

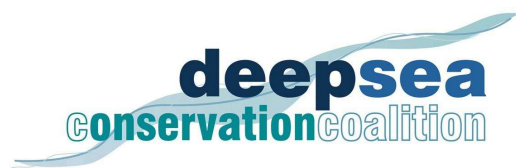
11TH MEETING OF THE SPRFMO COMMISSION

Manta, Ecuador, 13 to 17 February 2023

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Joint eNGO Briefing Paper for the 11th SPRFMO Meeting

DSCC, Greenpeace, ECONZ



Joint eNGO Briefing Paper for the 11th Meeting of the Commission of the South Pacific Regional Fisheries Management Organisation

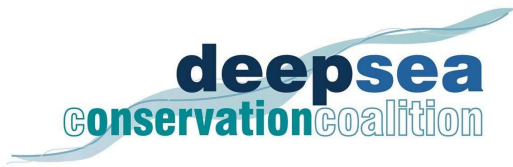
Manta, Ecuador

13-17 February 2023

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Summary

This briefing on bottom fishing for the 11th Commission of SPRFMO is written on behalf of the Deep Sea Conservation Coalition (DSCC), ECO New Zealand, and Greenpeace Aotearoa. It addresses the issues that will arise in the 11th Commission meeting in Manta, Ecuador, particularly agenda item 3, the Report of Scientific Committee SC10 and item 6, Conservation and Management Measures and c2 being CMM-03-2022 Bottom Fishing.

The 2021 year featured exceptionally low catches (20 tonnes of orange roughy and 1 tonne of seal sharks)¹ reported by the New Zealand bottom trawl fleet. The low catches have resulted in pressure to allow carrying forward the unused TACs into future years. This despite the absence of scientific analysis or assessment of the likely impact of increased intensity of fishing on stocks, bycatch or VMEs, and the inappropriate and unlawful suggestions of a ‘trade-off’ between fishing and environmental protection.

The spatial protection approach favoured by New Zealand and underpinning CMM 03-2021 relies heavily on the habitat suitability models. These models are limited by insufficient data and are focused narrowly on predictions of modelled indicator taxa. This combination leads to “great uncertainty in translating model outputs to estimates of abundance of VME indicator taxa on the seafloor, as well as issues of potential model over-prediction leading to over-optimistic estimates of protection for some taxa”.²

The alternative to and resolution of this invalid approach lies in the specific recommendations made by the relevant UNGA resolutions including the UNGA Sustainable Fisheries resolution 77/118 (2022), which followed the August 2022 bottom fishing workshop. These include recognition of the need for more biological information on the species that comprise VMEs, including their associated and dependent species, the assessment of significant adverse impacts (SAIs) on vulnerable marine ecosystems (VMEs), and protecting and conserving biodiversity, including beyond VMEs, as well as the consistent application of the Guidelines; and noting implementation barriers arising from data availability particularly in spatial distribution and connectivity of VMEs. Neither the need for more biological information on VME species and the protection and conservation of biodiversity including beyond VMEs, nor spatial distribution and connectivity of VMEs are addressed by the habitat suitability models that are heavily reliant on modelling inadequate data of individual VME taxa. While models can have value, for instance in aiding the design of fishery management areas, they must not be used as a proxy for management, especially one that allows fishing where VMEs are known or likely to occur, or worse, facilitating the destruction of certain percentages of VMEs. As the Intersessional Working Group (IWG) has observed, “Area closures are the only reliable management measures that will prevent SAIs on VMEs from fishing methods with substantial bottom contact.” (IWG Topic 3 para 81)

¹ “Overall catch and effort remained low, with 17 trawl tows completed taking 22 tonnes of fish. The majority of the trawl catch was orange roughy (20 t), with a small amount of seal shark (1 t).” SC-10 Report 2.9.

² SC-DW06_Rev1 page 4, citing the [SC8 Report](#).

There is a key theme running through the IWG topic papers, and that is an implicit, if not explicit, balancing of the protection of the environment against fishing industry interests. For example in the executive summary, ‘business costs’ are cited as a factor in managing SAIs on VMEs. It is not the function of SPRFMO to manage business costs: this is another form of ‘balancing’ the environment against the interests of the fishing industry: an approach which is widely accepted to be unacceptable and unlawful. The SPRFMO Convention objective includes to safeguard marine ecosystems, and cannot be and is not subject to a ‘tradeoff’ between commercial fishing and protection, and in UNCLOS, Art 192 imposes an unqualified obligation on States to provide the protection and preservation of the marine environment: period. Art 193 stresses that any use is contingent on Art 192 obligation of protection and preservation being given effect to. The IWG itself acknowledged that “Any management approach adopted by SPRFMO must meet the overarching obligation in Article 192 of UNCLOS to protect and preserve the marine environment. This obligation cannot be balanced against utilisation objectives.” (Topic 3 para 77)

Similarly, no support can be found in the SPRFMO Convention or UNCLOS for ‘minimum level of protection’ for taxa (also in the Executive Summary). SAIs on VMEs need to be prevented, and the UNGA resolutions make this clear, as well as making it clear how they are to be prevented. Instead of enabling the destruction of VMEs, SPRFMO must move to implement the UNGA resolutions 61/105 (2006), 64/72 (2009), 66/68 (2011), 71/123 (2016) and 77/118 (2022), and the FAO Guidelines in the four prescribed steps: identifying VMEs, closing areas where VMEs are known or likely to occur, ensuring that bottom fishing does not proceed unless it has established measures to prevent SAIs on all VMEs, and implementation of a move-on rule. This briefing includes some suggestions for revising CMM03-2021 to this end.

The ‘trade-off’ or balance underlies a suggestion that only a certain percentage – 70, 80, 90 or 95% - of VMEs need to be protected³, while a certain percentage of VME destruction is allowed and accepted in exchange for preserving “value to the fishery”.⁴ Loss of fishery value is explicitly stated when assessing the VME indicator scenarios.⁵ However, it is the role of the Commission to faithfully apply the 1982 Convention on the Law of the Sea (UNCLOS), the 1995 Fish Stocks Agreement and above all the SPRFMO Convention, all of which necessitate that the Commission reject any attempts to bolster industry at the expense of the environment i.e. trade off environmental protection against fishing.

Based on the realities and consequences outlined above, the DSCC suggests that SPRFMO follows NAFO’s lead in closing fishing on seamounts.⁶ Seamounts are biodiversity hotspots: the Pacific Ocean has the highest number in the world. Coral communities provide habitat, sanctuary, and nursery areas for many species. They are the foundation of the ocean ecosystem. Deep sea corals

³ However, the paper suggests that “These protection scenarios will support explicit consideration by the Commission of the trade-offs inherent in ensuring the long-term sustainable use of fisheries resources and the safeguarding of the marine ecosystems in which those resources occur.” Page 19. SC9-DW06_rev1: Development of Spatial Management Scenarios for Bottom Trawling.

⁴ SC-DW06_Rev1 page 6.

⁵ E.g. “The Bottom Trawl Management Areas in CMM03-2021 have resulted in the loss of 1.77% of the estimated historical fishery value in the FMA. The 95% scenario removes an additional 96.9% of the value and would result in a total of 98.64% of the historical fishery value being unavailable.” SC-DW06_Rev1 page 19 (South Louisville). “In general, higher protection targets resulted in more significant impacts on the estimated fishery value. Those impacts may be underestimated in the results provided, as the scenarios have not been tested for practical ‘fishability’. These protection scenarios will support explicit consideration by the Commission of the trade-offs inherent in ensuring the long-term sustainable use of fisheries resources and the safeguarding of the marine ecosystems in which those resources occur.” (page 19).

⁶ See NAFO, [2021 Annual Report](#): NAFO has now closed designated VMEs, including 15 areas to protect sponge, sea pen and corals and 12 seamount areas where bottom fishing is prohibited, All seamount areas in the NAFO Regulatory Area at fishable depth (i.e. shallower than 4 000 metres) are now closed. See DSCC 2021 [press release](#).

are slow growing and display extreme longevity: some are hundreds to thousands of years old.⁷ The UNGA resolution 77/118 (2022) recognised the immense importance and value of deep-sea ecosystems and the biodiversity they contain. IPBES has warned that around one million species face extinction, many within decades, unless action is taken to reduce the intensity of drivers of biodiversity loss: “Without such action there will be a further acceleration in the global rate of species extinction, which is already at least tens to hundreds of times higher than it has averaged over the past 10 million years.”⁸ SPRFMO faces a stark choice: to respect and effectively implement UNGA resolutions and FAO Guidelines or follow a proposal that explicitly proposes the sacrifice of vulnerable marine ecosystems in order to prop up a bottom trawl fishery on seamounts that is both uneconomic and an outlier in a 21st century increasingly defined by global ocean responsibility and commitment.

The joint eNGOs recommend a phase out of bottom trawling on all seamounts and other topographical features given the increasing evidence that bottom trawling on seamounts cannot be managed to prevent SAIs to VMEs and to bring SPRFMO in line with the seamount protection standard set by NAFO.⁹

⁷ Tracey, D.M. & Hjørvarðsdóttir, F. (eds, comps) (2019). [The State of Knowledge of Deep-Sea Corals in the New Zealand Region](#). NIWA Science and Technology Series Number 84.

⁸ IPBES (2019): Summary for policymakers of the global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. S. Díaz, J. Settele, E. S. Brondízio, H. T. Ngo, M. Guèze, J. Agard, A. Arneth, P. Balvanera, K. A. Brauman, S. H. M. Butchart, K. M. A. Chan, L. A. Garibaldi, K. Ichii, J. Liu, S. M. Subramanian, G. F. Midgley, P. Miloslavich, Z. Molnár, D. Obura, A. Pfaff, S. Polasky, A. Purvis, J. Razzaque, B. Reyers, R. Roy Chowdhury, Y. J. Shin, I. J. Visseren-Hamakers, K. J. Willis, and C. N. Zayas (eds.). IPBES secretariat, Bonn, Germany. 56 pages.
<https://doi.org/10.5281/zenodo.3553579> (IPBES [Summary for Policy-Makers](#)).

⁹ Six parties to NAFO are also SPRFMO members (Cuba, Denmark (in respect of Faroe Islands and Greenland), the European Union, the Republic of Korea, the Russian Federation, and the United States).

Joint eNGO Observer Recommendations

The DSCC, ECO NZ and Greenpeace Aotearoa New Zealand recommends as follows:

Item 3(a) Report of Scientific Committee SC-10

5.2 Reduce the catch limits for orange roughy: Amend the annual catch limits in CMM-03a (para 5) to the lowest of the catch limits derived from the latest Bmin model for each of the orange roughy stocks set out in SC10 including subdividing the catch limit for Louisville Ridge into the three stocks - North, Central, and South.

5.2 Carrying forward TAC for future years: The joint eNGOs strongly submit that there is insufficient scientific information to justify any carry forward of TACs for future years.

5.3 Reported encounters with VMEs: The Commission should assess SAI on VMEs at the scale of the Encounter Area, note that reopening the Encounter Area may result in SAIs on VMEs and decide that the encounter area remain closed, with the Encounter Area being confirmed as 5 NM from the encounter, consistent with the precautionary approach.

5.5 Catchability: The SC be requested to review all taxa thresholds with a view to ensuring the levels are precautionary, taking into account the current knowledge of catchability, and ensuring that research does not damage VMEs.

5.6 CMM 03 request regarding ongoing appropriateness of the measure: The Commission should recognise that the plan of work on spatial scales for assessing protection levels is not appropriate for managing the effects of bottom trawling on VMEs and make decisions on the future of that work in accordance with that fact.

Scenario Approach (Percentage approach)

The Commission should implement UNGA resolution [77/118](#) (2022) which specifically calls on RFMOs to identify and overcome barriers to implementation of the UNGA resolutions, including spatial distribution and connectivity of vulnerable marine ecosystems, and their associated and dependent species. The approach of the UNGA resolution is ignored by the scenario approach, as is gaining more biological information on the species that comprise VMEs. The invitation to choose between 70, 80 or 90% of VME protection is an invitation referenced not to the protection of vulnerable marine ecosystems but rather the interests of a handful of fishing vessels and companies and flag States. It is to actively engage in a 'tradeoff' between fishing and environmental protection - an approach that is fundamentally flawed and inconsistent with UNCLOS and UNGA resolutions. As such, the percentage approach must be rejected.

9.1 Salas y Gomez and Nazca Ridges

SPRFMO should not accept any proposals for exploratory bottom fishing in the area of the two ridges as such activity is likely to irrevocably harm these extremely unique and fragile ecosystems. SPRFMO should welcome Chile's biodiversity research proposal. Exploratory fishing proposals in EBSAs must be treated with particular caution and if entertained, should be encouraged to be situated in less sensitive areas.

C3 Amendment of Bottom Fishing Measure: Suggested amendments are attached to this briefing.

Climate change: The DSCC suggests that the Commission takes note of the growing impacts of climate change on the marine environment and request the SC establish an intersessional working group to review existing CMMs and to make recommendations to the Commission. A short paper is attached to this briefing.

Responses to Scientific Committee Advice

The [SC-10 Report](#) made some recommendations that need careful analysis.

5.2 Changes to Orange roughy catch limits

The Scientific Committee reviewed a new assessment for most orange roughy stocks in the Louisville Ridge and the Tasman Sea. This year's orange roughy assessment showed that previous assessment used to set current catch limits was unreliable, produced misleading biomass estimates, and the catch limits needed to be significantly reduced to precautionary catch levels.

Para 113 of SC10 sets out the main recommendations based on the review of past assessments and the new assessments of orange roughy stocks.

- “a. noted that the previously accepted orange roughy stock assessments for north, central and South Louisville Ridge, the West Norfolk Ridge, Lord Howe Rise and the Northwest Challenger Plateau using integrated assessment models have been shown to be unreliable.
- b. noted that even with accurate age data to inform the previously accepted stock assessment modelling approach, misspecification of natural mortality rate or year class strength could produce substantially misleading biomass estimates. Error in age frequencies could result in the true biomass being outside of the 95% CI of the assessment model, even if the assessment model had perfect knowledge for all other parameters.
- c. noted that error and bias in orange roughy age samples can be relatively high.
- d. noted that the integrated assessment model approach can still be used to estimate Bmin given plausible settings for stock productivity and vulnerability, and that the Bmin estimates from integrated models were higher than the B0 estimates from spatial CPUE and simple population model-based methods.”

Table 1 of SC10 contains recommendations on TACs for the SPRFMO orange roughy stocks, apart from the Tasman Rise or Westpac Bank (South Challenger Plateau). This includes estimates for the three Louisville Ridge stocks. These are outputs from the integrated assessment model approach based on estimates of Bmin.

In contrast to the Tasman Sea stocks, the catch limit for the Louisville Ridges is set for the areas as a whole rather than for three recognised stocks. The Louisville contains three stocks of orange roughy which were divided principally based on difference in spawning time, in addition to fishery characteristics (Clark *et al* 2016).¹⁰ These stock boundaries were used in recent assessments including the latest assessment reviewed by SC10 (Stephenson *et al* 2022, SC10-DW01 Rev1).

Retaining the current area wide catch limit for the Louisville, rather than the three stocks (North, Central and South) could result in over five times the annual estimated yields being taken in one year from the smallest stock (North Louisville). This would not be a precautionary approach to the management of the orange roughy stocks in this area. The Scientific Committee noted that until further informative data are available the uncertainty in sustainable yield estimates will remain high (para 113(e)).

Given the uncertainties associated with estimating catch limits, the joint eNGOs recommend precautionary management using the lowest of the catch limits derived from the Bmin model for

¹⁰ Clark, M.R.; McMillan, P.J.; Anderson, O.F.; Roux, M.-J. (2016). Stock management areas for orange roughy (*Hoplostethus atlanticus*) in the Tasman Sea and western South Pacific Ocean. *New Zealand Fisheries Assessment Report* 2016/19. 27 p.

each of the orange roughy stocks set out in SC10 table 10 be used until there is new information on which to set sustainable catch limits.

Table. SC10 recommendations on TACs for orange roughy stocks (Modified from Table 1 in SC10)

Area	DSCC TAC Recommendation (t)	Current catch limit (t)
Louisville Ridge Central	305	1140 (combined Louisville)
Louisville Ridge North	116	
Louisville Ridge South	145	
West Norfolk Ridge	44	54
Lord Howe Rise	160	261
NW Challenger	131	396

No changes to the catch limits for Westpac Bank or Tasman Rise are proposed.

5.3 Carrying Forward TACs

As set out above the SC noted (para 113(a)) that the previously accepted orange roughy stock assessments for north, central and South Louisville Ridge, the West Norfolk Ridge, Lord Howe Rise and the Northwest Challenger Plateau have been shown to be unreliable. The Scientific Committee noted that until further informative data are available the uncertainty in sustainable yield estimates will remain high (para 113(e)). The SC recommended that the multi-annual workplan include an item to evaluate the orange roughy population and wider ecosystem impacts of carrying forward of TACs over multiple years (para. 113(i)). It is entirely inconsistent with these uncertainties that the SC recommended the Commission should evaluate the possibility of allowing up to 100% of the orange roughy TAC to be carried forward to future years (so double the annual catch limit could be taken), stating that “this may improve the potential for viable fishery opportunities (and hence research data) within the constraints of spatial management.” (para 114). Annex 9 recorded the DSCC and ECO NZ views and that of industry:

- DSCC and ECO NZ Statement:* “DSCC and ECO NZ note that it is important to separate out the policy and scientific aspects of this recommendation. They consider that improving the potential for a viable fishery opportunity is not a function of the Scientific Committee. DSCC and ECO NZ also consider that the proposal is unnecessary in scientific terms as there would be enough catch in the limits to undertake an acoustic survey and target identification fishing. Further, the DSCC and ECO NZ considers there are numerous scientific questions relating to the impacts of fishing a multiple TAC in 1 year, including ecosystem impacts on local populations, on VMEs, and bycatch. An additional question is that if a stock was under 20% and thus well overfished then the current proposals would prevent rebuild and could cause further depletion. “

- *HSFG Statement:* HSFG strongly disagreed with the DSCC statement. They stated that the reduced TAC will make it uneconomical to fish out there, they are the operators and know the costs and risks involved.

Both the industry statement and the SC-10 recommendations feature claimed effects on industry of staying with one year TACs: “potential for viable fishery opportunities” and making it “uneconomical to fish out there”. In other words, the argument is that keeping to existing science and practice may not result in high enough catches to sustain industry. We cannot state clearly enough: not only is this not a scientific rationalization and it is the reverse of the precautionary approach mandated by the Convention. It is contrary to the Objective in Article 2 of the Convention: “The objective of this Convention is, through the application of the precautionary approach and an ecosystem approach to fisheries management, to ensure the long-term conservation and sustainable use of fishery resources and, in so doing, to safeguard the marine ecosystems in which these resources occur.” Use (fishing) is to be sustainable; it, as well as long-term conservation, is to be ensured through the application of the precautionary and ecosystem approaches, and the marine ecosystem is to be safeguarded.

The industry statement makes it clear that the justification for carrying forward a TAC is to make the fishing more financially viable. In other words, science is being cast aside in order to enhance fishing revenue in the face of lower TACs recommended by the new orange roughly assessment. Nowhere does the SPRFMO Convention sanction such an approach: quite the opposite. Article 3 requires that fishing shall be commensurate with the sustainable use of fishery resources, and Article 20(1) requires measures to “(b) prevent or eliminate over fishing and excess fishing capacity to ensure that levels of fishing effort do not exceed those commensurate with the sustainable use of fishery resources.”

Like the proposal to destroy up to a given percentage (30%/20% - i.e. not destroying 70%/80% etc.), this proposal is another manifestation of a wish to promote the viability of an uneconomic bottom trawl fishing industry at the expense of environmental destruction. This is contrary to both the Convention (Art 2, 20(1)(a), etc) and UNCLOS (Art 192, 194(5)) and the UNGA bottom fishing resolutions and should be firmly rejected by the Commission.

The proposal is also inconsistent with the existing measure. CMM 03a-2021 sets annual TACs, and it would be a major departure to allow fishing in a multi-year TAC which could either lead to using the quota to fish stocks in early years and subsequent industry pressure for a replacement quota, or heavy fishing of the quota in later years – neither of which has been subject to scientific inquiry and both of which would lead to accelerated damage to VMEs. The current CMM already permits carrying forward 10% of catch limit (CMM 03a-2021 para 19): the new proposal would in effect carry forward 100% of a catch limit.

The recommendation must be rejected.

5.4 Reported encounters with VMEs

The Intersessional Working Group on bottom fishing (IWG) concluded that the NZ 2020 VME encounter area should remain temporarily closed until the work on the multi-scale risk-based approach was completed. (SC-10 para 134)

The key point of disagreement with this issue is the spatial scale for an incident which has only been partially reported by New Zealand. Paragraph (e) reflects this:

e. Noting that the Commission is still deliberating on appropriate levels of protection; the SC-9 recommended that:

i) If assessing SAI on VMEs at the scale of FMAs, reopening the Encounter Area would likely not result in SAI on VMEs; and

ii) If assessing SAI on VMEs at the scale of the Encounter Area, reopening the Encounter Area may result in SAIs on VME.

The alternative competing recommendations reflect the need for resolution of the “appropriate levels of protection”. New Zealand’s [position](#),¹¹ reflected in option (i), is the result of confusion derived from its long-standing argument that SAIs can be assessed at the scale of Fishery Management Areas (FMAs). This argument is inconsistent with the United Nations General Assembly resolutions and the International Guidelines for the Management of Deep-sea Fisheries in the High Seas ([FAO Deep-Sea Guidelines](#)).

The [FAO Deep-Sea Guidelines](#) in paras 17 and 18 provide as follows:

Significant adverse impacts

17. Significant adverse impacts are those that compromise ecosystem integrity (i.e. ecosystem structure or function) in a manner that: (i) impairs the ability of **affected populations** to replace themselves; (ii) degrades the long-term natural productivity of habitats; or (iii) causes, on more than a temporary basis, significant loss of species richness, habitat or community types. **Impacts should be evaluated individually, in combination and cumulatively.**

18. When determining the scale and significance of an impact, the following six factors should be considered:

- i. the intensity or severity of the impact at the **specific site being affected**;
- ii. the spatial extent of the impact relative to the availability of the habitat type affected;
- iii. the sensitivity/vulnerability of the ecosystem to the impact;
- iv. **the ability of an ecosystem to recover from harm**, and the rate of such recovery;
- v. the extent to which ecosystem functions may be altered by the impact; and
- vi. the timing and duration of the impact relative to the period in which a species needs the habitat during one or more of its life history stages. (emphasis added)

An ordinary reading of paragraph 18 makes it very clear that the specific site being affected and ecosystem itself is the relevant scale. The ability of the ecosystem to recover from harm shows that it is the harm to that impacted ecosystem – that VME – that is the issue. Likewise, the impact should be evaluated individually, as well as in combination and cumulatively (with other impacts). There is simply no support in the FAO Guidelines for assessing an impact against the entire Fishery Management Area – which is based only on the target fish stock being managed and which is very likely far bigger than the VME impacted and is not an ecosystem in itself, potentially comprising many ecosystems.

United Nations General Assembly Resolutions

UNGA resolution [61/105](#)¹² in paragraph 8 reads that:

- (c) In respect of **areas** where vulnerable marine ecosystems, including seamounts, hydrothermal vents and cold water corals, are known to occur or are likely to occur based

¹¹ See NZ’s review at Marco Milardi, Tiffany Bock and Shane Geange, New Zealand 2020 VME encounter review, Rev.1. At <https://www.sprfmo.int/assets/2021-SC9/SC9-DW09-rev1-New-Zealand-2020-VME-encounter-review.pdf>.

¹² United Nations Resolution 61/105. Sustainable fisheries, including through the 1995 Agreement for the Implementation of the Provisions 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, and related instruments. Adopted 8 December 2006. At <https://undocs.org/A/RES/61/105>.

on the best available scientific information, to close **such areas** to bottom fishing and ensure that such activities do not proceed unless it has established conservation and management measures to prevent significant adverse impacts on vulnerable marine ecosystems; and

(d) To require members of the regional fisheries management organizations or arrangements to require vessels flying their flag to cease bottom fishing activities in areas where, in the course of fishing operations, vulnerable marine ecosystems are encountered, and to report the encounter so that appropriate measures can be adopted in respect of the relevant site.

Paragraph (c) and paragraph (d), which establishes the encounter protocol, makes it clear that “areas” are areas where bottom fishing activities are taking place – and the word “relevant site” makes it even more clear that the resolution is referring to the “relevant site” when it is referring to “areas” in “measures can be adopted in respect of the relevant site”. Otherwise the encounter protocol would make no sense. The word “areas” is clearly referring to areas where VMEs are encountered: “areas where, in the course of fishing operations, vulnerable marine ecosystems are encountered”. Clearly the intention is not to close the entire fisheries management area – but rather the area the VME is known or likely to occur, or encountered.

[UNGA resolution 64/72](#),¹³ in paragraph 119(b), likewise makes it clear that “such areas” referred to in paragraph 83(c) of resolution 61/105 are the “areas” to be closed to bottom fishing, or have measures established to protect them:

(b) Conduct further marine scientific research and use the best scientific and technical information available to identify where vulnerable marine ecosystems are known to occur or are likely to occur and adopt conservation and management measures to prevent significant adverse impacts on **such ecosystems** consistent with the Guidelines, or close **such areas** to bottom fishing until conservation and management measures have been established, as called for in paragraph 83 (c) of its resolution 61/105;

(c) Establish and implement appropriate protocols for the implementation of paragraph 83 (d) of resolution 61/105, including definitions of what constitutes evidence of an encounter with a vulnerable marine ecosystem, in particular threshold levels and indicator species, based on the best available scientific information and consistent with the Guidelines, and taking into account any other conservation and management measures to prevent significant adverse impacts on vulnerable marine ecosystems, including those based on the results of assessments carried out pursuant to paragraph 83 (a) of resolution 61/105 and paragraph 119 (a) of the present resolution;

UNGA resolution [72/72](#)¹⁴ (2017) makes this explicit in paragraph 185:

185. Recognizes that different types of marine scientific research, such as, inter alia, seabed mapping, mapping of vulnerable marine ecosystems based on information from the fishing fleet, on-site camera observations from remote vehicles, benthic ecosystem modelling, comparative benthic studies and predictive modelling have resulted in identification of **areas where vulnerable marine ecosystems are known or are likely to occur** and in the adoption of conservation and management measures to prevent **significant adverse impacts on such ecosystems**, including the closure of areas to bottom fishing in accordance with paragraph 119 (b) of resolution 64/72. (emphasis added)

¹³ United Nations Resolution 63/72. Sustainable fisheries, including through the 1995 Agreement for the Implementation of the Provisions 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, and related instruments. Adopted 4 December 2009. At <https://undocs.org/A/RES/64/72>.

¹⁴ United Nations Resolution 72/72. Sustainable fisheries, including through the 1995 Agreement for the Implementation of the Provisions 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, and related instruments. Adopted 5 December 2016. <https://undocs.org/A/RES/72/72>.

This paragraph makes it clear that the “areas” where VMEs are known to occur” are the relevant ecosystems (“such ecosystems”) and that prevention of SAIs is to include closure of areas to bottom fishing.

In conclusion, there is absolutely no support in the UNGA resolutions that SAIs can be assessed on VMEs at the broader scale of FMAs. The SPRFMO Convention in Article 20 provides for the CMMs of SPRFMO to:

protect the habitats and marine ecosystems in which fishery resources and non-target and associated or dependent species occur from the impacts of fishing, including measures to prevent significant adverse impacts on vulnerable marine ecosystems and precautionary measures where it cannot adequately be determined whether vulnerable marine ecosystems are present or whether fishing would cause significant adverse impacts on vulnerable marine ecosystems.” (emphasis added)

The mandate in Article 20(1)(d) is to ‘protect’ habitats and marine ecosystems. Article 20(1)(d) also refers to “precautionary measures” where it cannot adequately be determined whether VMEs are present or whether fishing would cause SAIs on VMEs. This is entirely disregarded by the ‘spatial management’ approach proposed by New Zealand, which would allow SAIs on VMEs. Assessing SAIs on a “spatial scale” is the opposite of a precautionary measure, since there is inadequate information on VMEs, yet would allow fishing on them.

The SPRFMO provisions also implement the UN Fish Stocks Agreement, including:

- its preambular recital that Parties are “[c]onscious of the need to avoid adverse impacts on the marine environment, preserve biodiversity, maintain the integrity of marine ecosystems and minimize the risk of long-term or irreversible effects of fishing operations”;
- the principle in article 5(g) to “protect biodiversity in the marine environment”; and
- the requirement in Article 5(6) to “apply the precautionary approach in accordance with article 6”.

The Convention also requires in Article 10 that the role of the Scientific Committee is to “(c) provide advice and recommendations to the Commission and its subsidiary bodies on the impact of fishing on the marine ecosystems in the Convention Area including advice and recommendations on the identification and distribution of vulnerable marine ecosystems, the likely impacts of fishing on such vulnerable marine ecosystems and measures to prevent significant adverse impacts on them.” The measures are to prevent SAIs on “them” – “them” being VMEs. Not Fisheries Management Areas (FMAs) or any other larger area.

The consideration of the scale of the VME itself is consistent with the approach reported for the IWG in SC-10 which proposes “that the assessment of VME encounters should be at biologically relevant spatial scales” (Para 138(c)).

Commentary on IWG Topic 4 (The Encounter Review Process)

IGC Topic 4 states that “the interim encounter review process is intensive and may be challenging if there are multiple encounters in a single year or encounters every year. This could become unsustainable if the encounter protocol is likely to be triggered regularly.” (para 6). If there are so many encounters, the conclusion must be drawn that the area must be closed: not that the rules or parameters should be changed to allow fishing to continue.

In the conclusions, the IWG recommended (para 21) that the Commission should “Determine, as a high priority, the appropriate scale for management to assess the impact on VMEs to ensure that the Member review and Scientific Committee review can provide maximum value.” This recommendation ignores that the function of the Commission is to prevent SAIs on VMEs: not to determine the appropriate scale for management.

Similarly, in recommendation para 21(d)(v), “modify paragraph 35(d) to incorporate the intent to assess uncertainty in the modelling and performance of the spatial management: the relationship between benthic bycatch from fishing vessels (including, inter alia, assessing repeated false negatives of encounter events) and the habitat suitability models”, the need is to assess all uncertainties and apply the precautionary approach in such cases.

Commentary on IWG Topic 5 (The 2020 VME Encounter)

IWG Paper Topic 5 notes (para 55) that the New Zealand 2020 encounter area should remain closed until the work referred to in paragraph 33.a.iii is accepted by the Scientific Committee and considered by the Commission, and the Commission can reconsider taking a decision pursuant to paragraph 30 of CMM 03-2022 at a later stage. The joint eNGOs agree with this recommendation.

However, the recommendation that “the Fishery Management Area scale is the appropriate scale for assessing the performance of the VME spatial management scenarios; and the scale for assessing VME encounters should be biologically relevant, in line with the Convention and taking into account the FAO Deep-sea Fisheries Guidelines; and that the encounter protocol should be strengthened by developing a multi spatial scale risk-based approach to VME encounter assessments” (para 44) needs to be carefully read. The recommendation is that the FMA is the appropriate scale for assessing the performance of the VME spatial management scenarios: not for management. Management is a different function: one mandated by the Convention, UNCLOS, the Fish Stocks Agreement and the UNGA resolutions. These require that specific steps be taken to prevent SAI on VMEs. From a scientific point of view, the caveats are crucial: the scale must be biologically relevant, must be in line with the Convention and take into account the FAO Deep-Sea Guidelines. As is noted elsewhere in this briefing, the Deep-Sea Guidelines, particularly in paragraph 18, are clear that impacts on the specific site are the frame of reference. Even a multi spatial scale approach must be focused on the specific site and VME.

Assessing the performance of the models should not be confused with managing the effects of bottom trawling on VMEs: there, SAIs on VMEs must be prevented, and this necessarily involves assessment of impacts where the VMEs are impacted (this sounds obvious but unfortunately it is too often disregarded).

DSCC supports the conclusion in para 55 that the encounter area should remain closed.

Move-on Distance: 1 or 5 NM?

The Scientific Committee was [given](#)¹⁵ the task of modeling after the European Union proposed to increase the move-on distance from 1 to 5 nautical miles as an additional precautionary measure to prevent SAIs to VMEs.

On the move-on distance: the IWG said in Topic 3 that the current move-on distance (1 nautical mile) is somewhat arbitrary (Para. 131). Yet most RFMOs use a 2 NM distance. The scientific analysis was extremely limited: one species and one seamount chain (Louisville) (para 131). The IWG acknowledged that “Given the (necessarily) narrow focus of this analysis, the Scientific Committee advice cannot be generalised or applied more widely to all taxa or areas. This is not a reflection on the analysis itself, which is considered to be a high standard, but rather a reflection of the data-limited reality” (para 134). The scientific analysis must be put aside in view of its major limitations.

It is based only on one taxon: stony coral *Solenosmilia variabilis*. It is only based on the Louisville seamount chain, and only two seamounts at that. A third limitation is the reliance on defining “VME indicator patches” as one of three posited abundance thresholds. Nowhere are VME indicator “patches” defined. All of these are inconsistent with the ecosystem approach. The

¹⁵ [SC9-DW7](#) Determination of optimal move-on distance in SPRFMO bottom fisheries. 2021.

ecosystem approach, as described by Watling and Auster (2021), defines VMEs in terms of ecosystems - not individual taxa, let alone one taxon. More fundamentally, the concept of 'patches' is not based on science or policy. The UNGA resolution, FAO Guidelines and most recently the Watling & Auster paper (2021), which emphasised that the object is preventing SAIs on VMEs - not patches of individual taxa.

The core limitations of the paper include that it is not intended to define a VME per se, but rather to evaluate the effect of different move-on distances on the likelihood of additional encounters with VME indicator taxa, under the assumption that overlap with one patch will likely yield enough bycatch to exceed the VME encounter threshold - as well as that it was based on only one taxon and the Louisville seamounts. The study notes, "The most obvious caveat to be attached to this research is that the results of this analysis are certain or likely to be VME habitat-, fishery- and region-specific." The paper is commendable in its acknowledgement of the caveats and assumptions, yet no attempt is made by those using it, to act on these caveats by applying the precautionary approach, which, we suggest, would require a larger move-on distance for all fisheries management areas to account for the uncertainty.

The paper [SC9-DW07](#) wrongly balances VME protection with burdens on fishery operators in concluding that "the current move-on distance of 1 nm effectively avoids most of the potential additional interactions with VMEs while not placing undue burden on fishing operators." This is a policy and management approach rather than a scientific conclusion. Moreover, the stated goal of not placing undue burden on fishing operators is without a foundation in policy or law.

A one-nautical mile protection assumes that the VME is small and that there are VME free areas surrounding these impacted areas. Using a larger distance (5nm) recognises the relevance of connectivity and the possibility that there further VMEs in that area and further will assist the recovery from bottom fishing impacts of VME taxa larvae in adjacent less modified areas. This all points to the need for a greater move-on distance than one NM.

In conclusion, the eNGOs recommend that the precautionary principle must be applied to increase the move-on distance to 5 nm according to the EU's original proposal.

Commentary on IWG Topic 3 (The move-on rule (i.e. weight thresholds and move-on distance))

Weight thresholds: Paragraph 119 of Topic 3 lists key uncertainties with setting reliable VME thresholds: setting reliable VME thresholds; catchability; level of VME remaining after an encounter; our understanding of the ecology of VME species, modeling relying on presence-only modeling, recovery time, size and overall area of cover of various VME species and similarity of VMEs between seamounts. The IWG states that choosing one percentile over another is an inherently arbitrary decision (para 126). The joint eNGOs disagree: choosing a lower percentile is a more precautionary approach, and choosing a threshold such as the 99th percentile allows 99% of the amount of historic taxa caught to be destroyed.

The IWG then said that "there is not enough evidence to support an increase (or decrease) to the distance, particularly relative to both the potential increased costs and uncertainty for operators and the lack of information on whether or not it would result in a conservation gain outside the specific taxa analysed" (para 134). The citation of increased costs for operators is revealing: industry does not want an increased distance. But as we have noted many times in this briefing, such a trade-off is not permitted under international law. As neither the SC or IWG are able to provide advice, the Commission must apply the law and international policy. Arguing, as industry does, that a greater move-on distance may put other VMEs at risk is disingenuous: a precautionary approach acknowledges that hitting a VME raises the possibility that there are either parts of the same VME or other VMEs in the vicinity. For this reason the move-on distance should be increased from 1 NM to 5 NM.

5.5 Further development of VME indicator taxa distribution

SC-10 recommended that for areas within FMAs with a high number of encounter events, or with high bycatch, that fine-scale spatiotemporal investigations of historical bycatch are undertaken (SC-10 Para 122). Such investigations are welcome, but not only where there is a high number of encounter events or with high bycatch, but whenever there was an encounter, and these should be undertaken in the context of implementing the UNGA resolutions – e.g. where investigations show that VMEs exist or are likely to occur, the area in question should be closed. Camera and video surveys could also be used to investigate encounter areas and to investigate VME areas.

5.6 Catchability

It has been increasingly apparent in the SC discussions that catchability is a key uncertainty in designing encounter thresholds and subsequent actions. Put simply, only very small percentages of impacted taxa such as coral and sponges are retained in the net and brought all the way to the deck of the fishing vessel, meaning that any analysis of the occurrence of and damage to VMEs is likely to be inaccurate and the true impact of trawling is under-reported.

SC-9 “noted that reviews of future encounters would be improved by the explicit use of catchability to support more robust review outputs.”¹⁶ Weight thresholds should take into account catchability.¹⁷ This is why catchability was added to the SC workplan.¹⁸

But while this work is being carried out, it is essential that this key uncertainty is reflected in the measure including weight thresholds. For example, a trawl catch of 250 kg of corals could scale to an impact of more than 33–104 t of corals on the seabed, or, taking the estimated impact proportion of 0.82¹⁹ (Mormede *et al.* 2017).²⁰ This contact range may translate to seabed impacts of more than 27–85 tonnes of coral affected; or taking the current 60 kg threshold for stony corals, seabed impacts may be from 6.5 tonnes to 20 tonnes.²¹ On that basis, 19 tonnes of stony corals (Scleractinia) may be destroyed on the sea floor before the current threshold is even triggered. As Mormede *et al.* (2017) noted, “fishing effort at repeatedly fished locations near the summit of preferred seamounts is still sufficiently concentrated that the cumulative impact approaches 100.”²²

This key uncertainty of catchability has implications for all decisions made with respect to VME indicator taxa. Specifically, the SC should be requested to review all taxa thresholds with a view to ensuring the levels are precautionary, taking into account the current knowledge or lack of it about catchability.

SC-10 recommended (para. 132(d)) that the feasibility of developing and funding a research programme to achieve robust estimates of catchability for VME indicator taxa in 2023+ should be explored. The joint eNGOs support this recommendation with the caveat that research methods need to be non-destructive of VMEs (e.g. camera and video transects could be used). While there is considerable uncertainty around catchability due to low data, we observe that most of the analysis presented indicated that catchability was generally very low or low (<5%) and therefore

¹⁶ SC-9 Report para. 68.

¹⁷ SC-9 Report page 2, paras. 70, 71.

¹⁸ SC-9 Report para. 84.

¹⁹ The impact index was then calculated as a simple arithmetic combination of the individual gear component impacts, proportional to the relative area of their respective footprints.

²⁰ Mormede, S., Sharp, B., Roux, M.J., Parker, S. (2017) Methods development for spatially-explicit bottom fishing impact evaluation within SPRFMO: 1. Fishery footprint estimation. SPRFMO SC5-DW06. At <https://www.sprfmo.int/assets/SC5-2017/SC5-DW06-Spatial-impact-assessment-method.pdf>.

²¹ Pitcher *et al.* 2019.

²² Mormede *et al.*, page 17.

should be considered in taking precautionary measures in developing thresholds. (SC 10 paras. 127 and 129)

Catchability in the IWG: Topic 3

The IWG in Topic 3 said (para 119) that “catchability is the key uncertainty... It is known to be low and variable between species, but is not quantified – i.e., it is not known what 10kg of a VME indicator taxon in a trawl net, from a given area, represents in terms of the impact on VMEs. Catchability has been discussed by the Scientific Committee, but methods for determining catchability have not yet been resolved.” In light of this “key uncertainty”, the joint eNGOs recommend that it is critical that the precautionary approach be applied, which in this case would mean lower weight thresholds are implemented.

5.7 Ongoing appropriateness of CMM 03 (BF-IWG)

CMM [03-2022](#) in paragraph 35 asked the SC to “review and provide advice on the effectiveness of the applied management measures, including:

f) the appropriateness of the management approach (e.g. scale) ... to ensure the measure is achieving its objective and the objectives of the Convention.

“The objective of the CMM together with CMM 03a-2021 (Deepwater Species) is, through the application of the precautionary approach and an ecosystem approach to fisheries management, to ensure the long-term conservation and sustainable use of deep sea fishery resources, including target fish stocks as well as non-target or associated and dependent species, and, in doing so, **to safeguard the marine ecosystems in which these resources occur, including inter alia the prevention of significant adverse impacts on vulnerable marine ecosystems.**”

Note that this is the prevention of SAIs on VMEs – not on the FMA.

The SPRFMO Convention in Article 2 is similar: “The objective of this Convention is, through the application of the precautionary approach and an ecosystem approach to fisheries management, to ensure the long-term conservation and sustainable use of fishery resources and, in so doing, to safeguard the marine ecosystems in which these resources occur.”

The precautionary approach and ecosystem approach are at the front of both objectives, and both require the Commission to “safeguard” the marine ecosystems.

SC-10 noted the comments of the IWG Chair including the importance of resolving the appropriate scale of management given its centrality to CMM 03-2022; and assessing the ongoing effectiveness of the CMM; and that the IWG will recommend that the Commission adopt the Fishery Management Area as the appropriate scale of management for assessing the performance of the VME spatial management scenarios (within the Evaluated Area); and taking a multi-scale risk-based approach to assess encounters with VME indicator taxa. (SC 10 para 134) The recommendation should be noted carefully: the FMA is the appropriate scale of management for assessing the performance of the VME spatial management scenarios: not for managing VME impacts of bottom fishing overall. The VME spatial management scenarios may assist in determining what areas may be open or closed to bottom fishing, but should not be confused with managing bottom fishing and its impacts on VME itself, which is the “biologically appropriate scale”.

The Scale of Management

A key area of debate relates to the suggestion by some members of SPRFMO that only some fraction of total VME abundance should be protected. This is contrary to the UNGA requirements and inconsistent with the decisions being taken by some members of SPRMO in other RFMO Commission meetings e.g. NAFO. The ‘auction’ approach of arbitrarily choosing 70, 80 or 90%

protection as proposed for SPRFMO has no scientific, policy or legal basis. The SC paper investigating the spatial scenarios,²³ [SC9-DW06_rev1](#), acknowledged that “there is great uncertainty in translating model outputs to estimates of abundance of VME indicator taxa on the seafloor, as well as issues of potential model over-prediction leading to over-optimistic estimates of protection for some taxa.” (page 4). The work done focused on protection of specific indicator taxa, rather than VMEs, and thus did not apply the ecosystem approach or address prevention of SAIs on VMEs.

For instance, with respect to the Louisville Seamount chain, the paper reported that “targets were met for 11 of the 12 taxa/metric combinations modelled with more than 1% of their distribution in the North Louisville FMA. The 80% and 90% targets were not met for [the coral *Solenosmilia variabilis*] (SVA) with the Power metric. For the eight taxa/metric combinations with less than 1% of their distribution in the FMA, targets were met for three. The 70%, 80% and 90% targets were not met for DEM [Class: Demospongiae] using the Power metric.” It seems self-evident that such an approach, focusing on targets for specific selected taxa which individually represent many species, does not and cannot substitute for a management approach which must be aimed at the objective of prevention of SAIs on VMEs, applying both the precautionary and ecosystem approaches. The joint eNGOs note that the Louisville Seamount chain that was assessed is recognised as an EBSA by the CBD.

It is of concern that the paper states that (page 19) “In general, higher protection targets resulted in more significant impacts on the estimated fishery value. Those impacts may be underestimated in the results provided, as the scenarios have not been tested for practical ‘fishability’. However, the paper suggests that “These protection scenarios will support explicit consideration by the Commission of the trade-offs inherent in ensuring the long-term sustainable use of fisheries resources and the safeguarding of the marine ecosystems in which those resources occur.” Here, the authors have strayed far from both law and policy: There should be no trade-off between fishing and the safeguarding of marine ecosystems. As is noted in the Summary, Article 2 of the SPRFMO Convention makes that clear. The objective is “to ensure the long-term conservation and sustainable use of fishery resources and, in so doing, to safeguard the marine ecosystems in which these resources occur.” The requirement to safeguard marine ecosystems cannot be and is not subject to some sort of ‘trade-off’ between commercial fishing and protection. Nor can such a trade-off be found in UNCLOS, where Art 192 imposes an unqualified obligation on States to provide the protection and preservation of the marine environment: period. Art 193 stresses that any use is contingent on Art 192 obligation of protection and preservation being given effect.

This is a fundamental weakness of the ‘scenario’ approach of picking a percentage of protection. In seeking to shield the fishing industry from the requirements to protect and preserve the marine environment it flies in the face of established and clear law and policy.

There are other objections: in using selected taxa, the approach risks damaging or destroying other taxa including populations of rare and cryptic species which apart from the four stony coral modelled are mixed together with many other species at the level of phylum, class, order or family. Further, its reliance on individual modelled taxa rather than VMEs takes the analysis away from the central issue of preventing SAIs on VMEs. Indeed, the 2022 sustainable fisheries resolution that followed the August 2022 UNGA workshop on bottom fishing, resolution 77/118, called on States and RFMOs as follows (emphasis added).

"211. Recognizes the need for further progress with regard to obtaining more biological information on the species that comprise vulnerable marine ecosystems, including their associated and dependent species, the assessment of significant adverse impacts on vulnerable marine ecosystems, and protecting and conserving

²³ SC9-DW06_rev1 Development of Spatial Management Scenarios for Bottom Trawling

biodiversity, including beyond vulnerable marine ecosystems, as well as the consistent application of the Guidelines;

"212. Calls upon, in this regard, States, regional fisheries management organizations and arrangements and those States participating in negotiations to establish a regional fisheries management organization or arrangement competent to regulate bottom fisheries, to identify and overcome barriers to the implementation of the relevant paragraphs of General Assembly resolutions 64/72, 66/68 and 71/123 such as data availability, especially with regard to baseline data and the **spatial distribution and connectivity of vulnerable marine ecosystems, including their associated and dependent species**, while recognizing the importance of international collaboration for this purpose, further recognizing that effective management of bottom fisheries is crucial to ensure the long-term sustainability of the sector;

The spatial distribution and connectivity of vulnerable marine ecosystems, including their associated and dependent species is completely ignored in the 'scenario analysis'.

Commentary on IWG Topic 1 (The appropriate scale of management to assess and prevent significant adverse impacts on VMEs)

An important observation is made in paragraph 14 of Topic 1. It acknowledges that "**A plain reading of paragraph 18 suggests that while there should be some level of scientific enquiry undertaken at the site-level...**²⁴". We completely agree. It goes on to state that "in addition to the other 5 factors specified in paragraph 18, it does not preclude or discourage the use of coarser scales for management decisions. In fact, it does not make a recommendation on the appropriate scale to be used for preventing SAIs on VMEs." The latter sentence is misleading: the Guidelines clearly assume that the appropriate scale is the scale of the site or VME, and nobody had then suggested otherwise. There was no need to make a recommendation on the appropriate scale because the appropriate scale was clearly the site or the VME. There is a weaker acknowledgement of the same point in para 37,²⁵ which misses the necessity - not "as the case requires" - to assess SAIs on VMEs at the site scale.

Paragraph 15 goes on to state that "In determining the appropriate scale of management to assess and prevent SAIs on VMEs, the Commission must base management measures on the advice of the Science Committee (SPRFMO Article 3(1)), including with respect to the chosen scale."

This is not the case for the simple reason that the issue of spatial management is, as has clearly been repeated in the past, a policy choice for the commission: not a scientific matter alone.

Paragraph 16 goes on to draw the following conclusion: "Accordingly, subject to the above, the Commission would appear to have a wide margin of discretion to determine the scale of management to assess and prevent SAIs on VMEs, provided the Commission can still meet its legal obligations." This assertion ignores the precautionary approach in the face of the many uncertainties, and treats the Commission's approach as having legal obligations to provide some sort of 'floor'. This is not the case: the legal obligations guide the Commission throughout the process. Paragraph 18 exemplifies the policy role of the Commission. It states that "However, realistically, there is little information to comprehensively inform this [the spatial management

²⁴ Para 14 of Topic 1 reads "14. While it has been argued that paragraph 18(i) of the FAO Deep-sea Fisheries Guidelines means that the appropriate scale of management can only be the site/encounter level, this interpretation is unnecessarily restrictive. A plain reading of paragraph 18 suggests that while there should be some level of scientific enquiry undertaken at the site-level, in addition to the other 5 factors specified in paragraph 18, it does not preclude or discourage the use of coarser scales for management decisions. In fact, it does not make a recommendation on the appropriate scale to be used for preventing SAIs on VMEs."

²⁵ "The Commission, or its Members, can also consider impacts on a finer scale if the case requires, for example if there are specific threats to assess or during the review of VME encounters." Para 36.

approach], so the Commission will need to determine the most biologically meaningful scale based on the available information.”

Para 19 helpfully sets out the limitations of the current understanding and modeling approach:

- a. *The relationship (if any) between habitat suitability models and taxa abundance is uncertain and difficult to estimate, meaning there is a risk that the amount of “protected” VME (e.g., outside the area open to fishing) is less than predicted by the current presence-only models;*
- b. *The incompleteness of VME indicator taxa modelled – there are no habitat suitability models for 4 of the VME indicator taxa listed in Annex 5 of CMM03-2022;*
- c. *The coarse taxonomic resolution of the modelled VME indicator taxa, which may mask ecological patterns and vulnerabilities at the scale of populations;*
- d. *The scale of habitat suitability predictions, which may not relate to all VME distributions and means the habitat suitability index models are limited in their ability to inform assessment and prevention of SAIs at the scales of populations.*

This is an important list which exemplifies why the bottom trawling CMM cannot be based on the spatial approach as the approach to preventing SAIs on VMEs. There are too many uncertainties. The Convention mandates the response to such uncertainties: the precautionary approach. “the Commission and subsidiary bodies shall:

- (i) be more cautious when information is uncertain, unreliable, or inadequate;
- (ii) not use the absence of adequate scientific information as a reason for postponing or failing to take conservation and management measures;
- (iii) take account of best international practices regarding the application of the precautionary approach, including Annex II of the 1995 Agreement and the Code of Conduct.” (Art 3(2)(a))

On reason for using the FMA scale is given in para. 27:

“The development and evaluation of the spatial management measures to date has been undertaken at the Fishery Management Area scale. This was chosen as a practical scale at the time the modelling was undertaken. Changing from this scale to a finer-scale at this point in time would present significant challenges including: Additional work and resources to re-evaluate the performance of the spatial management measures, and a potential re-design of the current management areas; Feasibility – a finer scale may require in-situ mapping of VMEs to determine management responses. However, given the models are based on habitat suitability indices, translation of HSI into actual presence on the seafloor and absolute abundance is difficult; Additional consultation with operators and the need for smaller management areas; New resourcing or reprioritization of the Scientific Committee Multi-Annual workplan tasking.”

None of these are valid or compelling reasons to ignore or failing to prevent SAIs on VMEs at the site scale. The UNGA resolutions provide a clear response: closing VMEs where they have been identified.

The IWG states that “none of these RFMOs have defined an appropriate scale of management for preventing SAIs on VMEs.” (Para 31) That is misleading: they have in that they have closed VMEs and NAFO has closed all seamounts. This is a clear recognition that the appropriate scale of management for preventing SAIs on VMEs is the site and VME scale. It goes on to state that “Information may be more limited compared to other RFMOs” (Para 33). In this case, SPRFMO should be more, not less, precautionary.

Bottom protection scenarios

There was a request from the Commission²⁶ for spatial management scenarios for bottom trawling. This recommendation was, for reasons discussed above, inconsistent with the UNGA resolutions, the FAO Guidelines and practice in all other bottom fishing RFMOs. Ultimately it relies on a wrong-headed ‘balancing’ of the environment against the profitability of the fishing industry. The SC “Recommended that the Commission consider the results of the spatial protection scenarios including to inform its determination of the level of protection required to prevent SAI on VMEs in the SPRFMO Convention Area” and “[n]oted that ecologically relevant spatial scales for assessing protection levels to prevent SAIs on VME indicator taxa still remain to be agreed, but that the existing information at the FMA is likely to be a more biologically appropriate compared with larger scales.”²⁷

The goal stated in the relevant [paper](#)²⁸ “to establish optimal areas for the *minimisation* of SAIs on VMEs while minimising costs to the fishery” is succinctly stated, but is antithetical to both international law and policy - as well as science, as Professors Auster and Watling have [observed](#).²⁹ The required goal is *prevention* of SAIs, not their minimisation, and there is to be no trade-off aimed to minimise costs to the fishery in preventing SAIs on VMEs. Article 192 of UNCLOS provides that States have the obligation to protect and preserve the marine environment: there is no exception for economic advantages. The freedom to fish provided for in Article 87 is expressly qualified in “subject to the conditions laid down in section 2”.

A core weakness of the approach taken is the failure to apply the ecosystem approach. Instead, it analyses the limited taxa for which the modelers had data (due largely to benthic bycatch). Rather than describe ecosystems impacted by bottom trawling, the best it can do is describe some taxa impacted by bottom trawling. As Professors Watling and Auster pointed out, the two are very different concepts. This approach “cuts and dices” VMEs into individual taxa, and far from preventing SAIs on VMEs, can, at the most, predict the percentage of individual taxa which are projected to be destroyed or not destroyed but in most cases only at the taxa level of phylum, order, class or family, as hundreds of species are reduced to 11 VME taxa. Compounding the problem are the uncertainties involved. The findings of the paper underline that even an 80% scenario (which would sanction the destruction of 20% of VMEs) is not achievable for all areas (e.g. North & South Lord Howe rise, Westpac Bank, West Norfolk, North & South Louisville).

However, the paper suggests that “[t]hese protection scenarios will support explicit consideration by the Commission of the trade-offs inherent in ensuring the long-term sustainable use of fisheries

²⁶ SPRFMO (2021). 9th SPRFMO Commission Meeting Report. Wellington, New Zealand. At <https://www.sprfmo.int/assets/0-2021-Annual-Meeting/Reports/COMM9-Report-Adopted.pdf>. The SC was asked to include in its work plan for 2021+ the development of spatial management scenarios for Bottom Trawling. This work will inform the Commission’s determination of the level of protection required to prevent Significant Adverse Impacts on VMEs in the SPRFMO Convention Area. Scenarios should encompass protection levels of 70%, 80%, 90%, 95% for the modelled VME indicator taxa using temporally static and temporally dynamic assessment methods. The SC should also explicitly account for uncertainties in current model predictions, the relative availability of VME indicator taxa in an area, and recommendations from other RFMOs or guidance documents (if any) when formulating its recommendations to the Commission. Evaluations should be undertaken at spatial scales comparable to the Fisheries Management Areas described in SC8-DW07_rev1. Para. 67.

²⁷ SC-9 Report Para. 67.

²⁸ SC9-DW06_rev1. Development of Spatial Management Scenarios for Bottom Trawling. At <https://www.sprfmo.int/assets/2021-SC9/SC9-DW06-rev1-Development-of-Spatial-Management-Scenarios-for-Bottom-Trawling-untracked.pdf>

²⁹ SC9-Obs02. L. Watling and P. Auster. VMEs, Communities and Indicator Species - Confusing Concepts for Conservation of Seamounts. At <https://www.sprfmo.int/assets/2021-SC9/SC9-Obs02-VMEs-Communities-and-Indicator-Species-Confusing-concepts-for-conservation-of-seamounts.pdf> and published at <https://www.frontiersin.org/articles/10.3389/fmars.2021.622586/full>.

resources and the safeguarding of the marine ecosystems in which those resources occur.”(page 19). Such a conclusion advocating trading off VME protection with fishing is a breach of the Convention, international law and the UNGA resolutions. No authority is cited for the proposition and none can be: it is inconsistent with UNCLOS, the Fish Stocks Agreement, and the applicable UNGA resolutions.

The joint eNGOs seek that the Commission recommend that this work be discontinued. It is unlikely to provide useful scientific information in line with requirements and the available resources would be better directed at implementing the UNGA resolutions and protecting VMEs.

Other RFMOs

No other RFMO is following the ‘spatial management’ approach that New Zealand has advocated. The DSCC has prepared a [detailed account](#) of approaches taken by RFMOs.³⁰ CCAMLR bans bottom trawling altogether; as of 2022 NAFO has [closed](#) the last seamount trawl fishery in the Northwest Atlantic, and CCAMLR, NAFO, GFCM, NPFC, SEAFO, and NEAFC have measures generally following the UNGA requirements. SIOFA to date has only an interim measure which largely reflects the UNGA requirements.

Commentary on IWG Topic 2 (Spatial management (i.e., protection) scenarios)

It is acknowledged in the paper that to date, no other RFMO has approached bottom fishing conservation and management in this way (para 41). This is because other RFMOs have been implementing the UNGA resolutions. The statement is made that “[o]verall, SPRFMO has adequate data available for the Scientific Committee to provide advice on management decisions to the Commission.” (para. 52) Given the many acknowledged uncertainties (see para 119 of Topic 3), this assertion seems unfounded. Paragraph 52 of Topic 2 lists more uncertainties:

The relationship (if any) between habitat suitability and abundance is uncertain and difficult to estimate;

A subset of VME indicator taxa were modelled (meaning some VME taxa are not modelled);

Data on some environmental variables that are significant predictors of VME distribution are not available or modelled (i.e., substrate type);

The coarse taxonomic resolution of the modelled VME indicator taxa may mask ecological patterns and vulnerabilities at scales of communities, populations and species level;

The spatial scale at which habitat suitability models are predicted may not relate to the spatial scales at which VME indicator taxa are distributed.

“The best science available to the SC at the current time” is not the same as adequate science. There is not, starting with an overwhelming lack of data on VMEs outside, as well as enormous uncertainties inside, the FMAs. This is a critical lack, since an approach purporting to protect a given percentage (say 80%) of VMEs presumes an adequate knowledge of the denominator - the total number of VMEs and their component taxa, including rare and cryptic species. Add to this “The relationship between habitat suitability and abundance (which is more representative of the likely presence of a VME) is uncertain” (para. 54) with a consequence that [SC-7](#) said that “CMM 03-2019 may provide less protection than previously thought”. Topic 30 then provides an even

³⁰ Susanna Fuller, Duncan Currie, Matthew Gianni, Lyn Goldsworthy, Cassandra Rigby, Kathryn Schleit, Colin Simpfendorfer, Les Watling, Barry Weeber. Preventing Biodiversity Loss in the Deep Sea — A Critique of Compliance by High Seas Fishing Nations and RFMOs with Global Environmental Commitments. 2020. At <http://www.savethehighseas.org/resources/publications/preventing-biodiversity-loss-in-the-deep-sea-a-critique-of-compliance-by-high-seas-fishing-nations-and-rfmos-with-global-environmental-commitments/>

longer list of uncertainties.³¹ These uncertainties cannot be dismissed. In short, they mean that the ‘scenario’ approach of protecting (or conversely allowing the damaging or destruction of) a certain percentage of VMEs is far too uncertain to implement as a management tool. And, as is acknowledged, “There are few options to reduce uncertainty regarding the spatial distribution of VME taxa....there is likely to continue to be a limit to the VME data available, and therefore a level of ongoing uncertainty.” (Para 59) This matters.

The reason this matters is also noted in Topic 3: (para. 74). “*Beyond the SPRFMO Scientific Committee, it is worth noting that the Second World Ocean Assessment noted that:*

- *Biodiversity is changing globally at rates unprecedented in human history, creating the potential for species extinction before they have been described. Bottom trawl fisheries are the most widespread source of anthropogenic physical disturbance to global seabed habitats (s3.2.2).*
- *Coldwater corals and the frameworks they create (both living and dead) are extremely vulnerable to direct and indirect impacts from bottom trawling (p. 324). The impacts of fishing activities on coldwater corals are well recognized, with bottom trawling, in particular, having strong direct physical (e.g., breaking or dislodging colonies) as well as secondary sedimentation (e.g., smothering individuals or colonies) effects (p. 326).*

³¹ In addition “aggregating species by taxonomic similarity is a common approach to overcome difficulties in analysis where the data are limited (e.g., for the development of habitat suitability models) or where species-level identifications are difficult (e.g., for the identification of VME indicator taxa by at-sea observers). While 231 species and 281 genera have been identified, only 13 taxa have been modelled. In addition to known species there are cryptic and un-named species. Additionally, the modelling is uncertain where VMEs are at the scale of VME populations and communities. However, this approach assumes that different species within a higher-level taxonomic group have similar characteristics affecting their vulnerability and distribution. This may not always be true. Diverse life-history traits, distribution patterns, and/or meta-population dynamics within coarser taxonomic resolutions can lead to the ecological patterns and vulnerabilities at the population/species level being obscured. This limits SPRFMO’s ability to manage SAIs at the community and population level based on data aggregated into coarse taxonomic groupings.

SC8-DW11 identified that the VME indicator taxa included within CMM03 are highly speciose, meaning that there is significant species diversity within the large taxa groups. For example, the VME indicator taxa Porifera, Alcyonacea (gorgonians) and Bryozoa all have more than 40 species or genera recorded from within the evaluated area of the SPRFMO Convention Area. It is currently unclear if, and to what extent, the loss of taxonomic information in the habitat suitability models (by only modelling a subset of VME indicator taxa and using coarse taxonomic designations) affects the ability of the spatial management measures to prevent SAIs on vulnerable populations of benthic taxa. The issue of taxonomic resolution within the habitat suitability models are not resolvable with current data limitations, however, some missing VME indicator taxa from Annex 5 could potentially be modelled.

The resolution of the habitat suitability models was set to 1 km² because the source of most presence-absence records for VME indicator taxa were from research or commercial fishing bottom trawl catches with a median tow length of approximately 0.8 km. Comparison of the habitat suitability model on the Louisville Seamount Chain with ground-truthed data (for a single taxa – *Solenastrea variabilis*) revealed that models are most informative at larger spatial scales (e.g., see SC9-DW07). This is because VME indicator taxa have a relatively small-scale distribution, compared to the relatively large-scale environmental parameters (e.g., depth, temperature etc) used to develop the habitat suitability models. This means the habitat suitability models are limited in their ability to inform assessment and prevention at one of the scales of natural organisation advised by the FAO Deep-sea Fisheries Guidelines, i.e., populations, species groups, communities and habitats. The accuracy of the habitat suitability models to predict VME presence or abundance at the intermediate scale of Fishery Management Area has not yet been tested. Data limitations for the whole of the Evaluated Area and for all VME indicator taxa prevented population dynamics (e.g., connectivity) from being considered alongside the habitat suitability models.

The Scientific Committee has not resolved what constitutes evidence of an SAI on VMEs. Defining a threshold between a good and a significantly-adversely-affected state based on scientific analysis alone is difficult, even for systems that are much more data rich than the SPRFMO Convention Area, because no methods to establish such thresholds are widely accepted or applied (ICES 2022). In 2022, the Scientific Committee asked the Commission to develop specific objectives for VME management and provide clarity on the choice of an operational/quantitative threshold defining what level of impact would constitute a SAIs (see paragraph 138(b) of the SC10 Report, 2022). (Topic 3, para. 58)

- *Bottom trawling causes considerable modification of the sea floor (p. 405).*
- *Bottom trawling constitutes the greatest current threat to seamount ecosystems (p. 439).*

Just as the uncertainties cannot be dismissed, nor can the legal obligations listed in Topic 3 (para. 77-79), including that utilisation cannot be balanced against environmental protection (Art 192, as well as 194(5)) and the specific obligations in the Convention, especially Art. 3.

In para 79 the assertion is made that the UNGA resolutions, “while not binding on States as a matter of international law, are highly relevant and must be taken into account.” We agree they must be taken into account. However the resolutions are the international community’s specific response to bottom trawling and the obligations in the UN Fish Stocks Agreement and UNCLOS, and together with the FAO Deep-sea Guidelines constitute “generally recommended international minimum standards” under Art 119 of UNCLOS. There is also a strong argument that these specific provisions, including UNGA resolution 61/105, constitute customary international law, as no State has said it does not need to follow them, though even without that, the above considerations mean that they need to be followed by SPRFMO and its member States.

In conclusion, the “arbitrary” nature of the proposed scenario approach must be rejected. The IWG said that “This could be achieved by setting, in the interim, a minimum level of protection for each modelled VME taxa. This would be arbitrary, but in the absence of a clear definition of how much impact constitutes an SAI, this approach offers a pragmatic starting place to operationalize spatial management measures to prevent SAIs on VMEs by closing areas to bottom fishing where VMEs are likely to occur.” (para 85) Likewise, the approach of determining a percentage in order to allow the bottom trawling industry to continue is an impermissible balance or trade-off approach: “The table consolidates different sources of data, each of which has limitations, but collectively indicate the impacts of reducing open area boundaries on fishing opportunity” (para 90) The varying 70% (para 93) and “range of 80 to 90%” (para 95) epitomise this arbitrary approach, which based on the numerous uncertainties listed above, and which are contrary to the UNGA resolutions, were not endorsed by the recent UNGA workshop only in August as well as contrary to the Convention.

Appropriateness in the IWG: Topic 1

The IWG in Topic 1 said that (para 18) “the Scientific Committee has advised that the spatial scale of the assessment of fishing impacts on VMEs, which should be relevant to the life history traits of component VME species that limit recovery, the spatial extent of VME habitat type and connectivity between populations to ensure viable VME populations at a given spatial scale (paragraph 71 of the SC9 Report, 2021). However, realistically, there is little information to comprehensively inform this, so the Commission will need to determine the most biologically meaningful scale based on the available information.” Therefore according to the Convention, the precautionary approach must be applied, which means to close areas where VMEs are known or likely to occur to prevent SAIs on VMEs. The IWG has noted that “the SC has noted that the scale of the Fishery Management Area is likely to be more appropriate than broader spatial scales” (page 65; and para 182).” But this does NOT mean that the FMA is more appropriate than the site scale. In fact the reverse is true. The SC finding was only that the FMA scale was more appropriate than much broader scales such as the bioregion.

9.1 Salas y Gomez and Nazca Ridges

These areas harbour a unique biodiversity marked by one of the highest levels of marine endemism on Earth (SC 10 para. 253) and are designated an ecologically or biologically significant marine area (EBSA) by the Convention on Biological Diversity (CBD). Steps suggested ([SC10-Doc 30](#)) include closing the area to fishing activities; working closely with other intergovernmental organizations such as IATTC and CPPS, using existing MoUs, not accepting any proposals for exploratory fishing in the area, since this could irrevocably harm these unique and extremely fragile ecosystems; and expanding research and capacity development activities for the area. The

joint eNGOs support these recommendations and looks forward to the outcome of the proposed research activities in 2023. Exploratory fishing proposals in EBSAs should be treated with particular caution and should be encouraged to be situated in less sensitive areas.

Discussion of IWG Summary of Key Recommendations

Due to the time limits involved, this briefing will need to comment on the draft IWG recommendations, as there will not be time to comment on final ones received after the observer paper deadline.

- **Recommendation 1:** The Commission should adopt the Fishery Management Area as the appropriate scale of management for assessing the performance of the VME spatial management scenarios.

We note here that this is NOT the same as the FMA being the appropriate scale of management for preventing SAIs on VMEs. That is a different function.

- **Recommendation 2:** The Commission ~~should~~ task the Scientific Committee to develop a multi spatial scale **precautionary** risk-based approach to assess encounters with VME indicator taxa that could range from local scales (such as the encounter area) to broad scales (such as the Fishery Management Area scale), in the context of the best available science on, inter alia, the distribution of VME across spatial scales for consideration by the Commission in 2024.

The assessment on local scales, being the encounter area, must not be glossed over. It is crucial. A risk-based approach may not be the best way to determine significant adverse impacts on the VME. Risk based approaches are affected by the assumptions made, including what factors should be included and this discussion is not focused on the VME. Given that this is linked to VME indicator taxa which are, in most cases, a combination of many species at high taxonomic level (Phylum, order, class or family level) the risk to individual species, including any cryptic species, will be subsumed in the higher order taxa risk.

- **Recommendation 3:** The limitations identified in the current BFIA should be minimized when the impact assessment is ~~next~~ revised in 2025.

- ~~● **Recommendation 4:** The Management Area boundaries should continue to be the primary tool through which the Commission prevents SAIs on VMEs.~~

The joint eNGOs strongly reject this recommendation. Nowhere in the paper is the case even made that boundaries are the primary tool for preventing SAIs on VMEs. Assessments, scientific research and closures where VMEs are known or likely to occur are all the primary tools mandated by the UNGA resolutions.

- **Recommendation 5:** The Commission ~~should~~ accept the advice of SC10 (2022) to provide guidance on the spatial scale at which SAIs should be evaluated, and to develop specific objectives for VME management and provide clarity on the choice of an operational/quantitative threshold defining what level of impact would constitute an SAI.

The Commission should acknowledge that the spatial scale SAIs should be evaluated should be the impact or encounter level. That is where the impacts are: the VMEs are damaged or destroyed by the bottom trawlers.

- **Recommendation 6:** The Commission ~~should apply a minimum level of~~ **ensure the** protection of suitable habitat for each modelled VME indicator taxa. Members should work over 2023 to develop new candidate management area boundaries that achieve that level of protection. An updated BFIA, and corresponding revised management area boundaries should be submitted to the Scientific Committee in 2023 and the Commission in 2024.

There is no basis in the Convention, UNCLOS or anywhere for setting “minimum levels of protection”. SAIs must be prevented. No support can be gained anywhere for allowing certain levels of damage to VMEs.

- **Recommendation 7:** The Commission ~~should~~ retain the move-on rule particularly given the uncertainties in the level of protection **of VMEs** that the spatial management measures alone can achieve. Move-on rules should be continually evaluated to ensure that they do not increase rather than decrease impacts on VMEs.

The uncertainties mean that the spatial management approach as conceived by the IWG is fundamentally flawed. The UNGA steps should be applied instead.

- **Recommendation 8:** ~~When~~ The VME thresholds ~~are next~~ be revised. The Commission should use the updated candidate thresholds in SC09-DW10 as a basis **for that revision**. The Commission should expressly consider the appropriate percentiles to be used when selecting candidate VME thresholds when they are next revised. **The thresholds should be set so as to be triggered when a VME is encountered.**

The uncertainties surrounding VME encounter thresholds mean that the thresholds should be set to be triggered when a VME is encountered: not at e.g. 99% meaning that only 1% of trawls will trigger the threshold. Indeed the methodology of applying a threshold according to historic catches is fundamentally flawed and thresholds should be set according to if a VME is likely to be encountered at that threshold.

- **Recommendation 9:** The Commission ~~should maintain~~ at the **11th Commission meeting change** the current move-on rule distance ~~of from 1 to 5 nautical miles, but and this should be~~ periodically reviewed it **as data becomes available**.

The science does not support this conclusion. The precautionary approach means that the encounter move-on distance should be set at 5 NM.

- **Recommendation 10:** Review and ~~Consider~~ amendments **as necessary** to the encounter protocol **by 2024** to improve its clarity, ~~purpose~~ and operation, consistent with the detailed advice provided in this review.

It should also be amended to be consistent with the UNGA resolutions and FAO Deep-Sea Guidelines.

- **Recommendation 11:** The Commission ~~should~~ task the Scientific Committee to develop an Encounter Review Standard **by 2024**, consistent with the detailed advice provided in this review **and give effect to the UNGA resolutions and FAO Deep-Sea Guidelines and include analysis of impacts at the site of the encounter and be biologically relevant.**

It should developed to be consistent with the UNGA resolutions and FAO Deep-Sea Guidelines

- **Recommendation 12:** The New Zealand 2020 encounter area should remain closed ~~until the multi-spatial scale referred to in Recommendation 2 above is developed. The Commission can reconsider taking a decision at a later stage.~~

c3 CMM 03-2022 Bottom Fishing Revisions

The revision of the bottom fishing measures, CMM [03-2202](#),

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Annex 1:

**Recommendations for Amendment of Bottom Fishing
Measure CMM 03-2022**

***Explanation: DSCC Proposed Edits to Bottom Fishing
Measure 03-2022***

These are DSCC's proposed edits to the current bottom fishing measure 03-2022.

They are intended to:

Build on the proposed draft of the IWG draft

1. Implement the new 2022 Sustainable Fisheries Resolution 77/118 (2022) bottom fishing provisions
2. Give a clear power to the SPRFMO to close areas where VMEs are known or likely to occur to provide for compliance with the UNA resolutions and
3. Suggest improvement of provisions we believe are ill-founded.

Preamble

We suggested adding the relevant provisions in the preamble to implement the UNGA resolution 77/118 provisions on bottom trawling.

18. This was where the 70/80/90/95% provision was proposed to be inserted. We have suggested, consistent with the UNGA resolutions, "Where VMEs are known to occur or are likely to occur based on the best available scientific information, the Commission shall close such areas to bottom fishing and ensure that bottom fishing does not proceed unless the Commission has established measures to prevent significant adverse impacts on vulnerable marine ecosystems."

21 Assessments:

a. (Matters the Member/CNCP submits)

We suggested adding "and shall include assessments of impacts on VMEs" To make it clear that the assessment must include assessments of impacts on VMEs.

b. (Matters the SC advises on)

We suggested combining (b) (i) and (ii) and adding:

"ii. which areas known or likely to contain VMEs are be closed to prevent significant adverse impacts on such VMEs;" (to add a requirement of consideration of closures of VMEs.)

"iii. What areas, based on scientific information, where deep-water species and vulnerable marine ecosystems are likely to better survive impacts of climate change and ocean acidification, and what measures should be established to support their resilience; {2022 resolution para 218}" to implement para. 218 of the 2022 resolution.

"iv. data availability, especially with regard to baseline data and the spatial distribution and connectivity of vulnerable marine ecosystems, including their associated and dependent species {2022 resolution para 212}" to implement para 212 of the 2022 resolution.

(d) (Matters the Commission shall consider):

adding (ii.)which areas known or likely to contain VMEs are be closed to prevent significant adverse impacts on VMEs;

24 bis. We suggested adding “24.bisThe Scientific Committee shall take all reasonable steps to obtain more biological information on the species that comprise VMEs, including their associated and dependent species, the assessment of significant adverse impacts on vulnerable marine ecosystems, and protecting and conserving biodiversity, including beyond VMEs, as well as the consistent application of the FAO Deep-Sea Guidelines; {2022 resolution 211} and as improve data availability, especially with regard to baseline data and the spatial distribution and connectivity of VMEs, including their associated and dependent species, while recognizing the importance of international collaboration for this purpose. {2022 resolution para 212}” to implement para. 212 of the 2022 resolution

32. We suggested adding:

“e) consider whether an area or areas should be closed to prevent significant adverse impacts on VMEs,”

- this is to implement the powers to close areas as needed.

f) use the full set of criteria in the FAO Deep-Sea Guidelines to identify where VMEs occur or are likely to occur, as well as for assessing significant adverse impacts on such ecosystems, including their associated and dependent species; {2022 resolution 213(a)}

g) ensure that the precautionary approach is applied, including in the utilization of impact assessments to inform management decisions and consideration of significant adverse impacts on VMEs, including their associated and dependent specie; {2022 resolution 213 (c)}

h) ensure that the precautionary approach is applied, including in the utilization of impact assessments to inform management decisions and consideration of significant adverse impacts on VMEs, including their associated and dependent species; {2022 resolution para. 213(c)}

i) Apply the considerations in paragraph 21(d)”

- (f), (g) and (h) to implement the 2022 resolution

-(i) to ensure there is reference to the new paragraph 21(d)

After para 42 insert a new section:

Closing identified VMEs or Protection of Identified Vulnerable Marine Ecosystems

42A Taking into account the advice of the Scientific Committee, the Commission shall identify areas as vulnerable marine ecosystems and list them as Annex 9 to this measure.

42.B All bottom fishing activities shall be prohibited within the areas listed on Annex 9.

Add a New Annex 9 Identified Vulnerable Marine Ecosystem area closed to bottom fishing

Area or FMA

Co-ordinates

Defined area

Aim: To establish a provision in CMM 03 which enables areas identified as VMEs to be closed to bottom fishing. CCAMLR Conservation measure 22-09 is a useful model for this mechanism.

DSCC Suggested edits to CMM 03-2022: Conservation and Management Measure for the Management of Bottom Fishing in the SPRFMO Convention Area

(Supersedes CMM 03-2021)

The Commission of the South Pacific Regional Fisheries Management Organisation;

RECOGNISING Article 2 of the Convention on the Conservation and Management of High Seas Fishery Resources in the South Pacific Ocean (the Convention), which provides that the objective of the Convention is, through the application of the precautionary approach and an ecosystem approach to fisheries management, to ensure the long-term conservation and sustainable use of fishery resources and, in so doing, to safeguard the marine ecosystems in which these resources occur;

FURTHER RECOGNISING Articles 3(1)(a)(i) and (vii) of the Convention, which call on the Commission, in giving effect to the objective of the Convention, to adopt Conservation and Management Measures (CMMs) that take account of international best practices and protect marine ecosystems, particularly ecosystems with long recovery times following disturbance;

FURTHER RECOGNISING Articles 3(1)(b) and (2) of the Convention which call on the Commission to apply the precautionary approach and an ecosystem approach to the conservation and management of fishery resources under the mandate of the Convention;

FURTHER RECOGNISING Article 4 of the Convention in which Contracting Parties acknowledge their duty to cooperate to ensure compatibility of (CMMs) established for fishery resources that are identified as straddling areas under national jurisdiction and the adjacent high seas of the Convention Area;

MINDFUL of Article 31(1) of the Convention which calls on the Commission to cooperate with other regional fisheries management organisations (RFMOs), the Food and Agriculture Organization of the United Nations (FAO), other specialised agencies of the United Nations and other relevant organisations on issues of mutual interest;

RECALLING that in 2007, Participants in the International Consultations on the Establishment of the South Pacific RFMO adopted voluntary interim management measures, including *inter alia*, for the management of bottom fisheries in the Convention Area;

NOTING United Nations General Assembly (UNGA) Resolution 61/105 which calls upon RFMOs to assess, on the basis of the best available scientific information, whether individual bottom fishing activities would have significant adverse impacts on vulnerable marine ecosystems (VMEs), and to ensure that if it is assessed that these activities would have significant adverse impacts, they are managed to prevent such impacts, or not authorised to proceed;

FURTHER NOTING UNGA Resolution 64/72 which calls upon RFMOs to establish and implement appropriate protocols for the implementation of UNGA Resolution 61/105, including definitions of what constitutes evidence of an encounter with a VME, in particular threshold levels and indicator species; and to implement the FAO International Guidelines for the Management of Deep-sea Fisheries in the High Seas (FAO, 2009; FAO Deep-sea Fisheries Guidelines) in order to sustainably manage fish stocks and protect VMEs;

FURTHER NOTING UNGA Resolution 66/68 which encourages RFMOs to consider the results available from marine scientific research, including those obtained from seabed mapping programmes concerning the identification of areas containing VMEs, and to adopt CMMs to

prevent significant adverse impacts from bottom fishing on such ecosystems, consistent with the FAO Deep-sea Fisheries Guidelines, or to close such areas to bottom fishing until such CMMs are adopted, as well as to continue to undertake further marine scientific research, in accordance with international law as reflected in Part XIII of the 1982 Convention;

FURTHER NOTING UNGA Resolutions 71/123 and 72/72 which call upon RFMOs to use the full set of criteria in the FAO Deep-sea Fisheries Guidelines to identify where VMEs occur or are likely to occur as well as for assessing significant adverse impacts, to ensure that impact assessments, including for cumulative impacts of activities covered by the assessment, are conducted consistent with the FAO Deep-sea Fisheries Guidelines, are reviewed periodically and are revised whenever a substantial change in the fishery has occurred or there is relevant new information, and that, where such impact assessments have not been undertaken, they are carried out as a priority before authorising bottom fishing activities, and to ensure that CMMs are based on and updated on the basis of the best available scientific information, noting in particular the need to improve effective implementation of thresholds and move-on rules;

Suggested new preambular paragraphs following UNGA Resolution 77/118 (2022)

BEARING IN MIND the FAO Deep-sea Fisheries Guidelines are generally recommended international minimum standards, that the description in the FAO Deep-sea Fisheries Guidelines describe of what constitutes significant adverse impacts, factors to be considered when determining the scale and significance of an impact, what constitutes temporary impacts and factors to be considered in determining whether an impact is temporary;

REAFFIRMING the steps already taken by the Commission to address the impacts of large-scale pelagic driftnets and all deepwater gillnets in the Convention Area, through the implementation of CMM 08-2019 (Gillnetting);

RECOGNISING Articles 20(1)(a) and (d) of the Convention, which provide that the CMMs adopted by the Commission shall include measures to ensure the long-term sustainability of fishery resources and promote the objective of their responsible utilisation, and to protect the habitats and marine ecosystems in which fishery resources and non-target and associated or dependent species occur from the impacts of fishing, including measures to prevent significant adverse impacts on VMEs and precautionary measures where it cannot adequately be determined whether VMEs are present or whether fishing would cause significant adverse impacts on VMEs;

FURTHER RECOGNISING Article 22 of the Convention, which provides that a fishery that has not been subject to fishing or has not been subject to fishing with a particular gear type or technique for ten years or more shall be opened only when the Commission has adopted cautious preliminary CMMs in respect of that fishery, and, as appropriate, non-target and associated or dependent species, and appropriate measures to protect the marine ecosystem in which that fishery occurs from adverse impacts of fishing activities;

ADOPTS the following CMM in accordance with Articles 8, 20, 21 and 22 of the Convention:

Objective

1. The objective of the CMM together with CMM 03a-2021 (Deepwater Species) is, through the application of the precautionary approach and an ecosystem approach to fisheries management, to ensure the long-term conservation and sustainable use of deep sea fishery resources, including target fish stocks as well as non-target

or associated and dependent species, and, in doing so, to safeguard the marine ecosystems in which these resources occur, including *inter alia* the prevention of significant adverse impacts on vulnerable marine ecosystems.

Definitions

2. For the purposes of this CMM, the term “bottom fishing” is defined as fishing using any gear type likely to come in contact with the seafloor or benthic organisms during the normal course of operations, and includes *inter alia*:
 - a) “Bottom trawl” which is defined as fishing using a trawl net that is designed to be pulled through the water and to come into contact with the seabed;
 - b) “Mid-water trawl” which is defined as fishing for bentho-pelagic species using a trawl net that is designed to be pulled through the water near the seabed and designed not to come into extended contact with the seabed;
 - c) “Bottom line” which is defined as fishing using a line to which a hook or hooks (whether baited or not) are attached and rigged to sink and fish on or near the seabed. This includes, but is not limited to, longlines, hand lines, drop lines, trot lines, and dahn lines.
3. For the purposes of this CMM, the term “vulnerable marine ecosystem” (VME) means a marine ecosystem that has the characteristics referred to in paragraph 42 of, and elaborated in the Annex to, the FAO Deep-sea Fisheries Guidelines.
4. For the purposes of this CMM, the term “Evaluated Area” means those parts of the Convention Area that are within the area starting at a point of 24°S latitude and 146°W, extending southward to latitude 57° 30S, then westward to 150°E longitude, northward to 55°S, westward to 143°E, northward to 24°S and eastward back to point of origin (Annex 1).
5. For the purposes of this CMM, the term “Management Area(s)” means those parts of the Evaluated Area specified in paragraph 13.
6. For the purposes of this CMM, the term “fishing year” means the period starting 0001 hours UTC on 1 January and ending 2359 hours on 31 December in the same year.

~~6.~~ 6bis For the purposes of this CMM, ‘Fishery Management Area’ has the same meaning as in CMM 03a-2021

General Provisions

7. This CMM applies to the entire Convention Area.
8. This CMM together with CMM 03a-2021 (Deepwater Species) are adopted as cautious preliminary CMMs consistent with Article 22(1) of the Convention.
9. This CMM together with CMM 03a-2021 (Deepwater Species) applies to all fishing vessels flying the flag of a Member or Cooperating non-Contracting Party (CNCP) to the South Pacific Regional Fisheries Management Organisation (SPRFMO) engaging or intending to engage in bottom fishing in the Convention Area.
10. Members and CNCPs shall prohibit vessels flying their flag from participating in bottom fishing in the Convention Area other than in accordance with the provisions of this CMM together with CMM 03a-2021 (Deepwater Species).
11. Only fishing vessels duly authorised pursuant to Article 25 of the Convention and in accordance with CMM 05-2022 (Record of Vessels) that are flagged to Members and CNCPs shall participate in bottom fishing in the Convention Area.
12. No Member or CNCP shall authorise vessels flying their flag to engage in any bottom fishing in the Convention Area unless:
 - a) Authorisation has been given by the Commission under paragraph 21(d)(i); or
 - b) approval has been given by the Commission under paragraph 14 of CMM 13-2021 (Exploratory Fisheries).

Bottom Fishing Management Areas

13. The Commission hereby establishes within the Evaluated Area the following Management Areas, the coordinates for which are provided in Annex 4:

a) **Bottom trawl Management Area**

b) Mid-water trawl Management Area

c) Bottom line Management Area

14. Bottom fishing in the Convention Area shall occur only in the three Management Areas established in paragraph 13 and in accordance with the terms of this CMM together with CMM 03a-2021 (Deepwater Species). CMM 13-2021 (Exploratory Fisheries) does not apply to bottom fishing in the three Management Areas established in paragraph 13.

15. Notwithstanding paragraphs 10 and 14, proposals to undertake bottom fishing:

- a) outside a Management Area; or
- b) inside a Management Area using bottom fishing methods other than bottom trawl, midwater trawl or bottom line fishing; or
- c) in a mid-water trawl Management Area using bottom trawl gear or in a bottom line Management Area using bottom trawl or mid-water trawl gear; or
- d) inside a Management Area targeting species not previously targeted in the area proposed to be fished (unless the species has regularly been caught as part of an existing fishery);

shall be handled in accordance with CMM 13-2021 (Exploratory Fisheries).

16. Unless a Member or CNCP is fishing in an exploratory fishery established pursuant to CMM 13-2021 (Exploratory Fisheries), Members and CNCPs shall ensure that vessels flying their flag comply with the following provisions:

- a) Bottom trawling shall only occur in a bottom trawl Management Area;
- b) Midwater trawling shall only occur in a midwater trawl Management Area or a bottom trawl Management Area;
- c) Bottom lining shall only occur in a Management Area.

17. The Commission may in future establish, disestablish, or adjust the boundaries of the Evaluated Area or any Management Area, based on advice from the Scientific Committee.

18. **Where VMEs are known to occur or are likely to occur based on the best available scientific information, the Commission shall close such areas to bottom fishing and ensure that bottom fishing does not proceed unless the Commission has established measures to prevent significant adverse impacts on vulnerable marine ecosystems. No later than at its 2023 annual meeting, the Commission shall decide on the level of protection required to prevent significant adverse impacts on VMEs, taking into account the advice and recommendations of the Scientific Committee.**

DSCC: Language from 61/105 para c

Marine Mammals, Seabirds, Reptiles and Other Species of Concern³²

³² "Other species of concern" means the list contained in Annex 14 of CMM 02-2022 (Data standards).

Assessment of Proposed Bottom Fishing

21. Subject to paragraph 15, all proposals to undertake bottom fishing in one of the Management Areas established in paragraph 13 shall be subject to an assessment process, based on the best available scientific information and taking into account the history of bottom fishing in the areas proposed and cumulative impacts of past and proposed fishing. The assessment will determine if such fishing would contribute to having significant adverse impacts on VMEs, and to ensure that if it is determined that this fishing would make such contributions, that they are managed to prevent such impacts or not authorised to proceed. The assessments shall follow the following procedures:

- a) Each Member or CNCP proposing to participate in bottom fishing activities shall submit to the Scientific Committee a proposed assessment that meets the SPRFMO Bottom Fishery Impact Assessment Standard (SPRFMO BFIAS³³) with the best available data including consideration of cumulative impacts, not less than 60 days prior to the annual meeting of the Scientific Committee. BFIAs shall be prepared using a scale no coarser than the Fishery Management Area and shall include assessments of potential impacts on VMEs. These submissions shall also include the mitigation measures proposed by the Member or CNCP to prevent such impacts.
- b) The Scientific Committee shall undertake a review of the proposed assessment and provide advice to the Commission on:
 - i. whether the proposed bottom fishing would contribute to having significant adverse impacts on deep sea fish stocks for which no stock assessment has been completed, bycatch species and/or VMEs and, if so, whether any proposed or additional mitigation measures would prevent such impacts.
 - ii. which areas are known or likely to contain VMEs and should be closed to prevent significant adverse impacts on such VMEs;
 - iii. what areas, based on scientific information, where deep-water species and vulnerable marine ecosystems are likely to better survive impacts of climate change and ocean acidification, and what measures should be established to support their resilience; {2022 resolution para 218}
 - iv. data availability, especially with regard to baseline data and the spatial distribution and connectivity of vulnerable marine ecosystems, including their associated and dependent species {2022 para 212}
- c) In its review of the proposed assessment, the Scientific Committee may use additional information available to it, including information from other fisheries in the region or similar fisheries elsewhere. The Scientific Committee is not obliged to consider, or provide advice on, proposed assessments provided after the deadline for submission of proposed assessments contained in paragraph 21(a).
- d) On the basis of the Scientific Committee's review of the submitted assessment, taking into account any recommendations and advice of the Scientific Committee and in line with the precautionary approach, the Commission shall consider:
 - i. consider whether, and if applicable the extent to which, bottom fishing in the Management Area(s) for which the proposed assessment was conducted should be authorised; ~~i~~
 - ii. which areas known or likely to contain VMEs are be closed to prevent significant adverse impacts on VMEs;

³³ As approved by the seventh session of the Scientific Committee 2019, available at: <https://www.sprfmo.int/assets/Fisheries/Science/SPRFMO-Bottom-Fishery-Impact-Assessment-Standard-2019.pdf>

■~~iii.~~ which, if any, additional measures to those proposed are required pursuant to Article 20 to prevent significant adverse impacts on VMEs;

■~~iv.~~ which, if any, additional precautionary measures are required where it cannot adequately be determined whether VMEs are present or whether fishing could cause significant adverse impacts on VMEs; and

■~~v.~~ in relation to an application to target a species for which no total catch limit exists, ~~consider~~ an exemption for such a Member or CNCP to paragraph 10 of CMM 03a-2021 (Deepwater Species), bearing in mind the need to be precautionary.

22. Members and CNCPs whose bottom fishing proposal has been authorised by the Commission under paragraph 21(d)(i) shall ensure that a proposed assessment meeting the requirements contained in paragraph 21(a) is submitted to the Scientific Committee and Commission at least every 3 years, and also when a substantial change in the fishery has occurred such that it is likely that the risk or impact of the fishery may have changed.

23. The Secretariat shall make publicly available on the SPRFMO website all assessments submitted in accordance with paragraph 21(a) within three days of receipt and shall invite public comment for 30 days from the date of publication on such assessment. The Secretariat shall also make the Scientific Committee's review of such assessments public in accordance with its usual procedures,

24. The Scientific Committee shall review, and update if required, the SPRFMO BFIAS every 5 years, starting in 2025, to ensure that it reflects, as appropriate, best practice.

~~24.~~ 24 bis The Scientific Committee shall take all reasonable steps to obtain more biological information on the species that comprise VMEs, including their associated and dependent species, the assessment of significant adverse impacts on vulnerable marine ecosystems, and protecting and conserving biodiversity, including beyond VMEs, as well as the consistent application of the FAO Deep-Sea Guidelines; {2022 resolution 211} and as improve data availability, especially with regard to baseline data and the spatial distribution and connectivity of VMEs, including their associated and dependent species, while recognizing the importance of international collaboration for this purpose. {2022 resolution 212}

Encounters with Potential VMEs

25. For the purposes of this section of the CMM, the term "VME indicator taxa" means any benthic organism listed in Annex 5.

26. For the purposes of this section of the CMM, the term "Encounter" means catch of a VME indicator taxa at or above threshold levels as set out in paragraph 27.

27. Where VME indicator taxa are encountered in any one tow at or above the weight threshold **in Annex 6A, or three or more different VME indicator taxa at or above the weight thresholds in Annex 6B**, Members and CNCPs shall require any vessel flying their flag to:

- a) cease bottom fishing immediately within an encounter area of one (1) nautical mile either side of the trawl track extended by one (1) nautical mile at each end;
- b) report the encounter immediately to the Member or CNCP whose flag the vessel is flying and the Secretariat, in accordance with the Guidelines for the preparation and submission of notifications of encounters with potential VMEs, contained in Annex 7.

28. In the event of an encounter, Members and CNCPs shall cooperate to the extent possible with the Secretariat and other Members or CNCPs engaged in bottom fishing to exchange such data and information as may be relevant to the Scientific Committee's consideration of the encounter area.

29. On receipt of a notification under paragraph 27(b) the Secretariat shall:

- a) record the location of the encounter area;
- b) within three (3) working days of receipt, notify all Members and CNCPs that bottom fishing is suspended in the encounter area in paragraph 27(a) ~~and-~~

(c) Publicise the encounter area on the internal part of the SPRFMO website for the duration of the suspension

30. Members and CNCPs shall ensure that vessels flying their flags do not bottom fish in an encounter area notified under paragraph 29(b) unless and until such time as the Commission determines management actions under paragraph 33 that would permit the resumption of bottom fishing in the area.

31. Members and CNCPs shall submit to the Scientific Committee³⁴ a detailed description of each encounter by vessels flying their flag that resulted in a temporary suspension pursuant to paragraph 27, a comparison of the encounter with the existing model prediction, and suggested management actions to prevent significant adverse impacts on VMEs³⁵. Members should provide as much detail as possible to verify whether a VME is likely to be present at the encounter site and/or the surrounding area, whether a significant adverse impact has occurred, and the risk of a significant adverse impact occurring in the future.

32. The Scientific Committee, at its next annual meeting, shall review all encounters reported pursuant to paragraph 27(b) once the relevant Member or CNCP has provided its review pursuant to paragraph 31, including considering the extent to which encounters are consistent or inconsistent with VME habitat suitability model predictions, and provide advice on management actions proposed by the relevant Member or CNCP under paragraph 31 and any alternate or additional ~~other~~ management actions the Scientific Committee considers appropriate. The Scientific Committee shall ~~This review should include consideration of:~~

- a) Consider the detailed analyses provided by a Member or CNCP pursuant to paragraph 31 including;
- i. historical fishing events within 5nm of the encounter tow, in particular, any previous encounters, and all information on benthic bycatch;
 - ii. model predictions for all VME indicator taxa;
 - iii. details of the relevant fishing activity, including the bioregion; and
 - iv. any other information the Scientific Committee considers relevant.

b) review the adequacy of the information submitted pursuant to paragraph 31, including the robustness of the analysis.

c) apply the FAO Deep-Sea Fisheries Guidelines

d) ensure its advice and recommendations arising from the review are provided with the objective of avoiding significant adverse impacts on VMEs

e) consider whether an area or areas should be closed to prevent significant adverse impacts on VMEs,

f) use the full set of criteria in the FAO Deep-Sea Guidelines to identify where VMEs occur or are likely to occur, as well as for assessing significant adverse impacts on such ecosystems, including their associated and dependent species; {2022 resolution 213(a)}

g) ensure that the precautionary approach is applied, including in the utilization of impact assessments to inform management decisions and consideration of significant adverse impacts on VMEs, including their associated and dependent specie; {2022 resolution 213 (c)}

h) ensure that the precautionary approach is applied, including in the utilization of impact assessments to inform management decisions and consideration of significant adverse impacts on

³⁴ Reviews shall, to the extent possible, be undertaken promptly and be submitted to the next Scientific Committee meeting by the Member of CNCP whose flag the vessel was flying at the time of the encounter. Where a Member or CNCP does not have the capacity to undertake the review within that timeframe, including because: the encounter has occurred immediately prior to the next annual Scientific Committee meeting; or a Member or CNCP other than the flag State of the vessel which reported the encounter agrees to take responsibility for the review; or if the encounter is the subject of a domestic investigation or legal process which limits the disclosure of information relevant to the assessment, then the relevant Member(s) and/or CNCP(s) shall inform the Scientific Committee of the circumstances and, as the case requires, an indication of when the review will be provided to the Scientific Committee.

³⁵ Relevant outputs from habitat suitability models (e.g. shapefiles of predicted distributions) will be made available to Members.

VMEs, including their associated and dependent species; {2022 resolution para. 213(c)}

i) Apply the considerations in paragraph 21(d) where applicable.

32bis Notwithstanding paragraph 32, the Scientific Committee may defer consideration of an encounter if:

a) there is inadequate information to provide meaningful advice and recommendations; ~~and/or~~

b) The relevant Member of CNCP has notified the Scientific Committee of a delay pursuant to paragraph 31; or

~~b)c) if the encounter has occurred prior to the Scientific Committee meeting and there been insufficient time for the flag State to present the relevant information to or for other Members or CNCPs to review the information within the normal timeframes for the submission of working papers to the Scientific Committee.~~

33. ~~Taking into account the Scientific Committee's review of each encounter and its advice on management actions,~~
At its next annual meeting, the Commission shall determine, for each encounter area, management actions to prevent significant adverse impacts on VMEs for each encounter area, which may include: the closing of some areas to some or all bottom fishing gear, temporal restrictions, spatial restriction, reopening areas. Management actions determined by the Commission will apply as appropriate, unless otherwise determined, from the conclusion of the relevant Commission meeting. The Commission shall base its decision on the Scientific Committee's advice; and be satisfied that its decision is consistent with the requirements of the Convention, including Article 3(2)(a).

33bis For the avoidance of doubt, each VME encounter shall be assessed against the requirements of the relevant CMM in effect at the time of the encounter. However, this shall not preclude the Scientific Committee and/or the Commission from taking into account the best available science in relation to the encounter in discharging their respective functions within the encounter review process.

General provisions in relation to the scientific review of information

34. Members and CNCPs shall submit to the Secretariat annual reports of all benthic bycatch data from vessels flying their flag, consistent with CMM 02-2022 (Data Standards), as part of their annual reports to the Scientific Committee, to enable an ongoing review of the effectiveness of the spatial management arrangements. By no later than its annual meeting in 2021, the Scientific Committee shall develop a review process to provide for ongoing monitoring and feedback.

35. At its annual meeting in 2021, the Scientific Committee shall review and provide advice on the effectiveness of the applied management measures, including:

- a) VME indicator thresholds;
- b) the Management Areas;
- c) the number of encounters;
- d) the relationship between benthic bycatch from fishing vessels (including, inter alia, assessing repeated false negatives of encounter events) and the habitat suitability models;
- e) the relationship of benthic bycatch to estimates of abundance of VME taxa, where information is available;
- f) the appropriateness of the management approach (e.g. scale);
- g) additional relevant VME indicator taxa or species that have not been modelled, assessed or for which thresholds have not been established;
- h) refinement of the encounter protocol;
- i) measures to prevent the catch of and/or impacts on rare species; and
- j) anything else the SC considers relevant]

to ensure the measure is achieving its objective and the objectives of the Convention.

36. The Scientific Committee shall review all available data and provide advice on the ongoing effectiveness of the management measures in this CMM to ensure the measure meets its objective and the objectives of the Convention and implements the relevant United Nations General Assembly Resolutions³⁶.

36bis From 2023, the Scientific Committee shall adopt the Fishery Management Area as the appropriate scale of management for assessing the performance of the VME spatial management scenarios that underpin this CMM.

36ter At its annual meeting in 2023, the Scientific Committee shall develop a biologically-relevant multi spatial-scale risk-based approach to assess encounters with VME indicator taxa. The Scientific Committee shall take into account the Convention and the FAO DeepSea Guidelines and may consider a broad range of scales in the context of the best available science on, inter alia, the distribution of VME across spatial scales.

36quater By no later than its 10th meeting, the Scientific Committee shall develop an Encounter Review Standard taking into account the guidance contained in paragraph [24(e)] of of Bottom Fishing Review [insert paper ref]

Nothing in this CMM shall prevent Members or CNCPs from taking additional measures compatible with this measure in relation to encounters with VME indicator taxa below the threshold in paragraph 27.

Monitoring and Control of Bottom Fishing Activities

36-37. Members and CNCPs shall:

- a) ensure that vessels that fly their flag and participate in bottom fishing:
 - are equipped and configured so that they can comply with all relevant SPRFMO CMMs;
 - act in accordance with CMM 06-2020 (Commission VMS), polling once every 30 minutes for the duration of the trip;³⁷
 - report tow or set start and end position to 1/100th degree resolution - decimal format, notwithstanding the Annexes of CMM 02-2022 (Data standards).
- b) only authorise vessels flying their flag to fish in the Convention Area where they are able to exercise their responsibilities as a flag State under the Convention and all relevant SPRFMO CMMs;
- c) ensure that they meet the level of observer coverage specified in this CMM to collect data in accordance with this and other CMMs;
- d) prohibit vessels flying their flag from participating in bottom fishing if the agreed minimum required data submissions have not been provided in accordance with the agreed subset of the vessel identification data requirements;
- e) in respect of each vessel that flies their flag and participates in bottom fishing, submit VMS reports to the Secretariat in accordance with CMM 06-2020 (Commission VMS).

Observer Coverage

37-38. All Members and CNCPs participating in bottom fishing pursuant to this CMM shall ensure scientific observer coverage of trips for vessels flying their flag consistent with the minimum observer coverage levels set out in Annex 8 and shall ensure that such observers collect and report data as described in CMM 02-2022 (Data

³⁶ UNGA Resolutions 61/105, 64/72, 66/68, 71/123, 72/72, 77/188 and any subsequent resolutions adopted by the United Nations General Assembly.

³⁷ This obligation shall apply to all trips in which the vessel departs port with the intention of entering the Convention Area. The term “duration of the trip” commences from the time the vessel departs from port, includes all times that it is in the Convention Area and concludes once it enters port.

Standards).

~~38-39.~~ The Commission shall review the appropriateness of the minimum observer coverage levels specified in Annex 8 of this CMM at its annual meeting in 2023~~31~~, taking into account the bottom fishing impact assessment and the SC advice and recommendations therein.

~~39-40.~~ Nothing in this measure shall affect the rights of Members and CNCPs to apply higher levels of observer coverage than set out in Annex 8, in accordance with their domestic requirements.

Electronic Monitoring

~~40-41.~~ Members and CNCPs may also require vessels flying their flag to have an electronic monitoring system installed and operating that is capable of recording (including visually) and storing recordings of fishing events for data collection and verification purposes.

42bis VME Closures

Closing identified VMEs or Protection of Identified Vulnerable Marine Ecosystems

42A Taking into account the advice of the Scientific Committee, the Commission shall identify areas as vulnerable marine ecosystems and list them as Annex 9.

42.B All bottom fishing activities shall be prohibited within the areas listed on Annex 9.

Review

~~42.~~ The Commission shall review this CMM ~~in 2023 and~~ at least every 3 years ~~thereafter~~, and in doing so, take appropriate action to meet the objectives of this CMM and the Convention, in view of the advice and recommendations of the Scientific Committee. Each such review shall consider the protocol for encounters with VME indicator taxa and the appropriateness of applied management measures. The Commission shall, ~~for each review, also~~ take into account relevant technical information from ~~the~~ United Nations bottom fishing review ~~scheduled for 2022 processes~~, any related resolutions adopted by the United Nations General Assembly (UNGA), and the United Nations Food and Agriculture Organization's International Guidelines for the Management of Deep-Sea Fisheries in the High Seas. The Commission shall make any modification to the CMM as is required to meet its objective.

~~41.~~ ~~43bis Notwith~~standing paragraph 43, ~~the~~ the Commission shall also review this CMM in 2024, focusing on any new information available from UNGA's review.

~~42.~~ An intersessional working group shall review this CMM in accordance with the Intersessional Work Plan for Reviewing CMM 03-2022 and present the results of its work to the Commission in 2023.

[annexes 1-8 omitted]

New Annex 9: Identified Vulnerable Marine Ecosystem area closed to bottom fishing

Area or FMA

Co-ordinates

Defined area

Annex 2:

SPRFMO and Climate Change

Lyn Goldsworthy

22 December 2021

The Intergovernmental Panel on Climate Change (IPCC) identified core impacts, mitigation and adaptation strategies that apply to SPRFMO jurisdiction and target species. The IPCC 2019 Special Report (Bindoff et al, 2019) identified the following observed and projected impacts of anthropogenic heating and acidification relating to SPRFMO:

- Range shifts in target and dependent and related species, driven by changing ocean currents;
- Alterations of the biogeochemical conditions and productivity of Eastern Boundary currents;
- Loss of habitat from coral bleaching;
- The decline of deep ocean oxygen; and
- Ocean acidification and its corresponding risk to marine biomass.

The IPCC agreed in 2014 (Pörtner et al 2014) that “*given the importance of the Ocean to all countries, there is need for the international community to progress rapidly to a ‘whole of ocean’ strategy for responding to the risks and challenges posed by anthropogenic ocean warming and acidification.*”

The Glasgow Climate Pact, “noting the importance of ensuring the integrity of all ecosystems, including in forests, the ocean and the cryosphere, and the protection of biodiversity, recognized by some cultures as Mother Earth,” “emphasizes the importance of protecting, conserving and restoring nature and ecosystems, including forests and other terrestrial and marine ecosystems, to achieve the long-term global goal of the Convention by acting as sinks and reservoirs of greenhouse gases and protecting biodiversity, while ensuring social and environmental safeguards.” (21)

Thus far, SPRFMO has not addressed the potential impact of climate changes on the resources for which they are responsible. Given the growing evidence of expected impacts on marine environments, it seems timely for SPRFMO to initiate work on collating scientific information on projected impacts and considering possible response actions.

A review of the literature provides a wide range of suggestions for appropriate management responses for marine environments experiencing rapid environmental changes associated with climate change (see e.g., CBD, 2017; CBD, 2019; FAO, 2002; FAO, 2007; FAO, 2009; FAO 2010; FAO, 2012; IPBES, 2019; Laffoley, 2020; Laffoley et al, 2019; Lo, 2016; Michonski & Levi, 2010; Pentz et al, 2018; Tittensor et al, 2019; UNFCCC, 2019). These include, *inter alia*:

- implementing the precautionary approach to address the current lack of certainty around predicted effects of rapid climate change on individual species and broader ecosystems and the potential advent of feedback loops;
 - implementing the ecosystem approach to resource management to ensure that relationships between harvested species and those dependent or related, as well as the impact on broader ecosystems, are considered when determining sustainable fishery levels and controls;
 - proactive research and monitoring to enhance early detection and understanding of climate change effects;
-

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- establishing networks of marine protected areas explicitly designed to address both climate change and biodiversity loss;
- increasing international cooperation to maximise distribution of the latest available scientific information and joint scientific and policy initiatives;
- including climate impact considerations in all proposals and working documents to facilitate the integration of climate change considerations in decisions;
- adopting substantive precautionary and ecosystem-based protection and control measures for human activities;
- developing both medium (3–5 year) and long-term management strategy considerations, proposals and decisions to allow for dynamic and responsive action;
- strengthening monitoring and compliance measures to reduce impacts of unregulated activities that may exacerbate the effects of climate change; and
- incorporating values, uses and benefits beyond fisheries opportunities in management decisions.

Table 1 provides a summary of mechanisms, approaches or actions taken by SPRFMO against each of these proposals and provides some suggestions for going forward.

Table 1. Commission responses to climate change management options

POTENTIAL RESPONSE	EXISTING	PROPOSED ACTION GOING FORWARD
Precautionary approach	Reference in Convention: <ul style="list-style-type: none"> - Preamble - Article 2: Objective - Article 3: Conservation and Management Principles and Approaches - Article 8: Functions of the Commission - Article 10: Scientific Committee References in several CMMs to need to apply	<ul style="list-style-type: none"> - Review of CMMs to identify where specific consideration of climate impact should be included - Incorporation of climate impact statements in new CMMs and exploratory fisheries plans
Ecosystem-based approach (EBA)	Reference in Convention: <ul style="list-style-type: none"> - Preamble - Article 2: Objective - Article 3: Conservation and Management Principles and Approaches - Article 8: Functions of the Commission - Article 10: Scientific Committee References in some CMMS to need to apply	<ul style="list-style-type: none"> - Incorporate EBA approach into all existing and new CMMs relating to management of species and fish stocks.

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	However, SPRFMO is yet to apply a consistent EBA approach to its management of specific fisheries	
Increased research and monitoring initiatives to progress understanding	Research is ad hoc. No SPRMO-organised research and monitoring programs designed to identify or study climate impacts	<ul style="list-style-type: none"> - Establish an intersessional SC working group to develop research and monitoring programs to progress understanding
MPA network for biodiversity refugia and ecosystem resilience	<p>There is no explicit provision in SPRFMO for marine protection for biodiversity purposes or ecosystem resilience</p> <p>However: the following requirements provide openings for SPRFMO to pursue such protection</p> <ul style="list-style-type: none"> - Article 3 1(a)(vii) - Article 8 - Article 10 2(c) 	<ul style="list-style-type: none"> - Proactive and systematic identification of VMEs across the Convention area - Proactive and systematic identification of climate change-vulnerable species (both fished and unfished) and habitats - Initiate discussions on how to deliver appropriate protection for the above and to build ecosystem resilience in the Convention area
Strong international cooperation to maximise information sharing and joint initiatives	<p>Article 31 requires cooperation with FAO, other relevant UN agencies and with other relevant organisations.</p> <p>It has MOUs with US NOAA, WCPFC, RMIT University, CPPS, CCAMLR, ACAP and the Network for the Exchange of Information and Shared Experiences Between Latin American and Caribbean Countries to prevent, deter, and eliminate IUU fishing.</p>	<ul style="list-style-type: none"> - Review existing cooperative arrangements for opportunities for joint research and climate change response actions - Review other opportunities for such arrangements
Strong protection and control measures for human activities	Currently has 23 active CMMs	<ul style="list-style-type: none"> - Review capacity of each existing CMM and the CMMs as a group to deliver objective in a climate-changing world
Inclusion of climate change consideration in all decisions, including climate impact statements in fisheries notifications	Not yet considered or implemented	<ul style="list-style-type: none"> - Establish an intersessional SC group to develop advice on scientific requirements - Establish an intersessional Commission group to develop response plan options
Both 3–5 year and long-term management strategies and decision	Not yet	

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processes supporting responsive action		
Strong monitoring and compliance to reduce unregulated activities	<p>References in Convention:</p> <ul style="list-style-type: none"> - Preamble - Article I: Definitions - Article III: Conservation and Management Principles and Approaches - Article VIII: Functions of the Commission <p>Number of CMMs designed to maximise compliance of Contracting Parties, including</p> <p>CMM 04 - IUU vessel list</p> <p>CMM 15 - on vessels without nationality in the Convention Area</p>	<ul style="list-style-type: none"> - Review existing Illegal, unreported and unregulated unreported fishing (IUU) mitigation measures to assess further requirements and opportunities - Review impact of non-compliance, including by Contracting Parties, and take actions to reduce.
incorporating values, uses and benefits beyond fisheries opportunities in management decisions	Not yet considered or implemented	

Conclusion

SPRFMO's objective set out in Article 2 is affected in all parts by climate change, which threatens the long-term conservation and sustainable use of fishery resources and requires action to safeguard the marine ecosystems in which these resources occur. A dedicated work programme of action by SPRFMO is needed this could be initiated via an intersessional Working Group to report with recommendations to the next SPRFMO Commission meeting.

References

Bindoff, N.L., W.W.L. Cheung, J.G. Kairo, J. Arístegui, V.A. Guinder, R. Hallberg, N. Hilmi, N. Jiao, M.S. Karim, L. Levin, S. O'Donoghue, S.R. Purca Cuicapusa, B. Rinkevich, T. Suga, A. Tagliabue, and P. Williamson, 2019. Changing Ocean, Marine Ecosystems, and Dependent Communities. In: *IPCC Special Report on the Ocean and Cryosphere in a Changing Climate* [H.-O. Pörtner, D.C. Roberts, V. Masson-Delmotte, P. Zhai, M. Tignor, E. Poloczanska, K. Mintenbeck, A. Alegría, M. Nicolai, A. Okem, J. Petzold, B. Rama, N.M. Weyer (eds.)]. In press.

CBD (Secretariat of the Convention on Biological Diversity), 2009. *Connecting biodiversity and climate change mitigation and adaptation: report of the second ad hoc technical expert group on biodiversity and climate change*. Retrieved from Montreal:

<https://www.cbd.int/doc/publications/cbd-ts-41-en.pdf>

Climate Change in SPRFMO

- CBD, 2017. *The Lima declaration on biodiversity and climate change: contributions from science to policy for sustainable development*. Retrieved from Montreal: <https://www.cbd.int/doc/publications/cbd-ts-89-en.pdf>
- CBD, 2019. Voluntary guidelines for the design and effective implementation of ecosystem-based approaches to climate change adaptation and disaster risk reduction and supplementary information. Retrieved from Montreal: <https://www.cbd.int/doc/publications/cbd-ts-93-en.pdf>
- FAO, 2002. The state of world fisheries and aquaculture 2002. Retrieved from Rome: <http://www.fao.org/3/a-y7300e.pdf>
- FAO, 2007. The state of world fisheries and aquaculture 2006. Retrieved from Rome: <http://www.fao.org/docrep/009/A0699e/A0699e00.htm>
- FAO, 2009. The state of world fisheries and aquaculture 2008. Retrieved from Rome: <http://www.fao.org/docrep/011/i0250e/i0250e00.htm>
- FAO, 2010. The state of world fisheries and aquaculture 2010. Retrieved from Rome: <http://www.fao.org/docrep/013/i1820e/i1820e00.htm>
- FAO, 2012. The state of the world fisheries and aquaculture 2012. Retrieved from Rome: <http://www.fao.org/icalog/inter-e.htm>
- FAO, 2018. The State of World Fisheries and Aquaculture 2018. Retrieved from Rome: <https://www.fao.org/documents/card/en/c/I9540EN/>
- IPBES (Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services), 2019. Summary for policymakers of the global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. Retrieved from Bonn, Germany: https://ipbes.net/sites/default/files/2020-02/ipbes_global_assessment_report_summary_for_policymakers_en.pdf
- Laffoley, D., 2020. *Protecting and effectively managing blue carbon ecosystems to realise the full value to society – a sea of opportunities*. An opinion piece by Dan Laffoley for WWF-UK. In (pp. 42). Woking, Surrey, UK.
- Laffoley, D., J.M. Baxter, J.C. Day, L. Wenzel, P. Bueno, and K. Zischka, 2019. Marine protected areas. In: C. Sheppard (ed.), *World Seas: An Environmental Evaluation*, 2nd ed., Academic Press, pp. 549–569.
- Lo, V., 2016. Synthesis report on experiences with ecosystem-based approaches to climate change adaptation and disaster risk reduction. *Technical Series No. 85. Secretariat of the Convention on Biological Diversity*, Montreal, 106 pages.
- Michonski, K. & M.A. Levi. 2010. *Harnessing international institutions to address climate change*, Council on Foreign Relations, New York. Retrieved from <https://www.jstor.org/stable/resrep00271>
- Pentz, B., N. Klenk, S. Ogle, S., and J.A.D. Fisher, 2018. Can regional fisheries management organizations (RFMOs) manage resources effectively during climate change? *Marine Policy* 92, 13–20, <https://doi.org/10.1016/j.marpol.2018.01.011>.
- Pörtner, H.-O., D.M. Karl, P.W. Boyd, W.W.L. Cheung, S.E. Lluch-Cota, Y. Nojiri, D.N. Schmidt, and P.O. Zavialov, 2014. Ocean systems. In: *Climate Change 2014: Impacts, Adaptation, and Vulnerability*. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Field, C.B., V.R. Barros, D.J. Dokken, K.J. Mach, M.D. Mastrandrea, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R.

Climate Change in SPRFMO

Mastrandrea, and L.L. White (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 411-484.

Tittensor, D.P., M. Beger, K. Boerder, D.G. Boyce, R.D. Cavanagh, A. Cosandey Godin, G.O. Crespo, D.C. Dunn, W. Ghiffary, S.M. Grant, L. Hannah, P.N. Halpin, M. Harfoot, S.G. Heaslip, N.W. Jeffery, N. Kingston, H.K. Lotze, J. McGowan, E. McLeod, C.J. McOwen, B.C. O’Leary, L. Schiller, R. Stanley, M. Westhead, K. L. Wilson, and B. Worm, 2019. Integrating climate adaptation and biodiversity conservation in the global ocean, *Sci. Adv.* 5 (11) 9969, <https://doi.org/10.1126/sciadv.aay9969>.

UNFCCC (UN Framework Convention on Climate Change), 2020. *Report of the conference of the parties on its twenty-fifth session*, Madrid, 2–15 December 2019. Retrieved from https://unfccc.int/sites/default/files/resource/cp2019_13E.pdf

UNFCCC 2021 Outcomes of the Glasgow Climate Change Conference - Advance Unedited Versions (AUVs) <https://unfccc.int/process-and-meetings/conferences/glasgow-climate-change-conference-october-november-2021/outcomes-of-the-glasgow-climate-change-conference>

Annex 3: The Precautionary Approach and Ecosystem Approach in the context of Prevention of Significant Adverse Impacts on Vulnerable Marine Ecosystems.

Duncan E J Currie

Barry Weeber

Introduction

This paper is to describe the role of the precautionary approach and ecosystem approach with respect to SPRFMO and the protection of vulnerable marine ecosystems (VMEs), with a view to upcoming issues to be addressed by the Commission.

The South Pacific Regional Fisheries Management Organization (SPRFMO) Convention³⁸ puts the precautionary approach and ecosystem approach at its core:

The objective of this Convention is, through the application of the precautionary approach and an ecosystem approach to fisheries management, to ensure the long-term conservation and sustainable use of fishery resources and, in so doing, to safeguard the marine ecosystems in which these resources occur.

This applies to the Scientific Committee, as a subsidiary body, as well as the Commission. Under Article 3(1), “[i]n giving effect to the objective of this Convention and carrying out decision-making under this Convention, the Contracting Parties, the Commission and subsidiary bodies established under Article 6 paragraph 2³⁹ and Article 9 paragraph 1⁴⁰ shall: (b) apply the precautionary approach and an ecosystem approach in accordance with paragraph 2.” So there is no doubt that the Scientific Committee shall apply the precautionary approach and an ecosystem approach.

Article 3(2) of the Convention adds specificity:

- (a) The precautionary approach as described in the 1995 Agreement and the Code of Conduct shall be applied widely to the conservation and management of fishery resources in order to protect those resources and to preserve the marine ecosystems in which they occur, and in particular the Contracting Parties, the Commission and subsidiary bodies shall:
 - (i) be more cautious when information is uncertain, unreliable, or inadequate;
 - (ii) not use the absence of adequate scientific information as a reason for postponing or failing to take conservation and management measures; and

³⁸ Convention on the conservation and management of high seas fishery resources in the South Pacific Ocean. Signed 1 February 2010. Entered into force 24 August 2012. At <https://www.sprfmo.int/assets/Basic-Documents/Convention-web-12-Feb-2018.pdf>.

³⁹ Article 6(2) The Organisation shall consist of: (a) a Commission; (b) a Scientific Committee; [...]

⁴⁰ Article 6(1) The Commission may establish other subsidiary bodies, additional to the Scientific Committee [...]

(iii) take account of best international practices regarding the application of the precautionary approach, including Annex II of the 1995 Agreement and the Code of Conduct.

(b) An ecosystem approach shall be applied widely to the conservation and management of fishery resources through an integrated approach under which decisions in relation to the management of fishery resources are considered in the context of the functioning of the wider marine ecosystems in which they occur to ensure the long-term conservation and sustainable use of those resources and in so doing, safeguard those marine ecosystems.

The Scientific Committee is to “provide advice and recommendations to the Commission ...based on [scientific] assessments” of the “status of fisheries resources” including ... catch limits.⁴¹

The Scientific Committee is to “provide advice and recommendations to the Commission and its subsidiary bodies on the impact of fishing on the marine ecosystems in the Convention Area including advice and recommendations on the identification and distribution of vulnerable marine ecosystems, the likely impacts of fishing on such vulnerable marine ecosystems and measures to prevent significant adverse impacts on them.”⁴²

The Commission has a similar task, including to adopt measures to:⁴³ “protect the habitats and marine ecosystems in which fishery resources and non-target and associated or dependent species occur from the impacts of fishing, including measures to prevent significant adverse impacts on vulnerable marine ecosystems and precautionary measures where it cannot adequately be determined whether vulnerable marine ecosystems are present or whether fishing would cause significant adverse impacts on vulnerable marine ecosystems.”

Fish Stocks Agreement

The Fish Stocks Agreement 1995⁴⁴ in Article 6 lays down some specific provisions on the application of the precautionary approach, including that:

“1. States shall apply the precautionary approach widely to conservation, management and exploitation of straddling fish stocks and highly migratory fish stocks in order to protect the living marine resources and preserve the marine environment.”

“2. States shall be more cautious when information is uncertain, unreliable or inadequate. The absence of adequate scientific information shall not be used as a reason for postponing or failing to take conservation and management measures.”

“3. In implementing the precautionary approach, States shall:

“(a) improve decision-making for fishery resource conservation and management by obtaining and sharing the best scientific information available and implementing improved techniques for dealing with risk and uncertainty;”

“(c) take into account, inter alia, uncertainties relating to the size and productivity of the stocks, reference points, stock condition in relation to such reference points, levels

⁴¹ SPRFMO Convention Article 2(b)

⁴² SPRFMO Convention Article 10(2)(c)

⁴³ SPRFMO Convention Article 20(2)(d)

⁴⁴ 1995 Agreement for the Implementation of the Provisions 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. Adopted 04/08/1995 and opened for signature on 4 December 1995. Entered into force 11/12/2001. At https://www.un.org/depts/los/convention_agreements/convention_overview_fish_stocks.htm.

and distribution of fishing mortality and the impact of fishing activities on non-target and associated or dependent species, as well as existing and predicted oceanic, environmental and socio-economic conditions;”

“(d) develop data collection and research programmes to assess the impact of fishing on non-target and associated or dependent species and their environment, and adopt plans which are necessary to ensure the conservation of such species and to protect habitats of special concern.”

“5. Where the status of target stocks or non-target or associated or dependent species is of concern, States shall subject such stocks and species to enhanced monitoring in order to review their status and the efficacy of conservation and management measures. They shall revise those measures regularly in the light of new information.”

These provisions are given more weight since they are made specifically applicable to SPRFMO.⁴⁵

The FAO Code of Conduct⁴⁶ specifically states that:

6.5 States and subregional and regional fisheries management organizations should apply a precautionary approach widely to conservation, management and exploitation of living aquatic resources in order to protect them and preserve the aquatic environment, taking account of the best scientific evidence available. The absence of adequate scientific information should not be used as a reason for postponing or failing to take measures to conserve target species, associated or dependent species and non-target species and their environment.

It then states that:

7.5.2 In implementing the precautionary approach, States should take into account, inter alia, uncertainties relating to the size and productivity of the stocks, reference points, stock condition in relation to such reference points, levels and distribution of fishing mortality and the impact of fishing activities, including discards, on non-target and associated or dependent species, as well as environmental and socio-economic conditions.

While the Code is itself voluntary, the SPRFMO Convention implements the precautionary approach as described in the Code of Conduct.⁴⁷ The bottom fishing CMM 03-2021⁴⁸ in its preamble specifically recognises Articles 3(1)(b) and (2) of the Convention on the precautionary approach and an ecosystem approach, and also recognises Articles 20(1)(a) and (d) of the Convention, including measures to prevent significant adverse impacts on VMEs and precautionary measures where it cannot adequately be determined whether VMEs are present or whether fishing would cause significant adverse impacts on VMEs. Even more directly, the objective of the CMM is, “through the application of the precautionary approach and an

⁴⁵ SPRFMO Convention Article 3(2).

⁴⁶ Code of Conduct for Responsible Fisheries adopted by the Conference of the Food and Agriculture Organisation of the United Nations at its twenty eighth session on 31 October 1995. At <http://www.fao.org/3/i1900e/i1900e00.htm>.

⁴⁷ SPRFMO Convention Article 3(2).

⁴⁸ CMM 03-2021. Conservation and Management Measure for the Management of Bottom Fishing in the SPRFMO Convention Area. At <https://www.sprfmo.int/assets/Fisheries/Conservation-and-Management-Measures/2021-CMMs/CMM-03-2021-Bottom-Fishing-12Mar2021.pdf>.

ecosystem approach to fisheries management, to ensure the long-term conservation and sustainable use of deep sea fishery resources, including target fish stocks as well as non-target or associated and dependent species, and, in doing so, to safeguard the marine ecosystems in which these resources occur, including inter alia the prevention of significant adverse impacts on vulnerable marine ecosystems.”

The CMM requires that for bottom fishing impact assessments, taking into account any recommendations and advice of the Scientific Committee and in line with the precautionary approach, the Commission shall *inter alia* [consider]⁴⁹ which, if any, additional precautionary measures are required where it cannot adequately be determined whether VMEs are present or whether fishing could cause significant adverse impacts on VMEs.

Applicability to the Work of the Commission

The Commission will need to address the findings of the Intersessional Working Group (IWG) and its recommendations.

In all these matters covered by the IWG, there is considerable uncertainty in the underlying data being considered.

Paragraph 119 of Topic 3 lists key uncertainties with setting reliable VME thresholds: setting reliable VME thresholds; catchability; level of VME remaining after an encounter; our understanding of the ecology of VME species, modeling relying on presence-only modeling, recovery time, size and overall area of cover of various VME species and similarity of VMEs between seamounts.

Paragraph 52 of Topic 2 lists more uncertainties:

- *The relationship (if any) between habitat suitability and abundance is uncertain and difficult to estimate;*
- *A subset of VME indicator taxa were modelled (meaning some VME taxa are not modelled);*
- *Data on some environmental variables that are significant predictors of VME distribution are not available or modelled (i.e., substrate type);*
- *The coarse taxonomic resolution of the modelled VME indicator taxa may mask ecological patterns and vulnerabilities at scales of communities, populations and species level;*
- *The spatial scale at which habitat suitability models are predicted may not relate to the spatial scales at which VME indicator taxa are distributed.*

Para 19 of IWG Topic 1 helpfully sets out the limitations of the current understanding and modeling approach:

- *The relationship (if any) between habitat suitability models and taxa abundance is uncertain and difficult to estimate, meaning there is a risk that the amount of “protected” VME (e.g., outside the area open to fishing) is less than predicted by the current presence-only models;*
- *The incompleteness of VME indicator taxa modelled – there are no habitat suitability models for 4 of the VME indicator taxa listed in Annex 5 of CMM03-2022;*

⁴⁹ A word appears to be missing in Paragraph 21(d)(ii) and (iii) but the word ‘consider’ appears immediately above in para (i) so it may be inferred that the missing word is ‘consider’.

- *The coarse taxonomic resolution of the modelled VME indicator taxa, which may mask ecological patterns and vulnerabilities at the scale of populations;*
- *The scale of habitat suitability predictions, which may not relate to all VME distributions and means the habitat suitability index models are limited in their ability to inform assessment and prevention of SAIs at the scales of populations.*

The IWG Paper 3 listed a lengthy number of uncertainties and data insufficiencies: (para 52)

- *The relationship (if any) between habitat suitability and abundance is uncertain and difficult to estimate;*
- *A subset of VME indicator taxa were modelled (meaning some VME taxa are not modelled);*
- *Data on some environmental variables that are significant predictors of VME distribution are not available or modelled (i.e., substrate type);*
- *The coarse taxonomic resolution of the modelled VME indicator taxa may mask ecological patterns and vulnerabilities at scales of communities, populations and species level;*
- *The spatial scale at which habitat suitability models are predicted may not relate to the spatial scales at which VME indicator taxa are distributed.*

What to do when faced with all these uncertainties? The precautionary principle states that when providing advice, the Commission should “be more cautious when information is uncertain, unreliable, or inadequate;” as well as describe and characterize uncertainty associated with advice and disclose boundaries of uncertainty.⁵⁰ The Commission should be particularly cautious in departing from the United Nations General Assembly (UNGA) resolutions.

The 2022 UNGA resolution which followed the UNGA bottom trawling workshop, resolution 77/118, stated that the UNGA:

" 211. Recognizes the need for further progress with regard to obtaining more biological information on the species that comprise vulnerable marine ecosystems, including their associated and dependent species, the assessment of significant adverse impacts on vulnerable marine ecosystems, and protecting and conserving biodiversity, including beyond vulnerable marine ecosystems, as well as the consistent application of the Guidelines;

"212. Calls upon, in this regard, States, regional fisheries management organizations and arrangements and those States participating in negotiations to establish a regional fisheries management organization or arrangement competent to regulate bottom fisheries, to identify and overcome barriers to the implementation of the relevant paragraphs of General Assembly resolutions 64/72, 66/68 and 71/123 such as data availability, especially with regard to baseline data and the spatial distribution and connectivity of vulnerable marine ecosystems, including their associated and dependent species, while recognizing the importance of international collaboration for this purpose, further recognizing that effective management of bottom fisheries is crucial to ensure the long-term sustainability of the sector;

⁵⁰ NAFO in 1999 adopted a resolution on the implementation of the precautionary approach within NAFO. It had previously noted the Roles and Responsibilities of Scientists and Managers outlined in Annex 3 to the Report of the Working Group on Precautionary Approach (NAFO/FC Doc. 98/2). At <https://www.nafo.int/Portals/0/PDFs/fc/1998/fc-98-002.pdf>. That Annex 3 recognised the need to describe and characterize uncertainties.

213 (c) To ensure that the precautionary approach is applied, including in the utilization of impact assessments to inform management decisions and consideration of significant adverse impacts on vulnerable marine ecosystems, including their associated and dependent species;

"216. Encourages, in this regard, States, regional fisheries management organizations and arrangements with the competence to manage deep-sea fisheries, and States participating in negotiations to establish such organizations or arrangements to continue to improve the best available science, carry out further marine scientific research to address the remaining knowledge gaps, in particular with regard to fish stock assessments **to improve understanding of the connectivity of populations of deep-sea fish species** and to base and update conservation and management measures on the best available scientific information, in accordance with international law, as reflected in Part XIII of the Convention;

"218. Calls upon States, individually and through regional fisheries management organizations and arrangements, to take into account the potential impacts of climate change and ocean acidification in taking measures to manage deep-sea fisheries and protect vulnerable marine ecosystems, **including by identifying areas, based on scientific information, where deep-water species and vulnerable marine ecosystems are likely to better survive such impacts, and establishing measures to support their resilience;**"

These recognitions of the importance of more biological information, on associated and dependent species – not just taxa indicating possible VME presence – connectivity, emphasis on protecting and conserving biodiversity, including beyond VMEs and specific invocation of the precautionary approach all need to be carefully taken into account by the Commission.

The Relevance of the Precautionary Approach and Ecosystem Approach to the Spatial Management Approach

Precautionary Approach

The need for precaution has been clear in the face of significant uncertainties in the science underpinning the bottom fishing measure. That need for precaution in treating uncertainties will be very much in evidence in addressing issues on the evaluation of VME encounters (the encounter protocol) and the role, if any, of spatial management. This will need to be borne in mind when considering the IWG recommendations, including the need to be more cautious when information is uncertain, unreliable, or inadequate as well as to adequately describe and characterize uncertainty associated with advice and disclose boundaries of uncertainty.

Ecosystem Approach

In addressing the very complex modelling approaches, addressing the problem of inadequate data and uncertainty in its different manifestations the Commission will need to ensure that it has implemented both the precautionary approach and the ecosystem approach.

Article 10(2)(c) of the Convention specifically requires the SC to provide advice and recommendations on “identification and distribution of vulnerable marine ecosystems, the likely impacts of fishing on such vulnerable marine ecosystems and measures to prevent significant adverse impacts on them” – and here we can emphasise “on them”. This task must be read in conjunction with the task of the Commission under Article 20(2)(d) to adopt measures to “protect the habitats and marine ecosystems in which fishery resources and non-target and associated or dependent species occur from the impacts of fishing, including measures to prevent

significant adverse impacts on vulnerable marine ecosystems and precautionary measures where it cannot adequately be determined whether vulnerable marine ecosystems are present or whether fishing would cause significant adverse impacts on vulnerable marine ecosystems.”

In other words, it must “protect” habitats and marine ecosystems from the impacts of fishing, as well as include measures to prevent significant adverse impacts on VMEs and precautionary measures where it cannot adequately be determined whether VMEs are present or whether fishing would cause significant adverse impacts on VMEs.

These provisions should also be read in conjunction with the UNGA resolutions, commencing with UNGA resolution 61/105,⁵¹ which called upon regional fisheries management organizations (RFMOs) and States to “adopt and implement measures, in accordance with the precautionary approach, ecosystem approaches and international law” the following measures:

- (a) To assess, on the basis of the best available scientific information, whether individual bottom fishing activities would have significant adverse impacts on VMEs, and to ensure that if it is assessed that these activities would have significant adverse impacts, they are managed to prevent such impacts, or not authorized to proceed;
- (b) To identify VMEs and determine whether bottom fishing activities would cause significant adverse impacts to such ecosystems and the long-term sustainability of deep sea fish stocks, inter alia, by improving scientific research and data collection and sharing, and through new and exploratory fisheries;
- (c) In respect of areas where VMEs, including seamounts, hydrothermal vents and cold water corals, are known to occur or are likely to occur based on the best available scientific information, to close such areas to bottom fishing and ensure that such activities do not proceed unless conservation and management measures have been established to prevent significant adverse impacts on VMEs;
- (d) To require members of the RFMOs or arrangements to require vessels flying their flag to cease bottom fishing activities in areas where, in the course of fishing operations, VMEs are encountered, and to report the encounter so that appropriate measures can be adopted in respect of the relevant site;⁵²

The 2020 UNGA fisheries resolution [75/89](#)⁵³ places modeling (both benthic ecosystem modelling and predictive modelling) in context:

200. Recognizes that different types of marine scientific research, such as seabed mapping, mapping of vulnerable marine ecosystems based on information from the fishing fleet, on-site camera observations from remote vehicles, benthic ecosystem modelling, comparative benthic studies and predictive modelling have resulted in the identification of areas where vulnerable marine ecosystems are known or are likely to occur and in the adoption of conservation and management measures to prevent

⁵¹ A/RES/61/105 “61/105. Sustainable fisheries, including through the 1995 Agreement for the Implementation of the Provisions 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, and related instruments. 6 March 2007. At <https://undocs.org/A/RES/61/105>.

⁵² UNGA resolution 61/105 para. 83.

⁵³ UNGA resolution 75/78 (2020). A/RES/75/89. -Sustainable fisheries, including through the 1995 Agreement for the Implementation of the Provisions 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, and related instruments. 18 December 2020. At <https://undocs.org/en/A/RES/75/89>

significant adverse impacts on such ecosystems, including the closure of areas to bottom fishing in accordance with paragraph 119 (b) of resolution 64/72.

In other words, the role of modelling is to identify areas where VMEs are known or to be likely to occur, as well as to assist in adopting measures to prevent SAIs on VMEs, including closure of areas to bottom fishing.

It is not the role of modelling to calculate, for example, how many VMEs can be destroyed to facilitate fishing: this is stated to avoid any impression that the task of the SC is to give the green light to fish on areas that VMEs are known or likely to occur. The UNGA resolutions make this clear, as does the SPRFMO Convention, but in addition, the precautionary approach is clear that the uncertainties need to be taken into account and plans need to be adopted which are necessary to ensure the conservation of species and to protect habitats of special concern.

But beyond this concern, the term itself “protection level options for VME indicator taxa” carries with it an essential flaw in this approach: protection of taxa does not equate with protection of ecosystems. The approach 1) would not prevent SAIs on VMEs according to UNGA resolution 61/105 and (2) would allow for VMEs to be destroyed by bottom trawling even though they are known to occur or likely to occur under paragraph (c).

In essence, the task, at best, equates protection of taxa with protection of VMEs. In its reliance on a model, this is even starker: it is based on some taxa. So even on the narrow basis of protecting taxa it fails because it only protects some taxa. Cryptic and rare species which the model does not account for or address are at risk of destruction or even extinction. But the problem is broader: protection of some taxa, as opposed to VMEs properly considered, is not consistent with the ecosystem approach.

The importance of the ecosystem approach was underlined in Professors Watling and Auster’s paper,⁵⁴ *Vulnerable Marine Ecosystems, Communities, and Indicator Species: Confusing Concepts for Conservation of Seamounts*. The professors argue that VME indicator species are too often conflated to indicate whether a VMEcosystem is present or not, often ignoring the connections of such species to the communities of organisms in which they reside. Focusing on single easily detected species, having been captured in fishing gear as bycatch – as is the case with the modelling undertaken here – does not, they say, equate to the extent of the interactions defining the ecosystem or the connectivity of the vulnerable seafloor community.

The whole community can be vulnerable where only part of a seamount is protected, thus not necessarily protecting the integrity of the seamount communities. This leads to error: Defining significant adverse impacts to indicator species alone merely defines a set of minimum bounds on the effects of human actions on VMEcosystems – it does not necessarily protect the VME itself. Watling and Auster note that on seamounts VME indicator species can be distributed widely, in dense clusters or sparsely. A dense cluster of scleractinian corals or sponges, for example, is not an ecosystem, but is a community, likely one of many that make up the ecosystem. Small species are part of the web of interactions and flow of materials/energy on the seamount. Thus spatial management approaches need to be considered that better address ecologically relevant space and time scales. They emphasise that the concept of a VME is linked to the ecosystem in which populations, communities and habitats are nested and interact at a functional level, whereas too often the concept of indicator species has been conflated with the ecosystem itself.

⁵⁴ Les Watling and Peter Auster. *Vulnerable Marine Ecosystems, Communities, and Indicator Species: Confusing Concepts for Conservation of Seamounts*. 2021. 8 *Frontiers in Marine Science*. DOI=10.3389/fmars.2021.622586 At <https://www.frontiersin.org/articles/10.3389/fmars.2021.622586/full>

Conversely, the sparse distribution (occasional presence) of indicator species may be wrongly interpreted to mean that the species is not within a VME – emphasising “ecosystem”. Relevant to the habitat suitability index (HSI) model, they cite the example of studies purportedly showing *Solenosmilia* VMEs, which in fact show *Solenosmilia* communities, which are only a part of the larger ecosystem. Whole seamounts need to be treated as VMEcosystems or as part of a larger ecosystem, they say.

Finally, Watling and Auster recommend:

- (1) using indicator species to identify individual seamount VMCommunities, recognizing that protecting part of a seamount identified only by the presence and distribution of an indicator species is not enough;
- (2) using a seamount classification system to delimit groups of similar seamounts to focus conservation management efforts and to distinguish between rare and abundant seamount types;
- (3) examining the similarities among adjacent groups of seamounts to see whether they should be considered to be part of a larger ecosystem group; and
- (4) evaluating the spatial extent of these larger units so that significant adverse impacts measures can be used to determine whether to allow some bottom fishing within a seamount ecosystem group.

Implications for the Work of the Commission

The Watling and Auster paper has wide-ranging ramifications for the work of this Commission, which is legally obligated to apply the ecosystem approach. For the encounter protocol, firstly, the assessment of encounters aim at **preventing** “significant adverse impacts”, following UNGA resolution 64/72⁵⁵ para. 119(d):

Establish and implement appropriate protocols for the implementation of paragraph 83 (d) of its resolution 61/105, including definitions of what constitutes evidence of an encounter with a vulnerable marine ecosystem, in particular threshold levels and indicator species, based on the best available scientific information and consistent with the Guidelines, and taking into account any other conservation and management measures to **prevent** significant adverse impacts on vulnerable marine ecosystems, including those based on the results of assessments carried out pursuant to paragraph 83 (a) of its resolution 61/105 and paragraph 119 (a) of the present resolution;

But it must also **prevent** significant adverse impacts “on vulnerable marine ecosystems”. UNGA resolution 71/123 (2016)⁵⁶ called on States and RFMOs to “To use, as applicable, the full set of criteria in the Guidelines to identify where vulnerable marine ecosystems occur or are likely to occur as well as for assessing significant adverse impacts.” The FAO Deep-Sea Guidelines⁵⁷ in paragraph 42 lists characteristics to be used as criteria in the identification of VMEs – which the

⁵⁵ UNGA resolution 64/72. A/RES/64/72. Sustainable fisheries, including through the 1995 Agreement for the Implementation of the Provisions 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, and related instruments 19 March 2010. At <https://undocs.org/A/RES/64/72>.

⁵⁶ A/RES/71/123. Sustainable fisheries, including through the 1995 Agreement for the Implementation of the Provisions 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, and related instruments 13 February 2017. At <https://undocs.org/A/RES/71/123>.

⁵⁷ FAO. International Guidelines for the Management of Deep-sea Fisheries in the High Seas. 2009. At <http://www.fao.org/documents/card/en/c/b02fc35e-a0c4-545a-86fb-4fc340e13b52>.

emphasis on identifying vulnerability (“A marine ecosystem should be classified as vulnerable based on the characteristics that it possesses.”). They are uniqueness or rarity, fragility, life-history traits of component species that make recovery difficult, and structural complexity.

If, as seems be the case, the scientists behind the recommended encounter protocol has instead used only one criteria, structural complexity, due to data limitations, this firstly raises the need to explicitly identify this limitation, which breaches UNGA resolution 71/123, but also exemplifies the failure to implement the ecosystem approach, which would also imply use of the full set of criteria.

Further, different types of marine scientific research, including seabed mapping, mapping of VMEs based on information from the fishing fleet, on-site camera observations from remote vehicles, benthic ecosystem modelling, comparative benthic studies and predictive modelling can all result in identification of areas where VMEs are known or are likely to occur.⁵⁸ Applying the UNGA resolutions, and the precautionary and ecosystem approaches, means the appropriate response to such research is not to give a green light to fish where VMEs are known or likely to occur, but the opposite: to protect those areas.

Precautionary approach to Setting catch limits

In a similar way setting catch limits for target and non-target species needs to apply the precautionary approach and the ecosystem approach to safeguard marine ecosystems. Article 3(2) requires the application of the precautionary approach as described in the 1995 Agreement and the Code of Conduct as set out earlier.

In setting catch limits the “Commission and subsidiary bodies shall:

- (i) be more cautious when information is uncertain, unreliable, or inadequate;
- (ii) not use the absence of adequate scientific information as a reason for postponing or failing to take conservation and management measures; and
- (iii) take account of best international practices regarding the application of the precautionary approach, including Annex II of the 1995 Agreement and the Code of Conduct.

There is no requirement in the Convention or the Agreement for conservation and management measures, including catch limits, to be set so as to create “viable fishery opportunities” rather there is requirement to apply the precautionary approach and the ecosystem approach⁵⁹. In addition, there is a general principle that “overfishing and excess fishing capacity shall be prevented or eliminated”⁶⁰.

Conclusion

The application of the precautionary approach and the ecosystem approach by the Commission, as mandated by the Convention, together with the UNGA resolutions means that the Commission needs to:

1. Recognise and describe the uncertainties inherent in the scientific approaches used;
2. Apply the ecosystem and precautionary approaches to safeguard marine ecosystems including in setting catch limits for target and bycatch species.

⁵⁸ UNGA resolution 75/89 para. 200.

⁵⁹ Article 3(2)(a) and (b).

⁶⁰ Article 3(1)(a)(iii) and Article 20(1)(b).

3. Where VMEs are known to occur or likely to occur, to close such areas to bottom fishing and ensure that bottom fishing does not proceed unless conservation and management measures have been established to prevent significant adverse impacts on VMEs;
4. Ensure that all species, including rare and cryptic species, are protected; and
5. Identify and protect vulnerable marine ecosystems properly so called, rather than taxa.