



Food and Agriculture
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What are vulnerable marine ecosystems?

Vulnerable marine ecosystems (VMEs) are groups of species, communities, or habitats that may be vulnerable to impacts from fishing activities

The vulnerability of an ecosystem is related to the vulnerability of its constituent population, communities, or habitats.

The *International Guidelines for the Management of Deep-sea Fisheries in the High Seas* (FAO, 2009), are designed to provide tools, including guidance towards sustainable use of marine living resources exploited by deep-sea fisheries, and the protection of VMEs and the marine biodiversity these ecosystems contain (Paragraph 6). The Guidelines provide detailed criteria for identifying VMEs (Paragraph 42), which include certain life-history traits such as:

- ⚙️ Maturation at relatively old age
- ⚙️ Slow growth rates
- ⚙️ Long life expectancies
- ⚙️ Low or unpredictable recruitment

This means that these organisms have low productivity and they can only sustain low exploitation rates, and recovery can be slow and uncertain. Communities and habitats with these characteristics could be candidates for VMEs and should be reviewed for application of protective measures.

The key concepts related to VMEs are *vulnerability* and *significant adverse impacts*.

Vulnerability relates to the likelihood that a population, community or habitat will experience substantial alteration from short-term or chronic

disturbance, and the likelihood that it would recover and in what time frame.

Significant adverse impacts are those that compromise the ecosystem integrity (structure and function), i.e. impairs the ability of populations to replace themselves, degrades the long-term natural productivity of the habitat, or causes significant loss of species richness, habitat or community type on more than a temporary basis.

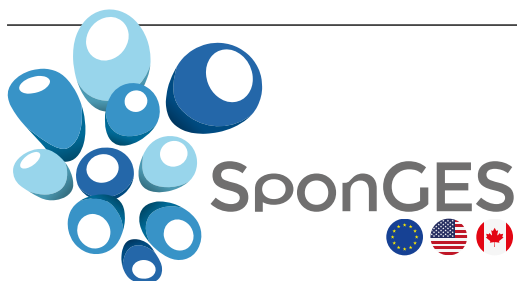
The concept of VMEs is applied in the context of a management response to impacts from deep-sea

Web Sources

The FAO VME DataBase is a global inventory of fisheries measures adopted in areas beyond national jurisdiction to prevent significant adverse impacts from bottom fisheries on VMEs. <http://www.fao.org/in-action/vulnerable-marine-ecosystems/vme-database/en/>

The ICES Data Portal on VMEs contains data on the distribution and abundance of VMEs, and organisms considered to be indicators of VMEs, across the North Atlantic. <http://www.ices.dk/marine-data/data-portals/Pages/vulnerable-marine-ecosystems.aspx>

SponGIS is a data portal for deep-sea sponge data built under the SponGES project. <http://spongis.org/>



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high seas fisheries and are normally embedded in the management process of regional fisheries management organizations or arrangements,, although individual States have adopted similar policies in many instances.

Examples that may contribute to the forming of VMEs are certain cold water corals and hydroids, **some types of sponge dominated communities**, communities composed of dense emergent fauna, and seep and vent communities (See also Annex 1 of the FAO Deep-sea Fisheries Guidelines).

In many areas sponges are the dominating organism in terms of abundance and biomass. They can form structurally complex ecosystems known as sponge grounds, gardens, aggregations and reefs. These

The EU-funded SponGES project will contribute to the development of sustainable management of the deep-sea fisheries and the protection of sponge dominated VMEs by the collection of data and development of knowledge about vulnerability and threats as well as protection leading to a sustainable use of the deep-sea areas.

ecosystems are very diverse in terms of community composition and structure, the geomorphological features they inhabit and their geographical and bathymetric distributions. Sponge ecosystems are found along continental shelves, slopes, seamounts, mid-ocean ridges, canyons and deep fjords at depths from 30 to 3,000 meters.

EXAMPLES OF SPECIES GROUPS, COMMUNITIES AND HABITAT-FORMING SPECIES THAT MAY CONTRIBUTE TO THE FORMING OF VMEs IN THE NORTH ATLANTIC



Large gorgonian coral



Sponge ground



Seapen field



Small gorgonian coral

sources

FAO. 2009. *International Guidelines for the Management of Deep-sea Fisheries in the High Seas / Directives internationales sur la gestion de la pêche profonde en haute mer / Directrices Internacionales para la Ordenación de las Pesquerías de Aguas Profundas en Alta Mar*. Rome/Roma. 73p. www.fao.org/fishery/topic/166308/en.

FAO. 2016. *Vulnerable Marine Ecosystems: Processes and Practices in the High Seas*, by Anthony Thompson, Jessica Sanders, Merete Tandstad, Fabio Carocci and Jessica Fuller, eds. FAO Fisheries and Aquaculture Technical Paper No. 595. Rome, Italy. www.fao.org/3/a-i5952e.pdf.

All photos courtesy of DFO, Canada



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