

Versioned Archive and Review of Biotic
Interactions and Taxon Names Found within
globalbioticinteractions/mycoportal
hash://md5/ec810b561cb97f8813cf3627fa11bec7

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<https://globalbioticinteractions.org/contribute>
<https://github.com/globalbioticinteractions/mycoportal/issues>

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Abstract

Life on Earth is sustained by complex interactions between organisms and their environment. These biotic interactions can be captured in datasets and published digitally. We present a review and archiving process for such an openly accessible digital interactions dataset of known origin and discuss its outcome. The dataset under review, named globalbioticinteractions/mycoportal, has fingerprint hash://md5/ec810b561cb97f8813cf3627fa11bec7, is 510MiB in size and contains 1,995,979 interactions with 6 unique types of associations (e.g., hasHost) between 117,907 primary taxa (e.g., Erysiphe cichoracearum) and 183,377 associated taxa (e.g., Substrate Undetermined). This report includes detailed summaries of interaction data, a taxonomic review from multiple catalogs, and an archived version of the dataset from which the reviews are derived.

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Introduction

Data Review and Archive

Data review and archiving can be a time-consuming process, especially when done manually. This review report aims to help facilitate both activities. It automates the archiving of datasets, including Darwin Core archives, and is a citable backup of a version of the dataset. Additionally, an automatic review of species interaction claims made in the dataset is generated and registered with Global Biotic Interactions (J. H. Poelen, Simons, and Mungall 2014).

This review includes summary statistics about, and observations about, the dataset under review :

AAFC-DAOM DwC-Archive | Darwin Core Archive for Canadian National Mycological Herbarium https://mycoportal.org/portal/content/dwca/AAFC-DAOM_DwC-A.zip 2026-03-28T04:37:20.552Z ARIZ DwC-Archive | Darwin Core Archive for University of Arizona, Gilbertson Mycological Herbarium, specimen-based https://mycoportal.org/portal/content/dwca/ARIZ_DwC-A.zip 2026-03-28T04:37:20.552Z BISH DwC-Archive | Darwin Core Archive for Bishop Museum, Herbarium Pacificum https://mycoportal.org/portal/content/dwca/BISH_DwC-A.zip 2026-03-28T04:37:20.552Z BPI DwC-Archive | Darwin Core Archive for USDA United States National Fungus Collections https://mycoportal.org/portal/content/dwca/BPI_DwC-A.zip 2026-03-28T04:37:20.552Z BRIT DwC-Archive | Darwin Core Archive for Botanical Research Institute of Texas https://mycoportal.org/portal/content/dwca/BRIT_DwC-A.zip 2026-03-28T04:37:20.552Z BRU DwC-Archive | Darwin Core Archive for Brown University Herbarium - Fungi https://mycoportal.org/portal/content/dwca/BRU_DwC-A.zip

2026-03-28T04:37:20.552Z CHRB DwC-Archive | Darwin Core Archive for Chrysler Herbarium - Mycological Collection https://mycoportal.org/portal/content/dwca/CHRB_DwC-A.zip
2026-03-28T04:37:20.552Z CINC DwC-Archive | Darwin Core Archive for University of Cincinnati, Margaret H. Fulford Herbarium - Fungi https://mycoportal.org/portal/content/dwca/CINC_DwC-A.zip
2026-03-28T04:37:20.552Z CLEMS DwC-Archive | Darwin Core Archive for Clemson University Herbarium https://mycoportal.org/portal/content/dwca/CLEMS_DwC-A.zip
2026-03-28T04:37:20.552Z CSU DwC-Archive | Darwin Core Archive for University of Central Oklahoma Herbarium - Fungi https://mycoportal.org/portal/content/dwca/CSU_DwC-A.zip
2026-03-28T04:37:20.552Z CUP DwC-Archive | Darwin Core Archive for Cornell University Plant Pathology Herbarium https://mycoportal.org/portal/content/dwca/CUP_DwC-A.zip
2026-03-28T04:37:20.552Z DBG-DBG DwC-Archive | Darwin Core Archive for Denver Botanic Gardens, Sam Mitchel Herbarium of Fungi https://mycoportal.org/portal/content/dwca/DBG-DBG_DwC-A.zip
2026-03-28T04:37:20.552Z DEWV DwC-Archive | Darwin Core Archive for Davis & Elkins College Herbarium - Fungi https://mycoportal.org/portal/content/dwca/DEWV_DwC-A.zip
2026-03-28T04:37:20.552Z DUKE DwC-Archive | Darwin Core Archive for Duke University Herbarium Fungal Collection https://mycoportal.org/portal/content/dwca/DUKE_DwC-A.zip
2026-03-28T04:37:20.552Z FLAS DwC-Archive | Darwin Core Archive for University of Florida Herbarium - Fungi https://mycoportal.org/portal/content/dwca/FLAS_DwC-A.zip
2026-03-28T04:37:20.552Z FLD DwC-Archive | Darwin Core Archive for Fort Lewis College Herbarium https://mycoportal.org/portal/content/dwca/FLD_DwC-A.zip
2026-03-28T04:37:20.552Z GAM DwC-Archive | Darwin Core Archive for University of Georgia, Julian H. Miller Mycological Herbarium https://mycoportal.org/portal/content/dwca/GAM_DwC-A.zip
2026-03-28T04:37:20.552Z HCOA DwC-Archive | Darwin Core Archive for College of the Atlantic, Acadia National Park Herbarium https://mycoportal.org/portal/content/dwca/HCOA_DwC-A.zip
2026-03-28T04:37:20.552Z ILL DwC-Archive | Darwin Core Archive for University of Illinois Fungarium - Fungi https://mycoportal.org/portal/content/dwca/ILL_DwC-A.zip
2026-03-28T04:37:20.552Z ILLS DwC-Archive | Darwin Core Archive for University of Illinois, Illinois Natural History Survey Fungarium - Fungi https://mycoportal.org/portal/content/dwca/ILLS_DwC-A.zip
2026-03-28T04:37:20.552Z ISC DwC-Archive | Darwin Core Archive for Iowa State University, Ada Hayden Herbarium https://mycoportal.org/portal/content/dwca/ISC_DwC-A.zip
2026-03-28T04:37:20.552Z LSUM-Fungi DwC-Archive | Darwin Core Archive for Louisiana State University, Bernard Lowy Mycological Herbarium https://mycoportal.org/portal/content/dwca/LSUM-Fungi_DwC-A.zip

Fungi_DwC-A.zip 2026-03-28T04:37:20.552Z MICH DwC-Archive | Darwin Core Archive for University of Michigan Herbarium https://mycoportal.org/portal/content/dwca/MICH_DwC-A.zip 2026-03-28T04:37:20.552Z MONTU DwC-Archive | Darwin Core Archive for University of Montana Herbarium https://mycoportal.org/portal/content/dwca/MONTU_DwC-A.zip 2026-03-28T04:37:20.552Z MSC DwC-Archive | Darwin Core Archive for Michigan State University Herbarium non-lichenized fungi https://mycoportal.org/portal/content/dwca/MS_C_DwC-A.zip 2026-03-28T04:37:20.552Z MU DwC-Archive | Darwin Core Archive for Miami University, Willard Sherman Turrell Herbarium https://mycoportal.org/portal/content/dwca/MU_DwC-A.zip 2026-03-28T04:37:20.552Z NCU-Fungi DwC-Archive | Darwin Core Archive for University of North Carolina at Chapel Hill Herbarium: Fungi https://mycoportal.org/portal/content/dwca/NCU-Fungi_DwC-A.zip 2026-03-28T04:37:20.552Z NEB DwC-Archive | Darwin Core Archive for University of Nebraska State Museum, C.E. Bessey Herbarium - Fungi https://mycoportal.org/portal/content/dwca/NEB_DwC-A.zip 2026-03-28T04:37:20.552Z OSC DwC-Archive | Darwin Core Archive for Oregon State University Herbarium https://mycoportal.org/portal/content/dwca/OSC_DwC-A.zip 2026-03-28T04:37:20.552Z PH DwC-Archive | Darwin Core Archive for Academy of Natural Sciences of Drexel University https://mycoportal.org/portal/content/dwca/PH_DwC-A.zip 2026-03-28T04:37:20.552Z RMS DwC-Archive | Darwin Core Archive for University of Wyoming, Wilhelm G. Solheim Mycological Herbarium https://mycoportal.org/portal/content/dwca/RMS_DwC-A.zip 2026-03-28T04:37:20.552Z SFSU DwC-Archive | Darwin Core Archive for San Francisco State University, Harry D. Thiers Herbarium https://mycoportal.org/portal/content/dwca/SFSU_DwC-A.zip 2026-03-28T04:37:20.552Z SYRF DwC-Archive | Darwin Core Archive for State University of New York, SUNY College of Environmental Science and Forestry Herbarium https://mycoportal.org/portal/content/dwca/SYRF_DwC-A.zip 2026-03-28T04:37:20.552Z TENN-F DwC-Archive | Darwin Core Archive for University of Tennessee Fungal Herbarium https://mycoportal.org/portal/content/dwca/TENN-F_DwC-A.zip 2026-03-28T04:37:20.552Z UC DwC-Archive | Darwin Core Archive for University of California Berkeley, University Herbarium https://mycoportal.org/portal/content/dwca/UC_DwC-A.zip 2026-03-28T04:37:20.552Z UCHT-F DwC-Archive | Darwin Core Archive for University of Tennessee, Chattanooga https://mycoportal.org/portal/content/dwca/UCHT-F_DwC-A.zip 2026-03-28T04:37:20.552Z UCSC DwC-Archive | Darwin Core Archive for University of California Santa Cruz Fungal Herbarium https://mycoportal.org/portal/content/dwca/UCSC_DwC-A.zip

A.zip 2026-03-28T04:37:20.552Z UNCA-UNCA DwC-Archive | Darwin Core Archive for University of North Carolina Asheville https://mycoportal.org/portal/content/dwca/UNCA-UNCA_DwC-A.zip 2026-03-28T04:37:20.552Z USAM DwC-Archive | Darwin Core Archive for University of South Alabama Herbarium https://mycoportal.org/portal/content/dwca/USAM_DwC-A.zip 2026-03-28T04:37:20.552Z USCH-Fungi DwC-Archive | Darwin Core Archive for University of South Carolina, A. C. Moore Herbarium Fungal Collection https://mycoportal.org/portal/content/dwca/USCH-Fungi_DwC-A.zip 2026-03-28T04:37:20.552Z USF DwC-Archive | Darwin Core Archive for University of South Florida Herbarium - Fungi including lichens https://mycoportal.org/portal/content/dwca/USF_DwC-A.zip 2026-03-28T04:37:20.552Z USU-UTC DwC-Archive | Darwin Core Archive for Intermountain Herbarium (fungi, not lichens), Utah State University https://mycoportal.org/portal/content/dwca/USU-UTC_DwC-A.zip 2026-03-28T04:37:20.552Z UT-M DwC-Archive | Darwin Core Archive for Natural History Museum of Utah Fungarium https://mycoportal.org/portal/content/dwca/UT-M_DwC-A.zip 2026-03-28T04:37:20.552Z VPI DwC-Archive | Darwin Core Archive for Virginia Tech University, Massey Herbarium - Fungi https://mycoportal.org/portal/content/dwca/VPI_DwC-A.zip 2026-03-28T04:37:20.552Z VSC DwC-Archive | Darwin Core Archive for Valdosta State University Herbarium - Fungi https://mycoportal.org/portal/content/dwca/VSC_DwC-A.zip 2026-03-28T04:37:20.552Z VT DwC-Archive | Darwin Core Archive for University of Vermont, Pringle Herbarium, Macrofungi https://mycoportal.org/portal/content/dwca/VT_DwC-A.zip 2026-03-28T04:37:20.552Z WIS DwC-Archive | Darwin Core Archive for Wisconsin State Herbarium, Fungi https://mycoportal.org/portal/content/dwca/WIS_DwC-A.zip 2026-03-28T04:37:20.552Z WSP DwC-Archive | Darwin Core Archive for Charles Gardner Shaw Mycological Herbarium, Washington State University https://mycoportal.org/portal/content/dwca/WSP_DwC-A.zip 2026-03-28T04:37:20.552Z hash://md5/ec810b561cb97f8813cf3627fa11bec7

For additional metadata related to this dataset, please visit <https://github.com/globalbioticinteractions/mycoportal> and inspect associated metadata files including, but not limited to, *README.md*, *eml.xml*, and/or *globi.json*.

Methods

The review is performed through programmatic scripts that leverage tools like Preston (Elliott et al. 2025), Elton (Kuhn, Poelen, and Leinweber 2025), Nomer (Salim and Poelen 2025), globinizer (J. Poelen, Seltmann, and Mietchen 2024) combined with third-party tools like `grep`, `mlr`, `tail` and `head`.

Table 1: Tools used in this review process

tool name	version
preston	0.11.1
elton	0.16.7
nomer	0.6.2
globinizer	0.4.0
mlr	6.0.0
jq	1.6
yq	4.25.3
pandoc	3.1.6.1
duckdb	1.3.1
mapserver	7.6.4

The review process can be described in the form of the script below ¹.

```
# get versioned copy of the dataset (size approx. 510MiB) under review
elton pull globalbioticinteractions/mycoportal

# generate review notes
elton review globalbioticinteractions/mycoportal\
> review.tsv

# export indexed interaction records
elton interactions globalbioticinteractions/mycoportal\
> interactions.tsv

# export names and align them with the Catalogue of Life using Nomer
elton names globalbioticinteractions/mycoportal\
| nomer append col\
> name-alignment.tsv
```

or visually, in a process diagram.

You can find a copy of the full review script at [check-data.sh](https://github.com/ncbi/check-data.sh). See also GitHub and Codeberg.

¹Note that you have to first get the data (e.g., via `elton pull globalbioticinteractions/mycoportal`) before being able to generate reviews (e.g., `elton review globalbioticinteractions/mycoportal`), extract interaction claims (e.g., `elton interactions globalbioticinteractions/mycoportal`), or list taxonomic names (e.g., `elton names globalbioticinteractions/mycoportal`)

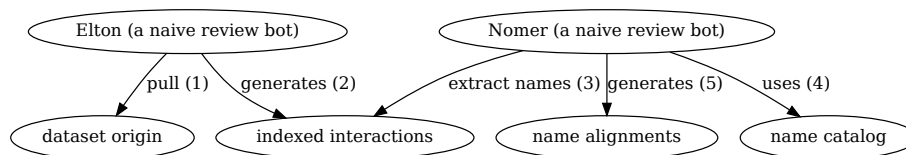


Figure 1: Review Process Overview

Results

In the following sections, the results of the review are summarized ². Then, links to the detailed review reports are provided.

Files

The following files are produced in this review:

filename	description
biblio.bib	list of bibliographic reference of this review
check-dataset.sh	data review workflow/process as expressed in a bash script
data.zip	a versioned archive of the data under review
HEAD	the digital signature of the data under review
index.docx	review in MS Word format
index.html	review in HTML format
index.md	review in Pandoc markdown format
index.pdf	review in PDF format
indexed-citations.csv.gz	list of distinct reference citations for reviewed species interaction claims in gzipped comma-separated values file format
indexed-citations.html.gz	list of distinct reference citations for reviewed species interactions claims in gzipped html file format
indexed-citations.tsv.gz	list of distinct reference citations for reviewed species interaction claims in gzipped tab-separated values format

²Disclaimer: The results in this review should be considered friendly, yet naive, notes from an unsophisticated robot. Please keep that in mind when considering the review results.

filename	description
indexed-interactions-col-family-col-family.svg	network diagram showing the taxon family to taxon family interaction claims in the dataset under review as interpreted by the Catalogue of Life via Nomer Corpus of Taxonomic Resources (J. H. (ed.). Poelen 2024)
indexed-interactions-col-kingdom-col-kingdom.svg	network diagram showing the taxon kingdom to taxon kingdom interaction claims in the dataset under review as interpreted by the Catalogue of Life via Nomer Corpus of Taxonomic Resources (J. H. (ed.). Poelen 2024)
indexed-interactions.csv.gz	species interaction claims indexed from the dataset under review in gzipped comma-separated values format
indexed-interactions.html.gz	species interaction claims indexed from the dataset under review in gzipped html format
indexed-interactions.tsv.gz	species interaction claims indexed from the dataset under review in gzipped tab-separated values format
indexed-interactions.parquet	species interaction claims indexed from the dataset under review in Apache Parquet format
indexed-interactions.png	species interaction claims indexed from the dataset under review plotted on a map
indexed-interactions.map	mapserver configuration to plot species interaction claims indexed from the dataset under review on a map
indexed-interactions.gpkg	species interaction claims indexed from the dataset under review in GeoPackage format
indexed-interactions-h3.gpkg	geospatially clustered h3 species interaction claims indexed from the dataset under review in GeoPackage format
indexed-interactions-sample.csv	list of species interaction claims indexed from the dataset under review in gzipped comma-separated values format

filename	description
indexed-interactions-sample.html	first 500 species interaction claims indexed from the dataset under review in html format
indexed-interactions-sample.tsv	first 500 species interaction claims indexed from the dataset under review in tab-separated values format
indexed-names.csv.gz	taxonomic names indexed from the dataset under review in gzipped comma-separated values format
indexed-names.html.gz	taxonomic names found in the dataset under review in gzipped html format
indexed-names.tsv.gz	taxonomic names found in the dataset under review in gzipped tab-separated values format
indexed-names.parquet	taxonomic names found in the dataset under review in Apache Parquet format
indexed-names-resolved-col.csv.gz	taxonomic names found in the dataset under review aligned with the Catalogue of Life as accessed through the Nomer Corpus of Taxonomic Resources (J. H. (ed.). Poelen 2024) in gzipped comma-separated values format
indexed-names-resolved-col.html.gz	taxonomic names found in the dataset under review aligned with the Catalogue of Life as accessed through the Nomer Corpus of Taxonomic Resources (J. H. (ed.). Poelen 2024) in gzipped html format
indexed-names-resolved-col.tsv.gz	taxonomic names found in the dataset under review aligned with the Catalogue of Life as accessed through the Nomer Corpus of Taxonomic Resources (J. H. (ed.). Poelen 2024) in gzipped tab-separated values format
indexed-names-resolved-col.parquet	taxonomic names found in the dataset under review aligned with the Catalogue of Life as accessed through the Nomer Corpus of Taxonomic Resources (J. H. (ed.). Poelen 2024) in Apache Parquet format

filename	description
indexed-names-resolved-discoverlife.csv.gz	taxonomic names found in the dataset under review aligned with Discover Life bee species checklist as accessed through the Nomer Corpus of Taxonomic Resources (J. H. (ed.). Poelen 2024) in gzipped comma-separated values format
indexed-names-resolved-discoverlife.html.gz	taxonomic names found in the dataset under review aligned with Discover Life bee species checklist as accessed through the Nomer Corpus of Taxonomic Resources (J. H. (ed.). Poelen 2024) in gzipped html format
indexed-names-resolved-discoverlife.tsv.gz	taxonomic names found in the dataset under review aligned with Discover Life bee species checklist as accessed through the Nomer Corpus of Taxonomic Resources (J. H. (ed.). Poelen 2024) in gzipped tab-separated values format
indexed-names-resolved-discoverlife.parquet	taxonomic names found in the dataset under review aligned with Discover Life bee species checklist as accessed through the Nomer Corpus of Taxonomic Resources (J. H. (ed.). Poelen 2024) in Apache Parquet format
indexed-names-resolved-gbif.csv.gz	taxonomic names found in the dataset under review aligned with GBIF Backbone Taxonomy as accessed through the Nomer Corpus of Taxonomic Resources (J. H. (ed.). Poelen 2024) in gzipped comma-separated values format
indexed-names-resolved-gbif.html.gz	taxonomic names found in the dataset under review aligned with GBIF Backbone Taxonomy as accessed through the Nomer Corpus of Taxonomic Resources (J. H. (ed.). Poelen 2024) in gzipped html format

filename	description
indexed-names-resolved-gbif.tsv.gz	taxonomic names found in the dataset under review aligned with GBIF Backbone Taxonomy as accessed through the Nomer Corpus of Taxonomic Resources (J. H. (ed.). Poelen 2024) in gzipped tab-separated values format
indexed-names-resolved-gbif.parquet	taxonomic names found in the dataset under review aligned with GBIF Backbone Taxonomy as accessed through the Nomer Corpus of Taxonomic Resources (J. H. (ed.). Poelen 2024) in Apache Parquet format
indexed-names-resolved-itis.csv.gz	taxonomic names found in the dataset under review aligned with Integrated Taxonomic Information System (ITIS) as accessed through the Nomer Corpus of Taxonomic Resources (J. H. (ed.). Poelen 2024) in gzipped comma-separated values format
indexed-names-resolved-itis.html.gz	taxonomic names found in the dataset under review aligned with Integrated Taxonomic Information System (ITIS) as accessed through the Nomer Corpus of Taxonomic Resources (J. H. (ed.). Poelen 2024) in gzipped html format
indexed-names-resolved-itis.tsv.gz	taxonomic names found in the dataset under review aligned with Integrated Taxonomic Information System (ITIS) as accessed through the Nomer Corpus of Taxonomic Resources (J. H. (ed.). Poelen 2024) in gzipped tab-separated values format
indexed-names-resolved-itis.parquet	taxonomic names found in the dataset under review aligned with Integrated Taxonomic Information System (ITIS) as accessed through the Nomer Corpus of Taxonomic Resources (J. H. (ed.). Poelen 2024) in Apache Parquet format

filename	description
indexed-names-resolved-mdd.csv.gz	taxonomic names found in the dataset under review aligned with the Mammal Diversity Database as accessed through the Nomer Corpus of Taxonomic Resources (J. H. (ed.). Poelen 2024) in gzipped comma-separated values format
indexed-names-resolved-mdd.html.gz	taxonomic names found in the dataset under review aligned with Mammal Diversity Database as accessed through the Nomer Corpus of Taxonomic Resources (J. H. (ed.). Poelen 2024) in gzipped html format
indexed-names-resolved-mdd.tsv.gz	taxonomic names found in the dataset under review aligned with Mammal Diversity Database as accessed through the Nomer Corpus of Taxonomic Resources (J. H. (ed.). Poelen 2024) in gzipped tab-separated values format
indexed-names-resolved-mdd.parquet	taxonomic names found in the dataset under review aligned with Mammal Diversity Database as accessed through the Nomer Corpus of Taxonomic Resources (J. H. (ed.). Poelen 2024) in Apache Parquet format
indexed-names-resolved-ncbi.csv.gz	taxonomic names found in the dataset under review aligned with the NCBI Taxonomy as accessed through the Nomer Corpus of Taxonomic Resources (J. H. (ed.). Poelen 2024) in gzipped comma-separated values format
indexed-names-resolved-ncbi.html.gz	taxonomic names found in the dataset under review aligned with the NCBI Taxonomy as accessed through the Nomer Corpus of Taxonomic Resources (J. H. (ed.). Poelen 2024) in gzipped html format

filename	description
indexed-names-resolved-ncbi.tsv.gz	taxonomic names found in the dataset under review aligned with the NCBI Taxonomy as accessed through the Nomer Corpus of Taxonomic Resources (J. H. (ed.). Poelen 2024) in gzipped tab-separated values format
indexed-names-resolved-ncbi.parquet	taxonomic names found in the dataset under review aligned with the NCBI Taxonomy as accessed through the Nomer Corpus of Taxonomic Resources (J. H. (ed.). Poelen 2024) in Apache Parquet format
indexed-names-resolved-pbdb.csv.gz	taxonomic names found in the dataset under review aligned with the Paleobiology Database as accessed through the Nomer Corpus of Taxonomic Resources (J. H. (ed.). Poelen 2024) in gzipped comma-separated values format
indexed-names-resolved-pbdb.html.gz	taxonomic names found in the dataset under review aligned with Paleobiology Database as accessed through the Nomer Corpus of Taxonomic Resources (J. H. (ed.). Poelen 2024) in gzipped html format
indexed-names-resolved-pbdb.tsv.gz	taxonomic names found in the dataset under review aligned with Paleobiology Database as accessed through the Nomer Corpus of Taxonomic Resources (J. H. (ed.). Poelen 2024) in gzipped tab-separated values format
indexed-names-resolved-pbdb.parquet	taxonomic names found in the dataset under review aligned with Paleobiology Database as accessed through the Nomer Corpus of Taxonomic Resources (J. H. (ed.). Poelen 2024) in Apache Parquet format

filename	description
indexed-names-resolved-tpt.csv.gz	taxonomic names found in the dataset under review aligned with the Terrestrial Parasite Tracker (TPT) Taxonomic Resource as accessed through the Nomer Corpus of Taxonomic Resources (J. H. (ed.). Poelen 2024) in gzipped comma-separated values format
indexed-names-resolved-tpt.html.gz	taxonomic names found in the dataset under review aligned with the Terrestrial Parasite Tracker (TPT) Taxonomic Resource as accessed through the Nomer Corpus of Taxonomic Resources (J. H. (ed.). Poelen 2024) in gzipped html format
indexed-names-resolved-tpt.tsv.gz	taxonomic names found in the dataset under review aligned with the Terrestrial Parasite Tracker (TPT) Taxonomic Resource as accessed through the Nomer Corpus of Taxonomic Resources (J. H. (ed.). Poelen 2024) in gzipped tab-separated values format
indexed-names-resolved-tpt.parquet	taxonomic names found in the dataset under review aligned with the Terrestrial Parasite Tracker (TPT) Taxonomic Resource as accessed through the Nomer Corpus of Taxonomic Resources (J. H. (ed.). Poelen 2024) in Apache Parquet format
indexed-names-resolved-wfo.csv.gz	taxonomic names found in the dataset under review aligned with the World of Flora Online as accessed through the Nomer Corpus of Taxonomic Resources (J. H. (ed.). Poelen 2024) in gzipped comma-separated values format
indexed-names-resolved-wfo.html.gz	taxonomic names found in the dataset under review aligned with the World of Flora Online as accessed through the Nomer Corpus of Taxonomic Resources (J. H. (ed.). Poelen 2024) in gzipped html format

filename	description
indexed-names-resolved-wfo.tsv.gz	taxonomic names found in the dataset under review aligned with the World of Flora Online as accessed through the Nomer Corpus of Taxonomic Resources (J. H. (ed.). Poelen 2024) in gzipped tab-separated values format
indexed-names-resolved-wfo.parquet	taxonomic names found in the dataset under review aligned with the World of Flora Online as accessed through the Nomer Corpus of Taxonomic Resources (J. H. (ed.). Poelen 2024) in Apache Parquet format
indexed-names-resolved-worms.csv.gz	taxonomic names found in the dataset under review aligned with the World Register of Marine Species (WoRMS) as accessed through the Nomer Corpus of Taxonomic Resources (J. H. (ed.). Poelen 2024) in gzipped comma-separated values format
indexed-names-resolved-worms.html.gz	taxonomic names found in the dataset under review aligned with the World Register of Marine Species (WoRMS) as accessed through the Nomer Corpus of Taxonomic Resources (J. H. (ed.). Poelen 2024) in gzipped html format
indexed-names-resolved-worms.tsv.gz	taxonomic names found in the dataset under review aligned with the World Register of Marine Species (WoRMS) as accessed through the Nomer Corpus of Taxonomic Resources (J. H. (ed.). Poelen 2024) in gzipped tab-separated values format
indexed-names-resolved-worms.parquet	taxonomic names found in the dataset under review aligned with the World Register of Marine Species (WoRMS) as accessed through the Nomer Corpus of Taxonomic Resources (J. H. (ed.). Poelen 2024) in Apache Parquet format
indexed-names-sample.csv	first 500 taxonomic names found in the dataset under review in comma-separated values format

filename	description
indexed-names-sample.html	first 500 taxonomic names found in the dataset under review in html format
indexed-names-sample.tsv	first 500 taxonomic names found in the dataset under review in tab-separated values format
interaction.svg	diagram summarizing the data model used to index species interaction claims
nanopub-sample.trig	first 500 species interaction claims as expressed in the nanopub format (Kuhn and Dumontier 2014)
nanopub.trig.gz	species interaction claims as expressed in the nanopub format (Kuhn and Dumontier 2014)
process.svg	diagram summarizing the data review processing workflow
prov.nq	origin of the dataset under review as expressed in rdf/nquads
review.csv.gz	review notes associated with the dataset under review in gzipped comma-separated values format
review.html.gz	review notes associated with the dataset under review in gzipped html format
review.tsv.gz	review notes associated with the dataset under review in gzipped tab-separated values format
review-sample.csv	first 500 review notes associated with the dataset under review in comma-separated values format
review-sample.html	first 500 review notes associated with the dataset under review in html format
review-sample.tsv	first 500 review notes associated with the dataset under review in tab-separated values format
review.svg	a review badge generated as part of the dataset review process
zenodo.json	metadata of this review expressed in Zenodo record metadata

Archived Dataset

Note that *data.zip* file in this archive contains the complete, unmodified archived dataset under review.

Biotic Interactions

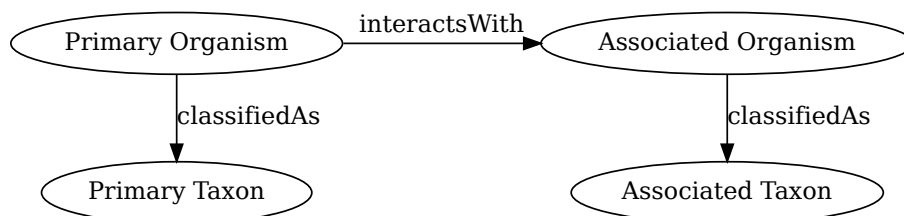


Figure 2: Biotic Interaction Data Model

In this review, biotic interactions (or biotic associations) are modeled as a primary (aka subject, source) organism interacting with an associate (aka object, target) organism. The dataset under review classified the primary/associate organisms with specific taxa. The primary and associate organisms The kind of interaction is documented as an interaction type.

The dataset under review, named `globalbioticinteractions/mycoportal`, has fingerprint hash://md5/ec810b561cb97f8813cf3627fa11bec7, is 510MiB in size and contains 1,995,979 interactions with 6 unique types of associations (e.g., `hasHost`) between 117,907 primary taxa (e.g., `Erysiphe cichoracearum`) and 183,377 associated taxa (e.g., `Substrate Undetermined`).

An exhaustive list of indexed interaction claims can be found in gzipped csv, tsv, geopackage and parquet archives. To facilitate discovery, a preview of claims available in the gzipped html page at `indexed-interactions.html.gz` are shown below.

The exhaustive list was used to create the following data summaries below.

Table 3: Sample of Indexed Interaction Claims

sourceTaxonName	interactionTypeName	targetTaxonName	referenceCitation
Exidia barryii	hasHost	Acer spicatum	https://mycoportal.org/portal/collections/individual
Glyphium abieticola	hasHost	Abies concolor	https://mycoportal.org/portal/collections/individual
Leotia lubrica f. stevensoni	adjacentTo	ground	https://mycoportal.org/portal/collections/individual
Tyromyces durescens	hasHost	Acer saccharinum	https://mycoportal.org/portal/collections/individual

Table 4: Most Frequently Mentioned Interaction Types (up to 20 most frequent)

interactionTypeName	count
hasHost	1518576
adjacentTo	378379
interactsWith	99008
killedBy	10
eats	5
hostOf	1

Table 5: Most Frequently Mentioned Primary Taxa (up to 20 most frequent)

sourceTaxonName	count
Erysiphe cichoracearum	8566
Puccinia graminis	8556
Coleosporium solidaginis	6607
Puccinia coronata	5451
Puccinia helianthi	5203
Puccinia menthae	5198
Cronartium ribicola	5027
Puccinia recondita	4892
Puccinia hieracii	4755
Erysiphe polygoni	4613
Puccinia polygoni-amphibii	3915
Otidea onotica	3731
Microsphaera alni	3595
Melampsora bigelowii	3477
Puccinia violae	3430
Puccinia dioicae	3352
Puccinia andropogonis	3046
Puccinia rubigo-vera	2992
Claviceps purpurea	2937

Table 6: Most Frequently Mentioned Associate Taxa (up to 20 most frequent)

targetTaxonName	count
Substrate Undetermined	181477
indet.	91748

targetTaxonName	count
indet	16728
ground	13719
Quercus sp.	13433
leaves	13196
Salix sp.	8123
Populus tremuloides	6539
Pseudotsuga menziesii	6401
Abies balsamea	6059
Populus sp.	5793
soil	5785
Pinus strobus	5553
Zea mays	5388
Betula sp.	4984
Acer sp.	4970
Quercus	4832
Rosa sp.	4761
wood	4657

Table 7: Most Frequent Interactions between Primary and Associate Taxa (up to 20 most frequent)

sourceTaxonName	interactionTypeName	targetTaxonName	count
Puccinia podophylli	hasHost	Podophyllum peltatum	1484
Poria	hasHost	Substrate	1361
		Undetermined	
Puccinia sorghi	hasHost	Zea mays	1145
Puccinia helianthi	hasHost	Helianthus annuus	1066
Polyporus	hasHost	Substrate	1000
		Undetermined	
Puccinia coronata	hasHost	Avena sativa	983
Puccinia hieracii	hasHost	Taraxacum officinale	971
Ustilago avenae	hasHost	Avena sativa	930
Cortinarius	hasHost	Substrate	875
		Undetermined	
Uromyces polygoni	hasHost	Polygonum aviculare	845
Puccinia malvacearum	hasHost	Althaea rosea	844

sourceTaxonName	interactionType	targetTaxonName	count
Cronartium ribicola	hasHost	Ribes nigrum	828
Puccinia asparagi	hasHost	Asparagus officinalis	815
Puccinia convolvuli	hasHost	Convolvulus sepium	763
Otidea onotica	interactsWith	Pseudotsuga menziesii	756
Gymnosporangium juniperi- virginianae	hasHost	Juniperus virginiana	754
Puccinia circaeae	hasHost	Circaea lutetiana	736
Polyporus gilvus	hasHost	Substrate Undetermined	696
Uromyces caladii	hasHost	Arisaema triphyllum	694

Interaction Networks

The figures below provide a graph view on the dataset under review. The first shows a summary network on the kingdom level, and the second shows how interactions on the family level. It is important to note that both network graphs were first aligned taxonomically using the Catalogue of Life. Please refer to the original (or verbatim) taxonomic names for a more original view on the interaction data.

You can download the indexed dataset under review at indexed-interactions.csv.gz. A tab-separated file can be found at indexed-interactions.tsv.gz

Geospatial Distribution

If geospatial information was extracted from the dataset under review, the map below will show their distribution. These maps were generated using MapServer (McKenna et al. 2025) tools configured via map configuration `indexed-interactions.map` :

```
MAP
  SIZE 1600 800
  EXTENT -180 -90 180 90
  PROJECTION
    "init=epsg:4326"
  END
  LAYER # MODIS WMS map from NASA
    NAME "modis_nasa"
    TYPE RASTER
```

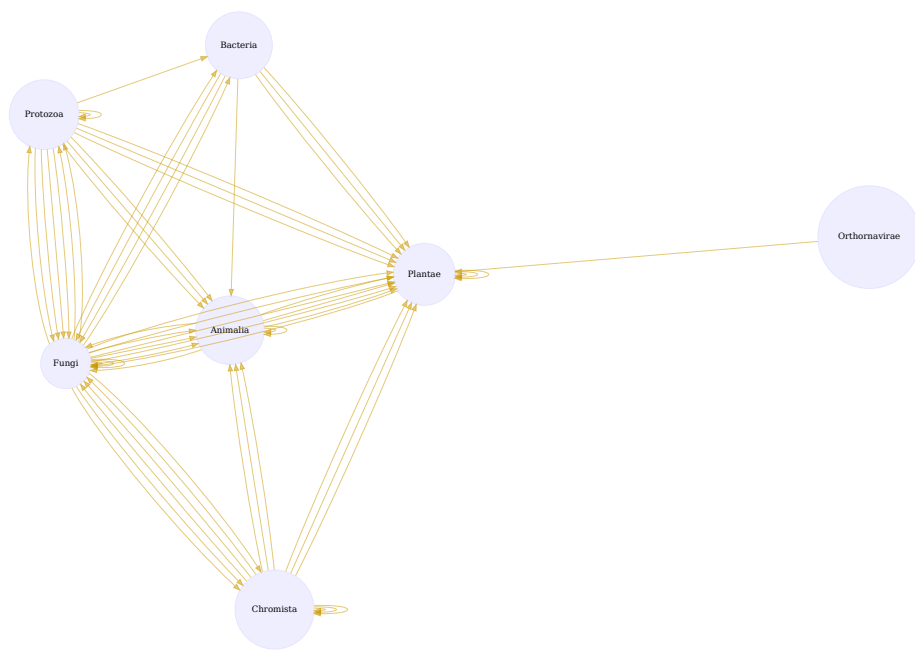


Figure 3: Interactions on taxonomic kingdom rank as interpreted by the Catalogue of Life download svg

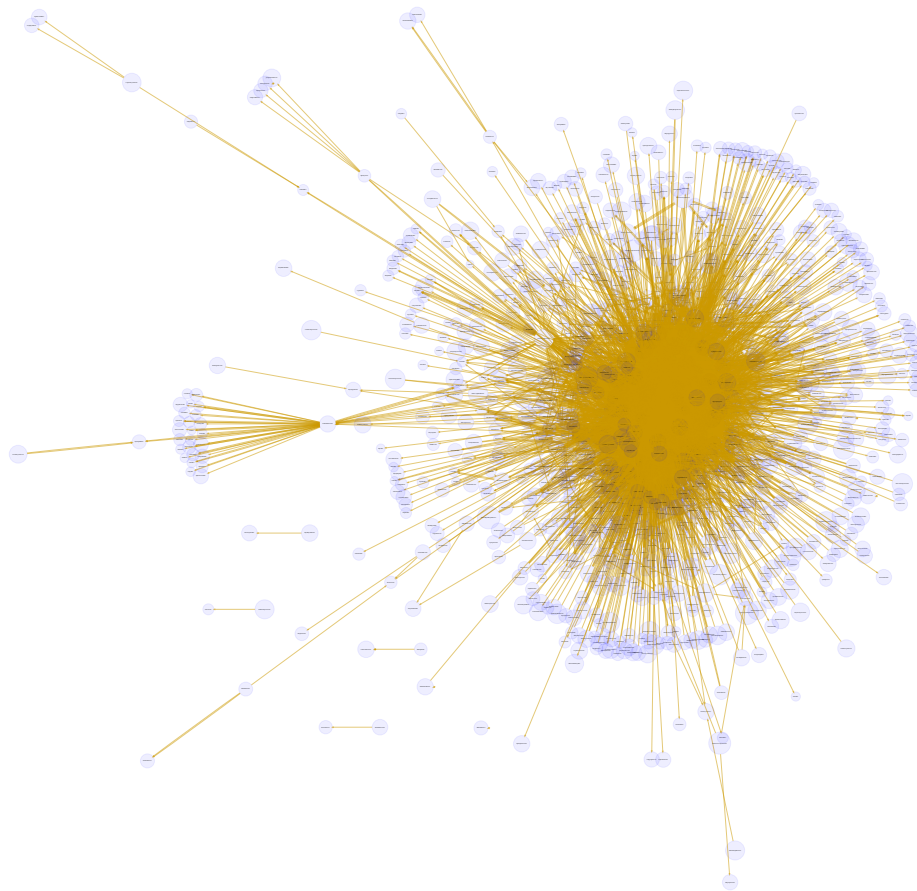


Figure 4: Interactions on the taxonomic family rank as interpreted by the Catalogue of Life. [download svg](#)

```

OFFSITE      0 0 0
STATUS       ON
CONNECTIONTYPE WMS
CONNECTION   "https://gibs.earthdata.nasa.gov/wms/epsg4326/best/wms.cgi?"

METADATA
  "wms_srs" "EPSG:4326"
  "wms_name" "OSM_Land_Water_Map"
  "wms_server_version" "1.1.1"
  "wms_format" "image/jpeg"
END
CLASS
  STYLE
    COLOR      232 232 232
    OUTLINECOLOR 32 32 32
  END
END
LAYER
  NAME "indexed-interactions"
  TYPE POLYGON
  STATUS ON
  CONNECTIONTYPE OGR
  CONNECTION "indexed-interactions-h3.gpkg"
  DATA "indexed-interactions-h3"
  CLASS
    STYLE
      COLORRANGE 253.0 231.0 37.0 32.0 164.0 134.0
      DATARANGE 0.3010299956639812 4.8649024816257
      RANGEITEM "log_number_of_records"
      OUTLINECOLOR 0 0 0
    END
  END
END
END

```

Associated data can be found in the geopackage files at indexed-interactions.gpkg for point data and indexed-interactions-h3.gpkg for data clustered in geospatial h3 hexagonals.

Learn more about the structure of this download at GloBI website, by opening a GitHub issue, or by sending an email.

Another way to discover the dataset under review is by searching for it on the GloBI website.

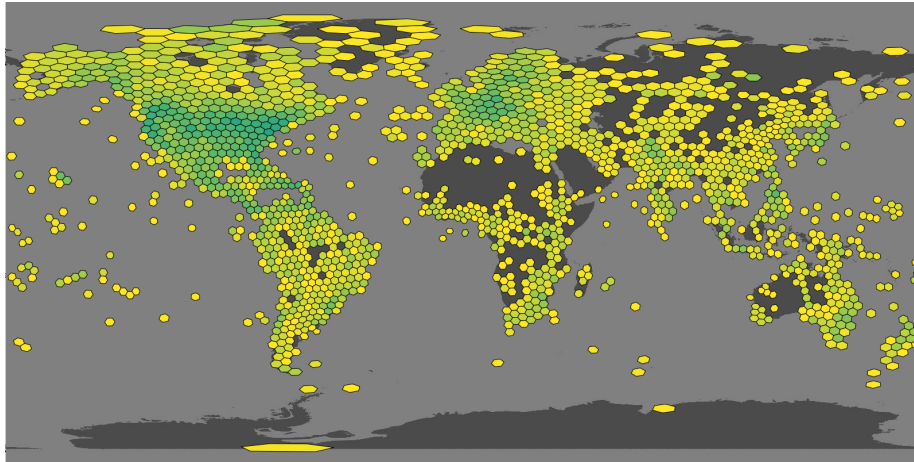


Figure 5: Hexagonal grid cells indicate that interactions claims are available for selected geospatial area: light yellow means relatively fewer claims, dark green relatively more claims.

Taxonomic Alignment

As part of the review, all names are aligned against various name catalogs (e.g., col, ncbi, discoverlife, gbif, itis, wfo, mdd, tpt, pbdb, and worms). These alignments can help review name usage or aid in selecting of a suitable taxonomic name resource.

Table 8: Sample of Name Alignments

providedName	relationName	resolvedCatalogName	resolvedName
Fraxinus	HAS_ACCEPTED_NAME	col	Fraxinus
Arachnopeziza candidofulva	HAS_ACCEPTED_NAME	col	Arachnopeziza candidofulva
Arachnopeziza cornuta	HAS_ACCEPTED_NAME	col	Arachnopeziza cornuta
Arachnopeziza delicatula	SYNONYM_OF	col	Gorgoniceps delicatula

Table 9: Distribution of Taxonomic Ranks of Aligned Names by Catalog. Names that were not aligned with a catalog are counted as NAs. So, the total number of unaligned names for a catalog will be listed in their NA row.

resolvedCatalogName	resolvedRank	count
col	NA	120264
col	class	12
col	family	296
col	form	12
col	genus	6371
col	infraorder	3
col	kingdom	4
col	order	41
col	phylum	9
col	section	1
col	species	97204
col	subclass	1
col	subfamily	27
col	subgenus	58
col	suborder	5
col	subspecies	3100
col	subterclass	1
col	subtribe	1
col	superfamily	4
col	superorder	2
col	tribe	18
col	unranked	1
col	variety	1422
discoverlife	NA	227343
discoverlife	species	8
gbif	NA	107808
gbif	class	13
gbif	family	342
gbif	form	102
gbif	genus	7035
gbif	kingdom	5
gbif	order	38
gbif	phylum	11
gbif	species	108193
gbif	subspecies	4244
gbif	variety	2445
itis	NA	204460
itis	class	10
itis	division	11

resolvedCatalogName	resolvedRank	count
itis	family	308
itis	form	1
itis	genus	2940
itis	infraorder	2
itis	kingdom	7
itis	order	47
itis	phylum	3
itis	species	17651
itis	subclass	3
itis	subdivision	2
itis	subfamily	15
itis	subgenus	7
itis	subkingdom	1
itis	suborder	9
itis	subphylum	1
itis	subsection	1
itis	subspecies	817
itis	subtribe	1
itis	superfamily	5
itis	superorder	2
itis	tribe	16
itis	variety	1138
mdd	NA	227350
ncbi	NA	179470
ncbi	clade	11
ncbi	class	11
ncbi	cohort	1
ncbi	family	294
ncbi	forma	13
ncbi	forma specialis	6
ncbi	genus	5157
ncbi	infraorder	3
ncbi	kingdom	2
ncbi	order	46
ncbi	parvorder	1
ncbi	phylum	8
ncbi	section	5
ncbi	series	1
ncbi	species	41728
ncbi	subclass	2
ncbi	subfamily	19
ncbi	subgenus	32
ncbi	suborder	5
ncbi	subphylum	4

resolvedCatalogName	resolvedRank	count
ncbi	subspecies	269
ncbi	subtribe	1
ncbi	superfamily	4
ncbi	superkingdom	2
ncbi	superorder	2
ncbi	tribe	23
ncbi	varietas	261
pbdb	NA	225073
pbdb	class	11
pbdb	family	236
pbdb	genus	1434
pbdb	infraclass	1
pbdb	infraorder	6
pbdb	kingdom	4
pbdb	order	37
pbdb	phylum	9
pbdb	species	490
pbdb	subclass	2
pbdb	subfamily	20
pbdb	subgenus	2
pbdb	suborder	14
pbdb	subphylum	1
pbdb	superfamily	4
pbdb	superorder	1
pbdb	superphylum	1
pbdb	tribe	18
pbdb	unranked clade	14
tpt	NA	227259
tpt	family	2
tpt	genus	37
tpt	order	1
tpt	species	50
tpt	specificepithet	1
tpt	subspecificepithet	1
wfo	NA	190709
wfo	family	167
wfo	form	14
wfo	genus	2976
wfo	order	1
wfo	phylum	2
wfo	section	7
wfo	series	1
wfo	species	31538
wfo	subgenus	1

resolvedCatalogName	resolvedRank	count
wfo	subsection	1
wfo	subspecies	1542
wfo	tribe	4
wfo	variety	1124
worms	NA	217515
worms	class	11
worms	family	230
worms	genus	2194
worms	infraorder	2
worms	kingdom	4
worms	order	41
worms	phylum	3
worms	phylum (division)	8
worms	section	1
worms	species	6990
worms	subclass	4
worms	subfamily	9
worms	subgenus	3
worms	suborder	9
worms	subphylum	1
worms	subphylum (subdivision)	2
worms	subspecies	312
worms	subterclass	1
worms	superorder	2
worms	tribe	4
worms	variety	270

Table 10: Name relationship types per catalog. Name relationship type “NONE” means that a name was not recognized by the associated catalog. “SAME_AS” indicates either a “HAS_ACCEPTED_NAME” or “SYNONYM_OF” name relationship type. We recognize that “SYNONYM_OF” encompasses many types of nomenclatural synonymies (ICZN 1999) (e.g., junior synonym, senior synonyms).

resolvedCatalogName	relationName	count
col	HAS_ACCEPTED_NAME	225457
col	SYNONYM_OF	216285
col	NONE	235330
discoverlife	NONE	619753
discoverlife	HAS_ACCEPTED_NAME	13
discoverlife	SYNONYM_OF	9

resolvedCatalogName	relationName	count
gbif	HAS_ACCEPTED_NAME	299844
gbif	SYNONYM_OF	319605
gbif	NONE	204938
itis	HAS_ACCEPTED_NAME	102036
itis	NONE	476897
itis	SYNONYM_OF	47649
mdd	NONE	618779
mdd	HAS_ACCEPTED_NAME	23
ncbi	SAME_AS	177335
ncbi	NONE	398425
ncbi	SYNONYM_OF	45923
ncbi	COMMON_NAME_OF	166
pbdb	HAS_ACCEPTED_NAME	24791
pbdb	NONE	593880
pbdb	SYNONYM_OF	1547
tpt	NONE	618516
tpt	HAS_ACCEPTED_NAME	293
tpt	SYNONYM_OF	16
wfo	HAS_ACCEPTED_NAME	111482
wfo	NONE	449124
wfo	SYNONYM_OF	86086
wfo	HAS_UNCHECKED_NAME	23322
worms	NONE	557814
worms	HAS_ACCEPTED_NAME	58936
worms	SYNONYM_OF	20592

Table 11: List of Available Name Alignment Reports

catalog name	alignment results
col	associated names alignments report in zipped html, csv, and tsv)
ncbi	associated names alignments report in zipped html, csv, and tsv)
discoverlife	associated names alignments report in zipped html, csv, and tsv)
gbif	associated names alignments report in zipped html, csv, and tsv)
itis	associated names alignments report in zipped html, csv, and tsv)
wfo	associated names alignments report in zipped html, csv, and tsv)

catalog name	alignment results
mdd	associated names alignments report in gzipped html, csv, and tsv)
tpt	associated names alignments report in gzipped html, csv, and tsv)
pbdb	associated names alignments report in gzipped html, csv, and tsv)
worms	associated names alignments report in gzipped html, csv, and tsv)

Additional Reviews

Elton, Nomer, and other tools may have difficulties interpreting existing species interaction datasets. Or, they may misbehave, or otherwise show unexpected behavior. As part of the review process, detailed review notes are kept that document possibly misbehaving, or confused, review bots. An sample of review notes associated with this review can be found below.

Table 12: First few lines in the review notes.

reviewDate	reviewCommentType	reviewComment
2026-03-30T15:23:31Z	summary	https://github.com/globalbioticinteractions/mycoporta
2026-03-30T15:23:31Z	summary	1995979 interaction(s)
2026-03-30T15:23:31Z	summary	0 note(s)
2026-03-30T15:23:31Z	summary	104 info(s)

In addition, you can find the most frequently occurring notes in the table below.

: Most frequently occurring review notes, if any.

For additional information on review notes, please have a look at the first 500 Review Notes in html format or the download full gzipped csv or tsv archives.

GloBI Review Badge

As part of the review, a review badge is generated. This review badge can be included in webpages to indicate the review status of the dataset under review.



Figure 6: Picture of a GloBI Review Badge ³

³Up-to-date status of the GloBI Review Badge can be retrieved from the GloBI Review Depot

Note that if the badge is green, no review notes were generated. If the badge is yellow, the review bots may need some help with interpreting the species interaction data.

GloBI Index Badge

If the dataset under review has been registered with GloBI, and has been successfully indexed by GloBI, the GloBI Index Status Badge will turn green. This means that the dataset under review was indexed by GloBI and is available through GloBI services and derived data products.



Figure 7: Picture of a GloBI Index Badge ⁴

If you'd like to keep track of reviews or index status of the dataset under review, please visit GloBI's dataset index ⁵ for badge examples.

Discussion

This review and archive provides a means of creating citable versions of datasets that change frequently. This may be useful for dataset managers, including natural history collection data managers, as a backup archive of a shared Darwin Core archive. It also serves as a means of creating a trackable citation for the dataset in an automated way, while also including some information about the contents of the dataset.

This review aims to provide a perspective on the dataset to aid in understanding of species interaction claims discovered. However, it is important to note that this review does *not* assess the quality of the dataset. Instead, it serves as an indication of the open-ness⁶ and FAIRness (Wilkinson et al. 2016; Trekels et al. 2023) of the dataset: to perform this review, the data was likely openly available, **F**indable, **A**ccessible, **I**nteroperable and **R**eusable. The current Open-FAIR assessment is qualitative, and a more quantitative approach can be implemented with specified measurement units.

This report also showcases the reuse of machine-actionable (meta)data, something highly recommended by the FAIR Data Principles (Wilkinson et al. 2016). Making (meta)data machine-actionable enables more precise processing by computers, enabling even naive review bots like Nomer and Elton to interpret the

⁴Up-to-date status of the GloBI Index Badge can be retrieved from GloBI's API

⁵At time of writing (2026-03-30) the version of the GloBI dataset index was available at <https://globalbioticinteractions.org/datasets>

⁶According to <http://opendefinition.org/>: "Open data is data that can be freely used, reused and redistributed by anyone - subject only, at most, to the requirement to attribute and sharealike."

data effectively. This capability is crucial for not just automating the generation of reports, but also for facilitating seamless data exchanges, promoting interoperability.

Acknowledgements

We thank the many humans that created us and those who created and maintained the data, software and other intellectual resources that were used for producing this review. In addition, we are grateful for the natural resources providing the basis for these human and bot activities. Also, thanks to <https://github.com/zygoballus> for helping improve the layout of the review tables.

Author contributions

Nomer was responsible for name alignments. Elton carried out dataset extraction, and generated the review notes. Preston tracked, versioned, and packaged, the dataset under review.

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