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Our Ref: L.27/ACB/sv   12 December 2016

Subject: Call for data: new information on Vulnerable Marine Ecosystems (VME) in the North Atlantic from ICES member countries

Dear Reader,

Please find enclosed a document describing the rationale, scope and technical details of this call for data, as well as the secure use of data.

The the Joint ICES/NAFO Working Group on Deep-water Ecology (WGDEC) maintains a central database holding information on the distribution and abundance of habitats and species considered to be indicators of vulnerable marine ecosystems (VMEs) across the North Atlantic . This ICES VME database aims to store and make available all known VME indicator records in the North Atlantic (covering deep water areas inside and outside national jurisdiction) for use by ICES and the wider marine community. ICES uses the database as a basis to provide scientifically-robust advice on the distribution of Vulnerable Marine Ecosystems (VMEs) and possible management solutions.

A list of deep-water VMEs and their characteristic taxa is provided (see Annex 2). Criteria to define what constitutes a VME has been produced by the FAO (FAO, 2009) and further refined WGDEC (ICES, 2016) to assist data providers.

Development of the VME database commenced a number of years ago, and is updated annually by WGDEC. The records in the database come from a variety of sources, ranging from dedicated deep sea research cruises equipped with high resolution seabed imagery through to fishing trawl and long line by-catch records that are submitted by ICES member countries. The database holds information on *bona fide* records of VME habitats, which are verified observations of a VME on the seabed, such as from an ROV transect. These are considered different to VME indicator records, such as bycatch of gorgonians (sea fans) from a fishing vessel. While data mining has been productive in discovering historical records, many research projects have come to an end in recent years which have collected information on VMEs, and there is a wish to adequately also capture any new information made available for the ICES VME database.

While data mining has been productive in discovering historical records, many research projects have come to an end in recent years which have collected information on VMEs, and there is a wish to adequately capture this new information with the ICES VME database.

This data call is targeting data from January 2014 through to end of June 2016, however older data which has not been submitted previously to ICES should also be submitted.

In case of questions please contact the ICES Secretariat (accessions@ices.dk) for clarification.

Sincerely,

Anne Christine Brusendorff
General Secretary

CC: Neil Golding (Chair of WGDEC)

Data call: new information on Vulnerable Marine Ecosystems (VMEs) in the North Atlantic from ICES member countries

Rationale:

The rationale for the call is that the Joint ICES/NAFO Working Group on Deep-water Ecology (WGDEC[1]) maintains a central database holding information on the distribution and abundance of habitats and species considered to be indicators of vulnerable marine ecosystems (VMEs) across the North Atlantic[2]. This ICES VME database aims to store and make available all known VME indicator records in the North Atlantic (covering deep water areas inside and outside national jurisdiction) for use by ICES and the wider marine community. ICES uses the database as a basis to provide scientifically-robust advice on the distribution of Vulnerable Marine Ecosystems (VMEs) and possible management solutions.

A list of deep-water VMEs and their characteristic taxa is provided (see Annex 2). Criteria to define what constitutes a VME has been produced by the FAO (FAO, 2009) and further refined WGDEC (ICES, 2016) to assist data providers.

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What the requested information will be used for:

The requested information, when ingested into the VME database, will have a number of important uses. The ICES VME database provides an essential resource for some of the core work of WGDEC in informing fisheries management, such as recommending bottom fishing closures within NEAFC (North East Atlantic Fisheries Commission) waters to protect VMEs. WGDEC also use this extensive database of VME records to respond to advice requests from the European Commission to provide new information on the locations of seabed habitats sensitive to particular fishing activities.

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[1] http://ices.dk/community/groups/Pages/WGDEC.aspx
[2] http://ices.dk/marine-data/data-portals/Pages/vulnerable-marine-ecosystems.aspx

Temporal and Geographical scope:

Temporal scope is for data on VMEs collected between January 2014 and June 2016, although please note that older data which has not been submitted previously to ICES should also be submitted.

The geographical scope of the data call is constrained to the ICES area, which can be viewed here: http://geo.ices.dk/viewer.php?add_layers=ices_ref:ices_areas with the exclusion of the Baltic Sea area. The ICES areas can also be downloaded here: http://geo.ices.dk/download.php?dataset=ices_ref:ices_areas

As WGDEC focuses its work on VME in 'deep water areas', considered to be in water depths of 200m and deeper, this thereby effectively excludes data from the following ICES areas in this data call: IIIa, IIIb, IIIc, IIId, IVb, IVc, VIIa, VIId, VIIe, and VIIf.

Legal scope:

Generically, all the governments and intergovernmental commissions requesting and receiving advice from ICES and all contracting parties to OSPAR and HELCOM have signed international agreements under UNCLOS 1995 Fish Stocks agreement article 5 and 6 to incorporate fisheries impacts on other components of marine ecosystems and WSSD 2002 article 30 to implement an ecosystem approach in relation to oceans policy including fisheries. These agreements include an obligation to collect and share data to support assessment of the impacts of fisheries on non-target species and the environment (UNCLOS FSA art 6). ICES provides annual advice on mapping the location of habitats sensitive to particular fishing activities (i.e. Vulnerable Marine Ecosystems, VMEs) to the EC and NEAFC.

Electronic outputs:

Data will be shown as maps within ICES WGDEC reports and ICES Advice.

Data will also be visible and accessible on the ICES VME data portal[2]. On this portal, all data (public and restricted) will be displayed aggregated to a 0.05 x 0.05 degree grid using the approach of C-square reference XXXX:XXX:XXX:X (see Rees, 2003). When downloading, publically accessible data (as determined by the data provider) will be available in its 'raw' form (i.e. not aggregated). Meanwhile, those data classed as 'restricted' by the data provider will be unavailable for download; only the data provider contact details will be provided.

How to report the data:

Electronic submission:	To submit data, please fill in the Excel "data submission template" with your data. The template can be found here:
	http://www.ices.dk/marine-

data/Documents/VME/VME_Reporting_Format_Template.xlsm.

Once the Excel data submission template is completed, go to the "Export_data" sheet and press the "Export data to XML" button to create a data file in XML format, and save it onto your computer or network. Note: please do not use the Excel automatic XMl conversion function, it will not produce the correct file.

Go to the VME portal http://vme.ices.dk/.

Press the 'Submit data' link and log in with your ICES sharepoint user credentials. If you do not have access to ICES sharepoint, please contact accessions@ices.dk for assistance.

Select your XML data file using the 'Browse' button to select the file.

Press the 'Screen file' button to validate and upload the file to the ICES database.

When submitting data, refer to Annex 1 for VME format description and Annex 2 for what species/habitats constitute a VME.

Additional information on how to submit data is also provided in the ICES VME data reporting guidance document

(http://www.ices.dk/marine-data/Documents/VME/VME_2016_Data_Reporting_Guidance.pdf).

Timing:	The data should be submitted by Friday 10th February 2017
Contact points:	For assistance with data submission and additional information contact accessions@ices.dk

References

ICES. 2016. Report of the Workshop on Vulnerable Marine Ecosystem Database (WKVME), 10–11 December 2015, Peterborough, UK. ICES CM 2015/ACOM:62. 42 pp.

FAO, 2009. The FAO International Guidelines for the Management of Deep-sea Fisheries in the High Seas. Activities pages. In: FAO Fisheries and Aquaculture Department [online]. Rome. Updated 30 April 2013. http://www.fao.org/fishery/topic/166308/en

Rees, T. 2003. "C-square s", a new spatial indexing system and its applicability to the description of oceanographic datasets. Oceanography, 16(1): 11–19.

Annex 1: VME Format Description

> **Format consists of 4 separate records for File Information, VME Cruise, VME Sample, and VME Data.**
> **File Information record is created automatically in the template.**
>
> **To report 'absence' data (for example if you are reporting a research trawl survey where there was no VME by-catch), this VME Data record should be left empty, and only VME Cruise and VME Sample should be completed.**
>
> **Note: in the 'Obligation' column, M stands for mandatory, O stands for optional and C stands for conditional (i.e. conditional on information being provided in the previous fields)**
>
> **In case of questions about data reporting format, vocabulary codes, etc., please contact accessions@ices.dk**

1. File Information (Mandatory record, created automatically from the data submission template)

FIELD NAME	FIELD TYPE	OBLIGATION	DESCRIPTION	GUIDANCE
RecordType	Text	M	Record Type code 'FI'	The field will be autofilled during data export to xml.
Country	Text	M	Survey country 2-alpha ISO code	The field will be autofilled from the Cruise record
EntryDateTime	Date	M	Data entry date time	The field will be autofilled during data export to xml.

2. VME Cruise (Mandatory record)

FIELD NAME	FIELD TYPE	OBLIGATION	DESCRIPTION	GUIDANCE
RecordType	Text	M	Record Type code 'VC'	The field will be autofilled during data export to xml.
SurveyName	Text	M	Survey name	Survey (campaign) name and acronym.
Country	Text	M	Survey country 2-alpha ISO code	Use codes from the list: http://vocab.ices.dk/?ref=337
VesselType	Text	M	Vessel type from which the sample was collected.	Choose from the list: http://vocab.ices.dk/?ref=57
Ship	Text	O	Code of vessel on which sample was collected (for ROV or AUV, provide reference to the parent vessel).	Field is strongly recommended for reporting. Report vessel code from the list at http://vocab.ices.dk/?ref=315
CruiseID	Text	M	Local Cruise ID	To be provided by the data supplier – cruise reference code. If CSR exists, report the CSR cruise reference for traceability

StartDate	Date	M	Cruise start date	All dates must be supplied as text in the format YYYY-MM-DD (ISO date format).
EndDate	Date	M	Cruise end date	All dates must be supplied as text in the format YYYY-MM-DD (ISO date format).
PlaceName	Text	O	Name of place in reference to the data collection.	Free text; e.g. "Rockall Bank"
ShipPositionPrecision	Integer	O	An estimate of the precision of the lat/long provided by the spatial positioning systems of the vessel/ROV	Calculated or estimated precision of the vessel/ROV position in metres. Take into account whether position is determined from the ship position or from ROV. For example when two separate spatial reference systems are in use such as vessel position GPS (+/- 10m) and ROV USBL (+/- 20m) position, the precision of both the vessel and ROV systems should be added together to give a precision of +/- 30m.
ResponsibleOrganisation	Text	M	EDMO code of the organization responsible for the data.	Please select the organization from the list at http://vocab.ices.dk/?ref=EDMO
ResponsibleOrganisationRole	Text	M	Role of the responsible organization for the data.	Choose from the list: http://vocab.ices.dk/?ref=1434
ScientistInCharge	Text	O	Name of SIC (Scientist in Charge) or PI (Principle Investigator.	Free text. Name of the scientist with overall responsibility for data collection and achieving science objectives during survey.
FundingProject	Text	O	Project name	Free text. Name of the funding project
PointOfContact	Text	M	Name of the point of contact for queries about the data.	Free text. Who should be contacted about the data
ContactEmail	Text	M	E-mail address for the point of contact about the data.	Valid e-mail address
Reference	Text	O	A reference to the data source.	Complete citation for the data source e.g. "Mortensen et al., 2006"
FileName	Text	O	Name of the excel or shape file submitted.	Link to the related metadata files, if available. The files should be sent to accessions@ices.dk
DataAccess	Text	M	Data access constraints.	e.g. "public" or "restricted". Please use "public" if you are content with the data being downloaded in its raw form from the ICES data portal. Alternatively, the data will not be downloadable if you select "restricted". Subset of the controlled vocabulary: http://vocab.ices.dk/?ref=1435

3. VME Sample (Mandatory record)

FIELD NAME	FIELD TYPE	OBLIGATION	DESCRIPTION	GUIDANCE
RecordType	Text	M	Record Type code 'VS'	The field will be autofilled during data export to xml.
CruiseID	Text	M	Local Cruise ID	To be provided by the data supplier – cruise reference code. If CSR exists, report the CSR cruise reference
StationID	Text	O	ID of the survey station, if known.	May be numeric, text or a combination of numbers and text.
SampleKey	Text	M	Key for each discernible sampling/analysis event.	A unique key for each sampling event like: • A single trawl • A single long line set • A single photograph from a photographic tow • A segment of analysed video from a video tow • A video tow, if video is unanalyzed • A sediment grab or core. To be created by data supplier. May be numeric, text or a combination of numbers and text, which may relate back to original data management convention for traceability.
ObservationDate	Date	C	Date the species or habitat was recorded.	Report the date of observation, if available. All dates must be supplied as text in the format YYYY-MM-DD (ISO date format).
ObservationDateType	Text	M	Precision of the reported ObservationDate	A one or two character code that identifies the types of dates used in ObservationDate. Explicitly stating the code avoids any ambiguity, which might lead to subtly different interpretations. Choose from the list: http://vocab.ices.dk/?ref=1429
DataCollectionMethod	Text	M	Reference to the data collection method used.	Specify the data collection method for the sample based on the vocabulary list **N.B. If several samples were taken on site by the variety of methods, report them separately with different sample keys** Choose from: • Multibeam echo sounder (unknown platform) • Multibeam echo sounder (vessel mounted) • Multibeam echo sounder (AUV mounted) • Multibeam echo sounder (ROV mounted)

				• Single beam echo sounder • Side scan sonar (Unknown platform) • Side scan sonar (AUV mounted) • Sub-bottom profiler • CTD • Grab (please specify type from link below) • Core (please specify type from link below) • Trawl (please specify type from link below) • Dredge (please specify type from link below) • Longline • Seabed imagery - towed camera system • Seabed imagery - drop camera system • Seabed imagery – ROV system This list is a subset of the ICES Sampler Type vocabulary. If your survey method is not listed, please select from: http://vocab.ices.dk/?ref=152
StartLatitude	Double	C	Start latitude of the record, if line (if point, use MidLatitude and leave this blank).	Use World Geodetic System 1984 (WGS84) geographic coordinate system, and decimal degrees.
StartLongitude	Double	C	Start longitude of the record, if line (if point, use MidLongitude and leave this blank).	Use World Geodetic System 1984 (WGS84) geographic coordinate system, and decimal degrees.
MiddleLatitude	Double	M	Midpoint latitude of the record if line (if point, use this field for position).	Use World Geodetic System 1984 (WGS84) geographic coordinate system, and decimal degrees.
MiddleLongitude	Double	M	Midpoint longitude of the record if line (if point, use this field for position).	Use World Geodetic System 1984 (WGS84) geographic coordinate system, and decimal degrees.
EndLatitude	Double	C	End latitude of the record (if point, use MidLatitude and leave this blank).	Use World Geodetic System 1984 (WGS84) geographic coordinate system, and decimal degrees.
EndLongitude	Double	C	End longitude of the record (if point, use MidLongitude and leave this blank).	Use World Geodetic System 1984 (WGS84) geographic coordinate system, and decimal degrees.
GeometryType	Text	M	Sampling geometry type	Point or line - subset of the controlled vocabulary http://vocab.ices.dk/?ref=1430
SamplePositionAccuracy	Integer	O	Accuracy of spatial position of record in metres.	For example, trawl by-catch of coral along a 5km trawl track would have a RecordPositionAccuracy of 5000 metres **whereas** an observation of a cold-water coral reef observed on an ROV/drop-camera frame transect may be have a RecordPositionAccuracy of 20 metres (this being the accuracy of the USBL positioning being used on the ROV/drop-frame) Value in metres; e.g. "10" means the given position of the record is accurate to ± 10 metres.
DepthUpper	Double	O	Upper depth in metres	For transect data (video or trawl) indicate the shallowest depth

FIELD NAME	FIELD TYPE	OBLIGATION	DESCRIPTION	GUIDANCE
				in metres. e.g. 110
DepthLower	Double	O	Lower depth in metres	For transect data (video or trawl) indicate the deepest depth in metres. e.g. 150
DepthShoot	Double	O	Depth at the beginning of the tow in metres	For trawling data, report depth in metres at the beginning of the tow
DepthHaul	Double	O	Depth at the end of the tow in metres	For trawling data, report depth in metres at the end of the tow

4. VME Data Record (Optional record – If you wish to report 'absence' data (for example if you are reporting a research trawl survey where there was no VME by-catch), this record should be left empty).

FIELD NAME	FIELD TYPE	OBLIGATION	DESCRIPTION	GUIDANCE
RecordType	Text	M	Record Type code 'VD'	The field will be autofilled during data export to xml.
SampleKey	Text	M	Key for each discernible sampling/analysis event.	A unique key for each sampling event like: • A single trawl • A single long line set • A single photograph from a photographic tow • A segment of analysed video from a video tow • A video tow, if video is unanalyzed • A sediment grab or core. To be created by data supplier. May be numeric, text or a combination of numbers and text, which may relate back to original data management convention for traceability.
RecordKey	Text	M	Unique key for each data record (row) within a submitted dataset.	To be created by data supplier. May be numeric, text or a combination of numbers and text, which may relate back to original data management convention for traceability. If no original data management key exists, this can be added as a sequential numeric list (1,2,3, etc.)
VME_Indicator	Text	C	Grouping of species/habitats used by WGDEC.	A VME indicator must be chosen if no *bona fide* VME habitat type is known to occur, e.g. a sponge from trawl by-catch. This field can also be used to record species records as additional detail for records of VME habitats. To do this, the VME indicator record(s) should be on a separate line from the VME habitat record, and should have the same VMEKey. VME indicators should match the list shown below. Controlled vocabulary http://vocab.ices.dk/?ref=1409

				Choose from: • Black coral • Cup coral • Gorgonian • Stylasterids • Sea-pen • Soft coral • Sponge • Stony coral • Anemones • Xenophyophores • Stalked crinoids • Chemosynthetic species (seeps and vents)
VME_IndicatorSubtype	Text	O	Indicator subtype code		These are additional VME Indicator types used by NAFO Working Groups, and are not represented in VME Indicator field above. Controlled vocabulary: http://vocab.ices.dk/?ref=1492
VME_HabitatType	Text	C	VME habitat types used by WGDEC.		A VME habitat type should be chosen if the record occurs within a *bona fide* VME habitat e.g. From an ROV transect surveying a cold water coral reef. All datapoints representing the known extent of a VME habitat type along a transect or tow should be recorded within one line of the database (e.g. a video tow split into sections of cold-water coral reef; bathyal rock; cold-water coral reef, would represent two VME habitat records of cold-water coral reef in the database). Controlled vocabulary http://vocab.ices.dk/?ref=1410 Choose from: • Cold-water coral reef • Coral garden • Deep-sea sponge aggregations • Sea-pen fields • Anemone aggregations • Mud and sand emergent fauna • Bryozoan patches • Hydrothermal vents/fields • Cold seeps
VME_HabitatSubtype	Text	O	VME sub habitat types used by WGDEC.		If no VME_habitat_type is filled in, this field should be left blank. If VME_habitat_type is filled in, this field is optional.

				Controlled vocabulary http://vocab.ices.dk/?ref=1411
				Choose from:

Controlled vocabulary http://vocab.ices.dk/?ref=1411
Choose from:
- *Lophelia pertusa*/*Madrepora oculata* reef
- *Solenosmilia variabilis* reef
- Hard-bottom coral garden
  Note that these records can be further classified as one of the following:
  - Hard-bottom coral garden: Hard-bottom gorgonian and black coral gardens
  - Hard-bottom coral garden: Colonial scleractinians on rocky outcrops
  - Hard-bottom coral garden: Non-reefal scleractinian aggregations
  - Hard-bottom coral garden: Stylasterid corals on hard substrata
- Soft-bottom coral garden
  Note that these records can be further classified as one of the following:
  - Soft-bottom coral garden: Soft-bottom gorgonian and black coral gardens
  - Soft-bottom coral garden: Cup-coral fields
  - Soft-bottom coral garden: Cauliflower Coral Fields
- Soft-bottom sponge aggregations
- Hard-bottom sponge aggregations
- Soft-bottom anemone aggregations
- Hard-bottom anemone aggregations

Field	Type		Description	Guidance
VMEKey	Double	C	Key to identify VME habitat and VME indicator records belonging to a single habitat patch.	Sequential number to identify records that come from the same block of habitat, e.g. Consecutive points on an ROV or video transect that are on the same coral reef. This is mandatory for any records of VME habitats. If each record comes from a separate habitat patch, or if this is not known, use a different number for each record. Also optional for records of VME indicator species, where it can be used to show that these come from a patch of VME habitat. See guidance on the VME_indicator field for more details.
GeneralTaxonDescriptor	Text	O	Most detailed name of taxon (according to HighestTaxonomicResolution).	e.g. Porifera, *Lophelia pertusa*, soft coral

TaxonLatinName	Text	C	Latin name of the most detailed taxon identified.	Report the taxon Latin name whenever possible. Report the taxon Latin name whenever possible. If reported in the Excel template, the AphiaID would be matched automatically. In case of ambiguities in the results, the data submitter should specify the AphiaID instead.
AphiaID	Integer	C	WoRMS Species reference code	We strongly recommend reporting of valid species AphiaIDs as in http://www.marinespecies.org/. In the excel template, either AphiaID or TaxonLatinName should be reported (same field). If the field is left blank, AphiaID=2 (Animalia) would be automatically assigned.
DeadAlive	Text	O	Indication of whether most of sample was dead or alive.	Choose either "Dead" or "Alive". Subset of the controlled vocabulary: http://vocab.ices.dk/?ref=64
Number	Double	O	Number of individuals associated with the record.	If not known, use "Null".
Weight	Double	O	Mass of indicator, in kg, associated with the record.	Weight in kilograms. This is likely to be relevant to by-catch/ data. If not known or not relevant, use "Null". Do not include if the record is a VME habitat type.
Density	Double	O	Number of individuals per square metre (m²).	If not known or not relevant, use "Null".
PercentCover	Double	O	Percentage cover of indicator (relevant to underwater imagery data, e.g. ROV or drop down video).	If not known or not relevant, use "Null".
SACFOR	Text	O	Semi-quantitative abundance scale (relevant to underwater imagery data, e.g. ROV or drop down video).	Controlled vocabulary http://vocab.ices.dk/?ref=1491. Scale description: http://jncc.defra.gov.uk/page-2684 If not known or not relevant, use "Null".
TaxonDeterminer	Text	O	Name of organization that identified the GeneralTaxonDescriptor.	Please select the organization from the list at http://vocab.ices.dk/?ref=EDMO
TaxonDeterminationDate	Date	O	Date of identification of the GeneralTaxonDescriptor.	All dates must be supplied as text in the format YYYY-MM-DD (ISO date format).
Comments	Text	O	Any other relevant comments or information.	e.g. "sample was 60% live coral and 40% dead"

Annex 2: A list of deep-water VMEs and their characteristic taxa (table extracted from ICES VME Workshop report (ICES, 2016))

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	*Lophelia pertusa/Madrepora oculata* reef	*Lophelia pertusa* *Madrepora oculata*	Stony coral
	Solenosmilia variabilis reef	*Solenosmilia variabilis*	Stony coral
Coral garden	Hard bottom coral garden **Note** - you can also assign records to a more detailed sub-type	(See below)	Black coral Gorgonian Stony coral Stylasterids
	Hard bottom coral garden: Hard bottom gorgonian[3] and black coral gardens	ACANTHOGORGIIDAE • *Acanthogorgia armata* ANTHOTHELIDAE CHRYSOGORGIIDAE CORALLIIDAE ISIDIDAE, KERATOISIDINAE • *Acanella arbuscula* • *Acanella spp.* • *Isidella spp.* • *Keratoisis spp.* • *Lepidisis spp.* PARAGORGIIDAE • *Paragorgia arborea* PLEXAURIDAE • *Paramuricea biscaya* • *Paramuricea placomus*	Gorgonian Soft coral Black coral

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[3] *Gorgonian* is now not a recognised taxonomic term. However, as many deep-sea biologists are familiar with this term, this VME Indicator was retained.

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")
		• *Paramuricea spp.* • *Swiftia pallida* PRIMNOIDAE • *Callogorgia verticillata* • *Primnoa resedaeformis* ALCYONIIDAE • *Anthomastus grandiflorus* ANTIPATHIDAE • *Stichopathes cf gravieri* LEIOPATHIDAE • *Leiopathes spp.* SCHIZOPATHIDAE • *Bathypathes spp.* • *Parantipathes hirondelle* • *Parantipathes spp.* • *Stauropathes arctica*	
	Hard bottom coral garden: Colonial scleractinians on rocky outcrops	*Lophelia pertusa* *Madrepora oculata*	Stony coral
	Hard bottom coral garden: Non-reefal scleractinian aggregations	*Enallopsammia rostrata* *Lophelia pertusa* *Madrepora oculata*	Stony coral
	Hard bottom coral garden: Stylasterid corals on hard substrata	STYLASTERIDAE • *Pliobothrus symmetricus* • *Pliobothrus spp.* • *Stylaster spp.*	Stylasterids
	Soft bottom coral garden **Note** - you can also assign records to a more detailed sub-type	(See below)	Gorgonian Soft coral Black coral Cup coral
	Soft bottom coral garden: Soft bottom gorgonian[1] and black coral gardens	ALCYONIIDAE • *Anthomastus grandiflorus* ANTIPATHIDAE • *Stichopathes cf gravieri*	Gorgonian Soft coral Black coral

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")
		CHRYSOGORGIIDAE • *Radicipes gracilis* • *Radicipes spp.* ISIDIDAE • *Acanella arbuscula* • *Acanella spp.* • *Isidella spp.*	
	Soft bottom coral garden: Cup-coral fields	CARYOPHYLLIIDAE • *Caryophyllia spp.* • *Stephanocyathus moseleyanus* FLABELLIDAE • *Flabellum macandrewi* • *Flabellum angulare* • *Flabellum alabastrum* • *Flabellum spp.*	Cup coral
	Soft bottom coral garden: Cauliflower Coral Fields	NEPHTHEIDAE • *Duva florida* • *Drifa glomerata* • *Gersemia spp.*	Soft coral
Deep-sea sponge aggregations	Soft bottom sponge aggregations	GEODIIDAE • *Geodia barretti* *Geodia macandrewi* • *Geodia atlantica* ANCORINIDAE • *Stryphnus ponderosus* • *Steletta spp.* PACHASTRELLIDAE • *Thenea spp.* ROSSELLIDAE	Sponge[4]

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[4] Data providers should ensure that only sponge records of species representative of deep sea habitats are submitted (see representative taxa)

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")
		• *Caulophacus arcticus* PHERONEMATIDAE • *Pheronema carpenteri*	
	Hard bottom sponge aggregations	AXINELLIDAE • *Axinella infundibuliformis* • *Phakellia spp.* MYCALIDAE POLYMASTIIDAE • *Polymastia* spp. TETILLIDAE ROSSELLIDAE • *Caulophacus arcticus* PHERONEMATIDAE • *Pheronema carpenteri*	Sponge[2]
Seapen fields		ANTHOPTILIDAE • *Anthoptilum murrayi* • *Anthoptilum spp.* PENNATULIDAE • *Pennatula phosphorea* FUNICULINIDAE • *Funiculina quadrangularis* HALIPTERIDAE • *Halipteris sp* KOPHOBELEMNIDAE • *Kophobelemnon stelliferum* PROTOPTILIDAE UMBELLULIDAE • *Umbellula encrinus* • *Umbellula huxleyi* • *Umbellula lindahli* • *Umbellula spp.* VIRGULARIIDAE • *Virgularia mirabilis*	Sea-pen

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")
Anemone aggregations	Soft bottom anemone aggregations	CERIANTHIDAE	Anemones
	Hard bottom anemone aggregations	ZOANTHARIA (Order)	Anemones
Mud and sand emergent fauna		BOURGETCRINIDAE ANTEDONTIDAE HYOCRINIDAE XENOPHYOPHORA • *Syringammina fragilissima* • *Reticulammina spp.* HYALONEMA (Stalked sponge)	Stalked crinoids Xenophyophores Sponge[3]
Bryozoan patches			
Hydrothermal vents/fields		ACTINOSCYPHIIDAE ALVINOCARIDIDAE • *Alvinocaris spp.* ANTONBRUNNIDAE BYTHOGRAEIDAE GALATHEIDAE • *Munidopsis spp.* GERYONIDAE LUCINIDAE MYTILIDAE PORTUNIDAE SIBOGLINIDAE SOLEMYIDAE THYASIROIDAE • *Thyasira spp.* VESICOMYIDAE	Chemosynthetic species (seeps and vents)

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 Seeps		ACTINOSCYPHIIDAE ALVINOCARIDIDAE • *Alvinocaris spp.* ANTONBRUNNIDAE BYTHOGRAEIDAE GALATHEIDAE • *Munidopsis spp.* GERYONIDAE LUCINIDAE MYTILIDAE PORTUNIDAE SIBOGLINIDAE SOLEMYIDAE THYASIROIDAE • *Thyasira spp.* VESICOMYIDAE	Chemosynthetic species (seeps and vents)