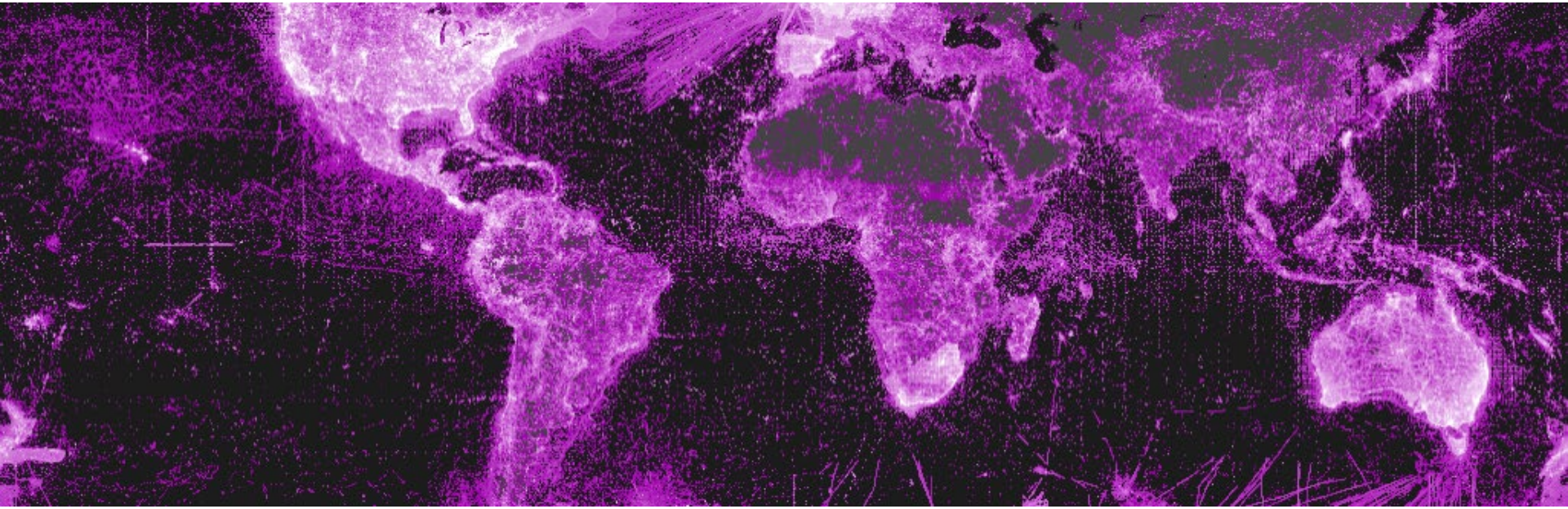


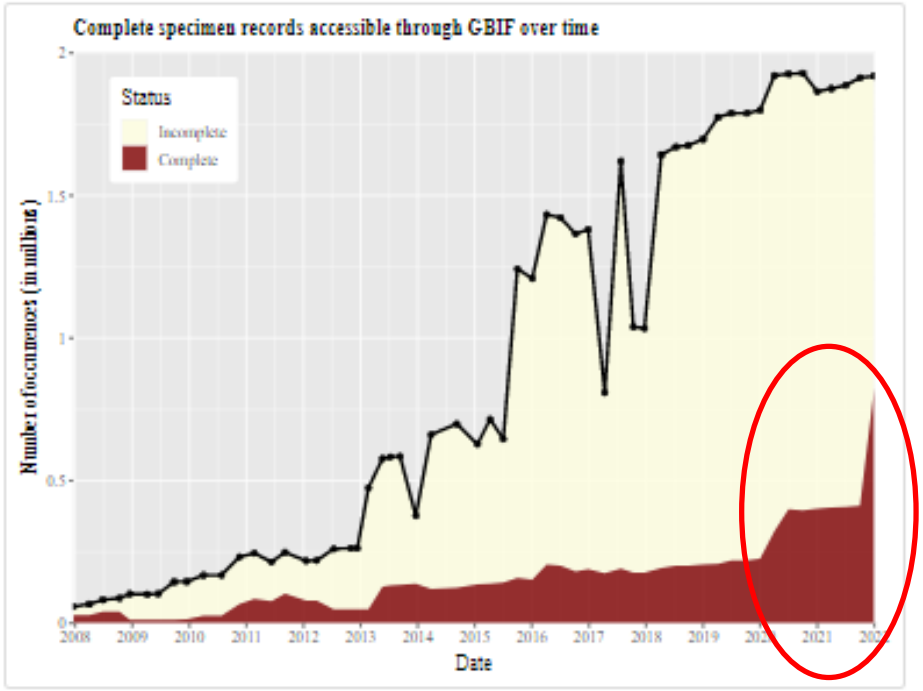
Datakwaliteit en hoe deze te verbeteren met behulp van GBIF

Jeroen Creuwels, Datamanager NLBIF

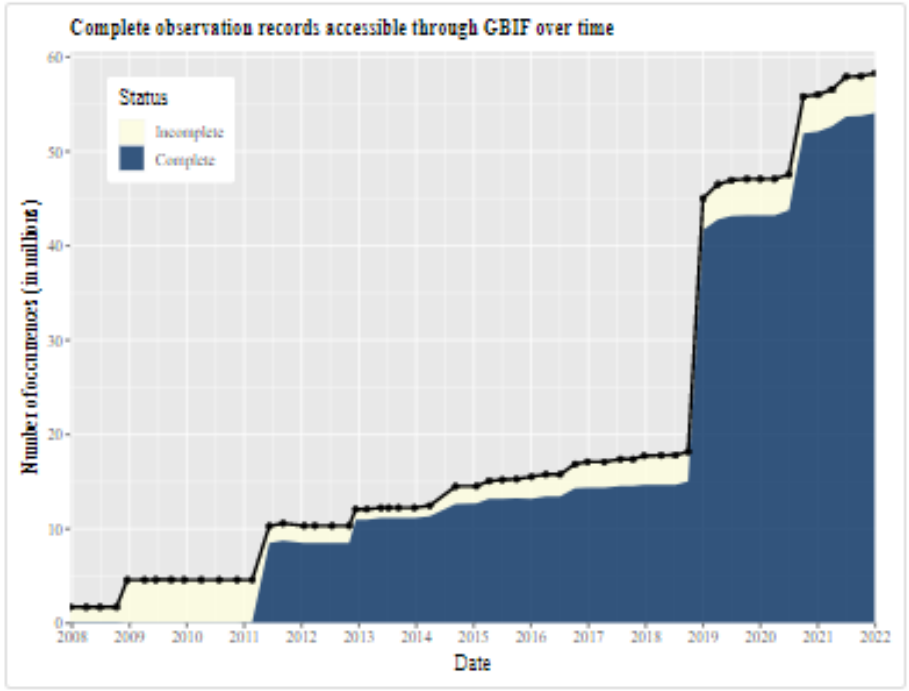
Compleetheid van de NL-data bij GBIF

"Complete = identification at least to **species rank**, valid **coordinates**, a **full date** of occurrence and a given **basis of record**"

Specimen records



Observation records



Incomplete

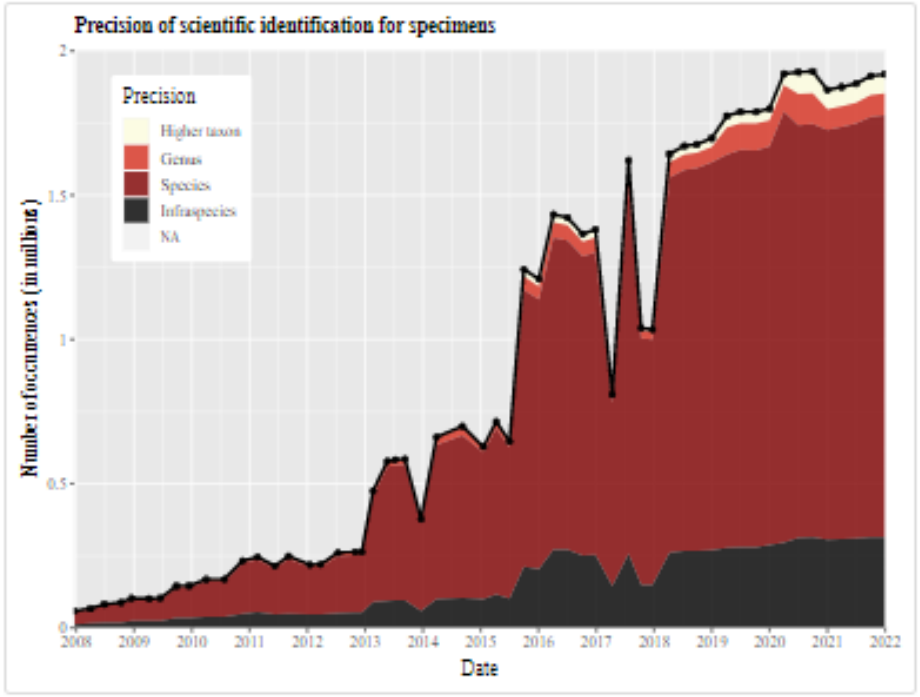
Complete

Incomplete

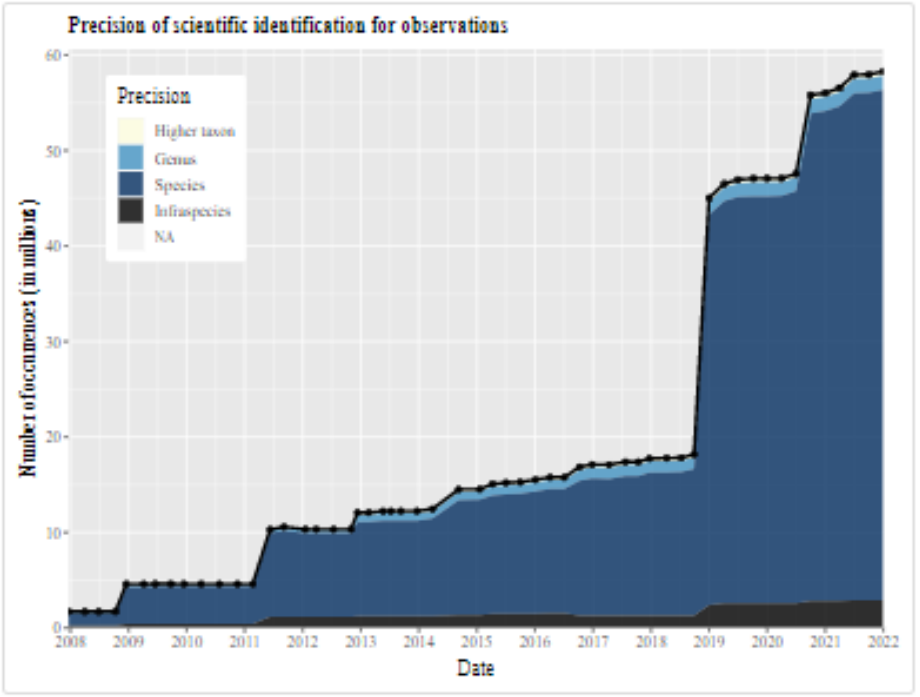
Complete

Taxonomische precisie

Specimen records



Observation records



Species

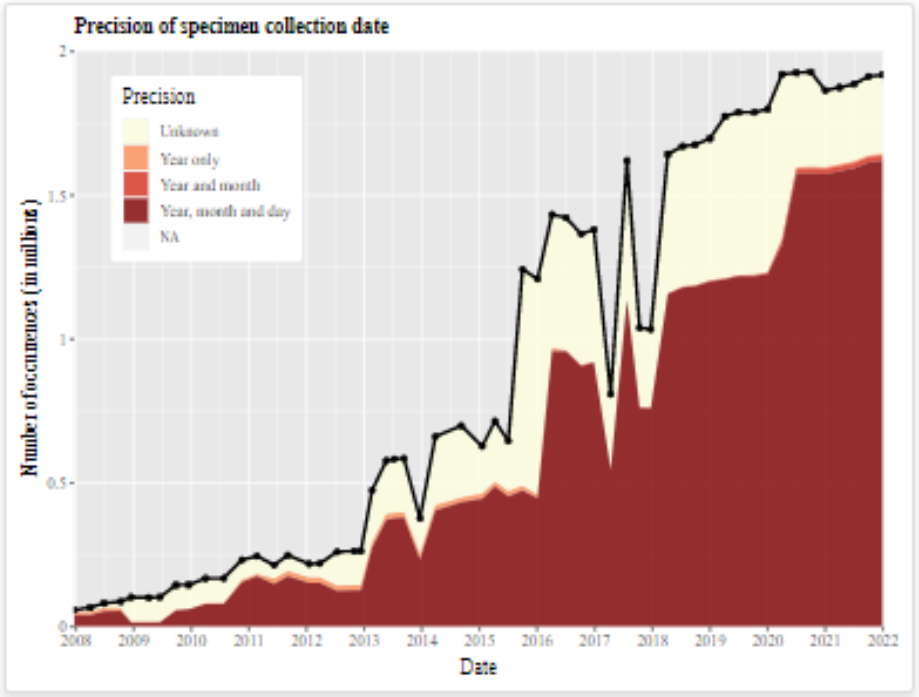
Infraspecies

Species

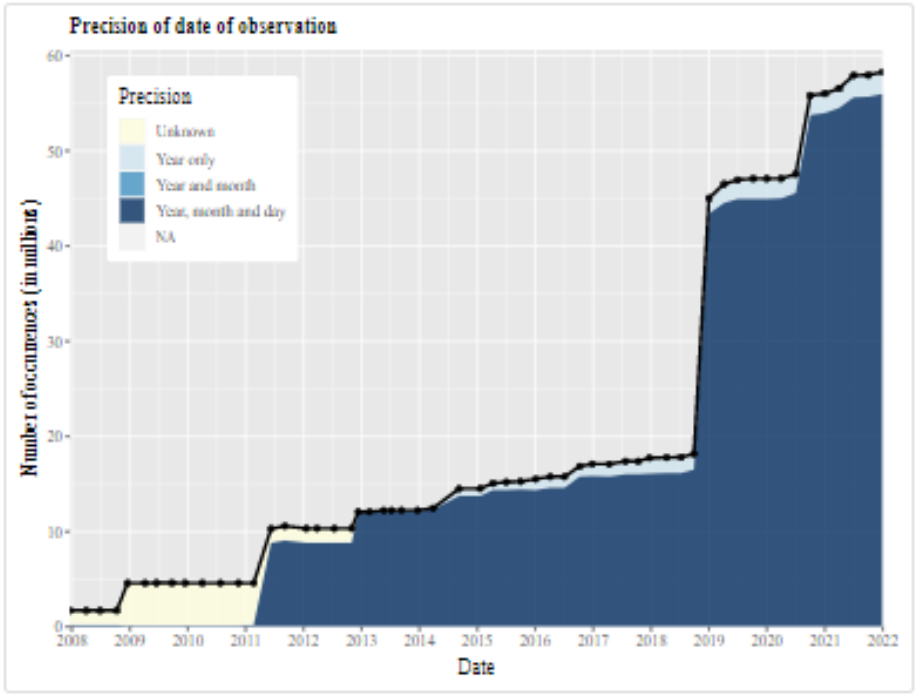
Infraspecies

Temporele precisie

Specimen records



Observation records



Unknown

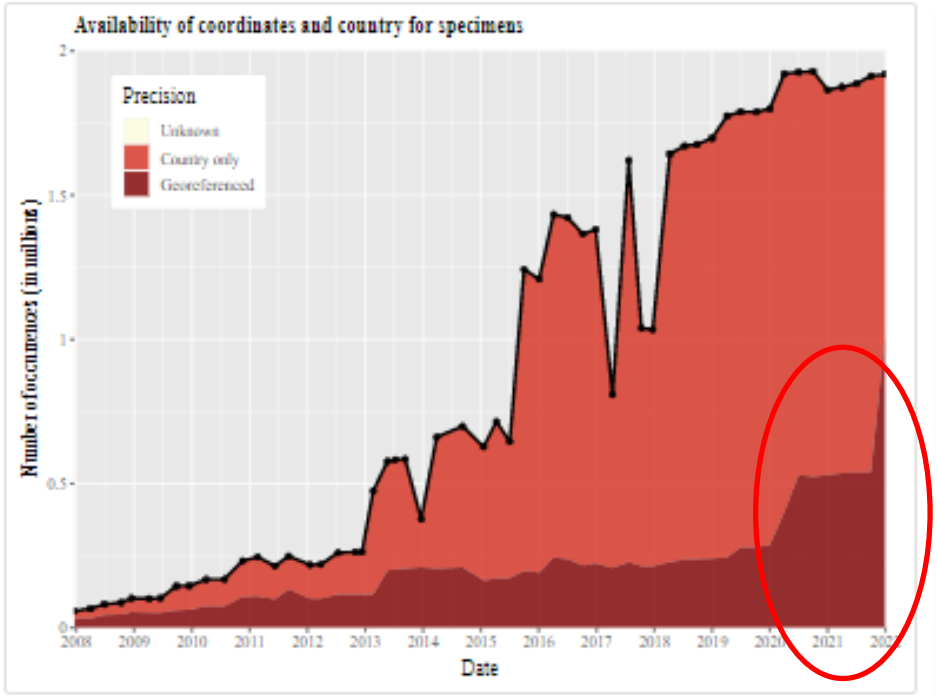
Year + Month + Day

Unknown

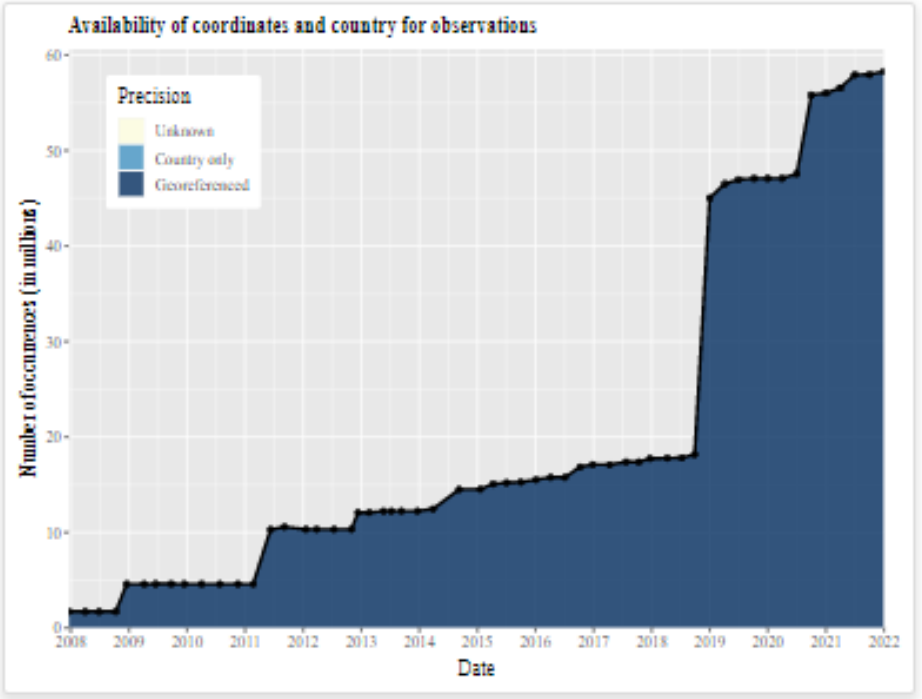
Year + Month + Day

Geografische precisie

Specimen records



Observation records



Countries only

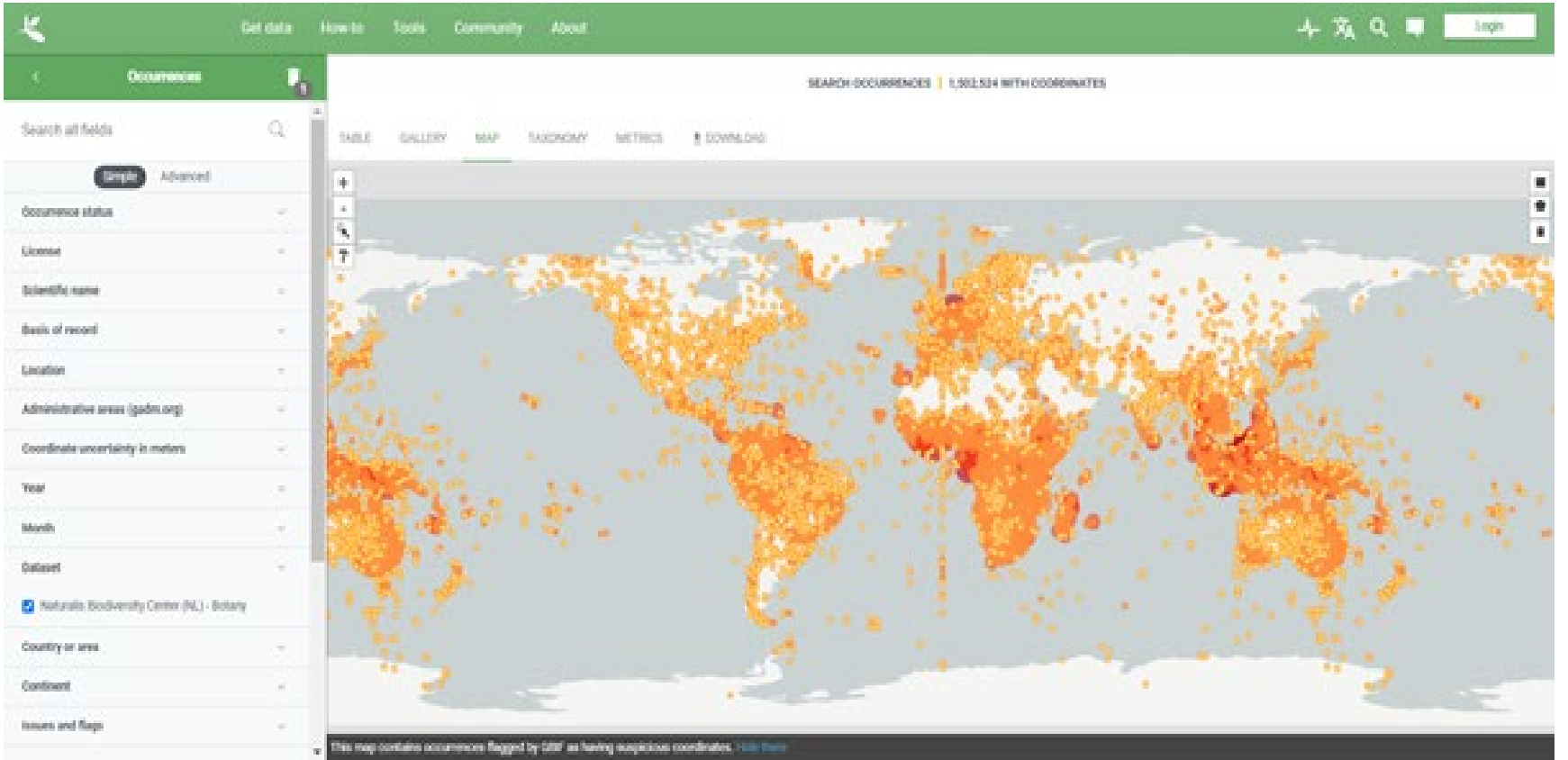
Georeferenced

Georeferenced

- *Minimum quality standards*

Hoe kun je de datakwaliteit verhogen?

- restricties/aanbevelingen bij invoer
- controle na publicatie bij GBIF (met flags/issues)
- en data opschonen (in bron-database)



Darwin Core records - *Minimum quality standards*

Term	Status
occurrenceID	Required
basisOfRecord	Required
scientificName	Required
eventDate	Required

Darwin Core records - *Minimum quality standards*

Term	Status
occurrenceID	Required
basisOfRecord	Required
scientificName	Required
eventDate	Required

Examples `PreservedSpecimen` , `FossilSpecimen` , `LivingSpecimen` , `MaterialSample` , `Event` , `HumanObservation` , `MachineObservation` , `Taxon` , `Occurrence` , `MaterialCitation`

Darwin Core records - *Minimum quality standards*

Term	Status
occurrenceID	Required
basisOfRecord	Required
scientificName	Required
eventDate	Required

Darwin Core records - *Minimum quality standards*

Term	Status
occurrenceID	Required
basisOfRecord	Required
scientificName	Required
eventDate	Required

Recommended best practice is to use a date that conforms to **ISO 8601-1**:2019.

Darwin Core records - *Minimum quality standards*

Term	Status
occurrenceID	Required
basisOfRecord	Required
scientificName	Required
eventDate	Required

Recommended best practice is to use a date that conforms to **ISO 8601-1**:2019.

YYYY-MM-DD

`1809-02-12`	(some time during 12 February 1809).
`1906-06`	(some time in June 1906).
`1971`	(some time in the year 1971).
`1900/1909`	(some time between the beginning of the year 1900 and the end of the year 1909).

Darwin Core records - *Minimum quality standards*

Term	Status
occurrenceID	Required
basisOfRecord	Required
scientificName	Required
eventDate	Required

Recommended best practice is to use a date that conforms to **ISO 8601-1**:2019.

YYYY-MM-DD

`1809-02-12`	(some time during 12 February 1809).
`1906-06`	(some time in June 1906).
`1971`	(some time in the year 1971).
`1900/1909`	(some time between the beginning of the year 1900 and the end of the year 1909).

```
2007-11-13/15
2009-02-20T08:40Z
2018-08-29T15:19
2007-03-01T13:00:00Z/2008-05-11T15:30:00Z
```

Darwin Core records - *Minimum quality standards*

Term	Status
occurrenceID	Required
basisOfRecord	Required
scientificName	Required
eventDate	Required
countryCode	Strongly recommended
taxonRank	Strongly recommended
kingdom	Strongly recommended
decimalLatitude & decimalLongitude	Strongly recommended
geodeticDatum	Strongly recommended
coordinateUncertaintyInMeters	Strongly recommended
individualCount, organismQuantity & organismQuantityType	Strongly recommended

Fouten, outliers en onnauwkeurigheden opsporen met “flags and issues” bij GBIF

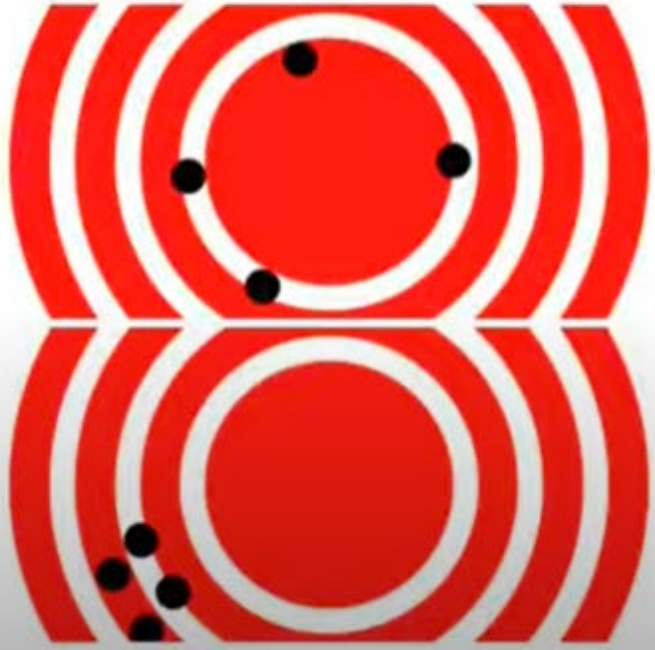
MEASURES OF QUALITY

Correctness (Accuracy)

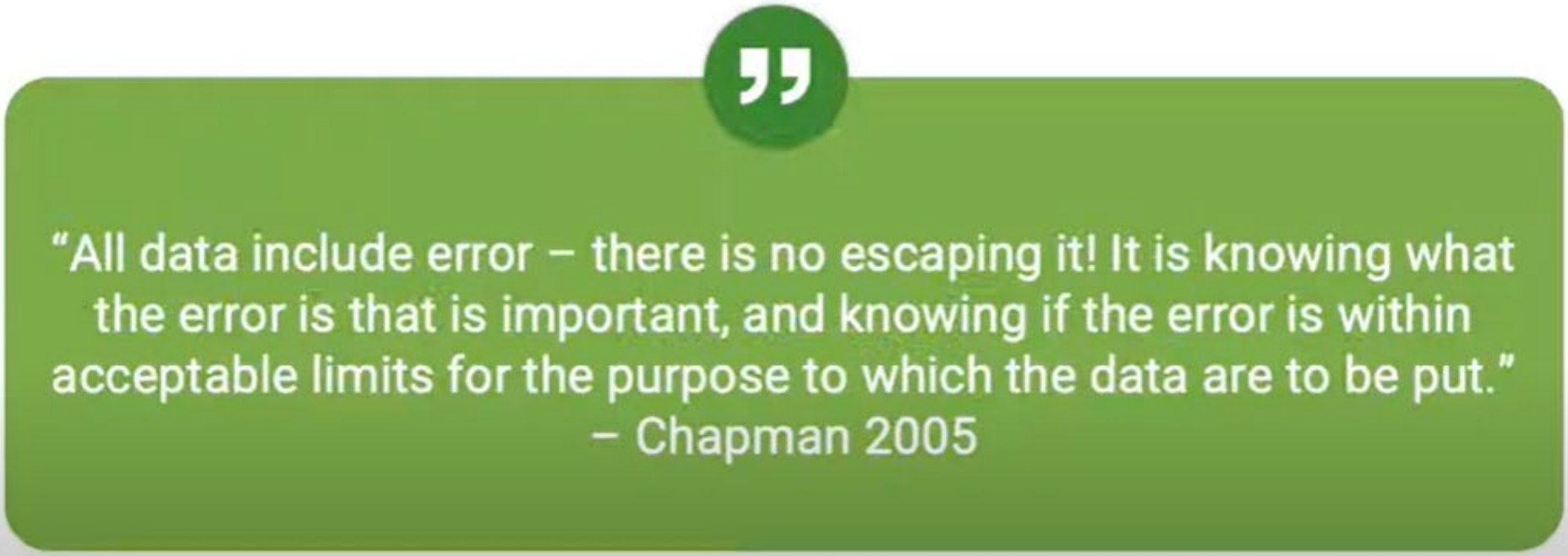
How close is the recorded value to the actual value?

Consistency (Precision)

How often do you get it right?



Fouten, outliers en onnauwkeurigheden opsporen met “flags and issues” bij GBIF

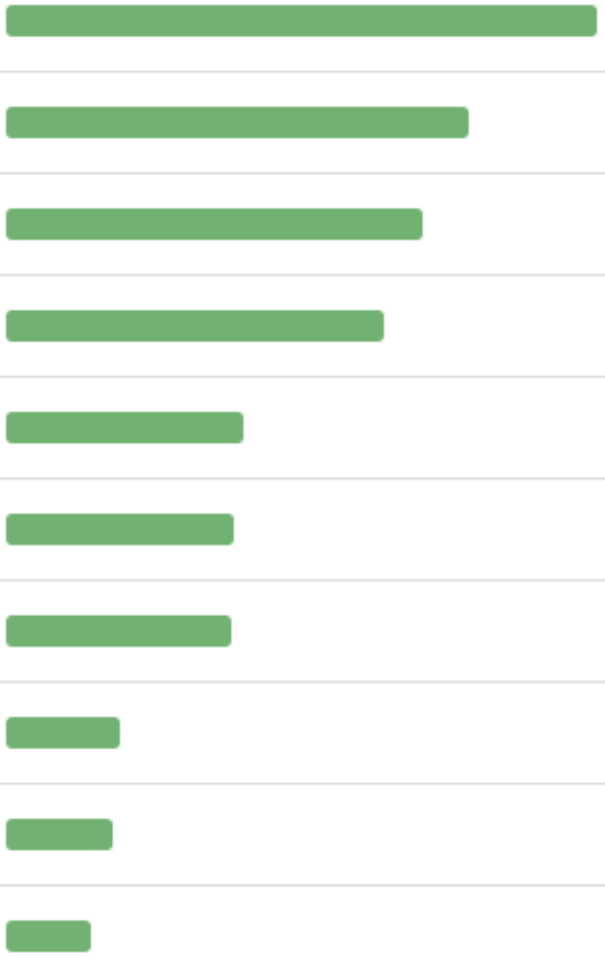


“All data include error – there is no escaping it! It is knowing what the error is that is important, and knowing if the error is within acceptable limits for the purpose to which the data are to be put.”
– Chapman 2005

From: Chapman, A. D. 2005. Principles of Data Quality, version 1.0.

OCCURRENCES PER ISSUES AND FLAGS 10 meest voorkomende flags/issues bij NL-data

Issues and flags	Count
Occurrence status inferred from individual count	44,321,611
Coordinate rounded	13,240,937
Institution match none	8,512,722
Country derived from coordinates	6,002,934
Recorded date invalid	1,553,002
Footprint WKT invalid	1,434,407
Taxon match higherrank	1,388,311
Individual count invalid	479,672
Geodetic datum assumed WGS84	456,998
Basis of record invalid	369,638



NEXT

OCCURRENCES PER ISSUES AND FLAGS

Issues and flags	Count
Occurrence status inferred from individual count	44,321,611

Examples	`present` , `absent`

Occurrence

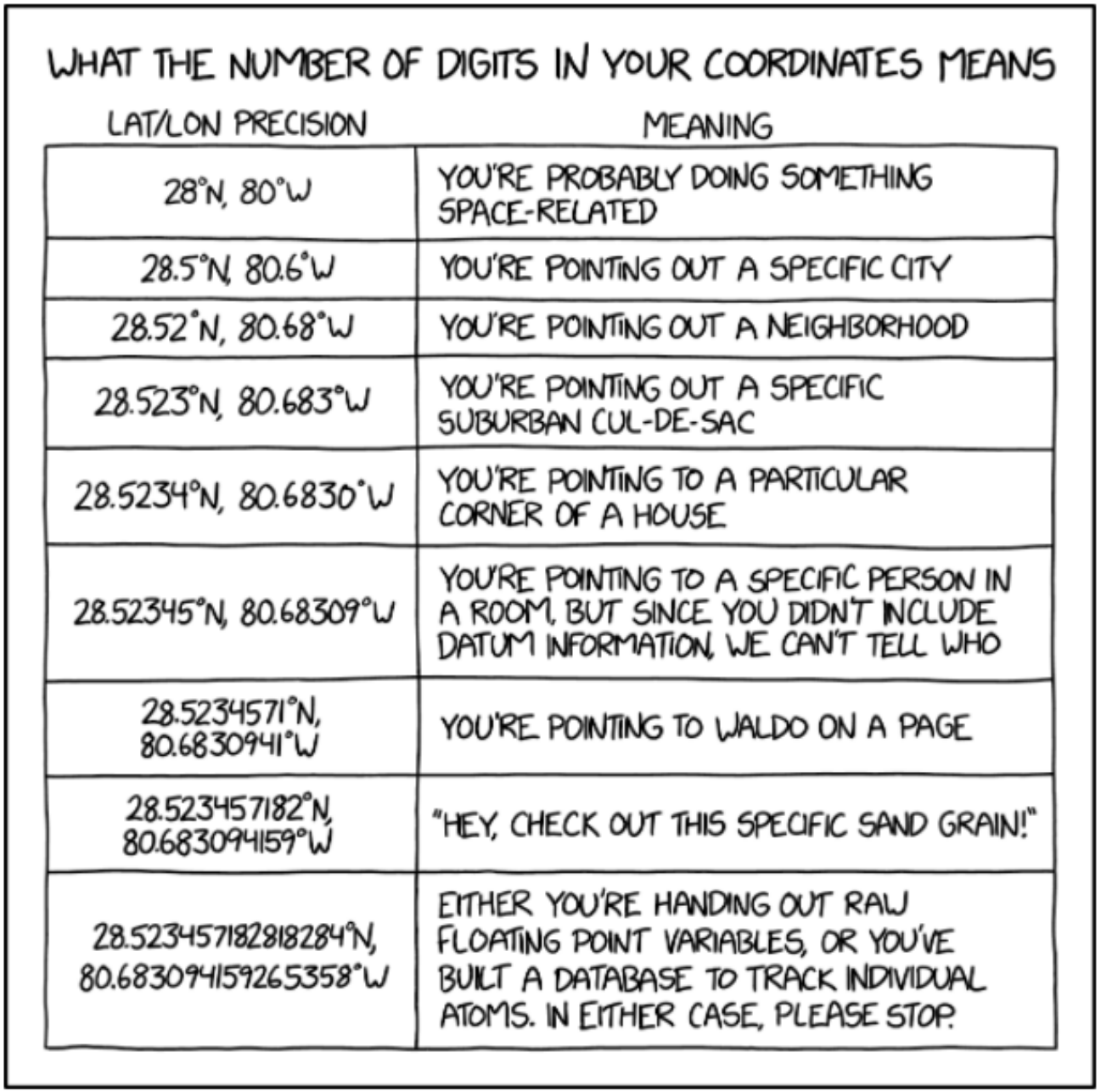
Term	Interpreted	Original	Remarks
Individual count	1	1	
Occurrence ID	18068	18068	
Occurrence remarks	Staart met wervelkolom. Laten liggen.	Staart met wervelkolom. Laten liggen.	
Occurrence status	PRESENT		Occurrence status inferred from individual c
Recorded by	Sabine	Sabine	
Sex		Onbekend	Excluded

OCCURRENCES PER ISSUES

Issues and flags

Occurrence status inferred

Coordinate rounded



From: https://xkcd.com/2170/

NEXT

OCCURRENCES PER ISSUES AND FLAGS

Issues and flags	Count
Occurrence status inferred from individual count	44,321,611
Coordinate rounded	13,240,937
Institution match none	8,512,722

Record

Term	Interpreted	Original	Remarks
Basis of record	Preserved specimen	PreservedSpecimen	
Collection code	Mammalia	Mammalia	
Institution ID	Naturalis Biodiversity Center	Naturalis Biodiversity Center	Institution match none

Term	Interpreted	Original	Remarks
Basis of record	Preserved specimen	PreservedSpecimen	
Collection code	NMR Collection Specimen collection of the Natural History Museum Rotterdam	NMR Collection	
Collection ID	187a8a55-7de6-4230-8250-7d4ee274004f Specimen collection of the Natural History Museum Rotterdam	187a8a55-7de6-4230-8250-7d4ee274004f	
Institution code	NMR Natural History Museum Rotterdam	NMR	
Institution ID	http://grbio.org/cool/jyde-k516 Natural History Museum Rotterdam	http://grbio.org/cool/jyde-k516	

OCCURRENCES PER ISSUES AND FLAGS

Issues and flags	Count
Occurrence status inferred from individual count	44,321,611
Coordinate rounded	13,240,937
Institution match none	8,512,722
Country derived from coordinates	6,002,934

Location

Term	Interpreted	Original	Remarks
Continent	EUROPE	Europe	
Coordinate uncertainty in metres	111	111	
Country or area	Netherlands		Country derived from coordinates
Country code	NL		Country derived from coordinates
Decimal latitude	51.496	51.496	Country derived from coordinates
Decimal longitude	4.774	4.774	Country derived from coordinates
Geodetic datum	WGS84	WGS84	Country derived from coordinates
Locality	B_HS_val 2_processiepark	B_HS_val 2_processiepark	
Location ID	e254a13c-26e8-483d-b664-4a0f1f4e9995	e254a13c-26e8-483d-b664-4a0f1f4e9995	

OCCURRENCES PER ISSUES AND FLAGS

Issues and flags	Count
Occurrence status inferred from individual count	44,321,611
Coordinate rounded	13,240,937
Institution match none	8,512,722
Country derived from coordinates	6,002,934
Recorded date invalid	1,553,002

Event

Term	Interpreted	Original	Remarks
Day	25		Recorded date invalid
Month	2		Recorded date invalid
Year	1964		Recorded date invalid
Event date	1964-02-25T18:12:00	1964-02-25T18:12:00Z/1964-02-26T7:33:00Z	Recorded date invalid

Term	Interpreted	Original	Remarks
Year		1972-1995	Recorded date invalid

Term	Interpreted	Original	Remarks
Day		2	Recorded date unlikely
Month		7	Recorded date unlikely
Year		1577	Recorded date unlikely
Event date		1577-07-02	Recorded date unlikely

OCCURRENCES PER ISSUES AND FLAGS

Issues and flags	Count
Occurrence status inferred from individual count	44,321,611
Coordinate rounded	13,240,937
Institution match none	8,512,722
Country derived from coordinates	6,002,934
Recorded date invalid	1,553,002
Footprint WKT invalid	1,434,407
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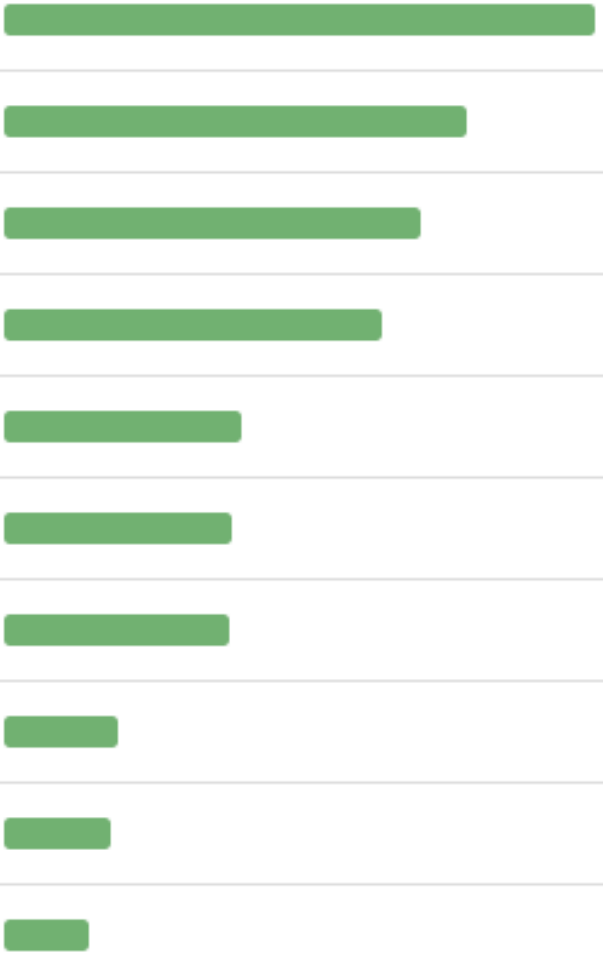


NEXT

Voorbeeld: Taxon match higherrank

Taxon

Term	Interpreted	Original	Remarks
Kingdom	Plantae	Plantae	Taxon match higherrank
Phylum	Tracheophyta		Taxon match higherrank
Class	Magnoliopsida	Magnoliopsidae	Taxon match higherrank
Order	Gentianales	Gentianales	Taxon match higherrank
Family	Rubiaceae	Rubiaceae	Taxon match higherrank
Genus	Psychotria	Psychotria	Taxon match higherrank
Specific epithet		varians	Taxon match higherrank
Higher classification	Plantae|Magnoliopsidae|Gentianales|Rubiaceae	Plantae|Magnoliopsidae|Gentianales|Rubiaceae	
Nomenclatural code	ICN	ICN	
Scientific name	Psychotria L.	Psychotria varians O.Lachenaud	Taxon match higherrank
Scientific name authorship		O.Lachenaud	Taxon match higherrank
Rank	Genus	species	Altered
Taxonomic status	Accepted		Inferred

Maart 2021

Voorbeeld: Taxon match higherrank

Taxon

Term	Interpreted	Original	Remarks
Kingdom	Plantae	Plantae	
Phylum	Tracheophyta		Inferred
Class	Magnoliopsida	Magnoliopsidae	Altered
Order	Gentianales	Gentianales	
Family	Rubiaceae	Rubiaceae	
Genus	Psychotria	Psychotria	
Specific epithet	varians	varians	
Generic name	Psychotria		Inferred
Higher classification	Plantae|Magnoliopsidae|Gentianales|Rubiaceae	Plantae|Magnoliopsidae|Gentianales|Rubiaceae	
Nomenclatural code	ICN	ICN	
Scientific name	Psychotria varians O.Lachenaud	Psychotria varians O.Lachenaud	
Scientific name authorship		O.Lachenaud	Excluded
Rank	Species	species	
Taxonomic status	Accepted		Inferred

Taxonomie: “flags and issues”

Wanneer geen exacte match van de wetenschappelijke naam met de GBIF taxonomic backbone wordt gevonden dan komen de volgende ‘flags’ voor:

Flag	Meaning	Example
Taxon match fuzzy	A match with a different spelling was found.	*Pelagodes antiquadrarius* and *Pelagodes antiquadraria*
Taxon Match higherrank	No match was found at the same taxonomic rank but one was found for a higher rank.	*Hylatomus pileatus* and *Hylatomus*
Taxon match none	No match was found.	*Flagellate*

Voorbeelden van geografische issues/flags

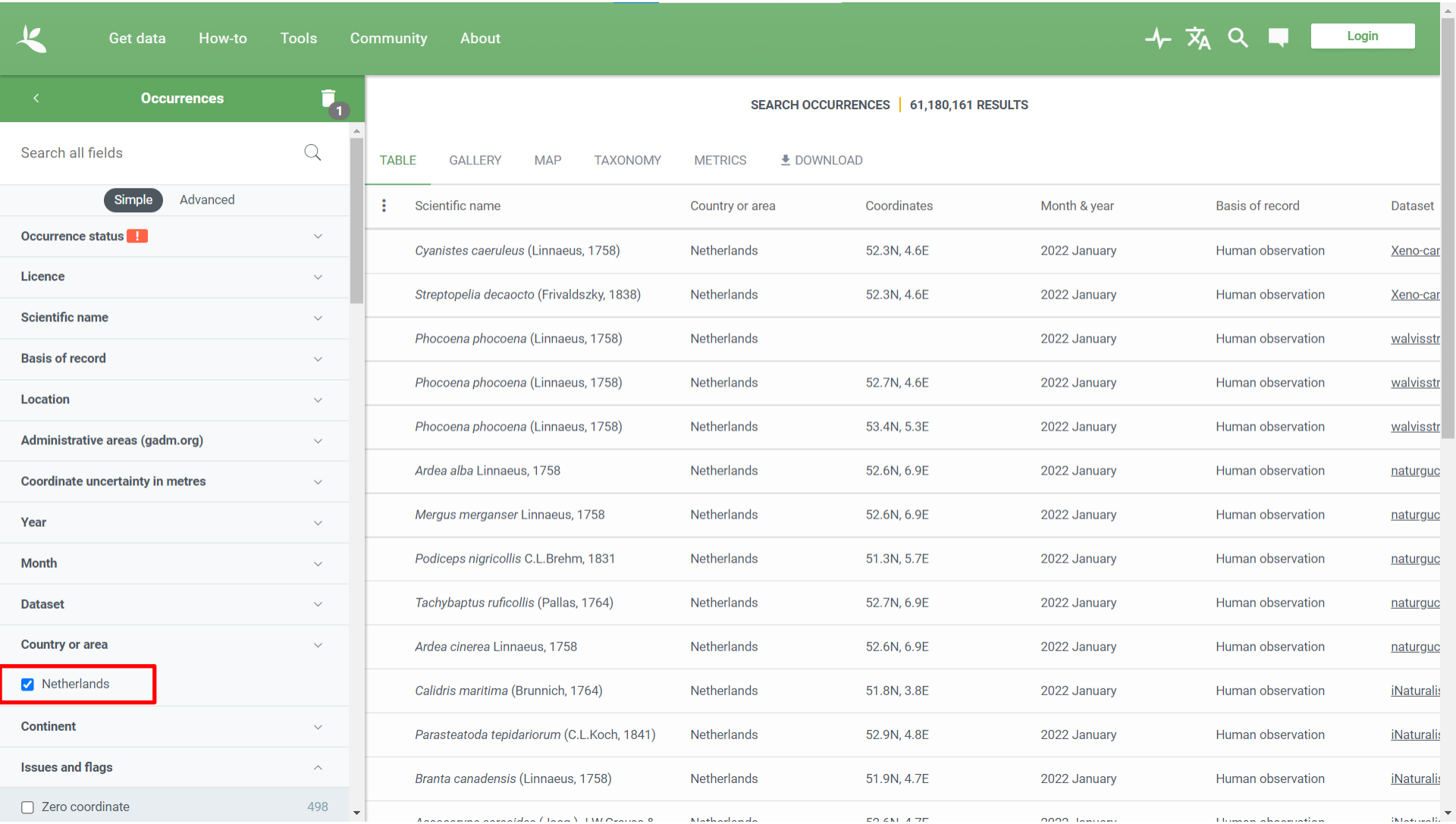
Country or area	Norfolk Island	Australia	Country derived from coordinates
Country code	NF	AU	Country derived from coordinates
Decimal latitude	-31.559919	-31.5599193572998	Coordinate rounded Country derived from coordinates
Decimal longitude	167.386169	167.386169433594	Coordinate rounded Country derived from coordinates

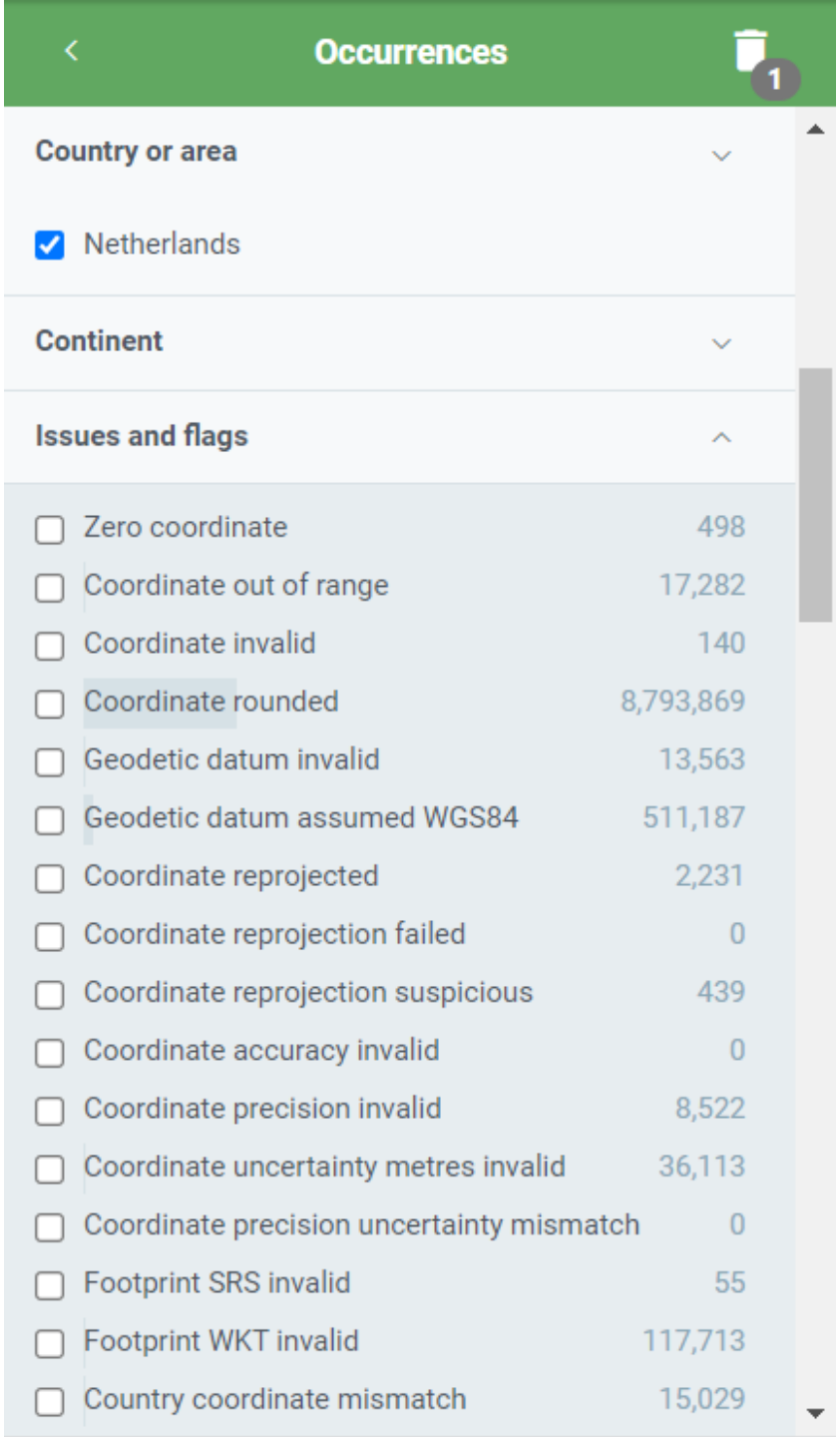
Decimal latitude	52.904243	6.243582	Presumed swapped coordinate
Decimal longitude	6.243582	52.904243	Presumed swapped coordinate
Geodetic datum	WGS84	WGS84	
Locality	Doldersummerveld	Doldersummerveld	
State province	Drenthe	Drenthe	

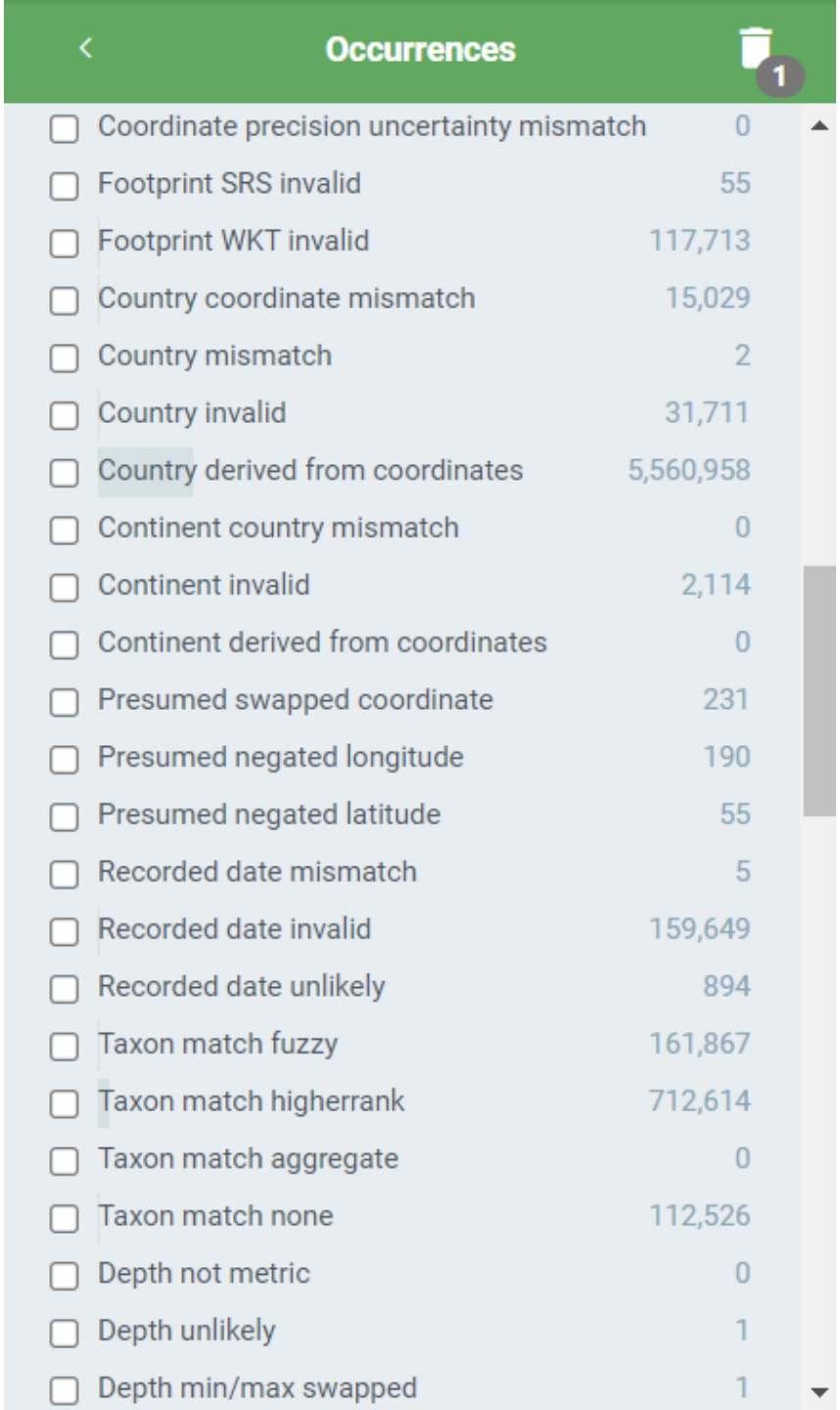
Country or area	France	France	
Country code	FR		Inferred
Decimal latitude	49.4372	49.4372	Presumed negated longitude
Decimal longitude	2.6287	-2.6287	Presumed negated longitude

GBIF

Hoe issues/flags te vinden bij GBIF (gbif.org)




Occurrences
1
Country or area
Netherlands
Continent
Issues and flags
Zero coordinate 498
Coordinate out of range 17,282
Coordinate invalid 140
Coordinate rounded 8,793,869
Geodetic datum invalid 13,563
Geodetic datum assumed WGS84 511,187
Coordinate reprojected 2,231
Coordinate reprojection failed 0
Coordinate reprojection suspicious 439
Coordinate accuracy invalid 0
Coordinate precision invalid 8,522
Coordinate uncertainty metres invalid 36,113
Coordinate precision uncertainty mismatch 0
Footprint SRS invalid 55
Footprint WKT invalid 117,713
Country coordinate mismatch 15,029


Occurrences
1
Coordinate precision uncertainty mismatch 0
Footprint SRS invalid 55
Footprint WKT invalid 117,713
Country coordinate mismatch 15,029
Country mismatch 2
Country invalid 31,711
Country derived from coordinates 5,560,958
Continent country mismatch 0
Continent invalid 2,114
Continent derived from coordinates 0
Presumed swapped coordinate 231
Presumed negated longitude 190
Presumed negated latitude 55
Recorded date mismatch 5
Recorded date invalid 159,649
Recorded date unlikely 894
Taxon match fuzzy 161,867
Taxon match higherrank 712,614
Taxon match aggregate 0
Taxon match none 112,526
Depth not metric 0
Depth unlikely 1
Depth min/max swapped 1