



# EMODnet



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Data Network

## EMODnet Seabed Habitats

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EMODnet Phase IV

## Guidance for formatting habitat point data



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## Introduction

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This document provides guidance to help users supply their habitat point data to EMODnet Seabed Habitats, using the excel template provided.

The excel file contains four different sheets named:

- 1) "metadata level"
- 2) "EMOF for data entry",
- 3) "sampling events" and;
- 4) "EMOF complete (protected)"

These sheets represent the different tables of our database structure. You must fill only the first three sheets as the fourth one ("EMOF complete (protected)") is auto-filled based on your entries.

The first few rows of each sheet contain information about the field that need to be completed. Information on the fields include: a description, the format (e.g. numeric) and the requirement level (optional or mandatory). As a minimum, all mandatory fields must be completed. The cells of this part of the template are coloured in light green (variable name), light gold (related OBIS field) and green (short field description and requirement level). Furthermore, to help you with your submission, some rows are provided with examples of data how the data must be entered and are represented by a light purple colour. Some cells also contain dropdown lists to adhere to formatting requirements.

Your data should be entered in the colourless cells adjacent to the examples coloured in purple.

Please advise that a new spreadsheet will need to be completed for each coherent dataset containing point data. The file name must also be the same as the datasetID.

As the template file size is driven by the number of allowed entries (because of the formulas nested in the different sheets), three different templates were created. In this way, it is possible to use the lighter (and faster) one for most of the datasets and the huger ones for the other needs. The different templates can host up to 500, up to 1000 and up to 10000 EMOF records respectively.

### **IMPORTANT**

- As there are validation lists used throughout the template, **if you are copying and pasting information from one tab to another, please ensure you use the 'Paste Values' option**. This will ensure that validation lists are not removed in the process. Inserted data that does not follow the dropdown vocabularies will result in the entire dataset being invalid.
- If equivalent species records have already been submitted to EurOBIS, the "**EventID**" field must be the same as provided to EurOBIS. Furthermore you must insert "point data already provided to EurOBIS" in the "Comments" field of the EMOF sheet. Alternatively, you can bypass the EMODnet Seabed Habitats database and append the habitat information to the data in EurOBIS according the guidance provided in [Duncan et al \(2021\)](#).

# 1 “metadata level” sheet

The metadata level tab contains two tables: one that describes the dataset (Figure 1) and one that provides the contact information of the dataset owner (Figure 2). Every field in the first table, describing the dataset, is mandatory.

Field name in WP4 habitat database	Field description	Field Type	Example
<b>DatasetID</b>	Unique identifier of the dataset. Suggested format: "CountryCode"_"Organization"_"Project Acronym"	<b>Text - Mandatory</b>	IT_JSPRA_MAERL_1
<b>ShortTitle</b>	Running title of the dataset	<b>Text - Mandatory</b>	Mediterranean Sea Maerl occurrences
<b>DatasetName</b>	Name of the dataset (or of the project)	<b>Text - Mandatory</b>	Synthesis of the cartographic information on the coralligenous assemblage and other biogenic calcareous formation in the Mediterranean Sea (Maerl)
<b>DataCreation</b>	Date template filled in	<b>Date format ISO 8601 - mandatory</b>	2017-11-03
<b>ExpectedCitation</b>	Reference	<b>Text - Mandatory</b>	ISPRA 2014 - Maerl II project - Studio sulla presenza nelle acque italiane dei fondi a maerl - corallinacee libere, habitat di interesse conservazionistico - Reaserch project 7 A 18 CUP J85E11000770001 - Final report - aprile 2014
<b>Abstract</b>	Short description of the dataset	<b>Text - Mandatory</b>	This research project aims to allow Italy to meet the commitments under Community environmental policies and fishery measures for involving of monitoring of protected habitats. One of the main objectives of this project is the definition, development and testing of a methodology capable of mapping the distribution of maerl beds in Italian waters. It should be noted that information available for the Mediterranean on the distribution of maerl beds in the Mediterranean is relatively scarce (Agnesi et al., 2009; 2010; 2011) and the modelling of the distribution of this habitat is still unreliable (Giannoulaki et al., 2013).
<b>Restriction</b>	Information about who can access the data or indication of its security status	<b>Text - Mandatory</b>	Creative Commons CC-BY (free to share)

Figure 1. The first table within the *metadata level* sheet used to describe the data.

A dropdown list is provided for the **Restriction** field, a description of each option is given in Table 1.

Table 1. Description of each option given in the **Restriction** field of the *metadata level* sheet.

Restriction Type	Description
<b>Creative Commons CC-0 (free to share)</b>	No rights reserved – Public domain – Data are as completely as possible free to use without reference to the original owner
<b>Creative Commons CC-BY (free to share)</b>	This license lets others distribute, remix, tweak, and build upon your work, even commercially, as long as the original creation are correctly credited
<b>Creative Commons CC-BY-NC (free to share)</b>	This license lets others remix, tweak, and build upon your work non-commercially, as long as the original creation are correctly credited
<b>Restricted (no download)</b>	This license does not allow to download the provided data from the portal. The stakeholder will be asked to contact the data owner to agree some specific data usage rules

<b>Restricted (no display - bounding box needed)</b>	This license does not allow both to visualize and to download the provided data from the portal. A bounding box will appear in the map viewer to highlight the area where the data occur. The stakeholder will be asked to contact the data owner to agree some specific data usage rule
<b>Restricted (presence of sensitive habitats)</b>	This license does not allow both to visualize and to download the provided data from the portal. As mapped data are sensitive, no indication about the area where the data occur will be visualized. The stakeholder will be asked to contact the data owner to agree some specific data usage rule

It is also mandatory to provide the contact details of the resource holder and of the main resource creator in the second table. All other contact details are considered optional but would aid the discovery of data.

Owner/Contact						
Creator (data owner); metadata provider; contacts						
	Field Type	First Name	Last Name	Organization	Phone	Email
Rights Holder	Text - optional	Leonardo	Tunesi	ISPRA	012345 678910	leonardo.tunesi@isprambiente.it
Resource Creator 1	Text - Mandatory	Sabrina	Agnesi	ISPRA	010987 654321	sabrina.agnesi@isprambiente.it
Rights Holder	Text - Mandatory					
Resource Creator 1	Text - Mandatory					
Resource Creator 2	Text - optional					
Resource Creator 3	Text - optional					
Resource Creator 4	Text - optional					
Resource Creator 5	Text - optional					

Figure 2. The second table within the *metadata level* sheet used to capture the contact details of the the data owner (Creator) and person who holds rights over the resource.

## 2 "sampling events" sheet

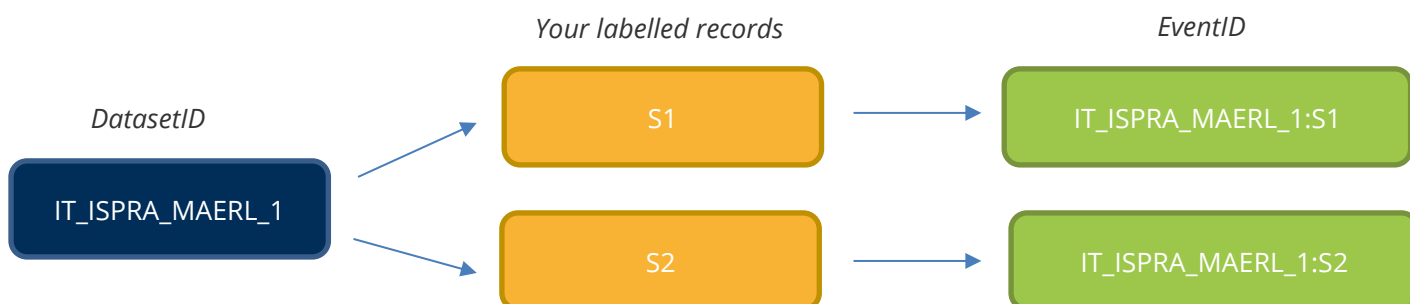
The details of each sampling point within the dataset must be entered in the *Sampling Event* sheet (Figure 3). As a minimum, individual records reported under the **EventID** field must be supplemented with the date by which the sample was collected and the latitudinal and longitudinal coordinates (reported in the World Geodetic System, WGS84).

Field name in WP4	EventID	ParentEventID	ParentType	Date	Organisation Code	DatasetName	Latitude (wgs84)	Longitude (wgs84)	MinimumDepth	MaximumDepth
Field description	Unique identifier of each sampling point of the dataset. Suggested format: "DatasetID" : "original sampleID"	Identifier used to group subsets of data (e.g. data from the same cruise). Suggested format: "DatasetID" : "grouping identifier"	Field to explain what the event refers to e.g. cruise, transect, station Visit, quadrat, sample or subsample	Sampling Date (ISO 8601) YYYY-MM-DD	The name (or acronym) in use by the institution having custody of the object(s) or information referred to in the record	The name identifying the data set from which the record was derived. Automatically populated from metadata tab	Latitude in decimal degree Datum must be EPSG:4326 (wgs84)	Longitude in decimal degree Datum must be EPSG:4326 (wgs84)	Record as a positive value. In the case of a single measurement of depth being taken per sample, populate the same depth in MinimumDepth and MaximumDepth columns.	Record as a positive value. In the case of a single measurement of depth being taken per sample, populate the same depth in MinimumDepth and MaximumDepth columns.
Field Type	Text - mandatory	Text - optional	Mandatory only if ParentEventID exists	Date format ISO 8601 - mandatory	Text - mandatory	Text - mandatory	Numeric - mandatory	Numeric - mandatory	Numeric - optional	Numeric - optional
	IT:ISPRA:MAERL_1:000000SA1			2017-10-16	ISPRA	Mediterranean Sea Maerl occurrences	2017-10-16	45-6789	12-3456	27
	IT:ISPRA:MAERL_1:CRUSE_1:000000SA2	IT:ISPRA:MAERL_1:CRUSE_1	Cruise	2017-02-16	ISPRA	Mediterranean Sea Maerl occurrences	2017-02-16	45-9876	12-6543	29
	IT:ISPRA:MAERL_1:CRUSE_1:000000SA3	IT:ISPRA:MAERL_1:CRUSE_1	Cruise	2017-02-17	ISPRA	Mediterranean Sea Maerl occurrences	2017-02-17	45-7869	12-4536	28

Figure 3. The single table within the *sampling events* sheet, used to detail the individual sampling points within the dataset.

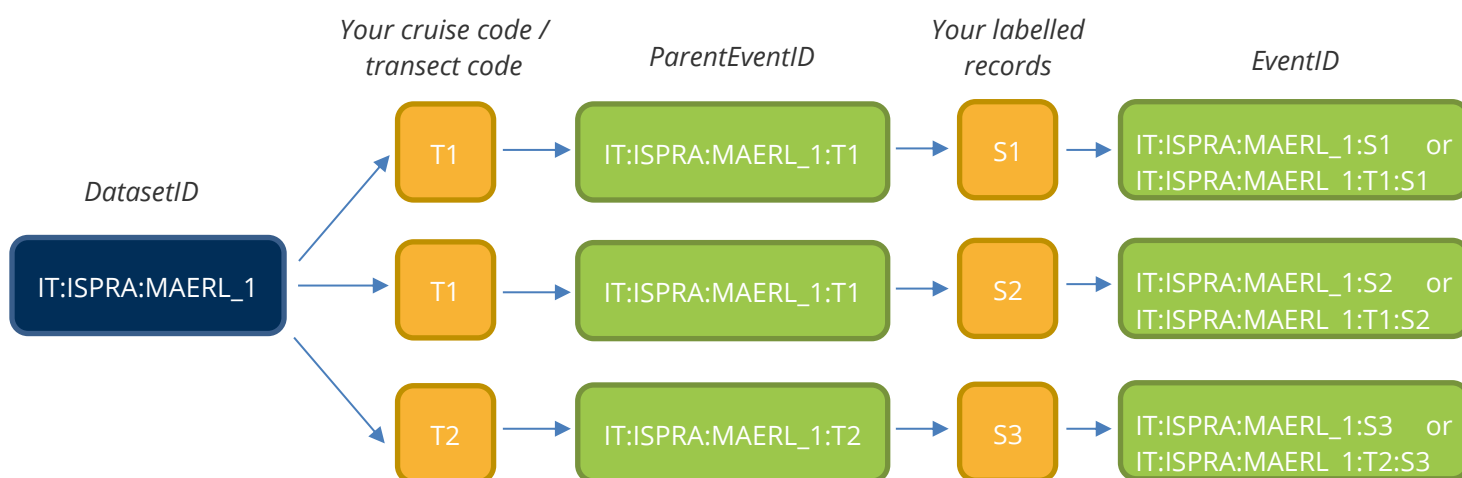
## 2.1 Generating the 'EventID'

The **EventID** field must contain a unique identification code for each sample. Here, we suggest using the **DatasetID** (as entered in the metadata level sheet) followed by a semicolon and however the record has been labelled in your original dataset (see diagram below):



## 2.2 Generating a 'ParentEventID' (optional)

If individual records can be grouped in some meaningful way (for example, if they belong to the same cruise or ROV transect) a **ParentEventID** can be assigned to identify these subsets. Here, we recommend using the **DatasetID**, followed by a grouping code and the record code, each separated by a semicolon (see diagram below):



### IMPORTANT

- Do not apply the same **ParentEventID** to the whole dataset. **ParentEventID** must be used only to group subsets of at least two records within the same dataset.
- It is acceptable to leave **ParentEventID** blank for some or all records.
- In case of point data associated to a **ParentEventID**, the **EventID** can contain the grouping code but this is not mandatory (see example above).

## 2.3 ParentEvent 'Type' (mandatory if ParentEventID is used)

If you are submitting a ParentEventID then it is **mandatory** to submit a parent event type. This should explain what the event refers to e.g. cruise, transect, stationVisit, quadrat, sample or subsample.



## 2.4 Date and position (mandatory)

**Date** format must be ISO 8601 (YYYY-MM-DD). This field is mandatory and can be set as the first of the month or the first of the year when the exact date is unknown.

**Latitude** and **Longitude** must be indicated in decimal degree. Number of decimals should be adequate to the level of uncertainty of the sampling point. Datum must be EPSG:4326 (wgs84).

### **IMPORTANT**

- **Date** is mandatory. If the day of the month is not known, assume it to be the first, i.e. YYYY-MM-01, likewise for the month, i.e. YYYY-01-01.
- **Latitude** and **Longitude** are strictly required in decimal degrees **with no white space** before, after or within.

## 2.5 Institution code (mandatory)

The name (or acronym) in use by the institution having custody of the object(s) or information referred to in the record i.e. the rights holder institution from the metadata sheet.

## 2.6 Dataset name (mandatory)

The name identifying the data set from which the record was derived. This field should be automatically populated from metadata tab.

## 2.7 Depth (optional)

If the depth were recorded for a sample, data must be reported in positive value. Moreover to allow the identification of depth intervals, two depth values (Columns J + K) can be associated to the same record. For this reason, wheter a single depth is recorded for the sampling point, the same value must be replicated in both the columns.

### 3 “EMOF for data entry” sheet

Habitat information and other measurements relating to the sampling records should be recorded in the *EMOF for data entry* sheet (Figure 4). In this tab, the **EventID** code will be replicated for each measurement recorded at each sample.

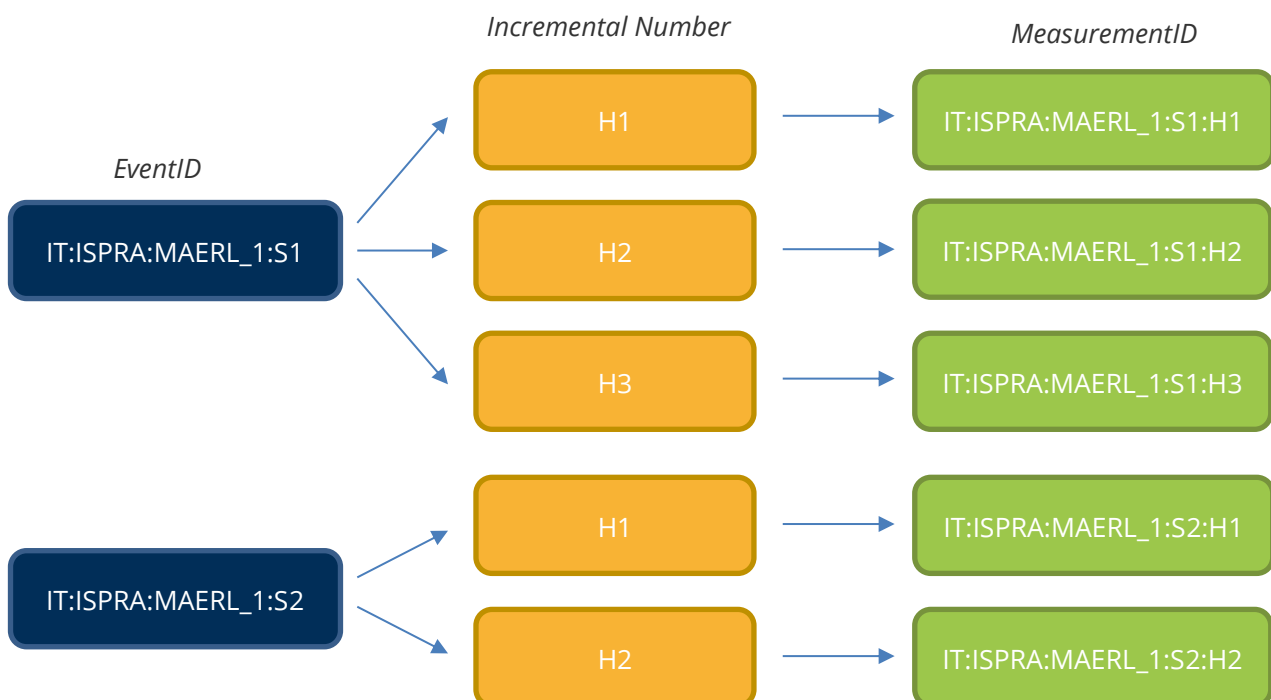
Field name in WP4 habitat database	EventID	MeasurementID	measurementType	measurementValue
<i>Field description</i>	<i>Unique identifier for each sampling point of the dataset, as in the "sampling events" tab.</i> <i>For multiple measurements taken in a single event, use a sequential suffix.</i>	<i>Unique identifier of the measurement carried out at the sampling point.</i> <i>Suggested format:</i> "EventID" + "sequential suffix"	<i>Select from the dropdown list the relevant one among "sampling methods", available substrate classifications and available seabedhabitat classifications</i>	<i>Select from the dropdown list the relevant item according to the MeasurementType entry</i>
<i>Field Type</i>	<b>Text - mandatory</b>	<b>Text - mandatory</b>	<b>Text - mandatory</b>	<b>Text - mandatory</b>
<i>Example</i>	IT:ISPRA:MAERL_1:6060606SA1	IT:ISPRA:MAERL_1:6060606SA1: M1	Sampling Method	Hamon grab
	IT:ISPRA:MAERL_1:6060606SA1	IT:ISPRA:MAERL_1:6060606SA1: M2	Barcelona Convention - Classification of Benthic Marine Habitat Types for the Mediterranean Region	IV.2.2.1. Association with rhodoliths

Figure 4. The mandatory fields within the single table of the *EMOF for data entry* sheet, used to provide details of measurements taken at each sampling point.

All records reported under the **EventID** column (Column E) must be supplemented with a unique identification code (**MeasurementID**) to then identify the measurements taken at each sample (**measurementType**), along with the value recorded against each measurement (**measurementValue**).

#### 3.1 Generating the ‘MeasurementID’

To populate the MeasurementID, we recommend users concatenating the **EventID** with a running incremental number (see below example):



### 3.2 'measurementType' and 'measurementValue'

The **measurementType** column contains a dropdown list for users to select the type of data recorded at each sample. The selection of a specific measurement type will alter the dropdown list in the adjacent column (**measurementValue**), as explained in Table 2.

Table 2. Examples of specific attributes you can record against each sample and how this would translate into the dropdown options within the **measurementType** field. Examples of the dropdown options available within the **measurementValue** field are also given.

Sampling point attribute	measurementType	measurementValue
<b>Methodology</b>	Sampling Method	Diver, Rock dredges, Van Veen grab, etc
<b>Seabed Substrate</b>	Folk 5 Folk 7 Folk 16	Sand, Coarse sediment, Mixed sediment, etc Sandy Mud, Muddy Sand, Sand, etc Muddy Sandy Gravel, Muddy Gravel, etc
<b>Seabed Habitat</b>	EUNIS version 2007-11 Habitats Directive Annex I habitats HELCOM HUB etc	A5.23, A5.535, A5.51. etc IV.3.1.1, IV.3.1.10, IV.3.1.14, etc AA.A1C1, AA.A1C2, AA.A1C3, etc .....

For each habitat data point you should record:

1. Method information, one of:
  - a. Sampling method – use this measurementType to give a general description of the tool used for sampling e.g. underwater camera.
  - b. Sampling instrument – use this measurementType if you know the specific instrument that was used i.e. the particular type of underwater camera.
2. Habitat information – choose the relevant habitat classification scheme as the measurementType.

#### **IMPORTANT**

- If you need to use a **measurementType** or **measurementValue** which is not included in the predefined list (e.g. another classification system), you may contact EMODnet Seabed Habitats<sup>1</sup> to ask for a template update.
- However, requests will only be accepted in the case of errors or gaps. Data providers should aim to use internationally/nationally accepted standard classification systems whenever possible.

### 3.2.1 How to record multiple measurements against a sampling point

As previously mentioned, the **EventID** code will be replicated for each measurement recorded at each sample. Table 3 describes the correct way to record multiple measurements against the same **EventID**.

Table 3. An example of how to record multiple measurements against a single sampling point in the *EMOF for data entry sheet*.

EventID	measurementID	measurementType	measurementValue
IT:ISPRA:MAERL_0000001	IT:ISPRA:MAERL_0000001:M1	Sampling Method	Underwater cameras
IT:ISPRA:MAERL_0000001	IT:ISPRA:MAERL_0000001:M2	Folk 5	Coarse sediment
IT:ISPRA:MAERL_0000001	IT:ISPRA:MAERL_0000001:M3	EUNIS (version 2007-2011)	A5.51 - Maerl beds
IT:ISPRA:MAERL_0000001	IT:ISPRA:MAERL_0000001:M4	Peres Picard 1964	IV.2.2.a. Facies with maërl (Lithothamnion corallioides and Phymatholithon calcareum)

#### IMPORTANT

- Each **EventID** in the *EMOF for data entry sheet* must have a corresponding **EventID** in the *sampling events sheet*. **The text strings must match precisely** with no white space.
- In the *EMOF for data entry sheet*, **EventID may be duplicated** in the case of multiple pieces of information for a single record, e.g. sampling method, sediment type, habitat type in one or more classification systems.
- **MeasurementID must never be duplicated.**

### 3.3 'SeabedStatus'

In case of **measurementValue** referring a biological habitat, this field reports the description of the "health" status of the Habitat. **SeabedStatus** should be described according to the main European Directives (WFD, Habitat Directive and MSFD).

Table 4. A description of the dropdown options available in the **SeabedStatus** field. Descriptions denote status of the habitat according to one of the listed European directives.

European Directive	Habitat status
<b>Habitat Directive</b>	Favourable Inadequate Bad
<b>Water Framework Directive</b>	HES - High Ecological Status GES - Good Ecologica Status Moderate Ecological Status PES - Poor Ecological Status BES - Bad Ecological Status
<b>Marine Strategy Framework Directive</b>	GES - Good Environmental Status

### 3.4 How to manage more habitat classification system defined at the same point

There may be instances where you have the “local” or “regional” original classification system used to classify the habitat and you would like to provide also the information of other (pan-European) classification systems (i.e. EUNIS). EMODnet Seabed Habitats strongly encourage this approach whenever it is possible to make the collected data well comparable across the different marine regions and subregions. In this case, it is important to provide additional information about the approach used to translate the original habitat and about the **occurrenceID** of the originally classified data. Under these circumstances, you will need to provide detail in the **SourceHabitatOccurrenceID** and **RelationshipToSourceHabitat** fields.

#### 3.4.1 ‘SeabedTypeDeterminer’, ‘SeabedTypeDeterminedDate’ and ‘SeabedTypeDeterminedMethod’

These fields provide information regarding who (list (concatenated and separated) of names of people, groups, or organizations), when (the date on which the above determination was made) and how (a description of references or method/protocol used to determine the seabed type) the habitat translation was made.

#### 3.4.2 ‘SourceHabitatOccurrenceID’

The **SourceHabitatMeasurementID** relates to the relevant record from which the new translated record was derived. As such, you will need to supply the **MeasurementID** of the original data point record.

### 3.4.3 'RelationshipToSourceHabitat'

For each record with a **SourceHabitatMeasurementID**, a relationship between the original habitat classification and the translated habitat classification should be detailed. To do this, a dropdown list is available, details of the symbols can be found in Table 5.

Table 5. A description of the dropdown options available in the **RelationshipToSourceHabitat** field. Descriptions denote the type of relationships that can be held between the original classification of the habitat, and the newly translated habitat.

RelationshipToSourceHabitat	Description of the relationship
=	The original habitat is the same as translate habitat
~	The original habitat is nearly the same as translate habitat
<	The translated habitat is contained within original habitat
>	The original habitat is contained within translate habitat
#	The definition of the original habitat partially overlaps with that of the translate habitat

#### REMINDER – IF YOU WANT TO COPY AND PASTE DATA FROM AN EXTERNAL TABLE

- because of the presence of pre-defined values for some variables, if you prefer to copy and paste records from other datasheets rather than manually select the value from the available lists preventing the possibility to write in a wrong way, you must:
  - check that your input values are written exactly in the same way of the related list;
  - use the "special" paste by choosing the "values only" option (this because the copy and paste tool of excel neutralizes the original setting of the cells, both in terms of allowed entries and format).

Keep in mind that, if you paste your records from other spreadsheets (by using the "values only" option), your entries will be allowed also if they are not coherent with the dropdown list. For this reason and in order to help you to correctly fill the table, **when an invalid entry occurs, the cell will be automatically highlighted in red**. Conversely, if the value is valid, the cell will be coloured in green confirming that your record is ok. **When a red cell appears, you must fix the error before send us the file.**

- If you don't use the "values only" paste tool, this last control doesn't work so you can't find any error.

## 4 "EMOF complete (protected)" sheet

All the records in the *EMOF complete (protected)* sheet are auto-filled from the other sheets. For this reason, you can see the table, but you cant modify it.