

HypoLexicon: A Terminological Resource for Describing Hyponymic Information

JUAN CARLOS GIL-BERROZPE

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BACKGROUND



The LexiCon Research Group at the University of Granada has been doing research in Terminology, Lexical Semantics, Lexicography, Metaphor, Translation, and Specialized Knowledge Representation since 1994, within the context of the Lexical Grammar Model and Cognitive Linguistics. Over the last decade, the <u>members of LexiCon</u> have focused the design of specialized multilingual knowledge bases and ontologies, such as <u>Oncoterm</u> and <u>EcoLexicon</u>, which can be used as terminological and translation resources. These knowledge bases have been created using on a robust model of semantic analysis, based on the creation of lexical templates derived from corpus and dictionary analysis. The approach applied is known as <u>Frame-Based Terminology</u>. This application of this model has led to a wide range of <u>publications</u>, which show its usefulness in the analysis of specialized language and specialized knowledge representation. The members of LexiCon are also very active in knowledge transfer through research contracts with several institutions and companies. Results include the <u>UGRTerm</u> ongoing terminology resource at the University of Granada.

http://lexicon.ugr.es



EcoLexicon is a terminological resource developed by the LexiCon Research Group at the University of Granada.

EcoLexicon represents the conceptual structure of the specialized domain of the Environment in the form of a visual thesaurus. This thesaurus has been elaborated according to the theoretical premises of <u>Frame-Based Terminology</u>. Consequently, each concept appears in the context of a specialized frame that highlights its relation to other concepts, and makes explicit its designations in English, Spanish, German, French, Russian, and Greek. Through the convergence of conceptual, linguistic and graphical information, EcoLexicon meets the needs of different users groups (people interested in the Environment, students, translators, technical writers, etc.).

http://ecolexicon.ugr.es



CONCEPTUAL RELATIONS



Settings	×
MAP CONFIGURATION	^
 Relations to display: 	
Generic-specific relations ✓ type of	
Part-whole relations	
✓ part of	
✓ located at	
delimited by	
✓ takes place in	
✓ phase of	
Non-hierarchical relations	
✓ opposite of	
✓ result of	
✓ has function	
✓ atttribute of	
✓ affects	
✓ studies	
✓ represents	
✓ measures	
I effected by	
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l destroys	
✓ obtains	V

HYPONYMY



- Hyponymy (the generic-specific relation):
 - The semantic relation between a generic concept and a specific concept
 - High relevance in terminology work
 - The backbone of taxonomies and concept hierarchies

HYPONYMY IN TRADITIONAL RESOURCES

bacterium, *n*.

View as: Outline | Full entry

Thesaurus v

Categories »

Quotations: Show all | Hide all Keywords: On | Off

Text size: A A

 Pronunciation: [®] Brit.
 /bak'tɪəriəm/, U.S.
 /bæk'tɪriəm/

 Forms: Plural bacteria; rarely anglicized as bactery.

 Frequency (in current use): •••••••

 Etymology: modern Latin, < Greek βακτήριον, diminutive of βάκτρον stick, staff.</td>

1. Any of several types of microscopic or ultramicroscopic single-celled organisms very widely distributed in nature, not only in soil, water, and air, but also on or in many parts of the tissues of plants and animals, and forming one of the main biologically interdependent groups of organisms in virtue of the chemical changes which many of them bring about, e.g. all forms of decay and the building up of nitrogen compounds in the soil.

1849–52 Todd's Cycl. Anat. & Physiol. IV. I. 6/1 In Bacterium, the contraction is weaker.

- 1867 J. HOGG Microscope (ed. 6) II. i. 295 What part do the fungi, or bacteria, play in the production of..cancer?
- 1884 Internat. Health Exhib. Official Catal. 155/1 Imperishable Yeast..and Models of Yeast and Bacteries.
- 1908 Daily Chron. 6 Aug. 6/5 Dr. Stonehouse said it was a bacteria infection.
- 1911 J. A. THOMSON *Biol. Seasons* II. 161 Analogous, though not 'inter-regnal', is the intimate and most profitable partnership between Bacteria-like microbes and Leguminous plants, like Clover.
- 1956 Nature 11 Feb. 279/2 This trypanosomid, first isolated in bacteria-free culture by Noguchi and Tilden.
- 1964 M. HYNES *Med. Bacteriol.* (ed. 8) iii. 26 The foundation of modern surgery is asepsis—the creation and preservation of a bacterium-free environment.

(Hide quotations)

2. bacteria bed *n*. a contact bed (see CONTACT *n*. Compounds 2).

Thesaurus »

- 1913 E. H. BLAKE *Drainage & Sanitation* xi. 369 This was the origin of the contact method of working bacteria beds—a method adopted with the septic tank.
- 1936 E. H. BLAKE Drainage & Sanitation (ed. 5) xi. 428 Such treatment is carried out in what are often called Bacteria Beds. These may be on the intermittent principle, in which case they are called Contact Beds, or on the continuous flow principle, in which case they are called Percolating Filters or Trickling Filters; in either case the cause of purification is aerobic bacteria.

(Hide quotations)

OED Online

Bacteria (Eubacteria) A domain of life containing a diverse group of ubiquitous microorganisms all of which consist of only a single *cell that lacks a distinct nuclear membrane and has a *cell wall of a unique composition (see illustration). Bacteria constitute the prokaryotic organisms of the living world. However, their classification is a controversial issue. It is now recognized, on the basis of differences in ribosomal RNA structure and nucleotide sequences (*see* MOLECULAR SYSTEMATICS), that prokaryotes form two evolutionarily distinct domains: *Archaea (the archaea) and Bacteria. Defining characteristics of bacteria include the possession of cell walls containing peptidoglycan, and membrane lipids containing fatty acids in ester linkage to glycerol, whereas archaea lack peptidoglycan and have ether-linked lipids. However, in general parlance, the term 'bacteria' can still, erroneously, encompass both archaea and bacteria.

Bacteria can be characterized in a number of ways, for example by their reaction with ***Gram's stain**, their ***GC content**, or on the basis of their metabolic requirements (e.g. whether or not they require oxygen: *see* AEROBIC RESPIRATION; ANAEROBIC RESPIRATION) and shape. A bacterial cell may be spherical (*see* COCCUS), rodlike (*see* BACILLUS), spiral (*see* SPIRILLUM), comma-shaped (*see* VIBRIO), corkscrew-shaped (*see* SPIROCHAETE), or filamentous, resembling a fungal cell. The majority of bacteria range in size from 0.5 to 5 µm. Many are motile, bearing ***flagella**, possess an outer slimy ***capsule**, and produce resistant spores (*see* ENDOSPORE). In general bacteria reproduce only asexually, by simple division of cells, but a few groups undergo a form of sexual reproduction (*see* CONJUGATION) and ***lateral gene** transfer is common. Bacteria are largely responsible for decay and decomposition of organic matter, producing a cycling of such chemicals as carbon (*see* CARBON CYCLE), oxygen, nitrogen (*see* NITROGEN CYCLE), and sulphur (*see* SULPHUR CYCLE). A few bacteria obtain their food by means of ***photosynthesis**, including the ***Cyanobacteria**; some are saprotrophs; and others are parasites, causing disease. The symptoms of bacterial infections are produced by ***toxins**.

A Dictionary of Biology (Hine, 2019)

HYPONYMY IN TRADITIONAL RESOURCES

bacteria One of two prokaryotic (no nucleus) domains, the other being the ARCHAEA. Bacteria are microscopic, simple, single-cell organisms. Some bacteria are harmless and often beneficial, playing a major



Photomicrograph of *Streptococcus (Diplococcus) pneumoniae* bacteria, using Gram's stain technique. *Streptococcus pneumoniae* is one of the most common organisms causing respiratory infections such as pneumonia and sinusitis, as well as bacteremia, otitis media, meningitis, peritonitis, and arthritis. *(Courtesy of Centers for Disease Control and Prevention, 1979)* role in the cycling of nutrients in ecosystems via aerobic and anaerobic decomposition (saprophytic), while others are pathogenic, causing disease and even death. Some species form symbiotic relationships with other organisms, such as legumes, and help them survive in the environment by fixing atmospheric nitrogen. Many different species exist as single cells or colonies, and they fall into four shapes based on the shape of their rigid cell wall: coccal (spherical), bacillary (rod-shaped), spirochetal (spiral/helical or corkscrew), and vibro (comma-shaped). Bacteria are also classified on the basis of oxygen requirement (aerobic vs. anaerobic).

In the laboratory, bacteria are classified as grampositive (blue) or gram-negative (pink) following a laboratory procedure called a Gram's stain. Gram-negative bacteria, such as those that cause the plague, cholera, typhoid fever, and salmonella, for example, have two outer membranes, which make them more resistant to conventional treatment. They can also easily mutate and transfer these genetic changes to other strains, making them more resistant to antibiotics. Gram-positive bacteria, such as those that cause anthrax and listeriosis, are more rare and are treatable with penicillin but can cause severe damage by either releasing toxic chemicals (e.g., clostridium botulinum) or by penetrating deep into tissue (e.g., streptococci). Bacteria are often called germs.

bacteriochlorin (7,8,17,18-tetrahydroporphyrin) A reduced PORPHYRIN with two pairs of nonfused saturated

Encyclopedia of Biology (Rittner & McCabe, 2004)

HYPONYMY IN CONTEMPORARY RESOURCES

	★ 1685426				1
	microorganisr	n [SCIENCE, natural and applied sciences, life sciences, biology]			COM
	.‡ . en	bacterium	***		СОМ
		Term reference: Aparna Vidyasagar, 'What Are Bacteria?' (3.12.2019), LiveScien	ice		
		Definition: <i>prokaryote</i> in the domain <i>Bacteria</i> which is single-celled organism twisted, thread-like mass called the nucleoid, or in separate, circular pieces c relationships with plants and animals	n with a simple internal stru alled plasmids, which are p	cture lacking a nucleus and c present in most of its habitats	containing DNA which either floats freely in a and can live in symbiotic and parasitic
		Definition reference: COM-Terminology Coordination, based on: 1) Aparna Vidyasagar, ' <i>What Are Bacteria?</i> ' (3.12.2019), LiveScience 2) Wikipedia > Bacteria (3.12.2019)			
		Creation date: 24.9.2003 0:00	Legacy datab	base: Eurodicautom	
		Created by: (COM)	Legacy ID: C	LF-MED98-16271	
		Modification date: 8.4.2020 15:18			
TE		Modified by: (CdT)			
	es	bacteria	***		СОМ
		Term reference: Pardo Serrano, VIH y SIDA: Infecciones bacterianas en el SI derecha en un paciente portador de una vía central, in: Rev. Esp. de Cardiol., vo	IDA,in:VIH y SIDA,1999;Pir ⊳l.51,n⁰2,1998,Doyma	ntor & al.,Bacteriemia por Sta	phylococcus aureus y masa en la aurícula
		Term Note: las bacterias que sólo rara vez son patógenas para el huésped in importante de morbi-mortalidad;REF:Pardo Serrano,VIH y SIDA:Infecciones	nmunocompetente,y que in bacterianas en el SIDA,in:\	ncluso forman parte de la flora /IH y SIDA,1999	a humana habitual,pueden ser causa
		Creation date: 24.9.2003 0:00	Legacy datab	base: Eurodicautom	
		Created by: (COM)	Legacy ID: C	LF-MED98-16271	
		Modification date: 8.4.2020 15:18			
		Modified by. (Cd1)			
	la	bacterium	****	à 🛛 🎍 🖉 🏜	СОМ

https://iate.europa.eu/

HYPONYMY IN CONTEMPORARY RESOURCES

Dinfluenza evaticella deno-associated viri lişea<mark>s</mark>êgye<u>g</u>e acut Concentration of AR DE ES FR KO PT RU ZH ectious agent Inhahernes baculovirus k virus virenienveloped virus host rang All subject fields Natural & Applied Sciences Biology lvegavir flavivir us replicon particle antigentie driftein phage therapy From То phage vector archaeal viru phage display Reset ... Omeiotic recombination - virion bost shutoff pr helper phage diatomaceous/earth nucleolus baeteriophage Opsychrophile Cryptobiosis prown algaethern dserotype mitotic spindle efilamentous alga necrotrop microbial inoculation Hulir namete archaeon prokaryote centrosome. xtremophile micro-organism etieerbeneteneoosi phosphorylation anima dati gutenic Liting body tropomyosin pedrotrophic otemediation svnoviolin true fungus bypoxic stress Cytôsol Sabrophyte cryptobiont procorrhizal fungus potentiator eukarvotic ho connexir dermatophyte steròid Workerenslation ro-orga Monascus woobaoteriu lantokinesitre Specific productivity onneyon ≤ánitation eurosteroid syncytium bacterial onesoangioblast おわりとの State The tic microorganism eukarvotic če osteogenic lineage Drokarvotic cell corrhiza sural cell adhe son molecule otobacillus fe ap jurotigherens junctig attouscular hermanhrodite bacterium -Caule cell adhesion protei thetic bacterium -osexing cell concentratio adhesion r Gramstaining uster ovary celi fusion Concertainese ectornvcorrhiz hermanhroditism ndomycorrhiza ignotaxis actino Stages estemness aerotaxis 😘 🖗 🕅 🔁 etachmeni lipoteichoic acid nitted progenitor phototaxis chemotaxis dosinetware electrotaxis Chemotactic gradient spindle assembly checkpoint stem cell expansion ell paste vancomvo Drotoplast eell therapy membrane selective permeability Chemotactic activity neoplastio tr early endosor tasma membra eytolysis Cate endosome terentiationerythroid cel lipid raft somátic gene therápy metastasize ribosome ribosomal RNA

WIPO Pearl

https://www.wipo.int/reference/en/wipopearl/

HYPONYMY IN CONTEMPORARY RESOURCES



http://ecolexicon.ugr.es

DESCRIPTION, CATEGORIZATION, AND REPRESENTATION



- Terminology
- Ontology
- Conceptual categories
- Hyponymy **subtypes**
- Hyponymic **contexts**

Hyponymy-based terminological resource: **HypoLexicon**

DESCRIPTION – CONCEPTUAL CATEGORIES



gravity dam

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CATEGORIZATION – HYPONYMY SUBTYPES



CATEGORIZATION – HYPONYMIC CONTEXTS

"In general there are two types of meristems: apical meristems and lateral meristems."

types of **HYPER**: **HYPO**

Enumeration contexts

"Plant hormones such as auxins, cytokinins, abscisic acid."

HYPER such as **HYPO**

Exemplification contexts

"Like several other angiosperms, including poplar, rice and tobacco."

HYPER including **HYPO**

Inclusion contexts

- No current resource available capable of including and representing the previous hyponymic information in an accessible way
- Solution: creation of a hyponymy-based terminological resource



HYPOLEXICON

INFORMATION EXTRACTION





(corpus filtering, concordances, word sketches...)

• Corpus analysis:

- Finding terms in large corpora
- Extracting syntactic and semantic information
- Identifying knowledge patterns that codify semantic relations between terms in knowledge-rich contexts
 - Semi-automatized procedures for extracting relevant knowledge-rich contexts and for extracting hyponymic information

https://www.sketchengine.eu/

INFORMATION EXTRACTION



INFORMATION EXTRACTION

Segment of the **hypernym** process (GEO subcorpus)

	Term	Focus	Reference	Keyness Score
1	earthquake	6,292	734,916	12.3
2	sediment	4,698	346,627	10.2
3	soil	6,659	2,469,621	9.8
4	wave	5,901	2,975,621	8.1
5	earth	7,226	5,210,790	7.6
6	surface	7,220	5,472,604	7.4
7	rock	6,424	5,011,777	6.9
8	water	14,184	17,935,266	6.2
9	ecosystem	3,034	937,880	6.2
10	velocity	2,776	591,949	6.1

BIO: BACTERIUM, REEF, CELL **CHEM:** SLUDGE, NITROGEN, MAIZE **CIV:** WASTEWATER, BREAKWATER, POLLUTANT **GEO:** EARTHQUAKE, SEDIMENT, SOIL

Segment of the **hyponym** process (**SEDIMENT** hyponyms)

SEDIMENT hyponyms (is the generic of WS)						
	[total frequency = 4,698]					
	TERM	FRE	QUENCY	SCORE		
1	1 sand			10.4		
2	silt		10	10.5		
3	clay		8	9.8		
4	gravel		5	9.3		
SEDIMENT hyponyms /S, modifier WS & MWT CQL) FOUN						

[total	frequency	= 4,698]
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(MW]

FOUND WITH	
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	TERM	FREQUENCY	SCORE	MWT WS	MODIFIER WS	MWT CQL
1	cohesive sediment	196	10.8	Х	Х	Х
2	suspended sediment	100	9.9	Х		Х
3	stream sediment	68	9.3	Х	Х	Х
4	lake sediment	53	9.0	Х	Х	Х
5	marine sediment	50	8.9	Х	Х	Х
6	bottom sediment	36	8.4	Х	Х	Х
7	coastal sediment	35	8.4	Х	Х	Х
8	fine sediment	33	8.3	Х	Х	Х
9	coarse sediment	23	8.7		Х	Х

TEMPLATE DESIGN

- Essential elements to be included in the terminological entries of HypoLexicon:
 - 1. Parent concepts (i.e., hypernyms)
 - 2. Child concepts (i.e., hyponyms and cohyponyms)
 - 3. Terminological definitions (based on EcoLexicon + corpus analysis)
 - 4. Conceptual categories (based on EcoLexicon)
 - 5. Hyponymy subtypes (based on EcoLexicon)
 - 6. Hyponymic contexts (based on corpus analysis)

TEMPLATE DESIGN

Example of a terminological definition building (concept: ATOLL)

	ATOLL
Original definition	Ring-shaped reef composed largely of coral, mainly found in the tropical
(EcoLexicon)	waters of the <u>Pacific Ocean</u> .
	An atoll is a ring of reef, and often islands or sand cays, surrounding a
Commission	central lagoon. The vast majority of atolls occur in the Indo-West Pacific
Corpus information	region, that is, the tropical Indian and western Pacific oceans. Atolls are
	rare in the Caribbean and the rest of the tropical Atlantic Ocean.
Corpus information	Atolls are <u>rings of reef</u> , with <u>steep outer slopes</u> , that <u>enclose a shallow</u>
Corpus information	lagoon.
	Darwin reasoned that atolls are <u>formed by reef growth</u> on a subsiding
Commission	island. The atoll gets its start when a deep-sea volcano erupts to build an
Corpus information	island or seamount. Corals soon colonize the shores of the new island,
	and a fringing reef develops.

Einal definition	Ring-shaped coral reef with steep outer slopes that encloses a shallow
rmai deimition	central lagoon and that is typically found in the Pacific Ocean.

Example of a **hyponymy subtype** identification (hierarchy: **REEF**)

CONCEPT	HYPONYMY SUBTYPE
reef	
Ridge or mound-like structure made of rock or other sedimentary	
material lying just below the surface of the sea and found in the	
tidal zone along a coastline.	
	Composition-based hyponymy (first level)
hisham	(IIISt level)
Poof made of codentary organisms such as marine invertebrates	
(cosale, achingdorms, gastropads, mallusks, atc.) and analosed	
(corais, echinodernis, gastropods, monusks, etc.) and enclosed	
or surrounded by rock of different origin.	
Coral reel	
Keel made of coral consolidated into limestone and that is	
generally found below the ocean surface in shallow warm	
tropical waters.	77 - 1 / 1 - 11
	Height-based hyponymy
	(second level)
uplifted reef	
Coral reet <u>that is above water level</u> .	
	Location-based hyponymy
	(second level)
barrier reef	
Coral reef <u>roughly parallel to a shore and separated from it</u>	
by a lagoon or other body of water that is too deep for coral	
to proliferate.	
coastal reef	
Coral reef occurring near and parallel to a coastline.	
fringing reef	
Coral reef directly connected to the coast that can be	
separated from it by a barrier lagoon or a canal.	
outer reef	
Coral reef that is located on the point where the coral system	
meets the ocean.	





- Open-source web-based platform for designing and publishing dictionaries
- Entries are written in **XML** (fully customizable)
- Hierarchical structure for the representation of the hyponymic relations
- The entry structure permits the modification of individual concept entries

https://www.lexonomy.eu/

TEMPLATE DESIGN

<parentconcept> <hypernym> @conceptualcategory <definition_hyper> <childconcept-1> <hyponymysubtype_hypo1> <hyponym-1> @conceptualcategory <definition_hypo1> <hyponymiccontext_hypo1> <childconcept-2> <hyponymysubtype_hypo2> <hyponym-2> @conceptualcategory <definition_hypo2> <hyponymiccontext_hypo2> <childconcept-3> <hyponymysubtype_hypo3> <hyponym-3> @conceptualcategory <definition_hypo3> <hyponymiccontext_hypo3> (...)

FINAL RESULT

(LEXONOMY)

anonymous user 👻 🗚

DICTIONARIES > HYPOLEXICON – A HYPONYMY-BASED TERMINOLOGICAL RESOURCE

HYPOLEXICON – A HYPONYMY-BASED TERMINOLOGICAL RESOURCE

DESCRIPTION

HypoLexicon is a stand-alone module for EcoLexicon focused on representing hyponymic nuances of environmental concepts. It includes definitional, relational, ontological and contextual information about specialized hypernyms and hyponyms.

SEARCH

search 🗙		starts like this 🗸
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RANDOM ENTRIES

* LIST OF CONCEPTUAL CATEGORIES	* LIST OF HYPONYMY SUBTYPES	bacterium	breakwater	cell
earthquake	maize	nitrogen	pollutant	reef
sediment	sludge	soil	wastewater	

cc-by-4.0

MUNI SKETCH

Version: 2.54

https://www.lexonomy.eu/hypolexicon/

× starts like this

- 1 * LIST OF CONCEPTUAL CATEGORIES
- 2. * LIST OF HYPONYMY SUBTYPES
- 3. bacterium
- 4 breakwater
- 5. cell
- 6. earthquake
- 7. maize
 - ^{8.} nitrogen
 - 9. pollutant
 - 10. reef
 - 11. sediment
 - 12. sludge
 - 13. soil
 - 14. wastewater

3 4 soil E-8.4.2.3: Soil | E-12.2: Layer

Top layer of the Earth's surface, consisting in weathered, unconsolidated material, dead and living organic matter, air space, and the soil solution on top of bed rock, which is capable of supporting plant growth.

6

SOIL, till, and other near-surface materials make up a relatively thin (<1.5-m thick) layer that overlies bedrock.

ABILITY-BASED HYPONYMY

fertile soil E-8.4.2.3: Soil

rich soil

Soil capable of sustaining agricultural plant growth, providing plant habitat and resulting in sustained and consistent yields of high quality.

COMPOSITION-BASED HYPONYMY

loam E-8.4.2.3: Soil

Fertile soil that contains a roughly equal mixture of clay, sand and silt, and which is good for growing most crops.

FUNCTION-BASED HYPONYMY

agricultural soil E-8.4.2.3: Soil

Fertile soil which is used to produce high quality plants for human use, providing the populations with food.

EFFECT-BASED HYPONYMY

expansive soil E-8.4.2.3: Soil

Soil that, upon wetting and drying, alternately expands and contracts, causing problems for foundations of buildings and other structures.

FUNCTION-BASED HYPONYMY

backfill soil E-8.4.2.3: Soil

Soil used to refill an excavated hole or trench, composed of a mixture of soil, sand, gravel, and even commercial products.

HEIGHT-BASED HYPONYMY

shallow soil E-8.4.2.3: Soil | E-12.2: Layer

Soil that is not deep (less than 50 cm depth of solum) and has little room for water storage.

surface soil E-8.4.2.3: Soil | E-12.2: Layer

Soil that extends 13 to 20 cm below the surface.

LOCATION-BASED HYPONYMY

bulk soil E-8.4.2.3: Soil | E-12.2: Layer

Soil that is located outside the rhizosphere and that is not penetrated by plant roots.

subsoil E-8.4.2.3: Soil | E-12.2: Layer

Soil that is located between the top soil and bedrock, which is usually less fertile and of poorer texture.

LOCATION-BASED HYPONYMY

continental sediment E-8.4.1: Deposit

Sediment deposited in a non-marine environment.

LOCATION-BASED HYPONYMY

alluvial sediment E-8.4.1: Deposit

alluvium

Continental sediment carried by rushing streams and deposited in a river bed, flood plain, or delta.

[...] geologic conditions can range from hard rock such as granite to soft, unconsolidated geologic formation such as ALLUVIAL SEDIMENTS.

LOCATION-BASED HYPONYMY

deposited sediment E-8.4.1: Deposit

bed sediment

Alluvial sediment made of inorganic particles below 2 mm in diameter that has been deposited on the bed of a river or stream.

fluvial sediment E-8.4.1: Deposit

Alluvial sediment that has been deposited by the water of a river.

ORIGIN-BASED HYPONYMY

stream sediment E-8.4.1: Deposit

Alluvial sediment derived from the erosion and transport of soil, rock debris and other materials within the catchment basin upstream of the sampling site.

starts like this

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* LIST OF CONCEPTUAL CATEGORIES

2. * LIST OF HYPONYMY SUBTYPES

 \times

- 3. bacterium
- 4. breakwater
- 5. cell
- 6. earthquake
- 7. maize
- 8 nitrogen
- 9. pollutant
- 10. reef
- 11. sediment
- 12. sludge
- 13. soil
- 14. wastewater

----A: Attribute A-1: Ability A-2: Direction A-3: Location A-4: Measurement A-4.1: Magnitude A-4.1.1: Level A-4.1.1.1: Mean A-5: Origin A-6: Physical attribute A-6.1: Composition A-6.2: Shape A-6.3: Size A-6.4: State

* LIST OF CONCEPTUAL CATEGORIES

This list of conceptual categories is based on the following publication:

Gil-Berrozpe, J.C., León-Araúz, P., & Faber, P. (2019). Ontological Knowledge Enhancement in EcoLexicon. In I. Kosem, T. Zingano Kuhn, M. Correia, J.P. Ferreria, M. Jansen, I. Pereira, J. Kallas, M. Jakubíček, S. Krek, & C. Tiberius (eds.), Proceedings of the eLex 2019 conference: Electronic lexicography in the 21st century, 177-197. Brno: Lexical Computing CZ, s.r.o. ISSN: 2533-5626.

starts like this

1. * LIST OF CONCEPTUAL CATEGORIES

2. * LIST OF HYPONYMY SUBTYPES

X

- 3. bacterium
- 4 breakwater
- 5. cell
- 6. earthquake
- 7. maize
- 8. nitrogen
- 9. pollutant
- 10. **reef**
- 11. sediment
- 12. sludge
- 13. soil
- 14. wastewater

* LIST OF HYPONYMY SUBTYPES

This list of hyponymy subtypes is based on the following publication:

Gil-Berrozpe, J. C., León-Araúz, P., & Faber, P. (2017). Specifying Hyponymy Subtypes and Knowledge Patterns: A Corpus-based Study. In I. Kosem, C. Tiberius, M. Jakubíček, J. Kallas, S. Krek, & V. Baisa (eds.), Proceedings of eLex 2017: 5th International Conference on Electronic Lexicography in the 21st Century, 63–92. Brno: Lexical Computing CZ s.r.o. ISSN: 2533-5626.

Ability-based hyponymy Activity-based hyponymy Agent-based hyponymy Amount-based hyponymy Color-based hyponymy Composition-based hyponymy Degree-based hyponymy Denomination-based hyponymy Density-based hyponymy Domain-based hyponymy Effect-based hyponymy Function-based hyponymy Hardness-based hyponymy Height-based hyponymy

FINAL RESULT

HYPOLEXICON – A HYPONYMY-BASED TERMINOLOGICAL RESOURCE

No. of full entries	- 12 (3 BIO, 3 CHEM, 3 CIV, 3 GEO)
No. of concepts	- 309
No. of terms	- 465
No. of terminological definitions	- 309
No. of conceptual categories	- 22
No. of hyponymy subtypes	- 19
No. of hyponymy levels	- 6
No. of hyponymic contexts	- 107

CONCLUSIONS

- The hyponymy-based terminological entries are a successful approach to the description, categorization, and representation of hyponymy because of their hierarchical structure and graphical classification of information based on definitional and corpus analysis.
- The visualization of hyponymic information in a terminological resource permits the identification of dynamic phenomena regarding generic-specific relations (e.g., hyponymic nuances in the verticality and horizontality of the conceptual hierarchies, different dimensions or microsenses of co-hyponyms, changes in characteristics of concepts through the addition of conceptual categories at more specific hyponymy levels, etc.).
- HypoLexicon, the hyponymy-based terminological resource, has an excellent structure and interface to showcase all hyponymic information.

FUTURE WORK

- HypoLexicon can continue to grow and be nourished with more content by creating additional terminological entries with all kinds of hyponymic information extracted from corpus techniques (these entries could belong to the same environmental subdomains or to new ones so as to extend the range of conceptual categories and hyponymy subtypes).
- The ideal line of work would be to seek the total integration of HypoLexicon in EcoLexicon. In this way, it would cease to be a stand-alone module or a byproduct, and would become an integral part of the original resource on which it is based.

