM), Avenida Brasilia, 1449-030 Lisbon, Portugal  
Tel: +351 21 303 5825 – Email: [iteixeira@dgrm.mm.gov.pt](mailto:iteixeira@dgrm.mm.gov.pt)

Tuvi, Aare. Counsellor, Fishery Resources Department, Republic of Estonia, Ministry of the Environment, Narva  
mnt 7A, 15172, Tallinn, Estonia  
Tel: + 372 6260 712 – Email: [aare.tuvi@envir.ee](mailto:aare.tuvi@envir.ee)

#### ICELAND

Benediktsdóttir, Brynhildur. Senior Expert, Department of Fisheries and Aquaculture, Ministry of Industries and  
Innovation, Skúlagötu 4, 150 Reykjavik, Iceland  
Tel: +354 545 9700 – Email: [brynhildur.benediktsdottir@anr.is](mailto:brynhildur.benediktsdottir@anr.is)

#### JAPAN

Nishida, Tsutomu. Associate Scientist, National Research Institute of Far Seas Fisheries, Fisheries Research  
Agency, 5-7-1, Orido, Shimizu-Ward, Shizuoka-City, Shizuoka, Japan 424-8633  
Tel: +81 54 336 8534 – Email: [aco20320@par.odn.ne.jp](mailto:aco20320@par.odn.ne.jp)

#### RUSSIAN FEDERATION

Fomin, Konstantin. Junior Scientist, Russian Research Institute of Marine Fisheries and Oceanography (PINRO),  
Polar Branch, 6 Academician Knipovich Street, Murmansk, 183038, Russia  
Tel: +7 (911) 319 9717 – E-mail: [fomin@pinro.ru](mailto:fomin@pinro.ru)

Tairov, Temur. Representative of the Federal Agency for Fisheries of the Russian Federation in Canada, 47  
Windstone Close, Bedford, Nova Scotia, B4A4L4  
Tel: +1 902 405 0655 – Email: [temurtairov@mail.ru](mailto:temurtairov@mail.ru)

#### UNITED STATES OF AMERICA

Gamble, Robert. Northeast Fisheries Science Centre (NOAA), 166 Water Street, Woods Hole, MA 02543  
Tel: +1 508 495 2202 – E-mail: [Robert.Gamble@noaa.gov](mailto:Robert.Gamble@noaa.gov)

Moran, Patrick. Foreign Affairs Specialist, National Marine Fisheries Service, Office of International Affairs,  
National Oceanic and Atmospheric Administration, (NOAA), 1315 East-West Hwy., Silver Spring, MD 20910  
USA  
Tel: +1 301 427 8370 – Email: [Pat.Moran@noaa.gov](mailto:Pat.Moran@noaa.gov)

#### INVITED SPEAKERS

##### ABNJ DEEP SEAS PROJECT (FAO)

Thompson, Anthony (via WebEx). Email: [tony.thompson@tele2.se](mailto:tony.thompson@tele2.se)



**SPONGES PROJECT (FAO)**

Ottaviani, Daniela. Email: [d.ottaviani@yahoo.it](mailto:d.ottaviani@yahoo.it)

**OBSERVERS****ECOLOGY ACTION CENTRE**

Arnold, Shannon. Marine Program, Senior Coordinator, Ecology Action Centre, 2705 Fern Lane, Halifax, Nova Scotia B3K 4L3  
Tel: +1 902-446-4840 – Email: [sarnold@ecologyaction.ca](mailto:sarnold@ecologyaction.ca)

**DALHOUSIE UNIVERSITY - MARINE & ENVIRONMENTAL LAW INSTITUTE**

VanderZwaag, David. Canada Research Chair in Ocean Law and Governance, Marine & Environmental Law Institute, Schulich School of Law, Dalhousie University, 6061 University Avenue, Halifax, Nova Scotia  
Tel: +1 902-494-1045 – Email: [David.VanderZwaag@Dal.Ca](mailto:David.VanderZwaag@Dal.Ca)

**NAFO SECRETARIAT**

Morris Drive, Suite 100, Dartmouth, Nova Scotia, Canada – Tel: +1 902 468-5590

Kingston, Fred. Executive Secretary.

Email: [fkingston@nafo.int](mailto:fkingston@nafo.int)

Blasdale, Tom. Scientific Council Coordinator.

Email: [tblasdale@nafo.int](mailto:tblasdale@nafo.int)

Federizon, Ricardo. Senior Fisheries Management Coordinator.

Email: [rfederizon@nafo.int](mailto:rfederizon@nafo.int)

LeFort, Lisa. Senior Executive Assistant to the Executive Secretary.

Email: [llefors@nafo.int](mailto:llefors@nafo.int)

## Annex 2. Agenda

1. Opening by the co-Chairs, Andrew Kenny (European Union) and Elizabethann Mencher (USA)
2. Appointment of Rapporteur
3. Adoption of Agenda
4. Review of Commission response to recommendations of the 2018 WG-EAFFM meeting
5. Report from the Secretariat on ongoing global processes
  - a. Intergovernmental Conference on Biodiversity Beyond National Jurisdiction (BBNJ)
  - b. International Seabed Authority
  - c. Other regional and global processes
6. Presentation and discussion on Scientific Council response to Commission request for advice in 2019:
 

**VME related**

  - a. Evaluation of the impact of scientific trawl surveys on VME in closed areas, and the effect of excluding surveys from these areas on stock assessments (request #5 in COM. Doc. 18-20)
  - b. Progress towards the 2020 re-assessment of VME closures and the 2021 re-assessment of the impacts of NAFO bottom fisheries (request #9 and #11 in COM. Doc. 18-20)
  - c. Revisions to VME taxa in CEM Annex I.E, Part VI (request #10 in COM. Doc. 18-20)

**Roadmap**

  - d. Work under the Ecosystem Approach road map, including testing the reliability of the ecosystem production potential model and other related models (request #8 in COM. Doc. 18-20)

**Other issues**

  - e. Update on relevant research related to the potential impact of activities other than fishing in the Convention Area (request #15 in COM. Doc. 18-20)
7. Discussion on other matters: Scope and direction of WG-EAFFM for 2020-2023
  - a. Preparations for the Review of Vulnerable Marine Ecosystems (VMEs) in Chapter II of the NAFO CEM
  - b. Other (discussion)
8. Other Business
  - a. ABNJ Global Oceans Project
  - b. OSPAR Commission proposal '*North Atlantic Current and Evlanov Seamount Marine Protected Area*'
9. Recommendations to forward to the Commission and/or Scientific Council
10. Adoption of Report
11. Adjournment

**Annex 3. Updated List of VME Indicator Species for inclusion in Annex I.E of the NCEM****Table 1.** Updated List of VME Indicator Species for inclusion in Annex I.E of the NAFO CEM. Also included are the FAO ASFIS 3-alpha codes. Codes for the genus level are indicated in parenthesis. Blank entries indicate that no code exists for that taxon. Those taxa marked with an asterisk were documented exclusively from the NAFO seamount closures.

Common Name and FAO ASFIS 3- ALPHA CODE	Taxon	Family	FAO ASFIS 3-ALPHA CODE
	<i>Asconema foliatum</i>	Rossellidae	ZBA
	<i>Aphrocallistes beatrix</i>	Aphrocallistidae	
	<i>Asbestopluma</i> ( <i>Asbestopluma</i> ) <i>ruetzleri</i>	Cladorhizidae	ZAB ( <i>Asbestopluma</i> )
	<i>Axinella</i> sp.	Axinellidae	
	<i>Chondrocladia grandis</i>	Cladorhizidae	ZHD ( <i>Chondrocladia</i> )
	<i>Cladorhiza abyssicola</i>	Cladorhizidae	ZCH ( <i>Cladorhiza</i> )
	<i>Cladorhiza kenchingtonae</i>	Cladorhizidae	ZCH ( <i>Cladorhiza</i> )
	<i>Craniella</i> spp.	Tetillidae	ZCS ( <i>Craniella</i> spp.)
	<i>Dictyaulus romani</i>	Euplectellidae	ZDY ( <i>Dictyaulus</i> )
	<i>Esperiopsis villosa</i>	Esperiopsidae	ZEW
	<i>Forcepia</i> spp.	Coelosphaeridae	ZFR
	<i>Geodia barrette</i>	Geodiidae	
	<i>Geodia macandrewii</i>	Geodiidae	
	<i>Geodia parva</i>	Geodiidae	
Large-Sized Sponges (PFR - Porifera)	<i>Geodia phlegraei</i>	Geodiidae	
	<i>Haliclona</i> sp.	Chalinidae	ZHL
	<i>Iophon piceum</i>	Acarnidae	WJP
	<i>Isodictya palmata</i>	Isodictyidae	
	<i>Lissodendoryx</i> ( <i>Lissodendoryx</i> ) <i>complicata</i>	Coelosphaeridae	ZDD
	<i>Mycale (Mycale) lingua</i>	Mycalidae	
	<i>Mycale (Mycale) loveni</i>	Mycalidae	
	<i>Phakellia</i> sp.	Axinellidae	
	<i>Polymastia</i> spp.	Polymastiidae	ZPY
	<i>Stelletta normani</i>	Ancorinidae	WSX ( <i>Stelletta</i> )
	<i>Stelletta tuberosa</i>	Ancorinidae	WSX ( <i>Stelletta</i> )
	<i>Stryphnus fortis</i>	Ancorinidae	WPH
	<i>Thenea muricata</i>	Pachastrellidae	ZTH ( <i>Thenea</i> )
	<i>Thenea valdiviae</i>	Pachastrellidae	ZTH ( <i>Thenea</i> )
	<i>Weberella bursa</i>	Polymastiidae	
Stony Corals (CSS - Scleractinia)	<i>Enallopsammia rostrata</i> *	Dendrophylliidae	FEY
	<i>Lophelia pertusa</i> *	Caryophylliidae	LWS

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	<i>Madrepora oculata*</i>	Oculinidae	MVI
	<i>Solenosmilia variabilis*</i>	Caryophylliidae	RZT
	<i>Acanella arbuscula</i>	Isididae	KQL (Acanella)
	<i>Anthothela grandiflora</i>	Anthothelidae	WAG
	<i>Chrysogorgia</i> sp.	Chrysogorgiidae	FHX
Small Gorgonians (GGW)	<i>Metallogorgia melanotrichos*</i>	Chrysogorgiidae	
	<i>Narella laxa</i>	Primnoidae	
	<i>Radicipes gracilis</i>	Chrysogorgiidae	CZN
	<i>Swiftia</i> sp.	Plexauridae	
	<i>Acanthogorgia armata</i>	Acanthogorgiidae	AZC
	<i>Calyptrophora</i> sp.*	Primnoidae	
	<i>Corallium bathyrubrum</i>	Coralliidae	COR (Corallium)
	<i>Corallium bayeri</i>	Coralliidae	COR (Corallium)
	<i>Iridogorgia</i> sp.*	Chrysogorgiidae	
	<i>Keratoisis</i> cf. <i>siemensii</i>	Isididae	
	<i>Keratoisis grayi</i>	Isididae	
	<i>Lepidisis</i> sp.*	Isididae	QFX (Lepidisis)
	<i>Paragorgia arborea</i>	Paragorgiidae	BFU
	<i>Paragorgia johnsoni</i>	Paragorgiidae	BFV
Large Gorgonians (GGW)	<i>Paramuricea grandis</i>	Plexauridae	PZL (Paramuricea)
	<i>Paramuricea placomus</i>	Plexauridae	PZL (Paramuricea)
	<i>Paramuricea</i> spp.	Plexauridae	PZL (Paramuricea)
	<i>Parastenella atlantica</i>	Primnoidae	
	<i>Placogorgia</i> sp.	Plexauridae	
	<i>Placogorgia terceira</i>	Plexauridae	
	<i>Primnoa resedaeformis</i>	Primnoidae	QOE
	<i>Thouarella (Euthouarella) grasshoffi*</i>	Primnoidae	
	<i>Anthoptilum grandiflorum</i>	Anthoptilidae	AJG (Anthoptilum)
	<i>Distichoptilum gracile</i>	Protoptilidae	WDG
	<i>Funiculina quadrangularis</i>	Funiculinidae	FQJ
	<i>Halipteris</i> cf. <i>christii</i>	Halipteridae	ZHX (Halipteris)
Sea Pens (NTW – Pennatulacea)	<i>Halipteris finmarchica</i>	Halipteridae	HFM
	<i>Halipteris</i> sp.	Halipteridae	ZHX (Halipteris)
	<i>Kophobelemnion stelliferum</i>	Kophobelemnidae	KVF
	<i>Pennatula aculeata</i>	Pennatulidae	QAC
	<i>Pennatula grandis</i>	Pennatulidae	
	<i>Pennatula</i> sp.	Pennatulidae	

	<i>Protoptilum carpenteri</i>	Protoptilidae	
	<i>Umbellula lindahli</i>	Umbellulidae	
	<i>Virgularia mirabilis</i>	Virgulariidae	
Tube-Dwelling Anemones	<i>Pachycerianthus borealis</i>	Cerianthidae	WQB
Erect Bryozoans (BZN – Bryozoa)	<i>Eucratea loricata</i>	Eucrateidae	WEL
Sea Lilies (CWD – Crinoidea)	<i>Conocrinus lofotensis</i>	Bourgueticrinidae	WCF
	<i>Gephyrocrinus grimaldii</i>	Hyocrinidae	
	<i>Trichometra cubensis</i>	Antedonidae	
Sea Squirts (SSX – Asciacea)	<i>Boltenia ovifera</i>	Pyuridae	WBO
	<i>Halocynthia aurantium</i>	Pyuridae	
Unlikely to be observed in trawls; <i>in situ</i> observations only:			
Large xenophyophores	<i>Syringamina</i> sp.	Syringamminidae	