

A suggestive list of deep-water VMEs and their characteristic taxa – updated Jan 2020

PROPOSED VME HABITAT TYPE (VME DATABASE FIELD: "VME_HABITATTYPE")	PROPOSED VME HABITAT SUBTYPE (VME DATABASE FIELD: "VME_HABITATSUBTYPE")	REPRESENTATIVE TAXA	CORRESPONDING VME INDICATOR (VME DATABASE FIELD: "VME_INDICATOR")
Cold-water coral reef	<i>Lophelia pertusa</i> / <i>Madrepora oculata</i> reef	<i>Lophelia pertusa</i> <i>Madrepora oculata</i>	Stony coral
	<i>Solenosmilia variabilis</i> reef	<i>Solenosmilia variabilis</i>	Stony coral
Coral garden	Hard bottom coral garden	(See below)	Black coral Gorgonian Stony coral Stylasterids
	<p><b>Note</b> - you can also assign records to a more detailed sub-type</p> <p>Hard bottom coral garden: Hard bottom gorgonian<sup>1</sup> and black coral gardens</p>	ACANTHOGORGIIDAE <ul style="list-style-type: none"> <li><i>Acanthogorgia armata</i></li> <li><i>Acanthogorgia hirsuta</i></li> </ul> ANTHOTHELIDAE CHRYSOGORGIIDAE CORALLIIDAE ISIDIDAE, KERATOISIDINAE <ul style="list-style-type: none"> <li><i>Acanella arbuscula</i></li> <li><i>Isidella</i> spp.</li> <li><i>Keratoisis</i> spp.</li> <li><i>Lepidisis</i> spp.</li> </ul> PARAGORGIIDAE <ul style="list-style-type: none"> <li><i>Paragorgia arborea</i></li> <li><i>Paragorgia johnsoni</i></li> </ul> ELLISELLIDAE <ul style="list-style-type: none"> <li><i>Viminella flagellum</i></li> </ul> PLEXAURIDAE <ul style="list-style-type: none"> <li><i>Paramuricea</i> spp.</li> <li><i>Swiftia</i> spp.</li> </ul>	Gorgonian Soft coral Black coral

<sup>1</sup> *Gorgonian* is now not a recognised taxonomic term. However, as many deep-sea biologists are familiar with this term, this VME Indicator was retained.

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	<ul style="list-style-type: none"> <li>• <i>Swiftia dubia</i></li> <li>• <i>Dentomuricea</i> spp.</li> </ul> PRIMNOIDAE <ul style="list-style-type: none"> <li>• <i>Callogorgia verticillata</i></li> <li>• <i>Candidella imbricata</i></li> <li>• <i>Primnoa resedaeformis</i></li> <li>• <i>Paracalyptrophora josephinae</i></li> <li>• <i>Narella</i> spp.</li> </ul> ALCYONIIDAE <ul style="list-style-type: none"> <li>• <i>Anthomastus grandiflorus</i></li> <li>• <i>Pseudoanthomastus agaricus</i></li> </ul> ANTIPATHIDAE <ul style="list-style-type: none"> <li>• <i>Stichopathes gravieri</i></li> </ul> LEIOPATHIDAE <ul style="list-style-type: none"> <li>• <i>Leiopathes</i> spp.</li> </ul> SCHIZOPATHIDAE <ul style="list-style-type: none"> <li>• <i>Bathypathes</i> spp.</li> <li>• <i>Parantipathes hirondelle</i></li> <li>• <i>Parantipathes</i> spp.</li> <li>• <i>Stauropathes arctica</i></li> </ul>	
Hard bottom coral garden: Colonial scleractinians on rocky outcrops	<i>Lophelia pertusa</i> <i>Madrepora oculata</i> <i>Solenosmilia variabilis</i>	Stony coral
Hard bottom coral garden: Non-reefal scleractinian aggregations	<i>Enallopsammia rostrata</i> <i>Lophelia pertusa</i> <i>Madrepora oculata</i> <i>Eguchipsammia</i> spp. <i>Dendrophyllia cornigera</i> <i>Dendrophyllia ramea</i>	Stony coral
Hard bottom coral garden: Stylasterid corals on hard substrata	STYLASTERIDAE <ul style="list-style-type: none"> <li>• <i>Pliobothrus</i> spp.</li> <li>• <i>Stylaster</i> spp.</li> <li>• <i>Errina</i> spp</li> <li>• <i>Crypthelia</i> spp.</li> </ul>	Stylasterids
Hard bottom coral garden: Cup coral fields	CARYOPHYLLIIDAE <ul style="list-style-type: none"> <li>• <i>Caryophyllia</i> spp.</li> </ul>	

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	Soft bottom coral garden	(See below)	Gorgonian Soft coral Black coral Cup coral
	<b>Note</b> - you can also assign records to a more detailed sub-type		
	Soft bottom coral garden: Soft bottom gorgonian <sup>1</sup> and black coral gardens	ALCYONIIDAE • <i>Anthomastus grandiflorus</i> ANTIPATHIDAE • <i>Stichopathes gravieri</i> CHRYSOGORGIIDAE • <i>Radicipes</i> spp. ISIDIDAE • <i>Acanella arbuscula</i> • <i>Isidella</i> spp. • <i>Isidella elongata</i> • <i>Isidella lofotensis</i>	Gorgonian Soft coral Black coral
	Soft bottom coral garden: Cup-coral fields	CARYOPHYLLIIDAE • <i>Caryophyllia</i> spp. • <i>Stephanocyathus moseleyanus</i>	
	Soft bottom coral garden: Cauliflower Coral Fields	NEPHTHEIDAE • <i>Duva florida</i> • <i>Drifa glomerata</i> • <i>Gersemia</i> spp.	Soft coral
<b>Deep-sea sponge aggregations</b>	Soft bottom sponge aggregations	GEODIIDAE • <i>Geodia barretti</i> • <i>Geodia macandrewi</i> • <i>Geodia atlantica</i> • <i>Geodia phlegraei</i> ANCORINIDAE • <i>Stryphnus fortis</i> • <i>Stelletta normani</i> PACHASTRELLIDAE • <i>Thenea</i> spp. ROSSELLIDAE • <i>Caulophacus arcticus</i>	Sponge <sup>2</sup>

<sup>2</sup> Data providers should ensure that only sponge records of species representative of deep-sea habitats are submitted (see representative taxa)

Hard bottom sponge aggregations

PHERONEMATIDAE

- *Pheronema carpenteri*

HYALONEMATIDAE

- *Hyalonema* spp.

GEODIIDAE

- *Geodia hentscheli*
- *Geodia parva*

Sponge<sup>2</sup>

ANCORINIDAE

- *Stelletta raphidiophora*

AZORICIDAE

- *Leiodermatium* spp.

CORALLISTIDAE

- *Neophrissospongia nolitangere*
- *Neoschrammeniella* spp.

MACANDREWIIDAE

- *Macandrewia* spp.

AXINELLIDAE

- *Axinella* spp.
- *Phakellia* spp.

MYCALIDAE

- *Mycale lingua*

POLYMASTIIDAE

- *Polymastia* spp.

TETILLIDAE

PETROSIIDAE

- *Petrosia* spp.

ROSSELLIDAE

- *Caulophacus arcticus*
- *Asconema setubalense*
- *Asconema foliatum*
- *Schaudinnia rosea*
- *Scyphidium septentrionale*
- *Trichasterina borealis*

PHERONEMATIDAE

- *Pheronema carpenteri*
- *Poliopogon amadou*

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Seapen fields

Sea-pen

ANTHOPTILIDAE

- *Anthoptilum murrayi*
- *Anthoptilum grandiflorum*

CHUNELLIDAE

- *Porcupinella profunda*

PENNATULIDAE

- *Pennatula phosphorea*
- *Pennatula aculeata*
- *Pteroeides spinosum*
- *Ptilella grandis*
- *Ptilella grayi*

FUNICULINIDAE

- *Funiculina quadrangularis*

HALIPTERIDAE

- *Halipterus finmarchica*
- *Halipterus christii*

KOPHOBELEMNIDAE

- *Kophobelemnion stelliferum*
- *Kophobelemnion macrospinosum*

PROTOPTILIDAE

- *Distichoptilum gracile*
- *Protoptilum carpenteri*
- *Protoptilum thomsoni*

SCLEROPTILIDAE

- *Scleroptilum grandiflorum*

UMBELLULIDAE

- *Umbellula encrinus*
- *Umbellula huxleyi*
- *Umbellula lindhali*
- *Umbellula monocephalus*
- *Umbellula thomsoni*
- *Umbellula durrisma*

VIRGULARIDAE

- *Virgularia mirabilis*
  - *Virgularia glacialis*
  - *Virgularia tuberculata*
  - *Stylatula elegans*
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			VERETILLIDAE	
			<ul style="list-style-type: none"> <li>• <i>Cavernularia pusilla</i></li> <li>• <i>Veretillum cynomorium</i></li> </ul>	
<b>Tube-dwelling anemone aggregations</b>			CERANTHIDAE	Anemones
<b>Stalked Crinoid aggregations</b>			RHIZOCRINIDAE	Stalked crinoids
			<ul style="list-style-type: none"> <li>• <i>Democrinus(?) cabiochi</i></li> <li>• <i>Cherbonniericrinus cherbonnieri</i></li> <li>• <i>Democrinus parfaiti</i></li> <li>• <i>Rhizocrinus lofotensis</i></li> </ul>	
			BATHYCRINIDAE	
			<ul style="list-style-type: none"> <li>• <i>Bathycrinus carpenterii</i></li> <li>• <i>Bathycrinus gracilis</i></li> <li>• <i>Monachocrinus recuperatus</i></li> </ul>	
			SEPTOCRINDAE	
			<ul style="list-style-type: none"> <li>• <i>Zeuctocrinus gisleni</i></li> </ul>	
			PHRYNOCRINIDAE	
			<ul style="list-style-type: none"> <li>• <i>Porphyrocrinus thalassae</i></li> <li>• <i>Porphyrocrinus incrassatus</i></li> </ul>	
			ISOCRINIDAE	
			<ul style="list-style-type: none"> <li>• <i>Endoxocrinus (Diplocrinus) wyvillethomsoni</i></li> </ul>	
			HYOCRINIDAE	
			<ul style="list-style-type: none"> <li>• <i>Gephyrocrinus grimaldii</i></li> <li>• <i>Anachalypsicrinus nefertiti</i></li> </ul>	
<b>Xenophyophore aggregations</b>			SYRINGAMMINIDAE	
			<ul style="list-style-type: none"> <li>• <i>Syringammina fragilissima</i></li> </ul>	
			PSAMMINIDAE	
			<ul style="list-style-type: none"> <li>• <i>Reticulammina plicata</i></li> </ul>	
<b>Bryozoan patches</b>			<i>Eucreatea loricata</i>	
<b>Hydrothermal vents/fields</b>	Active vents		KADOSACTINIDAE	Chemosynthetic species (seeps and vents)
			<ul style="list-style-type: none"> <li>• <i>Maractis rimicarivora</i></li> </ul>	
			MYTILIDAE	
			<ul style="list-style-type: none"> <li>• <i>Bathymodiolus sp.</i></li> <li>• <i>Bathymodiolus azoricu</i></li> </ul>	

	<p>TURRIDAE</p> <ul style="list-style-type: none"> <li>• <i>Phymorynchus</i> sp.</li> </ul> <p>ALVINOCARIDAE</p> <ul style="list-style-type: none"> <li>• <i>Rimicaris exoculata</i></li> <li>• <i>Chorocaris chacei</i></li> <li>• <i>Mirocaris fortunata</i></li> </ul> <p>BYTHOGRAEIDAE</p> <ul style="list-style-type: none"> <li>• <i>Segonzacia mesatlantica</i></li> <li>• <i>Ophidiiformes</i></li> </ul> <p>BYTHITIDAE</p> <ul style="list-style-type: none"> <li>• <i>Cataetyx laticeps</i></li> </ul> <p>ZOARCIDAE</p> <ul style="list-style-type: none"> <li>• <i>Pachycara</i> sp.</li> </ul>	
Inactive vents	Generally colonized by sponges and corals, some identified as VME indicators species under 'coral gardens' and 'deep-sea sponge aggregations'	
Cold Seeps	<p>LUCINIDAE</p> <ul style="list-style-type: none"> <li>• <i>Lucinoma</i> sp.</li> </ul> <p>THYASIRIDAE</p> <ul style="list-style-type: none"> <li>• <i>Thyasira</i> sp.</li> </ul> <p>MYTILIDAE</p> <ul style="list-style-type: none"> <li>• <i>Bathymodiolus</i> sp.</li> </ul> <p>SOLEMYDAE</p> <ul style="list-style-type: none"> <li>• <i>Acharax</i> sp.</li> </ul> <p>SIBOGLINIDAE</p> <ul style="list-style-type: none"> <li>• <i>Siboglinum</i> sp.</li> <li>• <i>Polybrachia</i> sp.</li> <li>• <i>Spirobrachia</i> sp.</li> <li>• <i>Bobmarleya</i> sp.</li> <li>• <i>Lamellisabella</i> sp.</li> <li>• <i>Sclerolinum</i> sp.</li> <li>• <i>Oligobrachia</i> sp.</li> </ul> <p>ZOARCIDAE</p> <ul style="list-style-type: none"> <li>• <i>Lycodes squamiventer</i></li> </ul>	Chemosynthetic species (seeps and vents)