



Foundations for a digitization project

Terminology and standards

Sophie Pamerlon

(based on the presentation done by Sharon Grant for the BID trainings)

Which kind of biodiversity data?

Checklists and taxonomical resources



Checklist: a simple list of taxa present in a given area



Taxon list of reference: a valid list of species/taxa present in a given area, with their hierarchy and synonyms



Red list (at national, regional or local level): a list of taxa present in a given area with their vulnerability status

GBIF Template for Taxon data

A	B	C	D	E	F	G
taxonID	parentNameUsageID	parentNameUsage	acceptedNameUsageID	acceptedNameUsage	scientificName	nameAccordingToID
73			73	Equisetopsida C. Aghard	Equisetopsida C. Aghard	http://dx.doi.org/10.1111/j.1095-8339.2009.01010.x
26	73	Equisetopsida C. Aghard	26	Equisetidae Warming	Equisetidae Warming	http://dx.doi.org/10.1111/j.1095-8339.2009.01010.x
25	26	Equisetidae Warming	25	Equisetales de Candolle ex Berchtold & J. Presl	Equisetales de Candolle ex Berchtold & J. Presl	http://www.jstor.org/stable/25065646
128	25	Equisetales de Candolle ex Berchtold & J. Presl	128	Equisetaceae Michaux ex de Candolle	Equisetaceae Michaux ex de Candolle	http://www.jstor.org/stable/25065646
1142	128	Equisetaceae Michaux ex de Candolle	1142	Equisetum Linnaeus	Equisetum Linnaeus	http://www.efloras.org/volume_page.aspx?volume=1142
2004	1142	Equisetum Linnaeus	2004	Equisetum subg. Equisetum	Equisetum subg. Equisetum	http://www.efloras.org/volume_page.aspx?volume=2004
5467	2004	Equisetum subg. Equisetum	5467	Equisetum fluviatile Linnaeus	Equisetum fluviatile Linnaeus	http://www.efloras.org/volume_page.aspx?volume=5467
5466	2004	Equisetum subg. Equisetum	5466	Equisetum arvense Linnaeus	Equisetum arvense Linnaeus	http://www.efloras.org/volume_page.aspx?volume=5466
5472	2004	Equisetum subg. Equisetum	5472	Equisetum pratense Ehrhart	Equisetum pratense Ehrhart	http://www.efloras.org/volume_page.aspx?volume=5472
5471	2004	Equisetum subg. Equisetum	5471	Equisetum palustre Linnaeus	Equisetum palustre Linnaeus	http://www.efloras.org/volume_page.aspx?volume=5471
5474	2004	Equisetum subg. Equisetum	5474	Equisetum sylvaticum Linnaeus	Equisetum sylvaticum Linnaeus	http://www.efloras.org/volume_page.aspx?volume=5474
5482	2004	Equisetum subg. Equisetum	5482	Equisetum xilitorale Kühlewein ex Ruprecht	Equisetum xilitorale Kühlewein ex Ruprecht	http://www.efloras.org/volume_page.aspx?volume=5482
5476	2004	Equisetum subg. Equisetum	5476	Equisetum telmateia Ehrhart	Equisetum telmateia Ehrhart	http://www.efloras.org/volume_page.aspx?volume=5476
15836	5476	Equisetum telmateia Ehrhart	15836	Equisetum telmateia subsp. braunii (J. Milde) H	Equisetum telmateia subsp. braunii (J. Milde) Haul	http://www.efloras.org/volume_page.aspx?volume=15836
5481	2004	Equisetum subg. Equisetum	5481	Equisetum xfont-queri Rothmaler	Equisetum xfont-queri Rothmaler	http://www.efloras.org/volume_page.aspx?volume=5481
2005	1142	Equisetum Linnaeus	2005	Equisetum subg. Hippochaete (J. Milde) Baker	Equisetum subg. Hippochaete (J. Milde) Baker	http://www.efloras.org/volume_page.aspx?volume=2005
5473	2005	Equisetum subg. Hippochaete (J. Milde) Baker	5473	Equisetum scirpoides Michaux	Equisetum scirpoides Michaux	http://www.efloras.org/volume_page.aspx?volume=5473
5484	2005	Equisetum subg. Hippochaete (J. Milde) Baker	5484	Equisetum xnelsonii (A.A. Eaton) J.H. Schaffner	Equisetum xnelsonii (A.A. Eaton) J.H. Schaffner	http://www.efloras.org/volume_page.aspx?volume=5484
5478	2005	Equisetum subg. Hippochaete (J. Milde) Baker	5478	Equisetum variegatum Schleicher ex F. Weber & D. Mohr	Equisetum variegatum Schleicher ex F. Weber & D. Mohr	http://www.efloras.org/volume_page.aspx?volume=5478
5477	5478	Equisetum variegatum Schleicher ex F. Weber & D. Mohr	5477	Equisetum variegatum subsp. alaskanum (A.A. Eaton) J.H. Schaffner	Equisetum variegatum subsp. alaskanum (A.A. Eaton) J.H. Schaffner	http://www.efloras.org/volume_page.aspx?volume=5477
5479	5478	Equisetum variegatum Schleicher ex F. Weber & D. Mohr	5479	Equisetum variegatum Schleicher ex F. Weber & D. Mohr	Equisetum variegatum Schleicher ex F. Weber & D. Mohr	http://www.efloras.org/volume_page.aspx?volume=5479
5470	2005	Equisetum subg. Hippochaete (J. Milde) Baker	5470	Equisetum laevigatum A. Braun	Equisetum laevigatum A. Braun	http://www.efloras.org/volume_page.aspx?volume=5470
5480	2005	Equisetum subg. Hippochaete (J. Milde) Baker	5480	Equisetum xferrissii Clute	Equisetum xferrissii Clute	http://www.efloras.org/volume_page.aspx?volume=5480
5469	2005	Equisetum subg. Hippochaete (J. Milde) Baker	5469	Equisetum hyemale Linnaeus	Equisetum hyemale Linnaeus	http://www.efloras.org/volume_page.aspx?volume=5469
5468	5469	Equisetum hyemale Linnaeus	5468	Equisetum hyemale subsp. affine (Engelmann) Cal	Equisetum hyemale subsp. affine (Engelmann) Cal	http://www.efloras.org/volume_page.aspx?volume=5468
5483	2005	Equisetum subg. Hippochaete (J. Milde) Baker	5483	Equisetum xmackayi (Newman) Brichan	Equisetum xmackayi (Newman) Brichan	http://www.efloras.org/volume_page.aspx?volume=5483

Used for sharing **taxonomic information**: red lists, checklists...

Each line = 1 taxon (not necessarily to the species level); you cannot have the same taxon twice in your list

Fields = all taxonomic levels (from kingdom to subspecies), with authorship, references and additional information (endangerment status, geographic details, etc.)

Specimens and materials



Herbarium sheets and vegetal materials (seeds, foliage, branches, bark, dried/preserved fruits...)



Preserved specimens in formol, alcohol (fishes, herpetology collections...); mounted specimens (birds, mammals, insects)



Fossils and other paleontological materials (amber, teeth, bones...); animal or vegetal samples (DNA, organs, skin, fur, faeces...)

Literature documents

ZooKeys 532: 107–115 (2015)
doi: 10.3897/zookeys.532.6176
<http://zookeys.pensoft.net>

DATA PAPER



Online database for mosquito (Diptera, Culicidae) occurrence records in French Guiana

Stanislas Talaga¹, Jérôme Murienné², Alain Dejean^{1,3}, Céline Leroy⁴

¹ CNRS, Laboratoire Ecologie des Forêts de Guyane (Ecofog, UMR 8172), Campus agronomique, 97310, Kourou, French Guiana ² CNRS/UPS/ENFA, Laboratoire Evolution et Diversité Biologique (EDB, UMR 5174), Université de Toulouse, 118 route de Narbonne, 31062, Toulouse, France ³ CNRS/UPS/INP, Laboratoire Ecologie fonctionnelle et Environnement (Ecobio, UMR 5245), Université de Toulouse, 118 route de Narbonne, 31062, Toulouse, France ⁴ IRD, Laboratoire de botanique et Modélisation de l'Architecture des Plantes et des végétations (AMAP, UMR 123), Boulevard de la Livrade, TA A-51/PS2, 34398, Montpellier, France

Corresponding author: Stanislas Talaga (email address)

Academic editor: G. Knyfe | Received 14 August 2015 | Accepted 12 October 2015 | Published 5 November 2015

<http://dx.doi.org/10.3897/zookeys.532.6176>

Citation: Talaga S, Murienné J, Dejean A, Leroy C (2015) Online database for mosquito (Diptera, Culicidae) occurrence records in French Guiana. ZooKeys 532: 107–115. doi: 10.3897/zookeys.532.6176

Published or in
press scientific
articles



PhD or Master
thesis



Reports and other
written documents

Fieldwork records and notes



Surveys,
assessments



Logs, field notes
with taxa observed
or collected; notes
about the protocol
used on the field



Citizen science
logs

GBIF Template for Occurrence data

	A	B	C	D	E	F	G	H	I	J	K
1	occurrenceID	basisOfRecord	eventDate	endDayOfYear	year	month	day	verbatimEventDate	eventRemarks	scientificName	higherClassific
2	http://arctos.database.m	PreservedSpecimen	1926-04		1926	4		0/4/1926	day of month unknown	Ambystoma maculatum	Animalia; Chord
3	http://arctos.database.m	PreservedSpecimen	1942-04-17	107	1942	4	17	17/04/1942		Desmognathus fuscus	Animalia; Chord
4	http://arctos.database.m	PreservedSpecimen	1942-04-17	107	1942	4	17	17/04/1942		Gyrinophilus porphyriticus	Animalia; Chord
5	http://arctos.database.m	PreservedSpecimen	1942-04-17	107	1942	4	17	17/04/1942		Eurycea bislineata bislineata	Animalia; Chord
6	http://arctos.database.m	PreservedSpecimen	1942-04-17	107	1942	4	17	17/04/1942		Plethodon cinereus	Animalia; Chord
7	http://arctos.database.m	PreservedSpecimen	1953-09-27	270	1953	9	27	27-sept-53		Rana sylvatica	Animalia; Chord
8	http://arctos.database.m	PreservedSpecimen	1979-06-02/1979-06-07					02/06/1979		Eleutherodactylus eneidae	Animalia; Chord
9	http://arctos.database.m	PreservedSpecimen	1981-06-01	152	1981	6	1	01-juin-81		Masticophis flagellum piceus	Animalia; Chord
10	http://arctos.database.m	PreservedSpecimen	2011-06-23	174	2011	6	23	23-juin-11		Rana (Lithobates) clamitans	Animalia; Chord

Occurrence = simple observation in the field or specimen in a collection

Each line = 1 individual or 1 group of individuals (you can have several occurrences of the same species/taxon in your file)

Fields = What? Where? When? How? By whom was the individual(s) observed and/or collected? (+ additional information: habitat, coordinates, associated species, etc.)

GBIF Template for Event data

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	eventID	samplingProtocol	samplingEffort	sampleSizeValue	sampleSizeUnit	eventDate	eventTime	startDayOfYear	eventRemarks	country	countryCode	locality	locationID
2	994-tr009-s00	Pollard walks	Average of 30 Minutes walk along transect	250 square metre		2012-10-11	09:28:02Z/10:16:02Z	284	No occurrences	Israel	IL	Sde boker reches halukim	tr009-s00
3	3502-tr056-s6	Pollard walks	Average of 30 Minutes walk along transect	250 square metre		2015-10-19	12:25:02Z/13:10:02Z	291		Israel	IL	Nahal Kovshim Beer Sheva	tr056-s6
4	3502-tr056-s9	Pollard walks	Average of 30 Minutes walk along transect	250 square metre		2015-10-19	12:25:02Z/13:10:02Z	291		Israel	IL	Nahal Kovshim Beer Sheva	tr056-s9

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	eventID	occurrenceID	basisOfRecord	individualCount	organismQuantity	organismQuantityType	occurrenceStatus	scientificName	kingdom	phylum	class	order	family	infraspecificEpithet	taxonRank	recordedBy
2	1382-tr009-s00	1382-tr009-s00-0	HumanObservation	0	0 individuals		absent	Lepidoptera	Animalia	Arthropoda	Insecta	Lepidoptera			order	Eviatar Fingo
3	3502-tr056-s6	3502-tr056-s6-21114	HumanObservation	3	3 individuals		present	Azanus Jesus	Animalia	Arthropoda	Insecta	Lepidoptera	Lycaenidae		species	Zvika Avni
4	3502-tr056-s6	3502-tr056-s6-21126	HumanObservation	1	1 individuals		present	Melitaea trivia	Animalia	Arthropoda	Insecta	Lepidoptera	Nymphalidae		species	Zvika Avni
5	3502-tr056-s6	3502-tr056-s6-21127	HumanObservation	3	3 individuals		present	Deudorix livia	Animalia	Arthropoda	Insecta	Lepidoptera	Lycaenidae		species	Zvika Avni
6	3502-tr056-s6	3502-tr056-s6-21129	HumanObservation	1	1 individuals		present	Azanus ubaldus	Animalia	Arthropoda	Insecta	Lepidoptera	Lycaenidae		species	Zvika Avni
7	3502-tr056-s6	3502-tr056-s6-21132	HumanObservation	1	1 individuals		present	Lycaena thersamon	Animalia	Arthropoda	Insecta	Lepidoptera	Lycaenidae		species	Zvika Avni
8	3502-tr056-s9	3502-tr056-s9-21116	HumanObservation	1	1 individuals		present	Azanus Jesus	Animalia	Arthropoda	Insecta	Lepidoptera	Lycaenidae		species	Zvika Avni
9	3502-tr056-s9	3502-tr056-s9-21122	HumanObservation	1	1 individuals		present	Tarucus balkanica	Animalia	Arthropoda	Insecta	Lepidoptera	Lycaenidae		species	Zvika Avni
10	3502-tr056-s9	3502-tr056-s9-21131	HumanObservation	1	1 individuals		present	Azanus ubaldus	Animalia	Arthropoda	Insecta	Lepidoptera	Lycaenidae		species	Zvika Avni

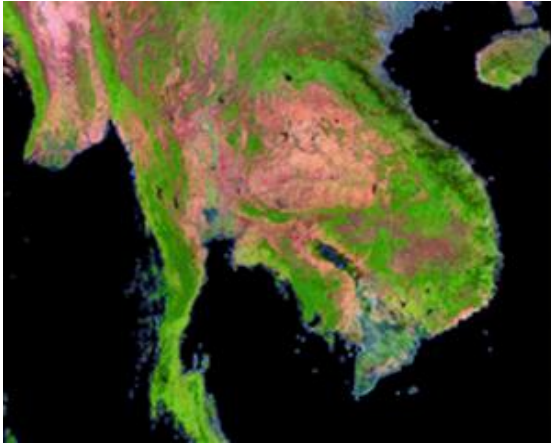
Used for sharing **more complex information** about a sampling event on the field: area description, protocols used, occurrences collected or observed, variables recorded...

Event data often come **in several sheets**: data about the event itself (transect, trap, quadrat...), data about the occurrences recorded for each event, data about variables, etc.

Each line in the event sheet = 1 event (e.g. a camera trap, a transect, a vegetation plot...)

Each field = description information (size of the plot, protocol, coordinates...)

Other origins of data



Remote sensing data: GPS, radar or satellite data; camera traps;



Paper maps or atlas; prints of satellite pictures



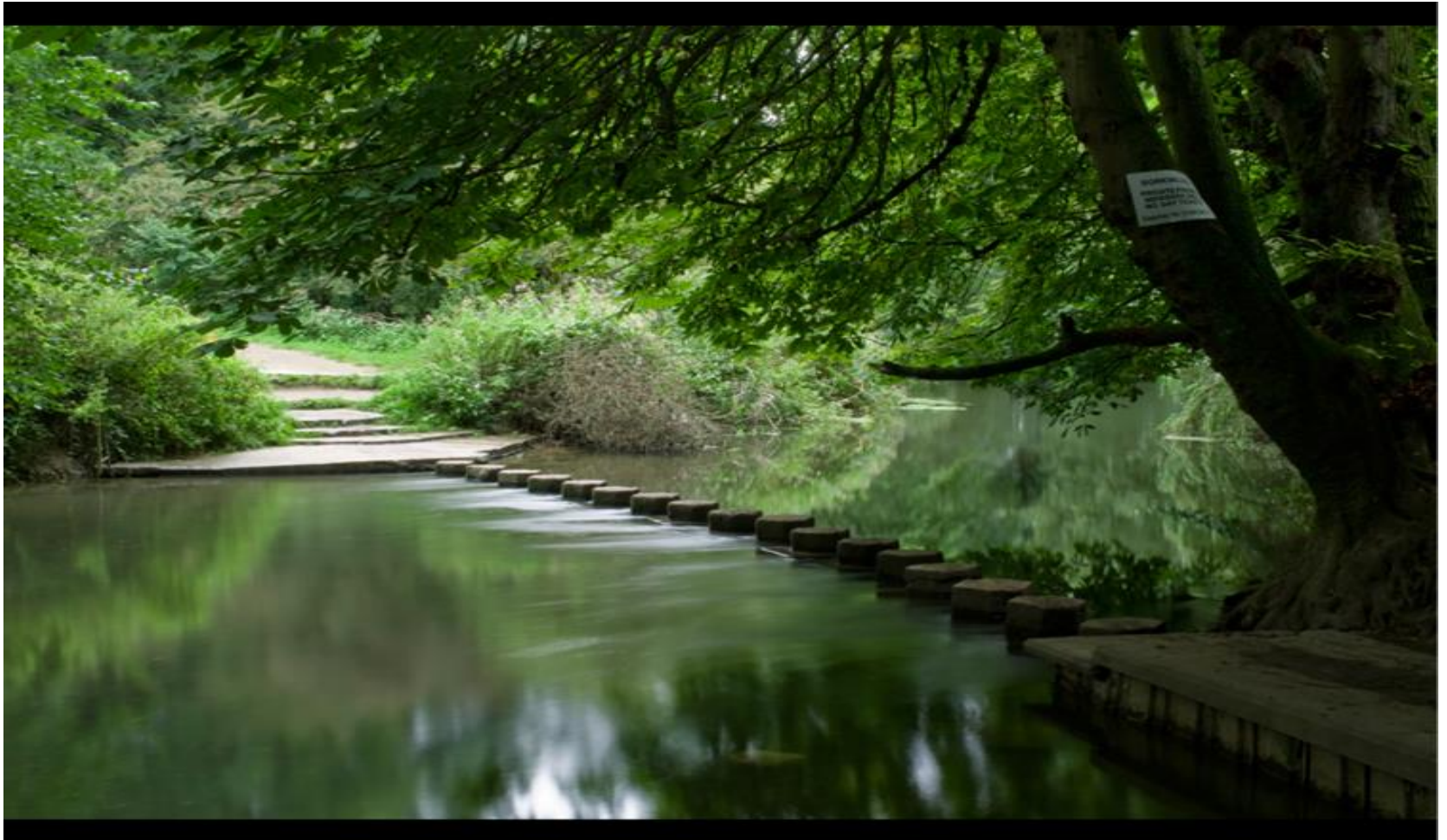
Other supports: pictures, audio, video recordings

From data to understanding...

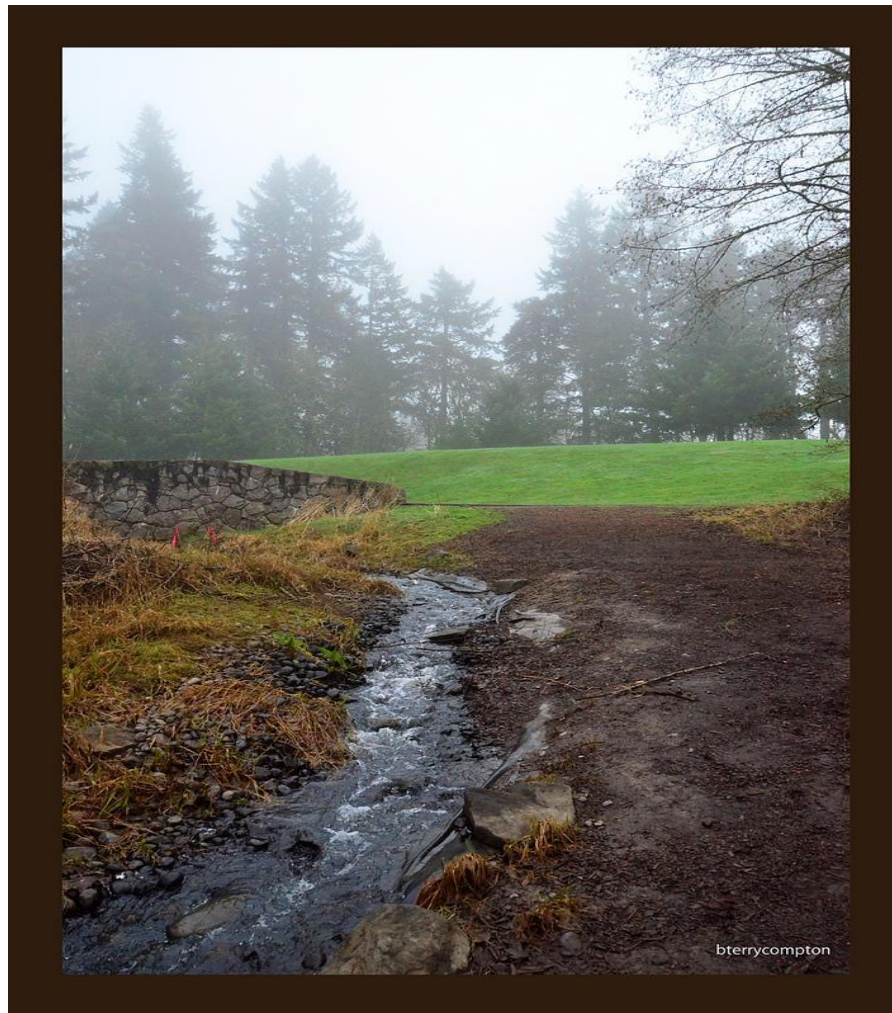


Oceans of data...

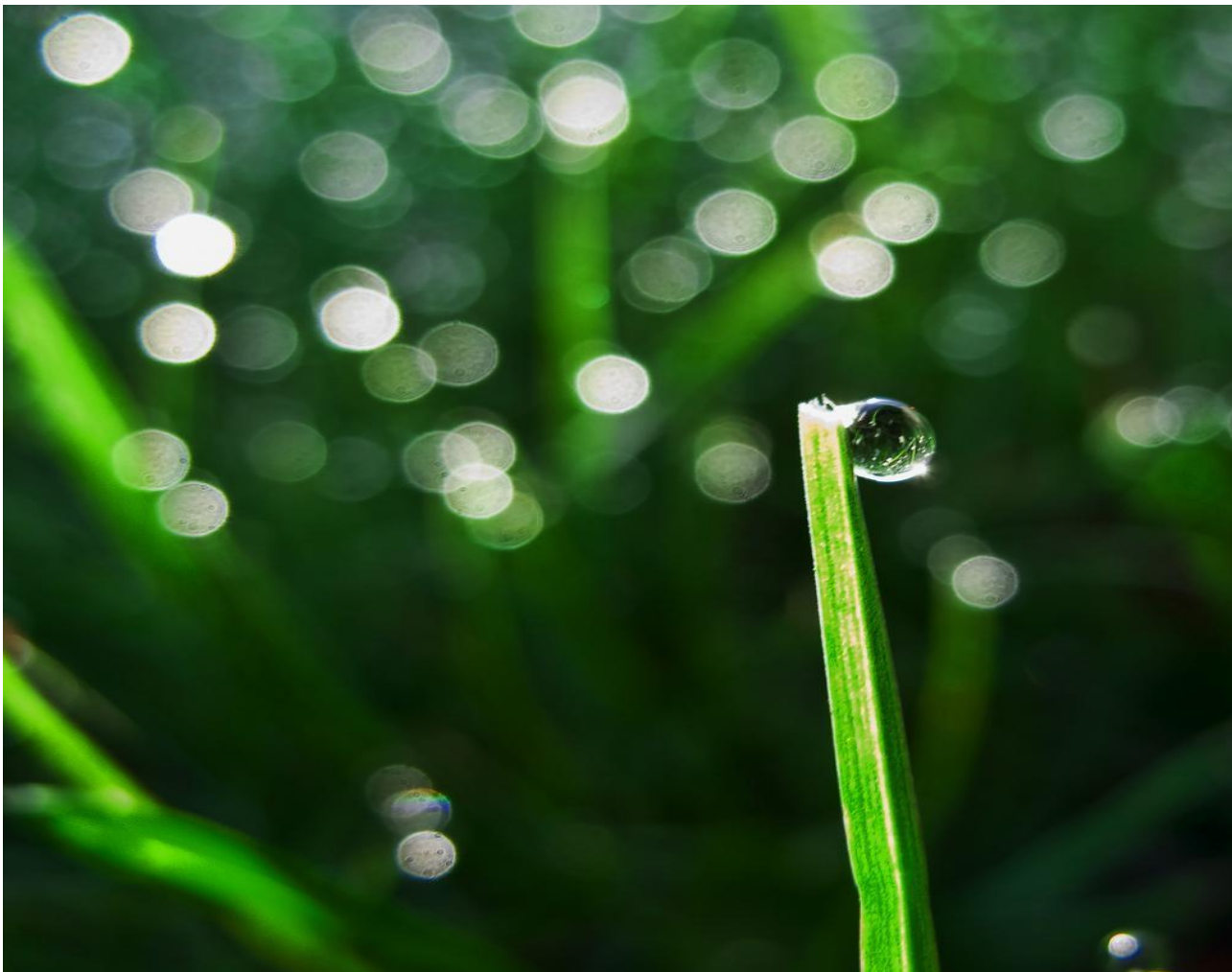
...rivers of information...



... streams of knowledge...



...droplets of understanding



Fitness for use - Definition

Data quality is a relative concept that depends on the use of these data.

"The general intent of describing the quality of a particular dataset or record is to describe the fitness of that dataset or record for a particular use that one may have in mind for the data."

Chrisman, 1991

Key Concepts Fitness for Use in the Real World

"How well does a thing do what it's supposed to and what is that anyway?"



Key Concepts Fitness for Use in the Real World

"How well does a thing do what it's supposed to and what is that anyway?"



Key Concepts Fitness for Use in the Real World

"How well does a thing do what it's supposed to and what is that anyway?"



Fitness for Use - Data

Do you understand your data and can you explain its purpose to someone else?

1. accessibility,
2. accuracy,
3. timeliness,
4. completeness / comprehensiveness,
5. consistency,
6. relevancy,
7. well documented [outside of your head],
8. easy to read and easy to interpret

Data Processing and Quality

Each institution should have:

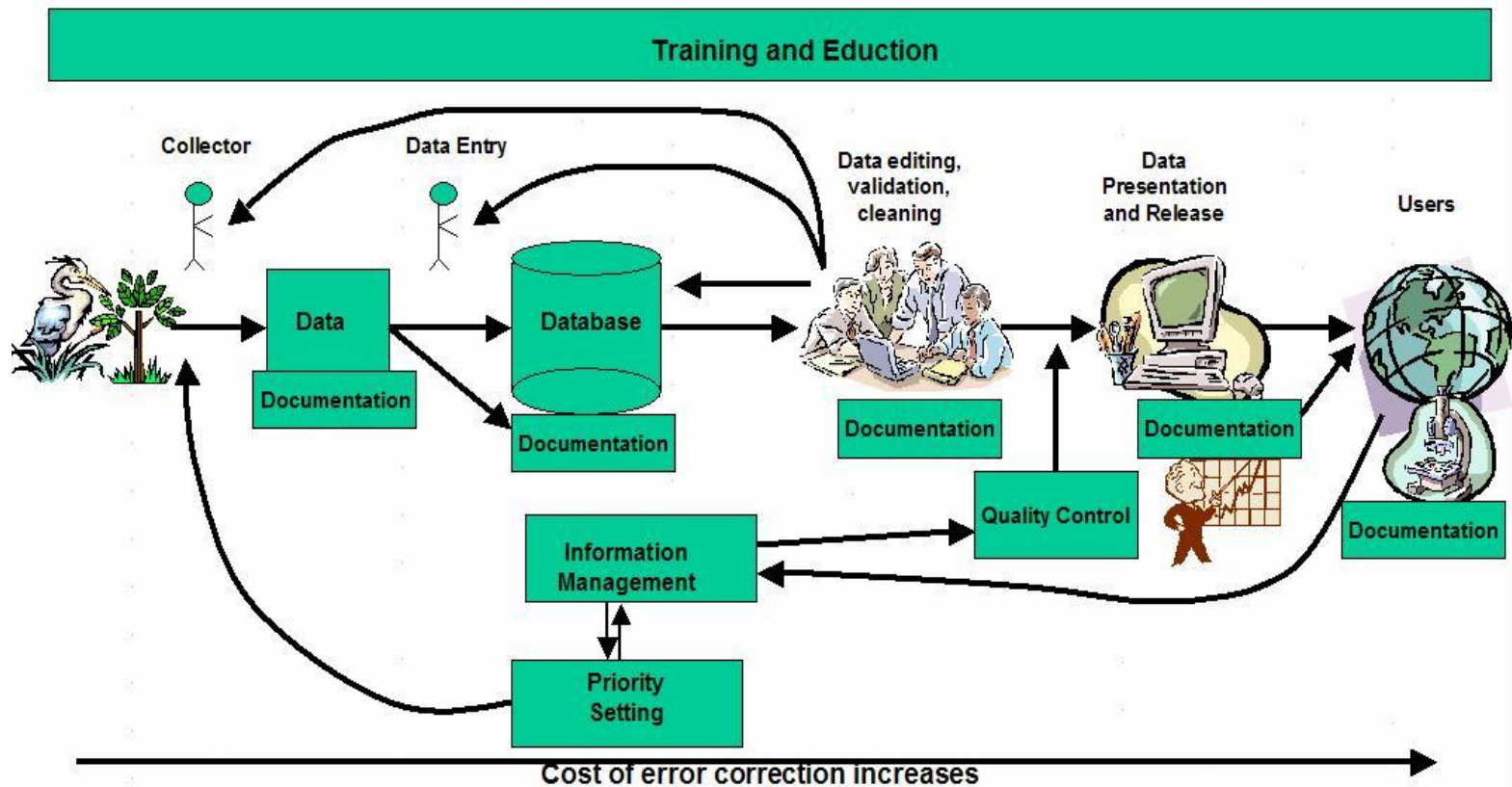
1. A **vision** targeted on data quality

- **Don't « reinvent the wheel » and use standards**
- **Seek efficiency (in collecting data and quality checks) and avoid duplicating efforts**
- **Promote sharing (data, informations, tools, standards...)**
- **Think at a large scale**
- **Cater to users and their needs**
- **Invest in documentation and metadata**

1. A **policy** implementing this vision

1. An **implementation strategy** for this policy (precise goals at short, mean and long term)

Data Processing and Quality



Quality loss happens at every step.

The responsibility in terms of data quality has to be assigned at the earlier possible step of the process.

Sharing responsibilities

Collector

Labels and logs are as **correct, complete and readable** as possible

Collection methods are vastly documented

Remarks are clear and non-ambiguous

Curator

Retranscription quality in the database

Regular validation **tests**.

Data regularly saved and **archived**

Keep precedent **versions**

Ensure **respect** of private life, intellectual rights, local traditions and sensibilities ...

Provide quality **documentation** (including known issues about the data)

Take **feedback** into account

Responsibility for maintenance but also moral responsibility to improve data quality (if possible) for future uses and users.

User

Inform data curators about **mistakes** and omissions in data and **documentation**.

Provide **feedback** to define future priorities

When using data, determine whether **data are adequate for intended use** and not use them if this is not the case.

Data quality and Data capture

Metadata :

- Description of the whole dataset (title, summary, contacts, licence, logo...)

Taxonomic information :

- Scientific names, vernacular names, reference lists used

Spatial information :

- Coordinates, locality, altitude, depth...

Collection (event) information :

- Collector's name, habitat, date...

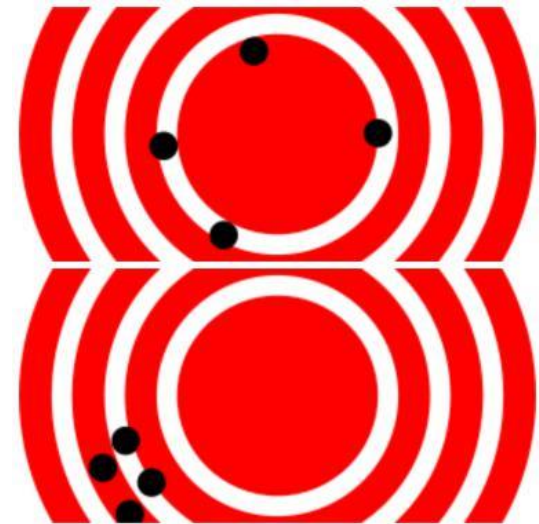
Descriptive information

- Age, sex, behaviour, quantity of individuals observed/collected...

Measures of Quality

"All data include error – there is no escaping it! It is knowing what the error is that is important, and knowing if the error is within acceptable limits for the purpose to which the data are to be put. (Chapman 2005)"

- **Correctness (Accuracy)**
 - How close is the recorded value to the actual value?
- **Consistency (Precision)**
 - How often do you get it right?

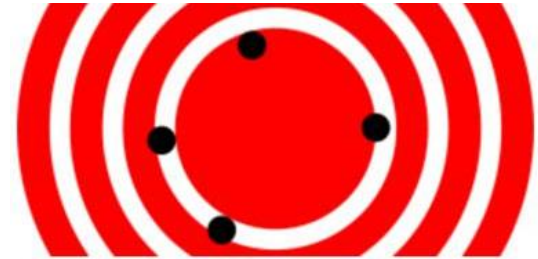


Correctness - examples

"All data include error – there is no escaping it! It is knowing what the error is that is important, and knowing if the error is within acceptable limits for the purpose to which the data are to be put. (Chapman 2005)"

Correctness (Accuracy)

How close is the recorded value to the actual value?

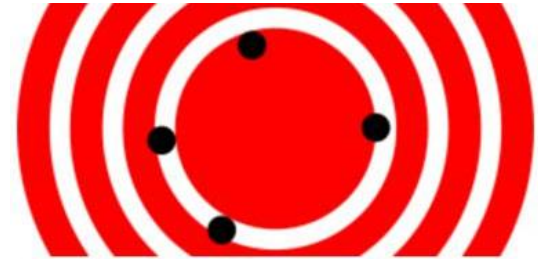


Correctness - example 1

"All data include error – there is no escaping it! It is knowing what the error is that is important, and knowing if the error is within acceptable limits for the purpose to which the data are to be put. (Chapman 2005)"

Correctness (Accuracy)

How close is the recorded value to the actual value?



A dataset contains fossil specimens from the Triassic period.

The recorded taxa for a specimen is *Thismia*.

Is Thismia a fossil bird?

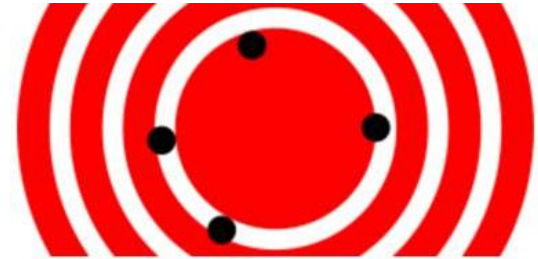


Correctness - example 1

"All data include error – there is no escaping it! It is knowing what the error is that is important, and knowing if the error is within acceptable limits for the purpose to which the data are to be put. (Chapman 2005)"

Correctness (Accuracy)

How close is the recorded value to the actual value?



A dataset contains fossil specimens from the Triassic period.

The recorded taxa for a specimen is *Thismia*.

Is Thismia a fossil bird?



Consistency - example

"All data include error – there is no escaping it! It is knowing what the error is that is important, and knowing if the error is within acceptable limits for the purpose to which the data are to be put. (Chapman 2005)"

Consistency (Precision)

How often do you get it right?



A botanical dataset has specimens collected by:

Full Name = Joseph Dalton Hooker

Full Name = Hooker, J.

Full Name = W. J. Hooker

Full Name = Hook.f.

Full Name = Hook.

How many unique collectors are there?

Consistency - example

"All data include error – there is no escaping it! It is knowing what the error is that is important, and knowing if the error is within acceptable limits for the purpose to which the data are to be put. (Chapman 2005)"

Consistency (Precision)

How often do you get it right?



A botanical dataset has specimens collected by:

Full Name = Joseph Dalton Hooker

Full Name = Hooker, J.

Full Name = W. J. Hooker

Full Name = Hook.f.

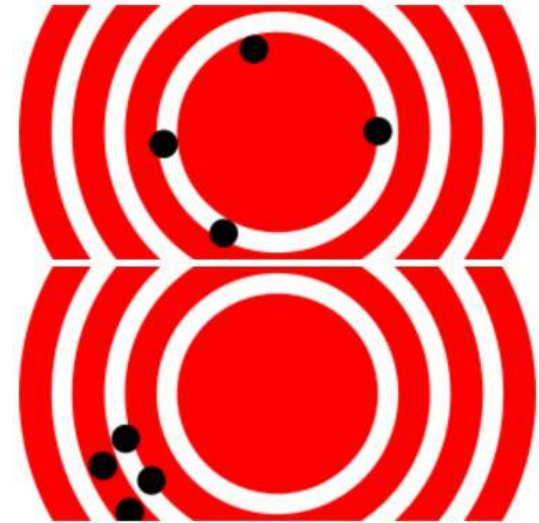
Full Name = Hook.

How many unique collectors are there?

Data Cleaning

*Data cleaning is the process of **correcting** or removing dirty data caused by **contradictions, disparities, keying mistakes, missing bits, etc.** It also includes validation of the changes made, and may require normalization.*

- **Correctness (Accuracy)**
 - How close is the recorded value to the actual value?
- **Consistency (Precision)**
 - How often do you get it right?



What is a Standard?

“An agreed way of doing something.”

An agreed way of doing something, to provide clarity and help communication.

- Norm
- Convention
- Specification
- Requirement
- Restriction
 - Rule

Everyday Standards

"The main purpose for standards is to create a framework to ease sharing. They should provide clarity and help communication."

Some examples of standards that you use often:

- Units of Measurement (Metric, Imperial)
- Numeral Systems (Hindu-Arabic; Roman Numerals)
- Alphabets
- Languages
- Emojis
- Postal Addressing
- Morse Code

Natural History Standards

“Data standards are the rules by which data are described and recorded. In order to share, exchange, and understand data, we must standardise the format as well as the meaning.” (USGS)

Some standards which already exist:

- Ecological Metadata Language Standard (EML),
- Audubon Media Description (aka Audubon Core),
- Global Genome Biodiversity Network (GGBN),
- Ocean Data Standards and Best Practices Project (ODSBP),
- **Darwin Core**

What is Darwin Core?

"List of fields and their definitions, as they relate to biodiversity data."

Biodiversity
Information
Standards
TDWG

Introduction

References

Quick Reference Guide

Term Index

Record-level Terms

Occurrence

Organism

MaterialSample

LivingSpecimen

PreservedSpecimen

FossilSpecimen

Event

HumanObservation

MachineObservation

Location

GeologicalContext

Identification

Taxon

Darwin Core Terms: A quick reference guide

Title: Darwin Core Terms: A quick reference guide

Date Issued: 2009-02-12

Date Modified: 2015-06-02

Abstract: This document is a quick reference for all recommended Darwin Core terms. For complete historical term information, including version changes and pre-standard terms, see [\[HISTORY\]](#). For a comparative table of elements from pre-standard versions of Darwin Core to the current terms in the standard, see [\[VERSIONS\]](#).

Contributors: John Wlczorek (MVZ), Markus Döring (GBIF), Renato De Giovanni (CRIA), Tim Robertson (GBIF), Dave Vieglais (KUNHM)

Legal: This document is governed by the standard legal, copyright, licensing provisions and disclaimers issued by the Taxonomic Databases Working Group.

Part of TDWG Standard: <http://www.tdwg.org/standards/450/>

Creator: Darwin Core Task Group

Identifier: <http://rs.tdwg.org/dwc/2015-03-19/terms/>

Latest Version: <http://rs.tdwg.org/dwc/terms/>

Replaces: <http://rs.tdwg.org/dwc/2014-11-08/terms/>

Document Status: Current Standard

Term Name: country	
Identifier:	http://rs.tdwg.org/dwc/terms/country
Class:	http://purl.org/dc/terms/Location
Definition:	The name of the country or major administrative unit in which the Location occurs. Recommended best practice is to use a controlled vocabulary such as the Getty Thesaurus of Geographic Names.
Comment:	Examples: "Denmark", "Colombia", "España". For discussion see http://terms.tdwg.org/wiki/dwc:country
Details:	country

What is Darwin Core?

Biodiversity
Information
Standards
TDWG

Terminology Platform

▼ Navigation
Help
Query concepts
Recent changes

► Tools

Page Discussion

Read

View form

View source

View history

Search



dwc:country



Country: The name of the country or major administrative unit in which the Location occurs. Recommended best practice is to use a controlled vocabulary such as the Getty Thesaurus of Geographic Names.

Notes: For discussion see <http://code.google.com/p/darwincore/wiki/Location>

Example(s): "Denmark", "Colombia", "España"

Translations

Español (Spanish)

País: El nombre del país o unidad administrativa de mayor jerarquía de la ubicación. La práctica recomendada es utilizar un identificador persistente de un lenguaje controlado como el Tesoro Getty de Nombres Geográficos.

Ejemplo: "Denmark", "Colombia", "España"

中文 (简体) (Simplified Chinese)

国家 (also sasdlasd): 发现地点的国家或主要行政区划名称。建议最好使用控制性词汇，如盖提地理名称索引。

日本語 (Japanese)

Country: その位置が存在する国名、あるいは主要な行政単位。the Getty Thesaurus of Geographic Names などの管理された語彙の使用を推奨。

Français (French)

Pays: Le nom du pays ou de l'unité administrative principale où a été localisé le sujet. Il est conseillé d'utiliser un vocabulaire contrôlé tel que le Thésaurus Getty des noms géographiques.

Exemple: "Danemark", "Colombie", "Espagne"

Notes: Voir la page <http://code.google.com/p/darwincore/wiki/Location>

Norsk bokmål (Norwegian)

Land: Navnet på landet eller større administrativ enhet for lokaliteten. Anbefalt praksis er å bruke et kontrollert vokabular, for eksempel Getty Thesaurus of Geographic Names.

Example: Danmark, Colombia, Spania

Notes: For discussion see <http://code.google.com/p/darwincore/wiki/Location>

Scheme: Darwin Core

Collection: Darwin Core Location

Country

- **URI:** <http://rs.tdwg.org/dwc/terms/country>
- **is defined by** <http://rs.tdwg.org/dwc/terms/>
- **skos: has close match**
<http://terms.tdwg.org/wiki/abcd.DataSets/DataSet/Units/Unit/Gathering/Country/Name>

Status: recommended

Issued: 2008/11/19

Modified: 2009/04/24

RDF feed | Browse properties | SMW-prop.

Search for values

Softwares for data capture and data management

- No need to go “big”: you can capture information from collection specimens or live observations in a simple spreadsheet such as Excel, OpenOffice, Google Sheets or through an app (iNaturalist, Biodiversity Data Capture, eBird for ornithology, Memento...)

GBIF Mammifères d'Auvergne 2017 - Mode de compatibilité - Excel

Sophie Parneton

Fichier Accueil Mise en page Formules Données Révision Affichage Foit PDF Dites-nous ce que vous voulez faire

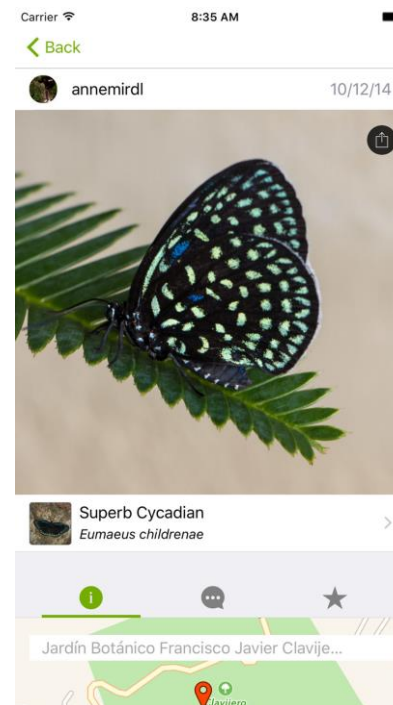
Collier Presse-papiers Police Alignement Nombre Styles de cellules Cellules Édition

GZ3 Soricomorpha

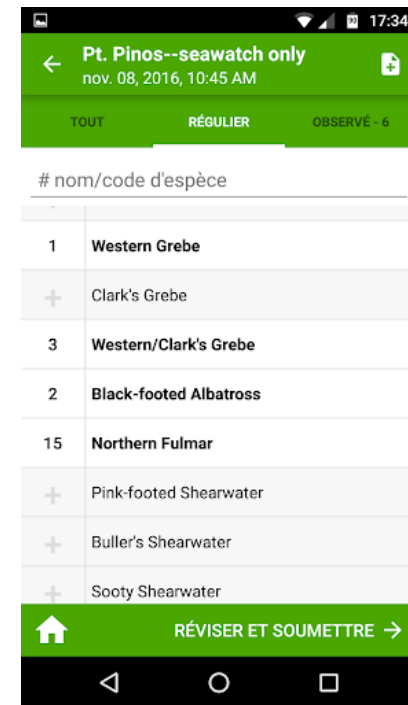
	A	B	C	D	E	F	G	H	I	J	K
	institutionCode	collectionCode	catalogNumber	kingdom	phylum	class	order	family	scientificName	scientificNameAuthorship	identifiedBy
1	Museum Henri-Lecoq Clermont-Ferrand MHLCLFE	Mammalogie	MHLCLFE A003	Animalia	Chordata	Mammalia	Chiroptera	Vespertilionidae	Pipistrellus pipistrellus	(Schreber, 1774)	Faure Marie-Françoise
2	Museum Henri-Lecoq Clermont-Ferrand MHLCLFE	Mammalogie	MHLCLFE A004	Animalia	Chordata	Mammalia	Chiroptera	Vespertilionidae	Pipistrellus pipistrellus	(Schreber, 1774)	Faure Marie-Françoise
3	Museum Henri-Lecoq Clermont-Ferrand MHLCLFE	Mammalogie	MHLCLFE A005	Animalia	Chordata	Mammalia	Chiroptera	Vespertilionidae	Pipistrellus pipistrellus	(Schreber, 1774)	Faure Marie-Françoise
4	Museum Henri-Lecoq Clermont-Ferrand MHLCLFE	Mammalogie	MHLCLFE A007	Animalia	Chordata	Mammalia	Chiroptera	Vespertilionidae	Pipistrellus pipistrellus	(Schreber, 1774)	Faure Marie-Françoise
5	Museum Henri-Lecoq Clermont-Ferrand MHLCLFE	Mammalogie	MHLCLFE A008	Animalia	Chordata	Mammalia	Chiroptera	Vespertilionidae	Pecticus auritus	(Linnaeus, 1758)	Faure Marie-Françoise
6	Museum Henri-Lecoq Clermont-Ferrand MHLCLFE	Mammalogie	MHLCLFE A009	Animalia	Chordata	Mammalia	Chiroptera	Vespertilionidae	Eptesicus serotinus	(Fischer, 1829)	Faure Marie-Françoise
7	Museum Henri-Lecoq Clermont-Ferrand MHLCLFE	Mammalogie	MHLCLFE A010	Animalia	Chordata	Mammalia	Chiroptera	Vespertilionidae	Myotis mystacinus	(Kuhl, 1817)	Faure Marie-Françoise
8	Museum Henri-Lecoq Clermont-Ferrand MHLCLFE	Mammalogie	MHLCLFE A011	Animalia	Chordata	Mammalia	Chiroptera	Vespertilionidae	Myotis mystacinus	(Kuhl, 1817)	Faure Marie-Françoise
9	Museum Henri-Lecoq Clermont-Ferrand MHLCLFE	Mammalogie	MHLCLFE A015	Animalia	Chordata	Mammalia	Chiroptera	Vespertilionidae	Pipistrellus pipistrellus	(Schreber, 1774)	Faure Marie-Françoise
10	Museum Henri-Lecoq Clermont-Ferrand MHLCLFE	Mammalogie	MHLCLFE A016	Animalia	Chordata	Mammalia	Chiroptera	Vespertilionidae	Pipistrellus pipistrellus	(Schreber, 1774)	Faure Marie-Françoise
11	Museum Henri-Lecoq Clermont-Ferrand MHLCLFE	Mammalogie	MHLCLFE A017	Animalia	Chordata	Mammalia	Chiroptera	Vespertilionidae	Eptesicus serotinus	(Fischer, 1829)	Faure Marie-Françoise
12	Museum Henri-Lecoq Clermont-Ferrand MHLCLFE	Mammalogie	MHLCLFE A020	Animalia	Chordata	Mammalia	Chiroptera	Vespertilionidae	Pecticus auritus	(Linnaeus, 1758)	Faure Marie-Françoise
13	Museum Henri-Lecoq Clermont-Ferrand MHLCLFE	Mammalogie	MHLCLFE A022	Animalia	Chordata	Mammalia	Chiroptera	Vespertilionidae	Myotis mystacinus	(Kuhl, 1817)	Faure Marie-Françoise
14	Museum Henri-Lecoq Clermont-Ferrand MHLCLFE	Mammalogie	MHLCLFE A023	Animalia	Chordata	Mammalia	Chiroptera	Rhinophoridae	Rhinolophus ferrumequinum	(Schreber, 1774)	Botier Emmanuel
15	Museum Henri-Lecoq Clermont-Ferrand MHLCLFE	Mammalogie	MHLCLFE A024	Animalia	Chordata	Mammalia	Chiroptera	Vespertilionidae	Pecticus auritus	(Linnaeus, 1758)	Botier Emmanuel
16	Museum Henri-Lecoq Clermont-Ferrand MHLCLFE	Mammalogie	MHLCLFE A025	Animalia	Chordata	Mammalia	Chiroptera	Rhinophoridae	Rhinolophus hipposideros	(Bechstein, 1800)	Botier Emmanuel
17	Museum Henri-Lecoq Clermont-Ferrand MHLCLFE	Mammalogie	MHLCLFE A026	Animalia	Chordata	Mammalia	Rodentia	Sciuridae	Sciurus vulgaris	(Linnaeus, 1758)	Botier Emmanuel
18	Museum Henri-Lecoq Clermont-Ferrand MHLCLFE	Mammalogie	MHLCLFE A031	Animalia	Chordata	Mammalia	Soricomorpha	Soricidae	Crocidura leucodon	(Hermann, 1780)	Botier Emmanuel
19	Museum Henri-Lecoq Clermont-Ferrand MHLCLFE	Mammalogie	MHLCLFE A032	Animalia	Chordata	Mammalia	Soricomorpha	Soricidae	Sorex araneus	(Linnaeus, 1758)	Botier Emmanuel
20	Museum Henri-Lecoq Clermont-Ferrand MHLCLFE	Mammalogie	MHLCLFE A033	Animalia	Chordata	Mammalia	Soricomorpha	Soricidae	Sorex minutus	(Linnaeus, 1758)	Botier Emmanuel
21	Museum Henri-Lecoq Clermont-Ferrand MHLCLFE	Mammalogie	MHLCLFE A034	Animalia	Chordata	Mammalia	Soricomorpha	Talpidae	Talpa europaea	(Linnaeus, 1758)	Botier Emmanuel
22	Museum Henri-Lecoq Clermont-Ferrand MHLCLFE	Mammalogie	MHLCLFE A035	Animalia	Chordata	Mammalia	Soricomorpha	Talpidae	Talpa europaea	(Linnaeus, 1758)	Botier Emmanuel
23	Museum Henri-Lecoq Clermont-Ferrand MHLCLFE	Mammalogie	MHLCLFE A036	Animalia	Chordata	Mammalia	Soricomorpha	Talpidae	Talpa europaea	(Linnaeus, 1758)	Botier Emmanuel
24	Museum Henri-Lecoq Clermont-Ferrand MHLCLFE	Mammalogie	MHLCLFE A037	Animalia	Chordata	Mammalia	Soricomorpha	Talpidae	Talpa europaea	(Linnaeus, 1758)	Botier Emmanuel
25	Museum Henri-Lecoq Clermont-Ferrand MHLCLFE	Mammalogie	MHLCLFE A038	Animalia	Chordata	Mammalia	Soricomorpha	Talpidae	Talpa europaea	(Linnaeus, 1758)	Botier Emmanuel
26	Museum Henri-Lecoq Clermont-Ferrand MHLCLFE	Mammalogie	MHLCLFE A039	Animalia	Chordata	Mammalia	Soricomorpha	Talpidae	Talpa europaea	(Linnaeus, 1758)	Botier Emmanuel
27	Museum Henri-Lecoq Clermont-Ferrand MHLCLFE	Mammalogie	MHLCLFE A040	Animalia	Chordata	Mammalia	Soricomorpha	Talpidae	Talpa europaea	(Linnaeus, 1758)	Botier Emmanuel
28	Museum Henri-Lecoq Clermont-Ferrand MHLCLFE	Mammalogie	MHLCLFE A041	Animalia	Chordata	Mammalia	Soricomorpha	Talpidae	Talpa europaea	(Linnaeus, 1758)	Botier Emmanuel
29	Museum Henri-Lecoq Clermont-Ferrand MHLCLFE	Mammalogie	MHLCLFE A044	Animalia	Chordata	Mammalia	Soricomorpha	Soricidae	Crocidura russula	(Hermann, 1780)	Botier Emmanuel
30	Museum Henri-Lecoq Clermont-Ferrand MHLCLFE	Mammalogie	MHLCLFE A044	Animalia	Chordata	Mammalia	Soricomorpha	Soricidae	Crocidura russula	(Hermann, 1780)	Botier Emmanuel

GBIF Lachiver

Excel spreadsheet for biodiversity data



iNaturalist app



eBird app

Softwares for data capture and data management

- Depending on your needs, a more detailed data capture/management software might be the right solution for your data:

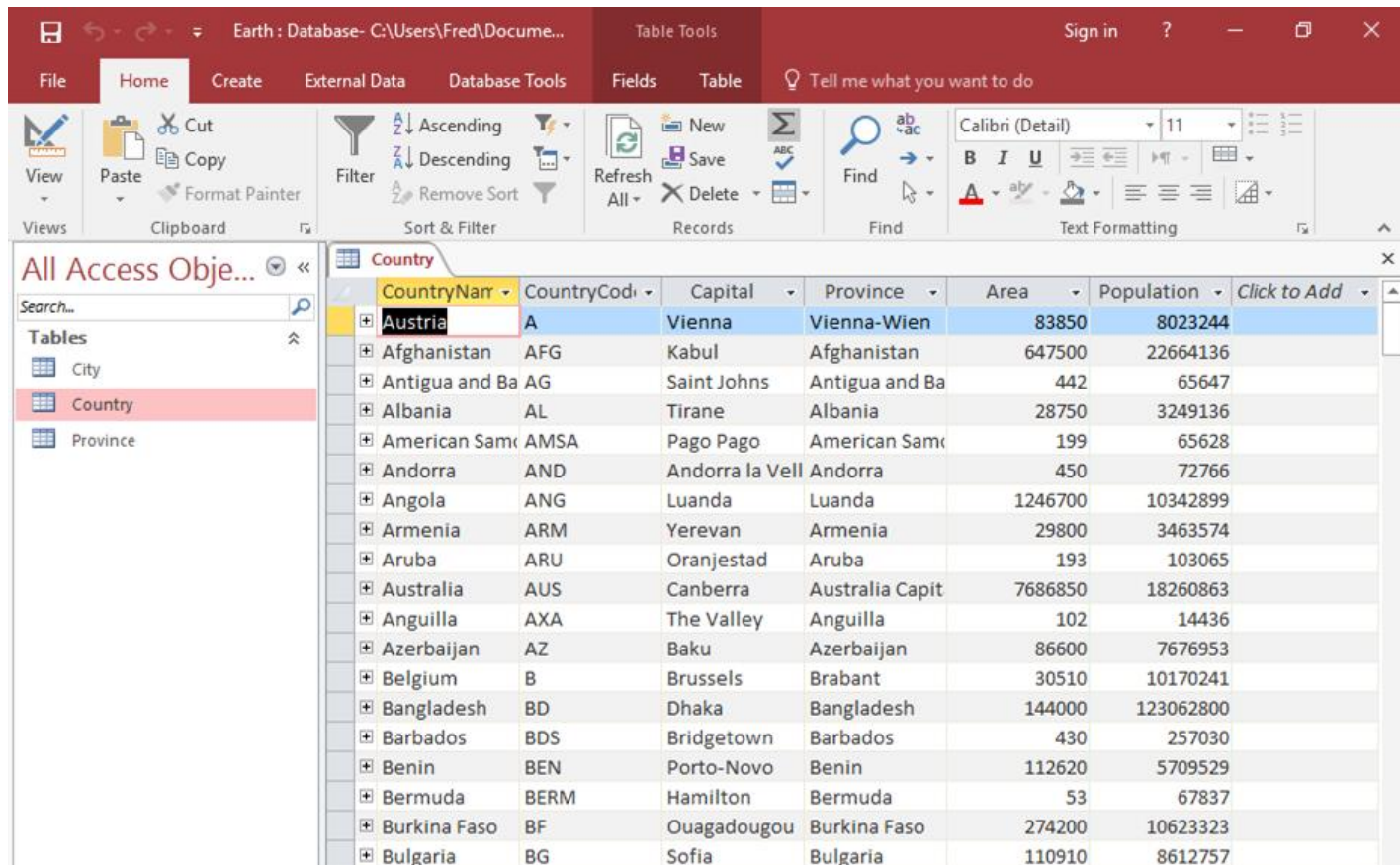
The image displays five different software interfaces used for data capture and management in botanical collections:

- SEINet (Southwest Environmental Information Network):** A web-based interface showing a user profile for Edward Gilbert, a navigation menu with options like 'Search Collections', 'Image Library', and 'Games', and a 'Data Upload Module' for the University Herbarium. It includes a table for mapping source fields to target fields.
- Specify 7:** A web-based interface for creating a 'New Collection Object'. It features fields for Cataloger, Accession #, Cat #, and Cat Date, along with a 'Determinations' section.
- Symbiota:** A web-based interface showing a 'New Collection Object' form with fields for Cat #, Accession #, Cat Date, and Cat Date (Full Date). It also includes a 'Determinations' section.
- Elysia (gestor de colecciones):** A web-based interface for managing collections. It shows a 'Trabajando con Test' section with a table for selecting a collection to work with.
- Brahms:** A desktop application interface showing a 'Conservation Assessment' for the family Araucariaceae. It includes a table with columns for Name, Botanical Name, Gen, Pop, Ecol, Uses, Threats, Consensus, Assess, BBG, Track, and Import/Export.

From left to right:
Symbiota, Specify
EMu
Elysia, Brahms

Softwares for data capture and data management

- Relational databases such as Access are useful for storing and managing data



The screenshot shows the Microsoft Access application window. The title bar indicates the file path: "Earth : Database- C:\Users\Fred\Docume...". The ribbon includes "File", "Home", "Create", "External Data", "Database Tools", "Fields", and "Table". The "Home" ribbon is active, showing options for "Views", "Clipboard", "Sort & Filter", "Records", "Find", and "Text Formatting". The "Country" table is selected in the "All Access Objects" pane on the left. The table data is displayed in a grid view with the following columns: CountryName, CountryCode, Capital, Province, Area, and Population. The first row is highlighted in blue and contains the data for Austria.

CountryName	CountryCode	Capital	Province	Area	Population
Austria	A	Vienna	Vienna-Wien	83850	8023244
Afghanistan	AFG	Kabul	Afghanistan	647500	22664136
Antigua and Barbuda	AG	Saint Johns	Antigua and Barbuda	442	65647
Albania	AL	Tirane	Albania	28750	3249136
American Samoa	AMSA	Pago Pago	American Samoa	199	65628
Andorra	AND	Andorra la Vella	Andorra	450	72766
Angola	ANG	Luanda	Luanda	1246700	10342899
Armenia	ARM	Yerevan	Armenia	29800	3463574
Aruba	ARU	Oranjestad	Aruba	193	103065
Australia	AUS	Canberra	Australia Capital Territory	7686850	18260863
Anguilla	AXA	The Valley	Anguilla	102	14436
Azerbaijan	AZ	Baku	Azerbaijan	86600	7676953
Belgium	B	Brussels	Brabant	30510	10170241
Bangladesh	BD	Dhaka	Bangladesh	144000	123062800
Barbados	BDS	Bridgetown	Barbados	430	257030
Benin	BEN	Porto-Novo	Benin	112620	5709529
Bermuda	BERM	Hamilton	Bermuda	53	67837
Burkina Faso	BF	Ouagadougou	Burkina Faso	274200	10623323
Bulgaria	BG	Sofia	Bulgaria	110910	8612757

Softwares for data capture and data management

- Going further: anticipate data publishing! (More about this in the days to come...) Make sure that your software or tool allows you to export data as csv or txt files. Then you will be able to share them with the international scientific and deciders community through tools such as the GBIF IPT or a BioCASE installation:

GBIF INTEGRATED PUBLISHING TOOL
free and open access to biodiversity data

TEST MODE

email login **ENGLISH**

Home **About**

Hosted resources available through this IPT

Logo	Name	Organisation	Type	Subtype	Records	Last modified	Last publication	Next publication
	1_Sample Checklist in Plinian Core	Not registered	Checklist	--	3	2018-03-26	2018-03-26	--
	AAA Test	Demo Org	Metadata-only	--	0	2018-03-26	2017-09-04	--
	African Crane Sightings	Not registered	Occurrence	Observation	26,403	2018-03-26	2018-03-26	--
	artsobservation	Demo Org	Occurrence	--	2	2018-03-26	2018-03-26	--
	Birds at Danish Lighthouses Daniel	Not registered	Occurrence	Specimen	1,212	2018-03-26	2018-03-26	--
	Birds at the Danish Lighthouses 1883-1939	Not registered	Occurrence	Observation	1,212	2018-03-26	2018-03-26	--
	Breakfast Demo Excel #1	Not registered	Occurrence	Specimen	9	2018-03-26	2018-03-26	--
	Centre d'Estudis Avançats de Banes Limnological Observatory of the Pyrenees - Diatomeas de lagos pirenaicos	Centre for Advanced Studies of Banes, CSIC	Occurrence	--	10,789	2018-03-26	2018-02-06	--
	Daniel Test Dataset	Demo Org	Occurrence	--	9	2018-03-26	2017-10-10	--

IPT (GBIF)

BioCASE Monitor 1.2

Register a new provider | Modify providers | Remove a provider

Zoological Data at Museum für Naturkunde

title	# current records	last modification	useful links
EDIT - ATBI (last modified at 2015-07-20 10:15:16) records	52235	2011-11-12T10:00:00	View mapping
Paläontologische Datenbank am MN (last modified at 2015-07-22 12:15:45) records	136994	2006-02-15T14:41:45.523000	View mapping
Animal Sound Archive (last modified at 2015-07-20 10:15:16) records	26362	2010-08-24T12:07:34	View mapping
MN - Optima Collection (last modified at 2015-07-20 10:15:16) records	1709	2013-04-02T00:00:00	View mapping
Naturhistorisches Museum Mainz Paläontologische Collection (last modified at 2015-07-20 10:15:16) records	9271	2012-01-31	View mapping
MN - Phasmod Collection (last modified at 2015-07-20 10:15:16) records	3989	2011-12-19	View mapping
MN - Helioscopa Collection (last modified at 2015-07-20 10:15:16) records	103176	02.02.2012	View mapping
sum:	333736		

GeoCASE Provider - ABCDEFG-Schema

title	# current records	last modification	useful links
Mineralogy (last modified at 2015-07-20 10:15:16) records	114174		View mapping
GfG geological collections (last modified at 2015-07-20 10:15:16) records	100503	2012-03-17T20:36:43	View mapping
NHMF Vienna: Geology & Palaeontology (last modified at 2015-07-20 10:15:16) records	26791	2011-03-17T09:00:24	View mapping
ELM geological collections (last modified at 2015-07-20 10:15:16) records	34274	2008-11-17T20:23:39	View mapping
TUG geological collections (last modified at 2015-07-20 10:15:16) records	38794	2012-11-01T23:36:25	View mapping
Paläontologische Datenbank am MN (last modified at 2015-07-20 10:15:16) records	136994	2006-02-15T14:41:45.523000	View mapping
sum:	451538		

Botanischer Garten & Botanisches Museum Berlin

TITLE	# CURRENT RECORDS	LAST MODIFICATION	USEFUL LINKS
EDIT - ATBI (last modified at 2015-07-20 10:15:16) records	46031	12.11.2010 10:00:00	View mapping
Flora: Observations of Mecklenburg-Pomerania - Higher Plants (last modified at 2015-07-20 10:15:16) records	528295	2013-04-20	View mapping
sum:	574326		

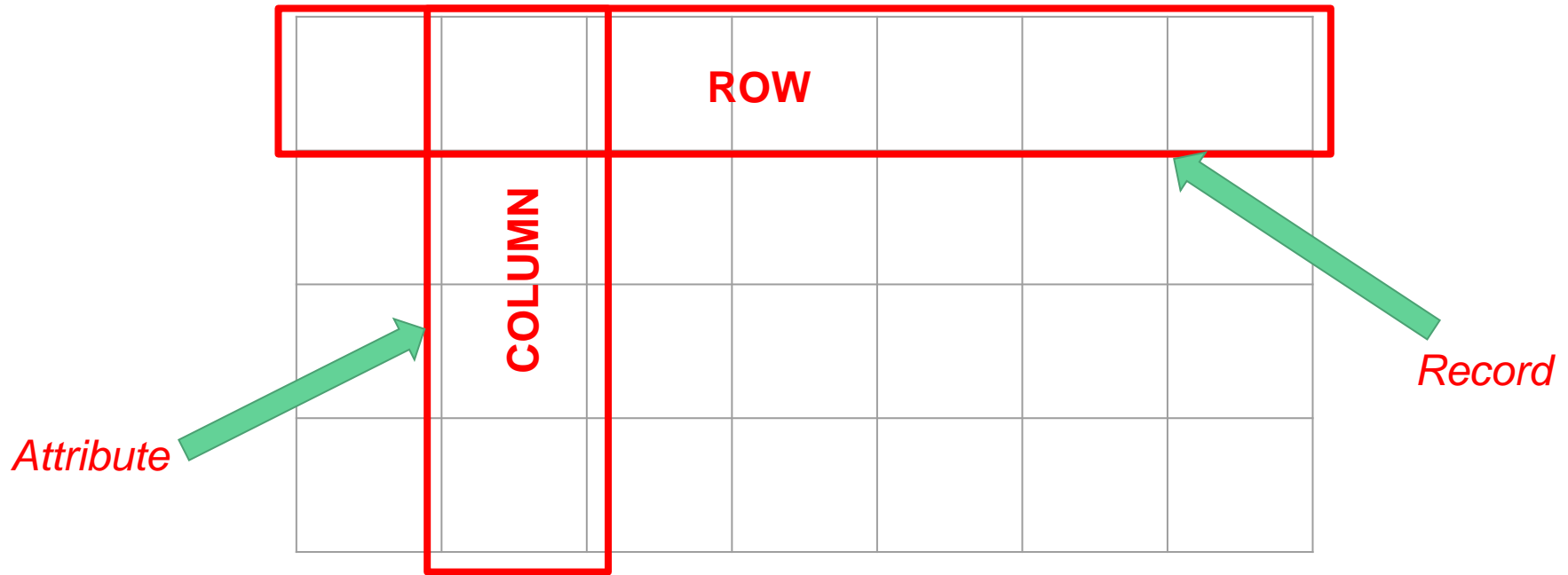
BioCASE

Softwares for data capture and data management

- The choice is yours!
- Each institution should discuss data workflow, goals, standards, licences, softwares, in order to choose the tools best suited for their needs
- Each software has its pros and cons (price, language, functionalities, documentation, new versions...), but whole user communities are available to help you decide which one is the best for you and your institution
- Feel free to exchange feedback and advice between colleagues!

Data Structures - Tables

“What happens when you add structure to a grid?”



Integrity and Security

“The difference between a spreadsheet and a database table.”

Row

Attributes of a record **ALWAYS** stay together.

Column

Any attribute has the **SAME** field/data type for every record.

Table

All data in a table refers to a **SINGLE** concept.

Row

For example a single specimen.

Column

For example the collector's name.

Table

For example everything collected on an expedition

Metadata

"Metadata must be rich enough to allow data (re)use by a third party without them having to refer to the data source."

Metadata = « Data about the data »

- **Describe content, accessibility, completeness...**
- About the **dataset**
- **Error documentation**
- Documentation of **validation process**, data cleaning and data correcting

Metadata

Experience has shown that treating data as a long-term asset and managing it within a coordinated framework produces considerable savings and ongoing value. (NLWRA 2003).

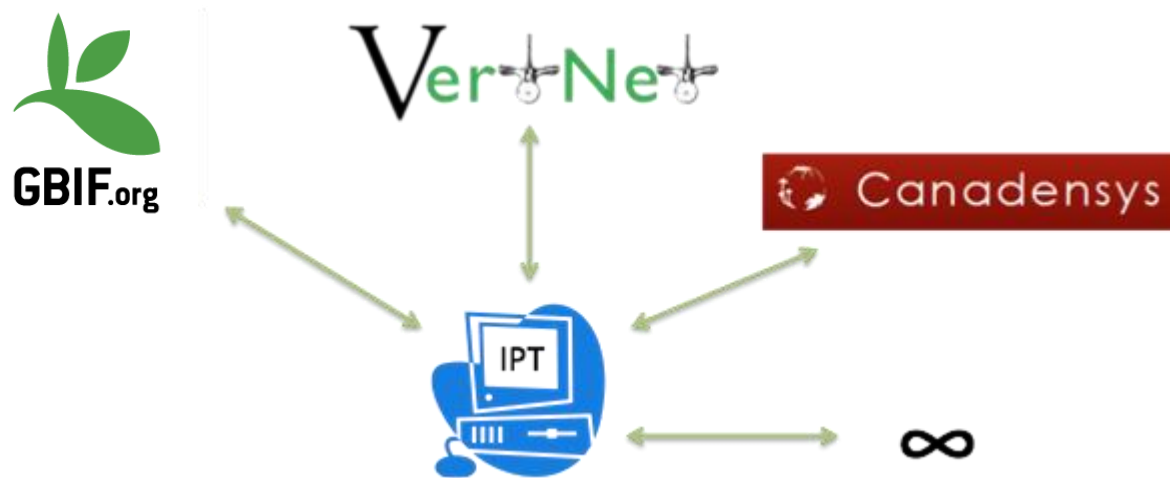
- title;
- narrative;
- source;
- data lineage;
- accuracy;
- logical consistency;
- date and life expectancy;
- field definitions;
- collection methodology;
- completeness;
- conditions of use and use constraints;
- custodianship;
- contact information

Publishing

"Nothing stinks like a pile of unpublished writing" Sylvia Plath


What is Data Publishing?

“Publishing” refers to making biodiversity datasets publicly accessible and discoverable, in a standardized form, via an access point, typically a web address (a URL).













What Does IPT Stand For?

Integrated Publishing Toolkit


GBIF INTEGRATED PUBLISHING TOOLKIT (IPT)
free and open access to biodiversity data

Hosted resources available through this IPT

Filter:

Logo	Name	Organisation	Type	Subtype	Records	Last modified	Last publication	Next publication
	Field Museum of Natural History (Botany) Seed Plant Collection	Field Museum of Natural History	Occurrence	Specimen	576,367	2018-03-05	2018-03-05	--
	Field Museum of Natural History (Botany) Bryophyte Collection	Field Museum of Natural History	Occurrence	Specimen	115,932	2018-03-05	2016-12-19	--
	Field Museum of Natural History (Botany) Fungi Collection	Field Museum of Natural History	Occurrence	Specimen	62,851	2018-03-05	2018-03-05	--
	Field Museum of Natural History (Botany) Lichen Collection	Field Museum of Natural History	Occurrence	Specimen	55,370	2018-03-05	2018-03-05	--
	Field Museum of Natural History (Botany) Pteridophyte Collection	Field Museum of Natural History	Occurrence	Specimen	70,784	2018-03-05	2018-03-05	--
	Field Museum of Natural History (Geology) Fossil Invertebrates Collection	Field Museum of Natural History	Occurrence	Specimen	62,149	2018-01-23	2017-01-06	--
	Field Museum of Natural History (Geology) Paleobotany Collection	Field Museum of Natural History	Occurrence	Specimen	22,851	2018-01-23	2017-01-27	--
	Field Museum of Natural History (Zoology) Amphibian and Reptile Collection	Field Museum of Natural History	Occurrence	Specimen	285,342	2018-01-23	2017-02-06	--
	Field Museum of Natural History (Zoology) Bird Collection	Field Museum of Natural History	Occurrence	Specimen	527,634	2018-02-27	2017-05-04	--
	Field Museum of Natural History (Zoology) Bird Egg Collection	Field Museum of Natural History	Occurrence	Specimen	20,992	2018-02-27	2018-02-27	--

Data -> IPT -> GBIF

GBIF INTEGRATED PUBLISHING TOOLKIT (IPT)
free and open access to biodiversity data

Home About

Hosted resources available through this IPT

Logo	Name	Organisation	Type	Subtype	Records	Last modified	Last publication	Next publication
	Field Museum of Natural History (Botany) Bryophyte Collection	Field Museum of Natural History	Occurrence	Specimen	115,932	2018-03-05	2016-12-19	—
	Field Museum of Natural History (Zoology) Insect, Arachnid and Myriapod Collection	Field Museum of Natural History	Occurrence	Specimen	62,149	2018-03-05	2017-01-06	—

Showing 1 to 14 of 14

The most recently updated resources are also available as an [RSS feed](#)

IPT Version 2.3.5-r690544 [About the IPT](#) [User manual](#) [Report a bug](#) [Request new feature](#)

©2017 Global Biodiversity Information Facility

Field Museum of Natural History (Zoology) Insect, Arachnid and Myriapod Collection
Published by [Field Museum](#)
© Sharon Grant • Crystal Maier

999,088 Occurrences 11 Distributions

90% With taxon match 23% With coordinates 72% With year

Description
The Division of Insects' holdings of worldwide Arthropoda (excluding Crustacea) rank fifth in overall size among worldwide importance for many groups. The collection presently includes roughly 4.1 million pinned insects plus 5.3 million specimens or lots in alcohol or on microscope slides. In addition, there are over 17,000 partly-sorted "bulk samples" from traps or leaf-litter extractions. The collection receives heavy use by US and international research visitors and borrowers as well as extensive educational use.

Geographic coverages
Global

Additional info
<https://www.fieldmuseum.org/field-museum-natural-history-conditions-and-suggested-norms-use-collections-data-and-images>

Contributors
Crystal Maier
Collection Manager Insects, Arachnids and Myriapods
Field Museum of Natural History
1400 S Lake Shore Drive
Chicago 60605
United States
crystal.maier@fieldmuseum.org

спасибо!

Questions ?