



*Ectatomma tuberculatum* observed in Peru by manimiranda.  
Photo via iNaturalist (CC BY-NC 4.0)

# Lowering the technical threshold to participate

*Tim Robertson*

GLOBAL NODES MEETING | LEIDEN | OCTOBER 2019

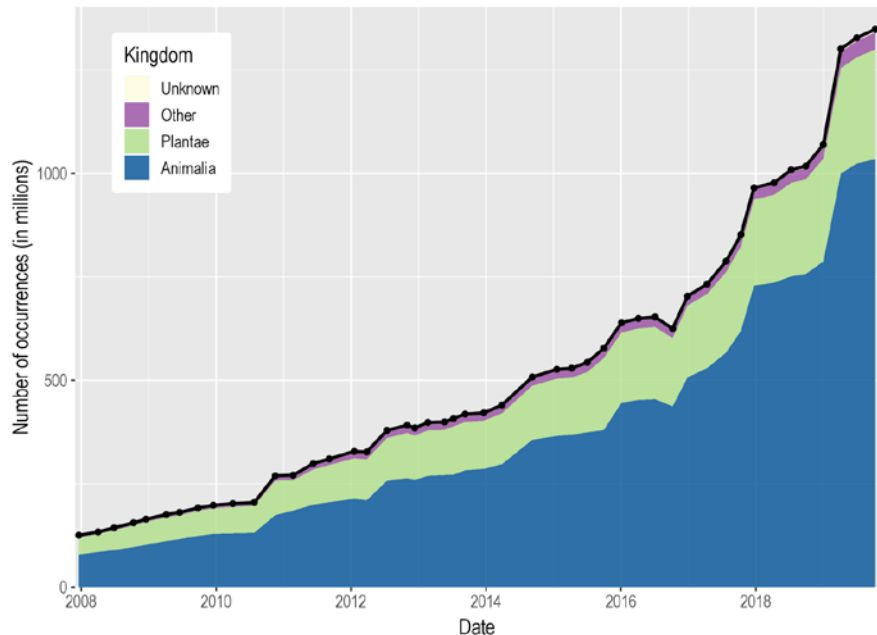
# SESSION CONTENTS

1. Growth (and some reflections)
2. Managing content in GBIF
3. Repositories
4. Broadening our data model
5. “Powered by GBIF”: Making the most use of our infrastructure

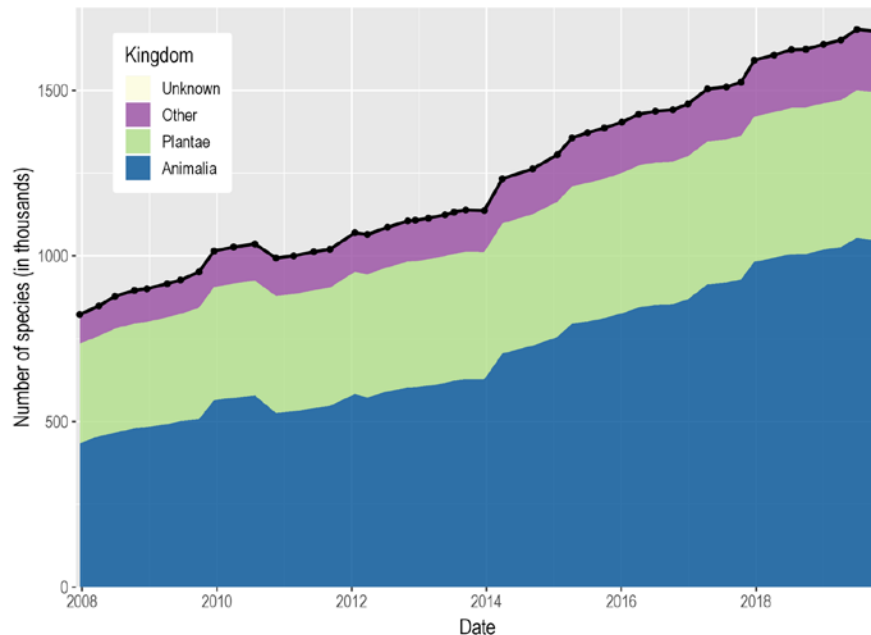
# Growth (and some reflections)

# GROWTH IN VOLUME AND VARIETY OCCURRENCE DATA

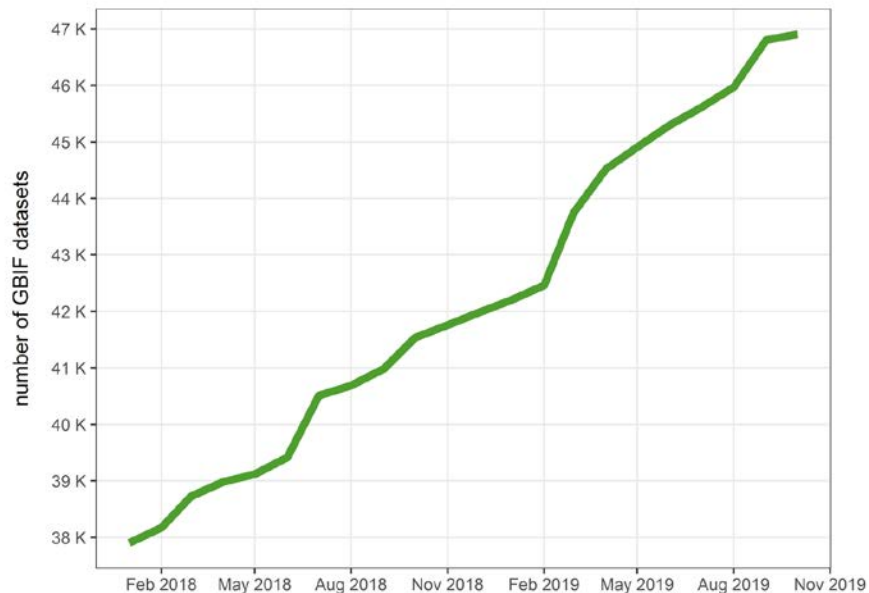
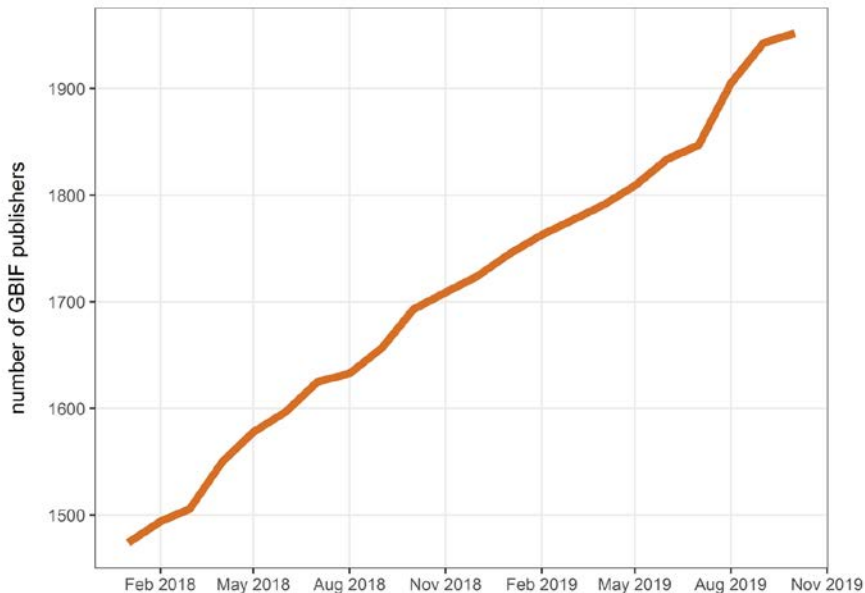
Species occurrence records accessible through GBIF over time



Number of species having occurrence records accessible through GBIF over time



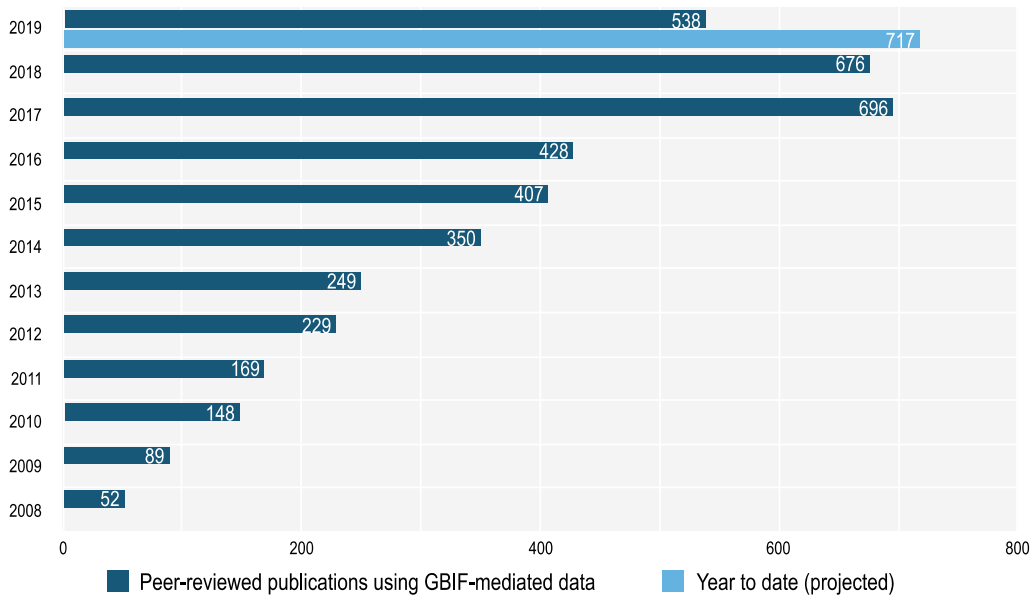
# GROWTH IN PUBLISHERS AND DATASETS



# GROWTH IN USE

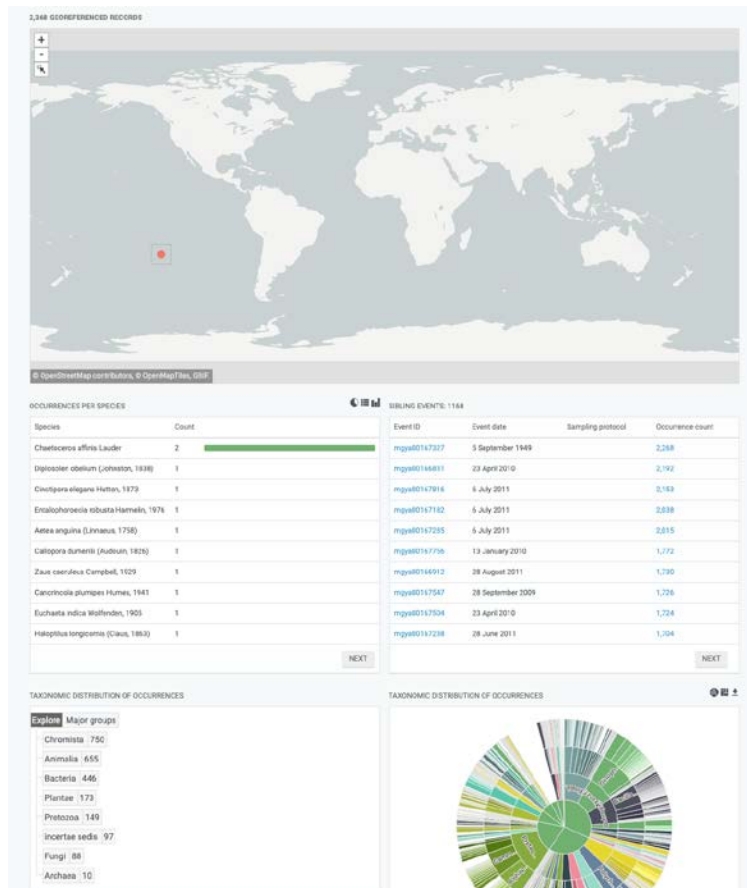
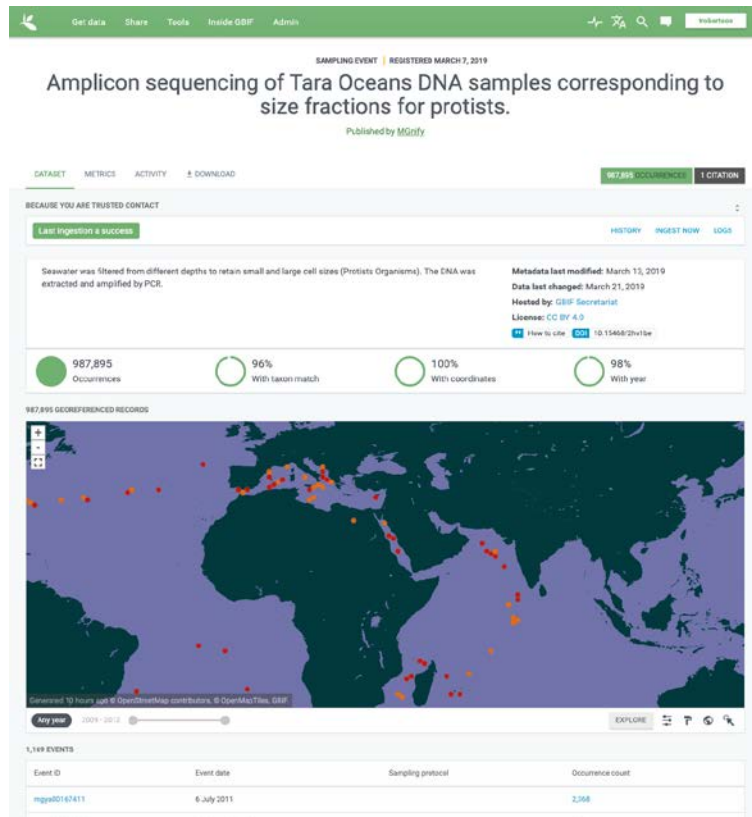


Users of GBIF.org per week  
~150k per month now



Citations of GBIF mediated data

# METAGENOMIC DATA



# TAXONOMIC TREATMENTS

The screenshot shows the GBIF Taxonomic Treatments interface for the species *Sciapus platypterus* (Fabricius, 1805). The interface is divided into a left sidebar for classification and a main content area for the species page.

**Classification Sidebar:**

- Kingdom: Animalia
- Phylum: Arthropoda
- Class: Insecta
- Order: Diptera
- Family: Dolichopodidae
- Genus: *Sciapus* Zeller, 1842
- Species: *Sciapus platypterus* (Fabricius, 1805)
- Immediate children: *Dolichopus platypterus* Fabricius, 1805; *Leptopus tipularius* Fallén, 1823; *Psilopus crinipes* Meigen, 1830; *Sciapus crinipes* (Meigen, 1830); *Sciapus tipularius* (Fallén, 1823)
- Unranked: BOLD:ABU9505 (cf. *Sciapus platypterus*)

**Main Content Area:**

**Species:** *Sciapus platypterus* (Fabricius, 1805)  
**Source:** Catalogue of Life  
**Basionym:** *Dolichopus platypterus* Fabricius, 1805

**Overview:** 1 TREATMENT, METRICS, REFERENCE TAXON, 1276 OCCURRENCES, 1874 SPECIES

**Dipterological surveys in Portugal unveil 200 species of long-legged flies, with over 170 new to the country (Diptera: Dolichopodidae)**

In: Pollet, Marc, Andrade, Rui, Gonçalves, Ana, Andrade, Pedro, Jacinto, Václav, Almeida, Jorge, Bräckerleer, Anja De, Calster, Hans Van, Brosems, Dimitri (2019): Dipterological surveys in Portugal unveil 200 species of long-legged flies, with over 170 new to the country (Diptera: Dolichopodidae). Zootaxa 4649 (1): 1-69. DOI: <https://doi.org/10.11646/zootaxa.4649.1.1>

Mediated through: Plazi.org taxonomic treatments database

**116. *Sciapus platypterus* (Fabricius, 1805) (Sciapodinae) – new to Portugal**

(Fig. 5M)

Number of specimens recorded: 59.

Distribution. Europe. Portugal: two northern coastal provinces.

Ecology. Recorded from four macrohabitat categories in Portugal, with most sampling sites situated in park landscape. In northwestern Europe, this species is found on tree trunks in a wide variety of habitat types.

Rarity (%). 6.9 (fairly rare). Very common (FL).

Activity period. May–June.

**FIGURES:**

**FIGURE 5.** Selected Portuguese species. A. *Neurigona biflexa* (?); B. *Orthoceratium sabulosum* (?); C. *Parathalassius blasigii* (?); D. *Poecilobothrus nobilitatus* (?); E. *Rhaphium appendiculatum* (?); F. *Rhaphium brevicorne* (?); G. *Rhaphium longicorne* (?); H. *Rhaphium micans* (?); I. *Schoenophilus versutus* (?); J. *Sciapus albivittatus* (?); K. *Sciapus laetus* (?); L. *Sciapus pallens* (?); M. *Sciapus platypterus* (?); N. *Sciapus zonatus* (?); O. *Syblistroma dufouri* (?); photos by Rui Andrade, except for D by James A.C. Clark.

© Pollet, Marc; Andrade, Rui; Gonçalves, Ana; Andrade, Pedro; Jacinto, Václav; Almeida, Jorge; Bräckerleer, Anja De; Calster, Hans Van; Brosems, Dimitri

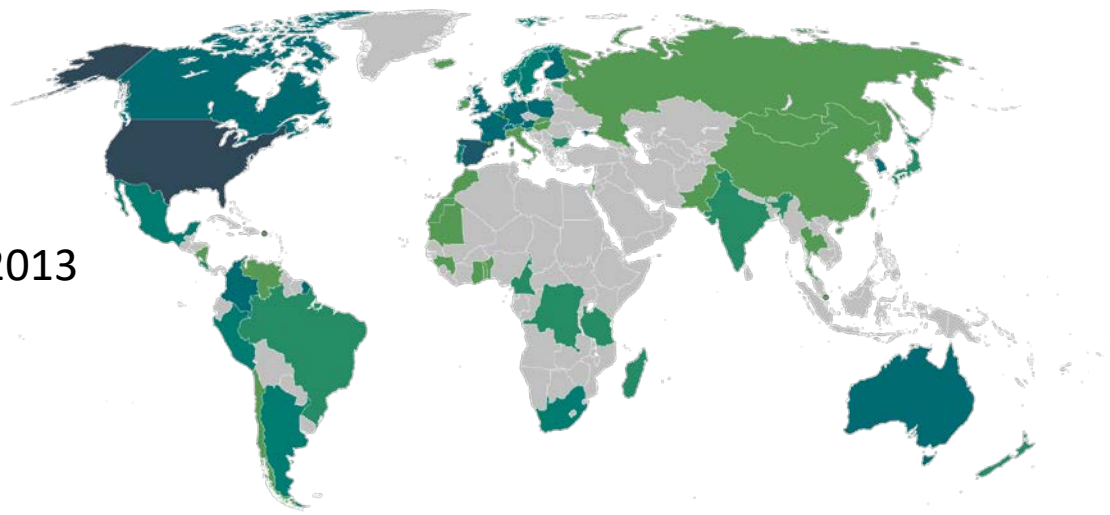
Mediated through Plazi:

1. 286k treatments at genus or more specific rank
2. connect to 212k concepts in the GBIF backbone
3. 48k concepts **are only supplied by Plazi** - largely representing newly described species

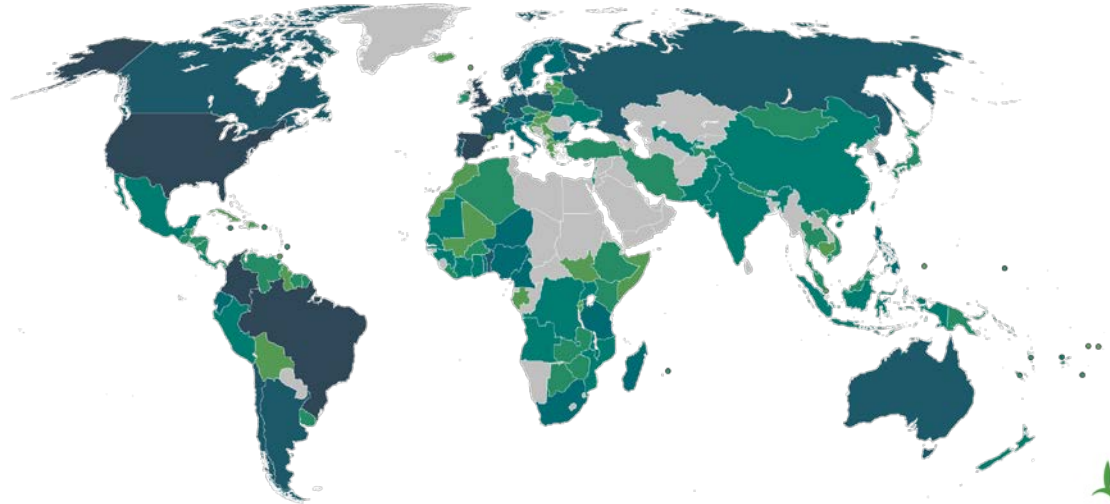


# COUNTRIES WITH DATA PUBLISHERS

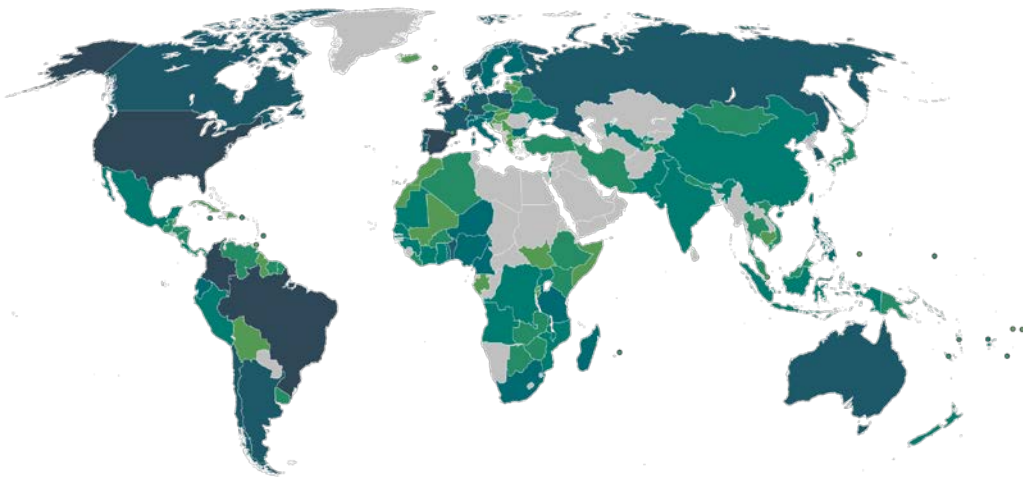
September 2013



Today



# REFLECTIONS

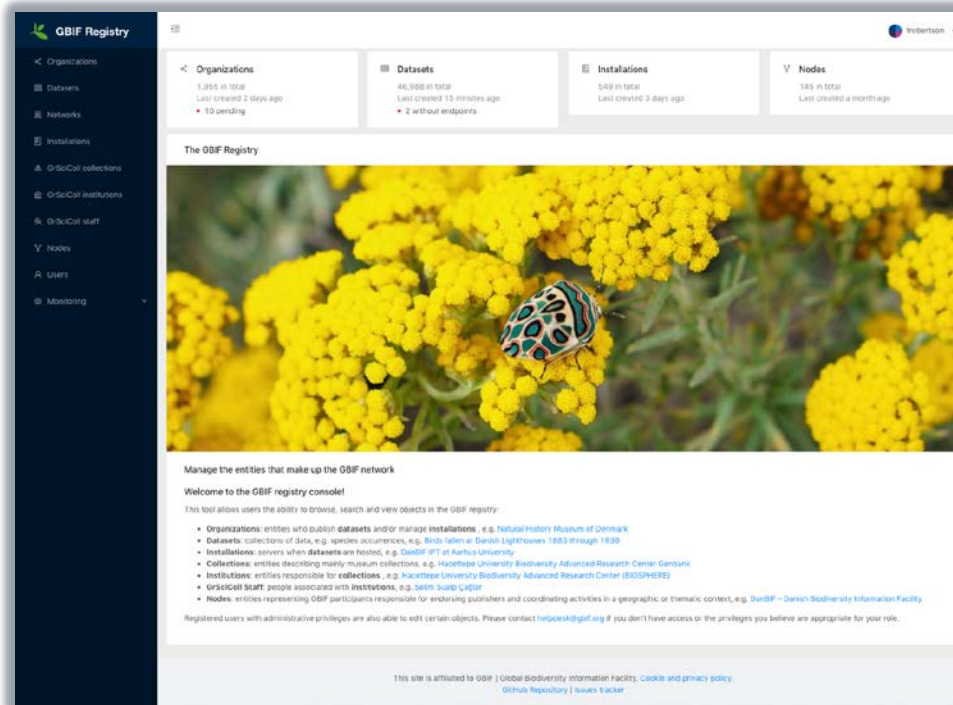


1. Very positive trends
2. Increased costs
  - i. Helpdesk and support
  - ii. More powerful hardware
  - iii. Data hosting
  - iv. Development effort
  - v. Engagement activities
  - vi. Translations

There are growing calls to  
lower the technical threshold  
to operate

# Managing content in GBIF

# OPEN REGISTRY



The screenshot shows the GBIF Registry console interface. On the left is a dark blue sidebar with a menu containing: Organizations, Datasets, Networks, Installations, GBIF collections, GBIF institutions, GBIF staff, Nodes, Users, and Monitoring. The main content area has a top navigation bar with four tabs: Organizations, Datasets, Installations, and Nodes. Below these tabs, a large banner image shows a colorful beetle on yellow flowers. Under the banner, the text reads "The GBIF Registry" followed by "Manage the entities that make up the GBIF network". A welcome message states "Welcome to the GBIF registry console!" and explains the tool's purpose. A bulleted list defines key entities: Organizations (publishers), Datasets (collections), Installations (servers), Collections (museum collections), Institutions (responsible for collections), GBIF staff, and Nodes (responsible for endorsing publishers). At the bottom, it provides contact information for help and notes that registered users can edit certain objects.

**GBIF Registry**

**Organizations**  
1,355 in total  
Last created 2 days ago  
• 10 pending

**Datasets**  
46,900 in total  
Last created 15 minutes ago  
• 2 without endpoints

**Installations**  
549 in total  
Last created 3 days ago

**Nodes**  
143 in total  
Last created a month ago

The GBIF Registry

Manage the entities that make up the GBIF network

Welcome to the GBIF registry console!

This tool allows users the ability to browse, search and view objects in the GBIF registry:

- **Organizations:** entities who publish **datasets** and/or manage **installations**, e.g. Natural History Museum of Denmark
- **Datasets:** collections of data, e.g. species occurrences, e.g. Birds taken at Danish Lighthouses 1883 through 1939
- **Installations:** servers where **datasets** are hosted, e.g. GBIF IPT at Aarhus University
- **Collections:** entities describing mainly museum collections, e.g. Haeckel's University Biodiversity Advanced Research Center Gerdano
- **Institutions:** entities responsible for **collections**, e.g. Haeckel's University Biodiversity Advanced Research Center (BIOSPHERE)
- **GBIF staff:** people associated with **institutions**, e.g. Søren Sørensen
- **Nodes:** entities representing GBIF participants responsible for endorsing publishers and coordinating activities in a geographic or thematic context, e.g. Danish Biodiversity Information Facility

Registered users with administrative privileges are also able to edit certain objects. Please contact [helpdesk@gbif.org](mailto:helpdesk@gbif.org) if you don't have access or the privileges you believe are appropriate for your role.

This site is affiliated to GBIF | Global Biodiversity Information Facility. Cookie and privacy policy.  
[GBIF Repository](#) | [Issues Tracker](#)

<https://registry.gbif.org>

# OPEN EDITING

The screenshot displays the GBIF Registry web application. On the left is a dark sidebar with navigation links: Organizations, Datasets (selected), Networks, Installations, GBIF collections, GBIF institutions, GBIF staff, Nodes, Users, and Monitoring. The main content area shows the breadcrumb 'Datasets / EDP Foz-Tua: Large Mammals (camera-trapping): Complementary Studies [2010]' and the dataset title 'EDP Foz-Tua: Large Mammals (camera-trapping): Complementary Studies [2010]'. Below this, a 'Dataset details' panel is visible, containing a table of metadata. The table lists fields such as Title, Type, Subtype, External status, License, Lock auto updates, Digital Object Identifier, Description, Publishing organization, Installation, Parent dataset, Duplicate of Dataset, Homepage, Logo URL, Language, Update frequency, Alias, Abbreviation, Citation, and Citation identifier. The 'Description' field contains a detailed paragraph about the dataset's origin and collection method. The 'Citation' field includes the authors, year, title, and a URL to the dataset on GBIF.org.

Field	Value
Title	EDP Foz-Tua: Large Mammals (camera-trapping): Complementary Studies [2010]
Type	Sampling event
Subtype	No information
External	No
License	CC-BY 4.0
Lock auto updates	No
Digital Object Identifier	10.15468/czpfa
Description	The dataset contains records of large mammals (Mammalia) collected in the lower valley of the river Tua and included in the Complementary Studies (2010) of the Environmental Impact Assessment of the Foz Tua Hydroelectric Dam, promoted by EDP - Energias de Portugal, S.A. Data were collected between February and March 2010 with 40 cameras in sampling points with favourable habitats in 20 2x2 km UTM squares on the area of the lower Tua river valley directly or indirectly affected by the Foz-Tua dam. The presence of individuals and the species identification was recorded by direct observation of the photos taken with the cameras.
Publishing organization	EDP - Energias de Portugal
Installation	GBIF Portugal PT
Parent dataset	No information
Duplicate of Dataset	No information
Homepage	No information
Logo URL	No information
Language	English
Update frequency	UNKNOWN
Alias	No information
Abbreviation	No information
Citation	Cabral J A, Barros P, Vale-Gonçalves H M, Santos R, Múrias T (2019). EDP Foz-Tua: Large Mammals (camera-trapping): Complementary Studies [2010]. EDP - Energias de Portugal. Sampling event dataset <a href="https://doi.org/10.15468/czpfa">https://doi.org/10.15468/czpfa</a> accessed via GBIF.org on 2019-10-17.
Citation identifier	No information

1. Manage Institutions, Datasets, Collections etc
2. Editor permission scoped to Country, Organisation or Installation
3. All data exposed through an API

# OPERATE THE CRAWLING

GBIF Registry

Monitoring / Running ingestions

Running ingestions

Search table

1 result in total

URL	ST	DC	PC	PFS	PFE	FE	FR	RON	ROM	ROU
<a href="https://gbif.org/GgServerIdwca/BA09ED5A2C07FC9B977FFD10760FFB2ip">https://gbif.org/GgServerIdwca/BA09ED5A2C07FC9B977FFD10760FFB2ip</a> Tree New Voregated Smalithines of the Genus Carapax (Theone: Scorpianiformes: Lipardae) from the Aleutian Islands, Alaska (2 occ)	2018-09-29T18:48:00.037+0000			1	1	0	0	0	0	0

If you have filters enabled you might not see anything

This site is affiliated to GBIF | Global Biodiversity Information Facility. [Cookie and privacy policy](#).  
[GitHub Repository](#) | [Issues tracker](#)

1. Control data ingestions
2. View all data ingestion diagnostic logs
3. Apply default values (e.g. *kingdom=Plantae*)
4. Future:
  - i. Manage the vocabularies to which we organise data (e.g. *habitat*)
  - ii. Richer metadata, such as Collection Description

# LOWER TECHNICAL THRESHOLD

1. Opportunity to reuse infrastructure
  - i. “Use GBIF” rather than “connect to GBIF”
  - ii. Optimise (future) development effort
  - iii. Efficiencies in data management (e.g. more effort on data “cleaning”)
  
2. Commitment from Australia to explore shared infrastructure:

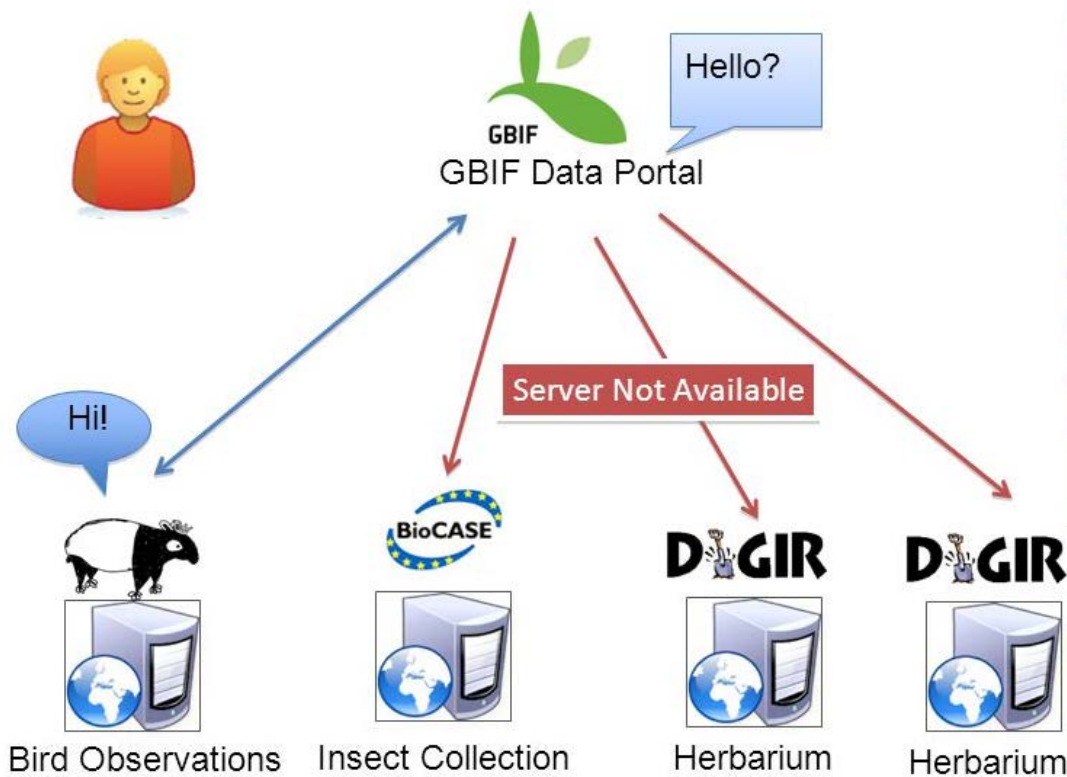
“ALA will adopt the GBIF registry. As part of this we suggest the functionality of the GBIF registry be expanded to provide hosted IPT style”



# Repositories

# BACK IN THE DAY...

*Circa 2008*



Graphic reused from old GBIF presentation

## “MICRO REPOSITORIES”

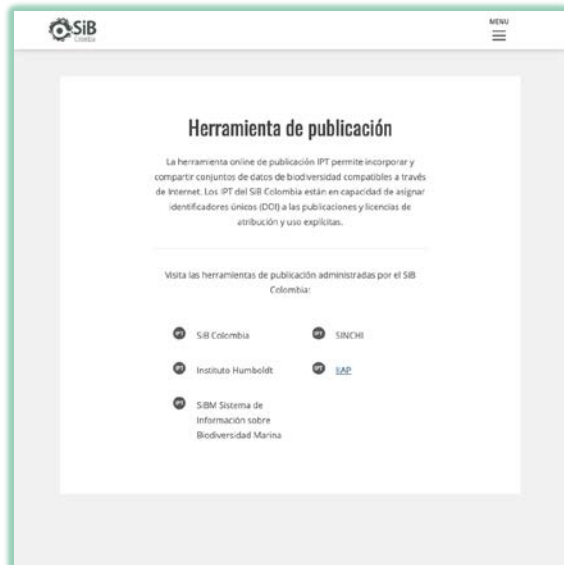
## IPT: The Integrated Publishing Toolkit

*A free open source software tool used to publish and share biodiversity datasets through the GBIF network.*



Don't see your IPT? Send [GBIF](#) your coordinates.

# CO-LOCATED REPOSITORIES (EXAMPLES)

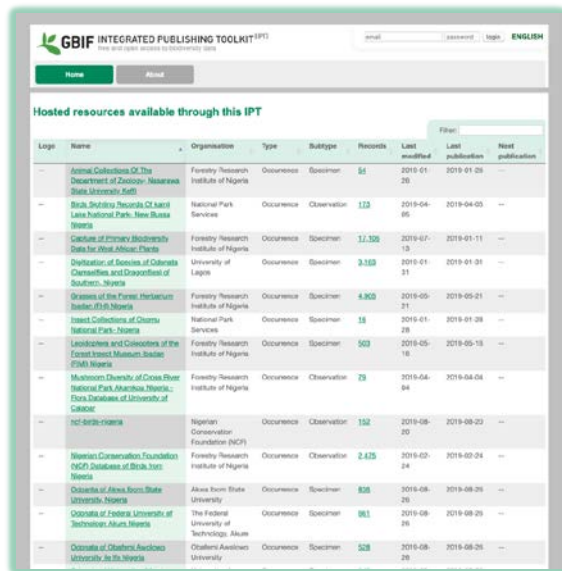


**Herramienta de publicación**

La herramienta online de publicación IPT permite incorporar y compartir conjuntos de datos de biodiversidad compatibles a través de Internet. Los IPT del SIB Colombia están en capacidad de asignar identificadores únicos (DOI) a las publicaciones y licencias de atribución y uso explícitas.

Visita las herramientas de publicación administradas por el SIB Colombia:

- SIB Colombia
- SINCHI
- Instituto Humboldt
- EAP
- SIB Sistema de Información sobre Biodiversidad Marina



**GBIF INTEGRATED PUBLISHING TOOLKIT<sup>1</sup>**

Hosted resources available through this IPT

Logo	Name	Organisation	Type	Subtype	Records	Last modified	Last publication	Next publication
	Animal Collections Of The Department of Zoology, Nnamdi Azikiwe University, Awka	Forestry Research Institute of Nigeria	Occurrence	Specimen	51	2019-01-20	2019-01-20	—
	Braka, Indragiri Tenggara, Cikarand Lela National Park, New Bussa Wewaka	National Park Services	Occurrence	Observation	123	2019-04-05	2019-04-05	—
	Calculation of Invertebrate Biodiversity Data for West African Chirps	Forestry Research Institute of Nigeria	Occurrence	Specimen	17,300	2019-07-19	2019-01-11	—
	Digitization of Species of Calceolaria, Gentianaceae and Droseraceae of Southern Nigeria	University of Lagos	Occurrence	Specimen	3,103	2019-01-31	2019-01-31	—
	Grasses of the Forest Herbarium, Zaria, Jigawa State	Forestry Research Institute of Nigeria	Occurrence	Specimen	4,302	2019-05-21	2019-05-21	—
	Insect Collections of Owerri National Park, Nigeria	National Park Services	Occurrence	Specimen	18	2019-01-28	2019-01-28	—
	Landrochers and Coleoptera of the Forest Herbarium, Zaria, Jigawa State	Forestry Research Institute of Nigeria	Occurrence	Specimen	503	2019-05-18	2019-05-18	—
	Mammal Diversity of Cross River National Park, Abia State, Nigeria	Forestry Research Institute of Nigeria	Occurrence	Observation	29	2019-04-04	2019-04-04	—
	not birds-nigeria	Nigerian Conservation Foundation (NCF)	Occurrence	Observation	152	2019-08-20	2019-08-20	—
	Nigerian Conservation Foundation (NCF) Database of Birds, Nigeria	Forestry Research Institute of Nigeria	Occurrence	Observation	2,425	2019-02-24	2019-02-24	—
	Occurrence of Akwa Ibom State University, Nigeria	Akwa Ibom State University, Nigeria	Occurrence	Specimen	808	2019-08-26	2019-08-26	—
	Occurrence of Federal University of Technology, Akure, Nigeria	The Federal University of Technology, Akure	Occurrence	Specimen	981	2019-08-26	2019-08-26	—
	Occurrence of Obafemi Awolowo University, Ile-Ife, Nigeria	Obafemi Awolowo University	Occurrence	Specimen	528	2019-08-26	2019-08-26	—



**GBIF** Global Biodiversity Information Facility

**GBIF Hosted IPTs**

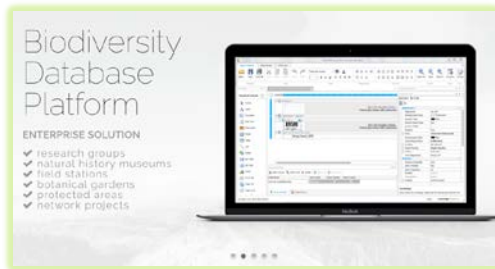
This server contains IPTs run by GBIF.org

- BID — Biodiversity Information for Development
- BIFA — Biodiversity Information Fund for Asia
- EIA — Environmental Impact Assessments
- EBON — European Union Biodiversity Observation Network
- LAC — Latin American and Caribbean GBIF Region
- GIASIP — Global Invasive Alien Species Information Partnership

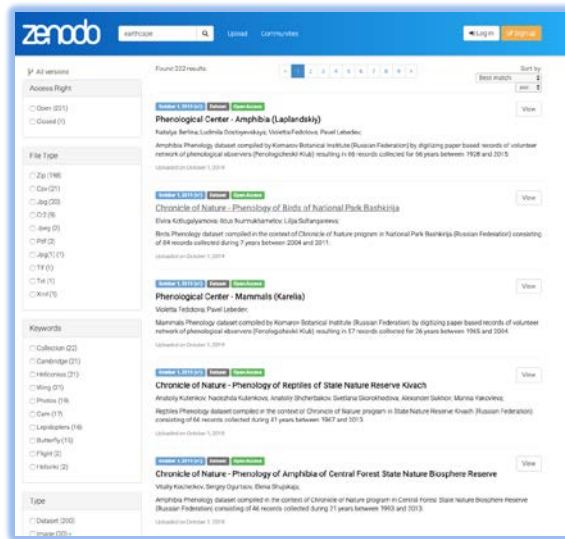


# PARTNERSHIPS USING OPEN REPOSITORIES

*Recent example of connecting infrastructure*



Dedicated,  
domain-specific tools



General purpose open  
science repository

# Understanding this trend is important for our activities...

1. For the long-term future of the IPT
2. Should GBIF seek strong partnerships (e.g. Zenodo)?
3. Do you wish GBIF to more prominently offer repository services?
4. How does your node see this landscape?

# Broadening our data model

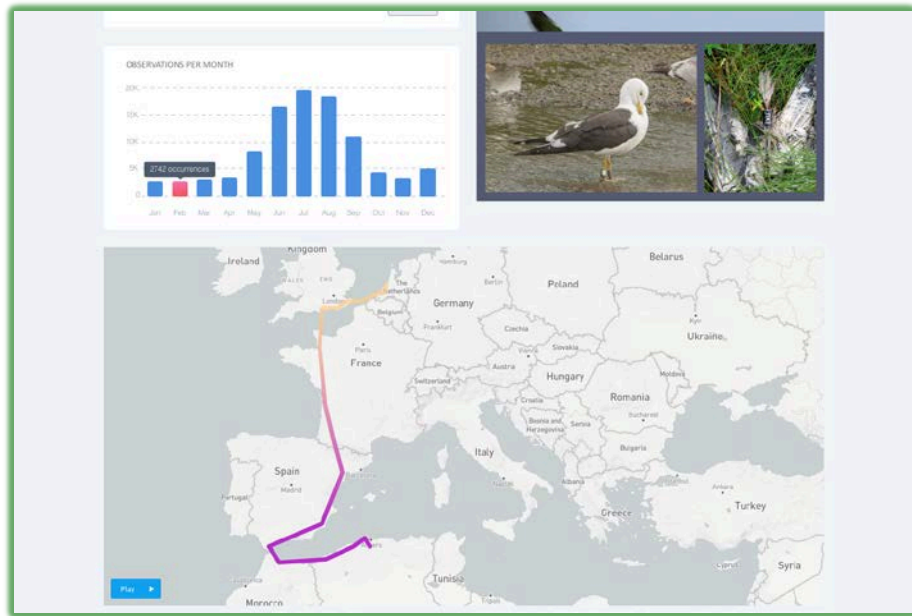
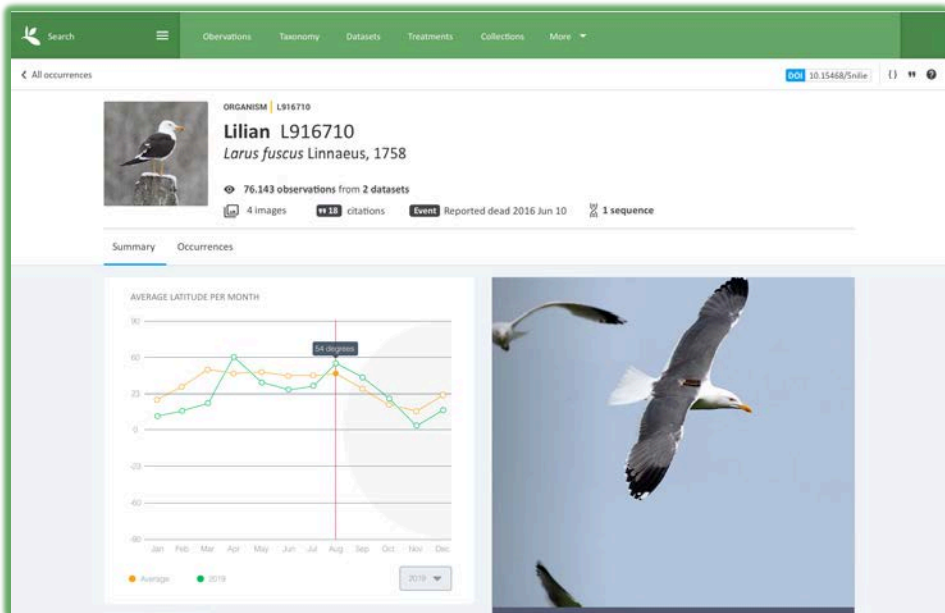
Images on <https://labs.gbif.org/visual-concepts>

”During 2020 we will focus on advancing and refining data models for Collections, Taxonomic treatments, Sampling Events, Organisms, Specimens, Citations and the **linkages between them.**”





# EXAMPLE 1: ORGANISM

← Simpler navigation to entity types



<https://labs.gbif.org/visual-concepts>


[Profiles](#)
[Trainers](#)
[Organizations](#)
[Countries](#)
[Agents](#)



[Log in with ORCID](#)

# Bloodhound

Claim the natural history specimens you collected or identified, track their use in new science, and help acknowledge your peers, mentors, and organizations.

Get started


## Sample Profiles



**Verrill, Addison Emery**  
(b. February 09, 1839 – d. December 10, 1926)  
United States of America

**Collected Plexauridae**

21 specimens claimed



**Henry, Augustine**  
(b. July 02, 1857 – d. March 23, 1930)  
Ireland


**Collected Rosaceae**

2,488 specimens claimed

**Geitler, Lothar**  
(b. May 18, 1899 – d. May 01, 1990)  
Austria

**Identified Batrachospermaceae and collected Batrachospermaceae**

24 specimens claimed



**Mayr, Ernst**  
(b. July 05, 1904 – d. February 03, 2005)  
United States of America; Germany

**Identified Psittacidae and collected Psittacidae**

4,382 specimens claimed

**Anderson, William**  
(b. December 28, 1750 – d. August 03, 1778)  
Kingdom of Great Britain

**Collected Nyctaginaceae**

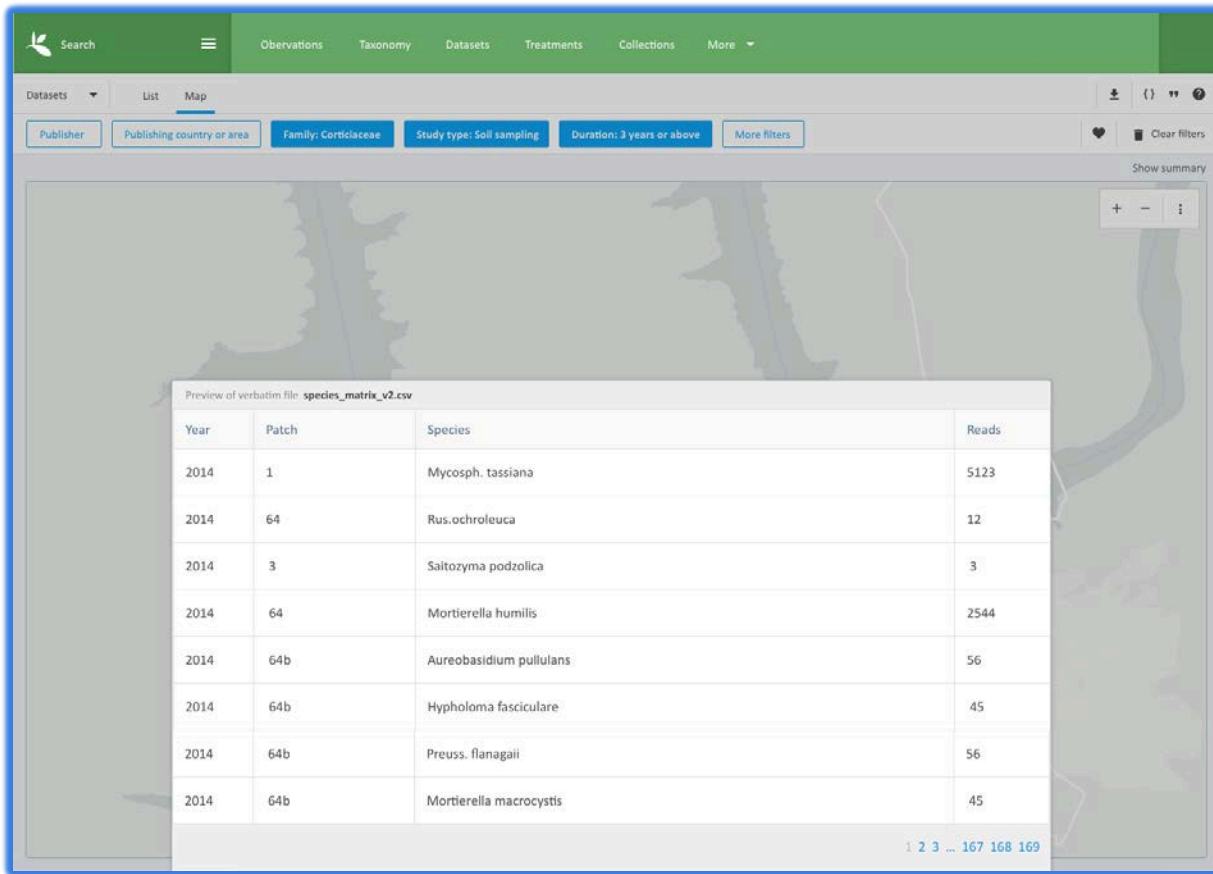
19 specimens claimed

**Cabrera, Ángel Lulio**  
(b. October 19, 1908 – d. July 08, 1999)  
Spain; Argentina

**Identified Scrophulariaceae and collected Poaceae**

25 specimens claimed

# EXAMPLE 3: DISCOVERING SAMPLE BASED DATA

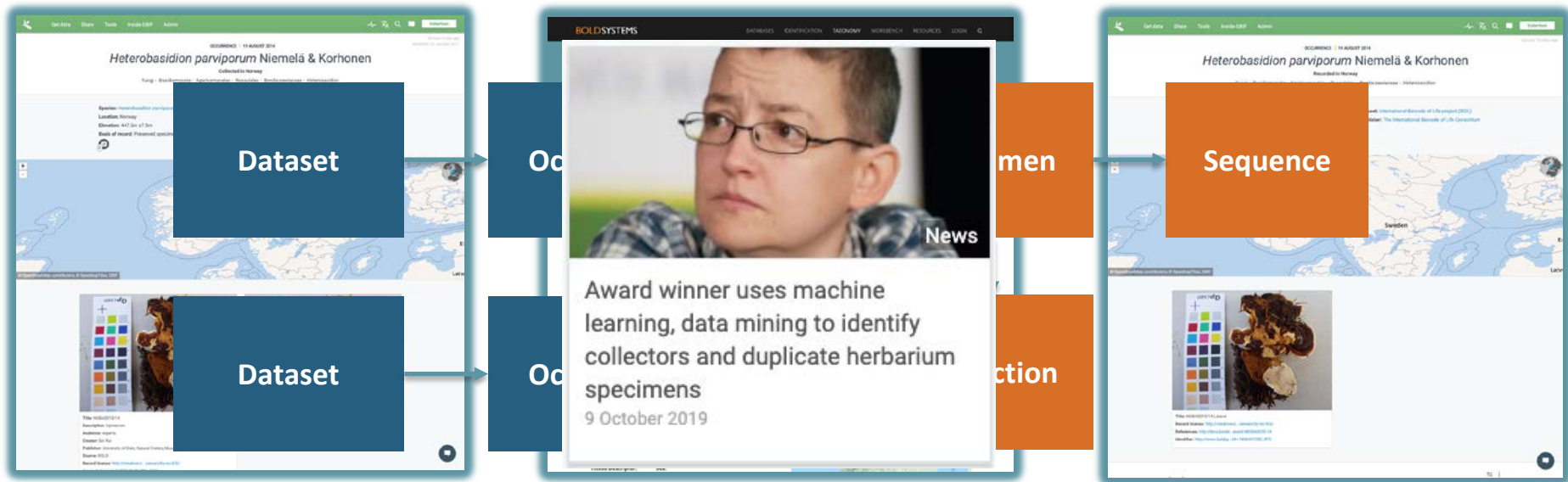


The screenshot displays the GBIF (Global Biodiversity Information Facility) interface. At the top, there is a green navigation bar with a search icon and the word "Search". Below this, a horizontal menu contains the following items: Observations, Taxonomy, Datasets, Treatments, Collections, and More. The main content area is divided into two sections. The top section is a filter bar with a "Datasets" dropdown menu and a "List" tab. Below the tab, there are several filter buttons: "Publisher", "Publishing country or area", "Family: Corticiaceae", "Study type: Soil sampling", "Duration: 3 years or above", and "More filters". To the right of these buttons are icons for a heart, a trash can, and a "Clear filters" button. The bottom section is a map view, indicated by the "Map" tab being selected. The map shows a geographical area with a river and some land features. Overlaid on the map is a "Preview of verbatim file: species\_matrix\_v2.csv". This preview shows a table with four columns: Year, Patch, Species, and Reads. The table contains eight rows of data. At the bottom right of the table, there is a pagination bar showing "1 2 3 ... 167 168 169".

Year	Patch	Species	Reads
2014	1	Mycosph. tassiana	5123
2014	64	Rus.ochroleuca	12
2014	3	Saitozyma podzolica	3
2014	64	Mortierella humilis	2544
2014	64b	Aureobasidium pullulans	56
2014	64b	Hypholoma fasciculare	45
2014	64b	Preuss. flanaganii	56
2014	64b	Mortierella macrocystis	45

See <https://labs.gbif.org/visual-concepts>

# EXAMPLE 4: LINKING SEQUENCES TO SPECIMENS



Museum record

Sequenced in  
BOLD

Republished

# EXAMPLE 5: MEDIATING TAXONOMIC TREATMENTS

## A taxonomic review of the genus *Triscaedecia* (Lepidoptera: Alucitidae) in the world fauna

PETR USTJUZHANIN, VASILII KOVTUNOVICH

### Abstract

The article describes four new species of Alucitidae in the genus *Triscaedecia* from the Malay and Polynesian regions: *Triscaedecia sulawesi* Ustjuzhanin, Kovtunovich & Hobern sp. nov., *T. sarawaki* Ustjuzhanin, Kovtunovich & Hobern sp. nov., *T. svetlanae* Ustjuzhanin, Kovtunovich & Hobern sp. nov., and *T. suva* Ustjuzhanin, Kovtunovich & Hobern sp. nov. The female genitalia of *Triscaedecia dactyloptera* Hampson, 1905 and the adult and the male genitalia of *Triscaedecia septemdactyla* (Pagenstecher, 1900) are described and illustrated for the first time. Diagnostic characters are specified for each new taxon, genitalia are described and illustrated, and images are provided of adults. A spreadsheet of all known localities and specimens is included as a supplementary file.

### Keywords

Lepidoptera, Many-plumed moths, new species, new data, Malay and Polynesian regions

Paper

Dataset

Taxon  
Concepts

Occurrences

Specimens

Collection

## review of the genus *Triscaedecia* (Lepidoptera: Alucitidae) in the world fauna

Mediated by [Plazi.org taxonomic treatments database](http://Plazi.org/taxonomic/treatments/database)

Petr Ustjuzhanin • Vasilii Kovtunovich • Donald Hobern • plazi • Guido Sautter

8 MATERIALS EXAMINED

7 RECORDS

ACTIVITY DOWNLOAD HOME PAGE

HISTORY INGEST NOW LOGS

This dataset contains the digitized treatments in Plazi based on the original journal article Ustjuzhanin, Petr, Kovtunovich, Vasilii, Hobern, Donald (2019): A taxonomic review of the genus *Triscaedecia* (Lepidoptera: Alucitidae).

Metadata last modified: March 28, 2019

Data last changed: March 28, 2019

Hosted by: [Plazi.org taxonomic treatments database](http://Plazi.org/taxonomic/treatments/database)

GRSICOLL INSTITUTION

## Natural History Museum, London

Index Herbarium Record:

Institution code:

Status of Institution:

Homepage:

Number of specimens:

Institutional governance:

Institution Type:

Identifiers:

No

NH-MUK

Active

<http://www.nhm.ac.uk/>

0

Federal

Museum

[GRSIO URI](http://grsicoll.org/institution/natural-history-museum-london) <http://grsicoll.org/institution/natural-history-museum-london>

[GRSIO URI](http://grsicoll.org/institution/natural-history-museum-london) <http://grsicoll.org/institution/natural-history-museum-london>

[GRSIO URI](http://biocol.org/urn:lsid:biocol.org:col:34665) <http://biocol.org/urn:lsid:biocol.org:col:34665> • [LSID](http://biocol.org/urn:lsid:biocol.org:col:34665) [urn:lsid:biocol.org:col:34665](http://biocol.org/urn:lsid:biocol.org:col:34665)

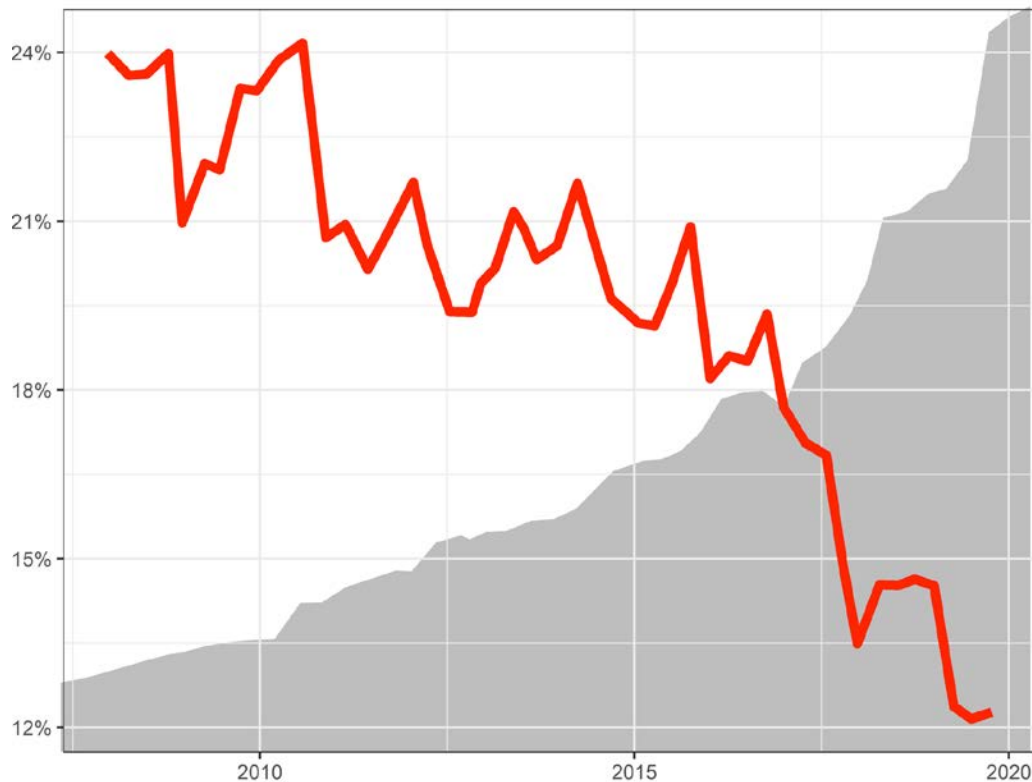
# **“Powered by GBIF”: Making the most use of our infrastructure**

Images on <https://labs.gbif.org/visual-concepts>

”...design and implement user interfaces and services ... to support simple hosted portals.

BID programme portal  
exploration of country portals  
an exemplar virtual natural history  
collection...”

# DECLINE IN VISIBILITY OF SPECIMEN DATA



Percentage of  
GBIF.org originating  
from specimens

2010: 23%

2015: 21%

2017: 15%

2019: 12%



# Natural History Collections

An ever growing catalogue of the worlds natural history collections and the people involved

Search specimens

Not sure how to get started? [Watch our Getting started video](#)

Activity this month

Collection citations  
24.7 per day  
-3.5%

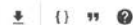
Collections  
563  
+9

Digitized specimens  
145.132.226  
+0.72%

Collections ▾

List

Map



Hacet



Species or group

Institution

France

Digitization state

More filters



Clear filters

1,302 results

**Hacettepe University Biodiversity Advanced Research Center Zoology collection**From [Hacettepe University](#)

71.266 specimens (32% digitized)

Major groups [Nudibranchia](#) • [Polychaeta](#) • [Malacostraca](#)**Canadian Museum of Nature Mollusc Collection**From [Hacettepe University](#)

71.266 specimens (32% digitized)

Major groups [Nudibranchia](#) • [Polychaeta](#) • [Malacostraca](#)**Nematoda Collection - Instituto Nacional de Pesquisas da Amazônia (INPA)**From [Hacettepe University](#)

71.266 specimens (32% digitized)

Major groups [Nudibranchia](#) • [Polychaeta](#) • [Malacostraca](#)**Distribution de quelques espèces végétales du Bénin**From [Hacettepe University](#)

71.266 specimens (32% digitized)

Major groups [Nudibranchia](#) • [Polychaeta](#) • [Malacostraca](#)**Hacettepe University Biodiversity Advanced Research Center Zoology collection**From [Hacettepe University](#)

71.266 specimens (32% digitized)

Major groups [Nudibranchia](#) • [Polychaeta](#) • [Malacostraca](#)



COLLECTION | ZOOLOGY

## Hacettepe University Biodiversity Advanced Research ...

... Center Zoology Collection

From [Hacettepe University](#)

📍 71.266 specimens (32% digitized)

★ Major groups **Magnolia** • Protozoa

👤 Jane Franklin • Viggo Mortensen

About

People

Citations

Digitized specimens

More

### Journal articles

Treatments

Downloads

How to cite this collection

2 results

[Add filter](#)

#### Range-expansion effects on the belowground plant microbiome

Ramirez, K. Snoek, L. Koorem, K. Geisen, S. Bloem, L. ten Hooven, F. ... - (2019) Nature Ecology &amp; Evolution

Plant range expansion is occurring at a rapid pace, largely in response to human-induced climate warming. Although the movement of plants along latitudinal and altitudinal gradients is well-documented, effects on belowground ...

[Cites collection](#)[Cites 2 specimens](#)

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[Cites collection](#)[Cites 2 specimens](#)

[All collections](#)

DOI 10.15468/5nile

{ } » ⓘ



COLLECTION | ZOOLOGY

## Hacettepe University Biodiversity Advanced Research ...

... Center Zoology Collection

From [Hacettepe University](#)

📍 71,266 specimens (32% digitized)

★ Major groups **Magnolia** • Protozoa

👤 Jane Franklin • Viggo Mortensen

[About](#) [People](#) [Citations](#) [Digitized specimens](#) [More](#)
[A/foaleetus Pagler & T.W.K. Young](#)[Where](#)[When](#)[Evidence](#)[Quality](#)[More filters](#)[List](#)

2,660,144 results

**HORNED PONDWEED**  
***Lepilaena cylindrocarpa* Benth.**

Plantae · Tracheophyta · Liliopsida · Alismatales · Potamogetonaceae · Lepilaena

Holotype

13 July 2015
 Taiwan
 2 images
 16 citations
 is sequenced

DOI 10.15468/5nile L: Botany: L1196509 + 2 more

**HORNED PONDWEED**  
***Hyphaene guineensis* Schumacher & Thonn.**

Plantae · Tracheophyta · Liliopsida · Alismatales · Potamogetonaceae · Lepilaena

13 July 2015
 Estonia
 16 citations

DOI 10.15468/5nile L: Botany: L1196509 + 2 more

**HORNED PONDWEED**  
***Hyphaene guineensis* Schumacher & Thonn.**

Plantae · Tracheophyta · Liliopsida · Alismatales · Potamogetonaceae · Lepilaena

Paratype

13 July 2015
 British Indian Ocean Territory
 2 images
 16 citations
 is sequenced

DOI 10.15468/5nile L: Botany: L1196509 + 2 more

[← All specimens](#)

DOI 10.15468/5nllie

{ } " ?



SPECIMEN | BOTANY

## *Sciodaphyllum* P. Browne

Collected by David A. Neill • Porter P. Lowry II • Gregory M. Plunkett • Efrén Merino  
Identified by (S. recaldiorum)

Collected in Ecuador

Types Holotype • 2 isotypes

Clustered with 3 other records

12 images

16 citations

2 sequences

Held in 3 herbaria

[Specimen](#)[People](#)[Treatments](#)[Cluster](#)[More](#)[Images](#)[Label](#)[Treatments](#)[Where it is housed](#)[Sequences](#)[Material samples](#)[Organisation according to  
Catalogue of Life](#)[How to cite](#)



## **Example 2:**

# **Simple hosted portals**

Images on <https://labs.gbif.org/visual-concepts>

# Biodiversity of Tecala

---

GBIF TECALA LETS YOU EXPLORE SPECIES IN OUR WONDERFUL COUNTRY

START EXPLORING →

## About

---

OPEN DATA FOR SCIENCE EVERY OBSERVATION AND  
RECORDING OF SPECIES CAN CONTRIBUTE TO

## What is GBIF?

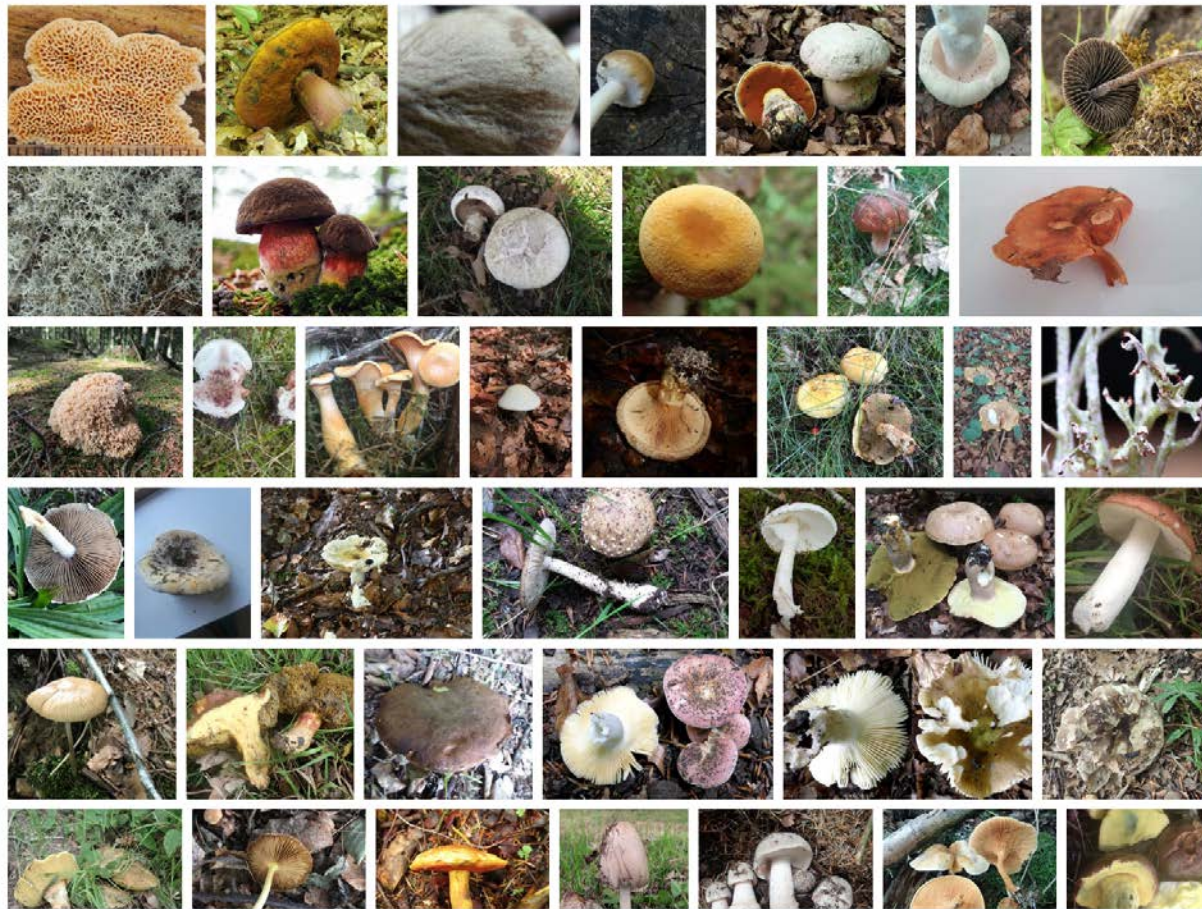
---

GBIF—THE GLOBAL BIODIVERSITY INFORMATION FACILITY—IS AN INTERNATIONAL

Search

2 Substrates

Clear filters



319,979 occurrences

Table

Gallery

Map

⋮

## Occurrences

319,979

## Basis of record

human observation 8,214

preserved specimen 6,554

unknown 425,635

observation 2,774,276

living specimen 105,449

machine observation 45,634

material sample 23,634

fossil specimen 3,134

## Dataset

Search

All selected

Danish Mycological Society, fungal r... 320K

## Recorded by

Search

## Substrate

Search

2 selected Select all

soil 198,434

wood 121,634



# Applying simple\* branding

\*font, logo, header, link color



Search



Observations

Taxonomy

Datasets

Treatments

Collections

More



Observations

Map

Table

Gallery

Dashboard



Afroboletus Pegler &amp; T.W.K.Young

Where

When

Evidence

Quality

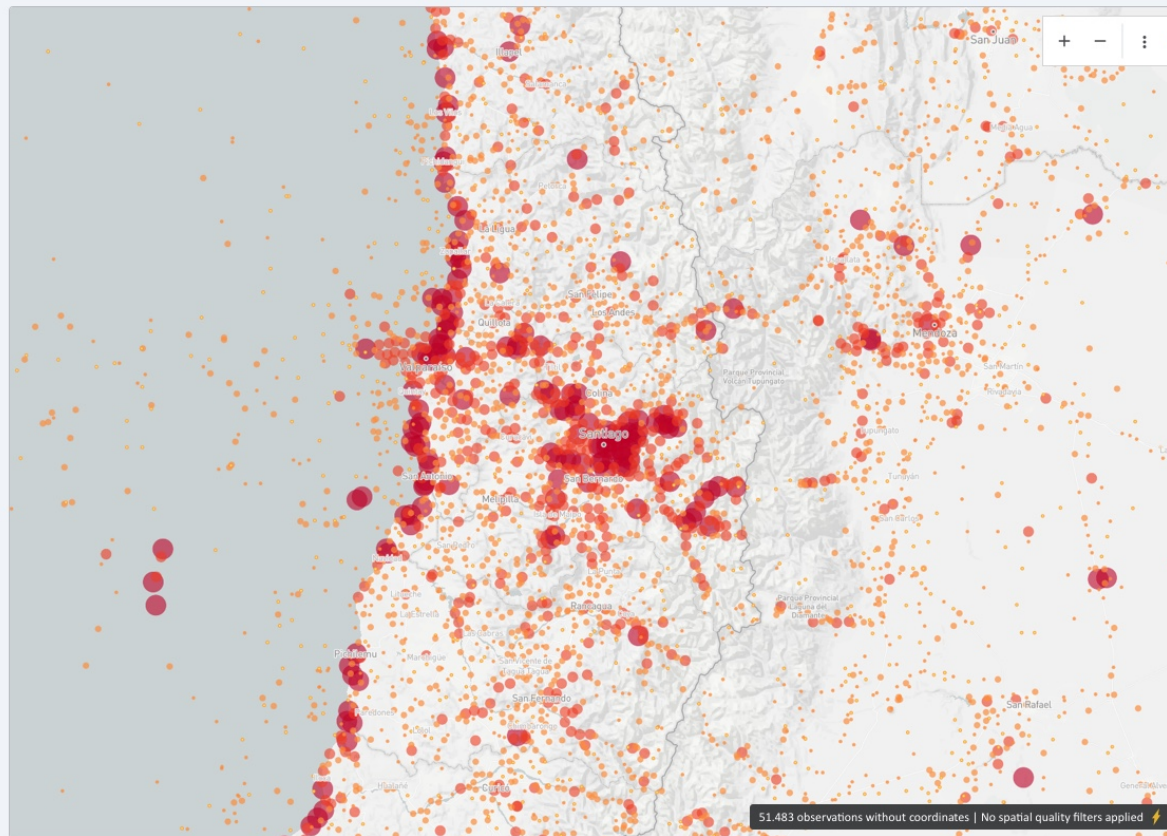
More filters



Clear filters

21.660.144 results

Hide summary



## Data sources and quality ⚡

You are browsing a normalized view across multiple datasets. To understand this data it is best to read about [data sources](#) and [quality flags](#).

## Remarks and issues ⋮

During data preparation we try to detect potential issues, but you decide which matters to you.

To ease filtering we have [Fitness for use profiles](#) that preset filters.

No profile selected

Exclude selected ☒

- ☐ Taxon match none
- ☒ Taxon match higherrank
- ☐ Taxon match fuzzy

[See more](#)

## Mixed data sources ▾

There are 182 datasets in your search results. Each with its own qualities.

18 Gridded datasets

6 eDNA datasets

2 Tracking datasets

[See more](#)



Home > Collections > Australian National Insect Collection

Map Table Gallery Dashboard

Afroboletus Pegler & T.W.K.Young

Where

When

Evidence

Quality

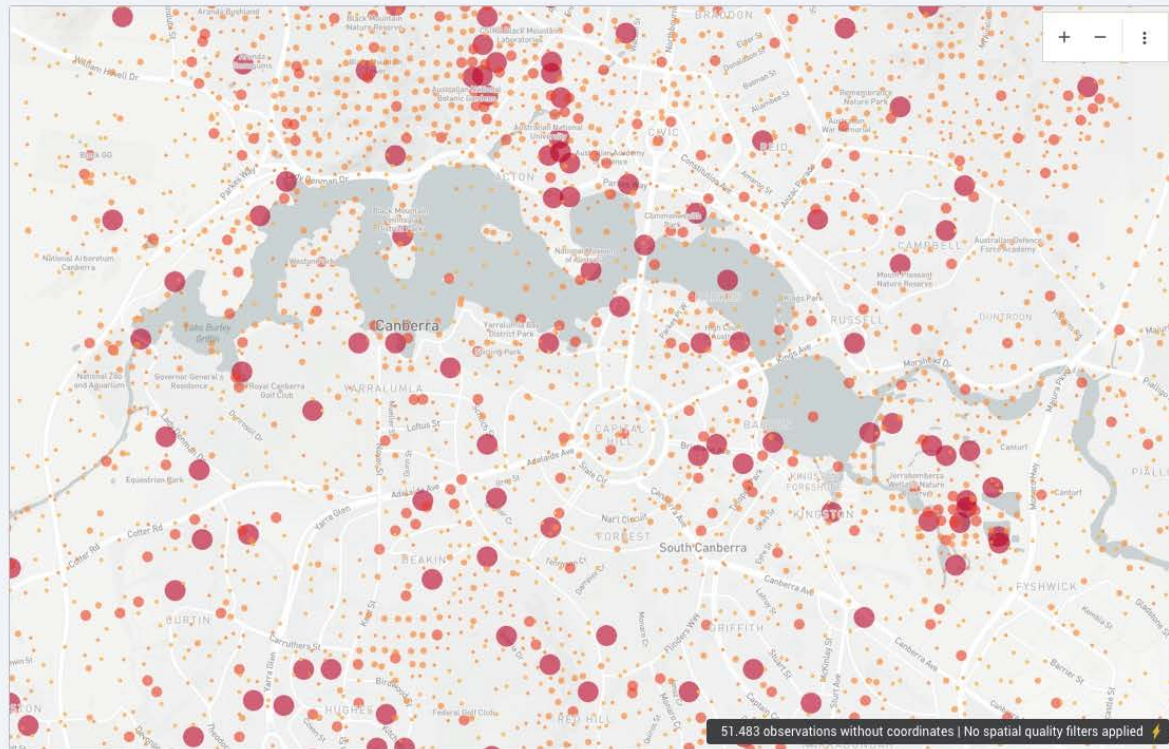
More filters



♥ Clear filters

21.660.144 results

Hide summary



### Data sources and quality ⚡

You are browsing a normalized view across multiple datasets. To understand this data it is best to read about [data sources](#) and [quality flags](#).

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No profile selected ▾

Exclude selected ☒

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See more

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Observations

Map

Table

Gallery

Dashboard



Afroboletus Pegler &amp; T.W.K.Young

Where

When

Evidence

Quality

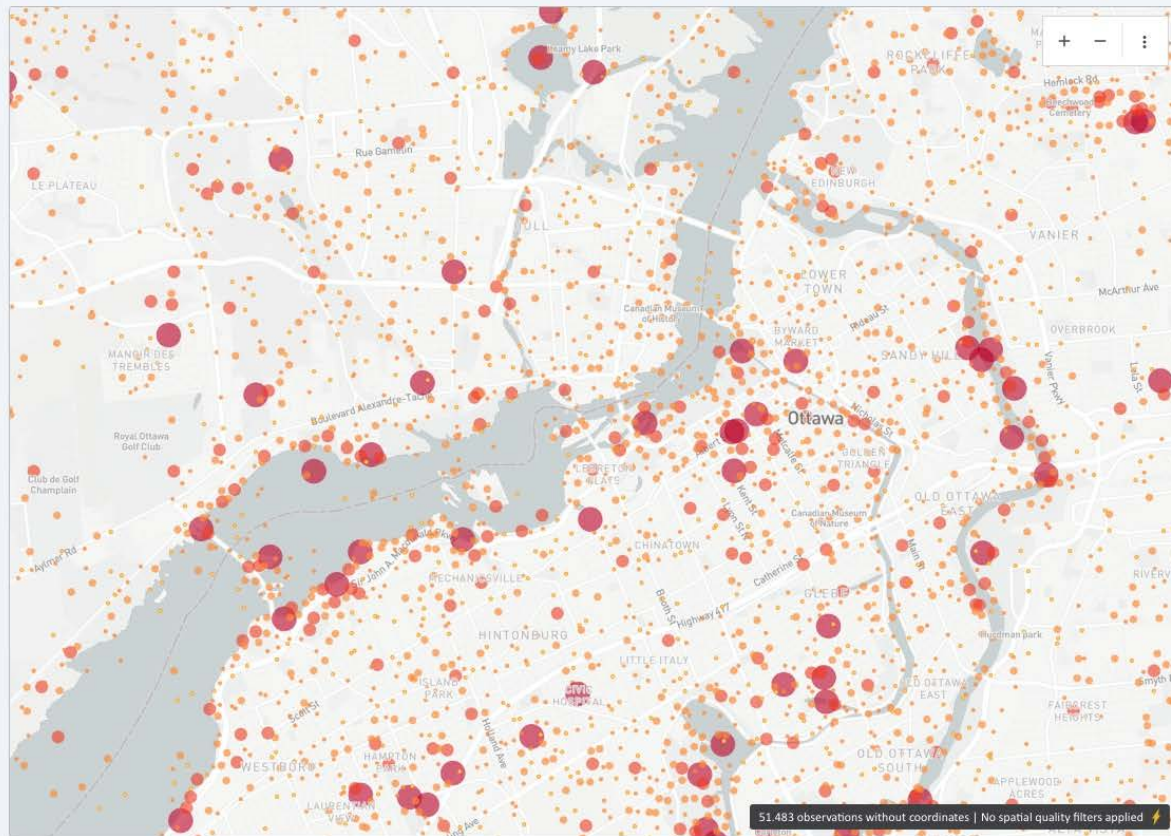
More filters



Clear filters

21.660.144 results

Hide summary



## Data sources and quality ⚡

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[See more](#)

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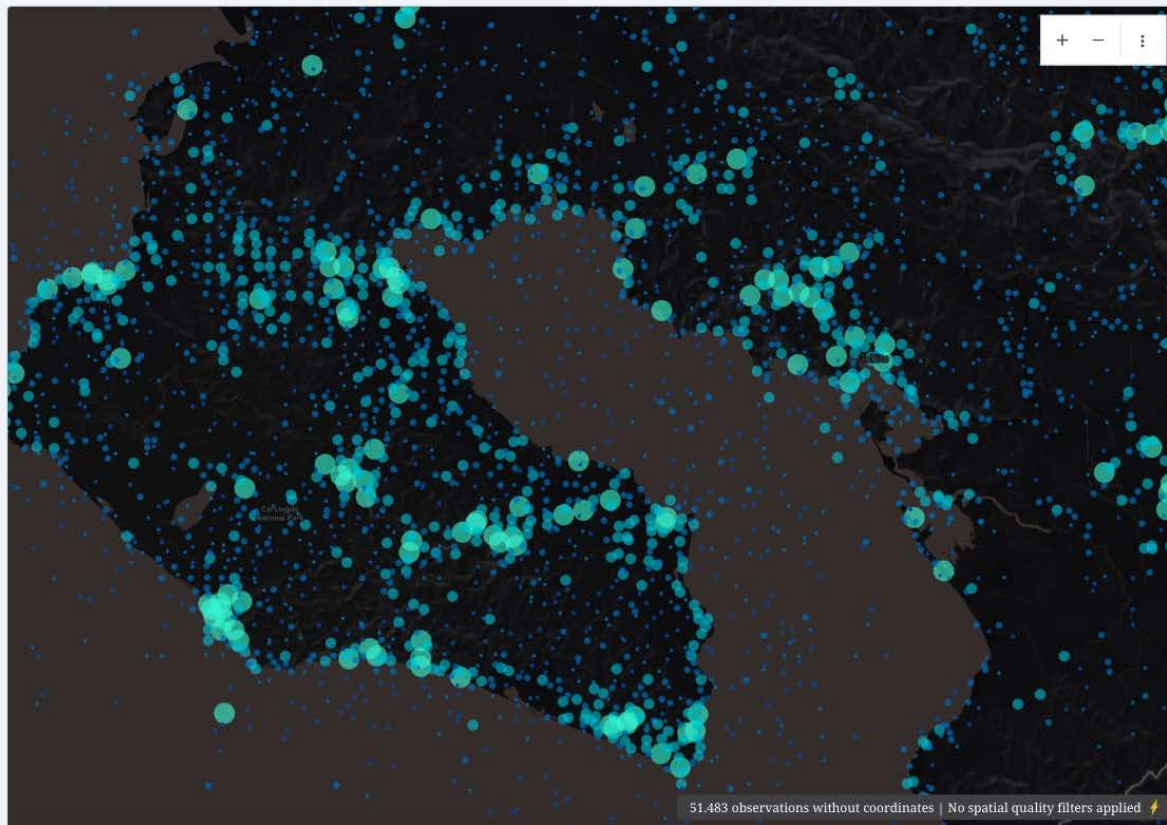
2 Tracking datasets

[See more](#)

51,483 observations without coordinates | No spatial quality filters applied ⚡

21.660.144 results

Hide summary



### Data sources and quality ⚡

You are browsing a normalized view across multiple datasets. To understand this data it is best to read about [data sources and quality flags](#).

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No profile selected ▾

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[See more](#)

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18 Gridded datasets

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# OPPORTUNITIES

1. Efficiencies in data management
2. Consistent data handling
3. Improved citation tracking
4. Optimize development effort
5. Expand helpdesk
6. Share infrastructure ("powered by GBIF")
7. Lower total cost of running

Thank you!