North Pacific Fisheries Commission

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Recommendation to Recognize New Quantitative Scientific Evidence for SAIs from Visual Surveys of Koko Seamount in the NPFC Convention Area

by

The Deep Sea Conservation Coalition

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Please find below a science based recommendation for the use of a methodology for defining and assessing for significant adverse impacts on VMEs and a published, peer reviewed paper attached which describes the methodology in detail:

Biede, V.C., N.B. Morgan, E.B. Roark, A.R. Baco. 2025. On a Trawled North Pacific Seamount, Reductions of Benthic Megafauna Abundance, Diversity, and Ecosystem Function are Correlated with Increased Evidence of Fishing. Marine Environmental Research: 107587, https://doi.org/10.1016/j.marenvres.2025.107587

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Recommendation to Recognize New Quantitative Scientific Evidence for SAIs from Visual Surveys of Koko Seamount

United Nations General Assembly (UNGA) resolutions 59/25, and 61/105 call upon States and regional fisheries management organisations or arrangements (RFMO/As) to apply the precautionary approach and protect vulnerable marine ecosystems (VMEs) from destructive fishing practices (UNGA 2004 & 2006). Following these resolutions, the Food and Agriculture Organization of the United Nations (FAO) developed the International Guidelines for the Management of Deep-sea Fisheries in the High Seas to provide, *inter alia*, standards and criteria for identifying VMEs in areas beyond national jurisdiction and to identify whether the fishing activities would pose a risk of significant adverse impacts (SAIs) on such ecosystems. These guidelines, adopted in 2008, offered the definition of SAIs as those compromising ecosystem's integrity and provided six factors to consider when determining the scale and significance of an impact (FAO, 2009). These paragraphs are also contained verbatim in Annex 2 of CMM 2025-05:

> *"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.*
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> *18. When determining the scale and significance of an impact, the following six factors should be considered:*
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> 1. *the intensity or severity of the impact at the specific site being affected;*
> 2. *the spatial extent of the impact relative to the availability of the habitat type affected;*
> 3. *the sensitivity/vulnerability of the ecosystem to the impact;*
> 4. *the ability of an ecosystem to recover from harm, and the rate of such recovery;*
> 5. *the extent to which ecosystem functions may be altered by the impact;*
> 6. *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."*

The UNGA Resolutions commit States and RFMO/As to apply the precautionary approach in the determinations regarding the nature and duration of impacts in case of limited information (FAO, 2009). This message was reinforced by the adoption of UNGA resolutions 64/72, 66/68, 71/123 and 77/118 (UNGA 2009, 2011, 2016 & 2022). According to this set of documents, RFMO/As should identify locations where VMEs are 'likely to occur' and assess whether one or more forms of bottom fishing are causing, or are likely to cause, SAIs on these ecosystems.

A 2025 peer-reviewed scientific paper by Biede et al., provides a fine-scale analysis of visual evidence of SAIs on Koko Guyot. The authors assessed visual evidence of fishing ― including trawl scars on the seabed, derelict fishing gear, and other anthropogenic debris ― compared to the abundance, diversity, and ecosystem function of benthic megafauna from replicate quantitative imaging transects at 3 depths on the northeast and southeast sides of the southeast corner of Koko Guyot. Multiple faunal assemblages were observed, ranging from depauperate communities dominated by sea urchins and cup corals to diverse coral gardens with octocorals and reef-forming scleractinians, with some areas of large VME indicator taxa at high densities. Overall, megafaunal abundance, diversity, and ecosystem function were significantly negatively correlated with increased visual evidence of fishing, consistent with the FAO's definition of SAIs. Therefore, this paper presents clear evidence of both current and historical SAIs in the region (Biede et al., 2025). Despite this degradation, pockets of diverse octocoral gardens and small colonies of reef-forming scleractinians in areas with lower evidence of fishing, indicate remnant

or recovering VME populations. Therefore, Koko Guyot appears to host a mosaic of disturbed, recovering, and remnant communities that merit greater protection from impacts by current and future bottom fishing activities.

Acknowledging the SWG VME's efforts to develop an approach to define SAIs, the Deep Sea Conservation Coalition recommends that the SSC BF-ME formally recognize that SAIs across the study's area have occurred. Based on the findings and evidence in Biede et al., NPFC should further note that SAIs are likely to continue to occur across the whole of Koko Guyot and other seamounts at depths where bottom-contact fishing is allowed to occur (2025). Furthermore, these findings show that increased evidence of bottom-contact fishing correlates to increased levels of adverse impacts.

Finally, the Deep Sea Conservation Coalition recommends that the SSC BF-ME formally note that the remnant populations there are vulnerable and require greater protection. Continued and increased fishing activities would further elevate the risk of SAIs on the ecosystem, as well as decrease the likelihood of ecosystem recovery.

References

Biede, V.C., N.B. Morgan, E.B. Roark, A.R. Baco. 2025. On a Trawled North Pacific Seamount, Reductions of Benthic Megafauna Abundance, Diversity, and Ecosystem Function are Correlated with Increased Evidence of Fishing. *Marine Environmental Research*: 107587, https://doi.org/10.1016/j.marenvres.2025.107587

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UNGA Resolution 59/25. 2004. 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. *UNGA A/RES/59/25*

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10 December 1982 relating to the conservation and management of straddling fish stocks and highly migratory fish stocks, and related instruments. *UNGA A/RES/64/72*

UNGA Resolution 66/68. 2011. 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. *UNGA A/RES/66/68*

UNGA Resolution 71/123. 2016. 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. *UNGA A/RES/71/123*

UNGA. Resolution 77/118. 2022. 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. *UNGA A/RES/77/118*