marine environmental
data & information network

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Title	MEDIN data guideline for sediment sampling by grab or core for benthos
MEDIN Discipline	Marine Biodiversity
Author(s)	M. Charlesworth, B. Seeley, S. Wilkinson
Document Owner	C. Postlethwaite
Reviewed by	MEDIN Data Standards Group
Date reviewed	20 July 2012
Version	4.0
Date approved and published on MEDIN website	04 September 2012
Date last checked for accuracy	21 October 2012
Summary	This guideline defines the format of data and information produced from the collection of benthic samples using a grab or core. If used correctly the data will be readily used and reused. An xls template is provided if required.
Keywords	Sediment, Benthos, Grab, Core

Change history		
Version	**Date**	**Change**
1.0	23/03/09	First draft of document
1.1	2/04/09	Incorporated comments and excel template
1.2	22/03/09	Further refinement following comments
1.3	20/05/09	Further refinement following comments by MEDIN standards Group
1.4	19/0709	Refinement following comments from Marine Monitoring Group, NMBAQC and other users.

3.0	05/05/2010	Revised in light of new table structure to all guidelines and link to NMBAQC
3.1	15/07/2010	Minor edits following changes to common tables and specification of .csv format for transfer of data
3.2	11/04/2011	Edits following guideline reviews.
3.3	17/08/2011	Editing of introduction
3.4	30/08/2012	Changed to allow identification of individual records with an identifier and also the ability to add attributes to species information in table 2.8 e.g. lengths and weights of individual specimens, details on chemical concentrations, mark recapture data size classes.
4.0	2/10/2012	Put field titles in camel case and made revisions to species and habitat data. Added a dBASE compatible field title. Added a colour coded field name summary list.

1.1.   Scope and data format for submission to DAC

This guideline covers the collection of benthic samples using a grab or core. It covers both the raw data from such sampling (actual counts of organisms), methodologies used (eg. sampling devices used) and derived summary information.

This guideline does not specify methodological standards however where applicable those recommended by the UK National Marine Biological Analytical Quality Control Scheme should be followed. Details can be seen at http://www.nmbaqcs.org/qa-standards.aspx

Following feedback from users the preferred format for holding the raw species data is in the format where each record is presented as a row. This is how it is anticipated that data is exchanged as it allows the application of other information such as stage of development, biomass etc to be recorded for each species. However it is recognized that often results are produced in a matrix format and this may be used for specific applications.

To submit data to a Data Archive Centre, the data must be saved and transferred in the .csv file format.

1.2 Background to Data Guidelines

The Marine Environmental Data and Information Network (MEDIN) is working towards creating a framework of consistent standards covering the major types of data collection undertaken in the marine environment around the UK. The principle benefits of this suite of standards are:

- Allows contracting organizations to easily specify a format that data should be returned in that can be readily used and includes all relevant attributes

- Provides a consistent format for contractors to work to (rather than a different format for each contract)

- Data can be readily exported to Data Archiving Centres and other users

- Instills good practice amongst users

Each standard defines the data and information that must be stored with a particular data type to ensure it can be readily used and reused. As this type of information is specific for different data types, guidelines are developed for each type. This document describes one such format. Other standards can be accessed through www.oceannet.org.

1.3 Using this data guideline

This guideline is split into sections that refer to information that can be collated at different levels:

Project - a collection of surveys that have been completed for a common purpose

Survey - a uniquely identifiable programme of data collection such as a research cruise, moored instrument deployment or survey event

Fixed Station – a target location used as the basis for replicate sample events and for repeat monitoring surveys

Sample Event – a sample specific event of data collection

Sampling Methodology (Data Production Tools) – Details of any method or instruments used to collect the data

Sample Data – the data

Information that is likely to be the same for all samples (e.g. ship used, datums used) is collated in the 'Survey Information' table. Information that is common to each station and sample is collected in the 'Sample Event' table and the raw data is collected in the 'Sample Data' table. The project, survey and fixed station tables in this guideline are common to all MEDIN guidelines and may be used in part to derive a MEDIN discovery metadata record. Where the survey is part of a ship cruise then the cruise report may hold the required information.

The tables below outline the data fields that are anticipated for this type of sampling. Each field is mandatory, conditional or optional as indicated by M, C, or O respectively. Conditional means that the field must be completed if a value is known. A description of what to include for each data field is also provided, as is a link to the controlled vocabularies that should be used where available.

You may use the tables below to create your own template but you must supply the data using the exact field title as provided in these guidelines. MEDIN provide a template spreadsheet containing the required data field titles but data can be supplied in whatever file format works best for your situation. An alternative dBASE compatible field title is also supplied if your data is provided in formats where field title length is limited. Please do not mix the field title naming conventions.

In the event that historical data, which does not have all the necessary mandatory fields is being configured into this guideline, then it is permissible to use the following entry terms:

Term	Description
unknown	The correct value is not known to and not computable by the creator of this information. However a correct value probably exists.
inapplicable	There is no appropriate value. To be used in cases where metadata elements cannot be set null due to schema constraints.

In some cases it may be necessary to extend this guideline for a specific purpose such as a specific exchange of data between applications or to fulfill the needs of a specific project. This is permissible however we advise that the broad structure and format is maintained and that where possible controlled vocabularies are used. As any extension to the structure and format may be useful for other organizations please inform MEDIN of further agreements.

1.4 Controlled Vocabularies

The available controlled vocabulary lists used for this MEDIN data guideline are provided primarily by SeaDataNet, the International Council for the Sea (ICES) and EPSG. If a term is not available in a recommended list then please contact MEDIN to arrange for the term to be added.

The SeaDataNet list may be viewed at http://seadatanet.maris2.nl/v_bodc_vocab/welcome.aspx . By clicking on the list any term may be searched for by using the drop-down menus or all terms viewed by clicking search. The terms may be viewed in groups of 15 or may be downloaded into an excel file.

The ICES term lists are available at http://www.ices.dk/datacentre/reco/

Select which list you require from the 'Reference Code List' drop-down box. The results are shown for the selected list and may be downloaded into MS Excel by selecting the inverted green arrow.

There are a number of ways of describing a spatial dataset. Common horizontal coordinate reference systems include WGS84 and British National Grid. Common vertical coordinate reference systems include Highest Astronomical Tide and Ordnance Datum Newlyn (ODN). It is important that the coordinate reference system used for a data set is recorded so conversions can be carried out between reference systems. The EPSG database of coordinate reference systems (http://www.epsg.org/Geodetic.html) provides a dictionary of reference systems. In brief, to find a code, click on the OGP Online Registry and if you know the title (eg WGS84) then type this in the 'Name' field and click search. The name, code and further information is displayed. If you are looking for a specific type of reference system such as 'vertical' then click in the 'Type' box, hover over coordinate reference system and click on vertical and then click the search button and all recorded vertical reference systems are shown. If you want to search for a reference system in a particular part of the world (e.g. Northern Ireland Grid) then you may do so by submitting a term to the 'Area' box or filling out the latitudes and longitudes and clicking search. The website also provides a database of the reference systems and web services to access the information.

1.5. Relationship between MEDIN data guidelines and MEDIN discovery metadata

The MEDIN discovery metadata format is aimed at allowing the non-informed user to discover data sets and it is likely that one 'discovery' data set record will contain a large range of data types that are in turn covered by a range of data guidelines. To enable individuals to reuse data of a specific nature (e.g. benthic invertebrate data) then related information must be collected (e.g. data owner, reference systems used etc). Some of the information which is collected at the Survey Level in a data guideline is also required to create a discovery metadata record. Who creates the MEDIN discovery record for a dataset is case specific and dependant on the organization, and the relationship it has with a Data Archive Centre. However it is intended that the information collected at the 'Survey Information' level is reused for creating a MEDIN discovery metadata record. Further details are available on the MEDIN website which demonstrate clearly which fields in the MEDIN Data Guidelines can be reused for which elements in the MEDIN Discovery Metadata Standard.

1.6. Updates and Feedback

If you have any comments or feedback on this guidelines please contact enquiries@oceannet.org. Standards develop over time and it is likely that this standard will change in the future. We advise that you return to the MEDIN website to identify new versions and that you sign up to the MEDIN Standards e-mail listing (e-mail tele@bodc.ac.uk) and Marine Data News to be kept informed of developments.

2.1. Project Information. If your collection of data forms part of a wider project or time series then the below details must be recorded. If the work is a small survey then the details below may not be required. A project is a collection of surveys that have been completed for a common purpose. For example: an environmental impact assessment composed of a number of separate surveys; scientific research composed of a number of different research cruises; a legislative monitoring programme which is conducted each year over several years. A project is usually funded by the same organization(s) for its lifetime.

M, C, O indicate which fields are mandatory, conditional or optional.

Field Title	M, C,O	Description	Recommended Controlled Vocabulary or Format	dBASE compatible Field Title
projectName	M	The nationally/internationally accepted version of the project name.	Free text; e.g. North Hoyle Windfarm EIA; Rapid Climate Change; Dogger Bank pSAC Monitoring Programme; EA Bathing Water Monitoring Programme 1989-2010 ;	projName

projectCode	M	Provide a code to uniquely identify the project and allow links to be made between the tables. To ensure uniqueness, it is recommended that the website of the data owner is used, followed by a unique code which should reflect the code used by the funding organization where possible. e.g. contract code.	Free text; e.g. http://www.dassh.ac.uk /ME102; http://www.bodc.ac.uk/ RCC;	projCode
projectStartDate	M	The date that the project started which is from when the funding was in place to start. Use the 1st of the month if the exact date is not known.	Date; yyyy-mm-dd; e.g. 2001-01-24; 1973-01-01	projStart
projectEndDate	C	The date that the project finished or is due to finish. Use the 1st of the month if the exact date is not known.	Date; yyyy-mm-dd; e.g. 2007-01-24; 1976-01-01	projEnd
projectWebsite	C	If a project website exists give the address. This should be the web address of the environmental survey and not, in the case of environmental impact assessments, the engineering development.	URL; e.g. http://www.noc.soton.a c.uk/rapid/rapid.php	projWeb

2.2. Survey Information (Data Activity). The survey information is a uniquely identifiable programme of data collection such as a research cruise, moored instrument deployment or survey event. This information is likely to be the same for all sample events (e.g. stations) and subsamples in a given data set such as a cruise. Note that in the event that these are not common to all sample events then they should be specified for each one. These fields are common throughout all other MEDIN data guidelines and only need to be given once and referenced if your data set is composed of many data types and therefore conforms to a number of MEDIN Data Guidelines. Where data collection is undertaken on research vessels the data below can often be sourced in the Cruise Summary Report.

M, C, O indicate which fields are M - mandatory (must be filled in), C - conditional (must be filled in if exists in data resource, e.g. if a depth coordinate system was used the depth and), or O - optional respectively.

Field Title	M, C, O	Description	Recommended Controlled Vocabulary or Format	dBASE Compatible Field Title
surveyName	M	Title of the survey	Free text; e.g. 2004 CCW Menai Strait benthic monitoring survey	survName

surveyType	M	Category of survey for use in subsequent searching for certain types of surveys.	Controlled Vocabulary; OGP SSDM WORK_CATEGORY Domain; e.g. Geophysical and Hi-Res Seismic (Analogue and Digital Survey) **Or** Free text; e.g. Oceanographic; benthic biology; fish stock	survType

surveyAbstract	M	Brief description of the purpose of the survey and other types of measurements that were made for the survey.	Free text; e.g. Survey was the first in a series of 3 in 2010 whose specific aim was to identify sites suitable for further monitoring. Geophysical techniques were used in combination with grabs and cores to assess seabed type.	survAbs
surveyCode	M	A unique code for the survey to allow links to be built between this and sample event data, (the cruise identifier code could be used). To ensure uniqueness, it is recommended that the website of the organization responsible for the work is used followed by a unique code designated by the responsible organization.	Free text; e.g. http://www.noc.ac.uk/JCR3022; http://www.bennett.ac.uk/RIBJULY_03_01)	survCode
projectCode	C	If the survey forms part of a wider project then state the code of the project given in the project table (Table 2.1) to allow links to be made between the tables.	Free text; e.g. RCC	projCode

originator	M	The organization who has created the data set. If the organization is not in EDMO please contact enquiries@oceannet.org to add it. If a person who is not associated with any organization generated the data then please provide the name in the sample event table.	Controlled vocabulary: European Directory of Marine Organizations at http://seadatanet.maris2.nl/edmo/; e.g. 28: Centre for Environment, Fisheries and Aquaculture Science, Lowestoft Laboratory 2588: ABP Marine Environmental Services Ltd	origin
owner	M	Organization that owns the data set. If the organization is not in EDMO please contact enquiries@oceannet.org to add it.	Controlled vocabulary: European Directory of Marine Organizations athttp://seadatanet.maris2.nl/edmo/; e.g. 78: Department of Environment Fisheries and Rural Affairs 53: BP Exploration and Production	owner

surveyStartDate	M	The date and time that the survey started.	Date or DateTime; yyyy-mm-dd or yyyy-mm-dd hh:mm:ss e.g. 2009-01-24 12:33:00	survStart
surveyEndDate	C	The date and time that the survey ended. May be left null if the survey is ongoing.	Date or DateTime; yyyy-mm-dd or yyyy-mm-dd hh:mm:ss e.g. 2009-02-16 16:33:00	survEnd
timeZone*	M	Give the time zone in which the date and time of the data acquisition is made (preferably Coordinated Universal Time (UTC))	Free text; e.g. UTC	timeZone

| spatialCRS* | M | Spatial coordinate reference system. Describes the system of spatial referencing. i.e. the datum used to supply the decimal latitudes and longitudes. (See section 1.4 on accessing controlled vocabulary lists). There are additional fields to indicate the datum of the original data if the coordinates have been transformed. | Controlled vocabulary: EPSG Geodetic Parameter Dataset at http://www.epsg-registry.org/; e.g. **WGS84** code: EPSG::7030; **British National Grid** (projected) code: EPSG::27700; **ETRS89 / UTM zone 28N** code: EPSG::25828; **ETRS89 / UTM zone 29N** code: EPSG::25829; **ED50** code: EPSG::4230; **UTM31N** code: EPSG::23031 | spatialCRS |

originalCRS	C	Datum of original coordinate if different from the one used to supply data.	Controlled vocabulary: EPSG Geodetic Parameter Dataset at http://www.epsg-registry.org/ or other defined coordinate reference system register;	origCRS
transformation	C	Transformation used to create decimal degrees if transformation undertaken.	Free text; e.g. data was converted from OSGB to WGS84 in ArcGIS using the petroleum transformation.	trans
positionFix*	M	Position fix method and source. Give the method and source of the position fix instrument.	Free text; e.g. Differential GPS taken from the ships navigation equipment. 4 point satellite fix achieved	posFix
horizontalAccuracy*	M	Horizontal positional accuracy. How accurate the spatial positions are likely to be.	Decimal; units = metres e.g. 15.2	horiAcc

depthCRS*	C	Depth coordinate reference system. Give the reference to which the depth has been calculated e.g. Ordnance Datum Newlyn; Highest Astronomical Tide. Mandatory if seabed depths are given for each sample. See section 1.4 on accessing controlled vocabulary lists.	Controlled vocabulary: EPSG Geodetic Parameter Dataset at http://www.epsg-registry.org/; e.g. **Ordnance Datum Newlyn** code: EPSG::5701 **Malin Head height** code: EPSG::5731	depthCRS
verticalAccuracy*	C	Vertical positional accuracy. How accurate the vertical resolution is. Must be provided if seabed depths are given.	Decimal; units = metres e.g. 0.5	vertAcc
platformType*	O	The platform type (e.g. Research Vessel) from which the sampling device was deployed.	Controlled vocabulary: SeadataNet Platform Classes, Table L061 at http://seadatanet.maris2.nl/v_bodc_vocab/welcome.aspx/ ; e.g. 31: Research Vessel; 13: beach/intertidal zone structure; 48: mooring; 71: human	platType

platformName*	C	Mandatory if a vessel was used for the survey. The name of the ship from which the sampling device was deployed. If your ship is not on the list please contact accessions@ices.dk	Controlled vocabulary: ICES Reference Codes, Table SHIPC at http://www.ices.dk/data centre/reco/ ; e.g. 74LG: Lough Foyle AA30: Unspecified Ship 74E9: Cefas Endeavour AA36: Unspecified Fishing Vessel AA33: Unspecified Self-Propelled Small Boat	shipName
cruiseReportReference*	O	Cruise report or boat log reference if applicable.	Free text; in reference format. e.g. Litt, E.J. 2009. PHiXT 4. 30 July to 2 August 2009 RV Prince Madog POL Coastal Observatory Liverpool Bay Cruise Report. POL Coastal Observatory, Liverpool.	cruiseRef

confidentiality	O	Note if the survey is confidential	Free text; e.g. Restricted access; Public;	confidy

*Fields marked are unlikely to be required for the collection of leisure and recreation data

2 .3. Fixed (Target) Station Information (Optional). You should only use this table if you are returning to the same fixed point/transect/area on several occasions to form a time series – ie. there is a target location for your sample event. When returning to a target station, the actual sample event may not be in exactly the same location each time due to ship movements or sampling strategy, however it is useful to record both the position which is intended to be sampled (fixed) and the actual sampling position (sample). Therefore, the information below must be included if a fixed point, transect or area is used as the basis for replicate sample events and for repeat monitoring surveys. Actual coordinates should be placed in the sample event table. A fixed station may be a point, transect, or an area. If the fixed station is a transect or an area then the secondary latitude and longitude fields must be completed.

Field Title	M, C, O	Description	Recommended Controlled Vocabulary or Format	dBASE Compatible Field Title
fixedStationID	M	Fixed station identifier. A unique identifier for the station.	Free text. e.g. Stanton_Bank_station_4 (point) EastChan_Innerdover_se04 Liverpool_Dublin_ferry_route1 (transect) Lagan_Estuary (area)	fixStatID
geometry	M	Description of fixed station spatial form. Describe if the fixed station is a point, transect (curve) or an area (surface).	Controlled vocabulary: SeadataNet Geospatial Feature Type, TableL021 at http://seadatanet.maris2.nl/v_bodc_vocab/welcome.aspx/; e.g. 004: Point 003: Curve 005: Surface	geometry

primaryLatitude	M	The primary latitude of the fixed station must be given in decimal degrees. For a point this field is set to the point latitude; for a transect it is set to the latitude of the start of the transect; for an area it is set to the southern edge of the box. Units are positive North.	Decimal degrees; minimum of four decimal places. e.g. 54.5837	primLat
primaryLongitude	M	The primary longitude of the sample must be given in decimal degrees. For a point this field is set to the point longitude; for a transect it is set to the longitude of the start of the transect; for an area it is set to the western edge of the box. Units are positive east (West is negative, East is positive).	Decimal degrees; minimum of four decimal places. e.g. -5.5837	primLon
secondaryLatitude	C	The secondary latitude of the fixed station must be given in decimal degrees. For a point this field is not required; for a transect it is set to the latitude of the end of the transect; for an area it is set to the northern edge of the box. Units are positive North.	Decimal degrees; minimum of four decimal places. e.g. 55.7393	secLat

SecondaryLongitude	C	The secondary longitude of the sample must be given in decimal degrees. For a point this field is not required; for a transect it is set to the longitude of the end of the transect; for an area it is set to the eastern edge of the box. Units are positive east (West is negative, East is positive).	Decimal degrees; minimum of fourdecimal places. e.g. -3.7394	secLon
originalCoordinates	C	Original coordinates and coordinate transformation technique. If coordinates were transformed from a different reference system into decimal degrees then the original coordinate and original coordinate reference system should be given, the method used to transform stated and any differences in the relative (significant figures) of the original transformation explained.	Free text; e.g. SX498476, Coordinates were transformed from British National Grid using in house software 'BODC_transform'. The number of significant figures was reduced to 4 decimal degrees in line with the accuracy of the coordinate and transformation technique.	origCoords
fixedStationNotes	O	Any further notes on the fixed station that may be of relevance can be added here	Free text; e.g. Rocky reef, west of West Maiden Also known as Hell's Mouth	fixStNotes

2.4. Grab or Core Information (Sample Event Table). This table holds information on the location depth and time of each grab or core.

Field Title	M, C, O	Description	Recommended Controlled Vocabulary or Format	dBASE Compatible Field Title
sampleEventID	M	Sample Event Identifier. A unique identifier for the sample under consideration. Replicate identifiers should be suffixed to the end of a sample identifier using an underscore such as _1 or _a	Free text; e.g. E5, PHJ7936 GB004_1 GB004_3	sampEvID
surveyCode	M	The survey code must be stated to allow links to be built between this table and the survey table (Table 2.2).The cruise identifier code could be used.	Free text; e.g. http://www.noc.ac.uk/JCR3022 http://www.bennett.ac.uk/RIBJULY_03_01	survCode
methodID	M	Method identifier. Provide the identifier for the methods used as stated in the Sampling Method (Table 2.5). If multiple methods were used separate codes using a comma.	Free text; e.g. TIMES4376 02465, 02896	methodID

fixedStationID	C	Fixed station identifier. If you are returning to the same fixed point/transect/area on several occasions to form a time series – ie. there is a target location for your sample event, then put the identifier specified in the fixed station table in here.	Free text; e.g. Stanton Bank site 4 PS74926	fixStatID
sampleLatitude	M	Latitude of sample. The latitude of the sample must be given in decimal degrees. Units are positive north.	Decimal degrees; minimum of two decimal places. e.g. 54.5837	samLat
sampleLongitude	M	Longitude of sample. The longitude of the sample must be given in decimal degrees. Units are positive east.	Decimal degrees; minimum of two decimal places. e.g. -3.476	samLon
originalSampleLatitude	C	Latitude, y-coordinate or grid reference of sample given in original recorded format. The latitude of the sample given in whichever format was used to record at the time of sampling if not recording decimal degrees.	Free text; e.g. 50°47'24'' SX324512	origSamLat

originalSampleLongitude	C	Longitude or x-coordinate of sample given in original recorded format. The longitude of the sample given in whichever format was used to record at the time of sampling if not recording decimal degrees.	Free text; e.g. -4°21'53''	origSamLon
locationName	O	The name of the sampling location.	Free text; e.g. Colwyn Bay West Hand Deeps Inner Orwell Estuary	locName
date	M	The date of sample collection.	Date; yyyy-mm-dd e.g. 2009-01-24	date
time	M	The time of sample collection.	Time; hh:mm:ss e.g. 13:33:00	time
seabedDepth	O	Depth of seabed. The depth of the seabed if recorded.	Decimal; units = meters. e.g. 24.2	seabedDep
pooledSamples	C	If more than one grab/core has been pooled to create a sample then indicate the number of grabs/cores used. Mandatory if samples are pooled	Integer; e.g. 3	pooledSam

sampleUpperDepth	O	Upper depth of sediment sample. The upper depth of the sediment which has been sampled. In all cases this will be 0, unless sections have been taken from a sediment core.	Integer; units = cm. e.g. 0	upDepth
sampleLowerDepth	O	Lower depth of sediment sample .The depth to which the device sampled if available.	Integer; units = cm. e.g. 10	lowDepth
samplingPersonnel	O	Names or the personnel who were involved in collecting and field processing the samples	Free text; full personnel names separated by semi-colon if a team collated the data; e.g. Joe Bloggs; Brian Begger collected and field processed samples	samPerson

sampleNotes	O	Any further notes on the sample collection that may be of relevance field observations of sediment or habitat can be added here but Particle Size Analysis should be entered using the additional PSA data guideline and biotope information using Table 2.7 of this Guideline (biotope sample table).	Free text; e.g. Due to rough weather the grab was not stable when it reached the sea floor and the sample was visibly disturbed upon recovery; anoxic layer evident a 4cm depth. Coarse sediment with shell and stone. Infralittoral mudflat.	samNotes
sampleImages	C	Photographs and videos. Describe if images were taken at any stage of the collection or processing, the purpose they were collected for, where they are held, what their IDs are and what format.	Free text; e.g. Images taken of grab before sieving to give indication of sediment type. Images submitted to MEDIN using data guideline on digital images. Images reference numbers are: Fladden_02mar08_01 to Fladden_02mar08_68	samImage

2.5. Sampling Method (Data Production Tools). In many cases the information in this table is consistent for a whole survey in which case it should only have to be completed once. Where necessary the information in this table should be completed for each parameter under consideration. Information in this table may also be used to complete fields in the discovery metadata. The field 'Method Identifier' provides the link between this table and the sample event table.

Field Title	M, C, O	Description	Recommended Controlled Vocabulary or Format	dBASE Compatible Field Title
methodID	M	Method Identifier. A unique code for the methods to allow links to be built between this and sample event data.	Free text; e.g. TIMES4376	methodID
samplingDevice	M	The type of sampling device used.	Controlled Vocabulary: ICES Reference Codes, Table SMTYP at http://www.ices.dk/data centre/reco/ ; e.g. Day Grab code = DA	samDev
deviceArea	M	The surface area of the sampling device.	Decimal; units = cm^2 e.g. 100	devArea
sieveMeshSize	C	The mesh size of the sieve used to extract the benthos from the sediment.	Decimal; units = mm² e.g. 0.5	sieveSize

storageMedium	O	The storage medium used for the fixation of biological samples prior to identification.	Free text; e.g. 50% Formalin	storMed
protocolsUsed	C	SOPs/ Protocols used . Any written methodology used should be referenced and linked. If the methodology is not referenced then provide a full description here.	Free text; e.g. Methodology follows the Green Book http://www.cefas.co.uk/ publications/scientific- series/green-book.aspx	protocols
replicates	C	Number of replicates per sample. If replicates were taken please indicate the number taken per sample.	Numeric; e.g. 5	replicates
analyticalLaboratory	C	The laboratory/organization(s) that analysed the samples if different from the originator identified in Table 2.2 Originator. Contact MEDIN to add an organization to this list.	Controlled vocabulary:ICES Reference Codes, Table RLABO at http://www.ices.dk/data centre/reco/; e.g. Unicomarine Ltd, Letchworth Laboratory code - UNIC	analLab

analyticalPersonnel	O	Names of the personnel who were involved in analysing the samples and their role in the analysis.	Free text; personnel name(s) separated by semi-colon if more than one personnel involved; indicate organization name in brackets if more than one organisation involved. e.g. Joe Bloggs collected and analysed all samples. John Doe; Henry Rice (MEConsulting) collection and sorting; Harriet Smith (MarineConsult) identification and biomass; Jamie Creed (MarineConsult) Checking	analPers
methodNotes	O	Sampling analysis notes. Any further notes on sample analysis that may be of relevance.	Free text; e.g. Voucher specimens were stored where appropriate.	methNotes

QCScheme	M	Quality control scheme. Description of any quality control scheme that samples were audited under during the analysis.	Free text; e.g. Samples audited using National Marine Biological Analytical Quality Control Scheme.	QCScheme
methodQCNotes	O	Any further notes on sample analysis that may be of relevance.	Free text; e.g. 10% of samples were checked by Brian Begger for QC purposes.	methQCNote

2.6. Species Sample Data. When providing the species data it must be clearly linked to the tow information or sample event. The preferred format for holding the raw species data is each record being presented as a separate row. However it is recognized that often results are produced in a matrix format and this may be used for specific applications.

Field Title	M, O, C	Description	Recommended Controlled Vocabulary or Format	dBASE Compatible Field Title
sampleEventID or **towID**	M	Sample event or Tow identifier. This links to sample event or tow information in Table 2.4.	Free text; e.g. 42	sampEvID or towID
methodID	M	Method identifier. This links to sampling methods in Table 2.5.	Free text; e.g. METHOD001	methodID
replicateID	C	Replicate identifier if replicates taken.	Free text; e.g. 001	replicID
taxonID	M	A unique reference to this taxon occurrence in this sample.	Free text; e.g. TXON087TH47 PS74926T0001	taxonID

taxonName	M	Give species name where possible or higher taxonomic group if not.	Controlled vocabulary: MSBIAS at http://www.marinespecies.org/msbias/aphia.php?p=search; e.g. *Mytilus edulis* Gobidiae	taxName
taxonQualifier	O	Additional information regarding the taxon group should be indicated here. The species notes section is the appropriate place for additional biological or ecological observations.	Free text; e.g. Type 2; Indet; Male; Juvenile; Female with eggs	taxonQual
aphiaID	M	WoRMS ID. The identifier for the taxon from the WoRMS (World Register of Marine Species) reference list should be recorded.	Controlled vocabulary: MSBIAS at http://www.marinespecies.org/msbias/aphia.php?p=search ; e.g. 3456	aphiaID
originalName	C	Original Name Recorded. Give the scientific or common name recorded if different from the WORMS scientific name.	Free text:; e.g. Basking shark *Elminus modestus*	origName

2.7 Sample Data (biotope). When providing the sample data it must be clearly linked to the station and sample event information for a given sample, date/time and replicate. The preferred format for holding the raw biotope data is with each record presented as a row. However it is recognized that often results are produced in a matrix format and this may be used for specific applications.

Field Title	M, C, O	Description	Recommended Controlled Vocabulary or Format	dBASE Compatible Field Title
sampleEventID or towID	M	A unique identifier for the sample under consideration to allow links to be made to sample event or tow information in Table 2.4.	Free text; e.g. E5, PHJ7936	sampEvID or towID
methodID	M	This links to sampling methods in Table 2.5.	Free text; e.g. METHOD001	methodID
replicateID	C	Replicate identifier if replicates taken. This links to species data in Table 2.6.	Free text; e.g. 001	replicID
habitat	M	Give EUNIS code for identified biotope. If EUNIS code not available or awaiting confirmation please indicate in biotope notes.	Controlled vocabulary: EUNIS at http://eunis.eea.europa.eu/habitats-code-browser.jsp ; e.g. A2.312	habitat

biotopeName	O	The name of the biotope identified.	Controlled vocabulary: EUNIS at http://eunis.eea.europa.eu/habitats-code-browser.jsp ; e.g. [Hediste diversicolor] and [Macoma balthica] in littoral sandy mud	bioName
originalBiotope	C	Original biotope code. If another classification was used to identify the original biotope indicate the code of the biotope assessed.	Free text; e.g. LS.LMu.MEst.HedMac	origBio
originalClassification	C	Original biotope classification. If another classification was used to identify the original biotope indicate the name and version of the classification.	Free text; e.g. The Marine Habitat Classification for Britain & Ireland (v04.05)	origClass
classificationConfidence	C	Biotope classification confidence Confidence of given assessment	Free text; e.g. Certain Uncertain	classConf
biotopeNotes	O	Any further information on the Biotope identification	Free text; e.g.	bioNotes

biotopeDeterminer	M	State person who determined biotope	Free text; Full name e.g. Brian Begger	bioDet
totalArea	O	The area of a habitat within the geographical feature that has been used to depict the distribution of the habitat within a certain country, bio-geographical regions or other geographical area. NOTE This is only relevant if the habitat covers a certain area (e.g. within a grid) and not in case of a linear feature.	Integer; units=m^2 e.g. 2	totalArea
totalVolume	O	The volume of a certain habitat type within the provided geometry of a specific habitat distribution unit.	Integer, units=m^3 e.g. 1	totalVol

2.8. Species Attribute Data. This table can be used if attributes of individual specimens or groups of specimens are recorded such as length, weight, contaminants, gender, stage development, reproductive status etc. The preferred format for holding the raw species data is each record being presented as a separate row. However it is recognized that often results are produced in a matrix format and this may be used for specific applications.

Field Title	M, C, O	Description	Recommended Controlled Vocabulary or Format	dBASE compatible Field Title
taxonID	M	A unique reference to this taxon occurrence in a given sample. This links to the species data in Table 2.6	Free text; e.g. TXON087TH47 PS74926T0001	taxonID
attributeID	C	A unique reference to the specimen measured in this sample. May be a simple number	Free text; e.g. PS74926T0001_01 01	attribID
measurementType	O	Type of measurement taken or attribute evaluated.	Free text; e.g. whole body length, carapace width, weight	measType
measurementValue	C	The measurement length, width, circumference etc. in SI.	Decimal; e.g. 0.62	measVal
measurementUnits	C	Measurement units used. Should be SI preferably metres but millimetres may be appropriate for smaller specimens.	Free text; e.g. metres, millimetres	measUnit

attributeType	O	The attribute being evaluated for the specimen or group of specimens	Free text; e.g. gender, Reproductive status, larval/Fish Stage Development, Size Class, Year Class	attribType
attributeValue	C	The value of the attribute measured	Free text, Integer or Decimal; e.g. F Female with eggs Juvenile 4-10mm	attribVal
count	C	If the measurement or attribute represents more than one specimen give a count of the number of specimens	Integer; e.g. 9	count

referenceImage	O	Note if reference images were taken of specimens at any stage of the processing, the purpose they were collected for, where they are held, what their IDs are and what format the images are in.	Free text; e.g. Images taken of *Gobius cobitis* were taken to confirm identification. Images submitted to MEDIN using data guideline on digital images. Images reference numbers are: Mytilus_02mar08_01 to Mytilus_02mar08_68.	refImage
referenceSpecimens	O	Note if specimen was stored	Free text; e.g. Reference specimen stored, vial22_4_2011_046789	refSpec