

Visualizing Biodiversity Information using Wikidata and Scholia

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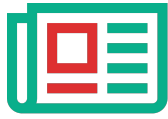


IGB

Leibniz Institute of Freshwater Ecology
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WIKIDATA



SCHOLIA

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Biodiversity
Information
Standards

T D W G

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BULGARIA

■ ■ ■ Structure of the talk

- ◆ Introduction to Wikidata
 - ◆ Introduction to Scholia
 - ◆ Visualizations
 - ◆ Outlook
-
- ◆ Throughout the talk or thereafter, feel free to explore <https://scholia.toolforge.org/> by yourself



Introduction to Wikidata

Template:Taxonomy properties

211 revisions since 2015-02-01 (+13 days), 31 editors, 18 pageviews (30 days), created by: Ivan A. Krestinin (77.718) · See full page statistics
Wikidata item not found.

	Taxonomy properties
Basic	taxon name taxon rank parent taxon is an individual of taxon
Qualifiers	taxon author ex taxon author year of taxon publication incertae sedis nomenclatural status original spelling gender of a scientific name of a genus
Optional	IUCN conservation status taxon range map image endemic to taxonomic type botanist author abbreviation temporal range start temporal range end author citation (zoology) basionym replaced synonym (for nom. nov.) found in taxon Code of nomenclature original combination taxon synonym parent of this hybrid, breed, or cultivar natural product of taxon this taxon is source of taxon common name this zoological name is coordinate with host NatureServe conservation status type locality (biology) NZTCS conservation status type host
Databases	IPNI author ID IUCN taxon ID NCBI taxonomy ID BHL page ID ITIS TSN Encyclopedia of Life ID BioLib taxon ID Fossilworks taxon ID GBIF taxon ID WoRMS-ID for taxa FishBase species ID MSW ID Tropicos ID IPNI plant ID Mycobank taxon name ID PlantList-ID ICTV virus ID AlgaeBase URL Index Fungorum ID GRIN URL Flora of North America taxon ID VASCAN ID ZooBank ID for name or act Flora of China ID Watson & Dallwitz family ID USDA PLANTS ID GrassBase ID Fauna Europaea ID Dyntaxa ID conifers.org ID LPSN URL Plazi ID Avibase ID African Plant Database ID CITES Species+ ID Xeno-canto species ID Panarctic Flora ID Species Profile and Threats Database ID BugGuide taxon ID New Zealand Organisms Register ID Index Heparicarum ID Australasian Pollen and Spore Atlas Code ARKive ID BacDive ID EPPO Code ButMoth ID Lepindex ID Catalogue of Life in Taiwan ID Internet Bird Collection species ID Flora of Australia ID (old) FloraBase ID Plantarium ID NSW Flora ID Inaturalist taxon ID TAXREF ID NBN System Key World Spider Catalog ID Vlinderstichting-ID Butterflies and Moths of North America ID Nederlands Soortenregister ID Calflora ID eBird taxon ID Euring number WCSPF ID Araneae Spider ID BOLD Systems taxon ID Wildflowers of Israel ID Flora of Israel Online plant ID ADW taxon ID PalDat plant ID Titan ID CNPS ID PtaF ID FOIH taxon ID ABA bird ID BTO five-letter code Guide to North American Birds ID uBio ID Ecocrop ID MONA ID BTO Birds of Britain ID Fauna Europaea New ID Phasmida Species File ID CONABIO ID Amphibians of India ID AmphibiaWeb Species ID Plants of the World online ID IRMNG ID GONIAT taxon ID Tree of Life Web Project ID BirdLife taxon ID AntWeb ID Amphibian Species of the World ID Tierstimmenarchiv ID The Reptile Database ID Global Invasive Species Database ID Invasive Species Compendium Datasheet ID Lepidoptera of Belgium ID VicFlora ID NT Flora ID APNI ID Center for Biological Diversity ID SeaLifeBase ID Hymenoptera Online taxon ID Oiseaux.net ID Hypericum MySpecies ID ECOS ID CMS ID Plant Finder ID C.V. Starr Virtual Herbarium ID Wild Herps ID Australian Faunal Directory ID John J. Audubon's Birds of America ID Echinoid Directory ID Espèces Envahissantes Outre-mer ID FEIS ID Global Raptor Information Network ID MNHN taxon ID Neotropical Birds ID New Zealand Birds Online ID NOAA Fisheries Species Directory ID OSF Online ID Sea Slug Forum ID Cockroach Species File ID Coreoidea Species File ID GT IBMA ID Mantodea Species File ID Red List of South African Plants ID Systematic Catalog of Cullicidae ID Plant Parasites of Europe ID Map of Life ID AtroMoths ID FloraWeb ID FLOW ID Info Flora ID Mushroom Observer ID Michigan Flora ID Observation.org ID Portal to the Flora of Italy ID Central African Plants ID Threatened Species Link ID APA ID Virtual Guide to the Flora of Mongolia ID Verspreidingsatlas.nl ID Atlas of Florida Plants ID Invasive Plant Atlas of the United States ID NAS ID Ca-IPC ID EUNIS ID for species SEINet ID Flora of Wisconsin ID Danmarks svampeatlas ID Weeds in Ontario ID ODNR Division of Wildlife ID IFPNI species ID The White-files species ID Lace Bugs Database ID Psyllist species ID COOL species ID Global Species ID Strepsiptera database species ID Brentidae of the world species ID Illustrated catalog of Tesseractidae species ID ScaleNet ID Flora of Australia ID (new) eBiodiversity ID ATRF ID SA Flora ID Atlas of Living Australia ID Australian Marine Algal Name Index ID Belgian Species List ID Insects (Insecta) of the World ID Plize Deutschland ID Moose Deutschland ID Fossilid.info ID NZPCN ID World Flora Online ID Microworld ID Queensland Biota ID Australian Weed ID Native Plants Database ID NBIC taxon ID BHL name ID Royal Horticultural Society plant ID Bloweb Ecuador ID Australian Fungi ID Australian Lichen ID Open Tree of Life ID NParcs Flora & Fauna Web ID Washington Flora Checklist ID OregonFlora taxon ID Oregon Flora Image Project ID MyBIS species ID Danish 2010 redlist identifier Microlepidoptera.nl ID SOR bird ID ToateAnimalele ID Moths and Butterflies of Europe and North Africa ID Burke Herbarium Image Collection ID Idaho Species ID Montana Field Guide species ID E-Fauna BC species ID E-Flora BC species ID Palynodata taxa ID izeltabauk.hu ID Endemia.nc animal taxon ID NZTCS ID Hardy's Guide to Marine Gastropods URL Vietherb species ID Arachne.org.au ID Birdata ID NWT Species ID All About Birds ID NatureServe Explorer ID Washington Native Plant Society Plant Directory ID New York Flora Atlas ID Gardens Navigator ID Madrean Discovery Expeditions Flora Database ID Madrean Discovery Expeditions Fauna Database ID Australian Reptile Online Database ID Leafsnap ID Virginia Tech Dendrology Factsheets ID Catalogue of Life ID Reflora ID North Carolina Extension Gardener Plant Toolbox ID UK Beetles ID Paleobiology Database ID Hesperomys taxon ID Colorado Plant Database ID UConn Plant Database ID vPlants ID Biota Information System of New Mexico species ID Naturbasen species ID Woody Plants Database cultivar ID Maryland Plant Atlas ID Maryland Biodiversity Project species ID eGardenGo plant ID Nebraska Invasive Species Program species ID
References	BHL page ID IUCN taxon ID IPNI author ID ZooBank author ID ZooBank publication ID IPNI publication ID BPH journal ID Harvard botanical journal ID Tropicos publication ID BioStor work ID Fossilworks ID for this journal article Washington Rare Plant Field Guide ID (PDF version) IFPNI author ID Palynodata publications ID Hardy's Guide to Marine Gastropods URL Washington Rare Plant Field Guide ID (Web version) taxonomic treatment

See also: Wikidata:WikiProject Taxonomy; Wikidata property related to taxa (Q18609040)

Introduction to Scholia

◆ Scholia homepage

◆ <https://scholia.toolforge.org/>

Profiles

Denny Vrandečić

View the researcher profile for the Semantic Web researcher Denny Vrandečić. It shows his papers, co-authors, etc.

Technical University of Denmark

View the profile for an organization: People associated with the organization, their publications, the co-author patterns, etc.

NeuroImage

View information about a venue, e.g., a scientific journal or scientific conference. Here, the *NeuroImage* journal, its recently published papers, authors, topics, citation pattern, etc.

Public Library of Science

View information about a publisher, here *Public Library of Science*, with, e.g., the journals it publishes.

COVID-19

View information about the authors or journals publishing on *COVID-19*.

Zika virus

View information about the authors or journals publishing on *Zika virus*.

Combinations

Scholia can show multiple items together.

Technical University of Denmark and University College London

Compare two or more organizations. Here a comparison between two universities with collaborating researchers, number of publications and citations.

Tim Berners-Lee, James Hendler and Ruben Verborgh

Compare three Semantic Web researchers.

University of Costa Rica and snakebites

Explore what people affiliated with this institution have published on the topic.

University of Melbourne and ggplot2

Explore what people affiliated with this institution have published using this open-source data visualization software.

Redirects

If you know the external identifier of a concept, then Scholia can make a lookup based on it:

twitter/utafriith

Look up by Twitter username @utafriith. This will identify the London-based researcher Uta Frith and redirect to her Scholia page.

twitter/mitpress

Redirect also works for organizations, here MIT Press

orcid/0000-0002-5494-8126

Lookup 0000-0002-5494-8126 that is identifying Carol Greider.

github/vedina

Redirect via GitHub username, here @vedina to Nina Jeliazkova.

doi/10.1186/S13321-016-0161-3

Redirect via a DOI.

viaf/59976288

Redirect via VIAF identifier, here to Ben Feringa

Introduction to Scholia

Scholarly profiles via parametrized predefined SPARQL queries

- ◆ Multiple types of profiles
 - ◇ e.g. <https://scholia.toolforge.org/topic/Q943313>
 - ◆ **topic** profile for seed dispersal (Q943313)
 - ◇ e.g. <https://scholia.toolforge.org/taxon/Q28557>
 - ◆ **taxon** profile for Phragmites australis (Q28557)
 - ◇ genes, pathways, journals, events, organizations, awards, locations, countries, ...
- ◆ Each profile type has
 - ◇ multiple panels based on predefined SPARQL queries parametrized with item ID
 - ◆ e.g. <https://scholia.toolforge.org/software/Q1659584#coused>
 - co-used resources on the **software** profile for ImageJ (Q1659584)
 - ◇ a curation page facilitating community review and curation
 - ◆ e.g. <https://scholia.toolforge.org/author/Q21389271/curation>
 - **author** **curation** page for Pavel Stoev (Q21389271)

Visualizations

- ◆ types
 - ◇ tables, bar charts, scatter plots, graphs, timelines, maps, image grids ...
 - ◇ one or several items of the same kind
- ◆ data sources
 - ◇ mostly directly from Wikidata Query Service, with some customization
 - ◇ some additional sources, e.g. Wikipedia, Wikisource, Wembedder
- ◆ navigation
 - ◇ some interactive sorting and filtering
 - ◇ rich links between profile types
 - ◇ redirects based on various identifiers, e.g.
 - ◆ <https://scholia.toolforge.org/github/Daniel-Mietchen>
 - ◇ link from each visualization to
 - ◆ underlying SPARQL query in the Wikidata Query Service
 - ◆ underlying unparametrized SPARQL query template on GitHub

Table of Contents

- The topic in context
- Recently published works on the topic
- Publications per year
- Earliest published works on the topic
- Authors
 - Authors publishing about the topic
 - Author score
 - Co-author graph
 - Awards received by authors who published on the topic
- Topics
 - Co-occurring topics
 - Co-occurring topics graph
 - Co-occurring topics map
- Uses
- Venues and series publishing works about the topic
- Citations
 - Works cited from works on the topic
 - Authors cited from works on the topic
 - Map of organizations associated with works about the topic
 - Citation graph of works about the topic, aggregated by country

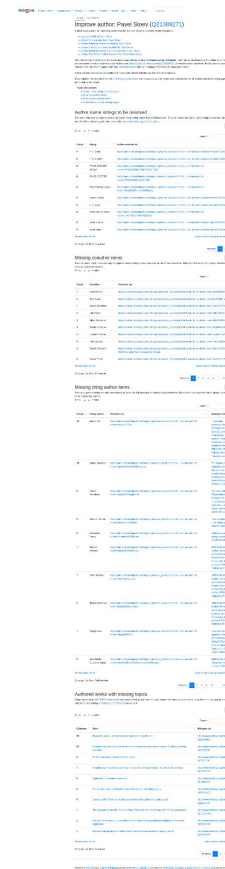
- ◆ Table of contents for a **topic** profile

Visualizations

software profile for [ImageJ](#)



topic profile for [seed dispersal](#)



taxon profile for [Phragmites australis](#)

author curation page for [Pavel Stoev](#)

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Visualizations

- ◆ zooming in: sample panel in the **work** profile for “[Ctenosciara alexanderkoenigi sp. n. \(Diptera: Sciaridae\), an exotic invader in Germany?](#)”

Supports the following statement(s)

Reload

Statements in Wikidata supported by references to this work. Only a maximum of around 2000 statements are shown.

Search:

Item	Property	Value	Unit
ZFMK-TIS-2527968	instance of	type specimen	
ZFMK-TIS-2527968	location of discovery	Museum Koenig	
ZFMK-TIS-2527968	subject has role	holotype	
Ctenosciara alexanderkoenigi	taxon name	Ctenosciara alexanderkoenigi	

Wikidata Query Service

work: statements.sparql

Showing 1 to 4 of 4 entries

■ ■ ■ Outlook

Challenges

- ◆ Wikidata
 - ◇ is incomplete
 - ◇ has lots of inconsistencies
 - ◇ changing constantly, including in terms of its data models
 - ◇ is not necessarily straightforward to navigate

Opportunities

- ◆ Wikidata
 - ◇ provides a framework for scalable collaborative curation & [citizen science](#)
 - ◇ is increasingly integrated with [open science](#) & [open GLAM](#) workflows
 - ◇ is sustainably funded and can assist in [making life sciences data more FAIR](#)
 - ◇ has an active community and robust infrastructure
 - ◇ can be fixed if someone takes the initiative
 - ◇ can help highlight issues in other databases
 - ◇ can make systematic reviews reproducible

- ◆ Scholia can
 - ◇ help explore Wikidata
 - ◇ identify highlights and gaps
 - ◇ be extended to other graphs
 - ◇ provide additional profile types



Acknowledgements

- ◆ [TDWG organizers](#)
- ◆ Wikimedia community
- ◆ Biodiversity community
- ◆ [Scholia contributors](#)
- ◆ VolkswagenStiftung
 - ◇ [Towards an open, zoomable atlas for invasion science and beyond](#)
- ◆ Alfred P. Sloan Foundation
 - ◇ [Scholia for software](#)

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