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Title	**MEDIN data guideline for the recording of offshore litter data**
MEDIN Discipline	Anthropogenic properties
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Summary	This guideline defines good practice for recording offshore litter data for assessments
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Change history		
Version	**Date**	**Change**
1.0	08/12/09	First draft of document
1.1	18/01/10	First comments received by MEDIN Standards Group
2.0	12/03/10	Comments incorporated by Clean Safe Seas Evidence Group
3.0	05/05/2010	Amended to fit into new structure
3.1	15/07/2010	Minor edits following changes to common tables and specification of .csv format for transfer of data
3.2	24/08/2011	Edits to introduction and clearer specification of table links
4.0	15/10/2015	Amended to fit into new structure

1 Introduction

1.1 What are MEDIN compliant data?

There are 3 requirements to ensure that that offshore litter data are recorded in a way that is MEDIN compliant:

1) **You supply General Metadata about your data –** *This may be included in a survey/cruise report or as separate metadata - See Appendix A*
2) **You supply Detailed Metadata about your data –** *This may be included in a survey/cruise report or as additional metadata – See Appendix B*
3) **Your data are in a format that MEDIN accepts –** *See Appendix C*

Example of a MEDIN compliant offshore litter dataset:

A file containing General Metadata (*Appendix A*)

A Survey Report that contains Detailed Metadata (*Appendix B*)

Sample Data supplied in .CSV format (*Appendix C*)

1.2 Scope

This guideline covers the recording of offshore litter data collected by fishing trawl or identified by cameras deployed from a benthic sledge (referred to as trawl and tow respectively). It is recognized that the UK does not currently have dedicated monitoring programmes to specifically trawl for or record offshore litter data at present. This guideline is therefore designed for recording litter data which have been identified as a byproduct of the main purpose of surveys such as biotope identification by benthic sledge or trawling for fish. Therefore many of the data and information specified in this guideline are collected routinely as part of the main purpose of such surveys.

1.3 Summary of the information required

A General Metadata:

This section lists the general metadata that should be provided with your data.

You can use the form here to record your General Metadata and can find additional information in Appendix A

The General Metadata fields are common throughout all 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. If your collection of data forms part of a wider project or time series then the **Project Information** must be recorded but if the work is a small survey then project details may not be required.

What is a Survey/Project?

A **survey** 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.

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.

Survey Information:
This information is mandatory and **must** be supplied with your data to ensure it can be reused:

1. surveyName
2. surveyType
3. surveyAbstract
4. surveyCode
5. originator
6. owner
7. surveyStartDate
8. timeZone
9. spatialCRS
10. positionFix
11. horizontalAccuracy

Additional items:
Please provide as much of the following information as possible to help others assess your data:

Survey Information:

1. surveyEndDate
2. originalCRS
3. transformation
4. depthCRS
5. verticalAccuracy
6. platformName
7. platformType
8. surveyMetadataURL
9. cruiseReportReference
10. surveyReportReference
11. confidentiality

Project Information:
Please provide as much of the following information as possible if your survey forms part of a wider project:

1. projectName
2. projectCode
3. projectStartDate
4. projectEndDate
5. projectWebsite
6. projectMetadataURL

B Detailed Metadata:

This section lists the detailed metadata that should be collected with your data. You can use the form here to record your Detailed Metadata and can find additional information in Appendix B. This information can be supplied in a cruise or survey report.

The Detailed Metadata fields are specific to each data guideline and should be completed for each type of data. The information requested here may be supplied as additional metadata or may be supplied in a cruise or survey report.

Acquisition Method:

This information is mandatory and **must** be supplied with your data to ensure it can be reused:

1. methodID
2. samplingDevice
3. trawlSledgeWidth
4. analyticalLaboratory
5. heightOfObservations
6. QCScheme
7. methodQCNotes

Additional Items:
Please provide as much of the following information as possible to help others assess your data:

1. trawlHeight
2. trawlMeshSize
3. liner
4. protocolsUsed
5. storageMedium
6. analyticalPersonnel
7. methodNotes

C Data:

This section gives a summary of the required data content and format for offshore litter data. It covers:

Station Information, Sample Event Data,

Offshore Litter Data

You can use the form here to record your data and can find additional information in Appendix C

Format

For ease of data sharing, MEDIN recommend the data be saved and transferred in the .CSV file format. The Station (if relevant) and Sample Event information can be supplied in a cruise or survey report.

Content

What is a Station?
A station refers to a specific target location of sampling. It is useful to record the station position in addition to the sample event information, for example if you are returning to a fixed target station as a basis for repeat replicate sample events and for repeat monitoring surveys. This is optional information.

What is a Sample Event?
A sample event is the specific date, time, location/extent and local conditions for the data collection. This is mandatory.

Station Information:
Please provide as much of the following information as possible if your sampling takes place at defined stations:

The following fields are mandatory if sampling takes place at a fixed station and **must** be supplied with your data to ensure it can be reused:

1. stationID
2. geometry
3. primaryLatitude
4. primaryLongitude

Additional Items:
Please provide as much of the following information as possible to help others assess your data:

1. stationName
2. secondaryLatitude
3. secondaryLongitude
4. originalCoordinates
5. stationNotes

Sample Event:
This information is mandatory and **must** be supplied with your data to ensure it can be reused:

1. sampleEventID
2. surveyCode
3. methodID
4. sampleDate
5. startDateTime
6. startDepth
7. startTowLatitude
8. startTowLongitude
9. endDateTime
10. endDepth
11. endTowLatitude
12. endTowLongitude
13. currentDirection
14. currentVelocity

Additional Items:
Please provide as much of the following information as possible to help others assess your data:

1. startOriginalTowLatitude
2. startOriginalTowLongitude
3. endOriginalTowLatitude
4. endOriginalTowLongitude
5. stationID
6. sampleImages
7. startVideoTimeCode
8. endVideoTimeCode
9. distanceTravelled
10. shipSpeed
11. tideState
12. eventName
13. samplingPersonnel
14. sampleNotes
15. waypointNumber
16. eventNumber
17. tempSurface
18. tempBottom
19. towShape
20. towNotes

Sample Data:
UK organisations collecting offshore litter data have primarily recorded data using two methods:

1. The number of items of litter in categories (*e.g.* plastics, household waste *etc.*). This gives the minimum data requirements for a litter survey.
2. Description of each litter item (*e.g.* Kestrel larger drink can 330ml) and then at a later date conversion of these data to the number of items per category for assessment purposes.

Both methods are acceptable, however if each litter item is described then those data should also be converted to number of items per category. The categories to be used in the UK and within the ICES community are currently under consideration, however a proposed list is given in the table immediately below.

The information collected using both methods should be displayed in tabular form. For **Method 1**, data should be displayed as a matrix with the litter categories as one axis and the sampleEventID (*e.g.* trawl identification number) as the other. For **Method 2**, a tabular structure is also required to record each item and details of that item including state of degradation, colonising organisms, possible sources, dimensions *etc.*

For both Method 1 and Method 2, the sampleEventID (*e.g.* Trawl 6726) must be specified clearly to allow links to be made to the sampling methodology (Detailed Metadata) and the Sample Event tables.

Litter categories in use in UK and recommended by United Nations Environment Programme (UNEP)
Cloth
Hard Plastic
Metal
Paper and Cardboard
Glass and Ceramics
Foam
Soft Plastic
Rubber
Wood
Sewage Related
Fishing Gear
Other

Appendix A

General Metadata:

This section describes the general metadata that should be provided with your data.

You can use the form here to record your General Metadata

To return to the summary above, click here

The General Metadata fields are common throughout all 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. If your collection of data forms part of a wider project or time series then the **Project Information** must be recorded but if the work is a small survey then project details may not be required.

A.1 Guidance:

Detailed descriptions and examples are given below to help you create General Metadata to accompany your data.

Survey Information

This information **must** be supplied with your data to ensure it can be reused:

Field Title	MCO	Description	Recommended Controlled Vocabulary or Format	Examples
surveyName	**M**	Title of the survey	Free text;	2004 CCW Menai Strait benthic monitoring survey
surveyType	**M**	Category of survey for use in subsequent searching for certain types of surveys.	Controlled Vocabulary; **OGP SSDM WORK_CATEGORY Domain**; or Free text	Geophysical and Hi-Res Seismic (Analogue and Digital Survey); Oceanographic; benthic biology; fish stock
surveyAbstract	**M**	Brief description of the purpose of the survey and other types of measurements that were made for the survey.	Free text;	Survey was the first in a series of 3 in 2010 whose specific aim was to identify sites suitable for benthic trawling.

	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;	http://www.noc.ac.uk/JCR3022; http://www.bennett.ac.uk/RIBJULY_03_01
	originator	**M**	The organization who has created the data set. EDMO controlled vocabulary is recommended. 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 their name.	Free text or Controlled vocabulary: **European Directory of Marine Organizations** at http://seadatanet.maris2.nl/v_edmo/welcome.asp	28: Centre for Environment, Fisheries and Aquaculture Science, Lowestoft Laboratory; 2588: ABP Marine Environmental Services Ltd; Joe Bloggs
	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** at http://seadatanet.maris2.nl/v_edmo/welcome.asp	78: Department of Environment Fisheries and Rural Affairs; 53: BP Exploration and Production
	surveyStartDate	**M**	The date and time that the survey started.	Date or DateTime; yyyy-mm-dd or yyyy-mm-dd hh:mm:ss	2009-01-24 12:33:00
	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;	UTC

	spatialCRS	**M**	Spatial coordinate reference system. Describes the system of spatial referencing i.e. the datum used to supply the decimal latitudes and longitudes. 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/	**WGS84** code: EPSG::4326; **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
	positionFix	**M**	Position fix method and source. Give the method and source of the position fix instrument.	Free text;	Differential GPS taken from the ships navigation equipment. 4 point satellite fix achieved
	horizontal Accuracy	**M**	How accurate the spatial positions are likely to be.	Decimal; units = metres	15.2

Additional Items:
Please provide as much of the following information as possible to help others assess you data:

Survey Information:

	Field Title	MCO	Description	Recommended Controlled Vocabulary or Format	Examples
	surveyEndDate	C	The date and time that the survey ended. May be left null if the survey is still ongoing.	Date or DateTime; yyyy-mm-dd or yyyy-mm-dd hh:mm:ss	2009-02-16 16:33:00

	originalCRS	**C**	Datum of original coordinates 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;	WGS84: EPSG::4326; British National Grid (projected): EPSG::27700; ETRS89 / UTM zone 28N: EPSG::25828; ETRS89 / UTM zone 29N: EPSG::25829; ED50: EPSG::4230; UTM31N: EPSG::23031
	transformation	**C**	Transformation used to create decimal degrees if transformation undertaken.	Free text;	Data was converted from OSGB to WGS84 in ArcGIS using the petroleum transformation.
	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 controlled vocabulary lists.	Controlled vocabulary: **EPSG Geodetic Parameter Dataset** at http://www.epsg-registry.org/	**Ordnance Datum Newlyn** code: EPSG::5701 **Malin Head height** code: EPSG::5731
	verticalAccuracy	**C**	Vertical positional accuracy. How accurate the vertical resolution is. Must be provided if seabed depths are given.	Decimal; units = metres	0.5
	platformName	**C**	Mandatory if a vessel was used for the survey. The name of the platform from which the sampling device was deployed. If your platform is not on the list please contact accessions@ices.dk	Controlled vocabulary: ICES Reference Codes, **Table SHIPC** at http://vocab.ices.dk/	74LG: Lough Foyle; AA30: Unspecified Ship; 74E9: Cefas Endeavour; AA36: Unspecified Fishing Vessel; AA33: Unspecified Self-Propelled Small Boat

	platformType	**O**	The platform type (e.g. Research Vessel) from which the sampling device was deployed.	Controlled vocabulary: SeadataNet Platform Classes, **Table L06** at http://seadatanet.maris2.nl/v_bodc_vocab_v2/welcome.asp;	31: Research Vessel; 13: beach/intertidal zone structure; 48: mooring; 71: human
	surveyMetadata URL	**O**	A URL which links to the metadata for the survey. To ensure uniqueness, it is recommended that the website of organization responsible for the work is used, followed by a unique code designated by the responsible organization which should reflect the code used by the funding organization where possible	URL	http://www.dassh.ac.uk/NATENG0000001
	cruiseReport Reference	**O**	Cruise report or boat log reference if applicable.	Free text; in reference format.	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.
	surveyReport Reference	**O**	Survey report reference if applicable	Free text; in reference format	Cutts, N., Hemingway, K., and Thompson. S (2011) Biological survey of the Intertidal sediments of the South Shore of the Solway Firth. Report to Natural England YBB170-F-2011
	confidentiality	**O**	Note if the survey is confidential. If not noted, the data will be assumed to be releasable to the public.	Free text;	Restricted access; Public;

Project Information: Please provide as much of the following information as possible if your survey forms part of a wider project

	Field Title	MCO	Description	Recommended Controlled Vocabulary or Format	Examples
	projectName	**M**	The nationally/internationally accepted version of the project name.	Free text;	North Hoyle Windfarm EIA; Rapid Climate Change; Dogger Bank pSAC Monitoring Programme; EA Bathing Water Monitoring Programme 1989-2010 ;
	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;	http://www.dassh.ac.uk/DASSHSE0000006; http://www.bodc.ac.uk/1378/;
	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;	2001-01-24; ;
	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;	2007-01-24; 1976-01-01;
	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;	http://www.southampton.ac.uk/oes/research/projects/rapid_meridional_overturning_circulation_moc.page;

	projectMetadata URL	**O**	A URL which links to the metadata for the project. To ensure uniqueness, it is recommended that the website of organisation responsible for the work is used followed by a unique code designated by the responsible organisation which should reflect the code used by the funding organisation where possible.	URL.	http://www.dassh.ac.uk/DASSHSE0000006

Appendix B

Detailed Metadata:

This section describes the detailed metadata that should be collected with your data. It contains specific information about the methods used, the organisations that carried out the work and any calibrations that have been applied to the data.

You can use the form here to record your Detailed Metadata or it may be supplied in a cruise or survey report.

To return to the summary above, click here

The Detailed Metadata fields are specific to each data guideline and should be completed for each type of data. The information requested here may be supplied as additional metadata or may be supplied in a cruise or survey report.

B.1 Guidance:

Detailed descriptions and examples are given below to help you create Detailed Metadata to accompany your data.

Acquisition Method:

This information **must** be supplied with your data to ensure it can be reused:

	Field Title	MCO	Description	Recommended Controlled Vocabulary or Format	Examples
	methodID	**M**	Method Identifier. A unique code for the methods to allow links to be built between this and sample event data.	Free text;	TIMES4376
	samplingDevice	**M**	The category of sampling device used.	Controlled Vocabulary; SeadataNet Device Categories, Table L05 at http://seadatanet.maris2.nl/v_bodc_vocab_v2/search.asp?lib=L05	62: beam trawls

	trawlSledge Width	**M**	The width of the trawl net between the shoes or across the headline. If a benthic sledge is used, give the width or camera view	Integer; units = m	3.5
	analytical Laboratory	**M**	The laboratory/organization (s) (with EDMO record ID) that analysed the samples if different from the originator identified in the general metadata. Contact MEDIN to add an organisation to this list	Controlled Vocabulary; **European Directory of Marine Organisations (EDMO)** at http://seadatanet.maris2.nl/v_edmo/welcome.asp	2734: Thomson Unicomarine
	heightOf Observations	**M**	The height of the observers above the transect line	Integer; units = m	10
	QCScheme	**M**	Description of any quality control scheme that samples were audited under during the analysis.	Free text.	Samples audited using National Marine Biological Analytical Quality Control Scheme (NMBAQC).
	methodQCNotes	**M**	Any further notes on sample analysis that may be of relevance.	Free text.	10% of samples were checked by Brian Begger for QC purposes.

Additional Items:
Please provide as much of the following information as possible to help others assess your data:

	Field Title	MCO	Description	Recommended Controlled Vocabulary or Format	Examples
	trawlHeight	**C**	The height of the beam or maximum height of the headline	Integer; units = m	2.1
	trawlMeshSize	**C**	The width of the net mesh from knot to knot	Number; units = µm	2
	liner	**C**	If a liner was used what was the size of the liner	Number; units = µm	2

	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.	Methodology follows the Green Book http://cefas.defra.gov.uk/media/510362/greenbookv15.pdf and http://www.cefas.defra.gov.uk/media/510382/greenbookappendicesv15.pdf
	storageMedium	**O**	The storage medium used if relevant	Free text.	50% Formalin
	analytical Personnel	**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 organisation name in brackets if more than one organisation involved.	Joe Bloggs collected and analysed all samples. John Doe; Henry Rice (ME Consulting) collection and sorting; Harriet Smith (Marine Consult) identification and biomass; Jamie Creed (Marine Consult) Checking
	methodNotes	**O**	Sampling analysis notes. Any further notes on sample analysis that may be of relevance.	Free text.	Voucher specimens were stored where appropriate.

Appendix C

Data

This section describes the required data content and format for side scan sonar (SSS) data. It covers:

Station Information, Sample Event Data

Offshore Litter Data (Method 1 and Method 2)

You can use the form here as guidance for what your dataset should contain

To return to the summary above, click here

The data content and format are specific to each data guideline and the relevant data guideline should be consulted for each type of data.

C.1 Format

For ease of data sharing, MEDIN recommend the data be saved and transferred in the .CSV file format. The Station (if relevant) and Sample Event information can be supplied in a cruise or survey report.

C.2 Guidance

Station Information:

If your data collection took place at target stations, this information **must** be supplied with your data to ensure it can be re-used.

	Field Title	MCO	Description	Recommended Controlled Vocabulary or Format	Examples
	stationID	**M**	Station identifier. A unique identifier for the station.	Free text.	Stanton_Bank_ station_4 (point); EastChan_Inner dover_se04; Liverpool_Dublin_ ferry_route1 (transect); Lagan_Estuary (area)

	geometry	**M**	Description of station spatial form. Describe if the fixed station is a point, transect (curve) or an area (surface).	Controlled Vocabulary; SeadataNet Geospatial Feature Type, Table L02 at http://seadatanet.maris2.nl/v_bodc_vocab_v2/welcome.asp	004: Point; 003: Curve; 005: Surface;
	primaryLatitude	**M**	The primary latitude of the 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.	54.5837
	primary Longitude	**M**	The primary longitude of the station 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.	-5.5837

Station Information
Additional items:
Please provide as much of the following information as possible to help others assess your data:

	Field Title	MCO	Description	Recommended Controlled Vocabulary or Format	Examples
	secondary Latitude	**C**	The secondary latitude of the 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.	55.7393
	secondary Longitude	**C**	The secondary longitude of the station 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 four decimal places.	-3.7394
	original Coordinates	**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;	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.

	stationName	**O**	The name by which a particular station is known	Free text.	L4 Stannock Head
	stationNotes	**O**	Any further notes on the station that may be of relevance can be added here.	Free text;	Rocky reef, west of West Maiden; Also known as Hell's Mouth

Sample Event information:

This information **must** be supplied with your data to ensure it can be re-used:

	Field Title	**M C O**	**Description**	**Recommended Controlled Vocabulary or Format**	**Examples**
	sampleEventID	**M**	Sample Event Identifier. A unique identifier for the sampling event under consideration. Replicate identifiers should be suffixed to the end of a sample event identifier using an underscore such as _1 or _a	Free text;	E5, PHJ7936, GB004_1, GB004_3
	surveyCode	**M**	The survey code must be stated to allow links to be built between this table and the other metadata. The cruise identifier code could be used. Copy from General Metadata	Free text;	http://www.noc.ac.uk/JCR3022; http://www.bennett.ac.uk/RIBJULY_03_01)
	methodID	**M**	Method identifier. Provide the identifier for the methods (copy from Detailed Metadata). If multiple methods were used separate codes using a comma.	Free text;	TIMES4376; 02465, 02896
	sampleDate	**M**	The date of sample collection	Date; yyyy-mm-dd	2009-01-24

	startDateTime	**M**	The start date and time of the trawl or tow	Date; yyyy-mm-dd or DateTime; yyyy-mm-dd hh:mm:ss	2009-01-24; 2009-01-24 13:33:00
	startDepth	**M**	The depth that the trawl/tow started at	Decimal; units = metres	-13.2
	startTowLatitude	**M**	The start latitude of the sample event must be given in decimal degrees. Units are positive north.	Decimal degrees; minimum of two decimal places.	53.4768
	startTow Longitude	**M**	The start longitude of the sample event must be given in decimal degrees. Units are positive east.	Decimal degrees; minimum of two decimal places.	-3.476
	endDateTime	**M**	The end date and time of the trawl or tow.	Time; hh:mm:ss or DateTime; yyyy-mmdd hh:mm:ss	2009-01-24; 2009-01-24 13:33:00
	endDepth	**M**	The depth that the trawl/tow ended	Decimal; units = metres	-13.2
	endTowLatitude	**M**	The end latitude of the trawl/tow must be given in decimal degrees. Units are positive north.	Decimal degrees; minimum of two decimal places.	54.5837
	endTow Longitude	**M**	The end longitude of the trawl/tow must be given in decimal degrees. Units are positive east.	Decimal degrees; minimum of two decimal places.	-3.476
	currentDirection	**M**	Give the direction of the current in relation to the trawl/tow	Free text.	'Against', 'With', 'Across'
	currentVelocity	**M**	The velocity of the current during the trawl/tow. May be averaged	Decimal; units = knots	2.1

Sample Event Information
Additional items:
Please provide as much of the following information as possible to help others assess your data:

	Field Title	MCO	Description	Recommended Controlled Vocabulary or Format	Examples
	startOriginal TowLatitude	**C**	The start latitude of the tow or trawl given in whichever format was used to record at the time of sampling if not recording decimal degrees.	Free text;	50°47'24''; SX324512
	startOriginal TowLongitude	**C**	The start longitude of the tow or trawl given in whichever format was used to record at the time of sampling if not recording decimal degrees.	Free text;	-4°21'53''
	endOriginalTow Latitude	**C**	The end latitude of the trawl/tow given in whichever format was used to record at the time of sampling if not recording decimal degrees.	Free text;	50°47'24''; SX324512
	endOriginalTow Longitude	**C**	The end longitude of the trawl/tow given in whichever format was used to record at the time of sampling if not recording decimal degrees.	Free text;	-4°21'53''
	stationID	**C**	Station Identifier if applicable. Copy from Station Guidance	Free text;	Stanton Bank site 4, PS74926
	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.	Still images taken at 2 minute intervals during tow.

	startVideoTime Code	**C**	The start time code on video samples. Mandatory for video tow segments or the time still images were taken from a video.	Time; hh:mm:ss	13:33:00
	endVideoTime Code	**C**	The end time code on video samples. Mandatory for video tow segments.	Time; hh:mm:ss	13:33:23
	distance Travelled	**C**	Total distance over ground between start and finish, specifying units (need to know this to calculate swept area for tows/trawls that are not a straight line).	Free text.	2.4 km
	shipSpeed	**C**	The speed of the ship during the trawl/tow if a ship based trawl or dredge. May be averaged.	Decimal; units = knots	3.5
	tideState	**C**	Mandatory for beach based trawls or dredges, optional for ship based trawls	Free text.	Low neap, high spring
	eventName	**O**	The name of the sampling location.	Free text.	Colwyn Bay West; Hand Deeps; inner Orwell Estuary
	sampling Personnel	**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;	Joe Bloggs; Brian Begger collected and field processed samples

	sampleNotes	**O**	Any further notes on the sample collection that may be of relevance.	Free text.	Visibility; Good, Wind; Force 2-4. Sea state; slight. Tow course altered temporarily at 50°47.24N, 3°12 12.44W to navigate around obstacle on seabed. Due to heavy weather the tow was not a direct line between shoot and haul.
	waypoint Number	**O**	Reference to waypointing software positions if used e.g. Leica waypoint number	Free text.	134; P26
	eventNumber	**O**	Link to survey software event record if used e.g. hypack event or to an event e.g. the presence of a species/biotope	Free text.	42
	tempSurface	**O**	Sea surface temperature	Decimal; Units: Degrees Celsius	13.2
	tempBottom	**O**	Water temperature at seabed	Decimal; Units: Degrees Celsius	10.5
	towShape	**O**	Shape of the trawl/tow track.	Free text.	Straight line or curve/loop
	towNotes	**O**	Any further notes that may be of relevance	Free text.	Due to heavy weather the tow was not a direct line between shoot and haul. Tow shape was a loop/straight/curved

Sample Data:

Method 1: Minimum data requirements for litter survey, by category

	Field Title	MCO	Description	Recommended Controlled Vocabulary or Format	Examples
	sampleEventID	**M**	Sample Event Identifier. A unique identifier for the sampling event under consideration. Replicate identifiers should be suffixed to the end of a sample event identifier using an underscore such as _1 or _a. Copy from Sample Event	Free text	Trawl 6705
	Cloth	**M**	Number of items of litter from this category. If no items are sampled, record accordingly.	Integer	0
	Hard Plastic	**M**	Number of items of litter from this category. If no items are sampled, record accordingly.	Integer	4
	Metal	**M**	Number of items of litter from this category. If no items are sampled, record accordingly.	Integer	0
	Paper and cardboard	**M**	Number of items of litter from this category. If no items are sampled, record accordingly.	Integer	3
	Glass and ceramics	**M**	Number of items of litter from this category. If no items are sampled, record accordingly.	Integer	0
	Foam	**M**	Number of items of litter from this category. If no items are sampled, record accordingly.	Integer	0

	Soft Plastic	**M**	Number of items of litter from this category. If no items are sampled, record accordingly.	Integer	3
	Rubber	**M**	Number of items of litter from this category. If no items are sampled, record accordingly.	Integer	2
	Wood	**M**	Number of items of litter from this category. If no items are sampled, record accordingly.	Integer	0
	Sewage Related	**M**	Number of items of litter from this category. If no items are sampled, record accordingly.	Integer	4
	Fishing Gear	**M**	Number of items of litter from this category. If no items are sampled, record accordingly.	Integer	5
	Other	**M**	Number of items of litter from this category. If no items are sampled, record accordingly.	Integer	3

Method 2: Table structure to record each litter item and details of that item, including degradation, colonizing organisms, possible sources etc.

	Field Title	MCO	Description	Recommended Controlled Vocabulary or Format	Example
	surveyEventID	**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.	Trawl 6749
	Wood (no of items)	**C**	The number of items of wood collected during the survey trawl/tow	Integer	1
	Wood Size	**C**	Description of dimensions of first item of wood recovered. Add in additional rows below to describe dimensions of all wood items recovered.	Free text; dimensions describing litter item with SI units	2*7 cm and approx 0.75 m long
	Wood Description	**C**	Description of first item of wood recovered. Add in additional rows below to describe all other wood items recovered.	Free text.	Machined hard wood, well worn and degraded
	Wood Comment	**O**	Any further comments on first item of wood recovered. Add additional rows for other recovered items of wood as necessary	Free text	Colonised by Mytilus edulis. No obvious source
	Soft Plastic (no. of items)	**C**	The number of items of soft plastic collected during the survey trawl/tow	Integer	2

	Soft Plastic Size	**C**	Description of dimensions of first item of soft plastic recovered. Add in additional rows below to describe dimensions of all soft plastic items recovered.	Free text; dimensions describing litter item with SI units	30 cm * 5 cm
					1 m * 30 cm
	Soft Plastic Description	**C**	Description of first item of soft plastic recovered. Add in additional rows below to describe all other soft plastic items recovered.	Free text.	Mr Freeze ice lolly wrapper
					Thin poly sheet
	Soft Plastic Comments	**O**	Any further comments on first item of soft plastic recovered. Add additional rows for other recovered items of soft plastic as necessary	Free text	
	Next litter category (no. of items)	**C**	The number of items of the next applicable litter category collected during the survey trawl/tow	Integer	
	Next litter category Size	**C**	Description of dimensions of first item of next applicable litter category recovered. Add in additional rows below to describe dimensions of all items recovered for this litter category.	Free text; dimensions describing litter item with SI units	

	Next litter category Description	**C**	Description of first item recovered in this litter category. Add in additional rows below to describe all other items recovered in this category.	Free text.	
	Next litter category Comments	**O**	Any further comments on first item recovered in this litter category. Add additional rows for other recovered items from this category as necessary	Free text	
	Repeat for additional categories	**O**			