

ICES Vulnerable Marine Ecosystem (VME) Database Factsheet

Portal to view and download
observations of Vulnerable Marine
Ecosystem (VME) indicators and
habitats in the North Atlantic

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ICES VME Database

A central portal (<http://vme.ices.dk>) for data on the distribution and abundance of Vulnerable Marine Ecosystems (VMEs), (and organisms considered to be indicators of VMEs) across the North Atlantic has been set up by the Joint ICES/NAFO Working Group on Deep-water Ecology (WGDEC). Criteria used to select habitats and indicators for inclusion in the database were those described in the FAO International Guidelines for the Management of Deep-sea Fisheries in the High Seas (FAO, 2009).

The database is comprised of; 1) 'VME habitats' which are records for which there is unequivocal evidence for a VME, e.g. ROV observations of a coral reef, 2) VME indicators which are records that suggest the presence of a VME with varying degrees of uncertainty. For VME indicators a weighting system of vulnerability and uncertainty is provided as part of the database to aid interpretation.

The VME database may be used for many purposes; ICES will use it when providing scientifically-robust advice on the distribution of VMEs and recommending possible management solutions such as bottom fishing closures within NEAFC (North East Atlantic Fisheries Commission) waters to protect VMEs.

Data sources

The records 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.

Relationship with the OSPAR habitat database

The OSPAR habitat reference database (<http://www.emodnet-seabedhabitats.eu/default.aspx?page=1974&LAYERS=OSPARhabPolygon,OSPARHabPoints,Region&zoom=2&Y=54.62836509879482&X=6.356914061928387>) is a spatial dataset containing point and polygon records for surveyed habitats contained within the OSPAR list of threatened and/or declining species and habitats covering the area of the North East Atlantic.

The majority of records within the ICES VME database are not duplicated within the OSPAR database of threatened and/or declining habitats. These two databases should be seen as complementary but users should be aware that some habitat types included in the OSPAR database of threatened and/or declining habitats would likely qualify as VMEs. Examples of such habitats include *Lophelia pertusa* reefs and deep-sea sponge aggregations.

Relationship with the FAO VME database

The ICES VME Database differs from the FAO VME database (<http://www.fao.org/in-action/vulnerable-marine-ecosystems/en/>). The ICES VME Database contains observations of VME indicators and habitats throughout

the North Atlantic, whereas the FAO database contains records of management measures implemented by Regional Fisheries Bodies throughout the world's oceans.

VME Database Schema (Version 2016)

FIELD NAME	FIELD TYPE	OBLIGATION	DESCRIPTION	GUIDANCE
WGDECGUI	Text	M	Globally Unique ID for each dataset.	To be created by data supplier - Follow the format: 2-letter ICES country code_WGDEC_year of data provision_3 digit sequential number for each dataset submitted. For example, if GB submitted two datasets in 2015 the WGDECGUIs would be GB_WGDEC_2015_001 and GB_WGDEC_2015_002. Note that each submission can contain multiple surveys.
SampleKey	Text	M	Key for each discernible sampling/analysis event.	<p>A Sample key must be unique for each sampling event, but can be used across multiple records if all were originally contained within a single sampling event. A sampling event can be described as a single discernible analysed unit, for example:</p> <ul style="list-style-type: none"> A single trawl; A single longline set A single photograph from a photographic tow; A segment of analysed video from a video tow; A video tow, if video is unanalysed; A sediment grab or core. <p>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.</p>
RecordKey	Text	M	Unique key for each 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.)

FIELD NAME	FIELD TYPE	OBLIGATION	DESCRIPTION	GUIDANCE
VME_Indicator	Text	C	Grouping of species/habitats used by WGDEC.	<p>A VME indicator must be chosen if no <i>bona fide</i> VME habitat type is known to occur, e.g. a sponge from trawl bycatch. 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.</p> <p>Choose from:</p> <ul style="list-style-type: none"> Black coral Cup coral Gorgonian¹ Stylasterids Sea-pen Soft coral Sponge Stony coral Anemones Xenophyophores Stalked crinoids Chemosynthetic species (seeps and vents)
VME_HABITAT_TYPE	Text	C	VME habitat types used by WGDEC.	<p>A VME habitat type should be chosen if the record occurs within a <i>bona fide</i> VME habitat e.g. From an ROV transect surveying a cold-water coral reef.</p> <p>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).</p> <p>Choose from:</p> <ul style="list-style-type: none"> Cold-water coral reef Coral garden Deep-sea sponge aggregations Seapen fields Anemone aggregations Mud and sand emergent fauna Bryozoan patches Hydrothermal vents/fields Cold seeps

¹ Data providers should note that *Gorgonian* is now not a recognised taxonomic term. However, as many deep-sea biologists are familiar with this term, this VME Indicator was retained. The following families should be considered under this term:

1. Holaxonia (Suborder): Acanthogorgiidae, Gorgoniidae, Keroeididae, Plexauridae.
2. Calaxonia (Suborder): Chrysogorgiidae, Dendrobrachiidae, Ellisellidae, Ifalukellidae, Isididae, Primnoidae.
3. Scleraxonia (Suborder): Anthothelidae, Briareidae, Coralliidae, Melithaeidae, Paragorgiidae, Parisididae, Subergorgiidae.

FIELD NAME	FIELD TYPE	OBLIGATION	DESCRIPTION	GUIDANCE
VME_HABITAT_SUBTYPE	Text	O	VME sub habitat types used by WGDEC.	<p>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.</p> <p>Choose from:</p> <p><i>Lophelia pertusa/Madrepora oculata</i> reef</p> <p><i>Solenosmilia variabilis</i> reef</p> <p>Hard-bottom coral garden</p> <p>Note that these records can be further classified as one of the following:</p> <p>Hard-bottom coral garden: Hard-bottom gorgonian and black coral gardens</p> <p>Hard-bottom coral garden: Colonial scleractinians on rocky outcrops</p> <p>Hard-bottom coral garden: Non-reefal scleractinian aggregations</p> <p>Hard-bottom coral garden: Stylasterid corals on hard substrata</p> <p>Soft-bottom coral garden</p> <p>Note that these records can be further classified as one of the following:</p> <p>Soft-bottom coral garden: Soft-bottom gorgonian and black coral gardens</p> <p>Soft-bottom coral garden: Cup-coral fields</p> <p>Soft-bottom coral garden: Cauliflower Coral Fields</p> <p>Soft-bottom sponge aggregations</p> <p>Hard-bottom sponge aggregations</p> <p>Soft-bottom anemone aggregations</p> <p>Hard-bottom anemone aggregations</p>
VMEKey	Double	C	Key to identify VME habitat and VME indicator records belonging to a single habitat patch.	<p>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.</p> <p>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.</p>
Status	Text	M	Presence or absence of habitat or species.	Choose either "Present" or "Absent".
GeneralTaxonDescriptor	Text	M	Most detailed name of taxon (according to HighestTaxonomicResolution).	e.g. Porifera, <i>Lophelia pertusa</i> , soft coral
HighestTaxonomicResolution	Text	C	Highest taxonomic resolution described in GeneralTaxonDescriptor.	Only use if a scientific taxon name is given. E.g. order, species, genus.
Order	Text	C	Order of taxon, if known.	If not known, use "Null".
Genus	Text	C	Genus of taxon, if known.	If not known, use "Null".
Species	Text	C	Species of taxon, if known.	If not known, use "Null".
Dead_alive	Text	O	Indication of whether most of sample was dead or alive.	Choose either "Dead" or "Alive".
Number	Double	O	Number of individuals associated with the record.	If not known, use "Null".

FIELD NAME	FIELD TYPE	OBLIGATION	DESCRIPTION	GUIDANCE
Weight_kg	Double	O	Mass of indicator, in kg, associated with the record.	This is likely to be relevant to bycatch/ 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 (m ²).	If not known or not relevant, use "Null".
%Cover	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).	If not known or not relevant, use "Null".
TaxonDeterminer	Text	M	Name of person and/or organization that identified the GeneralTaxonDescriptor.	Please add the name and select the organization from the list at http://vocab.ices.dk/?ref=EDMO . If the name of the person is not known, just select the organization.
TaxonDeterminationDate	Date	M	Date of identification of the GeneralTaxonDescriptor.	All dates must be supplied as text in the format YYYY-MM-DD (ISO date format).
ObsDate	Date	M	Date the species or habitat was recorded.	All dates must be supplied as text in the format YYYY-MM-DD (ISO date format).
ObsDateType	Text	M	A one or two character code that identifies the types of dates used in ObsDate. Explicitly stating the code avoids any ambiguity, which might lead to subtly different interpretations	Choose from: D - Dates specified to the nearest day. O - Dates specified to the nearest month Y - Dates specified to the nearest year ND - No date U - Unknown
StationID	Text	O	ID of the survey station, if known.	May be numeric, text or a combination of numbers and text.
SurveyKey	Text	M	Unique key for each dataset making up the country submission to WGDEC (e.g. representing actual separate surveys, data from different sources, museum collections, etc.). SurveyKey links to the Survey Key Metadata worksheet, where survey details are described in full.	Each SurveyKey must refer to a record in the SurveyKey Metadata worksheet.

FIELD NAME	FIELD TYPE	OBLIGATION	DESCRIPTION	GUIDANCE
SurveyMethod	Text	O	A description of the survey method(s) used.	Choose one or more from: Multibeam echosounder (unknown platform) Multibeam echosounder (vessel mounted) Multibeam echosounder (AUV mounted) Multibeam echosounder (ROV mounted) Single beam echosounder Sidescan sonar (Unknown platform) Sidescan sonar (AUV mounted) Sub-bottom profiler Grab (please specify type from link above) Core (please specify type from link above) Trawl (please specify type from link above) Dredge (please specify type from link above) 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
VesselType	Text	M	Vessel type from which the sample was collected.	Choose from: Commercial Research Other
Ship	Text	O	Name of vessel on which sample was collected (for ROV or AUV, provide name of parent vessel).	If the survey was carried out using a research vessel, please select the vessel name from the list at http://vocab.ices.dk/?ref=315
PlaceName	Text	O	Name of place in reference to the record collection.	Free text; e.g. "Rockall Bank"
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.
EndLatitude	Double	C	End latitude of the record (if point, leave blank).	Use World Geodetic System 1984 (WGS84) geographic coordinate system, and decimal degrees.
EndLongitude	Double	C	End longitude of the record (if point, leave blank).	Use World Geodetic System 1984 (WGS84) geographic coordinate system, and decimal degrees.
MidLatitude	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.
MidLongitude	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.
GeometryType	Text	M	Point or line.	Enter "point" or "line".

FIELD NAME	FIELD TYPE	OBLIGATION	DESCRIPTION	GUIDANCE
RecordPositionAccuracy	Integer	O	Accuracy of spatial position of record. For example, trawl bycatch 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 (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 \pm 10 metres.
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 (+/- 10 m) and ROV USBL (+/- 20 m) position, the precision of both the vessel and ROV systems should be added together to give a precision of +/- 30 m.
Reference	Text	M	A reference to the data source.	Complete citation for the data source e.g. "Mortensen <i>et al.</i> , 2006"
Filename	Text	O	Name of the excel or shape file submitted.	
ResponsibleOrganization	Text	M	Name of the organization responsible for the data.	Please select the organization from the list at http://vocab.ices.dk/?ref=EDMO
ResponsibleOrganizationRole	Text	M	Role of the responsible organization for the data.	Choose from: Owner (owns resource) Originator (created resource) Custodian (accepts responsibility for the data and maintains the resource)
PointOfContact	Text	M	Name of the point of contact for queries about the data.	Free text.
ContactE-mail	Text	M	E-mail address for the point of contact for the data.	Valid e-mail address
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".
DepthUpper	Double	O	For transect data (video or trawl) indicate the shallowest depth in metres.	e.g. 110
DepthLower	Double	O	For transect data (video or trawl) indicate the deepest depth in metres.	e.g. 150
Comments	Text	O	Any other comments or information.	e.g. "sample was 60% live coral and 40% dead"