

# A Review of Biotic Interactions and Taxon Names Found in `globalbioticinteractions/ucm-ucmc` hash://md5/2c855042b4811e51455fc9ff81fc8b8c

by Nomer, Elton and Preston, three naive review bots  
`review@globalbioticinteractions.org`  
<https://globalbioticinteractions.org/contribute>  
<https://github.com/globalbioticinteractions/ucm-ucmc/issues>

2025-04-22

## 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/ucm-ucmc`, has fingerprint hash://md5/2c855042b4811e51455fc9ff81fc8b8c, is 5.70MiB in size and contains 9,592 interaction with 2 unique types of associations (e.g., `interactsWith`) between 889 primary taxa (e.g., *Lasioglossum*) and 451 associated taxa (e.g., *Penstemon degeneri*). This report includes detailed summaries of interaction data, a taxonomic review from multiple catalogs, and an archived version of the dataset from which the reviews are derived.

## Contents

<b>Introduction</b>	<b>2</b>
Data Review and Archive . . . . .	2
<b>Methods</b>	<b>2</b>
<b>Results</b>	<b>4</b>
Files . . . . .	4
Archived Dataset . . . . .	11
Biotic Interactions . . . . .	11
Interaction Networks . . . . .	14
Taxonomic Alignment . . . . .	16

Additional Reviews . . . . .	19
GloBI Review Badge . . . . .	20
GloBI Index Badge . . . . .	20
<b>Discussion</b>	<b>20</b>
<b>Acknowledgements</b>	<b>21</b>
<b>Author contributions</b>	<b>21</b>
<b>References</b>	<b>21</b>

## 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:

University of Colorado Museum of Natural History Entomology  
Collection <https://github.com/globalbioticinteractions/ucm-ucmc/archive/60530dcc82d33c9675a4026ad60dc40bea8f2a91.zip>  
2025-04-19T03:51:11.903Z hash://md5/2c855042b4811e51455fc9ff81fc8b8c

For additional metadata related to this dataset, please visit <https://github.com/globalbioticinteractions/ucm-ucmc> 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, Seltsmann, and Mietschen 2024) combined with third-party tools like grep, mlr, tail and head.

Table 1: Tools used in this review process

tool name	version
preston	0.10.1

tool name	version
elton	0.15.9
nomer	0.5.13
globinizer	0.4.0
mlr	6.0.0
jq	1.6
yq	4.25.3
pandoc	3.1.6.1

The review process can be described in the form of the script below <sup>1</sup>.

```
# get versioned copy of the dataset (size approx. 5.70MiB) under review
elton pull globalbioticinteractions/ucm-ucmc

# generate review notes
elton review globalbioticinteractions/ucm-ucmc\
> review.tsv

# export indexed interaction records
elton interactions globalbioticinteractions/ucm-ucmc\
> interactions.tsv

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

or visually, in a process diagram.

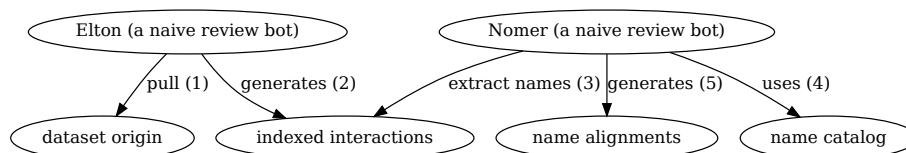


Figure 1: Review Process Overview

You can find a copy of the full review script at [check-data.sh](#). See also [GitHub](#) and [Codeberg](#).

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

## Results

In the following sections, the results of the review are summarized <sup>2</sup>. 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 Preston (Elliott et al. 2025) 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
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)

---

<sup>2</sup>Disclaimer: 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-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-sample.csv	list of species interaction claims indexed from the dataset under review in gzipped comma-separated values format
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-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

filename	description
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-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-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

filename	description
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
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-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-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

filename	description
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-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
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-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



filename	description
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-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-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

filename	description
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
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-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-sample.csv	first 500 taxonomic names found in the dataset under review in comma-separated values format
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

filename	description
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

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

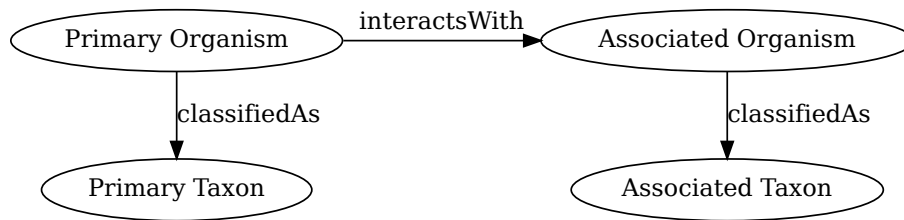


Figure 2: Biotic Interaction Data Model

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/ucm-ucmc`, has fingerprint hash: `//md5/2c855042b4811e51455fc9ff81fc8b8c`, is 5.70MiB in size and contains 9,592 interaction with 2 unique types of associations (e.g., `interactsWith`) between 889 primary taxa (e.g., *Lasioglossum*) and 451 associated taxa (e.g., *Penstemon degeneri*).

An exhaustive list of indexed interaction claims can be found in gzipped csv and tsv 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
Cerceris frontata	interactsWith	Eriogonum effusum	<a href="https://scan-bugs.org:443/portal/collections/individual/index.">https://scan-bugs.org:443/portal/collections/individual/index.</a>
Philanthus crabroniformis	interactsWith	Geranium fremontii	<a href="https://scan-bugs.org:443/portal/collections/individual/index.">https://scan-bugs.org:443/portal/collections/individual/index.</a>
Halictus avalonensis	interactsWith	Anthemis	<a href="https://scan-bugs.org:443/portal/collections/individual/index.">https://scan-bugs.org:443/portal/collections/individual/index.</a>
Melanoplus yarrowii	interactsWith	Citrus	<a href="https://scan-bugs.org:443/portal/collections/individual/index.">https://scan-bugs.org:443/portal/collections/individual/index.</a>

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

interactionTypeName	count
interactsWith	9540
adjacentTo	52

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

sourceTaxonName	count
Lasioglossum	411
Andrena	387
Bombus huntii	330
Bombus centralis	253
Bombus rufocinctus	191
Bombus appositus	165
Halictus tripartitus	141
Paratiphia	137
Bombus fervidus	134
Bombus pensylvanicus	133
Bombus flavifrons	125
Dendroctonus ponderosae	124
Bombus sylvicola	108
Bombus nevadensis	103
Bombus bifarius	102
Bombus morrisoni	83
Eurygaster	74
Augochlorella aurata	74
Osmia	72

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

targetTaxonName	count
Penstemon degeneri	566
Salix	488
Tamarix	400
Chrysothamnus	369
Melilotus	367
Asclepias	342
Helianthus	306
Pinus ponderosa	301
Solidago	300
Grindelia	174
Clematis ligusticifolia	139
Cardaria	114
Rhus trilobata	110
Erigeron	102
Cleome	101

targetTaxonName	count
Heterotheca villosa	98
Eriogonum effusum	93
Prunus virginiana	91
Astragalus	89

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

sourceTaxonName	interactionTypeNam	targetTaxonName	count
Andrena	interactsWith	Salix	211
Paratiphia	interactsWith	Tamarix	123
Bombus centralis	interactsWith	Penstemon degeneri	119
Lasioglossum	interactsWith	Salix	115
Bombus huntii	interactsWith	Chrysothamnus	84
Eurygaster	interactsWith	Poa	74
Bombus huntii	interactsWith	Penstemon degeneri	64
Dendroctonus ponderosae	interactsWith	Pinus ponderosa	57
Dendroctonus pseudotsugae	interactsWith	Pseudotsuga menziesii	57
Blepharida rhois	interactsWith	Rhus trilobata	55
Kleidocerys	interactsWith	Betula papyrifera	50
Smicronyx sordidus	interactsWith	Helianthus	50
Ips plastographus maritimus	interactsWith	Pinus radiata	50
Bembix pallidipicta	interactsWith	Asclepias	48
Deraeocoris	interactsWith	Pinus ponderosa	47
Gymnetron tetrum	interactsWith	Verbascum	44
Bombus appositus	interactsWith	Delphinium barbeyi	43
Dendroctonus ponderosae	interactsWith	Pinus contorta	40
Andrena	interactsWith	Prunus virginiana	39

### 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.

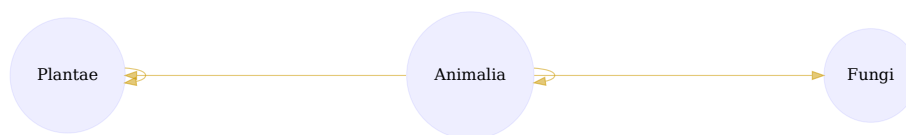


Figure 3: Interactions on taxonomic kingdom rank as interpreted by the Catalogue of Life download svg

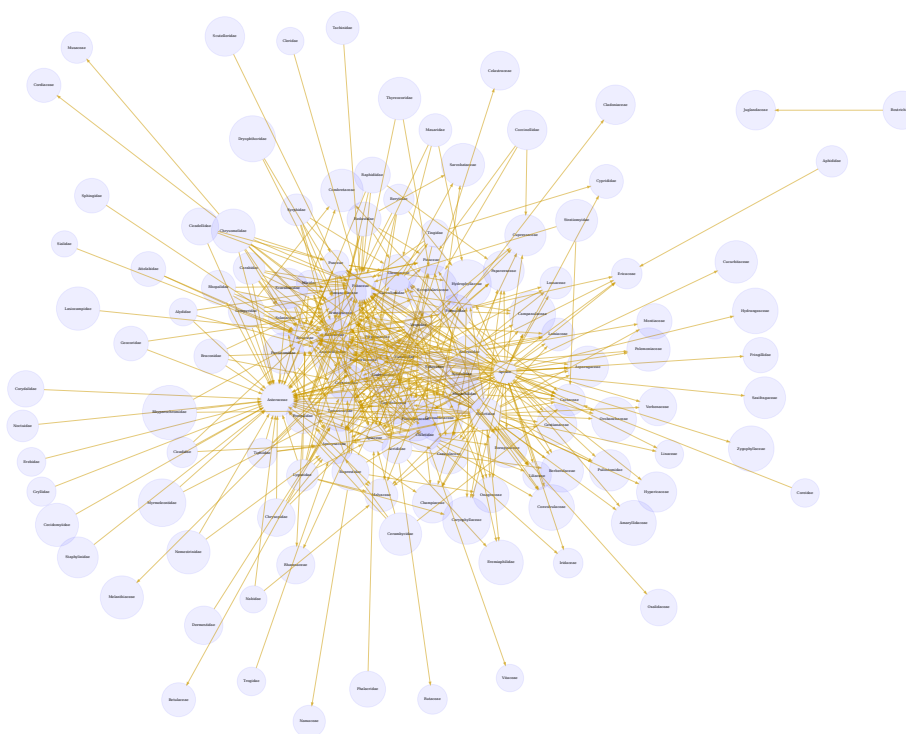


Figure 4: Interactions on the taxonomic family rank as interpreted by the Catalogue of Life. download svg

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](#)

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.

## 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
Agulla adnixa	HAS_ACCEPTED_NAME	col	Agulla adnixa
Agulla adnixa	SYNONYM_OF	col	Agulla adnixa
Agulla astuta	SYNONYM_OF	col	Agulla astuta
Agulla astuta	HAS_ACCEPTED_NAME	col	Agulla astuta

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	177
col	family	13
col	genus	294
col	species	801
col	subfamily	2
col	subgenus	7
col	subspecies	60
col	variety	8
discoverlife	NA	1164
discoverlife	species	176
gbif	NA	88
gbif	family	14
gbif	genus	306
gbif	species	866
gbif	subspecies	74
gbif	variety	13
itis	NA	232
itis	family	13
itis	genus	290
itis	species	764



resolvedCatalogName	resolvedRank	count
itis	subfamily	2
itis	subspecies	27
itis	variety	12
mdd	NA	1340
ncbi	NA	371
ncbi	family	13
ncbi	genus	295
ncbi	species	643
ncbi	subfamily	2
ncbi	subgenus	12
ncbi	subspecies	13
ncbi	tribe	1
ncbi	varietas	1
pbdb	NA	1152
pbdb	family	14
pbdb	genus	149
pbdb	species	23
pbdb	subfamily	1
pbdb	tribe	1
tpt	NA	1338
tpt	genus	2
wfo	NA	924
wfo	family	13
wfo	genus	157
wfo	species	235
wfo	subspecies	7
wfo	tribe	1
wfo	variety	8
worms	NA	1114
worms	family	13
worms	genus	132
worms	species	75
worms	subspecies	2
worms	tribe	1
worms	variety	4

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	1093
col	SYNONYM_OF	222
col	NONE	177
discoverlife	NONE	1164
discoverlife	HAS_ACCEPTED_NAME	169
discoverlife	SYNONYM_OF	56
discoverlife	HOMONYM_OF	13
gbif	HAS_ACCEPTED_NAME	1340
gbif	SYNONYM_OF	355
gbif	NONE	88
itis	HAS_ACCEPTED_NAME	1040
itis	NONE	232
itis	SYNONYM_OF	110
mdd	NONE	1340
ncbi	SAME_AS	946
ncbi	NONE	371
ncbi	SYNONYM_OF	47
pbdb	NONE	1152
pbdb	HAS_ACCEPTED_NAME	187
pbdb	SYNONYM_OF	7
tpt	NONE	1338
tpt	HAS_ACCEPTED_NAME	2
wfo	NONE	924
wfo	HAS_ACCEPTED_NAME	361
wfo	HAS_UNCHECKED_NAME	39
wfo	SYNONYM_OF	90
worms	NONE	1114
worms	HAS_ACCEPTED_NAME	226
worms	SYNONYM_OF	39

Table 11: List of Available Name Alignment Reports

catalog name	alignment results
col	associated names alignments report in gzipped html, csv, and tsv)
ncbi	associated names alignments report in gzipped html, csv, and tsv)
discoverlife	associated names alignments report in gzipped html, csv, and tsv)
gbif	associated names alignments report in gzipped html, csv, and tsv)
itis	associated names alignments report in gzipped html, csv, and tsv)
wfo	associated names alignments report in gzipped html, csv, and tsv)
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
2025-04-22T19:23:58Z	summary	<a href="https://github.com/globalbioticinteractions/ucm-ucmc/archive/60530dcc82d33c9675a4026ad60dc40bea8f2">https://github.com/globalbioticinteractions/ucm-ucmc/archive/60530dcc82d33c9675a4026ad60dc40bea8f2</a>
2025-04-22T19:23:58Z	summary	9592 interaction(s)
2025-04-22T19:23:58Z	summary	0 note(s)
2025-04-22T19:23:58Z	summary	10537 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 5: Picture of a GloBI Review Badge <sup>3</sup>

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 6: Picture of a GloBI Index Badge <sup>4</sup>

If you'd like to keep track of reviews or index status of the dataset under review, please visit GloBI's dataset index <sup>5</sup> 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

---

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

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

<sup>5</sup>At time of writing (2025-04-22) the version of the GloBI dataset index was available at <https://globalbioticinteractions.org/datasets>

this review does *not* assess the quality of the dataset. Instead, it serves as an indication of the open-ness<sup>6</sup> 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 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.

## References

- Elliott, Michael, Jorrit Poelen, Icaro Alzuru, Emilio Berti, and partha04patel. 2025. “Bio-Guoda/Preston: 0.10.5.” Zenodo. <https://doi.org/10.5281/zenodo.14662206>.
- ICZN. 1999. “International Code of Zoological Nomenclature.” The International Trust for Zoological Nomenclature, London, UK. <https://www.iczn.org/the-code/the-code-online/>.
- Kuhn, Tobias, and Michel Dumontier. 2014. “Trusty URIs: Verifiable, Immutable, and Permanent Digital Artifacts for Linked Data.” In *The Semantic Web: Trends and Challenges*, edited by Valentina Presutti, Claudia d’Amato,

---

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

- Fabien Gandon, Mathieu d’Aquin, Steffen Staab, and Anna Tordai, 395–410. Cham: Springer International Publishing.
- Kuhn, Tobias, Jorrit Poelen, and Katrin Leinweber. 2025. “Globalbioticinteractions/Elton: 0.15.1.” Zenodo. <https://doi.org/10.5281/zenodo.14927734>.
- Poelen, Jorrit H. (ed.). 2024. “Nomer Corpus of Taxonomic Resources Hash://Sha256/ B60c0d25a16ae77b24305782017b1a270b79b5d1746f832650 F2027ba536e276 Hash://Md5/17f1363a277ee0e4ecaf1b91c665e47e.” Zenodo. <https://doi.org/10.5281/zenodo.12695629>.
- Poelen, Jorrit H., James D. Simons, and Chris J. Mungall. 2014. “Global Biotic Interactions: An Open Infrastructure to Share and Analyze Species-Interaction Datasets.” *Ecological Informatics* 24 (November): 148–59. <https://doi.org/10.1016/j.ecoinf.2014.08.005>.
- Poelen, Jorrit, Katja Seltmann, and Daniel Mietchen. 2024. “Globalbioticinteractions/Globinizer: 0.4.0.” Zenodo. <https://doi.org/10.5281/zenodo.10647565>.
- Salim, José Augusto, and Jorrit Poelen. 2025. “Globalbioticinteractions/Nomer: 0.5.15.” Zenodo. <https://doi.org/10.5281/zenodo.14893840>.
- Trekels, Maarten, Debora Pignatari Drucker, José Augusto Salim, Jeff Ollerton, Jorrit Poelen, Filipi Miranda Soares, Max Rünzel, Muo Kasina, Quentin Groom, and Mariano Devoto. 2023. “WorldFAIR Project (D10.1) Agriculture-related pollinator data standards use cases report.” Zenodo. <https://doi.org/10.5281/zenodo.8176978>.
- Wilkinson, Mark D., Michel Dumontier, IJsbrand Jan Aalbersberg, Gabrielle Appleton, Myles Axton, Arie Baak, Niklas Blomberg, et al. 2016. “The FAIR Guiding Principles for Scientific Data Management and Stewardship.” *Scientific Data* 3 (1). <https://doi.org/10.1038/sdata.2016.18>.