

WoRMS

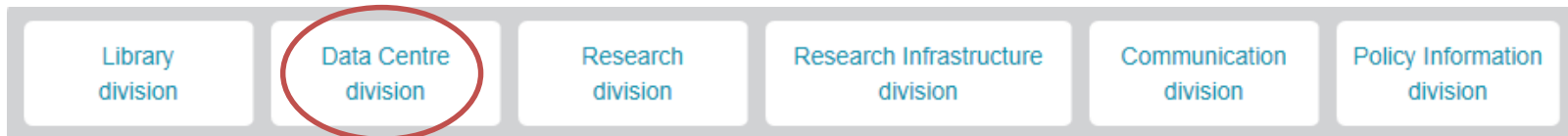
World Register of Marine Species

WoRMS Data Management Team (DMT), Bart Vanhoorne
Flanders Marine Institute (VLIZ)



Host: Flanders Marine Institute (VLIZ)

- Established in 1999, ~80 FTE
- Autonomous institute - non-profit organisation under Belgian law, largely funded by Flemish government
- Originally established to support all Belgian/Flemish researchers working in different universities: virtual hub



- Ship
 - Data centre
 - Marine library
 - Communication
 - Science-policy
- Since 2017: dedicated research department



Data management: towards open and FAIR data

Observations

Documentation

Integration

Use/Re-use

Registry & storage



Marine Data Archive (MDA)

Integrated Marine Information System (IMIS)

Data system

Data products
Atlases

FAIR

Findable

Accessible

Interoperable

Reusable



Taxonomic



Geographic



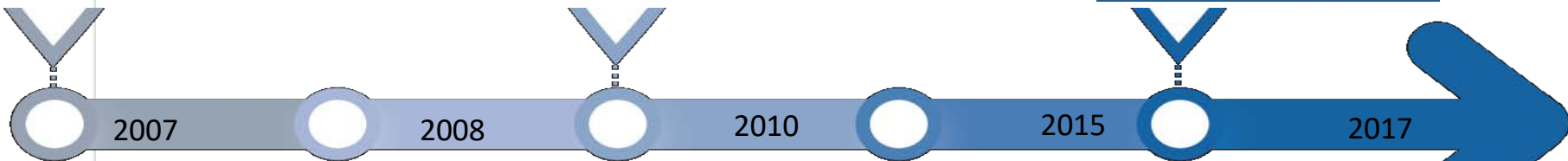
Cost, Expertise, Quality, Added value

World Register of Marine Species (WoRMS)

- History
 - 2004: MarBEF EU project => creation of online ERMS
 - 2007: further development to World Register



WoRMS aims to provide the most authoritative list of names of all marine species globally, ever published



www.marinespecies.org

Official launch
122.500 valid marine species
names

Goal of 230.000 reached...

CELEBRATING
10 years

WoRMS: in a nutshell

- Not just a name index, but expert-based taxonomic database
 - Almost 400 editors (taxonomic and thematic)
 - Elected Steering Committee (SC) (12+1 members)
 - Data Management Team (DMT)
- Permanent host-institute: VLIZ
- Web-based system, including web-services
- International standards
- Aphia = data system behind WoRMS



WoRMS statistics & content

Currently in WoRMS



Accepted marine species

243 272 (95% checked)



Marine species names, including synonyms

491 342



Species with image

32 626 (55% checked)



WoRMS editors

280



Registered institutional users

199



Webhits

113 434 232 (In 2017)



Citations

2417



World Register of Marine Species (WoRMS)

Data management team (DMT) @ VLIZ



Francisco Hernandez



Leen Vandepitte



Bart Vanhoorne



Wim Decock



Stefanie Dekeyzer



Thomas Lanssens



Kevin Verfaillie



Short-term contracts, internships, summer students ...



World Register of Marine Species (WoRMS)

Our editors around the world!



Almost 400 editors (both taxonomic and thematic), worldwide, 45 countries

WoRMS: powered by Aphia

HOSTED AT VLIZ

**MIGRATED VIA
DATA RESCUE**



NeMys
IRMNG
CLEMAM
...

**APHIA
PLATFORM**

STEERING COMMITTEE
EDITORIAL BOARD
DATA MANAGEMENT TEAM

**GLOBAL SPECIES
DATABASES (GSD)**



marine
WoRMS
Polychaeta
Porifera
Hydrozoa
...



fresh
terrestrial
or fossil
IRMNG
MolluscaBase
Isopoda
FreshGen
...

**REGIONAL SPECIES
DATABASES (RSD)**



ERMS
CaRMS
AfReMaS
RAMS
HKRMS
...

**THEMATIC SPECIES
DATABASES (TSD)**



WRIMS
WoRDSS
HAB
WoRCS
...



WORMS

World Register of Marine Species

Website sub-portals

WORLD PORIFERA DATABASE

Intro
Species
Specimens
Distribution
Log in

The World List of Extant Sponges

As a result of long term accumulation of literature records of extant sponges by Rob van Soest and John Hooper, we can now for the first time present a searchable preliminary world database of all Recent sponges ever described. The list is a logical follow up and addition to the *Systema Porifera* (editors Hooper & Van Soest, 2002).



The list is intended to promote stability and act as a tool for higher taxon revisions, regional monographs, and eventually as a catalogue of the world's sponge specimen databases as these are slowly being accumulated through EUROBSIS and GBIF. In order to have sufficient expert knowledge We have formed an editorial committee consisting of:

- Rob van Soest, general list editor
- Nicole Boury-Esnault, editor for Calcarea
- Dorte Janussen, editor for Hexactinellida
- John Hooper, editor for Demospongiae



We believe the list to be 95% complete. Currently, there are 8,162 valid species in the database. Reaching the final 100% is our obvious short term goal. For this we solicit your help. Please let the editors know whenever you come across an omission or a mistake or merely a typo. If you disagree with a senior synonymy decision or a genus assignment, please let us have your - argumented - corrected assignment. We intend to do a frequent update of the list, so your corrections will be incorporated quickly. More info

Citation

By downloading or consulting data from this website, the visitor acknowledges that he/she agrees to the following:

If data are extracted from this website for secondary analysis resulting in a publication, the website should be cited as follows:

- Rob van Soest; Nicole Boury-Esnault; Dorte Janussen; John Hooper (2005). World Porifera database. Available online at <http://www.marinespecies.org/porifera>. Consulted on 2008-03-20

If any data constitutes a substantial proportion of the records used in secondary analyses (i.e. more than 25% of the data are derived from this source, or the data are essential to arrive at the conclusion of the analysis), the authors/managers of the database should be contacted. It may be useful to contact us directly in case there are additional data that may strengthen the analysis or there are features of the data that are important to consider but may not have been apparent from the metadata.

Website and databases developed and hosted by VLIZ | Page last modified 2008-01-03 | contact: Rob van Soest

North Atlantic Register for Marine Species (NARMS)

Introduction Search taxa Taxon browser

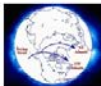
The North Atlantic Register for Marine Species, or NARMS, describes the species biodiversity of the northern Atlantic Ocean, the Mediterranean, and the Black Sea.

Featured are up-to-date species registers for both sides of the North Atlantic. The NW list spans dual in North American waters from Davis Strait to Cape Hatteras. The "European" list has many more species additional lower life forms, in the continental shelf seas of Europe from Greenland and north-west UK and Azores, including the Mediterranean shelf and the Black Sea. Information on species and higher geographic scope, can be accessed through the Search taxa tab. The Taxon browser tab leads to lists for NW and European registers in adjacent windows. Also on this page, clicking on "Taxa common to Europe" will provide the desired list.

The European register is derived from the MarBEF (<http://www.marbef.org>) database Aphia. Aphia is the European Register of Marine Species, or ERMS (<http://www.marbef.org/data/arms.php>), and now lists, such as from the Indian Ocean and the Antarctic. Aphia, and the classification adopted, are used. The NW Atlantic register is a product of the Atlantic Reference Centre (ARC) of the Huntsman Marine (<http://www.huntsmanmarine.ca>). Classification also follows Aphia. This register is an outgrowth of the Bay of Fundy Species Information (<http://www.marinebiodiversity.ca/bayoffundy/>) and other web pages of the Gulf of Maine, Canadian Atlantic, and finally NW North Atlantic species. These lists are posted here <http://www.marinebiodiversity.ca/norNARMS/index.jsp>. ARC species lists are based on paper and epress, and unpublished literature, and the ARC museum database. Though some sources and species missed, an attempt was made to make these lists comprehensive and authoritative species register.



Huntsman marine Science Centre



Coordinating Research on the Northern Atlantic (CORONA)



Vlaams Instituut voor de Zee



Marine Biodiversity and Ecosystems Functioning (MarBEF)



6th Framework Programme European Union

Marine, Freshwater and Terrestrial Isopod Crustaceans

World List of

About Search Browse Specimens Bibliography Stats Log in

Introduction

The Isopoda are small crustaceans with seven pairs of legs that range in size from 300 micrometres (Microcerberidae) to nearly 50 centimetres (*Bathynomus*). Their name, which means "like-foot" or similar (*iso*) and foot (*pod*), probably comes from the early zoologists' familiarity with the common terrestrial "slaters" or "woodlice" (other names: *cloportes*, *pissebedden*, *pillbugs*, *rolly-polies*, *sowbugs*). The isopods are diverse, with around 10,191 species found in all ecosystems from the deepest oceans to the montane terrestrial habitats and deep underground in caves or aquifers. Isopods are thought of as dorsoventrally flattened, as in the typical terrestrial slater, and indeed many species fit this morphological stereotype. Isopods from the deep sea and groundwater habitats and parasitic taxa may depart considerably from this typical body plan.

The isopods belong to the well-known crustacean group, the Malacostraca, which includes familiar crustaceans like shrimp, crabs, lobsters and krill. Unlike these malacostracans with an obvious carapace, the isopods lack one. The isopods belong to the Superorder Peracarida, which includes a diverse array of shrimp-like taxa that all brood their young in a pouch between their legs. Isopods are unique among these crustaceans for many reasons. Because they lack a carapace, the gills, which are covered by the carapace in other groups, are absent, so they breathe using specialised lamellar gill-like pleopods ("swimming limbs") on the posterior section of the body. In many terrestrial isopods, the pleopods bear respiratory structures similar to lungs. Internally, the heart is positioned in the posterior section of the thorax to provide increased circulation for the gills. Unlike all other crustaceans, the isopods shed their cuticle (a process called ecdysis) in two steps: "biphasic molting".

This site has the following aims:

- to provide a catalogue of the world's isopod species
- to promote stability in isopod nomenclature
- to act as a tool for higher taxonomic revisions and regional monographs
- to provide a base link for other online databases that use isopod nomenclature

To provide sufficient expert knowledge for maintaining the list, we have formed an editorial committee to whom the queries on particular taxa should be addressed.

History of the list

This list began as an initiative of the US National Museum of Natural History, Smithsonian Institution, maintained by the late Brian Kensley and Marilyn Schotte. It grew into a valuable resource <http://invertebrates.si.edu/isopod/> for providing nomenclature on the Isopoda: Schotte, M., B.F. Kensley, and S. Shilling. (1995 onwards). World list of Marine, Freshwater and Terrestrial Crustacea Isopoda. National Museum of Natural History Smithsonian Institution: Washington D.C., USA. This list is now reconstructed at <http://www.marinespecies.org>, with more detailed information on synonymies and distributions, and a capability to host more information, such as images, original literature, and specimen data. This list will be transferred on a monthly basis back to the Smithsonian site.

How to cite

Citation and use of the data

By use of data from this website, the visitor agrees to the following: Data from this website, if used in a publication, should be cited as follows:

- Schotte M., Boyko C. B., Bruce N. L., Markham J., Poore G.C.B., Taiti S., Wilson G.D.F. (Eds) (2008 onwards). World List of Marine Freshwater and Terrestrial Isopod Crustaceans. Available online at

Vlaams instituut voor de zee

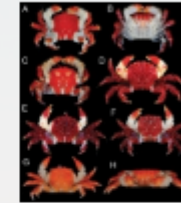


WoRMS: content/modules

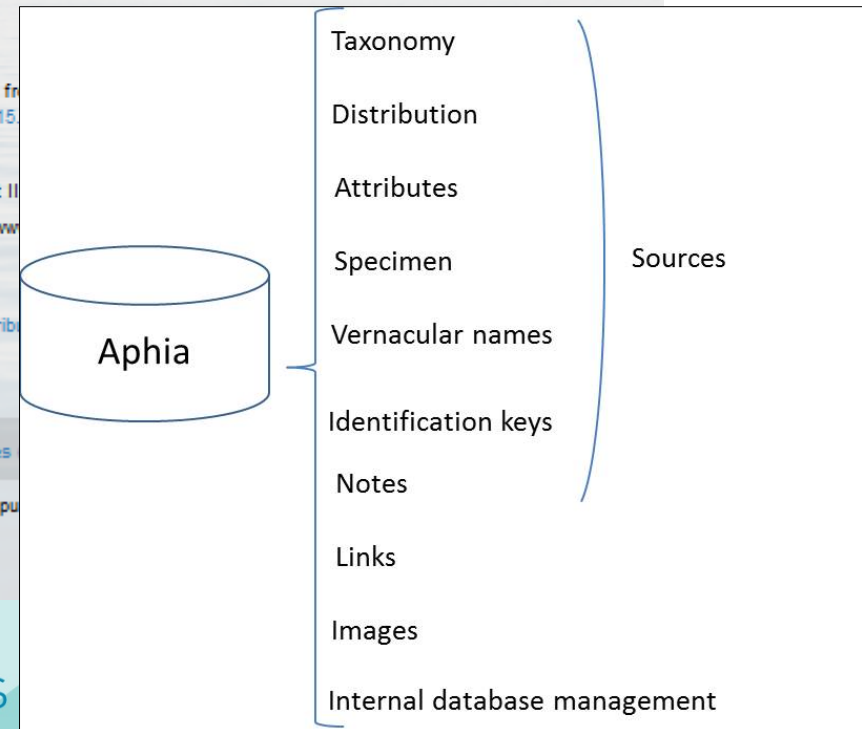
WoRMS taxon details

★ *Actaea grimaldii* Ng & Bouchet, 2015

AphiaID	854341 (urn:lsid:marinespecies.org:taxname:854341)						
Classification	Biota > ★ Animalia (Kingdom) > ★ Arthropoda (Phylum) > ★ Crustacea (Subphylum) > ★ Multicrustacea (Superclass) > ★ Malacostraca (Class) > ★ Eumalacostraca (Subclass) > ☆ Eucarida (Superorder) > ★ Decapoda (Order) > ★ Pleocyemata (Suborder) > ★ Brachyura (Infraorder) > ★ Eubrachyura (Section) > ★ Heterotremata (Subsection) > ★ Xanthoidea (Superfamily) > ★ Xanthidae (Family) > ★ Actaeinae (Subfamily) > ★ Actaea (Genus) > ★ <i>Actaea grimaldii</i> (Species)						
Status	accepted						
Rank	Species						
Parent	★ <i>Actaea</i> De Haan, 1833						
Orig. name	★ <i>Actaea grimaldii</i> Ng & Bouchet, 2015						
Environment	marine, brackish, fresh, terrestrial						
Fossil range	recent only						
Original description	Ng, P. K.; Bouchet, P. (2015). <i>Actaea grimaldii</i> , a new species of reef crab from Papua New Guinea. <i>Journal of Taxonomy</i> . 140., available online at https://doi.org/10.5852/ejt.2015.140 .						
Type data	★ Type locality contained in Papua New Guinean Exclusive Economic Zone						
Descriptive notes	★ Etymology The species name is in honour of His Serene Highness Albert II						
Taxonomic citation	WoRMS (2019). <i>Actaea grimaldii</i> Ng & Bouchet, 2015. Accessed at: http://www.marinespecies.org/aphia/terms/html.do?action=show_citation&taxon=854341						
Taxonomic edit history	<table><thead><tr><th>Date</th><th>action</th><th>by</th></tr></thead><tbody><tr><td>2015-10-08 20:06:37Z</td><td>created</td><td>Ng, Peter</td></tr></tbody></table>	Date	action	by	2015-10-08 20:06:37Z	created	Ng, Peter
Date	action	by					
2015-10-08 20:06:37Z	created	Ng, Peter					
Licensing	The webpage text is licensed under a Creative Commons Attribution-NonCommercial-ShareAlike license. [taxonomic tree]						



★ *Actaea grimaldii* sp...



Lifewatch: Taxonomic backbone



1. Setting up a central taxonomic backbone
 - Integrate existing databases: no new infra
 - Standardise species data
 - Build access services, APIs
2. Completing and updating taxonomic and related data
 - Central data management task force: 2 FTE
3. Organize and mobilize taxonomic experts
 - Support taxonomic societies
 - Logistic and financial support for workshops & meetings

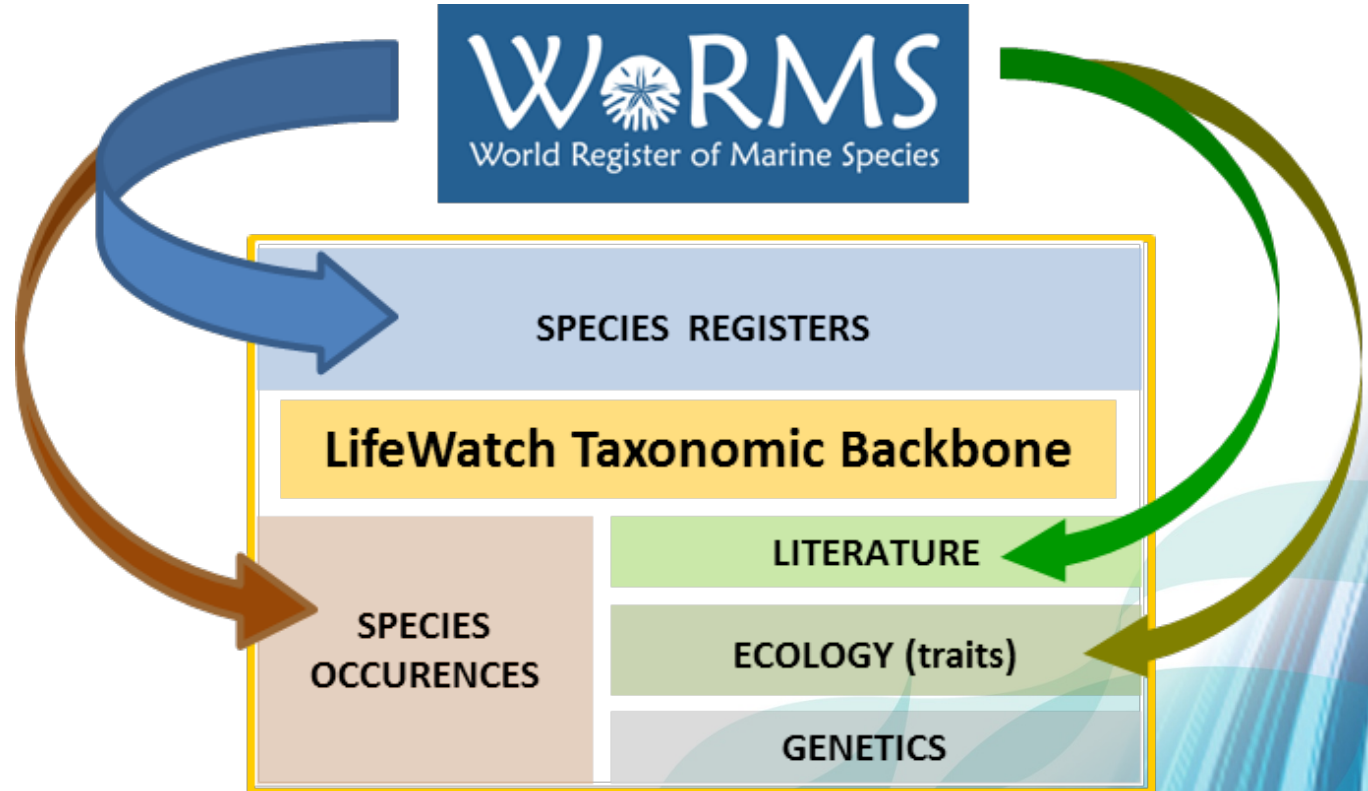


Taxonomic backbone architecture



Marineregions.org

a standard for georeferenced marine names





Taxonomic backbone

Marineregions.org

a standard for georeferenced marine names

standard list of marine georeferenced place names and areas

Contains:

- Hierarchy between places
- Synonymy between place names
- MRGIDs (GUIDs)

Offers:

- OGC web services
- Gazetteer services

Search

Browse

About

Tutorial

Webservices

Login

Marine Gazetteer Placedetails

MRGID <http://marineregions.org/mrgid/4288>

Status Proposed standard

Names	Language	Name	Name source
	English	Gulf of Mexico	IHO 23-3rd: Limits of Oceans and Seas, Special Publication 23, 3rd Edition 1953, published by the International Hydrographic Organization.
	English	Mexico Gulf	ASFA thesaurus

PlaceType IHO Sea Area

Latitude 24° 56' 32.3" N (24.94231563°)

Longitude 90° 22' 46.5" W (-90.37958525°)

Precision 1125456 meter

Source IHO 23-3rd: Limits of Oceans and Seas, Special Publication 23, 3rd Edition 1953, published by the International Hydrographic Organization.

Relation Part of [North Atlantic Ocean](#) (IHO Sea Area) [\[view hierarchy\]](#)

Map



Planet

[World](#) (World)

[World Oceans](#) (World)

[Arctic Ocean](#) (IHO Sea Area)

[Atlantic Ocean](#) (General Sea Area)

[Baie du Levrier](#) (Bay)

[Baltic Sea](#) (IHO Sea Area)

[Buzzards Bay](#) (Bay)

[Cape Cod Bay](#) (Bay)

[Central Atlantic Ocean](#) (General Sea Area)

[Eastern Atlantic](#) (General Sea Area)

[Florida Strait](#) (Strait)

[Hout Bay](#) (Bay)

[Mid-Atlantic Ridge](#) (Ridge)

[North Atlantic Ocean](#) (IHO Sea Area)

[Abaco Islands](#) (Archipelago)

[Andros](#) (Island)

[Azores](#) (Archipelago)

[Bahamas](#) (Nation)

[Bahamas Exclusive Economic Zone](#) (EEZ)

[Bantry Bay](#) (Bay)

[Bay of Biscay](#) (IHO Sea Area)

[Bermudian Exclusive Economic Zone](#) (EEZ)

[Bermudian part of the North Atlantic Ocean](#) (Marine Region)

Vlaams instituut voor de zee



Taxonomic backbone



ScientificName
Eulalia limbata
Eteone (Mystra) barbata
Atherina (Hepsetia) boyeri
Symphodus melops
Mycale (Aegogrophila) contarenii
Mycale contarenii
Jugocrangonyx
Notoplan alcinoy
Notoplana alcinoy
Pseudostichopa
Brachystomia carrozzai
Tabanus veralli Oldroyd
Portunus pelagicus L. 1758
Hippolyte garciaraso d' Udekem d' Acoz, 1996
Peyssonnelia coccinea (J. Agardh) Denizot
Aprostocetus punctiscuta Thoson 1878
Nephtys hombergi
Littorina obtusata var. aestuarii
Solea solea (Linnaeus, 1758)
solea solea
Schottera nicaeensis
Atylus swammerdamei
Ocenebra erinacea
Glycera convoluta
Phoronis mülleri
Tabanus veralli
Phoronis sp
Tabanus cf veralli
Amphithoe sp.
Mangelia costata
Mangela costatus
Chaetoceros convolutus trisetosa

WoRMS: Taxon Match

Match preview for the file 'digin_worms_vanhoorne_20180205.txt' - matching: 74.36% [new match]

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

Solea solea (Linnaeus, 1758)	Solea solea (Linnaeus, 1758)	exact
solea solea	Solea solea (Linnaeus, 1758)	exact
Schottera nicaeensis	Schottera nicaeensis (J.V. Lamouroux ex Duby) Guiry & Hollenberg, 1975	exact
Atylus swammerdamei	Atylus swammerdamei (H. Milne Edwards, 1830) accepted as Nototropis swammerdamei (H. Milne Edwards, 1830)	exact
Ocenebra erinacea	Ocenebra erinaceus (Linnaeus, 1758)	near_2
Glycera convoluta	Glycera convoluta Keferstein, 1862 accepted as Glycera tridactyla Schmarda, 1861	near_1
Phoronis mülleri	Phoronis muelleri Selys-Lonchamps, 1903	phonetic
Tabanus veralli	(none)	
Phoronis sp	Phoronis Wright, 1856	exact
Tabanus cf veralli	(none)	
Amphithoe sp.	Amphithoe Leach, 1814	phonetic
Mangelia costata	Mangelia costata (Pennant, 1777)	exact
Mangela costatus	Mangelia costata (Pennant, 1777)	near_3
Chaetoceros convolutus trisetosa	Chaetoceros convolutus f. trisetosa Brunel, 1962	exact
Chaetoceros convolutus f. trisetosa	Chaetoceros convolutus f. trisetosa Brunel, 1962	exact
Goniaulax tamarensis	(none)	

Excel sheet (XLS) Excel sheet (XLSX) Text file SGML

< Back

Download



WoRMS users

SYSTEMS, PROJECTS & PEOPLE USING APHIA AS A QUALITY CONTROL TOOL

OBIS
EMODnet Biology
LifeWatch
GBIF
NODCs
Musea
...

Many institutes
organisations
Initiatives
projects
ind. researchers

Website

± 4k visitors per day
± 3M hits per month
> 2k citations of WoRMS and related registers through Google Scholar

SYSTEMS RECEIVING DATA FROM APHIA



CoL
EoL
OBIS
GBIF
SeaLifeBase

FADA
PESI
ITIS
BoLD
...

- As standard taxonomic reference for organizations and programmes
=> *110 organizations requested acces to monthly download, via user agreements*
- Quality control purposes
=> *through web services & taxon match tool*
- Extensive use of the different web services
=> *>75 institutions/data systems use web services or provide deep links*



Relationships – flows with other systems & projects



FishBase



SeaLifeBase



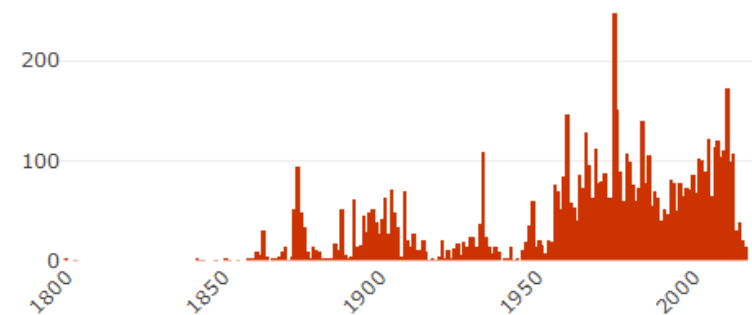
Current exchange:

- 61 GSD's
- = 151,635 extant species + > 9,000 fossil species
- = 10% of CoL species = from WoRMS/Aphia



Relationships – flows with other systems & projects

- **Ocean Biogeographic Information System (OBIS)**
 - WoRMS = taxonomic backbone for OBIS
 - Two ways of collaboration:
 - Provide type localities from WoRMS to OBIS
 - Clean up of non-matching OBIS names



WoRMS: related initiatives

- **Traits**

- Ecological information, e.g. body size, feeding methods, host-parasite relationship ...
- In collaboration with EMODnet Biology
- Several traits already documented:
 - Environment: marine – brackish – fresh – terrestrial
 - Benthic versus pelagic (*in progress*)
 - Species importance to society
 - Introduced, IUCN Red List, HABs, CITES, MSFD, OSPAR, FAO, ...*
 - Skeleton, containing calcareous elements
 - Body size (quantitative/qualitative) (*in progress*)
 - Feeding type (*in progress*)

- **Fossil information**

- Add and label fossil taxa
- Add stratigraphic time-ranges, following international standards



WoRMS: related initiatives

- **IRMNG – Interim Register of Marine & Non-Marine Genera**

- Hosted at VLIZ since end 2014
- Transferred to Aphia structure



- Advantages:

- Stronger link between IRMNG & WoRMS (cfr. taxonomic QC)
- Filling gaps in both systems & thereby avoiding duplication of effort
- WoRMS technology easily implemented onto IRMNG data
- Homonym-list (cfr. IRMNG ± 98% complete on genus-level)

- VLIZ will:

- Provide ongoing hosting of IRMNG data content, using Aphia infrastructure
- Support existing IRMNG web interface
- Continue the delivery of IRMNG data dumps (GBIF, EoL, OBIS, ALA ...)



WoRMS: priorities

Decided by WoRMS Steering Committee (June 2015)

1. Have at least 1 active editor per taxonomic group (cfr. Bacteria, Protozoa)
2. Mark (accepted) species as “checked by editor”
3. Document basionym (original name)
 - Forward-looking: make this information mandatory
 - Backward-looking: priority to make this complete
4. Complete missing authorships
5. Document original description of each (accepted) species
6. Complete the environment flags
 - Forward-looking: make this information mandatory (*implemented*)
 - Backward-looking: priority to make this complete (*98% complete for acc. species*)
7. Document higher classification according to:
 - Internationally accepted standards (editor input)
 - Management classification for CoL (Ruggiero *et al.* 2015), where there is no editor available
8. Document type localities
9. Document type species



Thank you!
Questions?

info@marinespecies.org

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