

Reuse of GBIF Infrastructure

Tim Robertson



Datasets ●
110,905

● Hosted portals
25

Country
Participants ●
64

● Peer-review papers
using data
12,184

Organizational
Participants ●
43

● Average records
downloaded per month (2024)
202.8 billion

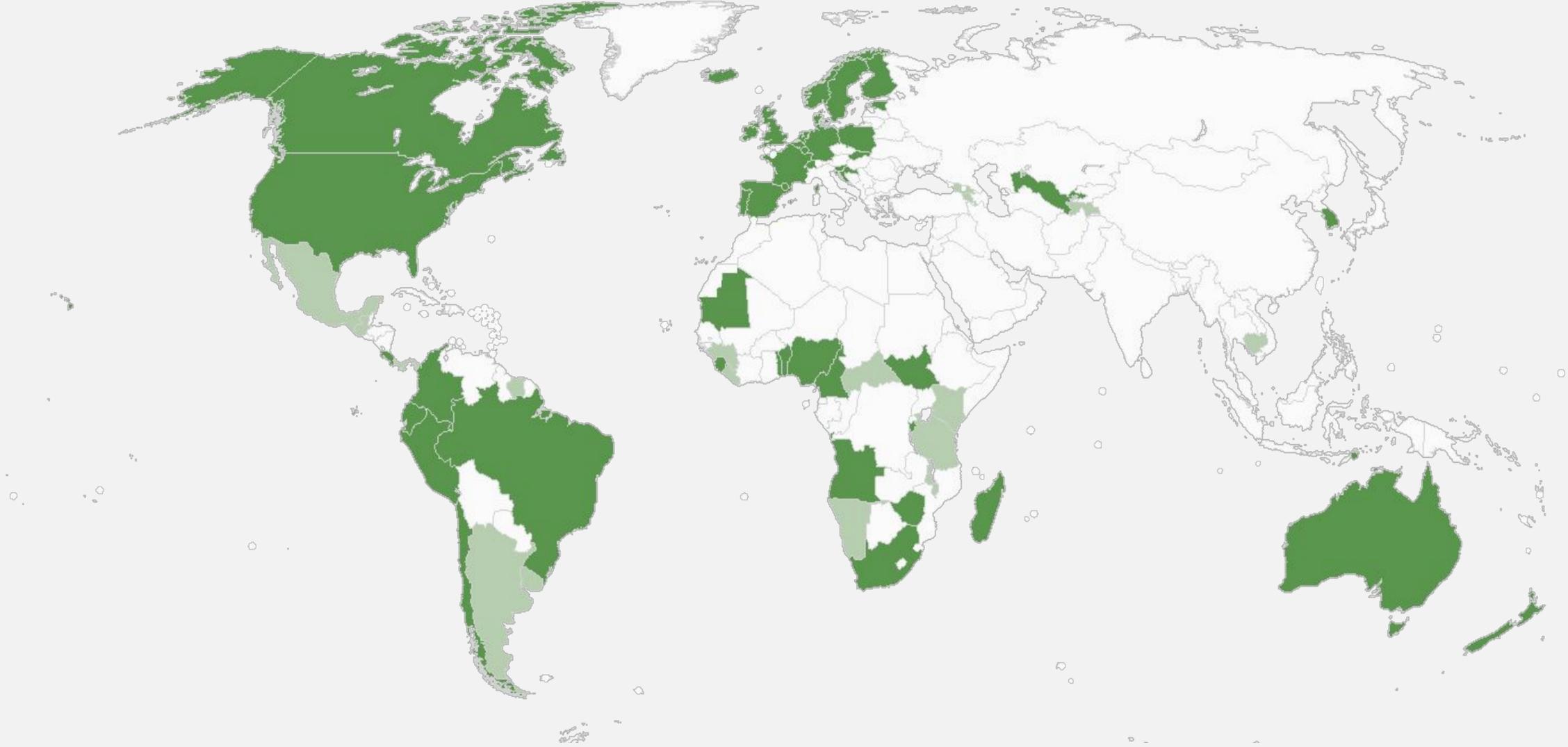
Publishers ●
2,354

● Species
occurrence records
3,038,370,536



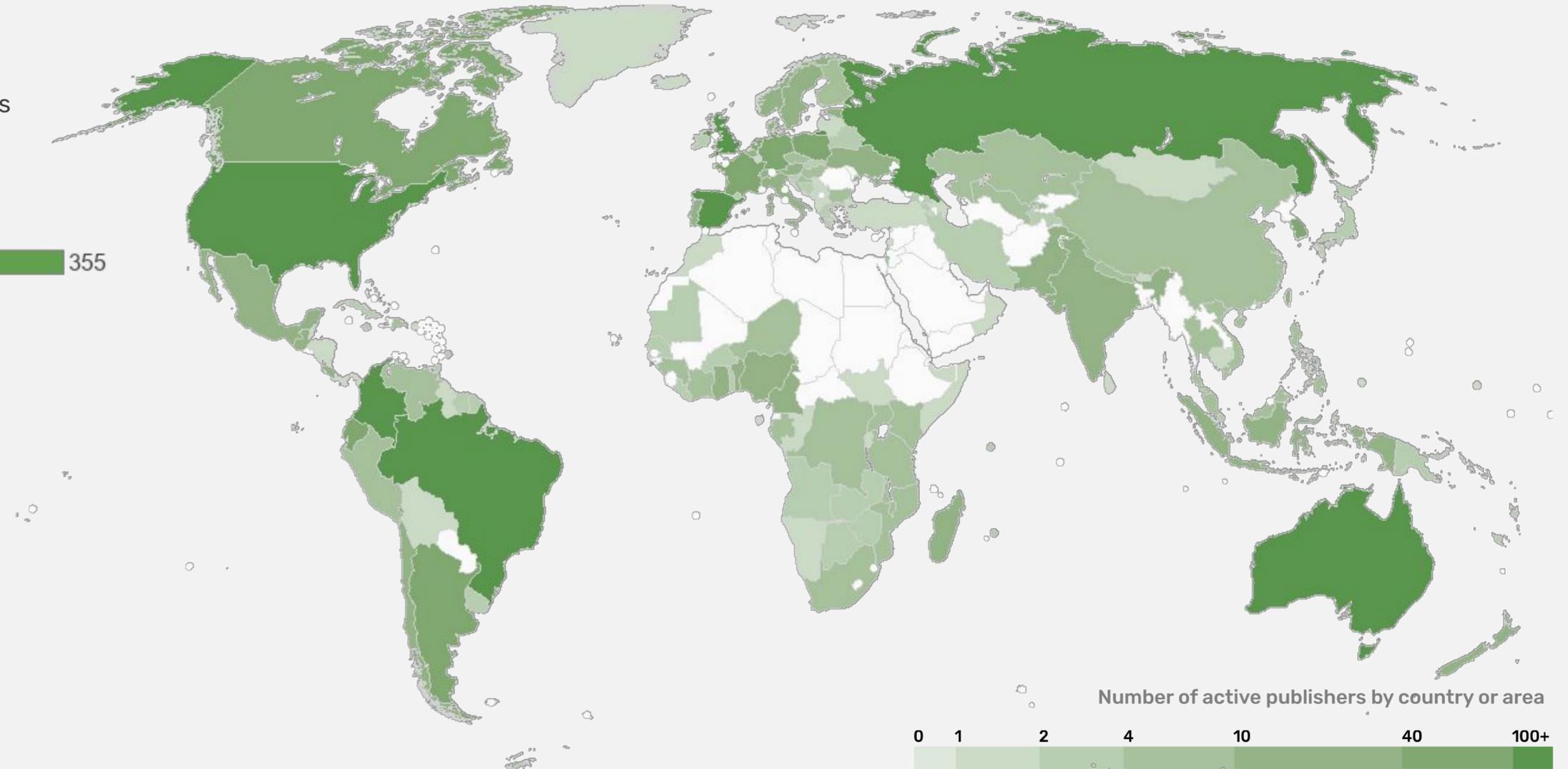
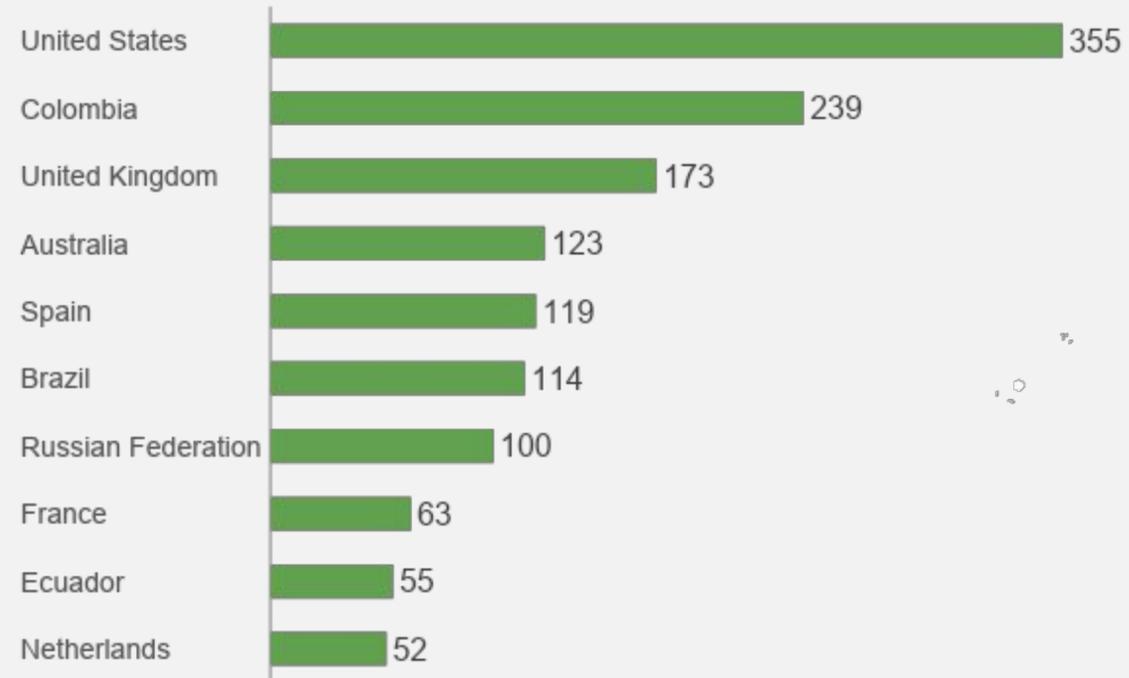
GBIF Participant countries

- Voting Participants
- Associate Participants

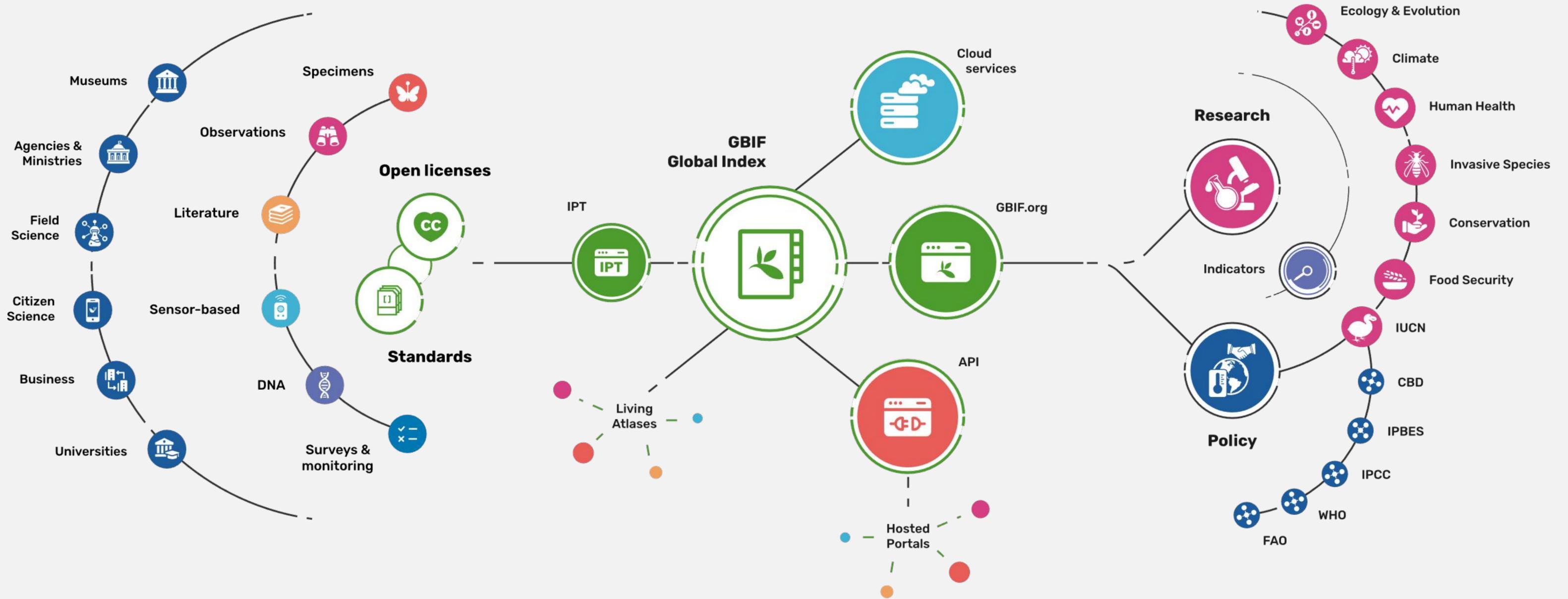


GBIF network of data publishing institutions

144 countries/areas with institutions sharing data through GBIF



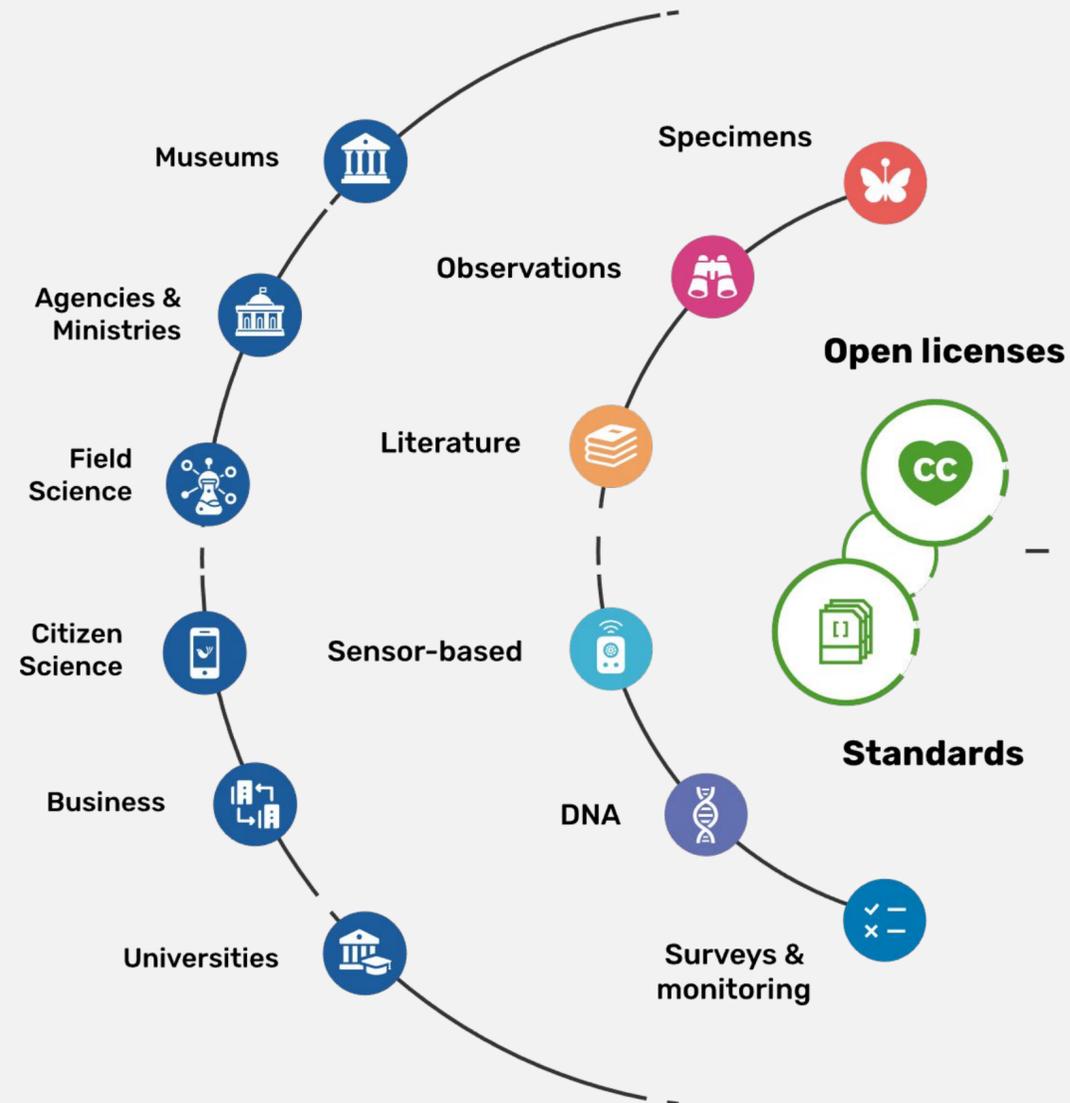
Providing biodiversity evidence for research and policy



Sources of biodiversity evidence

Create

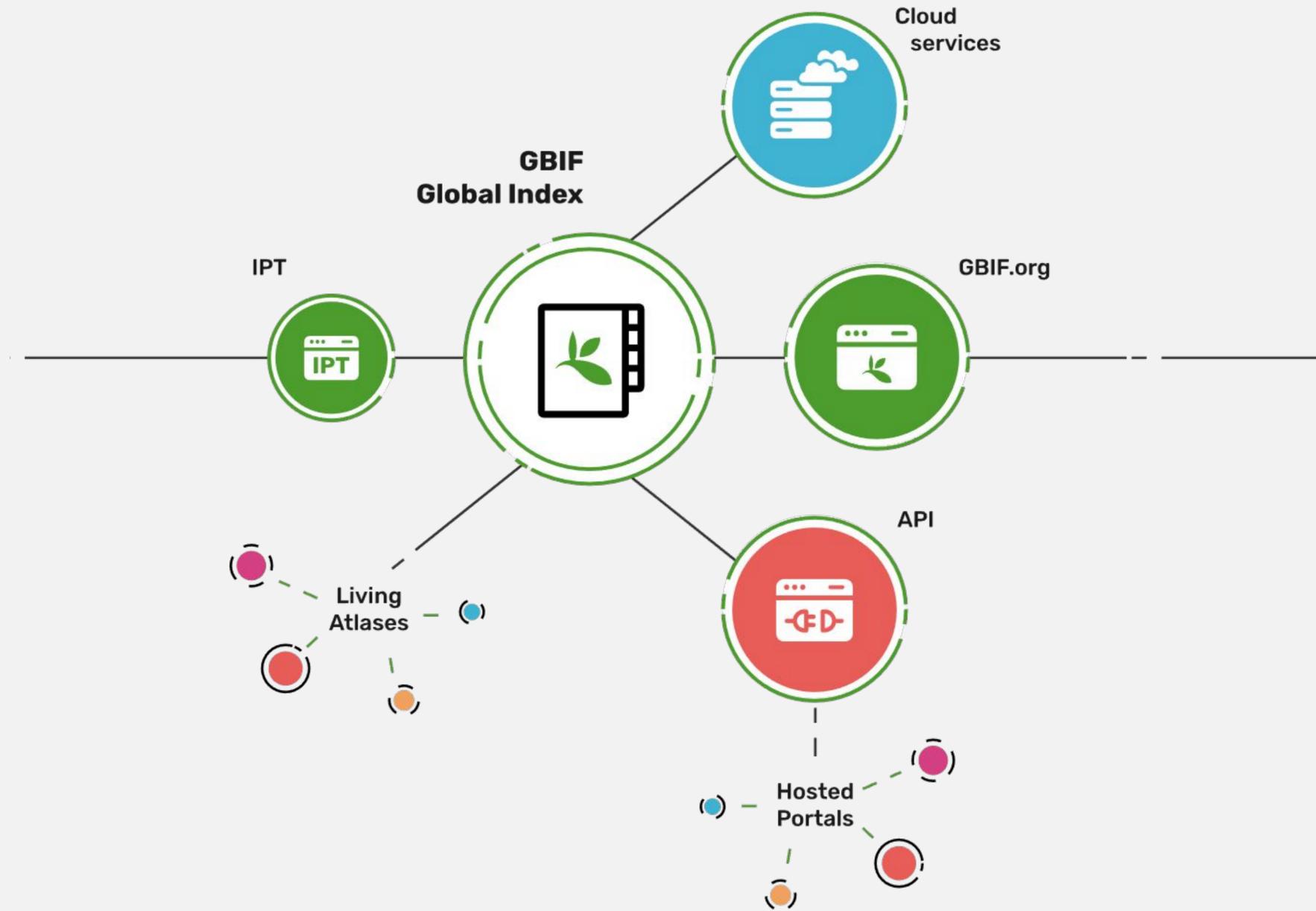
Combine sources of evidence



Access to biodiversity evidence

Share

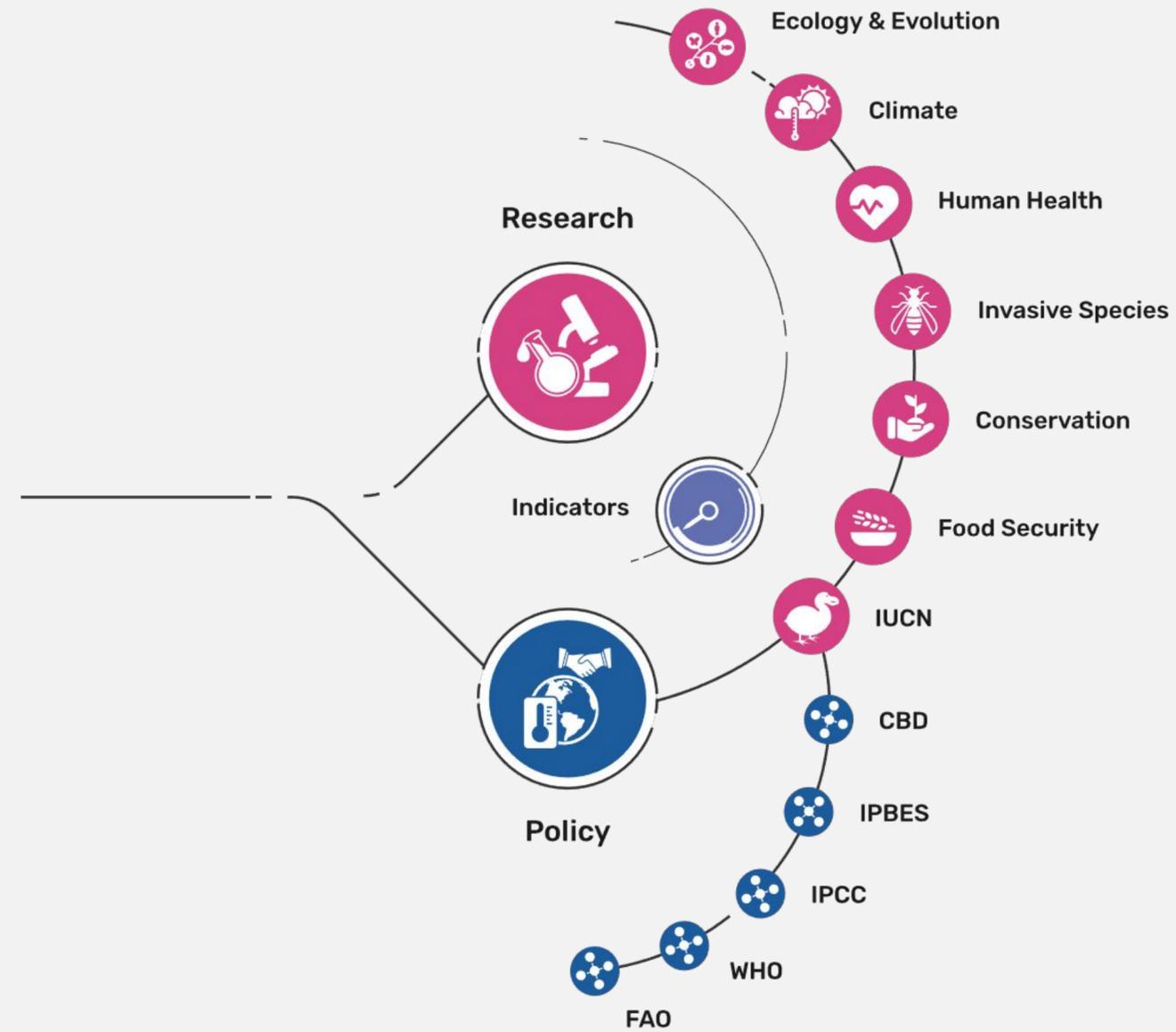
FAIR and open access



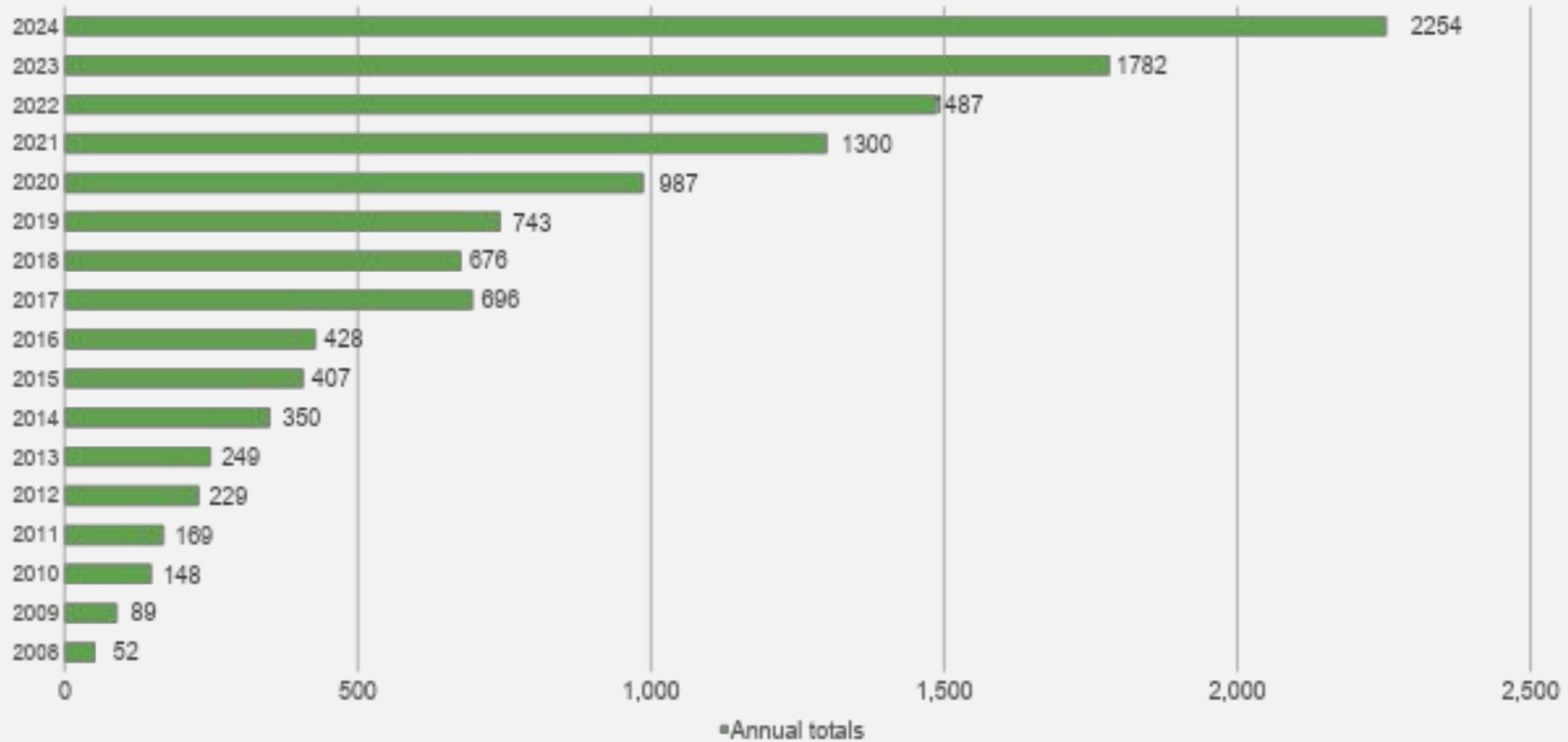
Uses of biodiversity evidence

Transform

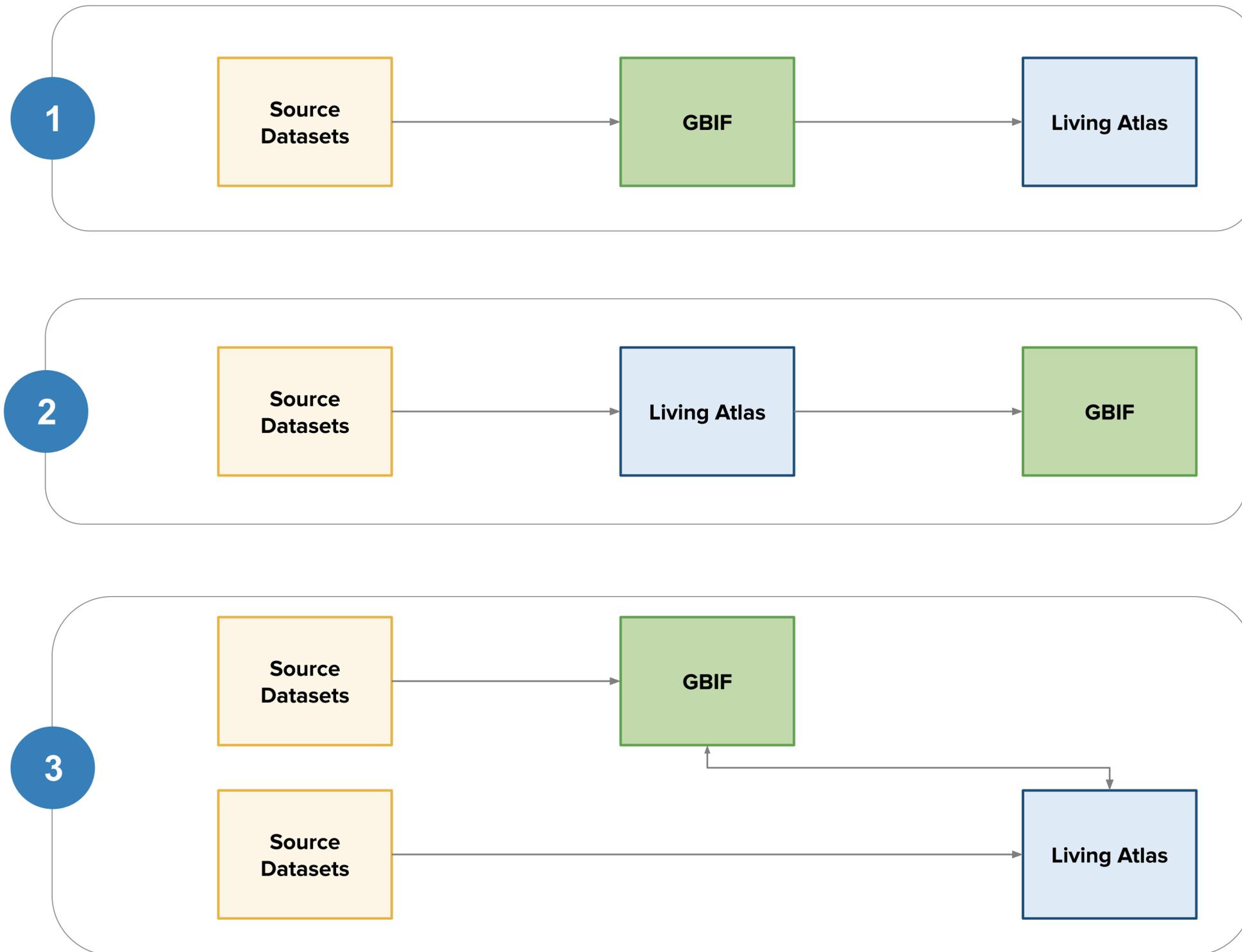
Apply and use data



Peer-reviewed publications using GBIF-mediated data

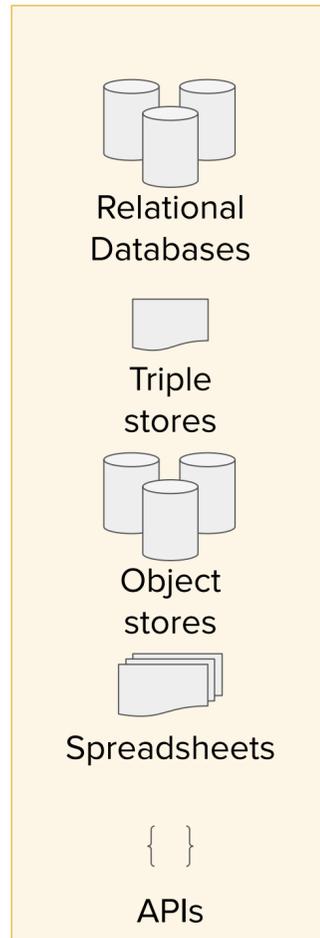


LAs and GBIF: Modes of operation (simplified)

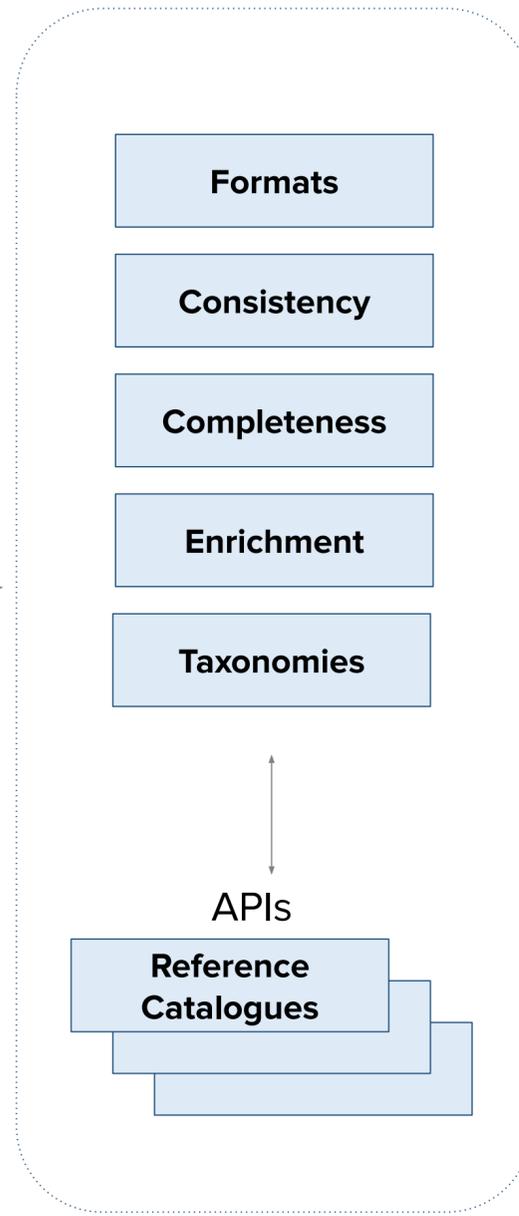


GBIF Data Warehouse (simplified)

Source Systems



Data pipelines



Indexes

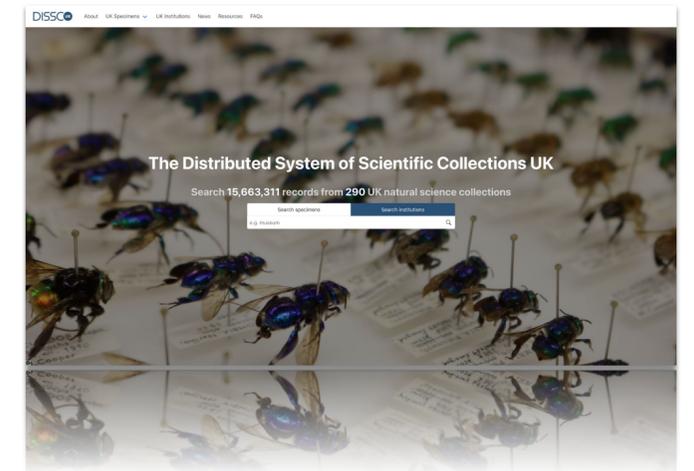
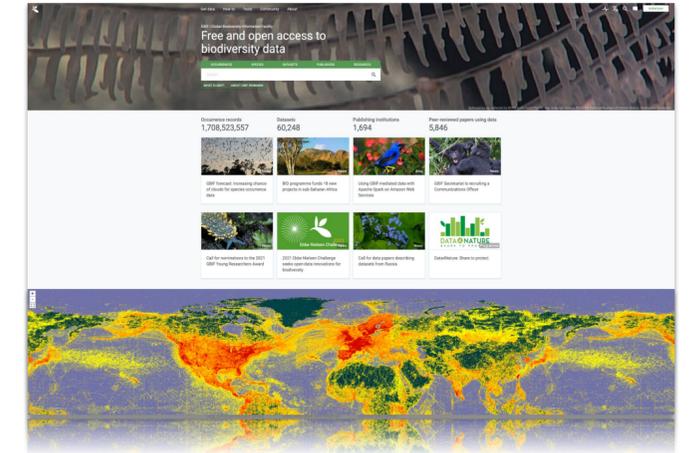
SQL services

Reports

Image caches

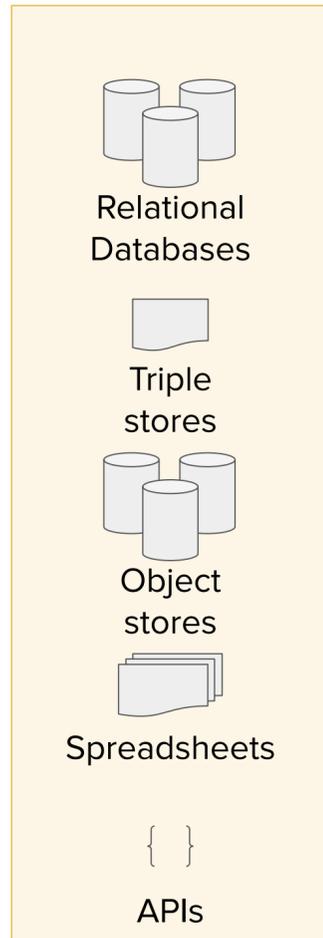
Open APIs

Citation tracking

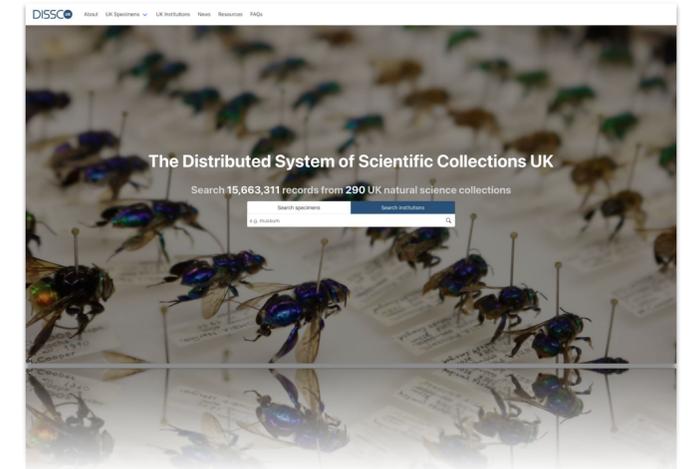
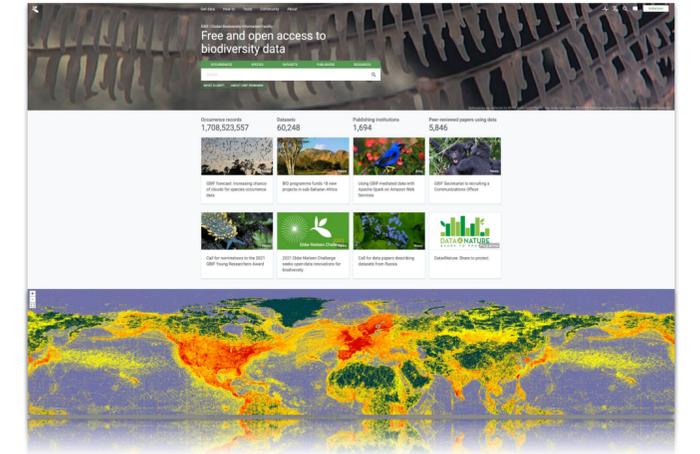
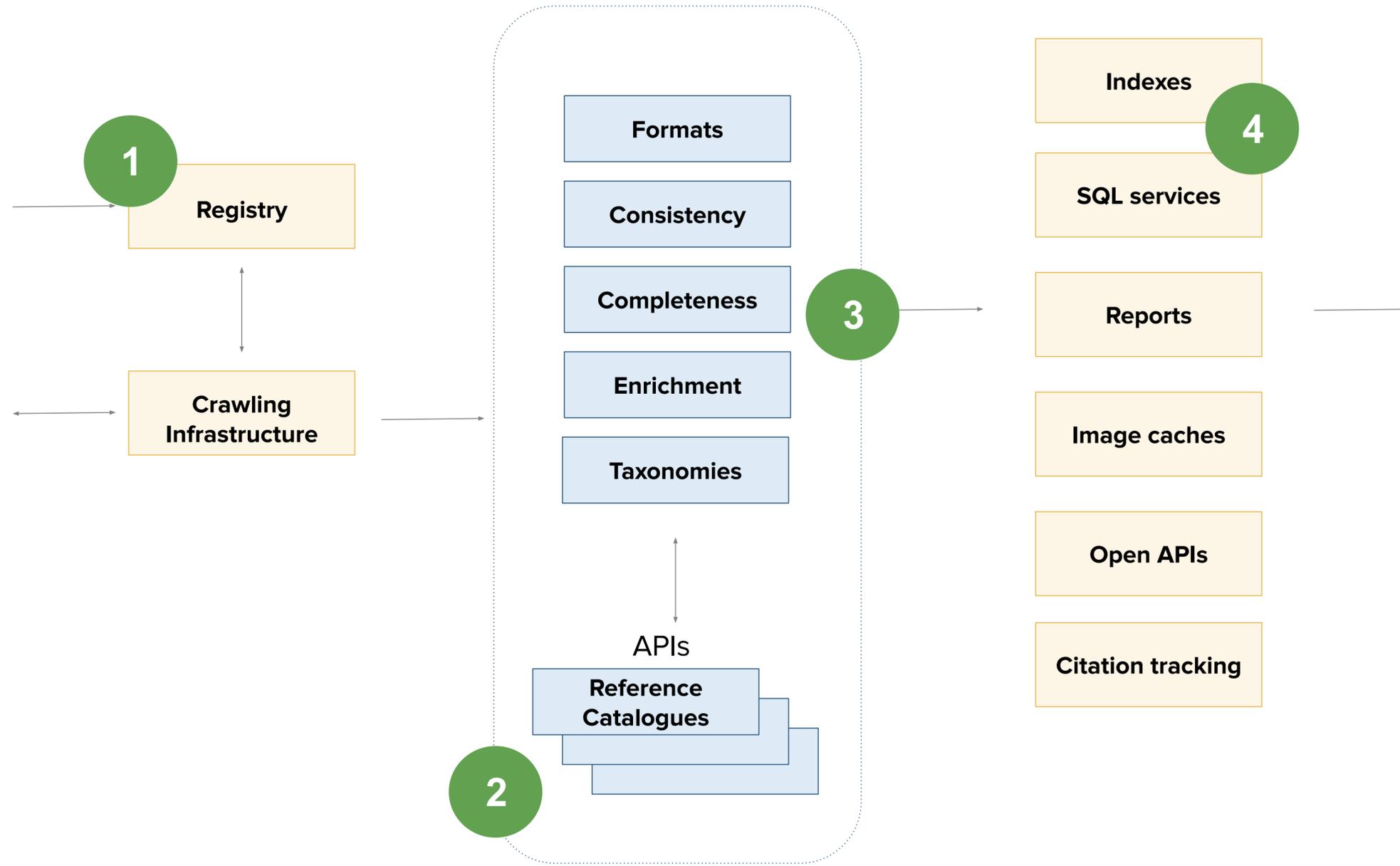


GBIF Data Warehouse (simplified)

Source Systems

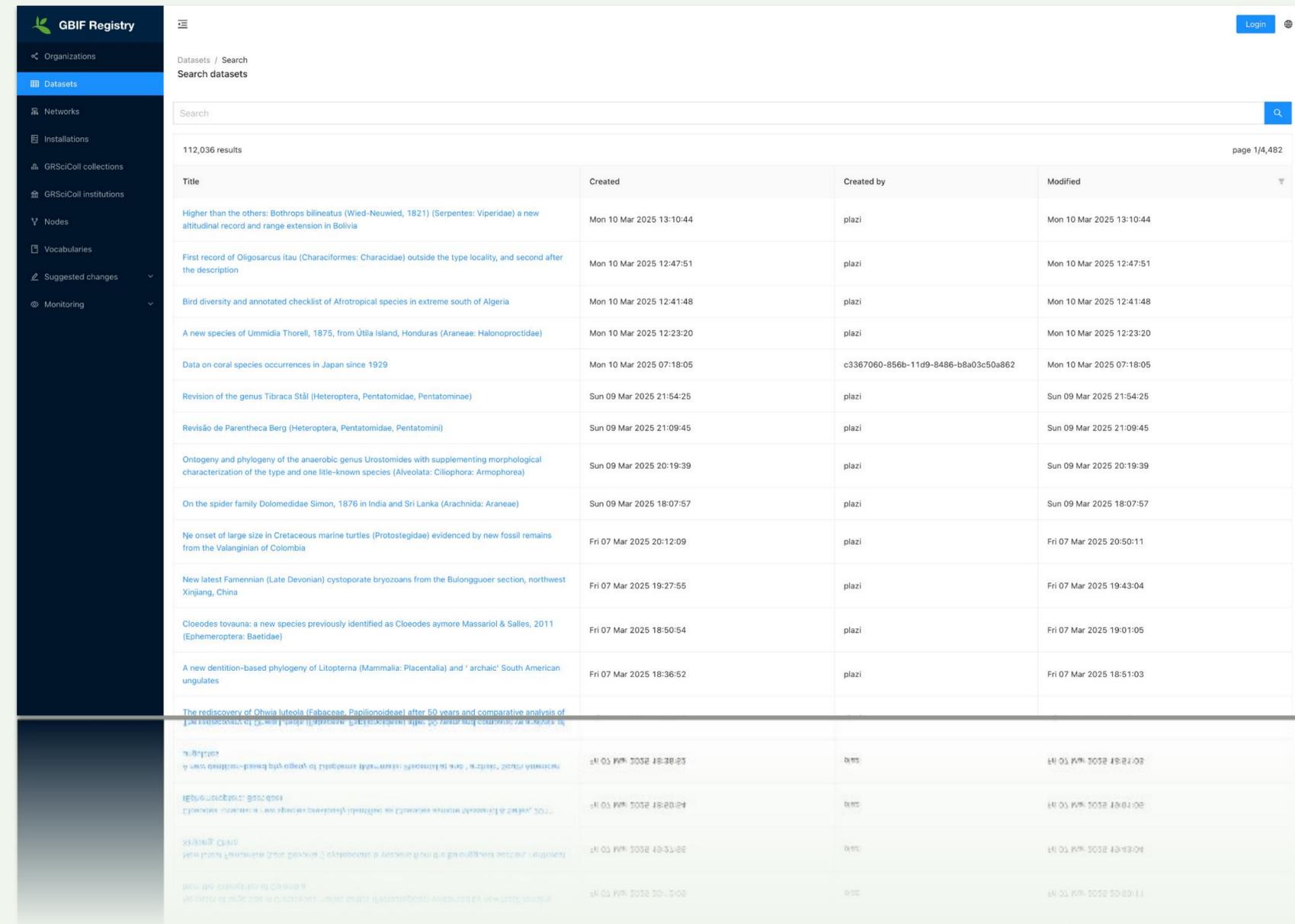


Data pipelines



Registry (collectory equivalent)

- Shared database with API and UI
- Datasets, organisations, endpoints etc
- GRSciColl collections
- Vocabulary management
- Basic authentication controls
- Synchronises with master record sources
- Identifier assignment (e.g. DOIs)
- Event propagation



The screenshot shows the GBIF Registry interface. On the left is a dark sidebar with navigation options: Organizations, Datasets (selected), Networks, Installations, GRSciColl collections, GRSciColl institutions, Nodes, Vocabularies, Suggested changes, and Monitoring. The main content area is titled 'Datasets / Search' and 'Search datasets'. It features a search bar and a table of 112,036 results. The table has columns for Title, Created, Created by, and Modified. The first few rows show titles like 'Higher than the others: Bothrops bilineatus (Wied-Neuwied, 1821) (Serpentes: Viperidae) a new altitudinal record and range extension in Bolivia' and 'First record of Oligosarcus itau (Characiformes: Characidae) outside the type locality, and second after the description'. The table is paginated, showing page 1 of 4,482.

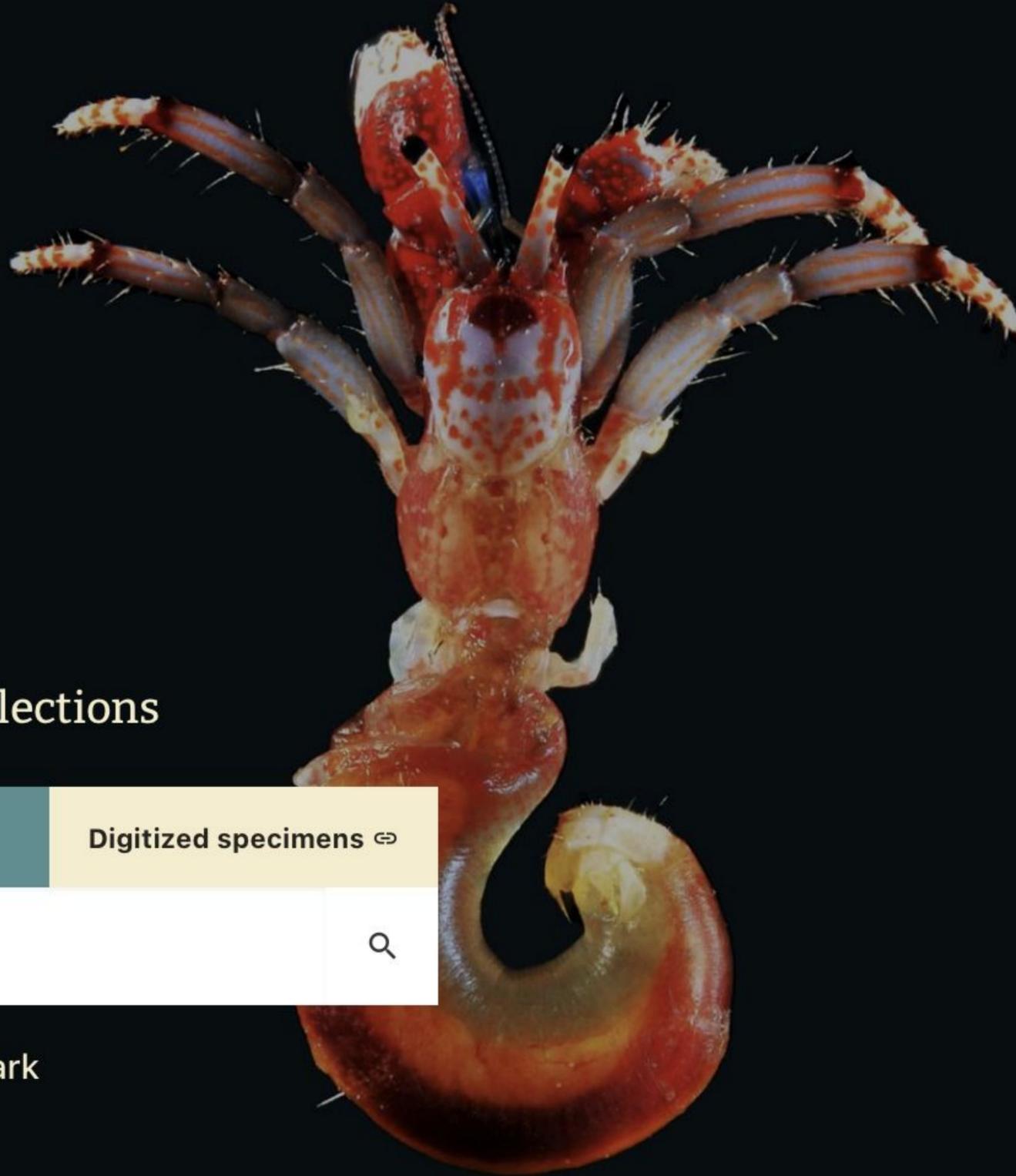
| Title | Created | Created by | Modified |
|---|--------------------------|--------------------------------------|--------------------------|
| Higher than the others: <i>Bothrops bilineatus</i> (Wied-Neuwied, 1821) (Serpentes: Viperidae) a new altitudinal record and range extension in Bolivia | Mon 10 Mar 2025 13:10:44 | plazi | Mon 10 Mar 2025 13:10:44 |
| First record of <i>Oligosarcus itau</i> (Characiformes: Characidae) outside the type locality, and second after the description | Mon 10 Mar 2025 12:47:51 | plazi | Mon 10 Mar 2025 12:47:51 |
| Bird diversity and annotated checklist of Afrotropical species in extreme south of Algeria | Mon 10 Mar 2025 12:41:48 | plazi | Mon 10 Mar 2025 12:41:48 |
| A new species of <i>Ummidia</i> Thorell, 1875, from Útila Island, Honduras (Araneae: Halonoproctidae) | Mon 10 Mar 2025 12:23:20 | plazi | Mon 10 Mar 2025 12:23:20 |
| Data on coral species occurrences in Japan since 1929 | Mon 10 Mar 2025 07:18:05 | c3367060-856b-11d9-8486-b6a03c50a862 | Mon 10 Mar 2025 07:18:05 |
| Revision of the genus <i>Tibraca</i> Stål (Heteroptera, Pentatomidae, Pentatominae) | Sun 09 Mar 2025 21:54:25 | plazi | Sun 09 Mar 2025 21:54:25 |
| Revisão de <i>Parentheca</i> Berg (Heteroptera, Pentatomidae, Pentatomini) | Sun 09 Mar 2025 21:09:45 | plazi | Sun 09 Mar 2025 21:09:45 |
| Ontogeny and phylogeny of the anaerobic genus <i>Urostomides</i> with supplementing morphological characterization of the type and one little-known species (Alveolata: Ciliophora: Armophorea) | Sun 09 Mar 2025 20:19:39 | plazi | Sun 09 Mar 2025 20:19:39 |
| On the spider family <i>Dolomedidae</i> Simon, 1876 in India and Sri Lanka (Arachnida: Araneae) | Sun 09 Mar 2025 18:07:57 | plazi | Sun 09 Mar 2025 18:07:57 |
| Ñe onset of large size in Cretaceous marine turtles (Protostegidae) evidenced by new fossil remains from the Valanginian of Colombia | Fri 07 Mar 2025 20:12:09 | plazi | Fri 07 Mar 2025 20:50:11 |
| New latest Famennian (Late Devonian) cystoporate bryozoans from the Bulongguoer section, northwest Xinjiang, China | Fri 07 Mar 2025 19:27:55 | plazi | Fri 07 Mar 2025 19:43:04 |
| <i>Cloeodes tovana</i> : a new species previously identified as <i>Cloeodes aymore</i> Massariol & Salles, 2011 (Ephemeroptera: Baetidae) | Fri 07 Mar 2025 18:50:54 | plazi | Fri 07 Mar 2025 19:01:05 |
| A new dentition-based phylogeny of <i>Litopterna</i> (Mammalia: Placentalia) and 'archaic' South American ungulates | Fri 07 Mar 2025 18:36:52 | plazi | Fri 07 Mar 2025 18:51:03 |
| The rediscovery of <i>Ohwia luteola</i> (Fabaceae, Papilionoideae) after 50 years and comparative analysis of | | | |

<https://registry.gbif.org>



Global Registry of Scientific Collections

A worldwide catalogue of scientific collections

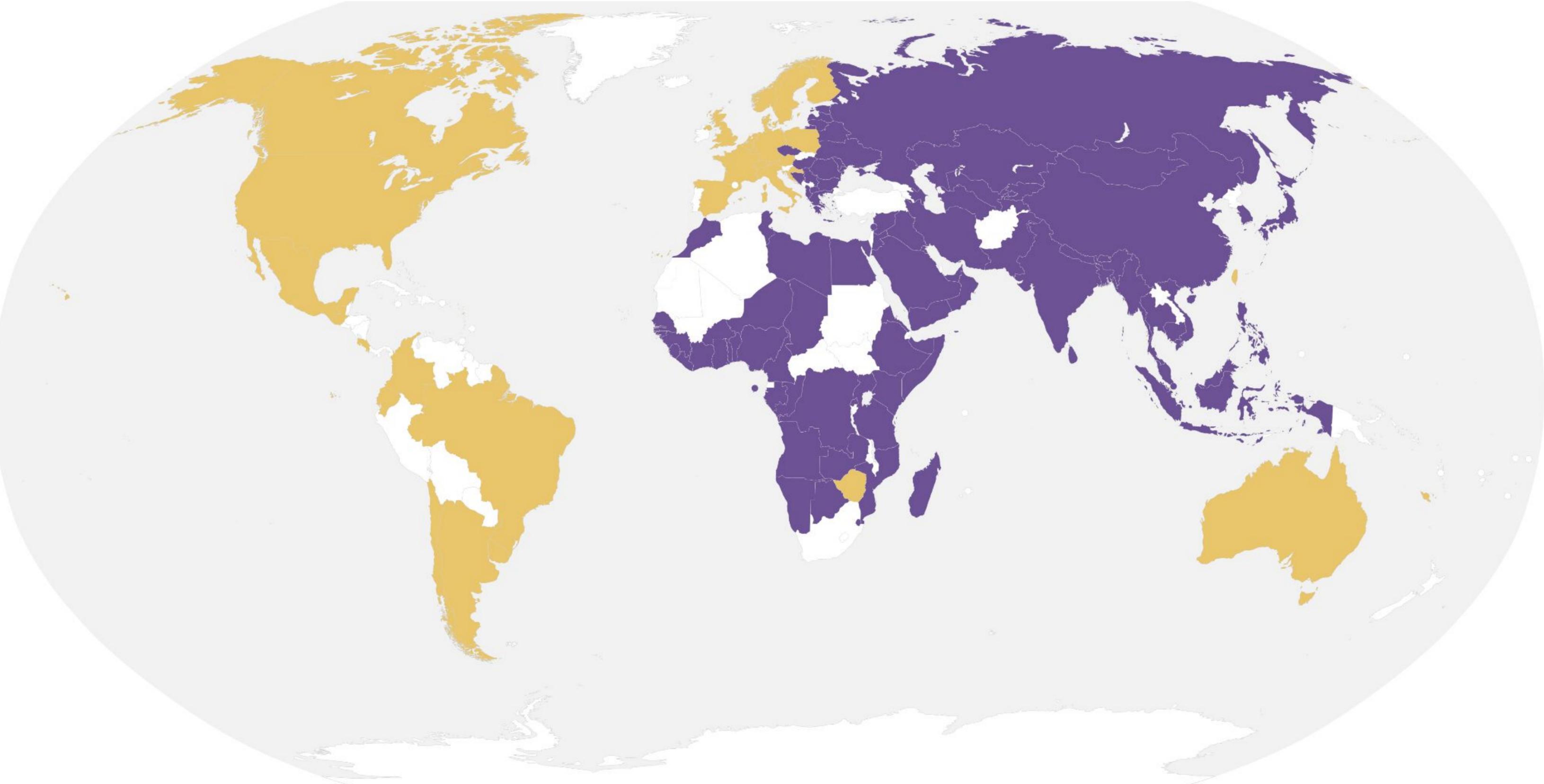


| Institution name | Digitized specimens ↻ |
|---|-----------------------|
| <input type="text" value="Search institutions"/> <input type="submit" value="🔍"/> | |

▶ Getting started?

📍 Institutions in Denmark

GRSciColl Content Mediators



The Distributed System of Scientific Collections UK

Search 15,663,311 records from 290 UK natural science collections

Search specimens

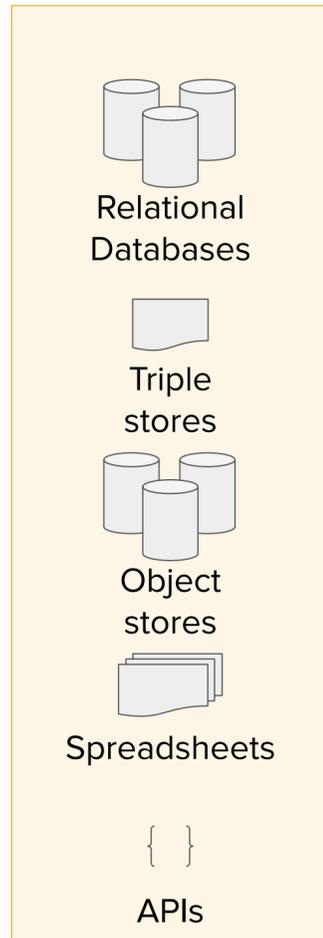
Search institutions

e.g. museum

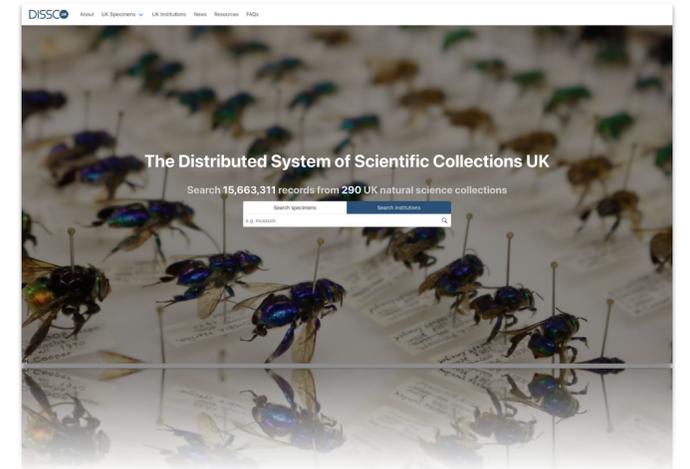
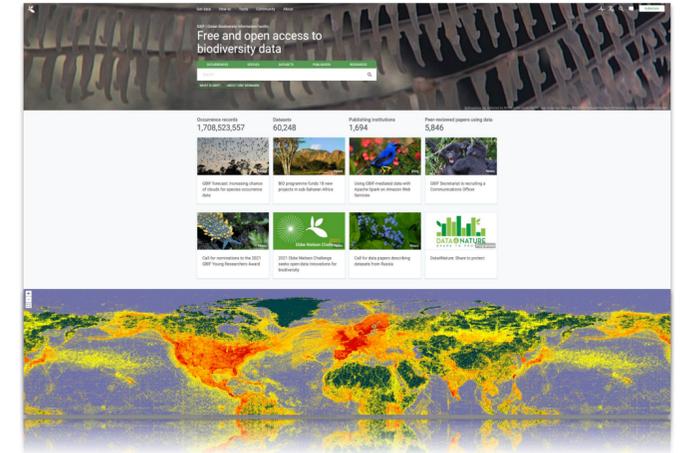
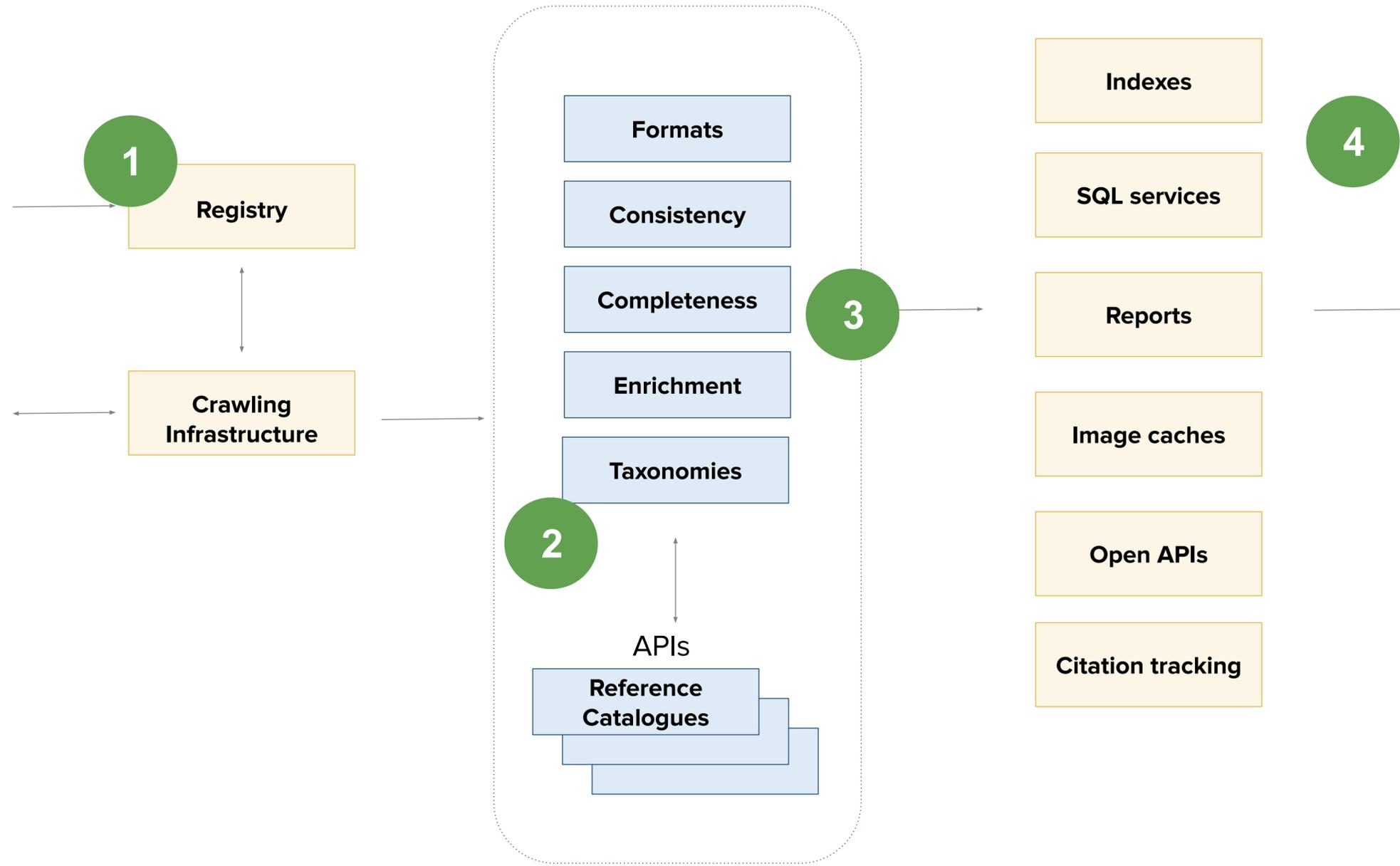


GBIF Data Warehouse (simplified)

Source Systems



Data pipelines



ChecklistBank (checklists and taxonomy building)

- Checklist repository
 - All GBIF datasets, + additions
 - Multiple input formats (e.g. DwC-A, COL-DP)
 - Standard API
 - Metrics, issues, metadata
 - Search, browse and download
- Editing tools
 - Create projects, release datasets
 - Tree editor
 - Sector assembly
 - Editorial workbench and decisions
 - Overlays
- Coming soon
 - Docker image for lookups (en premise)

ChecklistBank
Index and repository for taxonomic data

| | | | |
|------------------------------|------------------------------|---------------------------|----------------------|
| Species in Catalogue of Life | Name Usages in ChecklistBank | Datasets in ChecklistBank | Latest COL Checklist |
| 2,206,842 | 429,730,776 | 57,884 | 2025-02-13 |

The [Catalogue of Life \(COL\)](#) and [GBIF](#) aim to support the publication and curation of checklists and to provide a platform for their consistent discovery, use and citation. GBIF has for some time maintained a checklist index and supported the network of repositories for its community to share checklist data. COL and GBIF have united their capabilities to make ChecklistBank a consistent foundation and repository for all COL datasets and any other openly licensed species lists, including those mobilized and registered through [GBIF](#).

The taxonomic community can publish a checklist to ChecklistBank using [COLDP](#) or any other [supported format](#).

Regardless of the original data format, ChecklistBank generates a standardised interpretation. All datasets can be searched, browsed, downloaded or accessed programmatically via the [ChecklistBank API](#).

In order to use all functions of ChecklistBanks you will need to login with a [GBIF](#) user account. You can learn more about ChecklistBank in our [introduction pages](#) or our [user](#) and [project](#) tutorials.

Latest datasets added

- [Puer maculatus \(Olivier, 1789\) \(Neuroptera: Ascalaphidae\), new species for Portugal \(Mar 10th 2025\)](#)
- [Twenty-eight new and significant departmental reptile records for Paraguay \(Mar 10th 2025\)](#)
- [A review of the genus Microdera Eschscholtz, 1831 \(Coleoptera: Tenebrionidae\) of Uzbekistan \(Mar 10th 2025\)](#)

Developed by GBIF & Catalogue of Life
Leave Feedback | Frontend version: [acc0ea7](#) March 10, 2025 5:56 AM | Backend version: [fdcbfd1](#) February 28, 2025 12:00 AM

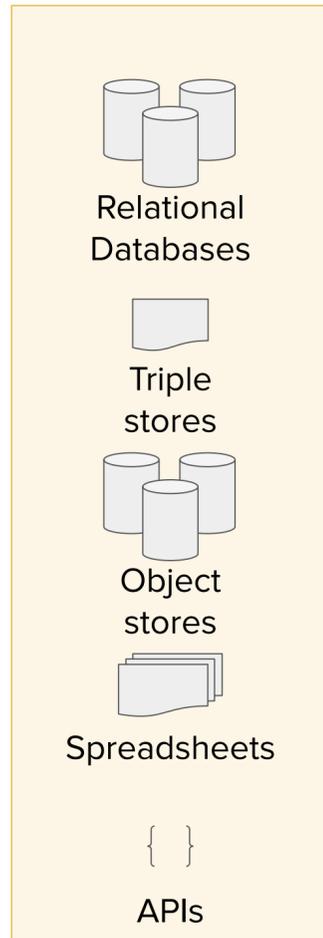
GLOBAL CORE BIODATA RESOURCE

<https://checklistbank.org>

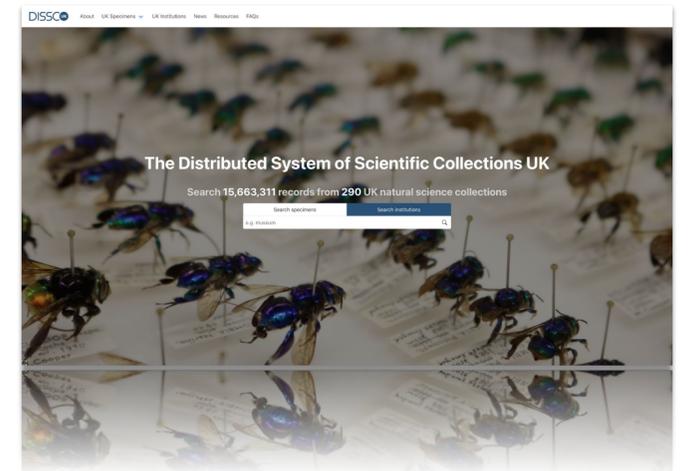
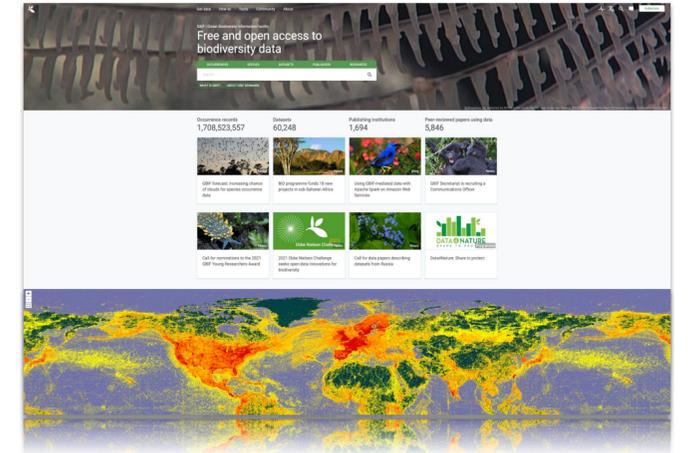
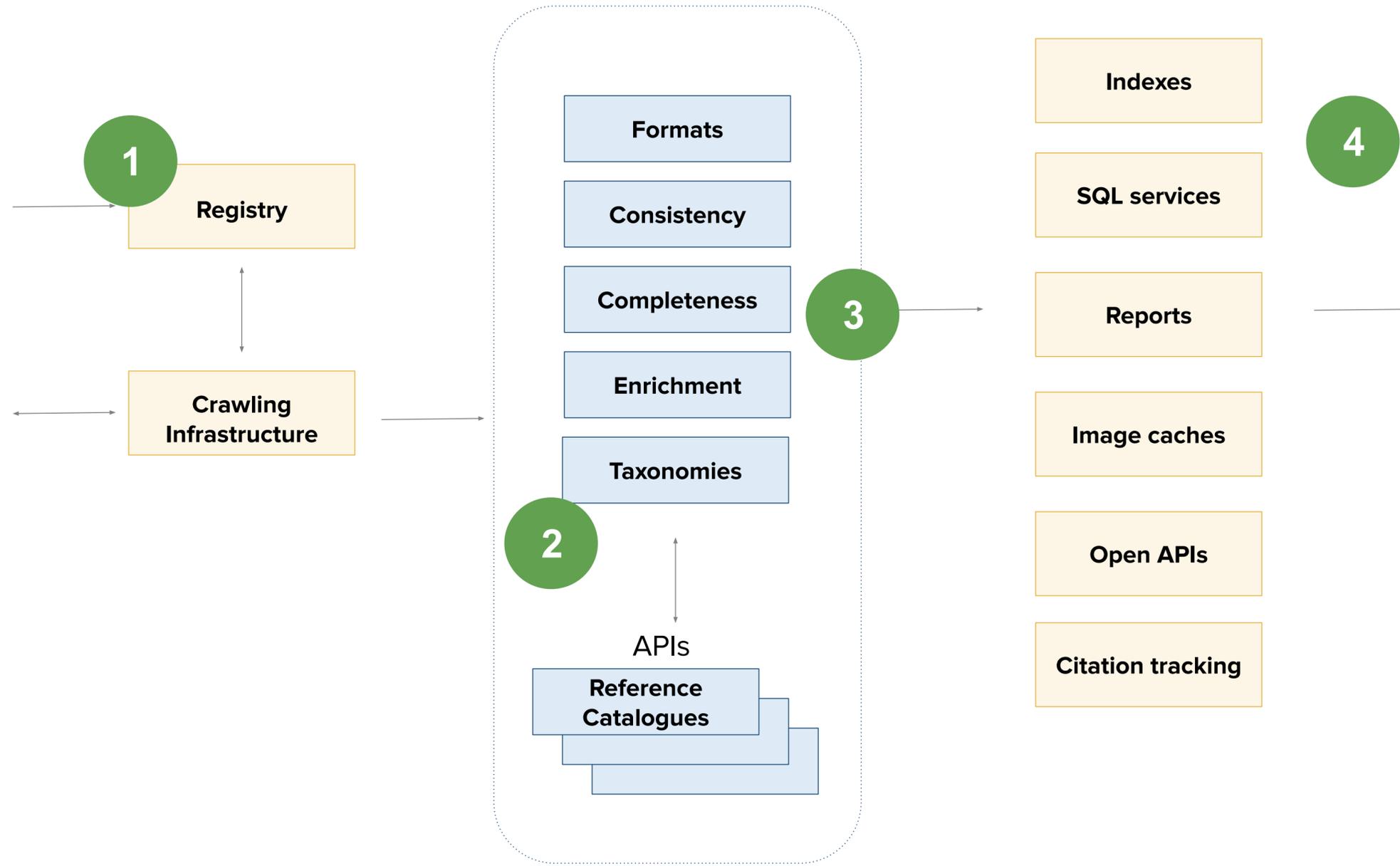


GBIF Data Warehouse (simplified)

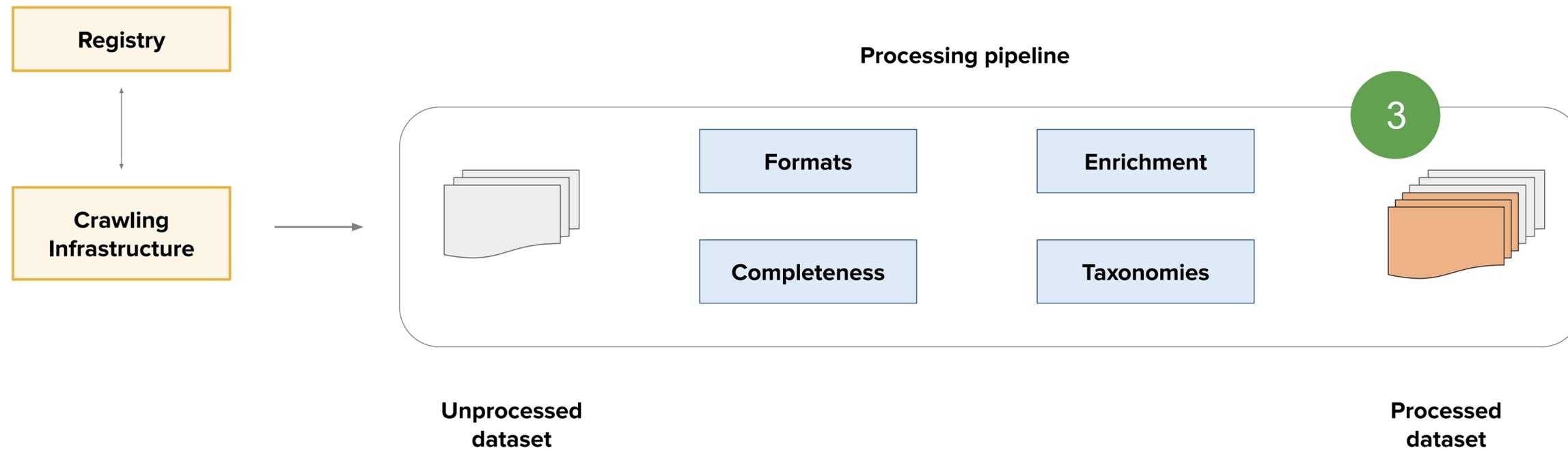
Source Systems



Data pipelines

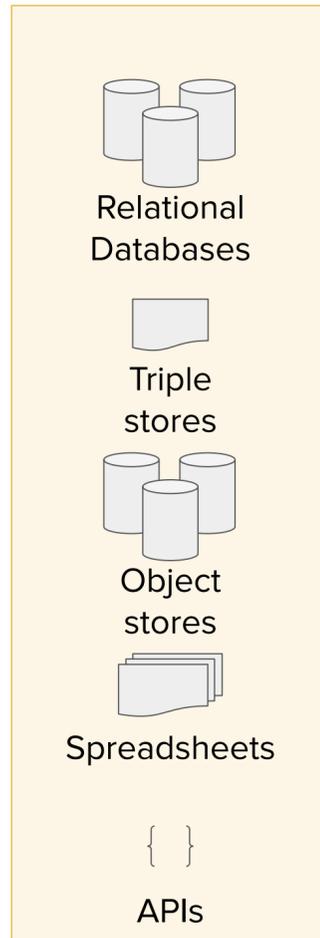


Idea: GBIF processing as a service?

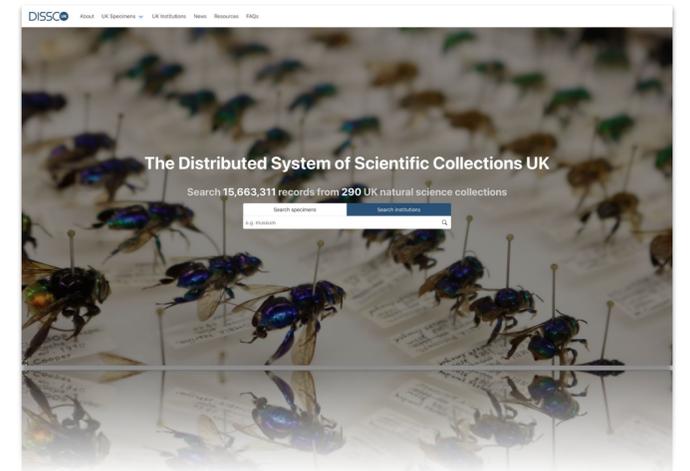
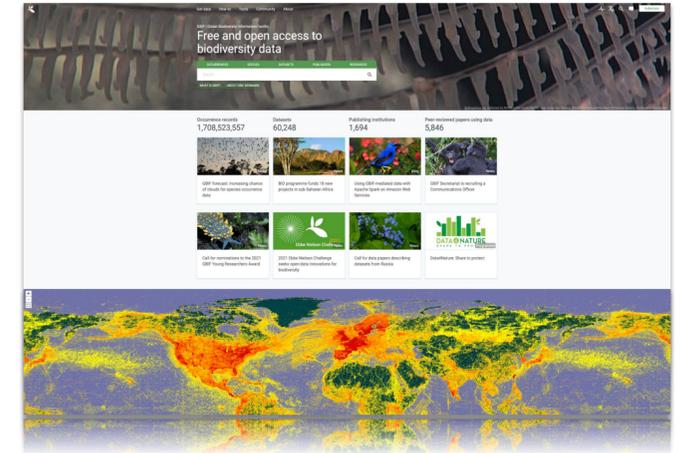
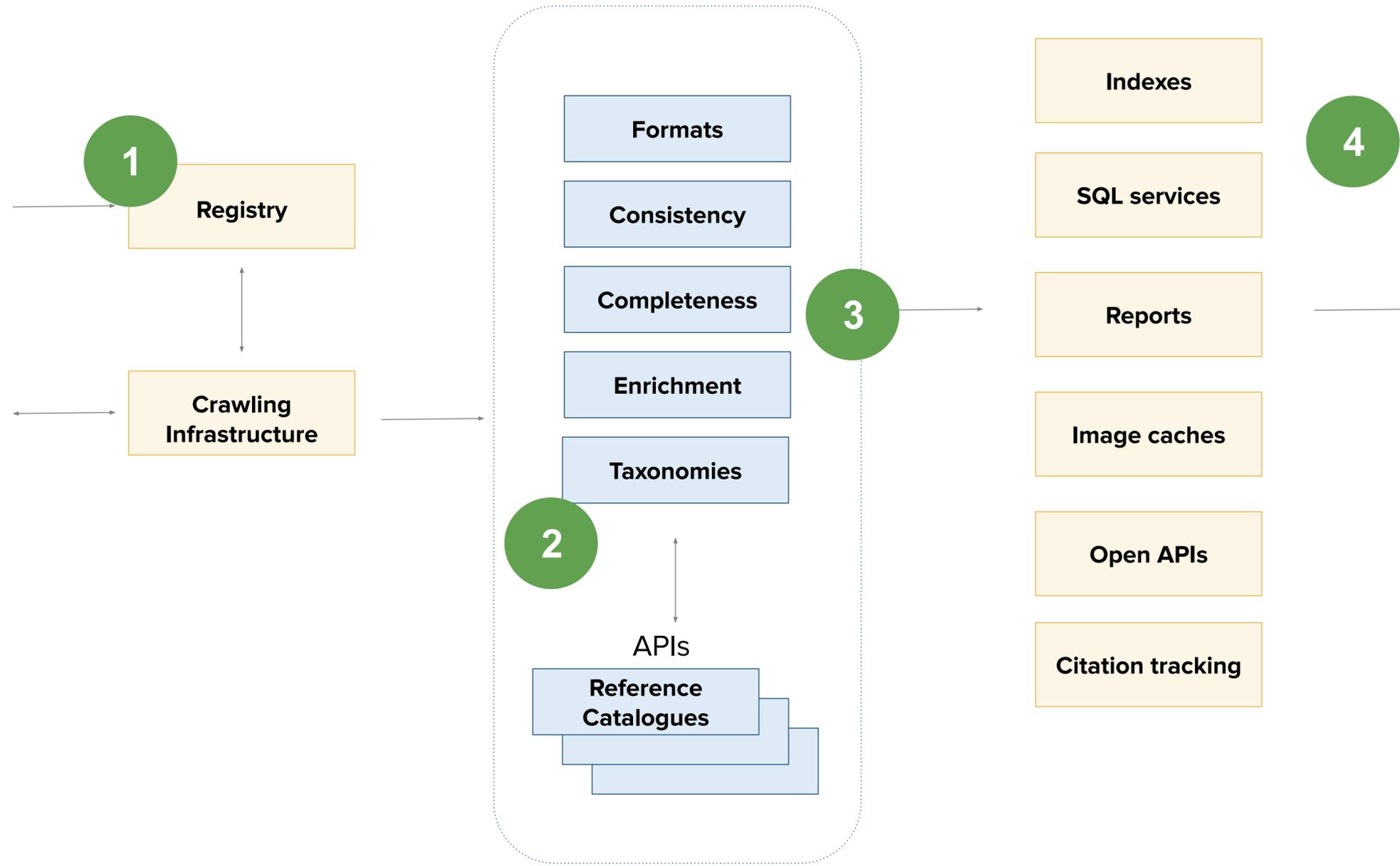


GBIF Data Warehouse (simplified)

Source Systems



Data pipelines



Gallery Map Table Datasets Download

Text search Scientific name Administrative area Locality Elevation Year Recorded by more

893,365 results with images

| | | | | | | | | | | | | | | |
|--|--|---|---|---|---|---|--|---|--|---|--|---|---|---|
|  Trillium erectum L. May 3, 2015, 7:38 United States of A |  Carya ovata (Mill.) K.Koch Nov 17, 2013 United States of America |  Lepomis gibbosus (Linnaeus, 1758) May 20, 2015, 1:21 United States of A |  Cyanocitta cristata (Linnaeus, 1758) Apr 18, 2021, 2:12 United States of A |  Drosera rotundifolia L. Jun 17, 2019, 11:43 AM United States of America |  Betula papyrifera Marshall May 20, 2016, 9:0 United States of A |  Anania hortulata Linnaeus, 1758 Jun 17, 2018, 10:59 PM United States of America |  Ambystoma maculatum (Shaw, 1802) May 17, 2003, 9:56 AM United States of America |  Cystopteris bulbifera (L.) Bernh. Aug 31, 2017, 11:46 AM United States of America |  Rosa multiflora Thunb. Jun 25, 2020, 2:14 United States of A |  Juncus alpinoarticulatus subsp. nodulosus (Wahlenb.) Hämet-Ahti Jul 31, 1879 United States of |  Lithobates sylvaticus (LeConte, 1825) May 24, 2020, 2:19 PM United States of America |  Sambucus racemosa subsp. racemosa L., 1753 May 23, 2016, 4:5 United States of A |  Poecile atricapillus (Linnaeus, 1766) Jan 26, 2020 United States of America | |
|  Condica vecors Guenée, 1852 May 26, 2019 United States of America |  Asterocampa celtis (Boisduval & Le Conte, 1833) Jul 3, 2006 United States of America |  Verbena urticifolia L. Aug 18, 1992 United States of Am |  Heterophleps triguttaria Herrich-Schäffer, 1854 Jun 4, 2014 United States of America |  Campaea perlata (Guenée) Aug 19, 2013, 8:05 AM United States of America |  Acer saccharum Marshall Feb 23, 2014, 4:10 United States of Ai |  Tsuga canadensis (L.) Carrière Aug 14, 2019, 10:1 United States of Ai |  Dennstaedtia punctilobula (Michx.) T.Moore Oct 1, 2021, 5:52 P United States of Ai |  Vulpes vulpes (Linnaeus, 1758) Jun 14, 2013 United States of America |  Acrionia americana Harris, 1841 Sep 21, 2013, 2:35 United States of Ai |  Notophthalmus viridescens (Rafinesque, 1820) Apr 8, 2019, 9:09 AM United States of America |  Toxostoma rufum (Linnaeus, 1758) Apr 25, 2014 United States of America |  Dryobates pubescens (Linnaeus, 1766) Apr 5, 2020 United States of America | | |
|  Agrilus ribesi Schaefer, 1946 Jun 10, 2021, 2:14 PM United States of America |  Bittacomorpha clavipes (Fabricius, 1781) Jun 3, 2014 United States of A |  Sitta canadensis Linnaeus, 1766 Nov 20, 2018, 1:09 PM United States of America |  Sayornis phoebe (Latham, 1790) Apr 5, 2020, 9:09 AM United States of America |  Ilex verticillata (L.) A.Gray Nov 11, 2014 United States of America |  Larus smithsonianus Coues, 1862 Jun 6, 2014 United States of America |  Goodyera repens (L.) R.Br. Aug 6–10, 1900 United States of |  Trillium undulatum Willd. Jun 3, 2019, 5:14 United States of A |  Clintonia borealis (Aiton) Raf. Jun 18, 1921 United States of |  Amphipoea Billberg, 1820 Aug 12, 2014, 9:13 PM United States of America |  Formica subsericea Say, 1836 May 8, 2022, 3:28 F United States of Am |  Hesperis matronalis L. May 21, 2016, 10:1 United States of A |  Calystegia sepium subsp. appalachiana Brummitt Sep 12, 2022, 10:4 United States of A |  Agrotis venerabilis Walker Sep 9, 2018, 8:15 A United States of Ar |  Juncus brevicaudatus (Engelm.) Fernald Jul 26, 1896 United States of |
|  Lophocampa caryae Harris, 1841 Sep 23, 2017 United States of Ai |  Setophaga caerulescens (J.F.Gmelin, 1789) Sep 24, 2020, 1:23 PM United States of America |  Phalaris arundinacea L. Jul 11, 1900 United States of |  Meleagris gallopavo Linnaeus, 1758 Dec 13, 2016, 10:53 AM United States of America |  Sparganium americanum Nutt. Aug 4, 2019, 2:07 P United States of Ar |  Antennaria parvifolia subsp. fallax (Greene) R.J.Bayer & Stebbins May 20, 1918 United States of |  Parrotaria pennsylvanica Muhl. ex Willd. Jun 27, 1936 United States of |  Junco hyemalis (Linnaeus, 1758) Dec 25, 2017, 2:32 PM United States of America | <div style="border: 1px solid black; padding: 5px; text-align: center;">More</div> | | | | | | |



BIODIVERSIDAD PARA TODOS

crear · compartir · transformar

Consultar



33,494,354

Registros biológicos



3,185

Conjuntos de datos



6,268

Fichas de especies



453

Listas de chequeo



241

Socios publicadores



Datos abiertos
Aves en ventanas



Datos abiertos
Fauna y flora del Casanare,



Comité técnico
Principales acuerdos y



Sharing infrastructure: Discussion

Constraints

- Mandate, Sovereignty?

Perceived benefits?

- Citation tracking, consistency, IDs
- Focus on value-adding services
- Next generation of DwC...

Technical challenges?

- Taxonomy?
- Sensitive data?

Risks?

- Flexibility, control



Thanks!

