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MoP6-INFO-07

Directions for the SIOFA Interim standard protocol for future designation of Vulnerable Marine Ecosystems and Protected Areas

Agenda Item: 11.1

Proposal ☐ Working Paper ☐ Information Paper ☒ Other Document ☐

Delegation of the European Union

Abstract

At MoP5 the interim protocol for the designation of areas to be protected was debated. This information paper aims a providing possible directions for clarifying the objectives and criteria to be used for future designation of VMEs and PAs, as well as, possible associated actions.

Recommendations *(proposals only)*

1. [The CC3 and MoP6 are invited to take note and discuss this paper.]

1. **SIOFA Interim standard protocol for future designation of Vulnerable Marine Ecosystems**

EXPLANATORY MEMORANDUM

The FAO International Guidelines for the Management of Deep-sea Fisheries in the High Seas (FAO, 2009) provides recommendations on governance frameworks and management of deep-sea fisheries with the aim to ensure long-term conservation and sustainable use of marine living resources in the deep sea and to prevent significant adverse impacts on vulnerable marine ecosystems (VMEs). The Guidelines assist States and RFMOs in formulating and implementing appropriate measures for the management of deep-sea fisheries in the high seas to protect and sustain highly sensitive vulnerable species and habitats. Furthermore, the requirement for VME mapping and the establishment of VME fishery encounter protocols has been set out in the SIOFA interim management measures (CMM 2018/01).

Although no formal definitions for VMEs exists, VME *indicator species*, or VME *elements* are provided in the Guidelines (para 42); the FAO guidelines do state that VMEs should be identified based on the characteristics they possess, such as:

- Uniqueness or rarity, e.g. habitats consisting of endemic or rare species
- Functional significance of the habitat, e.g. necessary for the survival, function, spawning/reproduction, or recovery of fish stocks or rare, threatened or endangered marine species.
- Fragility
- Life-history traits, e.g. slow growth, late age at maturity, low or unpredictable recruitment, Long-lived
- Structural complexity, e.g. comprising significant concentrations of biotic and abiotic features

It is noteworthy that the Guidelines (para 43) acknowledge that the criteria "*should be adapted and additional criteria should be developed as experience and knowledge accumulate*".

Since the Guidelines were published in 2009, several RFMOs have engaged in fisheries assessments that have identified and mapped VMEs within parts of their area of competence. This has resulted in an enhanced understanding of what constitutes deep-sea VMEs and a recognition that the FAO criteria should generally (but not always) be viewed not in isolation of one another, but in combination, especially when identifying and mapping VMEs in relation to high-seas fisheries management and the need to establish VME fishery closures.

It is also important to recognise that the presence of a VME *indicator* species or a habitat feature alone does not necessarily verify the presence of a VME. Several RFMOs have observed that VMEs typically possess a level of benthic community organization larger than the space occupied by an individual organism, with structural complexity and "significant

concentrations" of individuals (or biomass) being an important defining characteristic of a VME. This is consistent with the criteria listed in the Guidelines taken as a whole.

The aggregating nature of many VME indicator species allows natural discontinuities in the spatial distribution of high species biomass and/or abundance to be assessed, mapped and VME fishery closures to be established (FAO, 2009, para 42v). However, the extent of VME habitat, within which significant concentrations of VME indicator species occur, often extends spatially beyond the boundary of the area defined by "significant concentration" (Kenchington et al., 2015). Such VME habitat is generally structurally complex and may be characterized by higher diversities and/or different benthic communities from those characterising the area of significant concentration. The VME habitat is also most likely providing ecosystem functions and processes closely linked to the sustainability of the "significant concentrations" and therefore should be regarded as an integral part of the VME.

PROCESS FOR PROPOSAL DEVELOPEMENT AND REVIEW

This protocol recognises the need to protect, in particular through bottom fishing closures, the most vulnerable and sensitive benthic ecosystems (VMEs) from the immediate impacts of bottom fishing activities. It also recognises the need to protect wider areas of environmental and biological significance within which VMEs are likely to occur.

The protocol therefore has as objectives:

- **i.** to establish criteria for the identification and expanse of VMEs to facilitate the establishment of bottom fishing closures.
- **ii.** to establish criteria for the identification and expanse of areas of wider environmental and biological significance within which VMEs are likely to occur.

CRITERIA FOR EVALUATING VME PROPOSALS

Because information on benthic fauna in the deep ocean is sparse, habitat suitability models have been found to be essential to predict the probability of occurrence of a VME indicator species, or habitats, beyond areas of observed "significant concentration". Such models generate continuous surfaces of probability (or, more rarely, predicted density) using a suite of environmental variables that are statistically associated with observations of the presence, absence, or concentration of VME indicator species.

Over time, as RFMOs developed measures and applied these Guidelines, two characteristic features of VMEs emerged which are particularly important when aiming to identify and delineate VMEs; namely:

i. the observation or prediction of "significant concentrations" of VME *indicator species,* species that meet one or more of the FAO Guideline criteria for potential VMEs. Observation of indicator species or taxa is not an automatic indication of VME presence, but "significant concentrations" of one or more VME indicator species can be considered to constitute a VME, and;
ii. the identification of VME *elements* or habitats which are topographical, hydro-physical, or geological features typically associated with VME indicator species in a global context and likely to support VMEs.

When proposing a local area for VME designation, the proposal should clearly demonstrate which of the criteria are met, based on the list below *in no particular ranking or importance.*

1. VME indicator species[1] thresholds have been triggered in the proposed location, indicating a significant concentration of VME indicator species. For the purpose of CMM 2018/01:
    a. the threshold that triggers the encounter protocol for longline gears shall be the catch/recovery of 10 or more VME-indicator units[2] in a single line segment[3].
    b. the threshold that triggers the encounter protocol for the trawls shall be more than 60 kg of live sponges and/or 60 kg of live coral in any tow.
2. Habitat suitability models predict the proposed area [with x% confidence] to be highly likely to support VMEs, indicating VME elements or habitats typically associated with VME indicator species.
3. The proposed area has direct/confirmed evidence (e.g. scientific surveys, camera deployments) of VME presence.

OTHER PRINCIPLES TO BE CONSIDERED IN FORMULATING RECOMMENDATIONS FOR THE DESIGNATION OF VMES

1. Designation proposals for VMEs should be based on best available information, including agreed VME indicator thresholds and reported triggering events, and be of an appropriate scale.
2. Recommendations to consider VME designation should not be postponed solely because of a lack of full scientific certainty, especially where significant or irreversible damage to identified vulnerable marine ecosystems is likely to occur.
3. Dimensions of the area

[1] SIOFA VME indicators species are listed in Annex J of the Report of the 4th Meeting of the Scientific Committee of SIOFA (25-29 March 2019).
[2] 'VME indicator unit' means either one litre of those VME indicator organisms that can be placed in a 10-litre container, or one kilogram of those VME indicator organisms that do not fit into a 10-litre container.
[3] Line segment' means a 1000-hook section of line or a 1 200 m section of line, whichever is the shorter.

a. The recommended area should, as far as practicable, include continuous and contiguous depth.
b. Area designation should be based on seafloor features such as geomorphic features.
c. Boundary lines should be simple, as much as possible following latitudinal/longitudinal lines and, where possible, coinciding with existing regulatory boundaries.
d. The size and shape of each area should be of an appropriate local scale.

GUIDANCE FOR SC RECOMMENDATIONS TO THE MEETING OF THE PARTIES

The SC should make a recommendation to the MoP based on how the proposal satisfies one or more of the criteria of the protocol with respect to VMEs.
If the proposal documents the necessary data and scientific information to support VME designation using the protocol, then different measures could be applied, such as management measures, technical measures, closures.
In case of an area being designated a VME, its location shall be added to the VME registry, and the Commission shall make available this information to any relevant international or regional organisation and any State that is not a Contracting Party but whose nationals or vessels may enter the SIOFA Area [online/circular/other/to other RMBs].

SIOFA VME PROPOSAL DESIGNATION TEMPLATE

Name	*This field will contain the VME identification*
Details of the proponent/s	*This field should contain details of the proponent/s*
Geographic description	*This field should contain the coordinates of the proposed area's spatial boundaries. It may also contain maps showing the spatial area and/or bathymetry, or other spatial information of relevance to the proposal*
Criteria that the VMEs area meets	*This field would contain the specific criteria met, structured against the* SIOFA Standard protocol for designation of VMEs*. This field will also contain evidence in support of each criterium. This evidence may include, but is not limited to:* - *Photographs, graphs and figures supporting the proposal* - *Observer data/reporting* - *Fishing data analysis to support the proposal* - *Appropriately substantiated reports and/or statements from skippers or observers to justify the proposal.*

References

FAO. 2009. The FAO International Guidelines for the Management of Deep-sea Fisheries in the High Seas. FAO, Rome.

Kenchington, E., Murillo, F.J., Lirette, C., Sacau, M., Koen-Alonso, M., Kenny, A., Ollerhead, N., Wareham, V., & Beazley, L. 2015. Kernel density surface modelling as a means to identify significant concentrations of vulnerable marine ecosystem indicators. *PLoS ONE*, 10(1): e0117752. https://doi.org/10.1371/journal.pone.0117752.

2. SIOFA Interim process and standard protocol for designation of protected areas

SCOPE

This protocol recognises the need to protect wider areas of representativeness and environmental and biological significance in view of better understanding their functionalities, and the need to protect such areas to maintain resilience or the ability to adapt to the effects of climate change in order to protect living marine resources and preserve the marine environment. This protocol recognises the importance of protected areas as scientific reference areas for monitoring natural variability and long-term change, or for monitoring the effects of human activities.

The protocol therefore has the objective to establish criteria for the identification and delineation of areas of wider environmental and biological significance termed "protected areas (PA)".

PROCESS FOR PROPOSAL ELABORATION AND REVIEW

When submitting a proposal for Protected Area designation, the objectives should be clearly stated, and the proposal should clearly demonstrate which of the criteria are met, based on the list below *in no particular ranking or importance.*

GENERAL OBJECTIVES (tbd)

CRITERIA

a. The area is known to contain a relatively high proportion of sensitive habitats, biotopes or species that are functionally fragile (highly susceptible to degradation or depletion by human activity or by natural events) or with slow recovery

b. Area contains representative examples of marine ecosystems and habitats at appropriate scale to maintain long-term integrity and viability

c. Area contains features critical to the function of local ecosystems

d. Area contains key ecosystem processes, habitats, and species, including populations and life-history stages

OTHER PRINCIPLES TO BE CONSIDERED IN FORMULATING RECOMMENDATIONS FOR THE DESIGNATION OF BENTHIC PROTECTED AREAS

1. Designation proposals for Protected Areas should be based on best available information. These include, in order of preference, peer-reviewed literature, documents with output from past or ongoing research or surveys and reviewed by the SC and its WGs, or data from international reference databases. In the absence of information, a precautionary approach should be applied.

2. Recommendations must be informed by the available information. Best available information should include consideration of ecological, environmental, social and economic aspects of the proposed marine space (without unreasonable cost, effort or loss of timeliness).

3. The rationale used to recommend spatial management measures should be consistent and transparent.

4. Data derived from international reference databases should be analysed and provided (such as biophysical parameters and spatial indices, e.g. chlorophyll concentration, bottom temperature, currents velocity, salinity, dissolved oxygen concentration, depth, slope, rugosity, seamounts connectivity and bathomes representativity). A spatial analysis and description of the environmental context obtained from the clustering of the statistical layers may be provided.

5. Recommendations to implement spatial management measures should not be postponed because of a lack of full scientific certainty, especially where significant or irreversible damage to ecosystems could occur or indigenous species are at risk of extinction.

6. Adverse impacts on existing users should be evaluated. Where there is a choice of several sites that would similarly contribute to the protection network, the site(s) recommended should minimise adverse impacts on existing users. Where there is a choice to be made among minimum impact sites, selection may also be guided by the ease of management and enforcement, or if there are other benefits to the proposed sites such as education or eco-tourism.

7. There should be an evaluation of existing Protected Areas when making recommendations and explanation as to how a new management measure will assist in achieving MoP objectives. An enumeration of spatial management measures should be prepared to assess progress towards achieving the policies.

CONSIDERATIONS FOR DETERMINING BOUNDARIES OF PROTECTED AREAS

8. Dimensions of the area

    a. The proposed area should be at an appropriate scale to achieve the proposed specific objectives.

    b. Size and shape should consider connectivity corridors and biological dispersal patterns. Where this is unavailable, the protected area proposal and designation may consider research from regions beyond SIOFA to inform inferences on biological dispersal patterns.

    c. Boundary lines should be simple, as much as possible following straight latitudinal/longitudinal lines and, where possible, coinciding with existing regulatory boundaries.

GUIDANCE FOR SC RECOMMENDATIONS TO THE MEETING OF THE PARTIES

The SC should make a recommendation to the MoP based on how the proposal satisfies one or more of the criteria of the protocol with respect to protected areas.

If the scientific evidence to support the justification for a protected area using the protocol is not sufficiently robust on account of substantial data gaps, then more data may be required.

If the proposal documents the necessary data and scientific information to support the initiation of the protected area designation process using the protocol, a research plan shall be associated to it on the year to come. It shall include:

- Any measures in place in the protected area;
- The time of review of the protected area;
- The research that should be undertaken in the area. To this end, the parties should consider asking for international funds.

In order to encourage cooperation in implementing the protected area, the Commission shall make available information on designated protected areas including to any relevant international or regional organisation and any State that is not a Contracting Party but whose nationals or vessels may enter the Convention Area.

SIOFA BENTHIC PROTECTED AREA PROPOSALS AND DESIGNATION TEMPLATE

Name	*This field will contain the name of the proposed protected area*
Details of the proponent/s	*This field should contain details of the proponent/s*
Geographic description	*This field should contain the coordinates of the proposed area's spatial boundaries. It may also contain maps showing the spatial area and/or bathymetry, or other spatial information of relevance to the proposal*
Objectives	*This field will explicitly detail the specific objective/s that designation of the proposed protected area would address (i.e., the primary reason/s for protection)*
Criteria that the protected area meets	*This field would contain the specific criteria that the protected area meets, structured against the* SIOFA Standard protocol for protected areas designation*. This field will also contain evidence in support of each criteria that the area meets. This evidence may include, but is not limited to:* - *Information from scientific or other surveys* - *References to peer-reviewed literature* - *Photographs, graphs and figures supporting the proposal* - *Fishing data analysis to support the proposal* - *Appropriately substantiated reports and/or statements from skippers or observers to justify the proposal.*
Social, cultural and economic interests	*This section may consider potential future interests. Any social or cultural interests or values should also be included. This section should be backed up by data, formal statements and references in the literature.*
Risks to the proposed area	*This section should contain detailed information on the scope of the Protected Area designation in terms of what activities would be restricted. If the proposal is that some activities are restricted, this section should contain information on how these activities will be monitored.*
Review periods	*This section should contain an anticipated review period to review whether the Protected Area is achieving its objectives, including consideration of whether any new information has become*

	available that may enhance or degrade the justification for protection.
Outline of monitoring and/or research needed	*This section will contain an outline of monitoring and/or research needed to maintain, update or review the Protected Area.*

References

FAO. 2009. The FAO International Guidelines for the Management of Deep-sea Fisheries in the High Seas. FAO, Rome.

Kenchington, E., Murillo, F.J., Lirette, C., Sacau, M., Koen-Alonso, M., Kenny, A., Ollerhead, N., Wareham, V., & Beazley, L. 2015. Kernel density surface modelling as a means to identify significant concentrations of vulnerable marine ecosystem indicators. *PLoS ONE*, 10(1): e0117752. https://doi.org/10.1371/journal.pone.0117752.

United Nations General Assembly. 1995. Agreement for the implementation of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the conservation and management of straddling fish stocks and highly migratory fish stocks. United Nations, New York.