

EMODnet biology, results of the pilot and future plans

Klaas Deneudt, Simon Claus, Leen Vandepitte, Francisco Hernandez (& others)
Flanders Marine Institute (VLIZ)





Outline Presentation

- Background – the framework
- Marine biological data portal for Europe
 - Data system
 - Portal functionalities
 - Data inventory & gaps
- Future plans



Background – the framework

- European Commission: An Integrated Maritime Policy for the European Union (2007)
- Key: Consider all aspects of the oceans and seas in a holistic, integrated
 - Governance framework
 - Cross-sectoral tools
 - A European network for maritime surveillance for the safe use of marine space
 - Maritime Spatial Planning and ICZM
 - A source of Data and Information for decision-making
 - Promote the multi-dimensional mapping of Member States' waters
 - **European Marine Observation and Data Network (EMODNet)**





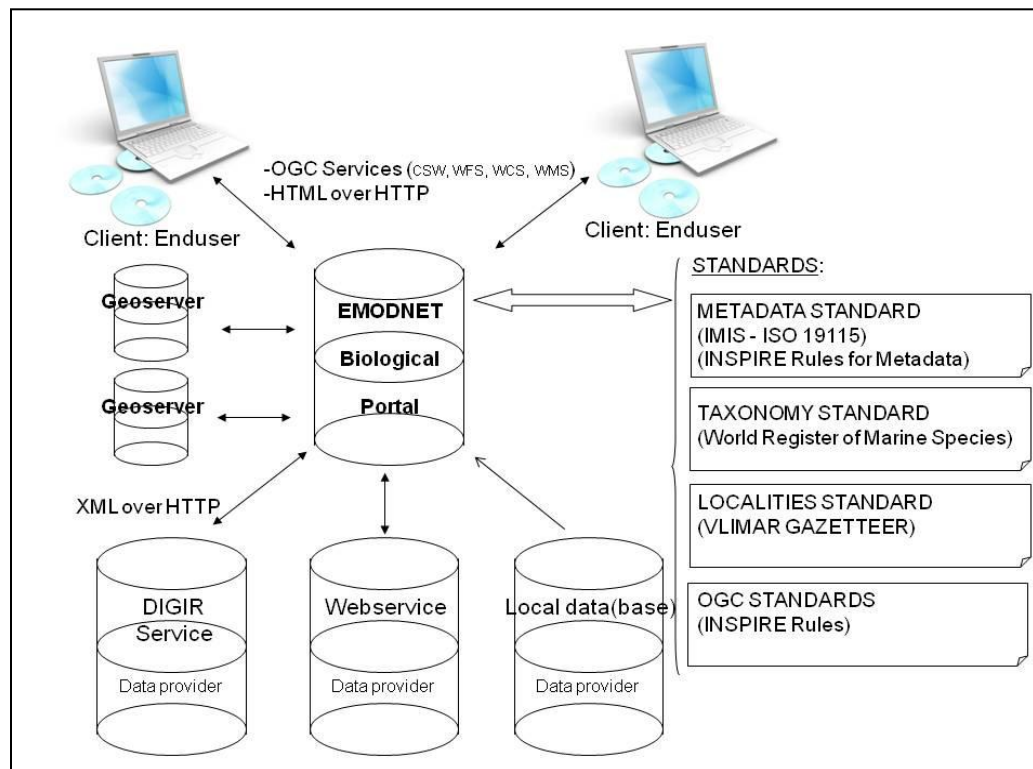
Background – the framework

- European Marine Observation and Data Network (EMODNET)
- Basic design principles of EMODNET: Assemble fragmented and inaccessible **marine data into interoperable, contiguous and publicly available data** streams for complete **maritime basins**.
 - **define the appropriate processes, best technology and approximate costs** of a final EMODNET
 - provide **first components of a final system** which will be useful to provide value-added services.
- 2009-2012: pilot data portals
 - Chemistry
 - Geology
 - Physics
 - Hydrography
 - **Biology**



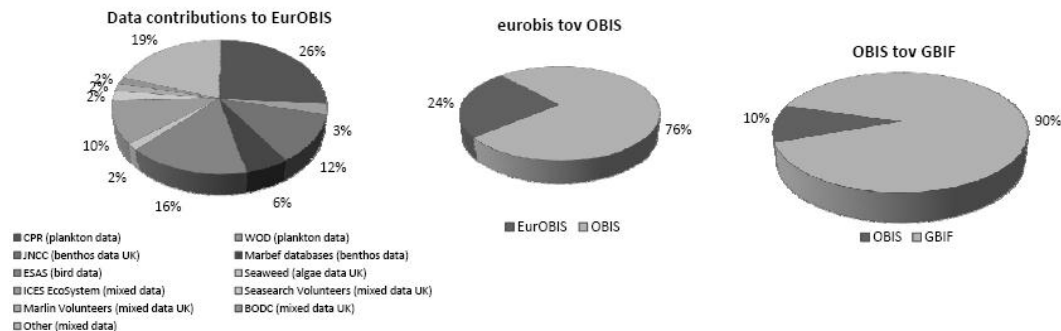
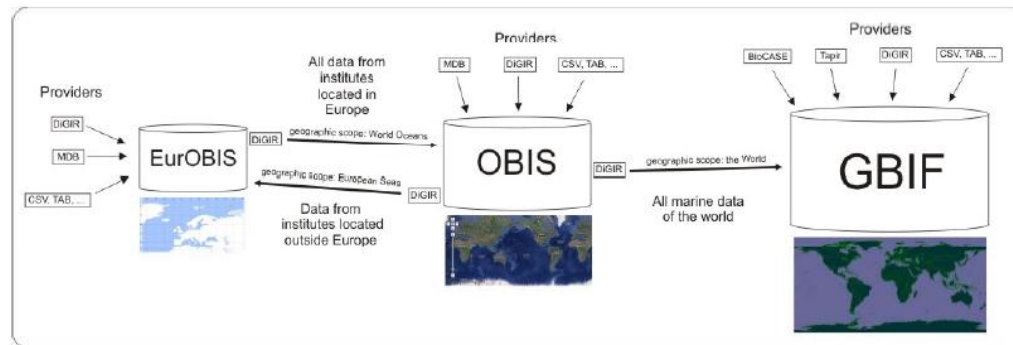
Marine biological data portal for Europe

- Existing network of distributed data systems
- OGC compliant data system (makes use of Geoserver/Geonetwork)
- Standardized data system
- System integrating data with different levels of accessibility
- User friendly and intuitive data portal interface



The data portal system

- Based on EurOBIS data system
 - Uses OBIS scheme for integrating biogeographic data
 - Linked with global systems (OBIS-IODE/IOC-GBIF)
 - Taxonomy matched with World Register of Marine Species
 - Geographic standards: OGC compliant, Marine Gazetteer for geographic names




















The portal functionalities

- Data querying
(taxa; parameters, datasets, layers)

The screenshot displays the EMODnet portal interface. At the top, there is a navigation bar with links for Search, Legend, Feedback, and Help. Below this, a search bar is visible, and a dropdown menu shows a list of themes: Zooplankton, Benthos, Phytoplankton, Fish, Birds, Mammals, Reptiles, Algae, Pigments, and Angiosperms. The main map area shows a satellite view of Europe with a coordinate display (Lat: 42.28, Lon: -33.03). To the right of the map, there is a vertical toolbar with icons for various functions: a magnifying glass for search, a globe for view, a list icon for list, a funnel for filter, a download icon for download, and an information icon for metadata. Below the map, there is a table of taxa data. The table has columns for ScientificName, Authority, Common name, AphiaID, RecordCount, and Display. The table lists several taxa, including Acartia longiremis, Acartia negligens, Aetideus armatus, Anomalocera patersoni, and Branchiostoma lanceolatum.

ScientificName	Authority	Common name	AphiaID	RecordCount	Display
Acartia longiremis	(Lilljeborg, 1853)		104257	13,151	  
Acartia negligens	Dana, 1849		104259	1	  
Aetideus armatus	(Boeck, 1872)		104275	1,033	  
Anomalocera patersoni	Templeton, 1837		104722	690	  
Branchiostoma lanceolatum	(Pallas, 1774)	Lancelet;	104906	908	  

 WoRMS

 View

 List

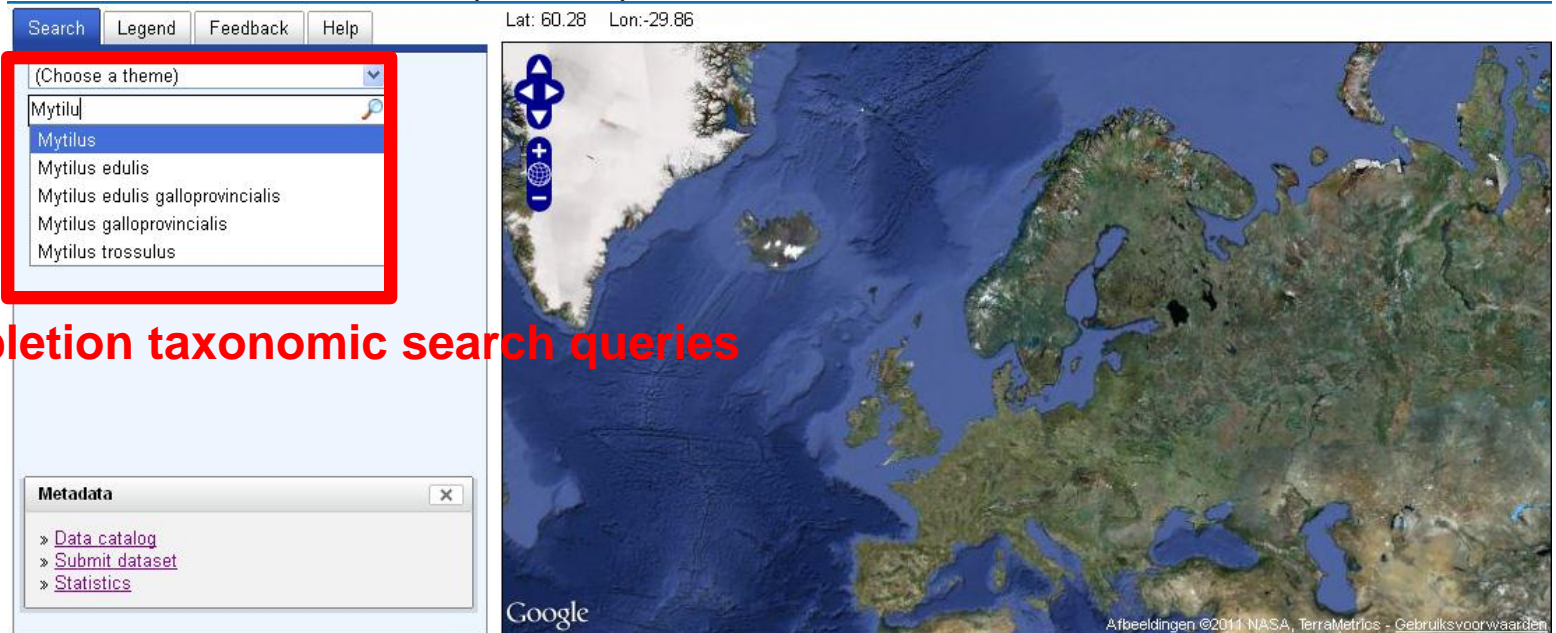
 Filter

 Download

 Metadata






The portal functionalities

→ Taxonomic functionalities (WoRMS) 



Autocompletion taxonomic search queries

Show map, include child taxa

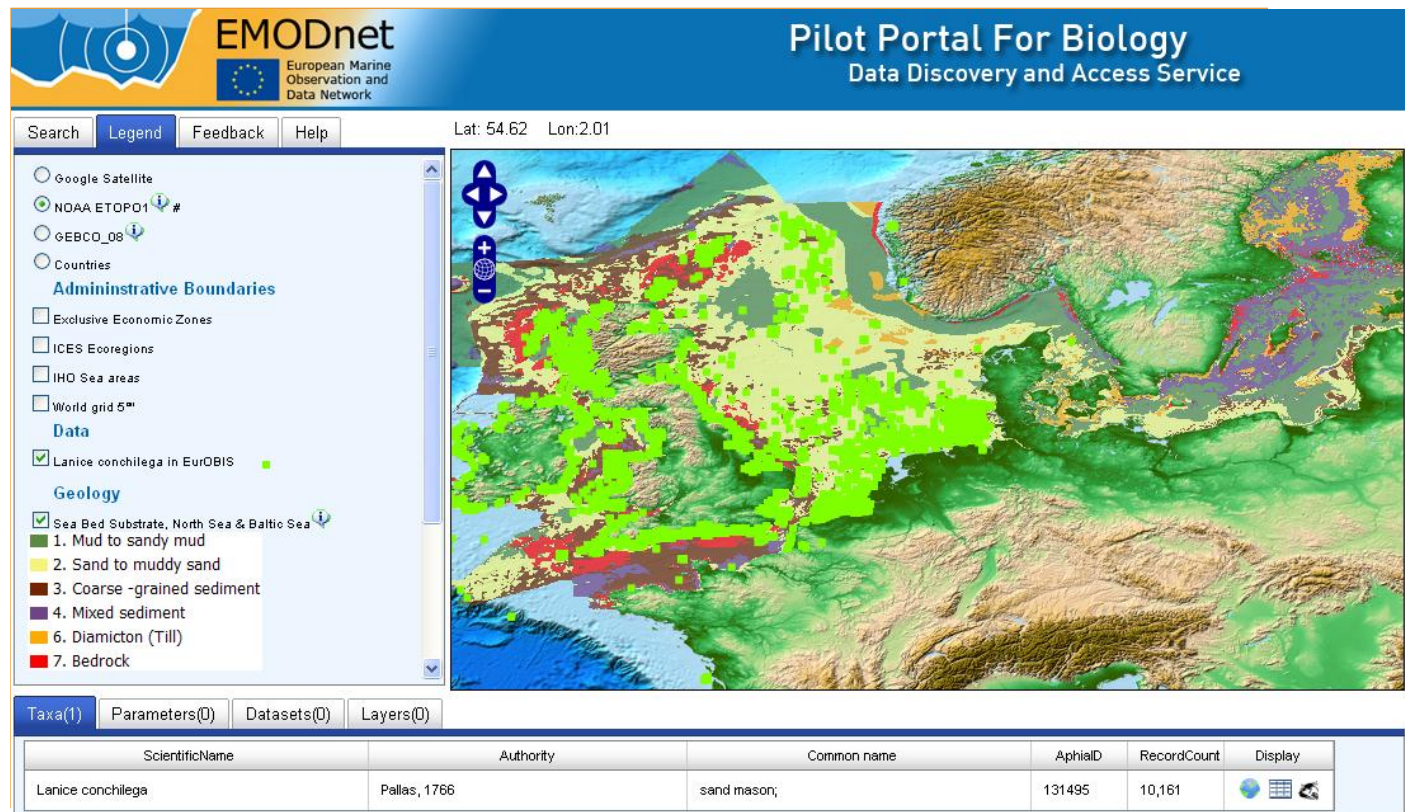
ScientificName	Authority	Common name	RecordCount	Display
Mytilus	Linnaeus, 1758		22,558	
Mytilus edulis	Linnaeus, 1758	blue mussel; edible blue mussel; eetbare mossel; blauwe mossel; essbare Miesmuschel; moule comestible; moule commun; common mussel;	21,206	
Mytilus edulis galloprovincialis <u>accepted as</u> Mytilus galloprovincialis	Lamarck, 1819	krombek mossel;	5	
Mytilus galloprovincialis	Lamarck, 1819	Mittelmeermiesmuschel; moule de provence; diepvatarmossel; Mediterranean mussel;	973	
Mytilus trossulus	Gould, 1850	foolish mussel;	1	

Show map, including synonyms



The portal functionalities

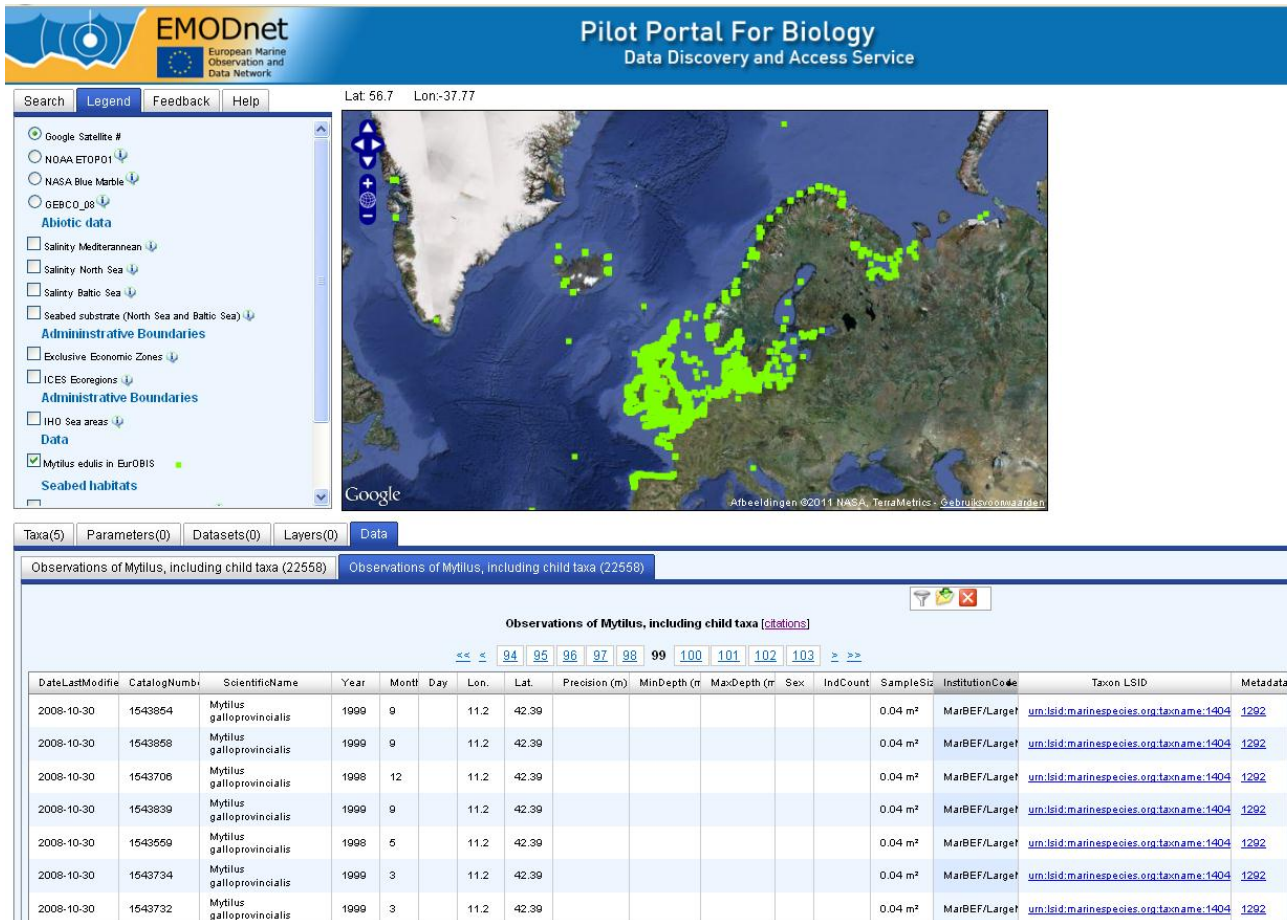
→ Data visualization 





The portal functionalities

→ Data table (list) 




The screenshot displays the EMODnet Pilot Portal For Biology interface. The top header includes the EMODnet logo and the text "Pilot Portal For Biology Data Discovery and Access Service". Below the header, there is a search bar and navigation tabs: Search, Legend, Feedback, and Help. The main content area features a map of Europe with numerous green data points. A sidebar on the left contains a legend with various data layers, including "Google Satellite #", "NOAA ETOP01", "NASA Blue Marble", "GEBCO_08", "Abiotic data", "Administrative Boundaries", "Data", and "Seabed habitats". The "Data" tab is selected, showing a table of observations for *Mytilus* species. The table includes columns for DateLastModified, CatalogNumber, ScientificName, Year, Month, Day, Lon., Lat., Precision (m), MinDepth (m), MaxDepth (m), Sex, IndCount, SampleSize, InstitutionCode, Taxon LSID, and Metadata. The table lists several observations of *Mytilus galloprovincialis* from 1999, with sample sizes ranging from 0.04 m² to 0.04 m². The table is paginated, showing 94 to 103 records.

DateLastModified	CatalogNumber	ScientificName	Year	Month	Day	Lon.	Lat.	Precision (m)	MinDepth (m)	MaxDepth (m)	Sex	IndCount	SampleSize	InstitutionCode	Taxon LSID	Metadata
2008-10-30	1543854	<i>Mytilus galloprovincialis</i>	1999	9		11.2	42.39						0.04 m²	MarBEF/Large	url.isid.marinemuseum.org/taxname/1404	1292
2008-10-30	1543858	<i>Mytilus galloprovincialis</i>	1999	9		11.2	42.39						0.04 m²	MarBEF/Large	url.isid.marinemuseum.org/taxname/1404	1292
2008-10-30	1543706	<i>Mytilus galloprovincialis</i>	1998	12		11.2	42.39						0.04 m²	MarBEF/Large	url.isid.marinemuseum.org/taxname/1404	1292
2008-10-30	1543839	<i>Mytilus galloprovincialis</i>	1999	9		11.2	42.39						0.04 m²	MarBEF/Large	url.isid.marinemuseum.org/taxname/1404	1292
2008-10-30	1543559	<i>Mytilus galloprovincialis</i>	1998	5		11.2	42.39						0.04 m²	MarBEF/Large	url.isid.marinemuseum.org/taxname/1404	1292
2008-10-30	1543734	<i>Mytilus galloprovincialis</i>	1999	3		11.2	42.39						0.04 m²	MarBEF/Large	url.isid.marinemuseum.org/taxname/1404	1292
2008-10-30	1543732	<i>Mytilus galloprovincialis</i>	1999	3		11.2	42.39						0.04 m²	MarBEF/Large	url.isid.marinemuseum.org/taxname/1404	1292



The portal functionalities


- Selected Data attributes from EurOBIS: 
- DateLastModified, CatalogNumber, ScientificName, Year, Month, Day, Longitude, Latitude, Precision(m), MinDepth(m) , MaxDepth (m), Sex, Observed Individual Count, SampleSize, InstitutionCode, Citation, TaxonLSID, Metadata

Taxa(5) Parameters(0) Datasets(0) Layers(0) Data																
Observations of <i>Mytilus edulis</i> (21206)																
Observations of <i>Mytilus edulis</i> [citations]																
<< < 1 2 3 4 5 6 7 8 9 10 > >>																
DateLastModified	CatalogNumber	ScientificName	Year	Month	Day	Lon.	Lat.	Precision (m)	MinDepth (m)	MaxDepth (m)	Sex	IndCount	SampleSize	InstitutionCode	Taxon LSID	Metadata
2011-03-16	618883	<i>Mytilus edulis</i>	1987	6	1	4.5	55.75	111	0	0		1		ICES	urn:lsid:marinespecies.org:taxname:140480	2144
2011-03-16	618883	<i>Mytilus edulis</i>	1987	6	1	4.5	55.75	111	0	0		1		ICES	urn:lsid:marinespecies.org:taxname:140480	2144
2011-03-16	618883	<i>Mytilus edulis</i>	1987	6	1	4.5	55.75	111	0	0		1		ICES	urn:lsid:marinespecies.org:taxname:140480	2144
2011-03-16	616540	<i>Mytilus edulis</i>	1991	8	26	2.5	57.25	111	80	80		1		ICES	urn:lsid:marinespecies.org:taxname:140480	2144
2011-03-16	616540	<i>Mytilus edulis</i>	1991	8	26	2.5	57.25	111	80	80		1		ICES	urn:lsid:marinespecies.org:taxname:140480	2144
2011-03-16	616540	<i>Mytilus edulis</i>	1991	8	26	2.5	57.25	111	80	80		1		ICES	urn:lsid:marinespecies.org:taxname:140480	2144
2011-03-16	610796	<i>Mytilus edulis</i>	1985	1	1	6.5	53.75	111	0	0		6		ICES	urn:lsid:marinespecies.org:taxname:140480	2144
2011-03-16	610796	<i>Mytilus edulis</i>	1985	1	1	6.5	53.75	111	0	0		6		ICES	urn:lsid:marinespecies.org:taxname:140480	2144
2011-03-16	610796	<i>Mytilus edulis</i>	1985	1	1	6.5	53.75	111	0	0		6		ICES	urn:lsid:marinespecies.org:taxname:140480	2144
2011-03-16	604206	<i>Mytilus edulis</i>	1981	3	22	-2.5	58.75	111	79	79		2		ICES	urn:lsid:marinespecies.org:taxname:140480	2144



The portal functionalities

→ Filter Data 

**EMODnet**
European Marine
Observation and
Data Network

Pilot Portal For Biology
Data Discovery and Access Service


Search

Filter data


☐ G
☐ N
☐ N
☐ G
☐ A
☐ S
☐ S
☐ S
☐ S
☐ A
☐ E
☐ C
☐ A
☐ H
☐ D
☒ M
☐ S

Time

Date
(yyyy-mm-dd
or yyyy)

From: 

Hour Minutes

To: 

Hour Minutes

Position (in decimal degrees: ex. lat: 51.40 lon: 3.41)

Min. Max.


Latitude




Longitude

Minimum Depth (in m: ex. min: 5 max: 10)

Depth:

submit


TerraMetrics - SeaWiFS SeaWiFS



SampleSize	InstitutionCode	Taxon LSID	Metadata
0.04 m²	MarBEF/Large	urn:lsid:marinespecies.org:taxname:1404	1292
0.04 m²	MarBEF/Large	urn:lsid:marinespecies.org:taxname:1404	1292
0.04 m²	MarBEF/Large	urn:lsid:marinespecies.org:taxname:1404	1292
0.04 m²	MarBEF/Large	urn:lsid:marinespecies.org:taxname:1404	1292
0.04 m²	MarBEF/Large	urn:lsid:marinespecies.org:taxname:1404	1292
0.04 m²	MarBEF/Large	urn:lsid:marinespecies.org:taxname:1404	1292
0.04 m²	MarBEF/Large	urn:lsid:marinespecies.org:taxname:1404	1292

12

EMODnet

September 24, 2012



The portal functionalities



Data downloading



EMODnet Pilot Portal For Biology
EMODnet Pilot Portal For Biology
and Access Service

Download dataportal

Fill out the form correctly, please. The information will not be used for commercial purposes.
We will only use this information to keep you informed of new versions of the data portal.
Fields marked with an asterisk are required fields.

Name

Organisation

Email*

Country*

For what purposes will you use the data?*

Choose a format:

I agree to the [terms of use](#)

WMS
GIF
GeoRSS
JPEG
KML (compressed)
KML (plain)
PDF
PNG
SVG
Tiff
WFS
CSV
GML2
GML3
GeoJSON
Shapefile

<< < 1 2 3 4 5 6 7 8 9 10 > >>

Catalog no	Scientific name	Year	Month	Day	Lon.	Lat.	Min depth	Max depth	Sex	Observed Ind. #	Institution	AphiaID	Metadata
------------	-----------------	------	-------	-----	------	------	-----------	-----------	-----	-----------------	-------------	---------	----------

The portal functionalities

→ Data catalogue (metadata) 


EMODnet
European Marine Observation and Data Network

Pilot Portal For Biology
Data Discovery and Access Service



Identification info

Title	Annual anomalies of total copepod abundance per CPR-grid cell from the SAHFOS CPR Survey data for 1948-2005		
Date	2010-12-01T00:21:13		
Date type	Revision: Date identifies when the resource was examined or re-examined and improved or amended		
Status	Completed: Production of the data has been completed		

Point of contact

Individual name	Bart Vanhoorne	Delivery point	Wandelaarkaai 7	
Organisation name	Flanders Marine Institute (VLIZ)	City	Oostende	
Position name	Application developer	Administrative area	West-Flanders	
Role	Point of contact: Party who can be contacted for acquiring knowledge about or acquisition of the resource		Postal code	8400
		Country	Belgium	
		OnLine resource	http://geo.vliz.be:80/geoserver/wms	

Descriptive keywords	Emodnet , Zooplankton , Saphos , CPR (theme).
Topic category code	Oceans

Extent
Geographic bounding box

	North bound latitude	
	66.0	
West bound longitude		East bound longitude
-71.0		11.0
	South bound latitude	
	40.0	

Distribution info
Transfer options

Interactive Map	Annual anomalies of total copepod abundance per CPR-grid cell from the SAHFOS CPR Survey data for 1948-2005 (OGC-WMS Server: http://geo.vliz.be:80/geoserver/wms?SERVICE=WMS&)
View in Google Earth	Annual anomalies of total copepod abundance per CPR-grid cell from the SAHFOS CPR Survey data for 1948-2005 

Data quality info

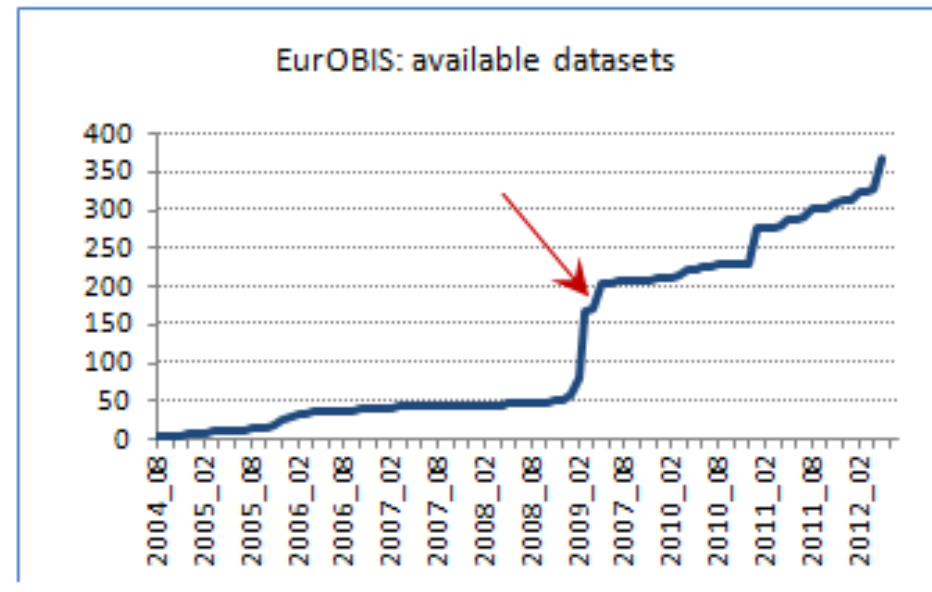
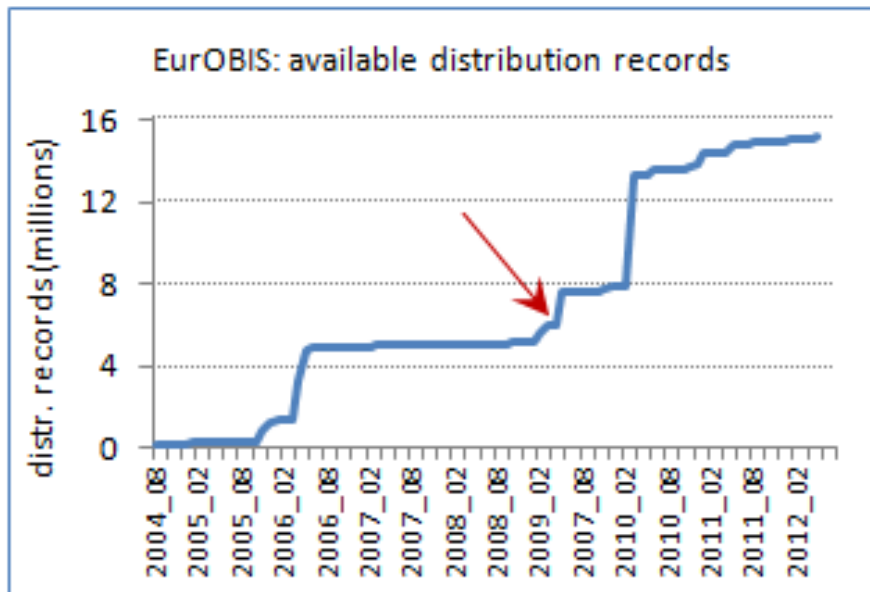
Hierarchy level	Dataset: Information applies to the dataset
-----------------	--

Metadata

File identifier	6476484c-c4a7-4518-9996-386e2009684e
Language	English
Character set	UTF8: 8-bit variable size UCS Transfer Format, based on ISO/IEC 10646
Hierarchy level	Dataset: Information applies to the dataset
Date stamp	2010-12-01T00:21:13
Metadata standard name	ISO 19115:2003/19139
Metadata standard version	1.0
...	...

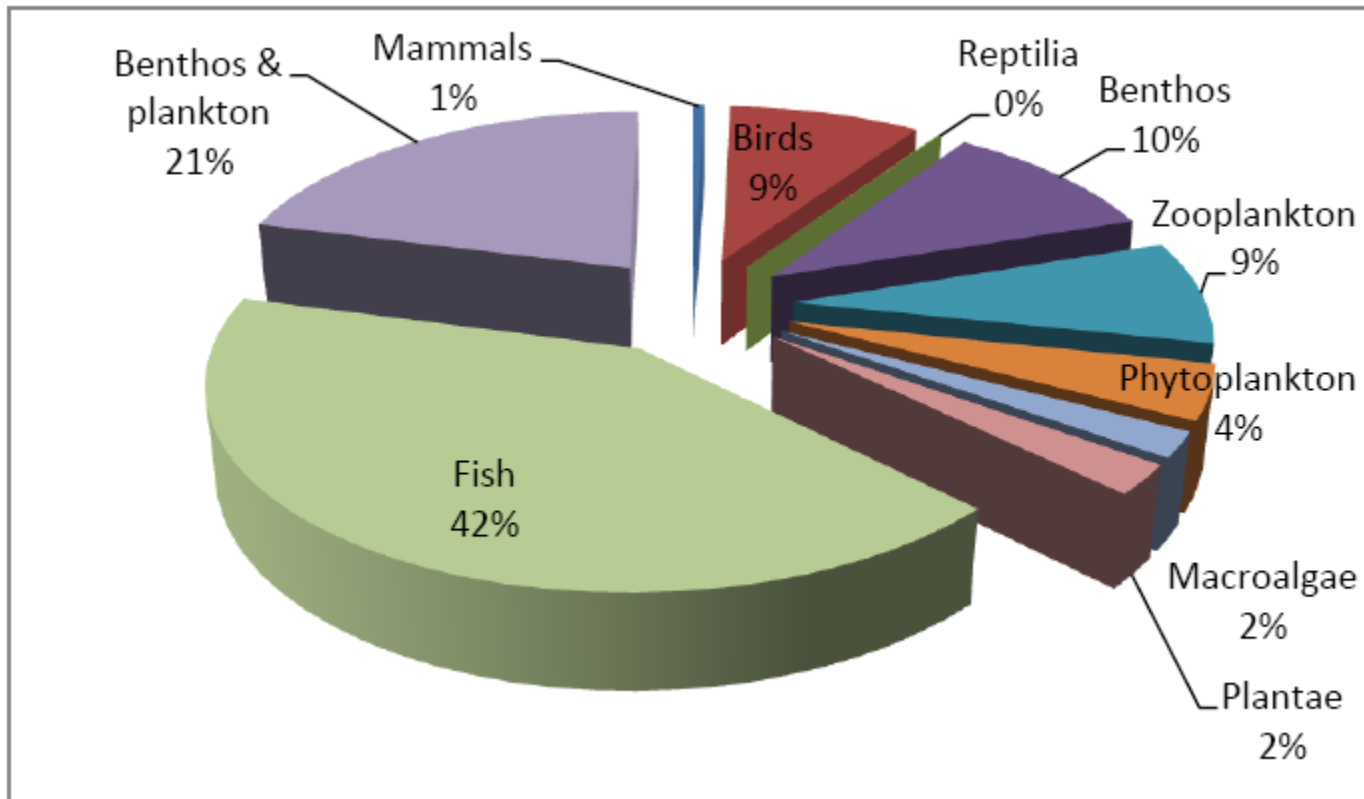


Data inventory and gaps: EurOBIS



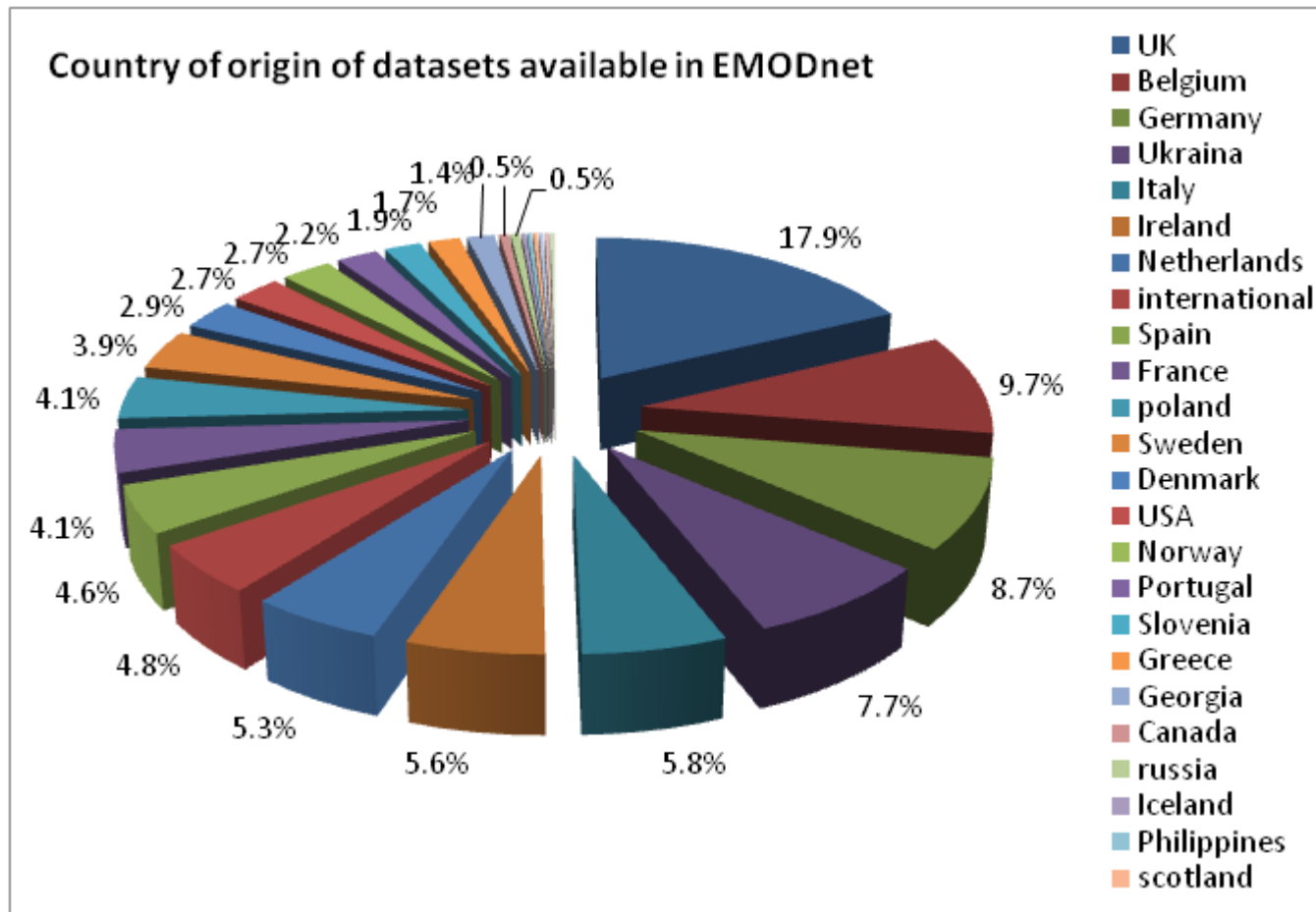
Data inventory and gaps: EurOBIS

Relative distribution Number of records per species group in EurOBIS (total=14.245.339)



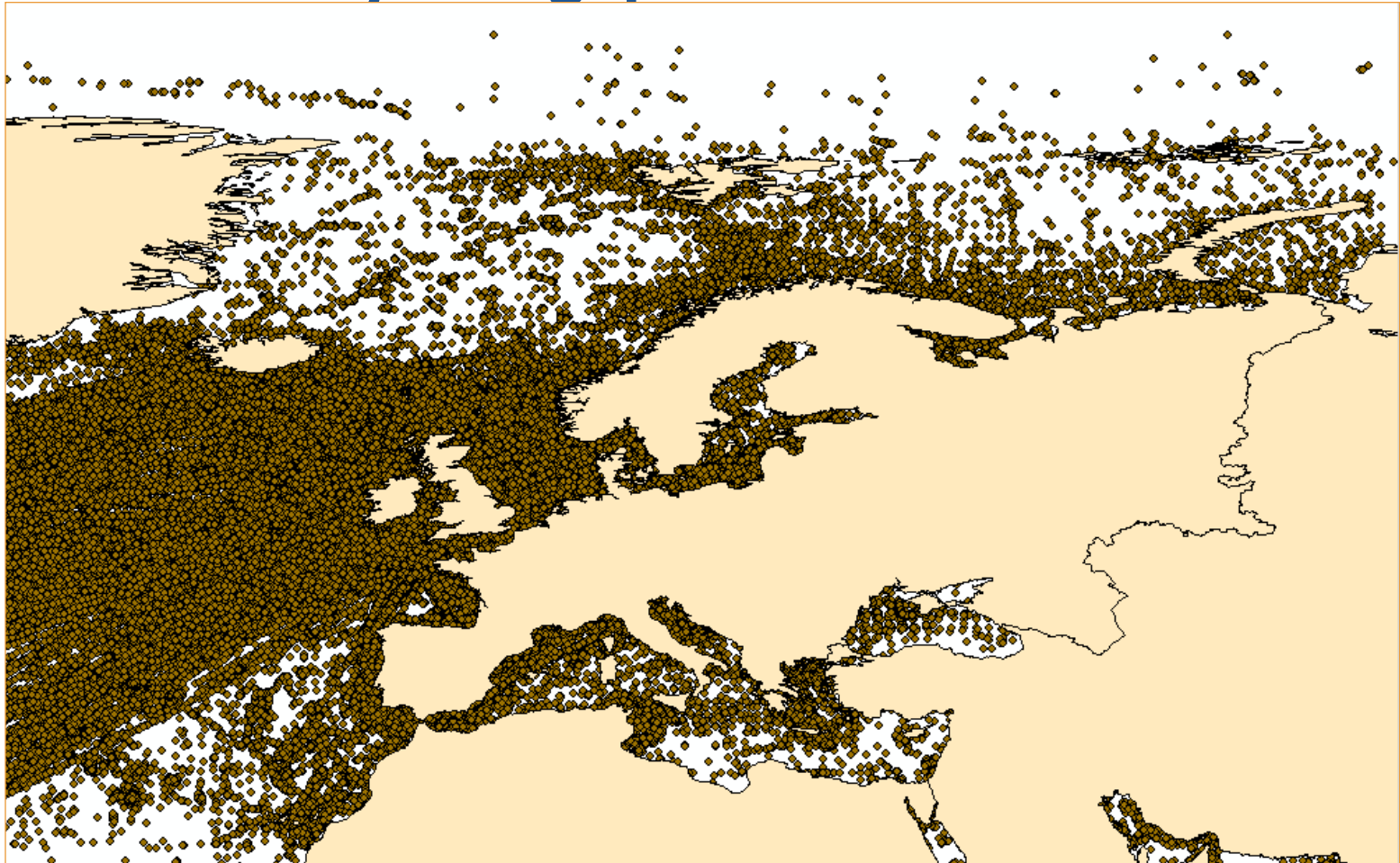


Data inventory and gaps



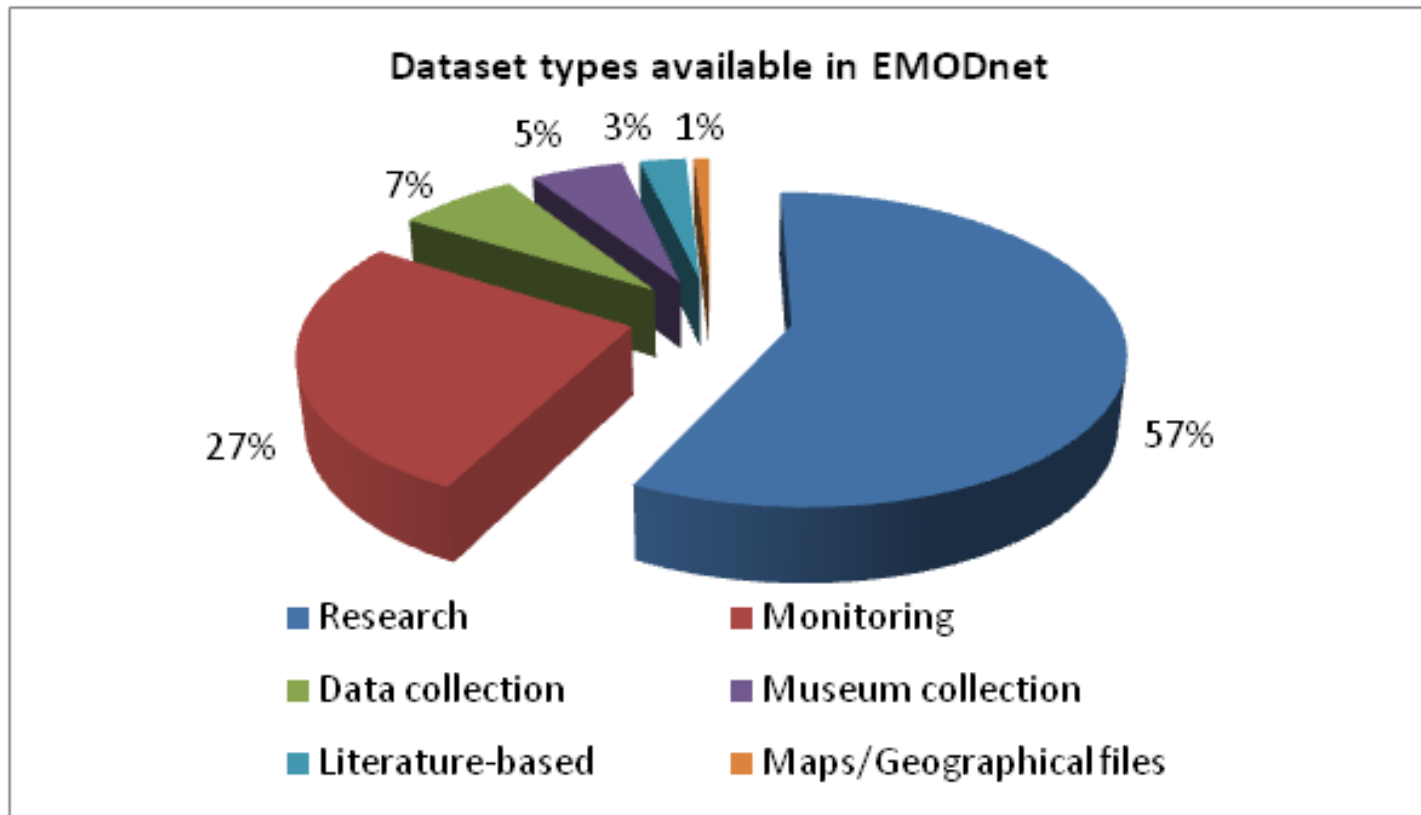


Data inventory and gaps: EurOBIS





Data inventory and gaps



Data inventory and gaps: national long term monitoring



Country	Groups	Temporal scope
Sweden	benthos, plankton, mammals	1971 - present
Denmark	benthos, plankton, algae, reptiles, mammals	1976 - present
Germany	benthos, plankton, algae, birds, mammals	1974 - present
Netherlands	benthos, plankton, birds, plants, mammals, bacteria	1956 - present
Belgium	benthos, birds, mammals	1979 - present
United Kingdom	benthos, plankton, birds, algae, reptiles, mammals	1970's - present
Ireland	benthos, plankton, birds, algae, mammals	1970's - present
France	benthos, plankton	1980's - present
Spain	plankton	1987 - present
Portugal	(benthos), phytoplankton, shellfish	?



Data inventory and gaps: national long term monitoring: REPHY monitoring

Search Legend Feedback Help

(Choose a theme)
phytoplankton france

Search Reset map

Metadata

- » [Data catalog](#)
- » [Submit dataset](#)
- » [Statistics](#)

Lat: 41.22 Lon: 3.8

Google Imagery ©2011 TerraMetrics - Terms of Use

Taxa(0) Parameters(0) **Datasets(4)** Layers(0)

Dataset Name	RecordCount	View
Productivity of oceanic pelagic systems		
Quadriga database		
Réseau de Surveillance phytoplanctonique	285,562	
Taxonomic Information System for the Belgian coastal area	22,148	



Data inventory and gaps: species observations per group

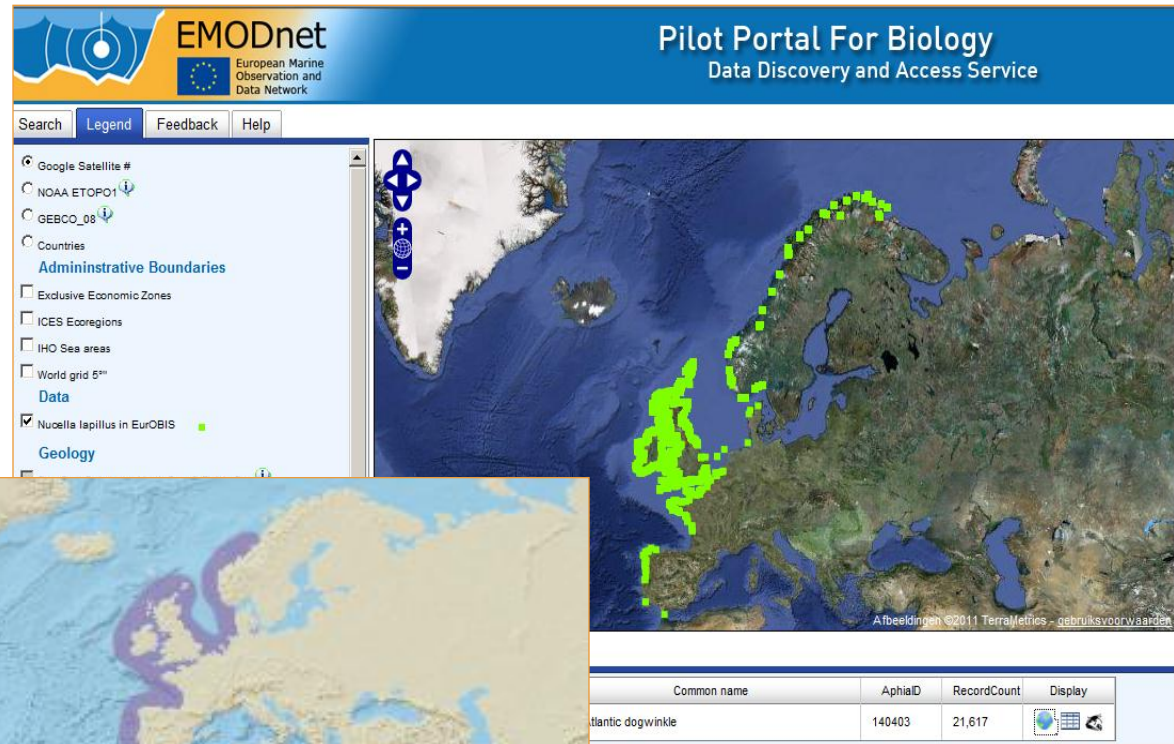
	Common name	# records	Time-frame	# datasets
<i>Nucella lapillus</i>	dogwhelk	21 617	1854 - 2009	22
<i>Mytilus edulis</i>	blue mussel	21 586	1986 - 2010	55
<i>Nephrops norvegicus</i>	Dublin bay prawn	19 239	1929 - 2010	35



Linked with <http://www.marinespecies.org>



Data inventory and gaps: species observations per group





Future plans

- OPEN CALL FOR TENDERS: No MARE/2012/10 - Knowledge base for growth and innovation in ocean economy: assembly and dissemination of marine data for seabed mapping
- Specifications LOT NO: 5 – BIOLOGY
 - **Provide data and metadata** on surveys in the **water column** and on the **sea-bed** for: (1) phytoplankton, (2) zooplankton (3) angiosperms (4) macro-algae (5) invertebrate bottom fauna (6) birds (surface observation at sea and coastal nesting) (7) mammals (8) reptiles (9) fish.
 - Special attention to those species and communities protected by **EU Directives and international conventions**, and those to be used as **indicators for MSFD**.
 - Provide **free access** to all the data and metadata obtained within the EurOBIS database and at least **three other separately managed databases**. The strategy should not be to maintain all these data within one database but to provide access to them.
 - **Gridded set of map layers** should be produced showing the **average abundance** of species in set time windows
 - Calculate **spatially distributed data products** specifically relevant for MSFD Descriptor 2 (**non-indigenous species**) based on guidance provided by the MSFD Common Implementation Strategy.
 - A number of **improved portal features**



Future plans

- Proposal LOT NO: 5 – BIOLOGY
 - 10 -> 21 partners
 - Budget: 1.700.000 Euro
 - 6 Work Packages
 - WP1: Project Management
 - WP2: Identification and collection of species, species attributes and species indicator information
 - WP3: Data access to marine biological data
 - WP4: Data archaeology and rescue
 - WP5: Creation of gridded abundance data products
 - WP6: Technical update EMODnet Biology portal & link to other portals
 - Relation with SeaDataNet2



Thank you