

**LifeWatch**

e-Science European Infrastructure  
for Biodiversity and Ecosystem Research



# Strumenti semantici per la ricerca applicata ai tratti funzionali: sviluppo e applicabilità dei Thesauri

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# Problem

Large amounts of relevant data...

....highly heterogeneous (format, content, semantics)



**Heterogeneity impedes:**

- **Data Discovery**
- **Data Integration**
- **Data Re-usability**

**What do we need?**

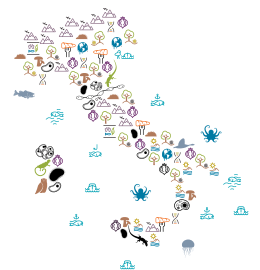
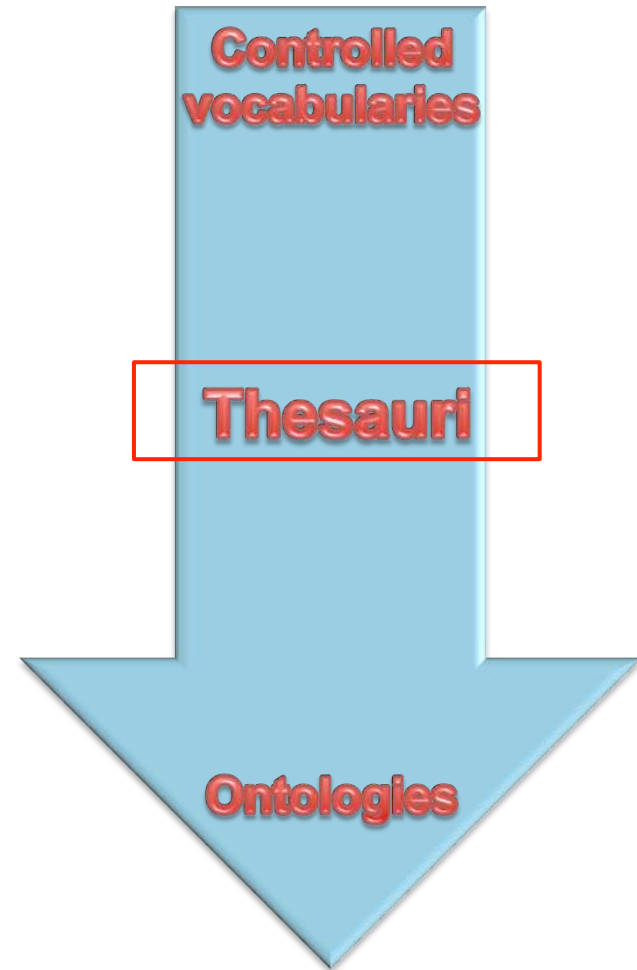
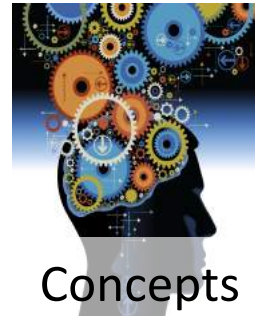
- **Harmonization**
- **Standardization**

**in order to share information and to support and facilitate the research in this field**



# Solution

How can we do it?






...a hierarchical controlled vocabulary, designed to define a set of key terms and to capture how they are associated with each other in a specific domain of knowledge



functional traits



# Thesaurus development: approach

TemaTres Editor   
Manage, Publish, Share, Re-use

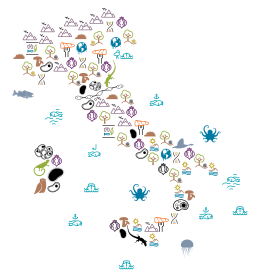
A web based tool, open-source, for the development and management of formal representations of knowledge.

Features:

- Flexible and user-friendly interface
- Sophisticated search capabilities
- Compliant to different standards (e.g. Mads, Skos, Vdex, XTM, Json)

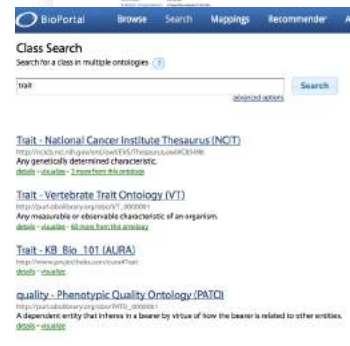
## SKOS

A common data model for sharing and linking knowledge organization systems via Web, using the Resource Description Framework (RDF/RDFS).



# Thesaurus development: 1. selection phase

Trait				
.	Fish Trait			
.	.	Functional Trait		
.	.	.	Morphological Trait	
.	.	.	.	Body Parts
.	.	.	.	Anal Fin Depth
.	.	.	.	Anal Fin Length
.	.	.	.	Caudal Fin Aspect Ratio
.	.	.	.	Caudal Fin Depth
.	.	.	.	Caudal Fin Length
.	.	.	.	Caudal Fin Surface
.	.	.	.	Dorsal Fin Depth
.	.	.	.	Dorsal Fin Length
.	.	.	.	Eye Diameter
.	.	.	.	Eye Position
.	.	.	.	Gut Length
.	.	.	.	Gut Length-Standard Length Ratio
.	.	.	.	Head Depth
.	.	.	.	Peduncle Caudal Depth
.	.	.	.	Peduncle Caudal Length
.	.	.	.	Pelvic Fin Length
.	.	.	.	Prenal Length
.	.	.	.	Predorsal Length
.	.	.	.	Snout Length
.	.	.	.	Body Shape
.	.	.	.	Anguilliform
.	.	.	.	Combination of Shapes
.	.	.	.	Compressiform



# Thesaurus development: 2. edition phase



Home | Menu | About... | Adv...

**LifeWatch Italia** Fish Traits The

- [-] Trait
  - [-] Fish Trait
    - [-] Functional Trait
      - [-] Morphological Trait
        - [-] Body Parts
        - [-] Body Shape
        - [-] Body Size
          - [-] Body Depth
          - [-] Body Length
            - Fork Length**
            - Standard Length
            - Total Length
          - [-] Body Weight
          - [-] Body Width

A B C D E F G H L M P S T W

## Fork Length

Home ▶ Trait ▶ Fish Trait ▶ Functional Trait ▶ Morphological Trait ▶ Body Size ▶ Body Length ▶ Fork Length

### Alternative label:

FL

2015-03-11 15:37:13

### Definition:

1: Length of a fish from the tip of the snout to the end of the middle caudal fin rays (Source: ATOL.0001658).

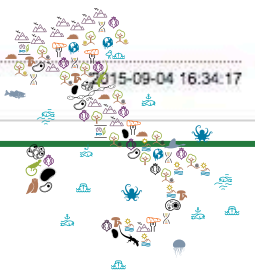
2: Length of a fish measured from the tip of the snout to the posterior end of the middle caudal rays. This measurement is used instead of standard length for fishes on which it is difficult to ascertain the end of the vertebral column, and instead of total length in fish with stiff, forked tail, e.g., tuna. Mostly used in fishery biology and not in systematics (Source: Fishbase).

2015-03-11 15:36:50

### Preferred unit:

cm

2015-09-04 16:34:17





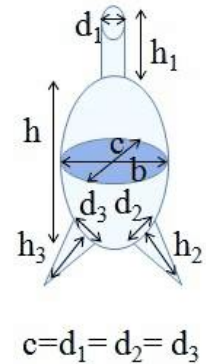


# Outputs

## Phytoplankton Traits Thesaurus

- ❑ More than 100 functional traits of phytoplankton
- ❑ Mostly morphological traits
- ❑ SKOS thesaurus: stable reference resource
- ❑ Available online by the end of May

<http://openskos.lifewatchitaly.eu/PhytoTraits/>



## Fish Traits Thesaurus

`<skos:ConceptScheme rdf:about="http://openskos.lifewatchitaly.eu/PhytoTraits/">`

- ❑ About 60 morphological traits of fishes
- ❑ SKOS thesaurus: stable reference resource
- ❑ Available online by the beginning of June

`<dc:language>en</dc:language>`

`<skos:Concept rdf:about="http://openskos.lifewatchitaly.eu/PhytoTraits/?tema=38/Shape" Shape />`

`<skos:prf:label xml:lang="en">Shape</skos:prf:label>`

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`<skos:narrower rdf:resource="http://openskos.lifewatchitaly.eu/PhytoTraits/?tema=48&/complex shape">`

`<skos:narrower rdf:resource="http://openskos.lifewatchitaly.eu/PhytoTraits/?tema=24&/simple shape">`

`<skos:relatedMatch>`

`<skos:Concept rdf:about="http://purl.obolibrary.org/obo/OBA_0000052"/>`



**Each term or concept is identified by an URI and can be brought into relation with anything else with an RDF triple.**

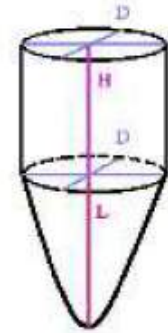


# In fieri...

## Zooplankton Traits Thesaurus

- Edition phase
- About 50 morphological traits
- SKOS thesaurus: stable reference resource

<http://openskos.lifewatchitaly.eu/zooplankton/>



## Macrozoobenthos Traits Thesaurus

- Selection phase
- About 30 morphological traits
- SKOS thesaurus: stable reference resource



## Priorità strategiche

- ❑ Implementare ed espandere i thesauri esistenti con altri tratti funzionali;
- ❑ Implementare e pubblicare thesauri su altri gruppi tassonomici o altri domini di conoscenza
- ❑ Integrazione dei vari thesauri LW

## Come contribuire?



Essendo parte del gruppo di lavoro o del panel di esperti e lavorare con noi per arrivare ad una versione stabile dei thesauri esistenti e di quelli futuri!

**Open Question:** Come vogliamo interagire con gli altri gruppi che lavorano su altri thesauri inerenti altri domini di conoscenza?

