

polytraits



A database on biological traits of polychaetes

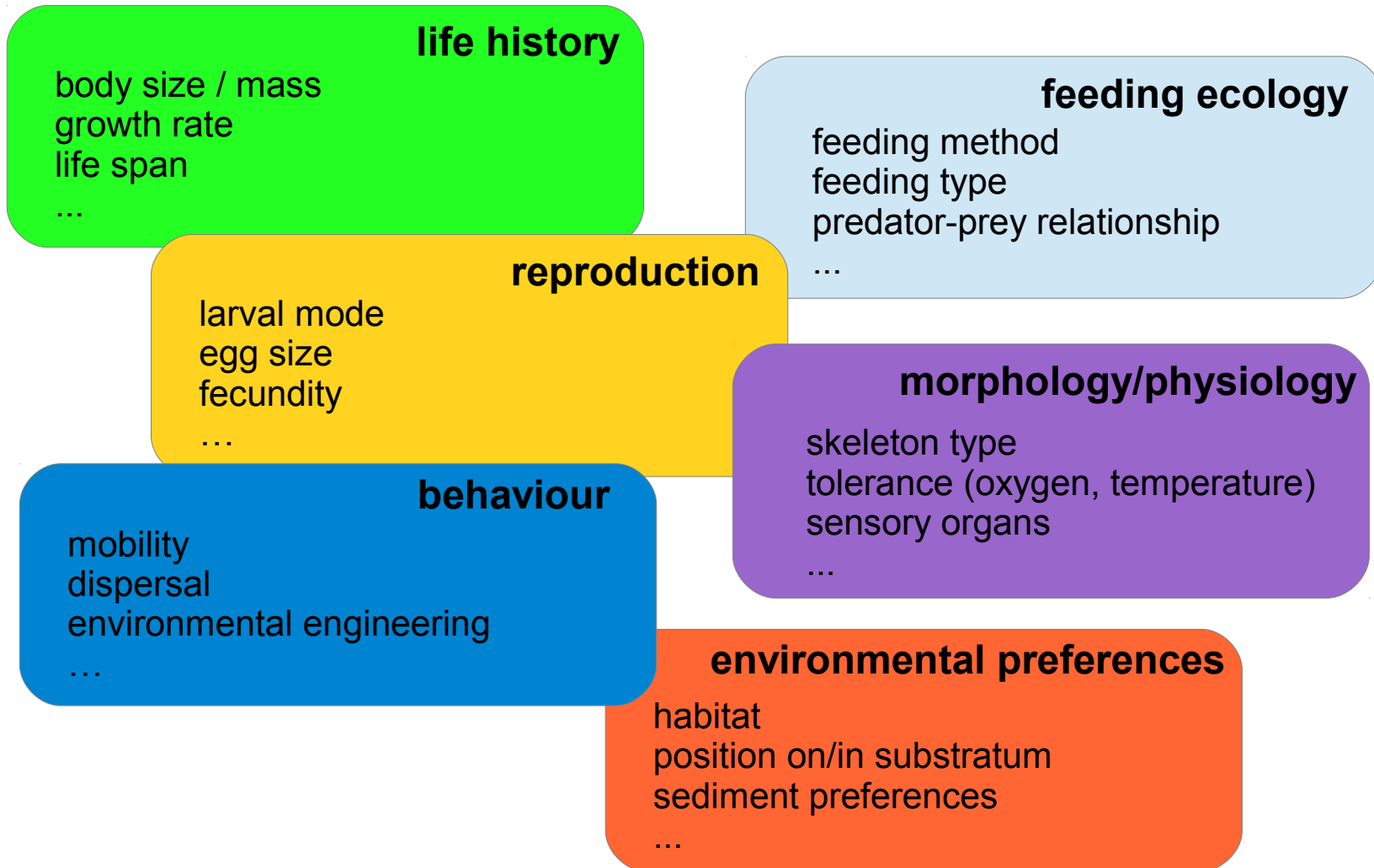
<http://polytraits.lifewatchgreece.eu>

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What are traits?

... measurable / observable properties of an organism / species



... categorical and / or continuous

... can be used to answer complex questions



Which marine species in the Mediterranean are larger than 1m?

Which species associated with seagrass meadows are carnivorous?



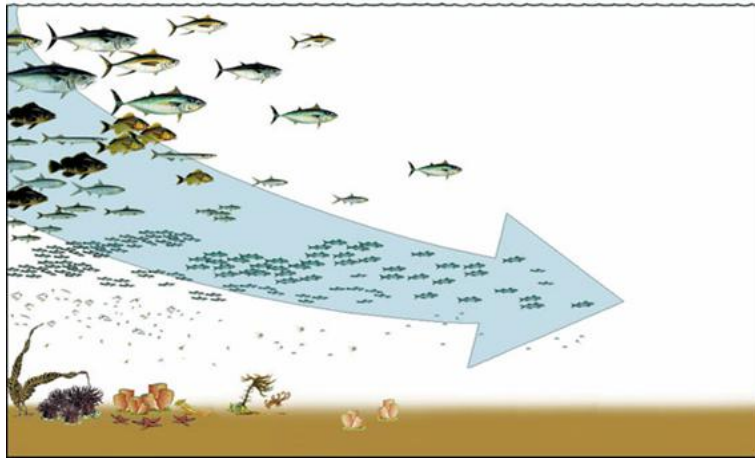
Is brood protection more common in small species or in large species?

When snorkelling in Crete I saw a red fish, ca. 10cm long, in a rocky cave. Which one could that be?

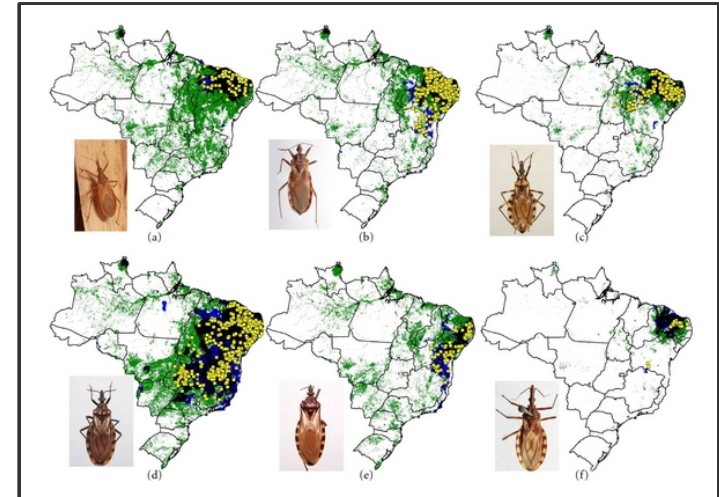


... can be linked to the organism's role in the ecosystem

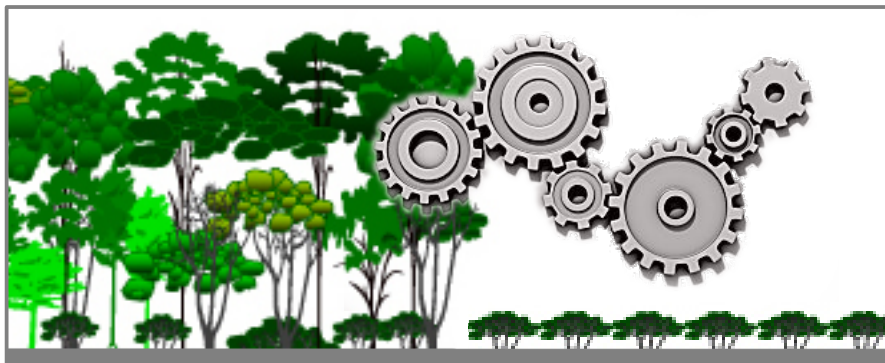
understand trophic relationships



predict species occurrences



understand the functional consequences of biodiversity loss



model future biodiversity in a changing world





<http://polytraits.lifewatchgreece.eu>

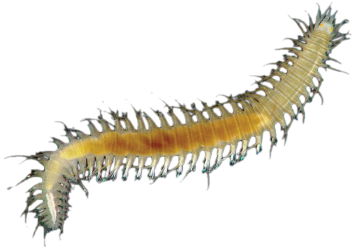
first started in-house in 2006

aim: collecting traits to perform Biological Traits Analysis

**initially: dataset with 102 polychaete species from
Mediterranean lagoons**

manual text mining

data collection: purpose-driven, not systematic



~ 1000 species-level taxa



950 literature sources



~ 20,000 records



semantically described terms



current aim: data mobilisation

structure of the data

<u>taxon</u>	<u>trait</u>	<u>modality</u>	<u>traitvalue</u>	<u>reference</u>	<u>text_excerpt</u>
<u>Hediste diversicolor</u>	Age at first reproduction	6 months - 1year	present	<u>Dierschke, V., Kube, J., Rippe, H. (1999) Fe</u>	p. 73: "From our observations it must be conclu
<u>Hediste diversicolor</u>	Body size (<u>max</u>)	>100 mm	present	<u>Hartmann-Schröder, G. (1996) Annelida, Bo</u>	p. 202:"Bis 120 <u>Segmente</u> = bis zu 200mm Läng
<u>Hediste diversicolor</u>	Depth <u>zonation</u> (<u>benthos</u>)	littoral zone	present	<u>Hartmann-Schröder, G. (1996) Annelida, Bo</u>	p. 203:"Ihre <u>vertikale Verbreitung</u> reicht vom Su
<u>Hediste diversicolor</u>	Depth <u>zonation</u> (<u>benthos</u>)	<u>sublittoral</u> zone	present	<u>Hartmann-Schröder, G. (1996) Annelida, Bo</u>	p. 203:"Ihre <u>vertikale Verbreitung</u> reicht vom Su
<u>Hediste diversicolor</u>	Developmental mechanism	viviparous	absent	BIOTIC - Biological Traits Information Catalo	http://www.marlin.ac.uk/biotic/browse.php?sp=

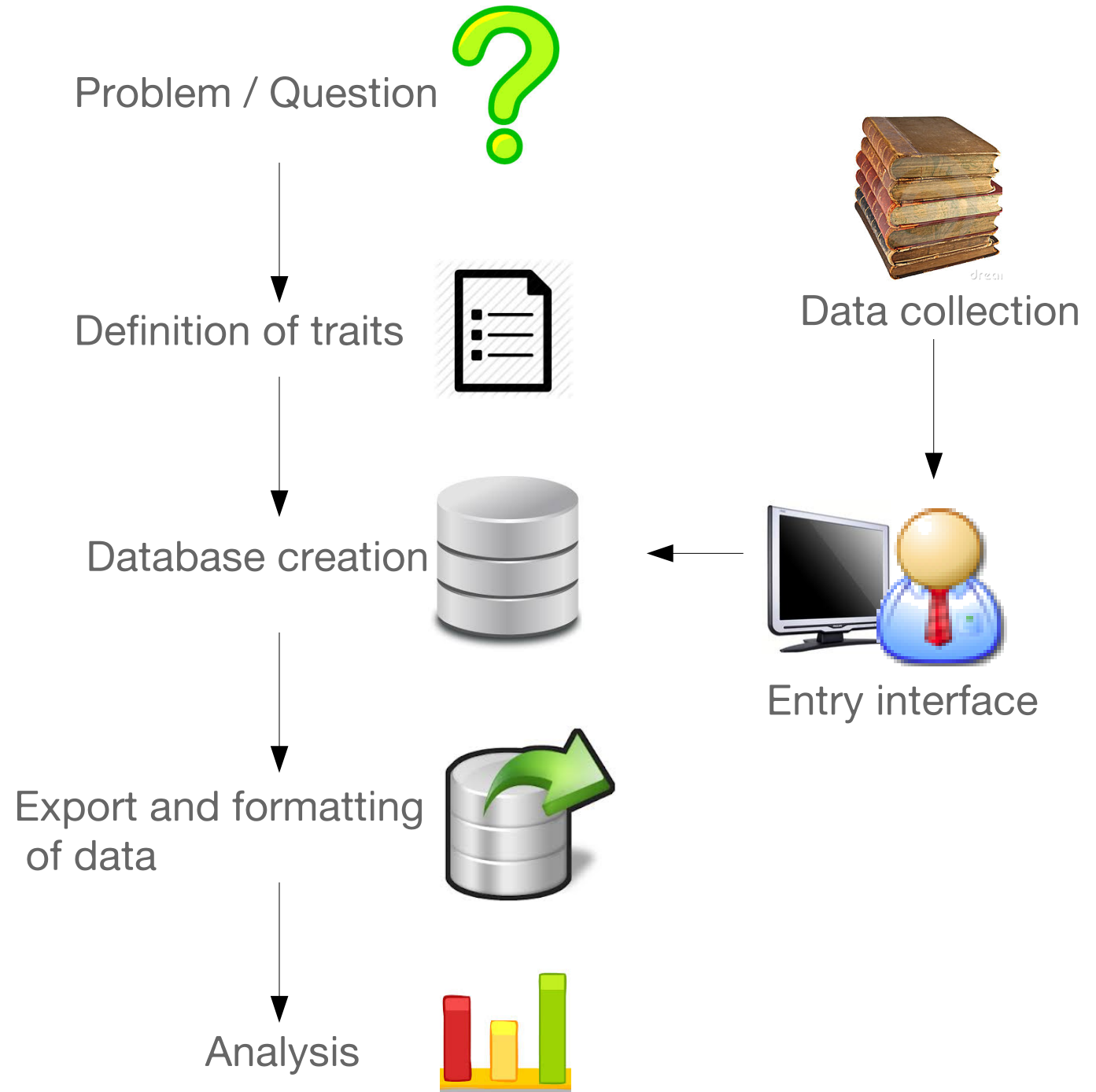
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user name & date of data entry

workflow



workflow

Problem / Question



Definition of traits



Data dissemination



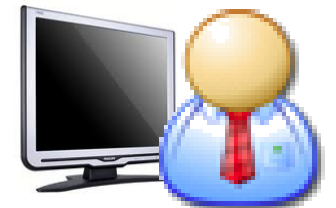
Export and formatting of data



Analysis



Data collection



Entry interface

workflow

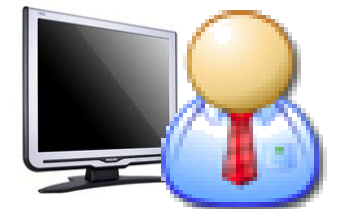
Problem / Question



Definition of traits



Data collection



Entry interface

Data dissemination

 Scratchpads
biodiversity online

 eOL
Encyclopedia of Life

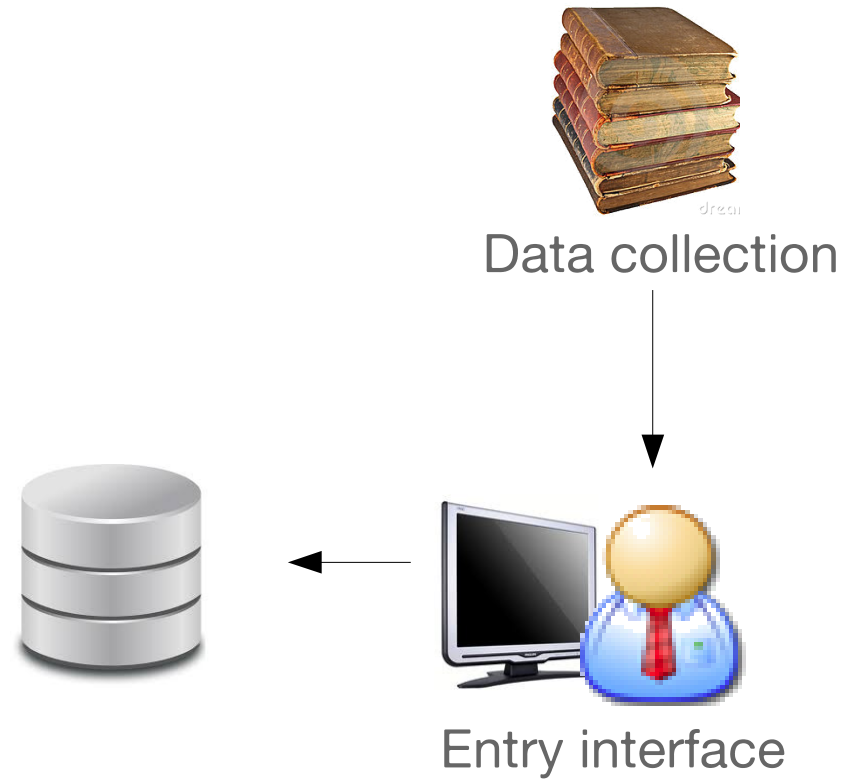
 polytraits

Export and formatting
of data

Analysis



getting data in ...



getting data in ...

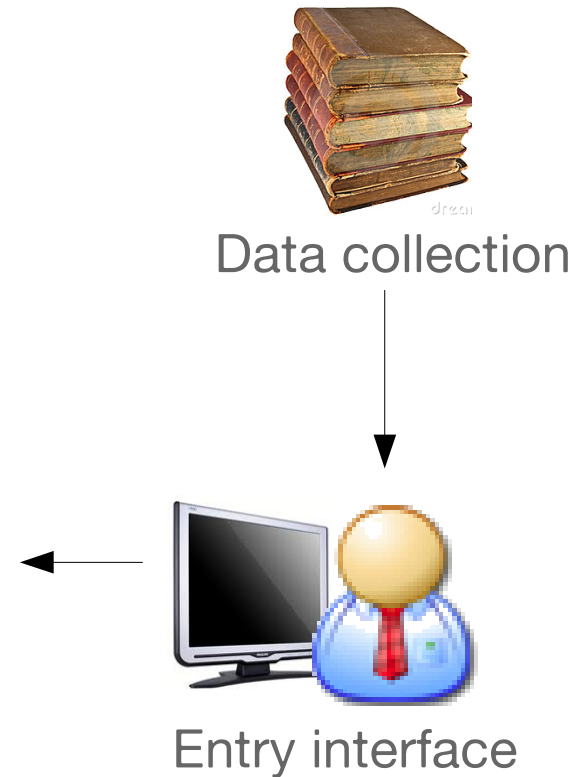
taxonomic classification
(stores Aphia IDs)

bibliography management

point-and-click data entry (→ categorical values, yes/ no)

recording of original text passage

various options to browse and export data



- Factors triggering reproduction
- Fecundity
- Fertilization type
- Mode of reproduction
- Pattern of oogenesis
- Population sex ratio
- Reproduction strategy of the individual
- Reproduction temperature
- Resorption of eggs
- Sexual metamorphosis
- show original values

		Hartmann-Schröder, G. (1996) Annelida, Borstenwürmer, Polychaeta. Gustav Fischer Verlag, Jena. 6 [added by Sarah Faulwetter on 2012-06-12 10:59:02]
yes	<input checked="" type="checkbox"/> present	Rouabah, A., Scaps, P. (2003) Life Cycle and Population Dynamics of the Polychaete Perinereis Cultrifera from the Algerian Mediterranean Coast. <i>Marine Ecology</i> , 24:85-99. [added by Sarah Faulwetter on 2013-01-11 16:36:33]
	<input type="checkbox"/> absent	Vieitez, J., Alos, C., Parapar, J., Besteiro, C., Moreira, J., Núñez, J., Laborda, A., San Martín, G. (2004) Fauna Iberica, Vol. 25. Annelida Polychaeta I. Museo Nacional de Ciencias Naturales, Consejo Superior de Investigaciones Cientificas, Madrid. 1-530pp. [added by Sarah Faulwetter on 2012-09-28 17:26:15]
	<input type="checkbox"/> unknown	
no	<input checked="" type="checkbox"/> present	Rouabah, A., Scaps, P. (2003) Life Cycle and Population Dynamics of the Polychaete Perinereis Cultrifera from the Algerian Mediterranean Coast. <i>Marine Ecology</i> , 24:85-99. [added by Sarah Faulwetter on 2013-01-11 16:37:03]
	<input checked="" type="checkbox"/> absent	Vieitez, J., Alos, C., Parapar, J., Besteiro, C., Moreira, J., Núñez, J., Laborda, A., San Martín, G. (2004) Fauna Iberica, Vol. 25. Annelida Polychaeta I. Museo Nacional de Ciencias Naturales, Consejo Superior de Investigaciones Cientificas, Madrid. 1-530pp. [added by Sarah Faulwetter on 2012-09-28 17:26:10]
	<input type="checkbox"/> unknown	

Original Information (Raw Data) - Mozilla Firefox

polytraits.lifewatchgreece.eu/data_entry_inter

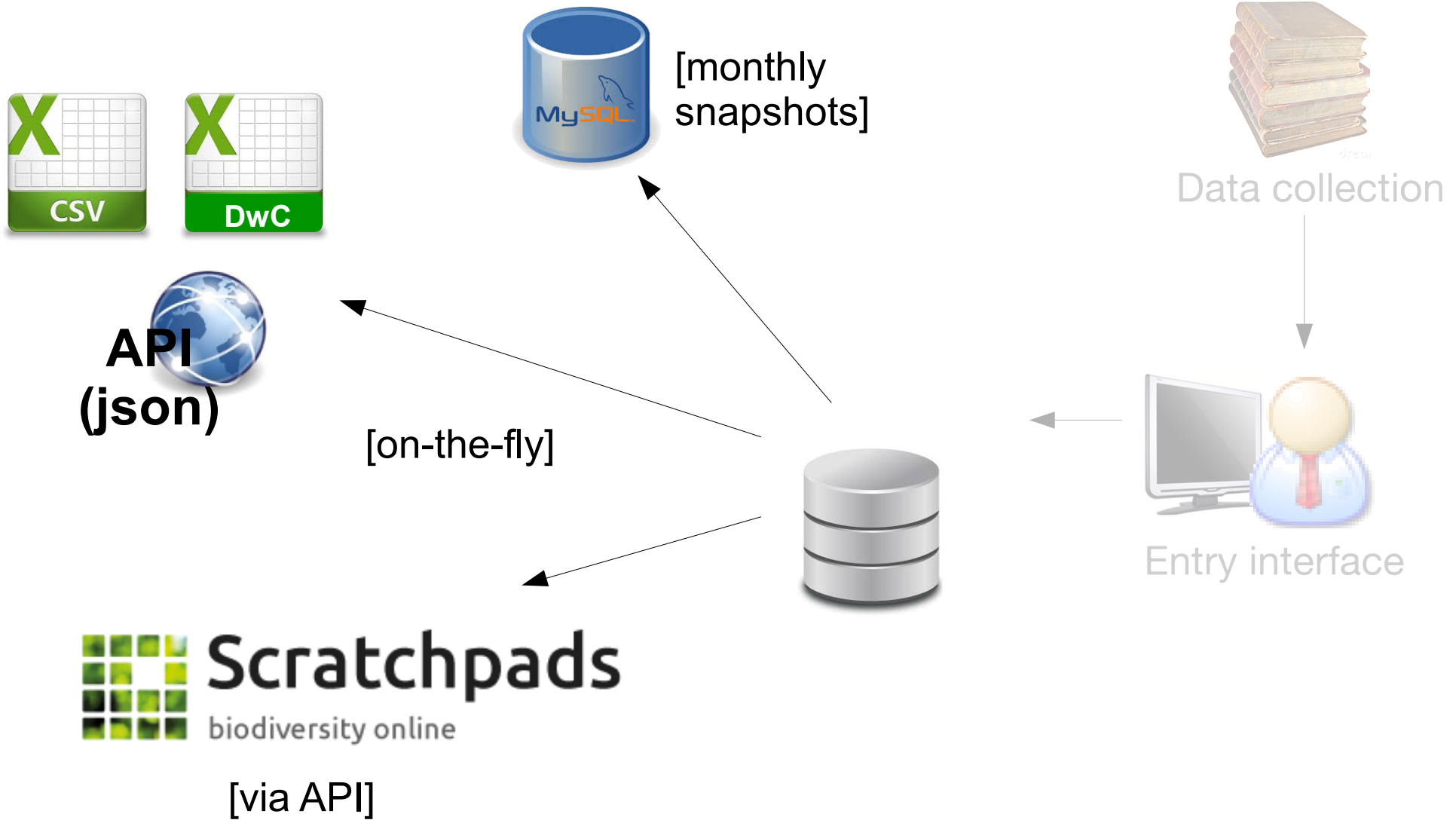
Rouabah, A., Scaps, P. (2003) Life Cycle and Population Dynamics of the Polychaete Perinereis Cultrifera from the Algerian Mediterranean Coast. *Marine Ecology*, 24:85-99.

p. 85/86: "Reproduction in the English Channel and the Atlantic is of an epitokous type (Herpin, 1925; Durchon, 1951; Cazaux, 1965; Scaps et al., 1992; Scaps et al., 2000) as is the case in the Mediterranean Sea at Salammborn near Tunis and in the Venice Lagoon in Italy (Ansaloni et al., 1986; Zghal & Ben Amor, 1989). In the Mediterranean (Bay of Algiers), however, specimens assigned to P. cultrifera have been described as being atokous (Marcel, 1962)."

added / modified by Sarah Faulwetter on 2013-01-11 16:36:58

[Edit/Add](#)

... getting data out ...





Overview of export options



The data in the polytraits database can be accessed in five different ways:

1. Browsing the data on a taxon-by-taxon basis through the [Polychaete Database](#) ("haeetes" - tab "Traits")
2. Accessing the data through the [Encyclopedia of Life](#) (*note: currently only available for* [EOL's TraitBank](#))
3. Downloading the data as a [comma separated value \(*.csv\)](#) file. The data can be accessed by submitting a list of taxa for which trait information should be retrieved or by limiting the output to specific traits. As an output format, either a polytraits-specific format or [DarwinCore](#) can be chosen. A description of the returned fields for both formats is provided below.
4. Downloading the [full database as a MySQL script](#), automatically created at monthly intervals. A full documentation of all database tables and fields, including an Entity Relationship Diagram is also provided. The script can be imported into any local MySQL database and will automatically create all relevant tables and their data.
5. Accessing the data programmatically via a [web service](#) (REST API, application programming interface). This approach addresses a more technically oriented audience.

Data downloaded as *.csv files or accessed through the API always reflect the latest changes in the database, the MySQL export is provided as monthly snapshots. The data available through EOL are a one-time export and reflect the database contents as of November 6th, 2013.

Syllidae

Grube, 1850


[Overview](#)
[Descriptions](#)
[Media](#)
[Literature](#)
[Maps](#)
[Specimens](#)
[Traits](#)

BIOLOGICAL TRAITS

These data can be downloaded in various formats from the [polytraits database](#)

Trait	Modality	Value	Verified
▼ Age at first reproduction	≤ 2 months	yes	
<p>Value added by Sarah Faulwetter on 2013-02-21 11:52:28 Reference: Mchugh, D., Fong, P.P. (2002) Do life history traits account for diversity of polychaete annelids?. <i>Invertebrate Biology</i>, 121:325-338. Original data: p. 331, Appendix 1 "Data on 5 life history traits for 32 polychaete Families": Syllidae- Age at first reproduction (years): 0.6 +/- 0.5 Original data added by Sarah Faulwetter on 2013-02-21 11:52:32</p>			
▶ Age at first reproduction	2 - 6 months	yes	
▶ Body size (max)	0.2mm - 0.25 cm (200µm - 2.5 mm)	no	
▶ Body size (max)	0.25cm -1 cm (2.5mm -10 mm)	no	
▶ Body size (max)	1cm-2cm (10mm-20mm)	no	
▶ Body size (max)	2cm-5cm (20mm-50mm)	no	

Darwin Core

(... and its problems)

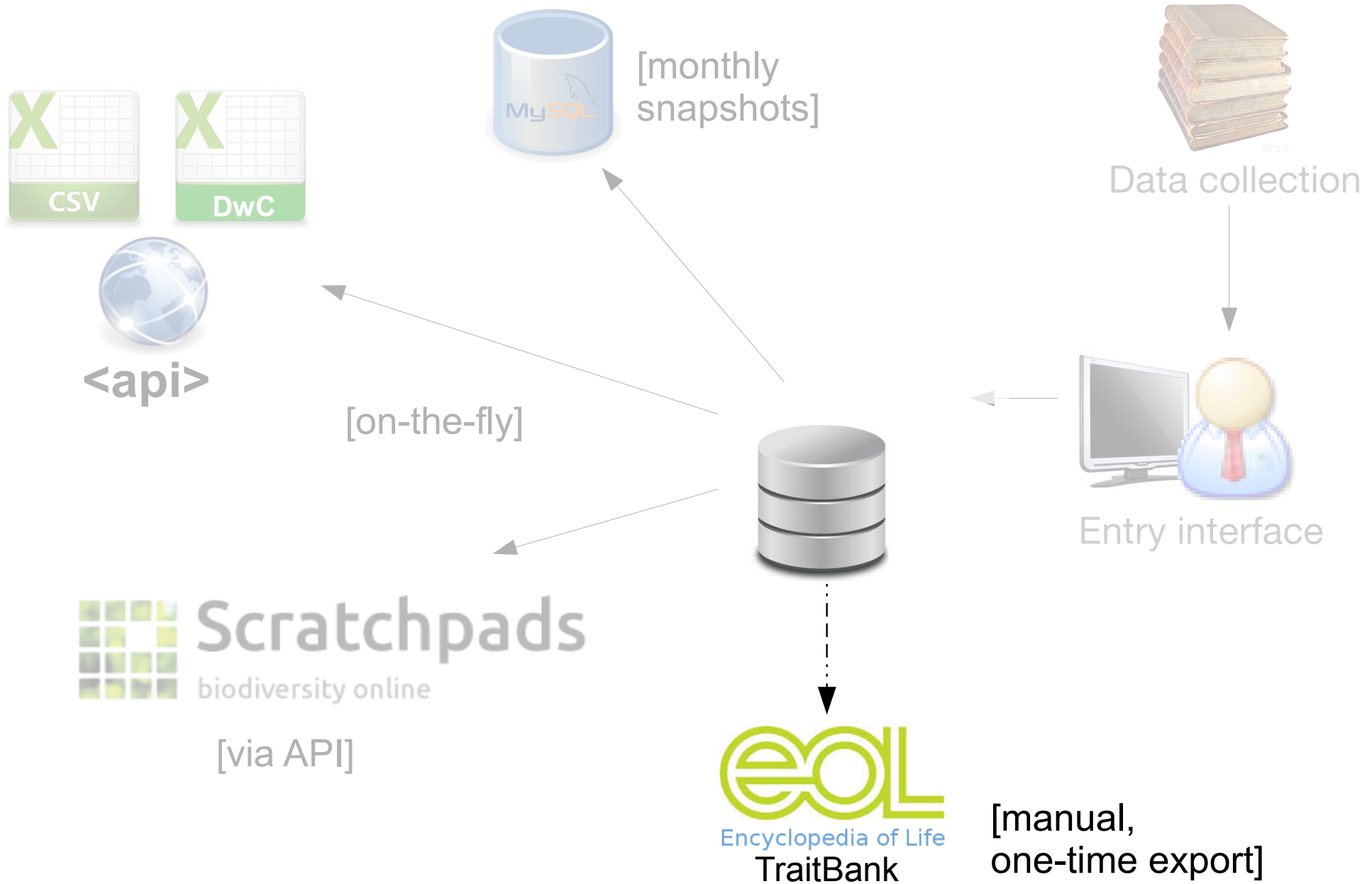


scientificName	= Taxon
measurementOrFact	= Trait
measurementValue	= Modality
dcterms:bibliographicCitation	= Reference
measurementRemarks	= Text excerpt
measurementDeterminedBy	= Person who last modified entry
measurementDeterminedDate	= Date of last modification

scientificName	= Taxon
measurementOrFact	= Trait
measurementValue	= Modality
dcterms:bibliographicCitation	= Reference
measurementRemarks	= Text excerpt
measurementDeterminedBy	= Person who last modified entry
measurementDeterminedDate	= Date of last modification

- **no information on the absence of a modality in a taxon**
- **no information on who entered reference and who entered text excerpt**
- **“misuse” of fields**
- **Some fields missing (e.g. DOI)**

... integrating data ...



Alitta succinea

Common Clamworm [learn more about names for this taxon](#)

- Overview
- Detail
- Data**
- 21 Media
- 3 Maps
- Names
- Community
- Resources
- Literature
- Updates

- All
- Distribution
- Physical Description
- Ecology**
- Life History and Behavior
- Names and Taxonomy
- Other
- Classifications

[TraitBank](#) assembles data records from many providers. Select a row for more details about the record, or [search within *Alitta succinea*](#).

Ecology

Habitat		
	▶ bay	Environments - EOL project
	▶ biogenic reef	polytraits
	▶ biogenic reef	polytraits
	▶ biogenic reef	polytraits
	▶ coastal water	Environments - EOL project

Habitat type

Definition

The place in which an organism lives. It is defined for the marine environment according to geographical location, physiographic features and the physical and chemical environment (including salinity, wave exposure, strength of tidal streams, geology, biological zone, substratum, 'features' (e.g. crevices, overhangs, rockpools) and 'modifiers' (e.g. sand-scour, wave-surge, substratum mobility) [1292].

Identifier

<http://eol.org/schema/terms/Habitat>

Related terms

Environment; Habitat type of settlement/ early development

Additional explanations

The modalities of this trait might be expanded in the future and/or merged with the trait "Physiographic feature".

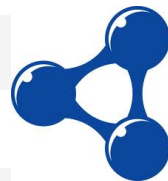
Modalities

▶ algae

▶ rockpools

▶ salt marsh

▾ seagrass



Semantically described traits (mapped to ontologies)

Definition

Habitat associated with seagrass meadows communities. Seagrasses are flowering plants that are adapted to living fully submerged and rooted in estuarine and marine environments [1292].

Identifier

http://purl.obolibrary.org/obo/ENVO_01000059

Related terms

Angiospermophyta; Posidoniaceae; Zosteraceae; Hydrocharitaceae, Cymodoceaceae

Additional explanations

▶ strandline

▶ under boulders

http://purl.obolibrary.org/obo/ENVO_01000059

many terms not covered by existing ontologies

definitions not always precise

broken links / URIs

**terms borrowed from a number of different ontologies –
their relationships are lost**

many terms not covered by existing ontologies

definitions not always precise

broken links / URIs

terms borrowed from a number of different ontologies –
their relationships are lost



**many terms self-defined, need
for a shared vocabulary with very
precise definitions!**

Improving data interoperability

(wish list)



Trait Ontology/Vocabulary → EmodNET / WoRMS (ongoing)

integration with Mendeley and/or CrossRef

**better integration of taxonomy with WoRMS
(but with option to add / change taxonomy)**

API: allow search by Aphia ID

Darwin Core extension for traits or other standard

Geo-coding of information (→ MarineRegions)