



PAN-EUROPEAN INFRASTRUCTURE  
FOR OCEAN & MARINE DATA  
MANAGEMENT

## *Introduction to biological data management*

*Klaas Deneudt – Flanders Marine Institute*



Vlaams Instituut voor de Zee  
*Flanders Marine Institute*

## OUTLINE PRESENTATION

- Introduction
  - SDN and biological data
  - Marine biological data systems and international data flow
  - Biological data: different types and various formats
- Taxonomy and use of World Register of Marine Species
- *Exercise 1*
- Data format: CDI + ODV biology variant
- *Exercise 2*
- Status, feedback and discussion



PAN-EUROPEAN INFRASTRUCTURE  
FOR OCEAN & MARINE DATA  
MANAGEMENT

## SeaDataNet & biological data

- Marine observing systems highly fragmented; measurement of physical, geophysical, geological, chemical parameters, biological parameters, ...
- Now: mostly oceanographic data
- Near future: also biological data from SDN partners available
- Public data will become part of international data flow



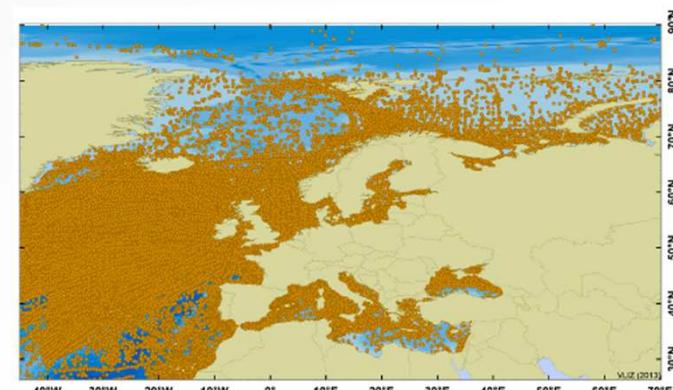
**SeaDataNet**

PAN-EUROPEAN INFRASTRUCTURE  
FOR OCEAN & MARINE DATA  
MANAGEMENT



## Marine biological data system in Europe

- *EurOBIS – European Ocean Biogeographic Information System*
- Biodiversity data on European marine species
- Freely available online, quality controlled data
- Developed within MarBEF (FP6) (2004-2009), further maintenance by VLIZ
- 1 of the 14 regional nodes (RoNs) of OBIS (IODE)
- Backbone of EMODnet biology
- Standards: Darwin Core & World Register of Marine Species (WoRMS)
- Currently available in EurOBIS (May 2014)
  - 551 datasets
  - 17 million distribution records
- International data flow: EurOBIS <=> OBIS <=> GBIF



## Data flow for public data



Marine data from

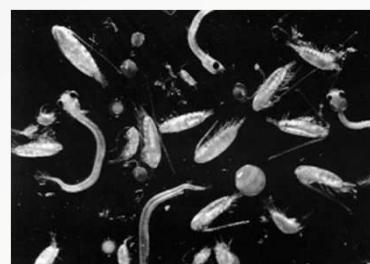
- Europe
- outside Europe, by European institutes

Data delivery:

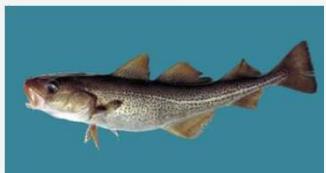
- Through email: excell, access, CSV, ...
- Distributed: DIGIR, IPT toolkit

## Types of biological data

- Observation and results
  - Occurrence
  - Density
  - Biomass
  - Body morphology
  - Condition
  - Substance concentrations or ratios
  - Sequencing material



- Biological components
  - benthos, plankton, fish, birds, mammals, ...





**SeaDataNet**

PAN-EUROPEAN INFRASTRUCTURE  
FOR OCEAN & MARINE DATA  
MANAGEMENT

- Geometry and sampling protocol

- Point

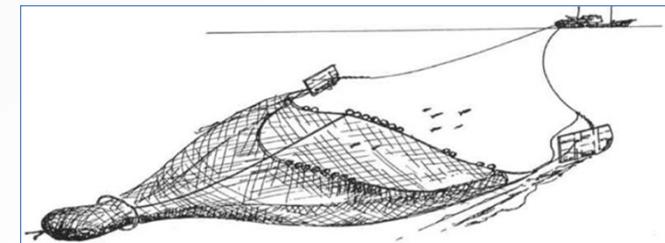
- soft-bottom grabs & cores (depth layer separation possible)
    - vertical net and water samples (multiple depths possible)
    - static net samples
    - hard-bottom sampling (scraping or visual)
    - static observations/underwater photography

- Curve

- net trawl, dredge or sledge
    - transect observations/underwater video

- Surface

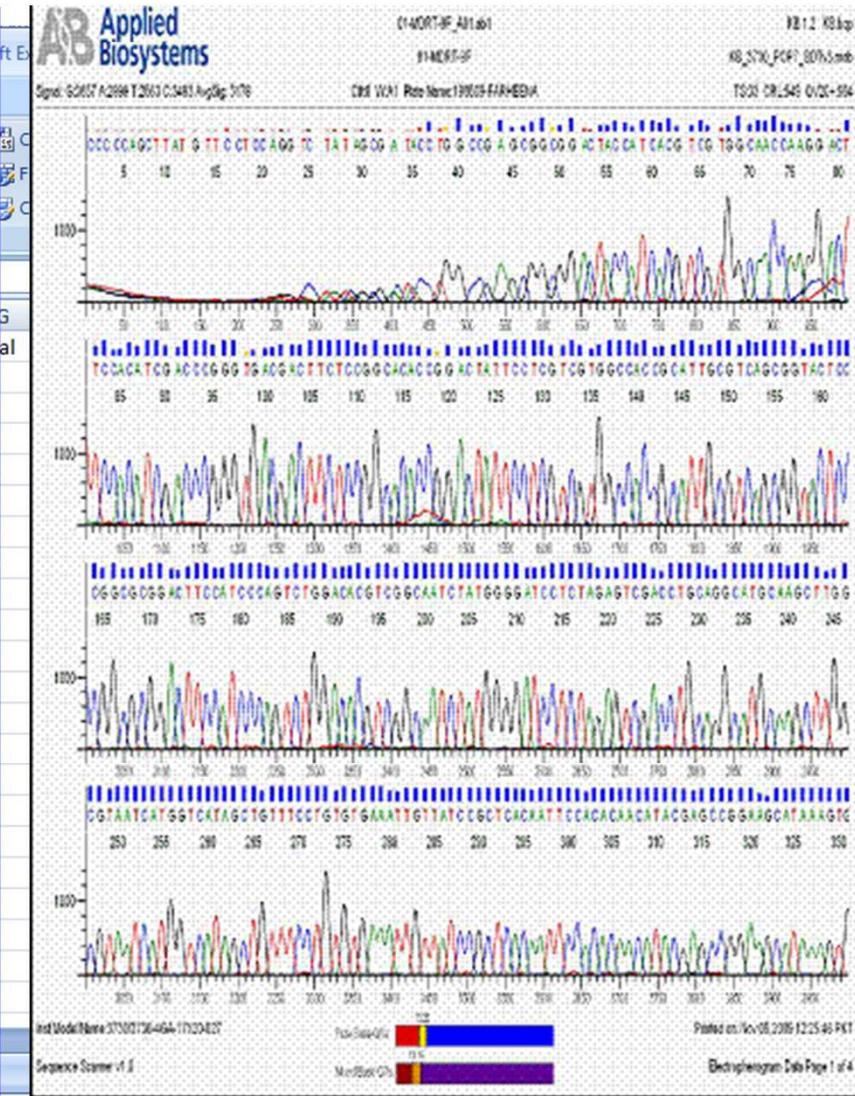
- surface observations





# Data formats

Vissoort :	Schol	Datum :	04/07/2008
Vaartuig :	O.89	PK :	Vissenij : bokken
Zone :	N	Visuren :	Totale vangst : 1106
Sortering	1	2	3
Tot. vangst	1880	3491	4289
Monster	25.460	36.450	48.100
24			
25			
26	3		
27	7		
28	20		
29	23		
30	27	1	
31	14	12	
32	5	29	
33	1	29	5
34		21	16
35		6	20
36		1	27
37			4
38			15
39			7
40			21
41			28
42			2
43			16
44			2
45			4
46			3
47			10
48			5
49			10
50			9
			4
			2



## “Common denominator” = taxonomy

- **Taxonomy**

from Ancient Greek: τάξις *taxis* "arrangement" and Ancient Greek: νομία *nomia* "method"

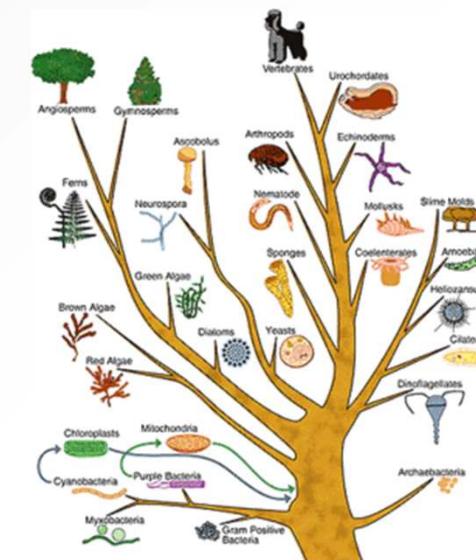
= ***the academic discipline of defining groups of biological organisms on the basis of shared characteristics and giving names to those groups.***

To bring order into the “chaos” of species, to help scientists in how to deal with species, so they know they are talking about the same creature and to classify them in larger groups.

*International Code on Zoological Nomenclature (ICZN)*

*International Code of Nomenclature for algae, fungi, and plants*

Kingdom > Phylum > Class > Order > Family > Genus > Species



## Taxonomy: spelling errors

*... some names are harder to spell than others ...*

### **Actinobacillus actimomycetemcomitans**

Actinobacillus actimycetemcomitans  
Actinobacillus actinmymcetemcomitans  
Actinobacillus actinomicetemcomitans  
Actinobacillus actinomy  
Actinobacillus actinomyce  
Actinobacillus actinomycemcomitans  
Actinobacillus actinomyceremcomitans  
Actinobacillus actinomycetam  
Actinobacillus actinomycetamcomitans  
Actinobacillus actinomycetecomitans  
Actinobacillus actinomycetemcmittans  
Actinobacillus actinomycetemcomintans  
Actinobacillus actinomycetemcomitance

Actinobacillus actinomycetemcomitans  
Actinobacillus actinomycetemcomitants  
Actinobacillus actinomycetemcommitans  
Actinobacillus actinomycetemocimitans  
Actinobacillus actinomycetencomitans  
Actinobacillus actinomycetum  
Actinobacillus actinomyctemcomitans  
Actinobacillus actinomyectomcomitans  
Actinobacillus actinomyetemcomitans  
Actinobacillus actinonmycetemcomitans  
Actinobacillus actionomycetemcomitans  
Actinobacillus actynomicetemcomitans  
Actinobacillus antinomycetemcomitans

- Difficulties with Latinized Names
- Transcription errors

Which one is correct? Controlled taxonomic vocabulary necessary!



**SeaDataNet**

PAN-EUROPEAN INFRASTRUCTURE  
FOR OCEAN & MARINE DATA  
MANAGEMENT

Dataset	Before tax. check
1	<i>Amphiura sunderali</i>
2	<i>Amphiura sundevali</i>
3	<i>Amphiura sundvali</i>
4	<i>Amphiura sundevalli</i>





**SeaDataNet**

PAN-EUROPEAN INFRASTRUCTURE  
FOR OCEAN & MARINE DATA  
MANAGEMENT

## Taxonomy: many ways to (correctly) spell a name

*Agalinus paupercula borealis*

*Agalinus pauperculum borealis*

*Agalinis paupercula var. Borealis*

*Agalinus pauperculum var. borealis*

*Agalinus paupercula var. borealis*

*Agalinus paupercula var. borealis Pennell*

*Agalinus paupercula Britton var. borealis Pennell*

*Agalinus paupercula (Gray) Britt. var. borealis Pennell*

*Agalinis paupercula (A. Gray) Britton var. borealis Pennell*

*Agalinus paupercula (Gray) Britton var. borealis (Pennell) Zenkert 1934*

*Gerardia paupercula borealis*

*Gerardia paupercula var. borealis*

*Gerardia paupercula var. borealis (Pennell) Deam*

*Gerardia paupercula (Gray) Britt. var. borealis (Pennell) Deam*

*Gerardia paupercula (Gray) Britt. var. borealis (Pennell) Deam*

*Gerardia paupercula (A. Gray) Britton var. borealis (Pennell) Deam*

*Gerardia paupercula (A. Gray) Britton subsp. borealis (Pennell) Pennell*

*Gerardia paupercula (Gray) Britt. ssp. borealis (Pennell) Pennell*

*Gerardia paupercula Britton ssp. borealis Pennell*



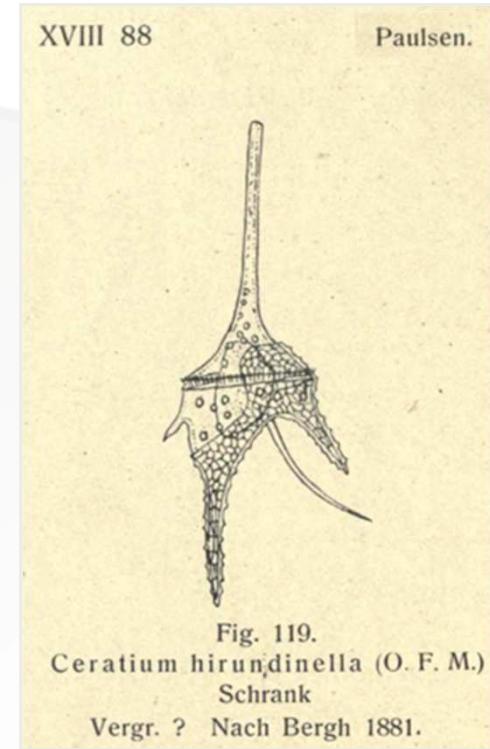


**SeaDataNet**

PAN-EUROPEAN INFRASTRUCTURE  
FOR OCEAN & MARINE DATA  
MANAGEMENT

## Taxonomy: variation in author name

- ✓ *Ceratium hirudinella*
- ✓ *Ceratium hirudinella* (Muller 1773)
- ✓ *Ceratium hirundienella*
- ✓ *Ceratium hirundinella*
- ✓ *Ceratium hirundinella* (Mull )
- ✓ *Ceratium hirundinella* (Mull)
- ✓ *Ceratium hirundinella* (Muller )
- ✓ *Ceratium hirundinella* (Muller 1773)
- ✓ *Ceratium hirundinella* (Muller)
- ✓ *Ceratium hirundinella* (O. F. Müller) Bergh
- ✓ *Ceratium hirundinella* (O.F. MÃ¼ller) Bergh
- ✓ *Ceratium hirundinella* (O.F. Müller) Bergh
- ✓ ***Ceratium hirundinella* (O.F. Müller, 1773) Dujardin, 1841**
- ✓ *Ceratium hirundinella* (O.F. MÃ¶ller) Bergh
- ✓ *Ceratium hirundinella* Dujardin
- ✓ *Ceratium hirundinella* O. F. M.
- ✓ *Ceratium hirundinella* O. F. Muller



(Example from the Global Names Index - GNI)



*Alcyonium manusdiaboli* sensu Esper, 1794 (genus transfer and junior synonym)  
*Alcyonium medullare* Lamarck, 1815 (genus transfer & junior synonym)  
*Alcyonium paniceum* (Pallas, 1766) (genus transfer)  
*Amorphina appendiculata* Schmidt, 1875 (genus transfer and junior synonym)  
*Amorphina grisea* Fristedt, 1887 (genus transfer and junior synonym)  
*Amorphina paciscens* Schmidt, 1875 (genus transfer and junior synonym)  
*Amorphina panicea* (Pallas, 1766) (genus transfer)  
*Clathria (Microciona) seriata* (Grant, 1826) (genus transfer and junior synonym)  
*Clathria (Microciona) tumulosa* (Bowerbank, 1882) (genus transfer and junior synonym)  
*Clathria seriata* (Grant, 1826) (genus transfer and junior synonym)  
*Eumastia appendiculata* (Schmidt, 1875) (genus transfer and junior synonym)  
*Halichondria albescens* (Rafinesque, 1818) (junior synonym)  
*Halichondria ambigua* Bowerbank, 1874 (junior synonym)  
*Halichondria bibula* (Schmidt, 1870) (junior synonym)  
*Halichondria brettii* (Bowerbank, 1866) (subgenus assignment)  
*Halichondria caduca* Bowerbank, 1866 (junior synonym)  
*Halichondria coccinea* Bowerbank, 1861 (junior synonym)  
*Halichondria coralloides* Bowerbank, 1882 (junior synonym)  
*Halichondria edusa* Bowerbank, 1874 (junior synonym)  
*Halichondria firmus* (Bowerbank, 1874) (junior synonym)  
*Halichondria glabra* Bowerbank, 1866 (junior synonym)  
*Halichondria grisea* (Fristedt, 1887) (junior synonym)  
*Halichondria incerta* Bowerbank, 1866 (junior synonym)  
*Halichondria lactea* (Bowerbank, 1866) (junior synonym)  
*Halichondria membrana* (Bowerbank, 1866) (junior synonym)  
*Halichondria paciscens* (Schmidt, 1875) (junior synonym)  
*Halichondria panicea* (Pallas, 1766) (subgenus assignment)  
*Halichondria pannosus* Vernill, 1874 (junior synonym)  
*Halichondria papillaris* (Linnaeus, 1791) (junior synonym)  
*Halichondria reticulata* Lieberkühn, 1859 (junior synonym)

## Taxonomy: synonymy

### ***Halichondria (Halichondria) panicea* (Pallas, 1766)**

**Bread-crumb sponge  
(> 60 synonyms)**

*Halichondria sevosa* Johnston, 1842 (junior synonym)  
*Halichondria topsenti* de Laubenfels, 1936 (junior synonym)  
*Halichondriella corticata* Burton, 1931 (genus transfer and junior synonym)  
*Halina panicea* (Pallas, 1766) (genus transfer)  
*Hymeniacidon brettii* Bowerbank, 1866 (genus transfer and junior synonym)  
*Hymeniacidon coccinea* (Bowerbank, 1861) (genus transfer and junior synonym)  
*Hymeniacidon fallaciosus* Bowerbank, 1866 (genus transfer and junior synonym)  
*Hymeniacidon firmus* Bowerbank, 1874 (genus transfer)  
*Hymeniacidon fragilis* Bowerbank, 1866 (genus transfer and junior synonym)  
*Hymeniacidon lactea* Bowerbank, 1866 (genus transfer and junior synonym)  
*Hymeniacidon membrana* Bowerbank, 1866 (genus transfer and junior synonym)  
*Hymeniacidon parfitti* Parfitt, 1868 (genus transfer and junior synonym)  
*Hymeniacidon reticulatus* Bowerbank, 1866 (genus transfer and junior synonym)  
*Hymeniacidon solida* Bowerbank, 1874 (genus transfer and junior synonym)  
*Hymeniacidon tegeticula* Bowerbank, 1874 (genus transfer and junior synonym)  
*Hymeniacidon thomasi* Bowerbank, 1866 (genus transfer and junior synonym)  
*Isodictya crassa* Bowerbank, 1882 (genus transfer and junior synonym)  
*Isodictya perplexa* Bowerbank, 1882 (genus transfer and junior synonym)  
*Menanetia minchini* Topsent, 1896 (genus transfer and junior synonym)  
*Microciona tumulosa* Bowerbank, 1882 (genus transfer and junior synonym)  
*Pellina bibula* Schmidt, 1870 (genus transfer and junior synonym)  
*Seriatula seriata* (Grant, 1826) (genus transfer and junior synonym)  
*Spongia albescens* Rafinesque, 1818 (genus transfer and junior synonym)  
*Spongia compacta* Sowerby, 1806 (genus transfer and junior synonym)  
*Spongia cristata* Ellis & Solander, 1786 (genus transfer and junior synonym)  
*Spongia panicea* Pallas, 1766 (genus transfer)  
*Spongia seriata* Grant, 1826 (genus transfer and junior synonym)  
*Spongia tomentosa* Linnaeus, 1767 (genus transfer and junior synonym)  
*Spongia tubulosa* Ellis & Solander, 1786 (genus transfer and junior synonym)  
*Spongia urens* Ellis & Solander, 1786 (genus transfer and junior synonym)  
*Spuma borealis* var. *convoluta* Miklugo-Maclay, 1870 (genus transfer & junior synonym)  
*Spuma borealis* var. *tuberosa* Miklugo-Maclay, 1870 (genus transfer & junior synonym)  
*Spuma borealis* var. *velamentosa* Miklugo-Maclay, 1870 (genus transfer & junior synonym)  
*Trachysylla glaberrima* Burton, 1931 (genus transfer and junior synonym)

## Taxonomy: homonymy

### *Homonym*

*A name for a taxon that is identical in spelling to another such name,  
that belongs to a different taxon.*

*Only one of the two names can stay “valid”, the other becomes “invalid”.*

#### **Moorea**

- Moorea Lemaire, 1855 (*Plantae-Magnoliophyta-Liliopsida-Poales-Poaceae*) .. (Current name: *Cortaderia*)
- Moorea Jones & Holl, 1869 (*Animalia-Arthropoda-Ostracoda-Leperditicopida-Leperditiiidae*)
- Moorea Rolfe, 1890 (*Plantae-Magnoliophyta-Liliopsida-Asparagales-Orchidaceae*) .. (Current name: *Neomoorea*)
- Moorea Hampson, 1894 (*Animalia-Arthropoda-Insecta-Lepidoptera-Arctiidae*) .. (Current name: *Sebastia*)
- Moorea Toxopeus, 1927 (*Animalia-Arthropoda-Insecta-Lepidoptera-Lycaenidae*) .. (Current name: *Arletta*)
- Moorea Ahn, 2004 (*Animalia-Arthropoda-Insecta-Coleoptera-Staphylinidae*) .. (Current name: *Ianmoorea*)

Scientific name: *Alebion*



*Alebion* Krøyer, 1863

=> Animalia, Crustacea, parasitic copepods



*Alebion* Gray, 1867

=> Animalia, Porifera

=> Accepted as *Iophon* Gray, 1867

## How to deal with all this variation?

- Link taxon names with ***World Register of Marine Species (WoRMS)***
- WoRMS:
  - ✓ Standard list of marine taxon names
  - ✓ First authoritative list of names of all marine & brackish water taxa worldwide
  - ✓ Managed by VLIZ, directed by taxonomic experts
  - ✓ Open access
  - ✓ Follow international standards & serve permanent Global Unique IDs (LSIDs)  
<http://www.tdwg.org/standards/150/download/>
  - ✓ Up-to-date and (near) complete (incl. synonyms & commonly used spelling mistakes)
- If no link possible:
  - ✓ Consult with data provider(s)
  - ✓ Consult with taxonomic expert(s) at [info@marinespecies.org](mailto:info@marinespecies.org)
- Originally delivered name is always safeguarded!



## WoRMS content

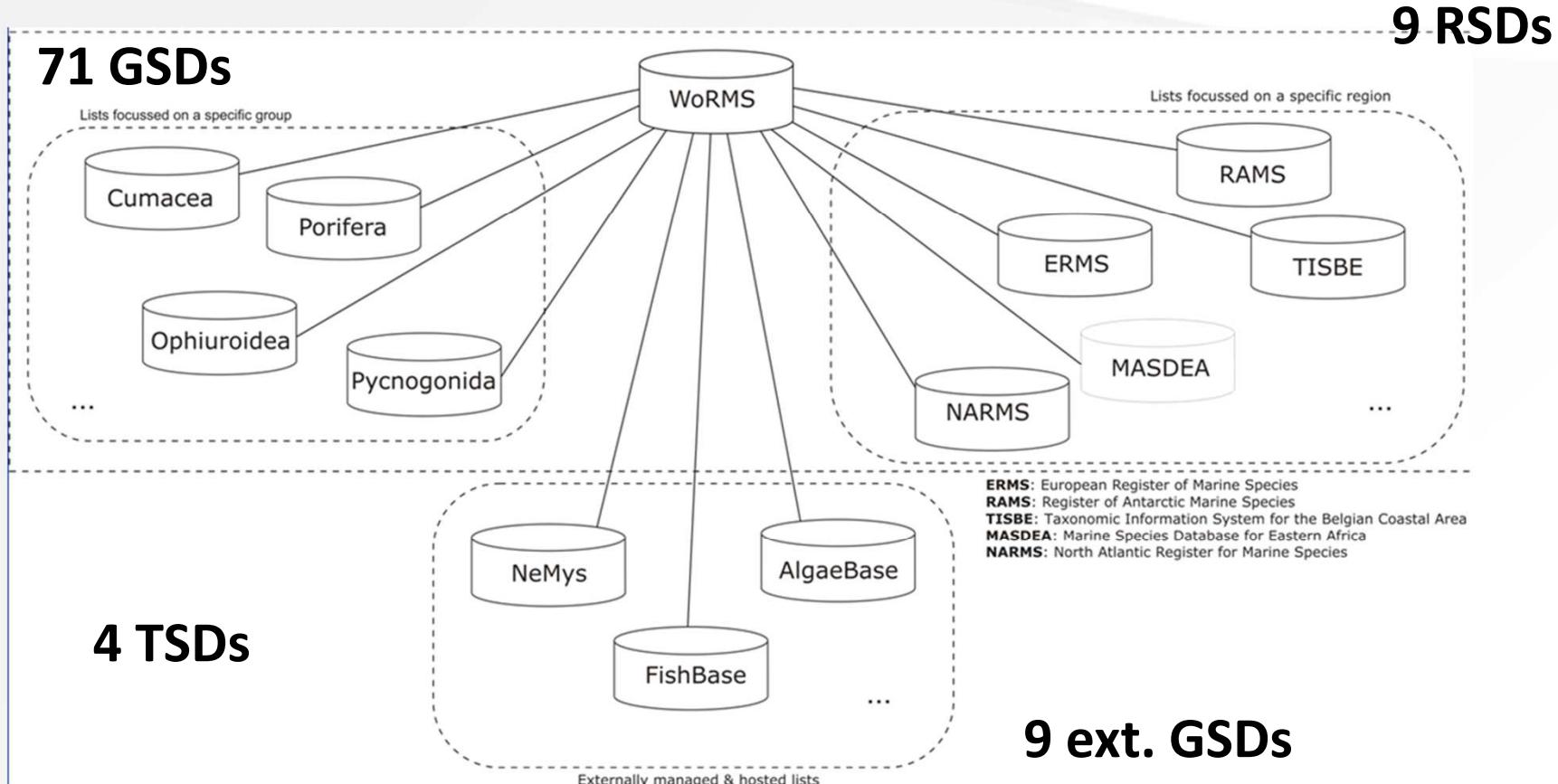
- 633 849 taxa
- 251 910 accepted species of which 95% is checked by a taxonomic editor
- 47 062 images
- 53 453 vernacular names
- 166 840 key literature references (=sources)
- 57 845 specimen details
- 375 021 published distributions
- > 750 000 web links
- Notes, feeding type & habitat information, host-parasite relationships ...



**SeaDataNet**

PAN-EUROPEAN INFRASTRUCTURE  
FOR OCEAN & MARINE DATA  
MANAGEMENT

- integrates over 100 global, regional and thematic species databases into a common IT platform, which means every species occurs in the system only once





SeaDataNet

PAN-EUROPEAN INFRASTRUCTURE  
FOR OCEAN & MARINE DATA  
MANAGEMENT



WoRMS  
World Register of Marine Species

## Phoronida World Database



[Intro](#) - [Search taxa](#) - [Taxon tree](#) - [Literature](#) - [Log in](#)

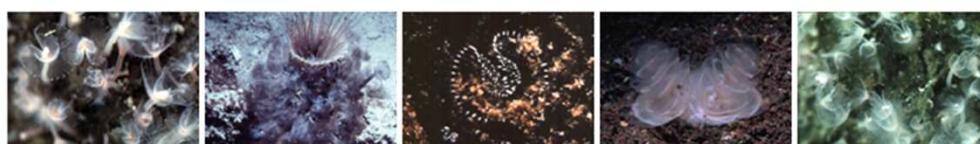
### Phoronida world database

The Phoronida, also named *horseshoe worms*, is an exclusively marine group of lophophorate animals: sedentary infaunal, benthic suspension-feeders, with a vermiform body enclosed in a slender, chitinous tube in which it moves freely and it is anchored by the ampulla, the end-bulb of the body. The tubes are vertically embedded in soft sediments (sand, mud or fine gravel) or form tangled masses of many individuals, buried in, or encrusting, limestone rocks and shells of dead mollusks. One species, *Phoronis australis*, is embedded into the tube of cerianthid anemones.

Phoronida are considered as phylum or class among the Lophophorata and are without intermediate hierarchical level until the genus level. Two genera, *Phoronis* and *Phoronopsis*, are recognized with respectively seven and three well-defined species. Phoronids are found in all oceans and seas (except the polar seas) and all species have wide geographical ranges and most are cosmopolitan. They occur at depths ranging from the intertidal zone to about 400 m depth, but mainly between 0 to 70 m.

The body is more or less elongate, ranging in length from some millimeters to more than 45 cm, and bears a terminal, bilaterally symmetrical, crown of tentacles named lophophore. The lophophore may form an oval to a horseshoe shape more or less complex with two spiral to helicoidal coils; the complexity of the form is proportional to the increase of the general body size.

Phoronida have a characteristic ciliated and free-swimming pelagic larva, named *Actinotrocha* or actinotroch. Separate names for larval and adult forms are still used in taxonomy. Despite the priority of the larval name *Actinotrocha*, the International Commission of Zoological Nomenclature accepted also as valid the name *Phoronis*. Consequently, the actinotroch keeps a separate "generic" name considered as a technical term under *Actinotrocha* followed by a species name (see Silén, 1952), which is sometimes still different from the adult species name. [More info](#).



WoRMS integrates:  
**Global Species Databases (GSD)**

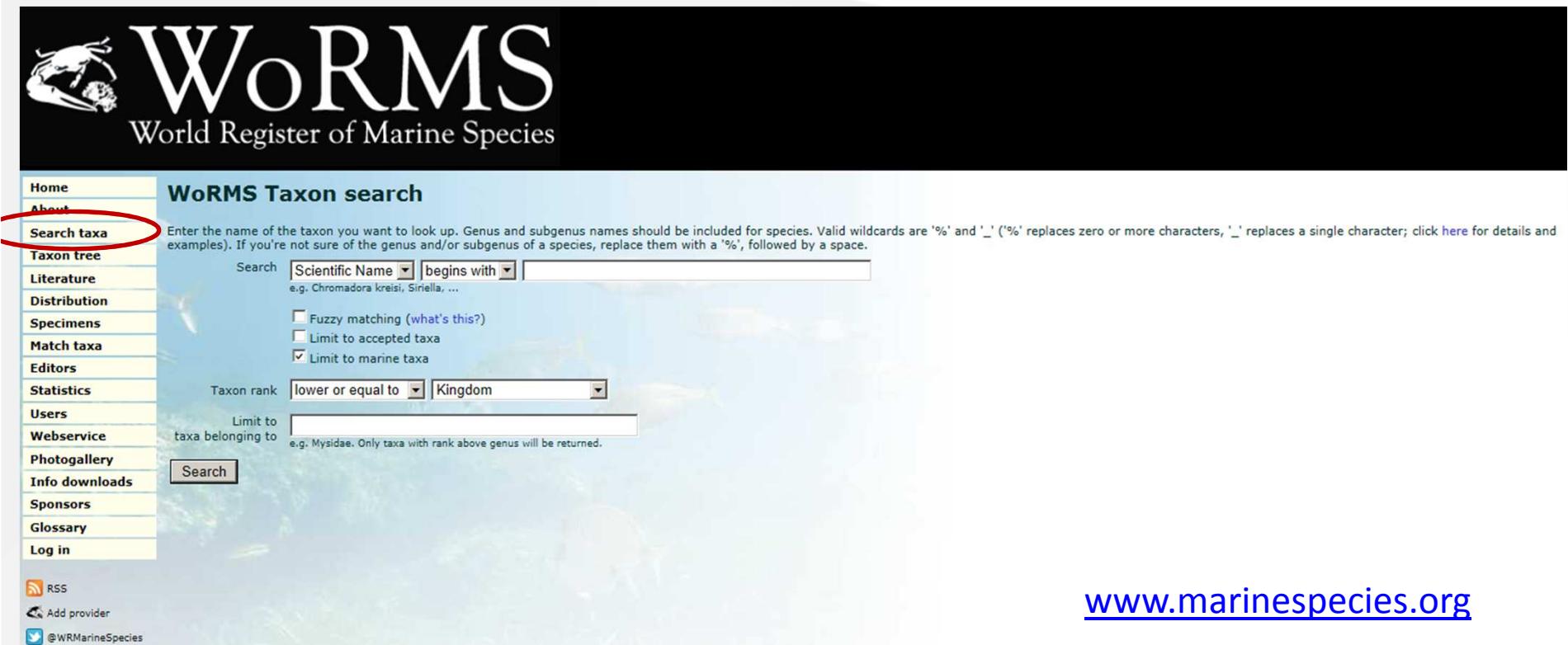
[World List of Porifera](#)  
[World List of Proseriata and Kalyptorhynchia - Rhabditophora](#)  
[World List of Cumacea](#)  
[World List of Brachiopoda](#)  
[World List of Phoronida](#)  
[World List of Pycnogonida](#)  
[World List of Ophiuroidea](#)  
[World List of Isopoda](#)  
[World List of Copepoda](#)  
[World List of Asteroidea](#)  
[World List of Remipedia](#)  
[World List of Cetacea](#)  
[World List of Mangroves](#)  
[World List of Hydrozoa](#)  
[World List of Placozoa](#)  
[World List of littoral Myriapoda](#)  
[World List of Echinoidea](#)  
[World List of Hemichordata](#)  
[World List of Ascidiacea](#)  
[World List of Foraminifera](#)  
[World List of Polychaeta](#)  
[World List of Lophogastrida, Stygiomysida and Mysida](#)  
[World List of Euphausiaceae](#)  
[World List of Nemertea](#)  
[World List of Tanaidacea](#)  
[World List of marine Hirudinea](#)  
[World List of Priapulida](#)  
[World List of Nematomorpha](#)  
[World List of marine & brackish water Branchiopoda](#)  
[World List of Ciliophora](#)  
[World List of Acanthocephala](#)  
[World List of Bochusacea](#)  
[World List of Sipuncula](#)  
[World List of Sirenia](#)  
[World List of Thermosbaenacea](#)  
[World List of Chaetognatha](#)  
[World List of Lophogastrida](#)  
[World List of Merostomata](#)  
[World List of Mystacocarida](#)  
[World List of Tantulocarida](#)  
[World List of Podocopa](#)

## WoRMS users

- As standard taxonomic reference for organizations and programmes  
=> *e.g. GBIF, OBIS, CoL, EoL, ICES, NODCs, ...*
- Quality control purposes  
=> *through webservices & taxon match tool*
- Website:
  - 4 000 visitors per day
  - 3 million hits per month
  - > 600 citations of “*World Register of Marine Species*” through Google Scholar

## How to use WoRMS?

- For single name: ‘search taxa’

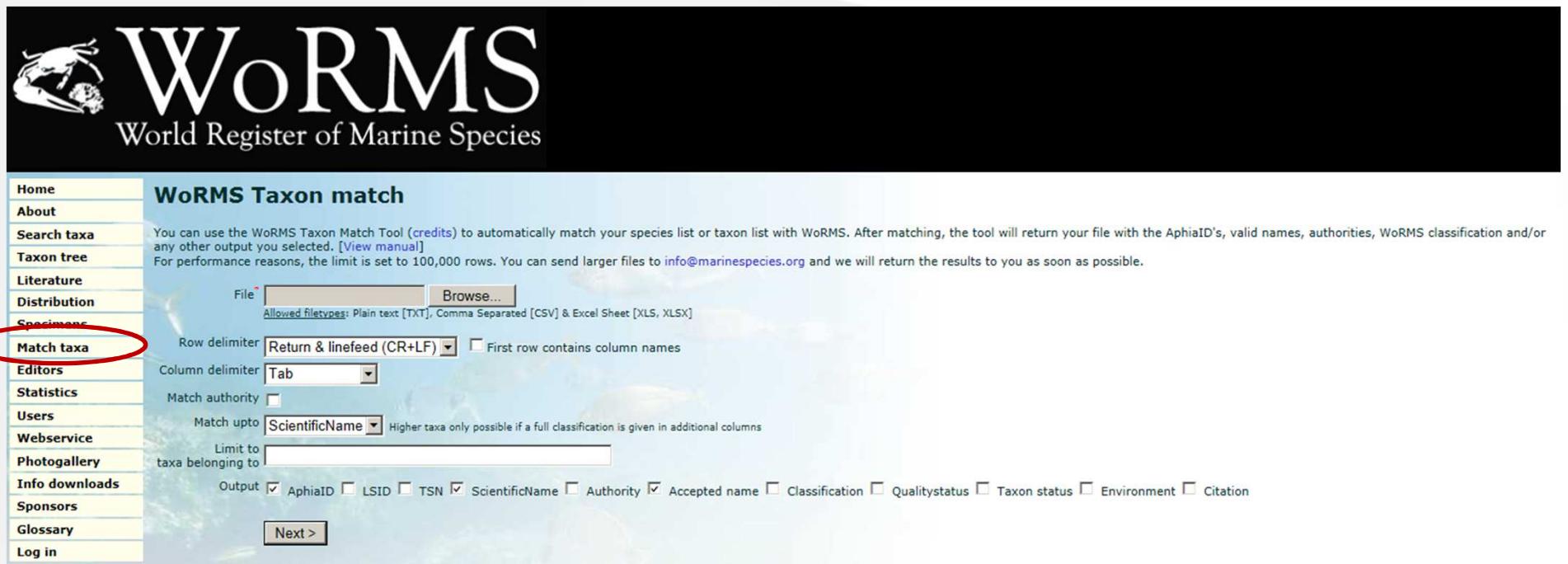


The image shows the WoRMS Taxon search interface. On the left, there is a vertical navigation menu with links: Home, About, **Search taxa** (circled in red), Taxon tree, Literature, Distribution, Specimens, Match taxa, Editors, Statistics, Users, Webservice, Photogallery, Info downloads, Sponsors, Glossary, Log in, RSS, Add provider, and @WRMarineSpecies.

The main search form is titled "WoRMS Taxon search". It includes a search input field with dropdown menus for "Scientific Name" and "begins with", and a text input field for "e.g. Chromadora kreisi, Siricella, ...". There are three checkboxes: "Fuzzy matching (what's this?)", "Limit to accepted taxa", and "Limit to marine taxa" (which is checked). Below the search form are dropdown menus for "Taxon rank" (set to "lower or equal to" and "Kingdom") and "Limit to taxa belonging to" (with a note: "e.g. Mysidae. Only taxa with rank above genus will be returned"). A "Search" button is at the bottom of the form.

At the bottom right of the page, the URL [www.marinespecies.org](http://www.marinespecies.org) is displayed.

- For a batch of names: ‘match taxa’ (online ‘taxon match’ tool)



The image shows the WoRMS Taxon match tool interface. On the left is a vertical navigation menu with links: Home, About, Search taxa, Taxon tree, Literature, Distribution, Specimens, Match taxa (which is circled in red), Editors, Statistics, Users, Webservice, Photogallery, Info downloads, Sponsors, Glossary, and Log in. The main area has a title "WoRMS Taxon match". Below it is a text block: "You can use the WoRMS Taxon Match Tool (credits) to automatically match your species list or taxon list with WoRMS. After matching, the tool will return your file with the AphiaID's, valid names, authorities, WoRMS classification and/or any other output you selected. [View manual]". It also states: "For performance reasons, the limit is set to 100,000 rows. You can send larger files to [info@marinespecies.org](mailto:info@marinespecies.org) and we will return the results to you as soon as possible." There are several input fields: "File" with a browse button, "Row delimiter" set to "Return & linefeed (CR+LF)", "First row contains column names" checked, "Column delimiter" set to "Tab", "Match authority" checked, "Match upto" set to "ScientificName" (with a note: "Higher taxa only possible if a full classification is given in additional columns"), "Limit to taxa belonging to" (with a text input field), and "Output" checkboxes for AphiaID, LSID, TSN, ScientificName (which is checked), Authority, Accepted name, Classification, Qualitystatus, Taxon status, Environment, and Citation. At the bottom is a "Next >" button.

This tool uses the following components:

- ✓ TAXAMATCH fuzzy matching algorithm by Tony Rees
- ✓ PHP/MySQL port of TAXAMATCH by Michael Giddens
- ✓ Scientific Names Parser by Dmitry Mozherin



**SeaDataNet**

PAN-EUROPEAN INFRASTRUCTURE  
FOR OCEAN & MARINE DATA  
MANAGEMENT

- ✓ Prepare your own file (Plain text [TXT], Comma Separated [CSV] & Excel Sheet [XLS, XLSX])
- ✓ Upload onto website

taxon\_test.txt - Notepad

File Edit Format View Help

```
Solea solea
Atylus sp
Atylus larvae
Atylus nonsense
Schottera nicaeensis
Glycera convulata
Phoronis mülleri Selys-Longchamps
Atylus swammerdamei
Ocenebra erinacea
Gammarus finnmarchicus Dahl, 1938
Harmothoe frazer-thompsoni McIntosh, 1897
```



**Aphia Taxon match**

Preview for the file 'taxon\_test.txt' (first 20 records) [[new match](#)]  
Please select a Aphia term that corresponds to your column and click 'Match'.

ScientificName

```
Solea solea
Atylus sp
Atylus larvae
Atylus nonsense
Schottera nicaeensis
Glycera convulata
Phoronis mülleri Selys-Longchamps
Atylus swammerdamei
Ocenebra erinacea
Gammarus finnmarchicus Dahl, 1938
Harmothoe frazer-thompsoni McIntosh, 1897
```



## Aphia Taxon match

Match preview for the file 'taxon\_test2.txt' - matching: 91.67% [new match]

If available, please select the [Aphia](#) taxon that corresponds to your taxon. Then click 'Download'.

**ScientificName**

*Solea solea*

*Atylus* sp

*Atylus larvae*

*Atylus nonsense*

*Buccinum fusiforme*

*Schottera nicaeensis*

*Glycera convoluta*

*Phoronis mülleri* Selys-Longchamps

*Atylus swammerdamei*

*Ocenebra erinacea*

*Gammarus finnmarchicus* Dahl, 1938

*Harmothoe frazer-thompsoni* McIntosh, 1897

**Aphia match**

*Solea solea* (Linnaeus, 1758)

*Atylus* Leach, 1815

*Atylus* Leach, 1815

(none)

(ambiguous - select below)

(ambiguous - select below)

*Buccinum fusiforme* Broderip, 1830 accepted as *Turrisiphon fenestratus* (Turton, 1834) [exact]

*Buccinum fusiforme* Kiener, 1834 accepted as *Buccinum humphreysianum* Bennet, 1824 [exact]

*Atylus swammerdami* (Milne-Edwards, 1830)

*Ocenebra erinaceus* (Linnaeus, 1758)

*Gammarus finmarchicus* Dahl, 1938

*Harmothoe fraserthomsoni* McIntosh, 1897



**SeaDataNet**

PAN-EUROPEAN INFRASTRUCTURE  
FOR OCEAN & MARINE DATA  
MANAGEMENT

A	B	C	D	E	F	G	
1	ScientificName	AphiaID	Match type	LSID	TSN	Qualitystatus	Taxon status
2	Solea solea	127160	exact	urn:lsid:marinespecies.org:taxname:127160	173002	Checked by Taxonomic Editor	accepted
3	Atylus sp	101497	exact	urn:lsid:marinespecies.org:taxname:101497	93514	Checked by Taxonomic Editor	accepted
4	Atylus larvae	101497	exact	urn:lsid:marinespecies.org:taxname:101497	93514	Checked by Taxonomic Editor	accepted
5	Atylus nonsense						
6	Schottera niceae	494793	exact	urn:lsid:marinespecies.org:taxname:494793		Checked by Taxonomic Editor	unaccepted
7	Glycera convoluta	155109	exact	urn:lsid:marinespecies.org:taxname:155109		Added by Database Management Team	unaccepted
8	Phoronis m	128549	phonetic	urn:lsid:marinespecies.org:taxname:128549	206663	Checked by Taxonomic Editor	accepted
9	Atylus swammerdamei	102131	phonetic	urn:lsid:marinespecies.org:taxname:102131	93523	Checked by Taxonomic Editor	accepted
10	Ocenebra erinacea	140405	near_1	urn:lsid:marinespecies.org:taxname:140405	73249	Checked by Taxonomic Editor	accepted
11	Gammarus finmarchicus Dahl, 1938	102277	near_2	urn:lsid:marinespecies.org:taxname:102277	206449	Checked by Taxonomic Editor	accepted
12	Harmothoe frazer-thompsoni McIntosh, 1897	130764	near_2	urn:lsid:marinespecies.org:taxname:130764	64526	Checked by Taxonomic Editor	accepted

H	I	J	K	L	M	N	O	P	Q	R	S	T
1	ScientificName	Authority	AphiaID	ScientificName_accepted	Kingdom	Phylum	Class	Order	Family	Genus	Species	Citation
2	Solea solea	(Linnaeus, 1758)	127160	Solea solea	Animalia	Chordata	Actinopterygii	Pleuronectidae	Solea	solea		Bailly, N. (2011). Solea
3	Atylus	Leach, 1815	101497	Atylus	Animalia	Arthropoda	Malacostraca	Amphipoda	Atylidae	Atylus		Lowry, J.; De Broyer,
4	Atylus	Leach, 1815	101497	Atylus	Animalia	Arthropoda	Malacostraca	Amphipoda	Atylidae	Atylus		Lowry, J.; De Broyer,
5												
6	Schottera niceaeensis	(J.V.Lamouroux ex	145666	Schottera niceaeensis	Plantae	Rhodophyta	Florideophyceae	Gigartinale	Phyllophor	Schottera	niceaeensis	Guiry, M.D. (2011). Si
7	Glycera convoluta		130120	Glycera convoluta	Animalia	Annelida	Polychaeta	Phyllodocidae	Glyceridae	Glycera	convoluta	WoRMS (2010). Glyc
8	Phoronis muelleri	Selys-Lonchamps,	128549	Phoronis muelleri	Animalia	Phoronida				Phoronis	muelleri	Emig, C. (2011). Phor
9	Atylus swammerdami	(Milne-Edwards, 18	102131	Atylus swammerdami	Animalia	Arthropoda	Malacostraca	Amphipoda	Atylidae	Atylus	swammerdami	Costello, M.; Bellan-S
10	Ocenebra erinaceus	(Linnaeus, 1758)	140405	Ocenebra erinaceus	Animalia	Mollusca	Gastropoda	Neogastropoda	Muricidae	Ocenebra	erinaceus	Houart, R.; Gofas, S.
11	Gammarus finmarchicus	Dahl, 1938	102277	Gammarus finmarchicus	Animalia	Arthropoda	Malacostraca	Amphipoda	Gammaridae	Gammarus	finmarchicus	Costello, M.; Bellan-S
12	Harmothoe fraserthomsoni	McIntosh, 1897	130764	Harmothoe fraserthomsoni	Animalia	Annelida	Polychaeta	Phyllodocidae	Polynoidae	Harmothoe	fraserthomsoni	Fauchald, K.; Barnich



## Exercise1/Demo

### Online taxon match

- Download exercise files from training server (SpeciesList.xlsx)
- Go to [www.marinespecies.org](http://www.marinespecies.org) => match taxa
- Match files with online taxon match tool
- Double check possible doubtful (dubious) entries

## **Data format**

- Analysis on required adaptions for marine biological data
- Format documentation
- Example files
  - Grab/core benthos community data
  - Zooplankton community
  - Demersal fish population data
  - Pollutant concentrations in biota specimens





## ***Data format***

- CDI metadata
- ODV biology variant
  - Mandatory fields (8 + 10)
  - Optional fields: P01 & P06 terms
  - Quality flag fields
  - Semantic header
- Version: BioODV\_1.0

## Data format

HEADER  
Describing fields

```
//<subject> ...<object>...<units>....<instrument>...
//<subject> ...<object>...<units>....<instrument>....
//....
```

Field 1	Field 2	Field 3	Field ...

DATA TABLE

8 mandatory ODV fields	# optional fields
10 mandatory bio fields	P01 & P06 terms
Quality flag fields	
	Extensible!



**SeaDataNet**

PAN-EUROPEAN INFRASTRUCTURE  
FOR OCEAN & MARINE DATA  
MANAGEMENT

## ***Data Format***

- **Mandatory ODV fields**

- Cruise
- Station
- Type
- yyyy-mm-ddThh:mm:ss.sss
- Longitude [degrees\_east]
- Latitude [degrees\_north]
- LOCAL\_CDI\_ID
- EDMO\_code
- Bot. Depth [m]



**SeaDataNet**

PAN-EUROPEAN INFRASTRUCTURE  
FOR OCEAN & MARINE DATA  
MANAGEMENT

## ***Data Format***

- **Mandatory ODVbio fields**

- MinimumDepthOfObservation/MaximumDepthOfObservation
- SampleID
- SamplingEffort [unit]
- SubsampleID
- SubSamplingCoefficient
- ScientificName
- ScientificNameID
- Sex
- LifeStage
- ObservedIndividualCount



**SeaDataNet**

PAN-EUROPEAN INFRASTRUCTURE  
FOR OCEAN & MARINE DATA  
MANAGEMENT

## **Data Format**

- **Optional fields ODVbio**

- **DensityPerUnitEffort [1/m<sup>2</sup>]**

[www.seadatanet.org/urnurl/SDN:P01::SDBIOL02](http://www.seadatanet.org/urnurl/SDN:P01::SDBIOL02)

(definition: Abundance of unspecified biological entity per unit area of the bed)

[www.seadatanet.org/urnurl/SDN:P06:PMSQ](http://www.seadatanet.org/urnurl/SDN:P06:PMSQ)

(definition: per square metre)

- **ObservedIndividualLength [cm]**

<http://www.seadatanet.org/urnurl/SDN:P01::OBSINDLX>

(definition : Length of unspecified biological entity)

<http://www.seadatanet.org/urnurl/SDN:P06::ULCM>

(definition : Centimetres)



## Data Format

- Quality flag fields
- Semantic header
  - <subject></subject> => local field name
  - <object></object> => P01 reference
  - <units></units> => P06 reference
  - <instrument></instrument> => L22 reference

```
//SDN_parameter_mapping
//<subject>SDN:LOCAL:MinimumObservationDepth</subject><object>SDN:P01::MINWDIST</object><units>SDN:P06::ULAA</units>
//<subject>SDN:LOCAL:MaximumObservationDepth</subject><object>SDN:P01::MAXWDIST</object><units>SDN:P06::ULAA</units>
//<subject>SDN:LOCAL:SampleID</subject><object>SDN:P01::SAMPID01</object><units>SDN:P06::UUUU</units>
//<subject>SDN:LOCAL:SamplingEffort</subject><object>SDN:P01::AREABEDS</object><units>SDN:P06::UUUU</units>
//<subject>SDN:LOCAL:SubsampleID</subject><object>SDN:P01::SSAMID01</object><units>SDN:P06::UUUU</units>
//<subject>SDN:LOCAL:SubsamplingCoefficient</subject><object>SDN:P01::SSAMC01 </object><units>SDN:P06::ULUU</units>
//<subject>SDN:LOCAL:ScientificName</subject><object>SDN:P01::SCNAME01</object><units>SDN:P06::UUUU</units>
//<subject>SDN:LOCAL:ScientificNameID</subject><object>SDN:P01::SNAMID01</object><units>SDN:P06::UUUU</units>
//<subject>SDN:LOCAL:Sex</subject><object>SDN:P01::ENTSEX01</object><units>SDN:P06::UUUU</units>
//<subject>SDN:LOCAL:LifeStage</subject><object>SDN:P01::LSTAGE01</object><units>SDN:P06::UUUU</units>
//<subject>SDN:LOCAL:ObservedIndividualCount</subject><object>SDN:P01::OCOUNT01</object><units>SDN:P06::UUUU</units> <instrument>SDN:L22:TOOL0653</instrument>
//<subject>SDN:LOCAL:DensityPerUnitEffort</subject><object>SDN:P01::SDBIOL02</object><units>SDN:P06::UPMS</units><instrument>SDN:L22:TOOL0653</instrument>
//<subject>SDN:LOCAL:AFDWBiomass</subject><object>SDN:P01::SDBIOL04</object><units>SDN:P06::UGRM</units><instrument>SDN:L22:TOOL0653</instrument>
//<subject>SDN:LOCAL:AFDWBiomassPerUnitEffort</subject><object>SDN:P01::SDBIOL03</object><units>SDN:P06::UGMS</units><instrument>SDN:L22:TOOL0653</instrument>
```



- **Example 1:** Grab/core benthos community data (BioODV\_1.0\_MacroB) - This example demonstrates how to cover both density and biomass of infaunal (in this case macrobenthos) community data.

CDI mandatory fields	CDI optional fields	ODVbio mandatory fields	ODVbio optional fields
All mandatory CDI fields	No specific optional CDI fields	Cruise	DensityPerUnitEffort [unit]*
		Station	AFDWBiomassPerUnitEffort [unit]*
		Type	AFDWBiomass [unit]*
		yyy-mm-ddThh:mm:ss.sss	...
		Longitude [degrees_east]	
		Latitude [degrees_north]	
		LOCAL_CDI_ID	
		EDMO code	
		Bot. Depth [m]	
		MinimumObservationDepth	
		MaximumObservationDepth	
		SampleID*	
		SamplingEffort [unit]*	
		SubSampleID*	
		SubSamplingCoefficient*	
		ScientificName*	
		ScientificNameID*	
		Sex*	
		LifeStage*	
		ObservedIndividualCount*	

(\*) fields indicated require paired QC flag column



- **Example 2:** Vertical Profile zooplankton community data (BioODV\_1.0\_ZooP) - This example demonstrates how to cover zooplankton data from vertical net sampling of different depth zones.

<u>CDI mandatory fields</u>	<u>CDI optional fields</u>	<u>ODVbio mandatory fields</u>	<u>ODVbio optional fields</u>
All mandatory CDI fields	No specific optional CDI fields	Cruise	DensityPerUnitEffort [unit]*
		Station	...
		Type	
		www-mm-ddThh:mm:ss.sss	
		Longitude [degrees_east]	
		Latitude [degrees_north]	
		LOCAL_CDI_ID	
		EDMO_code	
		Bot. Depth [m]	
		MinimumObservationDepth	
		MaximumObservationDepth	
		SampleID*	
		SamplingEffort [unit]*	
		SubSampleID*	
		SubSamplingCoefficient*	
		ScientificName*	
		ScientificNameID*	
		Sex*	
		LifeStage*	
		ObservedIndividualCount*	

(\*) fields indicated require paired QC flag column



- **Example 3:** Fish trawl data (BioODV\_1.0\_DemFish) - This specific example demonstrates how to cover demersal fish population data resulting from towed net fish trawls. The example demonstrates how to deal with subsampling storing information on the applied SubSamplingCoefficient and storing identifiers for both sample and subsample. The example includes both real counts of fish and derived densities per unit effort. Furthermore exemplary cases for including length-frequency data (counts and densities for different size classes), individual fish length measurements, and age information are available.

CDI mandatory fields	CDI optional fields	ODVbio mandatory fields	ODVbio optional fields
All mandatory CDI fields	Tracks (Curves)	Cruise	
		Station	ObservedMinLength [unit]*
		Type	ObservedMaxLength [unit]*
		www-mm-ddThh:mm:ss.sss	ObservedIndividualLength [unit]*
		Longitude [degrees_east]	DensityPerUnitEffort [unit]*
		Latitude [degrees_north]	Age [unit]*
		LOCAL_CDI_ID	SampleDuration [unit]*
		EDMO code	
		Bot. Depth [m]	
		MinimumObservationDepth	
		MaximumObservationDepth	
		SampleID*	
		SamplingEffort [unit]*	
		SubSampleID*	
		SubSamplingCoefficient*	
		ScientificName*	
		ScientificNameID*	
		Sex*	
		LifeStage*	
		ObservedIndividualCount*	



- **Example 4:** Biota pollutant concentration data (BioODV\_1.0\_BiotaPol) - This example demonstrates how to cover data on pollutant concentrations in biota.

<u>CDI mandatory fields</u>	<u>CDI optional fields</u>	<u>ODVbio mandatory fields</u>	<u>ODVbio optional fields</u>
All mandatory CDI fields	No specific optional CDI fields	Cruise	Lead_per_unit_wet_weight_of_biotabio[unit]*
		Station	...
		Type	
		www-mm-ddThh:mm:ss.sss	
		Longitude [degrees_east]	
		Latitude [degrees_north]	
		LOCAL_CDI_ID	
		EDMO_code	
		Bot. Depth [m]	
		MinimumObservationDepth	
		MaximumObservationDepth	
		SampleID*	
		SamplingEffort [unit]*	
		SubSampleID*	
		SubSamplingCoefficient*	
		ScientificName*	
		ScientificNameID*	
		Sex*	
		LifeStage*	
		ObservedIndividualCount*	

(\*) fields indicated require paired QC flag column



**SeaDataNet**

PAN-EUROPEAN INFRASTRUCTURE  
FOR OCEAN & MARINE DATA  
MANAGEMENT

## ***Exercise2/Demo2***

- Look at example files
- Look at Format documentation
- List feedback



**SeaDataNet**

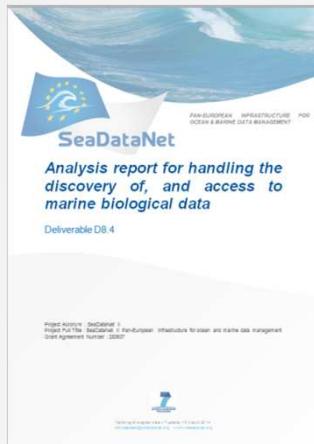
PAN-EUROPEAN INFRASTRUCTURE  
FOR OCEAN & MARINE DATA  
MANAGEMENT

## ***Discussion***

- Status
  - Deliverables
  - Feedback
  - Testing
  - Developments

## Status: deliverables

- D8.4a Analysis report with required adaptions for marine biological data
- D8.4b Format documentation
- Example files



Code	Station	Type	Latitude [degrees.west]	Longitude [degrees.north]	LOCAL_Cat_ID	EMMO_code	Rel_Depth_m	MinimumObservationDepth	QV/SEADATANET	MaximumObservationDepth	QV/SEADATANET
1	IV	Mechelen	330	58	1974-06-05T06:02:13	51.24411	MACROBELL1551	449	25	21.5	1
19	IV	Mechelen	330	58	1974-06-05T06:02:13	2.92361	MACROBELL1551	449	25	21.5	1
20	IV	Mechelen	330	58	1974-06-05T06:02:13	2.92361	MACROBELL1551	449	25	21.5	1
21	IV	Mechelen	330	58	1974-06-05T06:02:13	2.92361	MACROBELL1551	449	25	21.5	1
22	IV	Mechelen	330	58	1974-06-05T06:02:13	2.92361	MACROBELL1551	449	25	21.5	1
23	IV	Mechelen	330	58	1974-06-05T06:02:13	2.92361	MACROBELL1551	449	25	21.5	1
24	IV	Mechelen	2002	58	1974-07-07T07:04:10	3.21113	MACROBELL1206	449	28	23.1	1
25	IV	Mechelen	2002	58	1974-07-07T07:04:10	3.21113	MACROBELL1206	449	28	23.1	1
26											
27											
28											



PAN-EUROPEAN INFRASTRUCTURE  
FOR OCEAN & MARINE DATA  
MANAGEMENT

## ***Status: feedback and testing***

- Feedback
  - VLIZ, ICES, IFREMER, BODC, IMARES/NIOZ
- Testing
  - IFREMER
  - IMARES/NIOZ
  - ICES (in preparation)...

## ***Status: feedback and testing***

- Feedback VLIZ
  - 1. General but flexible because extendible  
Able to capture details of a variety of data
  - 2. Use not straightforward (cryptic header, recurrent QV columns, ...) manual creation is hard => work for data managers
  - 3. Translatable into Darwin Core and OBIS
  - 4. Reservations on storing some crucial technical metadata into CDI (start and end coordinates, times,...)
  - 5. Work needed on: ODV, DM, machine-to-machine.

## ***Status: feedback and testing***

- Feedback ICES
  - 6. Core biological information i.e min/max depth only available in the linked CDI might be problematic. ODV files should be self-describing.
  - 7. Main focus on biological community data and to a lesser extent on contaminants data. (Contaminant data require separate field for describing compounds)
  - 8. ICES will test

## ***Status: feedback and testing***

- **Feedback IFREMER**

9. Appreciation for most of variants specific of biology files, especially to indicate the taxon without use a P01 code per taxon. Using the scientific name (WoRMs) and the Aphia ID is ok for us.

10. Some mandatory fields ("LifeStage", "ObservedIndividualCount", "SamplingEffort, ...) could be problematic unless the "Unknown" (or something equivalent) value is permitted.

11. If no subsampling occurred => SubSamplingCoefficient=1, right ?); may the "SubsampleID" be the same as the "SampleID" ?

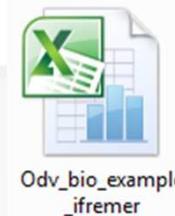
## ***Status: feedback and testing***

- **Feedback IFREMER**

12. Phytoplankton test file ready.

Main issues:

- a) LOCAL\_CDI\_ID does not represent a single sampling event.  
Several years of data for one station grouped as one CDI.
- b) SampleID, SubsampleID left empty, but needed to group observations
- c) Sex, Lifestage left empty; ICES stage vocab, S11, Emodnet bio, ...
- d) Only densities/Litre were given and no raw counts





## ***Status: feedback and testing***

- Feedback IMARES/NIOZ

13. 582 files created;  
6 files checked.

Main issues:

- a) LOCAL\_CDI\_ID does not represent a single sampling event.  
Data for several stations grouped as one CDI.
- b) ISO8601 dates; DM creates 00 for time that is not given; sometimes only Year - Month (YYYY-MM)
- c) Sex, Lifestage left empty; ICES stage vocab, S11, Emodnet bio, ...



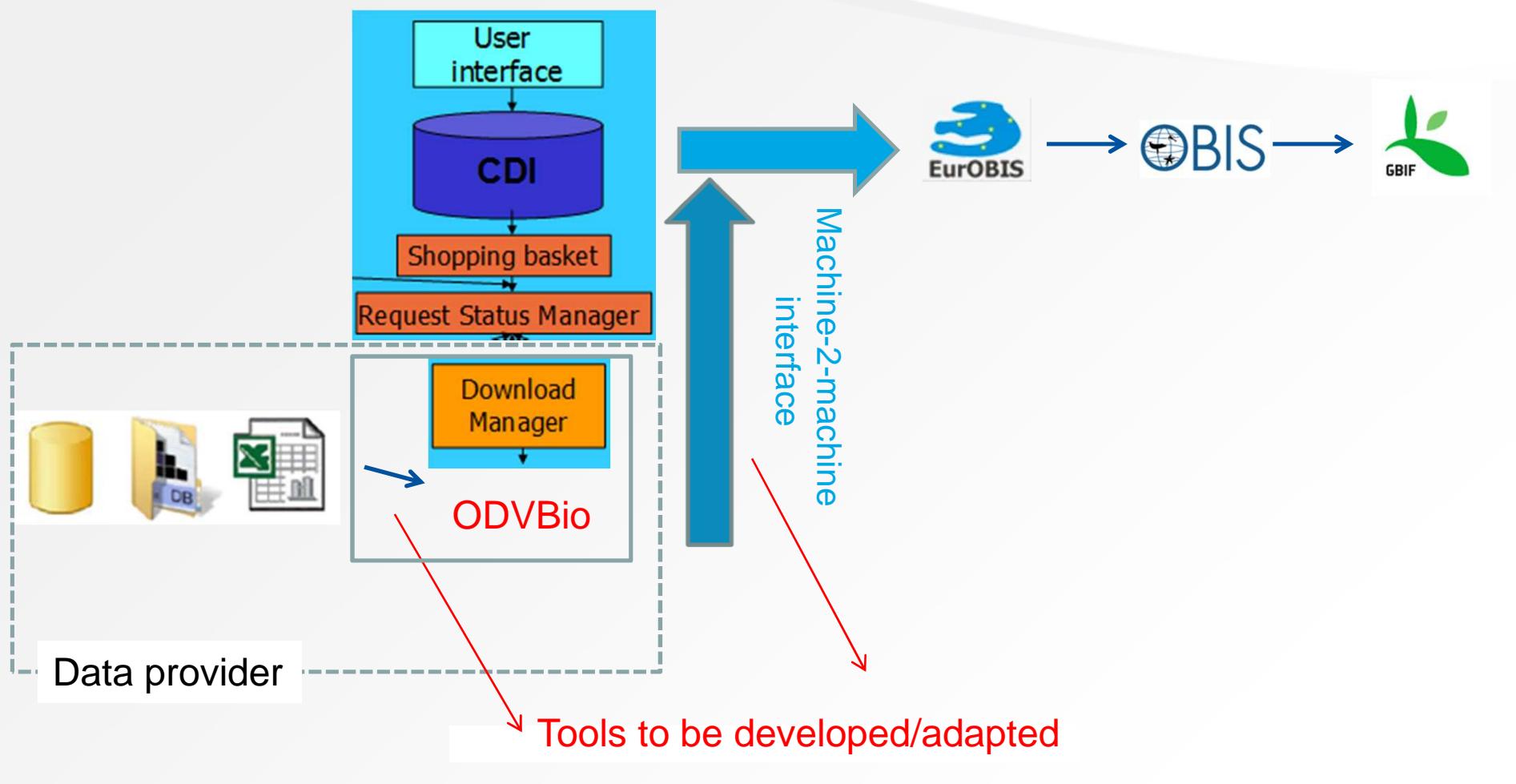
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
1	#																			
2	#\$DN_PARAMETER_MAPPING																			
3	#<subject>SDN:LOCAL:Minimum observation depth</subject><object>SDN:P01::MINWDIST</object><units>SDN:P06::ULAA</units>																			
4	#<subject>SDN:LOCAL:Maximum observation depth</subject><object>SDN:P01::MAXWDIST</object><units>SDN:P06::ULAA</units>																			
5	#<subject>SDN:LOCAL:Sample ID</subject><object>SDN:P01::SAMPID01</object><units>SDN:P06::UUUU</units>																			
6	#<subject>SDN:LOCAL:Trawl length</subject><object>SDN:P01::LENTRACK</object><units>SDN:P06::ULAA</units>																			
7	#<subject>SDN:LOCAL:Subsample ID</subject><object>SDN:P01::SSAMID01</object><units>SDN:P06::UUUU</units>																			
8	#<subject>SDN:LOCAL:Subsampling coefficient</subject><object>SDN:P01::SSAMPC01</object><units>SDN:P06::UUUU</units>																			
9	#<subject>SDN:LOCAL:Scientific name</subject><object>SDN:P01::SCNAME01</object><units>SDN:P06::UUUU</units>																			
10	#<subject>SDN:LOCAL:Scientific name ID</subject><object>SDN:P01::SNAMEID01</object><units>SDN:P06::UUUU</units>																			
11	#<subject>SDN:LOCAL:Sex</subject><object>SDN:P01::ENTSEX01</object><units>SDN:P06::UUUU</units>																			
12	#<subject>SDN:LOCAL:Life stage</subject><object>SDN:P01::LSTAGR01</object><units>SDN:P06::UUUU</units>																			
13	#<subject>SDN:LOCAL:Individual count</subject><object>SDN:P01::OCOUNT01</object><units>SDN:P06::UUUU</units>																			
14	#<subject>SDN:LOCAL:Sample duration</subject><object>SDN:P01::AZDRZ201</object><units>SDN:P06::UMIN</units>																			
15	#																			
16	Cruise	Station	Type	yyyy-mm-ddThh:mm	Longitude	Latitude	[ LOCAL_CD_ID ]	EDMO	Bot. Dep	Minimur	QV:SEA	Maximur	QV:SEA	Sample I	QV:SEA	Trawl Ier	QV:SEA	Subsam	QV:SEA	Subs:
17	DFS_198618_030	*		1984-09-24T12:27	6.1667	53.4167	DFS_biological_1984_61K	1340	7	0	1	7	1	51611	1	1600	1	56336	1	
18	DFS_198618_030	*		1984-09-24T12:27	6.1667	53.4167	DFS_biological_1984_61K	1340	7	0	1	7	1	51611	1	1600	1	56336	1	
19	DFS_198618_030	*		1984-09-24T12:27	6.1667	53.4167	DFS_biological_1984_61K	1340	7	0	1	7	1	51611	1	1600	1	56336	1	
20	DFS_198618_030	*		1984-09-24T12:27	6.1667	53.4167	DFS_biological_1984_61K	1340	7	0	1	7	1	51611	1	1600	1	56336	1	
21	DFS_198618_030	*		1984-09-24T12:27	6.1667	53.4167	DFS_biological_1984_61K	1340	7	0	1	7	1	51611	1	1600	1	56336	1	
22	DFS_198618_030	*		1984-09-24T12:27	6.1667	53.4167	DFS_biological_1984_61K	1340	7	0	1	7	1	51611	1	1600	1	56336	1	
23	DFS_198618_030	*		1984-09-24T12:27	6.1667	53.4167	DFS_biological_1984_61K	1340	7	0	1	7	1	51611	1	1600	1	56336	1	
24	DFS_198618_030	*		1984-09-24T12:27	6.1667	53.4167	DFS_biological_1984_61K	1340	7	0	1	7	1	51611	1	1600	1	56336	1	
25	DFS_198618_030	*		1984-09-24T12:27	6.1667	53.4167	DFS_biological_1984_61K	1340	7	0	1	7	1	51611	1	1600	1	56336	1	
26	DFS_198618_030	*		1984-09-24T12:27	6.1667	53.4167	DFS_biological_1984_61K	1340	7	0	1	7	1	51611	1	1600	1	56336	1	
27	DFS_198618_030	*		1984-09-24T12:27	6.1667	53.4167	DFS_biological_1984_61K	1340	7	0	1	7	1	51611	1	1600	1	56336	1	
28	DFS_198618_030	*		1984-09-24T12:27	6.1667	53.4167	DFS_biological_1984_61K	1340	7	0	1	7	1	51611	1	1600	1	56336	1	
29	DFS_198618_030	*		1984-09-24T12:27	6.1667	53.4167	DFS_biological_1984_61K	1340	7	0	1	7	1	51611	1	1600	1	56336	1	
30	DFS_198618_030	*		1984-09-24T12:27	6.1667	53.4167	DFS_biological_1984_61K	1340	7	0	1	7	1	51611	1	1600	1	56336	1	
31	DFS_198618_030	*		1984-09-24T12:27	6.1667	53.4167	DFS_biological_1984_61K	1340	7	0	1	7	1	51611	1	1600	1	874549	1	
32	DFS_198618_030	*		1984-09-24T12:27	6.1667	53.4167	DFS_biological_1984_61K	1340	7	0	1	7	1	51611	1	1600	1	874549	1	
33	DFS_198618_030	*		1984-09-24T12:27	6.1667	53.4167	DFS_biological_1984_61K	1340	7	0	1	7	1	51611	1	1600	1	874549	1	
34	DFS_198618_031	*		1984-09-24T12:56	6.0833	53.4333	DFS_biological_1984_61K	1340	4	0	1	4	1	51612	1	1500	1	56337	1	
35	DFS_198618_031	*		1984-09-24T12:56	6.0833	53.4333	DFS_biological_1984_61K	1340	4	0	1	4	1	51612	1	1500	1	56337	1	
36	DFS_198618_031	*		1984-09-24T12:56	6.0833	53.4333	DFS_biological_1984_61K	1340	4	0	1	4	1	51612	1	1500	1	56337	1	
37	DFS_198618_031	*		1984-09-24T12:56	6.0833	53.4333	DFS_biological_1984_61K	1340	4	0	1	4	1	51612	1	1500	1	56337	1	
38	DFS_198618_031	*		1984-09-24T12:56	6.0833	53.4333	DFS_biological_1984_61K	1340	4	0	1	4	1	51612	1	1500	1	56337	1	
39	DFS_198618_031	*		1984-09-24T12:56	6.0833	53.4333	DFS_biological_1984_61K	1340	4	0	1	4	1	51612	1	1500	1	56337	1	
40	DFS_198618_031	*		1984-09-24T12:56	6.0833	53.4333	DFS_biological_1984_61K	1340	4	0	1	4	1	51612	1	1500	1	56337	1	
41	DFS_198618_031	*		1984-09-24T12:56	6.0833	53.4333	DFS_biological_1984_61K	1340	4	0	1	4	1	51612	1	1500	1	56337	1	
42	DFS_198618_031	*		1984-09-24T12:56	6.0833	53.4333	DFS_biological_1984_61K	1340	4	0	1	4	1	51612	1	1500	1	56337	1	
43	DFS_198618_031	*		1984-09-24T12:56	6.0833	53.4333	DFS_biological_1984_61K	1340	4	0	1	4	1	51612	1	1500	1	56337	1	
44	DFS_198618_031	*		1984-09-24T12:56	6.0833	53.4333	DFS_biological_1984_61K	1340	4	0	1	4	1	51612	1	1500	1	56337	1	
45	DFS_198618_031	*		1984-09-24T12:56	6.0833	53.4333	DFS_biological_1984_61K	1340	4	0	1	4	1	51612	1	1500	1	56337	1	
46	DFS_198618_031	*		1984-09-24T12:56	6.0833	53.4333	DFS_biological_1984_61K	1340	4	0	1	4	1	51612	1	1500	1	56337	1	
47	DFS_198618_031	*		1984-09-24T12:56	6.0833	53.4333	DFS_biological_1984_61K	1340	4	0	1	4	1	51612	1	1500	1	874550	1	
48	DFS_198618_031	*		1984-09-24T12:56	6.0833	53.4333	DFS_biological_1984_61K	1340	4	0	1	4	1	51612	1	1500	1	874550	1	
49	DFS_198618_032	*		1984-09-24T13:23	6.0667	53.4667	DFS_biological_1984_61K	1340	10	0	1	10	1	51613	1	1500	1	56338	1	
50	DFS_198618_032	*		1984-09-24T13:23	6.0667	53.4667	DFS_biological_1984_61K	1340	10	0	1	10	1	51613	1	1500	1	56338	1	
51	DFS_198618_032	*		1984-09-24T13:23	6.0667	53.4667	DFS_biological_1984_61K	1340	10	0	1	10	1	51613	1	1500	1	56338	1	
52	DFS_198618_032	*		1984-09-24T13:23	6.0667	53.4667	DFS_biological_1984_61K	1340	10	0	1	10	1	51613	1	1500	1	56338	1	
53	DFS_198618_032	*		1984-09-24T13:23	6.0667	53.4667	DFS_biological_1984_61K	1340	10	0	1	10	1	51613	1	1500	1	56338	1	
54	DFS_198618_032	*		1984-09-24T13:23	6.0667	53.4667	DFS_biological_1984_61K	1340	10	0	1	10	1	51613	1	1500	1	56338	1	



SeaDataNet

PAN-EUROPEAN INFRASTRUCTURE  
FOR OCEAN & MARINE DATA  
MANAGEMENT

## *Developments needed*



## ***Status: feedback and testing***

- Work to be done on:
  - Ocean Data Viewer
    - Incorporate information from CDI
    - Aggregate single localCDI data files
    - Develop appropriate filtering and visualisation tools
    - Date time: iso 8601 - extended possibilities
  - DM
    - Creation of biological data files through database connection
  - Machine to machine interface