What are Vulnerable Marine Ecosystems?

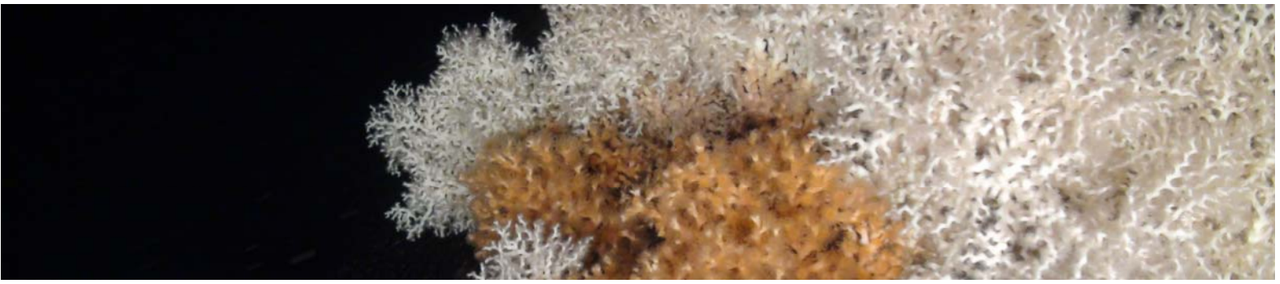
Marine ecosystems are typically classified as VMEs according to a set of characteristics laid out in the FAO "*International Guidelines for the Management of Deep-sea Fisheries in the High Seas*" (2009). VMEs are designated according to one or a combination of these criteria, based on the best available scientific information.

CHARACTERISTIC	DESCRIPTION OF AREA, ECOSYSTEM, OR HABITAT
UNIQUENESS OR RARITY	Unique or containing rare species whose loss could not be compensated for by similar areas or ecosystems. These include: – habitats that contain endemic species; – habitats of rare, threatened or endangered species that occur only in discrete areas; or – nurseries or discrete feeding, breeding, or spawning areas.
FUNCTIONAL SIGNIFICANCE OF THE HABITAT	Discrete areas or habitats that are necessary for the survival, function, spawning/reproduction or recovery of: – fish stocks; – particular life-history stages (e.g., nursery grounds or rearing areas); or – rare, threatened or endangered marine species.
FRAGILITY	Highly susceptible to degradation by anthropogenic activities.
LIFE-HISTORY TRAITS OF COMPONENT SPECIES THAT MAKE RECOVERY DIFFICULT	Characterised by populations or assemblages of species with one or more of the following characteristics: – slow growth rates; – late age of maturity; – low or unpredictable recruitment; or – long-lived.
STRUCTURAL COMPLEXITY	Characterised by complex physical structures created by significant concentrations of biotic and abiotic features. Often associated with high diversity. Both diversity and ecological processes are usually highly dependent on the structuring organisms.

Adapted from FAO (2009). International Guidelines for the Management of Deep-Sea Fisheries in the High Seas. FAO, Rome.

VMEs are frequently found in association with particular features of the seabed. Thus, the FAO guidelines also provide examples of geological features that potentially support VMEs: submerged edges and slopes; summits and flanks of seamounts, guyots, banks, knolls, and hills; canyons and trenches; hydrothermal vents; and cold seeps.

In the Mediterranean Sea, seamounts and submarine canyons are among the most common geological features. Scientific studies in recent years have gathered a large body of data regarding the biological communities that inhabit these areas. Such studies have confirmed their importance as biodiversity hotspots, and highlighted the importance of their protection, in order to conserve VMEs and associated species, including commercial fishes.



OCEANA EUROPE

European Headquarters
Gran Vía,59-9º
28013 Madrid, Spain
Phone: + 34 911 440 880
Fax: + 34 911 440 890
Email: europe@oceana.org
WEB: eu.oceana.org

European Union Office
Rue Montoyer, 39
1000 Brussels, Belgium
Phone: +32 (0)2 513 22 42
Fax: +32 (0)2 513 22 46
Email: brussels@oceana.org

Baltic Sea Office
Nyhavn 16, 4 sal
1051 Copenhagen, Denmark
Phone: + 45 33151160
Email: baltic@oceana.org

Developing a list of Vulnerable Marine Ecosystems

40th Session of the General Fisheries Commission for the Mediterranean

St Julian's, Malta, 30 May - 3 June 2016

Mediterranean VMEs: Diverse, fragile habitats that support fisheries

Recent scientific studies have demonstrated that vulnerable marine ecosystems (VMEs) such as cold water coral reefs, gardens of soft corals, and deep-sea sponge aggregations are found in many areas of the Mediterranean Sea, and are unique. These ecosystems are frequently associated with high levels of biodiversity, and **provide habitat for very specific assemblages of species, including juveniles and adults of commercial species** such as hake, Norway lobster, and red shrimp. Given their importance and their vulnerability to the impacts of bottom fishing activities, specific management and conservation measures are required for their protection.

VMEs** provide habitat for **assemblages of commercial species

A pending issue in the Mediterranean

Regrettably, the protection of highly productive, vulnerable deep-sea benthic habitats and species remains a pending task in the Mediterranean, even though some of these ecosystems have been heavily damaged for years by destructive fishing practices.
The protection of VMEs has been a legal obligation for RFMOs since 2008, with specific requirements laid out under United Nations General Assembly (UNGA) Resolutions 59/25, 61/105 and 64/72. Despite the fact that GFCM is one of the oldest RFMOs, it has yet to fulfil these obligations, and current GFCM measures related to VME protection are very limited. Fisheries Restricted Areas have been designated to protect VMEs in just three specific sites (Santa Maria di Leuca, the Nile Delta, and Eratosthenes Seamount) across the entire Mediterranean basin. At the regional scale, **the prohibition on the use of towed dredges and trawl nets below 1,000 m depth does not confer protection to many VMEs**, because most VMEs occur shallower than 1,000 meters, and the majority of the Mediterranean fishing fleet does not operate beyond that depth limit.
Beyond GFCM, spatial protection of VMEs is also weak. The network of marine protected areas in the Mediterranean mainly covers shallow coastal habitats, leaving offshore and deep-sea habitats and species unprotected.

Safeguarding deep-sea** highly productive areas from adverse fishing impacts **remains a pending task for GFCM

What needs to be done

Oceana is aiming to contribute to rebuilding Mediterranean fisheries and preserving important deep-sea ecosystems, through the implementation of the UNGA Resolutions related to VME protection.
Before VME protection measures can be put into place, the first key step is to know which VMEs are found in the Mediterranean. **Oceana proposes to establish a comprehensive list of VME indicator species, as an essential tool for developing the required conservation and management measures.**

OCEANA'S DRAFT LIST OF MEDITERRANEAN VME INDICATOR SPECIES

Oceana proposes, as an initial step towards developing a Mediterranean list of VME indicator species, the VME habitat types listed below. This draft list has been developed according to FAO criteria, and is based on scientific literature and data, including direct observations from at-sea research in the Mediterranean Sea by Oceana. Habitats are grouped by type, and examples are provided of known VME indicator species from the habitat types and families listed. This list should be reviewed and expanded by a GFCM VME Working Group of scientific experts.

PROPOSED VME HABITAT TYPE	VME INDICATOR SPECIES
COLD-WATER CORAL REEFS	
A. *Lophelia pertusa* reefs	*Lophelia pertusa*
B. *Madrepora oculata* reefs	*Madrepora oculata*
CORAL GARDENS	
A. Hard-bottom coral garden	
A.1. Hard-bottom gorgonians, black coral gardens and other corals	
A.1.1. **GORGONIANS** (Order Alcyonacea)	
ACANTHOGORGIIDAE	*Acanthogorgia hirsuta* *Acanthogorgia armata*
CORALLIIDAE	*Corallium rubrum*
DENDROBRACHIIDAE	*Dendrobrachia bonsai*
ELLISELLIDAE	*Ellisella paraplexauroides* *Viminella flagellum* *Viminella furcata*
GORGONIIDAE	*Eunicella verrucosa* *Eunicella labiata* *Eunicella cavolini* *Eunicella singularis* *Eunicella gazella*
PLEXAURIDAE	*Bebryce mollis* *Paramuricea macrospina* *Paramuricea clavata* *Swiftia pallida* *Villogorgia bebrycoides*
PRIMNOIDAE	*Callogorgia verticillata*
A.1.2. **BLACK CORALS** (Order Antipatharia)	
ANTIPATHIDAE	*Antipathes dichotoma* *Antipathes fragilis*
APHANIPATHIDAE	
MYRIOPATHIDAE	*Antipathella subpinnata*
LEIOPATHIDAE	*Leiopathes glaberrima*
SCHIZOPATHIDAE	*Parantipathes larix*
A.1.3. **HEXACORALS** (Subclass Hexacorallia)	
CARYOPHYLLIIDAE - Solitary corals	*Caryophyllia calveri* *Desmophyllum dianthus*
PARAZOANTHIDAE	*Savalia savaglia*
A.2. Colonial scleractinians on hard rock outcrops and non-reefal scleractinian aggregations	
CARYOPHYLLIIDAE	*Lophelia pertusa* *Anomocora fecunda*
DENDROPHYLLIDAE	*Dendrophyllia cornigera*
OCULINIDAE	*Madrepora oculata*
A.3. Soft corals	
ALCYONIIDAE	*Alcyonium acaule* *Alcyonium palmatum*
NIDALIIDAE	*Chironephthya mediterránea* *Nidalia studeri*
PARALCYONIIDAE	*Paralcyonium spinulosum*
A.4. Hydrocorals	
STYLASTERIDAE	*Errina aspera*
B. Soft-bottom coral gardens	
B.1. Soft-bottom gorgonian and other coral gardens	
GORGONIIDAE	*Eunicella filiformis*
ISIDIDAE	*Isidella elongata*
PLEXAURIDAE	*Spinimuricea atlantica* *Spinimuricea klavereni*
B.2. Cup-coral fields	
CARYOPHYLLIIDAE	*Caryophyllia smithii* var. *clavus*
B.3. Cauliflower coral fields	
NIDALIIDAE	*Nidalia studeri*

PROPOSED VME HABITAT TYPE (cont.)	VME INDICATOR SPECIES
DEEP-SEA SPONGE AGGREGATIONS	
A. Ostur sponge aggregations	
GEODIIDAE	*Geodia conchilega* *Geodia nodastrella*
PACHASTRELLIDAE	*Pachastrella monilifera*
B. Hard-bottom sponge gardens	
AXINELLIDAE	*Axinella cannabina* *Axinella damicornis* *Axinella verrucosa* *Axinella polypoides* *Phakellia ventilabrum* *Phakellia robusta*
AZORICIDAE – Stone sponge reefs	*Leiodermatium lynceus* *Leiodermatium pfeifferae*
STYLOCORDYLIDAE	*Stylocordyla pellita* *Stylocordyla borealis*
TETHYIDAE	*Tethya aurantium*
VULCANELLIDAE	*Poecillastra compressa* *Vulcanella gracilis*
C. Glass sponge communities	
PHERONEMATIDAE	*Pheronema carpenter*
ROSSELLIDAE	*Asconema setubalense*
D. Sponge aggregations on soft bottoms	
THENEIDAE	*Thenea muricata*
CLADORHIZIDAE – Carnivorous sponges	*Cladorhiza abyssicola*
STYLOCORDYLIDAE	*Stylocordyla pellita*
SEA PEN FIELDS	
PENNATULIDAE	*Pennatula* spp *(e.g. P. phosphorea, P. rubra, P. aculeata)* *Pteroeides* spp.
FUNICULINIDAE	*Funiculina quadrangularis*
KOPHOBELEMNIDAE	*Kophobelemnon stelliferum*
PROTOPTILIDAE	*Protoptilum carpenteri*
VIRGULARIIDAE	*Virgularia mirabilis*
TUBE-DWELLING ANEMONE PATCHES	
CERIANTHIDAE	*Cerianthus membranaceous* *Arachnanthus* spp.
MUD- AND SAND-EMERGENT FAUNA	
Echinodermata	
ANTEDONIDAE	*Leptometra celtica* *Leptometra phalangium*
Brachiopoda	
TEREBRATULIDAE	*Gryphus vitreus*
BRYOZOAN PATCHES	
BUGULIDAE	*Kinetoskias spp.*
HORNERIDAE	*Hornera lichenoides*
MOLLUSCS	
GRYPHAEIDAE	*Neopycnodonte cochlear* *Neopycnodonte zibrowii*
ANNELIDS	
SABELLIDAE	
SIBOGLINIDAE	*Lamellibrachia anaximandri* *Siboglinum* spp.
ALVINELLIDAE	
TEREBELLIDAE	*Lanice conchilega*
CRUSTACEANS	
AMPELISCIDAE	*Haploops* spp.