

# European Marine Observation and Data Network

Biology

Simon Claus

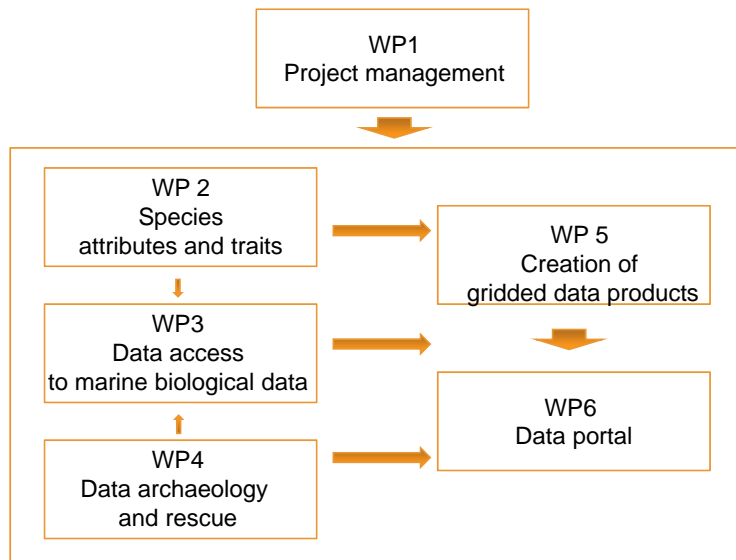


## EMODnet

- Start: 30-08-2013
- 19 partners + 3 subcontractors



## EMODnet

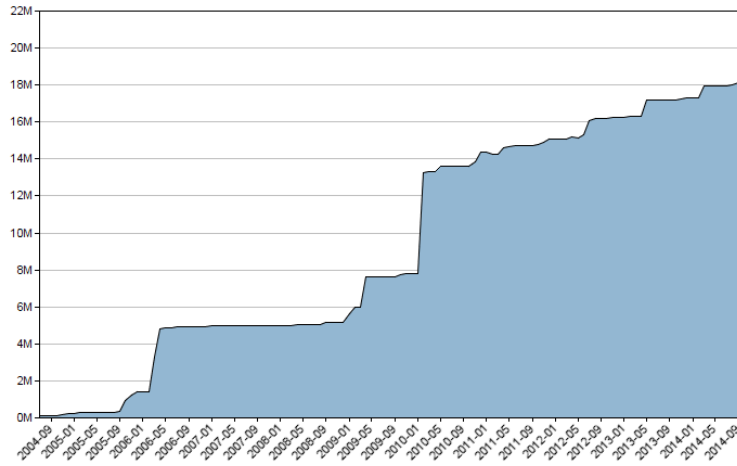


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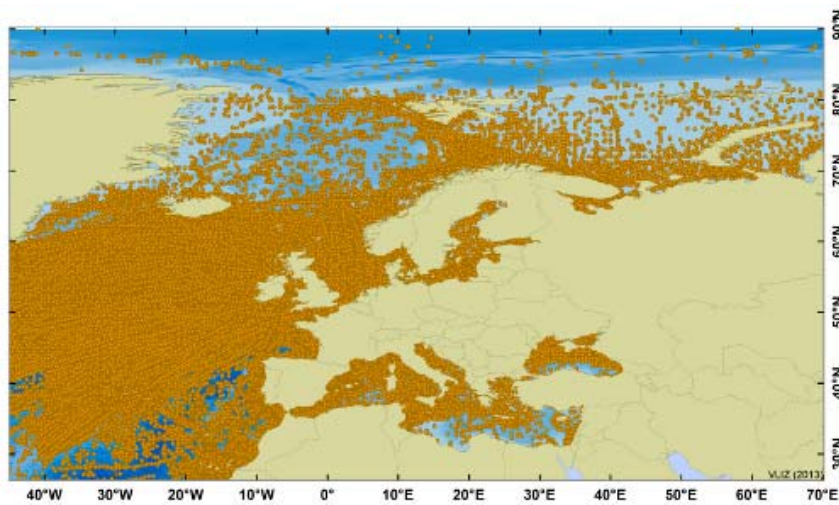
March 12, 2015

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18,682,398 distribution records - 649 datasets - 55,792 species names

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## EMODnet

### WP3 Data access to marine biological data

- All WP3 partners have indicated their data transfer protocol of choice, e.g. the mechanism through which the data will become accessible through the EMODnet Biology Portal:

Data transfer protocol	# partners
IPT	5
SeaDataNet format	3
OGC (WFS)	2
Own web services	2
Combination of protocols	3



## EMODnet

- The inventory has led to the description of 75 new datasets in the metadata catalogue, all of which will become accessible through the Portal. In total, 101 new (sub)data sets will contribute to the Portal.

Group	# datasets	# records
Benthos	12	1.541.685
Phytoplankton	28	1.474.340
Zooplankton	14	1.721.621
Angiosperms	2	1.845
Macro-algae	3	317.209
Birds	3	123.933
Mammals	2	24.593
Reptiles	2	3.242
Fish	15	2.158.305
No indication		1.400.000

## WP 5: Creation of gridded abundance data products

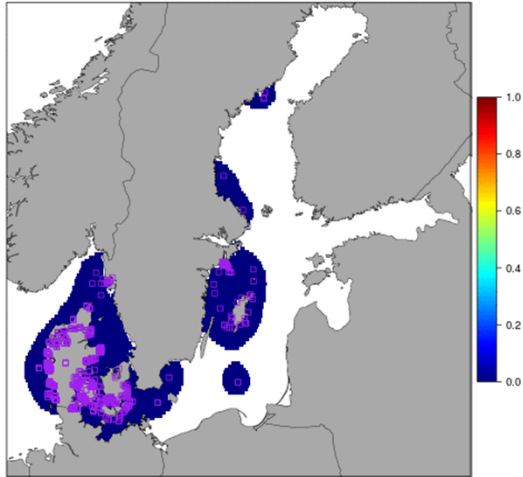


## Objectives

- Implement DIVA methodology to produce statistically optimized gridded map layers.
- Make gridded maps of 3 species per group in appropriate time window
- Estimate the accuracy of the gridding procedure by comparison with validation data.
- Produce spatial maps (data products) relevant for MSFD Descriptor 2 (non-indigenous species).
- Produce spatial maps of quality indicators for MSFD, if available and feasible

## *Marenzelleria* Baltic Sea

mar1987



2. Non-indigenous species

## *Gadus morhua* North Sea

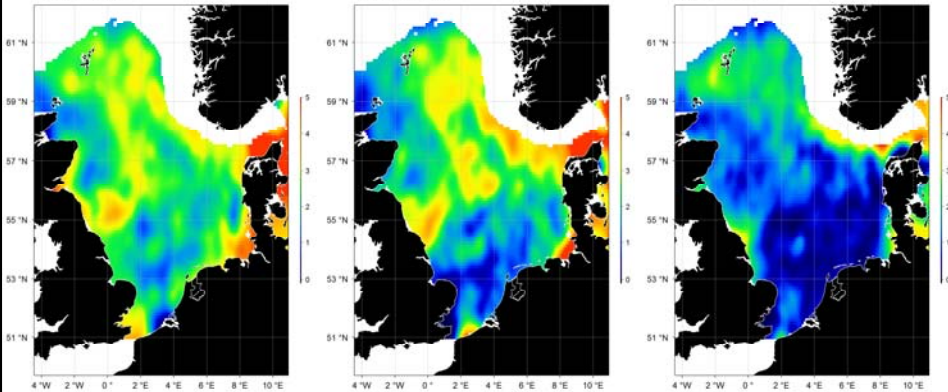


3. Populations of commercial species

1980 - 1989

1990 - 1999

2000 - 2013



 **EMODnet**  
European Marine Observation and Data Network

**Biology**  
Data Discovery and Access Service

[Data portal](#) [Data catalog](#) [Data products](#) [Partners](#) [Project](#) [Contribute](#)

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Click on an image to select an album

			
<b>Fish (4)</b>	<b>Zooplankton (10)</b>	<b>Birds (4)</b>	<b>Mammals (1)</b>
			
<b>Benthos (1)</b>	<b>Phytoplankton (1)</b>		

[\[Add an image\]](#) [\[Slideshow\]](#) [\[RSS\]](#) [\[Search\]](#)

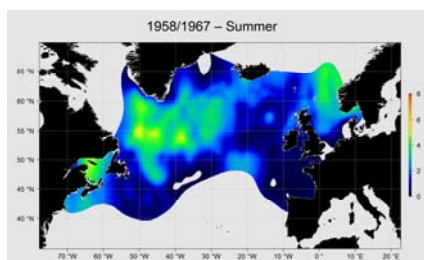
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3/12/2015

### OOPS: operational oceanographic products and services

- Proposal to provide EMODnet biology zooplankton products for regional overviews ICES accepted
- SLA being set up between ICES, VLIZ, SAHFOS (EMODnet product becomes operational)





## Biological and ecological traits of marine species

*Costello et al., subm*

Trait	Relevance of proposed high priority traits
<b>Taxonomic</b>	Related species have similar traits so taxonomic relationships predict traits of related species
<b>Environment</b>	Most studies are confined to a particular environment so this trait allows users to quickly isolate species of interest for their purpose.
<b>Depth</b>	The most widely available variable to distinguish species habitat.
<b>Substratum</b>	<b>A key physical factor determining benthic species habitat.</b>
<b>Habitat</b>	Derived from environment, depth, and substratum.
<b>'Habit'</b>	Determines mode of dispersal and ecological role (e.g. habitat forming) in the ecosystem.
<b>Skeleton</b>	<b>Calcareous important for ocean acidification</b> and fossil record. <b>Gelatinous</b> important due to sampling difficulties, role as predators, and hazard to humans.
<b>Diet</b>	Influence on abundance of other species, determines position in food web.
<b>Body size</b>	<b>Related to position in food web, species abundance, metabolic rates, and dispersal.</b>



## Biological and ecological traits of marine species

*Costello et al., subm*

### ■ Species' importance to society

Taxon Kingdom or Phylum.	ERMS	WoRMS	Alien	origin unknown	origin uncertain	EU Directive	OSPAR	HAB	FAO
Agnatha	6	93	0	0	0	4	0	0	17
Annelida	2,170	12,658	159	21	22	1	0	0	19
Aves	234	645	2	0	0	143	9	0	133
Bacteria	181	1,716	3	0	0	0	0	1	1
Bryozoa	800	6,112	58	4	4	0	0	0	0
Chaetognatha	41	131	1	0	0	0	0	0	0
Chelicerata	517	2,939	4	0	1	0	0	0	12
Chromista	3,929	20,285	186	29	2	0	0	115	42
Cnidaria	1,294	10,760	79	6	6	1	0	0	86
Crustacea	7,062	53,321	294	16	6	2	1	0	643
Ctenophora	39	187	4	0	0	0	0	0	1
Echinodermata	652	7,277	17	1	1	1	0	0	151
Echiura	37	197	1	0	1	0	0	0	0
Entoprocta	60	174	4	1	0	0	0	0	0

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**Under development!**

# World Register of Introduced Marine Species



Intro | Search taxa | Distributions | Terminology | References | Online sources | Log in

## World Register of Introduced Marine Species (WRIMS)

### Introduction



The International Union for Conservation of Nature (IUCN) describes invasive alien species as "animals, plants or other organisms introduced by man into places out of their natural range of distribution, where they become established and disperse, generating a negative impact on the local ecosystem and species". These impacts may disrupt the ecosystem processes, introduce diseases, and reduce biodiversity. Invasive alien species are found across all taxa from micro-organisms to mammals and occur in all environments.

Invasive species pose a potentially major threat to the marine environment and its ecological integrity. Marine invasive species reduce marine diversity and species populations and disrupt ecosystems. A well-known example is the impact of the introduced comb jelly *Mnemiopsis leidyi*, a major carnivorous predator of edible zooplankton, pelagic fish eggs and larvae in the Black Sea. Marine invasive species also have negative impacts on livelihood and food security (fisheries, aquaculture and mariculture), human health (e.g. Paralytic Shellfish Poisoning (PSP)), and infrastructure (colonization of jetties, navigation buoys, petroleum platforms, wrecks and other artificial hard substrata; clogging of industrial water pipes; etc.).


Marine species are introduced outside their native range both intentionally and accidentally through a suite of vectors/pathways. Intentional introductions include: species introduced through the pet/aquarium and live-food trade; species introduced for the purpose of fisheries, aquaculture and mariculture; species introduced for biological control, etc. Accidental introductions include: species transported through ship's ballast (both water and solid); species transported as hull-fouling organisms; species transported as hitchhikers and stowaways on boats, scuba gear, sea chests; and even species carried by other organisms.

### Background of the database

In 2008-2009 the IUCN Invasive Species Specialist Group (ISSG) worked on a project, within the framework of the Ocean Biogeographic Information System (OBIS), that developed an annotated dataset of marine introduced and invasive species for the World Register of Marine Species (WoRMS) in order to flag species on the register as "alien and invasive species".

**Under development!**

# World Register of Introduced Marine Species



Intro | Search taxa | **Distributions** | Terminology | References | Online sources | Log in

## Invasives Distribution

Search distribution records for

Geographical area\*:

Include subareas

Type:  endemic  exotic  typelocality  vagrant  specimen

Taxon rank:

Limit to taxa belonging to:

e.g. Mysidae. Only taxa with rank above genus will be returned.  
\* = mandatory


Introduction Provenance:

Invasiveness:

Occurrence:

Include distributions with status:  Valid  Valid or doubtful  All records  Inaccurate

Synonyms:  Sort on synonyms, list valid names  Sort on accepted names, list synonyms  Only accepted names



[www.marineregions.org](http://www.marineregions.org)

Website and databases developed and hosted by VLIZ - Page generated 2014-05-22 - contact: info@marineregions.org

**Invasives Distribution**

62 matching records. Click on one of the taxon names listed below to check details for that taxon.

*Acrothamnion preissii* (Sonder) E.M.Wollaston, 1968  
*Alexandrium catenella* (Whedon & Kofoid) Balech, 1985  
*Amathia distans* Busk, 1886  
*Amphibalanus improvisus* (Darwin, 1854)  
*Anadara inaequalis* (Brugulère, 1769)  
*Antithamnionella spirographidis* (Schiffner) E.M.Wollaston, 1968  
*Asciodiella aspersa* (Müller, 1776)  
*Asparagopsis armata* Harvey, 1855  
*Asparagopsis taxiformis* (Deflè) Trevisan de Saint-Léon, 1845  
*Bonnemaisionia hamifera* Hariot, 1891  
*Brachiopontes pharaonis* (P. Fischer, 1870)  
*Branchiommia bairdi* (McIntosh, 1885)  
*Bugula stolonifera* Ryland, 1960  
*Bursatella leachi* Blainville, 1817  
*Callinectes sapidus* Rathbun, 1896  
*Caprella scaura* Templeton, 1936  
*Caulerpa racemosa* (Forsskål) J.Agardh, 1873  
*Caulerpa racemosa* var. *cylindracea* (Sonder) Verlaque, Hulsmán & Boudouresque, 2003  
*Caulerpa taxifolia* (M.Vahl) C.Agardh, 1817  
*Cerithium acabridium* Phillips, 1848  
*Coolia monotis* Meunier, 1919  
*Corbula gibba* (Olivier, 1792)  
*Cordylophora caspia* (Pallas, 1771)  
*Crasostrea gigas* (Thunberg, 1793)  
*Crepidula fornicata* (Linnaeus, 1758)  
*Diadumene lineata* (Verrill, 1869)  
*Echinolittorina punctata* (Gmelin, 1791)  
*Ectopleura crocea* (Agassiz, 1862)  
*Elasmopus pectanicus* (Bate, 1862)  
*Enocheir sinensis* H. Milne Edwards, 1853  
*Ficopomatus enigmaticus* (Fauvel, 1923)  
*Fistularia commersonii* Rüppell, 1838  
*Fulvia fragilis* (Forsskål in Niebuhr, 1775)  
*Godiva quadricolor* (Barnard, 1927)  
*Grateloupia turuturu* Yamada, 1941  
*Halophila stipulacea* (Forsskål) Anderson, 1867  
*Heterosiphonia japonica* Yendo, 1920  
*Heterotentacula mirabilis* (Kram, 1957)  
*Hydrocladia elegans* (Haswell, 1893)  
*Hypnea musciformis* (Wulfen) J.V.Lamouroux, 1813  
*Lophocladia lallemantii* (Montagne) F.Schmitz, 1893  
*Marsupenaeus japonicus* (Spence Bate, 1888)  
*Microcosmus squamiger* Michaelsen, 1927  
*Mnemiopsis leidyi* A. Agassiz, 1865  
*Nya ananaria* Linnaeus, 1758  
*Mytilicola orientalis* Mori, 1935  
*Ostreopsis ovata* Fukuyo, 1981  
*Palaemon macrodactylus* Rathbun, 1902  
*Penulus repus* De Brito Capello, 1864  
*Paracalanus indicus* Wolfenden, 1905  
*Paracapsella pusilla* Mayer, 1890  
*Percnon gibbesi* (H. Milne Edwards, 1853)  
*Phaeocolon* (*Phaeocolon*) *caupo* Hendrix, 1975  
*Phyllorhiza punctata* Lendenfeld, 1884

62 alien species within Western Basin of the Mediterranean Sea (IHO) (provenience=alien)

12 alien invasive species within Western Basin of the Mediterranean Sea (IHO) (provenience=alien; invasiveness=invasive)

**Invasives Distribution**

12 matching records. Click on one of the taxon names listed below to check details for that taxon.

*Acrothamnion preissii* (Sonder) E.M.Wollaston, 1968  
*Alexandrium catenella* (Whedon & Kofoid) Balech, 1985  
*Asparagopsis armata* Harvey, 1855  
*Branchiommia bairdi* (McIntosh, 1885)  
*Caulerpa racemosa* (Forsskål) J.Agardh, 1873  
*Coolia monotis* Meunier, 1919  
*Echinolittorina punctata* (Gmelin, 1791)  
*Fistularia commersonii* Rüppell, 1838  
*Lophocladia lallemantii* (Montagne) F.Schmitz, 1893  
*Marsupenaeus japonicus* (Spence Bate, 1888)  
*Mnemiopsis leidyi* A. Agassiz, 1865  
*Percnon gibbesi* (H. Milne Edwards, 1853)

**Invasives taxon details**

✓ ***Caulerpa racemosa* (Forsskål) J.Agardh, 1873**  
 AphidID: 144472

Classification: Biota > Plantae (Kingdom) > Chlorophyta (Phylum) > Ulvophyceae (Class) > Bryopsidales (Order) > Caulerpaceae (Family) > Caulerpa (Genus)

**Status** accepted  
**Rank** Species  
**Parent** ✓ *Caulerpa* J.V. Lamouroux, 1809  
**Source** Not documented

**Direct child taxa (3)**  
 Variety ✓ *Caulerpa racemosa* var. *cylindracea* (Sonder) Verlaque, Hulsmán & Boudouresque, 2003  
 Variety ✓ *Caulerpa racemosa* var. *lamourouxii* (Turner) Weber-van Bosse, 1898  
 Variety ✓ *Caulerpa racemosa* var. *turbinata* (J.Agardh) Eubank, 1946

**Environment** marine

**Distribution** FROM OTHER SOURCES  
 Mediterranean Sea - Eastern Basin  
 Mediterranean Sea - Eastern Basin (introduced) [details]  
 Mediterranean Sea - Western Basin  
 Algerian part of the Mediterranean Sea - Western Basin (introduced)  
 Mediterranean Sea - Western Basin (introduced) [details]

**Links**  
 Delivering Alien Invasive Species Inventories for Europe (DAISIE)  
 Delivering Alien Invasive Species Inventories for Europe (DAISIE)  
 Delivering Alien Invasive Species Inventories for Europe (DAISIE)  
 Published In AlgaeBase -[\\$j.algaebase](#)  
 To Barcode of Life (2 barcodes)  
 To Biodiversity Heritage Library (94 publications)  
 To Encyclopedia of Life  
 To GenBank (234 nucleotides; 97 proteins)  
 To Marine Species Identification Portal  
 To PESI  
 To ITIS

**Attribute** ? Paraphyletic group Algae (inherited from Chlorophyta) [details]

**Images** ? [show unreviewed]

**LSID** urn:lsid:marinespecies.org:taxname:144472

**Taxonomic Edit history**  
 Date action by  
 2004-12-21 15:04:05Z created Quiry, Michael D.  
 2010-12-13 10:09:16Z changed Quiry, Michael D.

[Taxonomic tree] [Google] [Google scholar] [Google images]

**Cite:** Quiry, Michael D. (2014). *Caulerpa racemosa* (Forsskål) J.Agardh, 1873. In: Quiry, M.D. & Quiry, G.M. (2014). AlgaeBase. World-wide electronic publication. National University of Ireland, Galway (taxonomic information republished from AlgaeBase with permission of M.D. Quiry). Accessed through: WRMS editorial board (2014) World Register of Introduced Marine Species at <http://www.marinespecies.org/invasives/alpha.php?taxdetails&id=144472> on 2014-05-22

**Invasives distribution details**

**Geonit** Mediterranean Sea - Eastern Basin (MIO Sea Area)

**Source** Panayotidis, P. (2006). On The Enigmatic Origin Of The Mediterranean Invasive *Caulerpa racemosa* (Caulerpaceae, Chlorophyta). *Mediterranean Marine Science* 7(1): 119-121. available online at: <http://www.medi-mar-sc.net/index.php/marine/article/view/181/180>

**Provenience** Alien [Species introduced by man into places out of their natural range of distribution]

**Invasiveness** Invasive [Species that are known to be invasive- those species in whose cases evidence of impact has been recorded or which is spreading aggressively]

**Occurrence** Established and expanding [Species that have become established in their introduced range and are known to be increasing in abundance and expanding their range]

**Reginate** 1926

**Edit Date** action by  
**history** 2014-05-23 07:52:32Z created Pageal, Shyama

 **EMODnet**

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*Data formats: discussed at biodiversity workshop EEA – in contact with*

*Deltares*

- Marine Information System (MIS)“ which will encompass both compliance and state-of-the-environment reporting information across the range of MSFD-relevant topics”
- MIS LEVEL 3: Monitoring and data management - OBJECTIVE: To define a common model for managing monitoring programs and data flows
- Draft Structure based on Emodnet Biology, SEADATANET standards (ODV and CDI) and other initiatives
- In progress