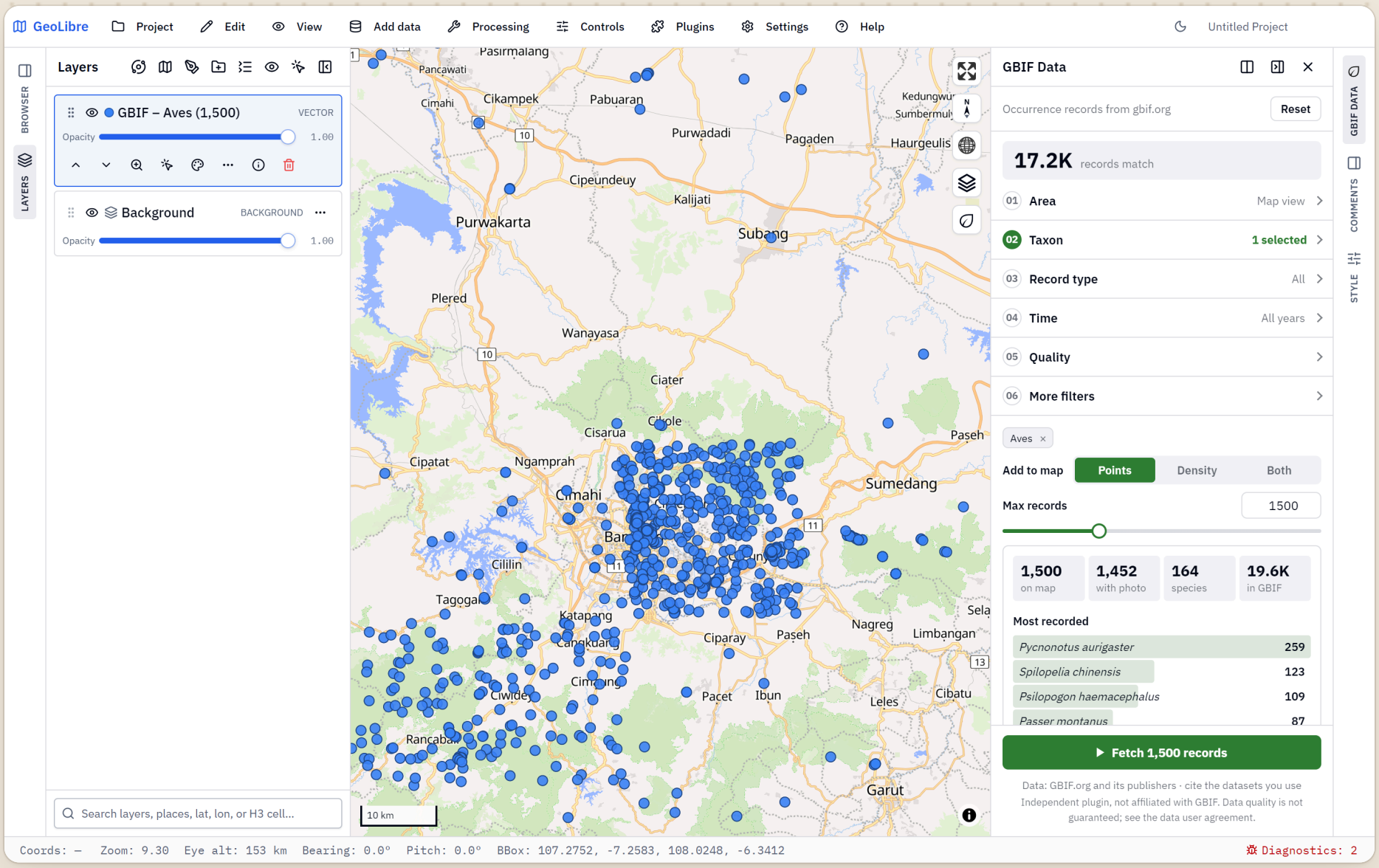
Complete Guide · English edition

GBIF Data
a GeoLibre plugin · v1.1.0

GEOLIBRE PLUGIN MODULE

Biodiversity Occurrence Data on Your Map with the GBIF Data Plugin

A complete guide from installation to a citable result: every filter from area to IUCN Red List, points and density layers, the record popup, licences, GBIF policy and the derived-dataset DOI.



1,500 bird (Aves) records around Bandung, West Java, fetched with GBIF Data in GeoLibre

Defani Arman Alfitriansyah
PLUGIN DEVELOPER · FORESTER

Plugin v1.1.0 · GeoLibre 3.0.0+
October 2026 · Guide licence CC BY-NC 4.0

Preface and Acknowledgements



Defani Arman Alfitriansyah
PLUGIN DEVELOPER · FORESTER

GBIF Data is my third plugin for GeoLibre. It grew out of a question I ask almost every week as a forester: *which species have been recorded here?* I wanted that answer inside my own map, next to my own boundaries and field data, without writing a script every time.

Much of what I know about where species live comes from people I will never meet: herbarium curators, museum staff, field surveyors, citizen scientists, and the institutions that publish their records. **Thank you to GBIF**, its participant countries and nodes, and every data publisher and observer behind each point on the map. You made that knowledge open, consistent and free to reach.

My sincere thanks to **Dr. Qiusheng Wu** and the GeoLibre project for an open platform and a plugin registry that welcomes independent contributors, and to everyone in the GeoLibre community who tried the plugin and gave feedback.

I built the plugin to follow GBIF's rules, to credit the people who did the work, and to make citing their data the easy path rather than the forgotten one. I hope this guide does the same for you.

With gratitude,

Defani Arman Alfitriansyah
PLUGIN DEVELOPER

A Clarification about GBIF

Before you start, please read this short statement about who made this plugin and this guide.

I am an individual contributor

I wrote the plugin and this guide as a private person: a forester and an independent open-source contributor. I am **not** GBIF staff, I do not speak for the GBIF Secretariat, a GBIF participant country, a GBIF node or any data publisher.

Not affiliated, not endorsed

GBIF Data is an independent project. It is not affiliated with, endorsed or sponsored by GBIF, nor by GeoLibre, MapLibre, IUCN or Google. The name "GBIF" is used only to say where the data comes from. No GBIF logo is used.

The data belongs to its publishers

Every record shown by the plugin is fetched live from GBIF's public API and stays the property of the institution that published it, under the licence that institution chose.

No guarantee of data quality

GBIF and its publishers do not guarantee that records are accurate or complete. Check the records against your purpose; you use them at your own risk.

Official rules come from GBIF

Where this guide summarises GBIF's data user agreement, terms of use or citation guidelines, the original documents on gbif.org always prevail. This guide is not legal advice.

> In short: the **plugin code** is mine (MIT License); the **data, photos and taxonomy** belong to GBIF's publishers and creators and keep their own licences (Chapter 6).

Terms of Reference (TOR) of This Module

This module is a self-study and training guide. The terms below define its purpose, scope and expected results.

Background
Biodiversity occurrence data are needed in forestry, conservation and spatial planning, but are often collected by hand from websites. GBIF Data brings GBIF records straight into GeoLibre with licences and citation built in.

Objective
Participants can find, filter, map, interpret and correctly cite GBIF occurrence records inside GeoLibre.

Target users
Foresters, ecologists, conservation and planning staff, lecturers, students and researchers. No programming needed.

Prerequisites
Basic GeoLibre use (layers, map navigation), an internet connection, GeoLibre 3.0.0 or newer with the MapLibre (2D/globe) renderer.

Scope
All features of GBIF Data v1.1.0: installation, live counter, the six filter steps (incl. IUCN Red List and data licence), points and density output, results, popup, attribute table, licensing, GBIF policy and DOI citation.

Learning outcomes
(1) install and open the plugin, (2) build a filtered query, (3) add points or density layers, (4) read a record and its licences, (5) prepare a derived-dataset or download DOI.

Method and duration
Guided practice with real data from West Java and Java, Indonesia. About 3 to 4 hours, or one training day with exercises.

Outputs
A GBIF layer in a GeoLibre project, a dataset list (CSV) and a correct citation for a report, paper or map.

Session	Topic	Chapters	Time
1	GBIF, the plugin, installation and the panel	1–2	30 min
2	The six filter steps, IUCN Red List and data licence	3	60 min
3	Fetching points and density; reading records and the attribute table	4–5	60 min
4	Licences, citation and the derived-dataset DOI	6	45 min
5	Practice with the recipes; checklist before publishing	7	45 min

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01 **GBIF and the Plugin** pp. 6–10
What GBIF is, what GBIF Data does, who it is for, and how it is built inside GeoLibre.

02 **Installation and the Panel** pp. 11–16
Three ways to install, how to open the panel, its parts, and how to read the live counter.

03 **The Six Filter Steps** pp. 17–26
Every control in steps 01 to 06: area, taxon, record type, time, quality including the IUCN Red List and data licence, and more filters.

04 **Fetching Records onto the Map** pp. 27–33
Choosing points, density or both, the Max records limit, the fetch progress, the results card, and three worked examples.

05 **Records, Popups, IUCN and the Layer** pp. 34–40
Reading a single record and its photo, a threatened-species case study for Java, and working with the attribute table.

06 **Licences, Citation and GBIF Policy** pp. 41–46
Four kinds of licence, what you may do with the data, the Cite this data block, two ways to get a DOI, and how the plugin follows GBIF's rules.

07 **Recipes, Troubleshooting and Closing** pp. 47–55
Ready-made settings for common tasks, fixes for common problems, theming, the licence of this guide, and references.

Conventions: button and menu names are in **bold**; API parameters and attribute columns in `code`; scientific names in *italics*; orange numbered discs on screenshots match the numbered lists beside them. Screenshots were taken on 29 October 2026 in GeoLibre on the web; record counts change daily.

01

GBIF and the Plugin

What GBIF is, what GBIF Data does, who it is for, and how it is built inside GeoLibre.

About GBIF · What the plugin does · Use cases · Architecture · From filters to requests

What Is GBIF?

The **Global Biodiversity Information Facility** (GBIF) is an international network and data infrastructure, funded by governments, that gives anyone free and open access to data about all types of life on Earth.

An occurrence record

Evidence that a species (or other taxon) was found at a place and time: a field observation, a museum or herbarium specimen, a camera-trap image, a sound recording, an eDNA sample.

Who publishes

Thousands of institutions: museums, herbaria, universities, government agencies, NGOs and citizen-science platforms such as iNaturalist and eBird.

A common standard

Records are shared in the Darwin Core standard and matched to the GBIF Backbone Taxonomy, so data from very different sources can be searched together.

Open, with obligations

Each dataset carries CC0 1.0, CC BY 4.0 or CC BY-NC 4.0. GBIF asks every user to cite the data, ideally with a DOI.

Public APIs

GBIF offers web APIs for occurrence search, species, maps and images. The plugin uses these APIs only.

Billions of records

GBIF indexes billions of occurrence records from tens of thousands of datasets, and the number grows every day.

> GBIF describes its data as free for all but not free of obligations. Chapter 6 explains what that means in practice and how the plugin helps.

19.6K	4,003	5,737	91
bird records around Bandung	threatened-species records in Java	tiger records worldwide	threatened species in Java

Counts from the examples in this guide, GBIF.org, 29 October 2026.

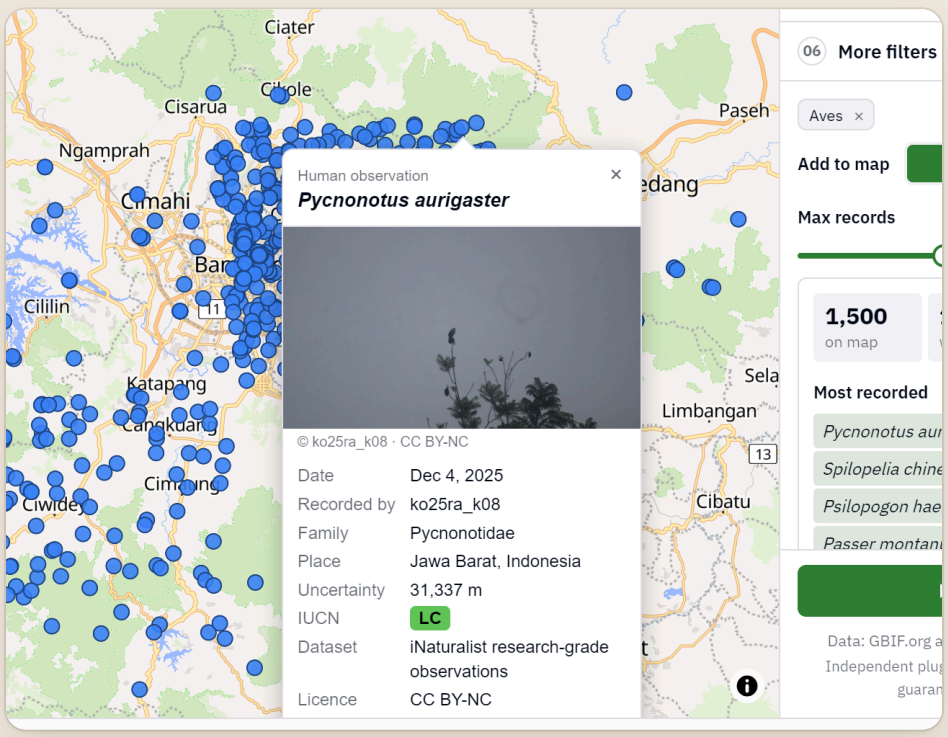
What the Plugin Does and Who It Is For

GBIF Data connects GeoLibre to GBIF. You choose an area, a taxon and filters, and the records arrive as a normal GeoLibre layer, with licences and citation tools attached.

Part	What it does
Live counter	Shows how many GBIF records match your filters, while you change them.
Six filter steps	Area, Taxon, Record type, Time, Quality (photos, issues, uncertainty, IUCN, licence) and More filters.
Points output	Up to 5,000 records as a GeoJSON layer that is saved with the project.
Density output	GBIF hexagon tiles summarising **every** matching record, at any scale.
Results card	Records on the map, with photo, species count, the five most recorded taxa.
Record popup	Photo, date, recorder, family, place, uncertainty, IUCN badge, dataset and licence.
Cite this data	Licence summary, citation text, dataset list (CSV) for a derived-dataset DOI, link to a GBIF.org download.

Typical uses

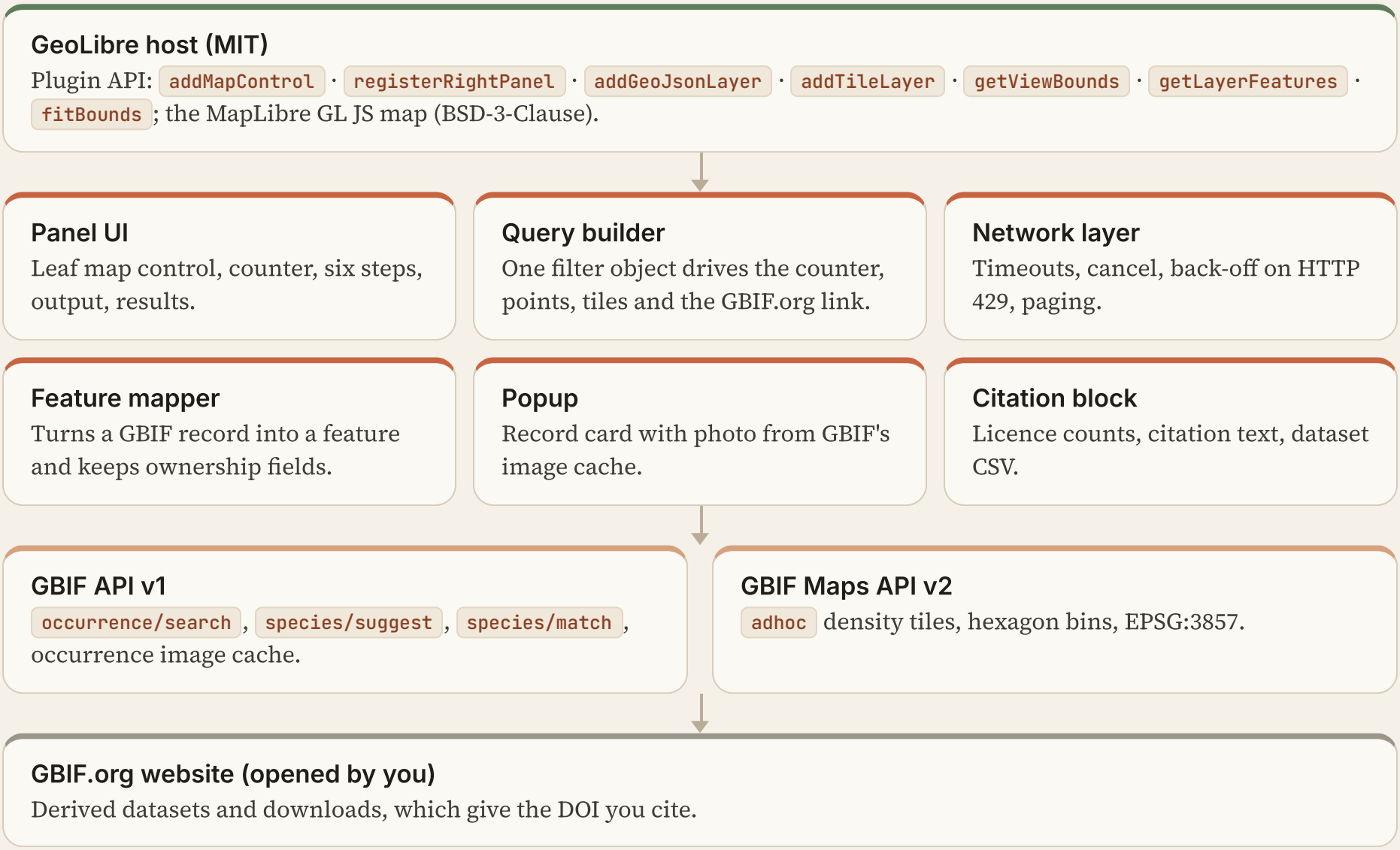
Check species records in a concession, protected area or village; map threatened (IUCN CR/EN/VU) species near a planned activity; see the global range of a species; pull herbarium specimens of a genus before a survey; prepare cited data for a report.



A bird record opened from the map: photo, details, IUCN badge, dataset and licence

Architecture

The plugin is one self-contained JavaScript module plus a stylesheet. It bundles no libraries: the map engine belongs to GeoLibre and the data to GBIF.



From Filters to API Requests

Everything you set in the panel becomes parameters of one GBIF request. Because one filter object drives every request, the counter, the points, the density tiles and the GBIF.org link always describe the **same set of records**.

Panel control	GBIF API parameter
01 Area: Map view or Layer	`decimalLatitude=south,north` · `decimalLongitude=west,east`
01 Area: Country	`country` (ISO 3166-1 alpha-2, e.g. ID)
02 Taxon and major groups	`taxonKey` (repeated = OR)
03 Record type	`basisOfRecord` (repeated)
04 Time	`year=from,to`
05 Photos only · Drop issues · Presence only	`mediaType=StillImage` · `hasGeospatialIssue=false` · `occurrenceStatus=PRESENT`
05 Coordinate uncertainty	`coordinateUncertaintyInMeters=0,max`
05 IUCN Red List · Data licence	`iucnRedListCategory` · `license` (repeated)
06 Recorded by · Dataset · Institution · Keyword	`recordedBy` · `datasetKey` · `institutionCode` · `q`
Always added	`hasCoordinate=true`

```
// example: birds in the map view, records with photos, since 2000
https://api.gbif.org/v1/occurrence/search?
taxonKey=212&decimalLatitude=-7.26,-6.34&decimalLongitude=107.28,108.02
  &year=2000,2026&mediaType=StillImage&hasGeospatialIssue=false&hasCoordinate=true&limit=300
```

02

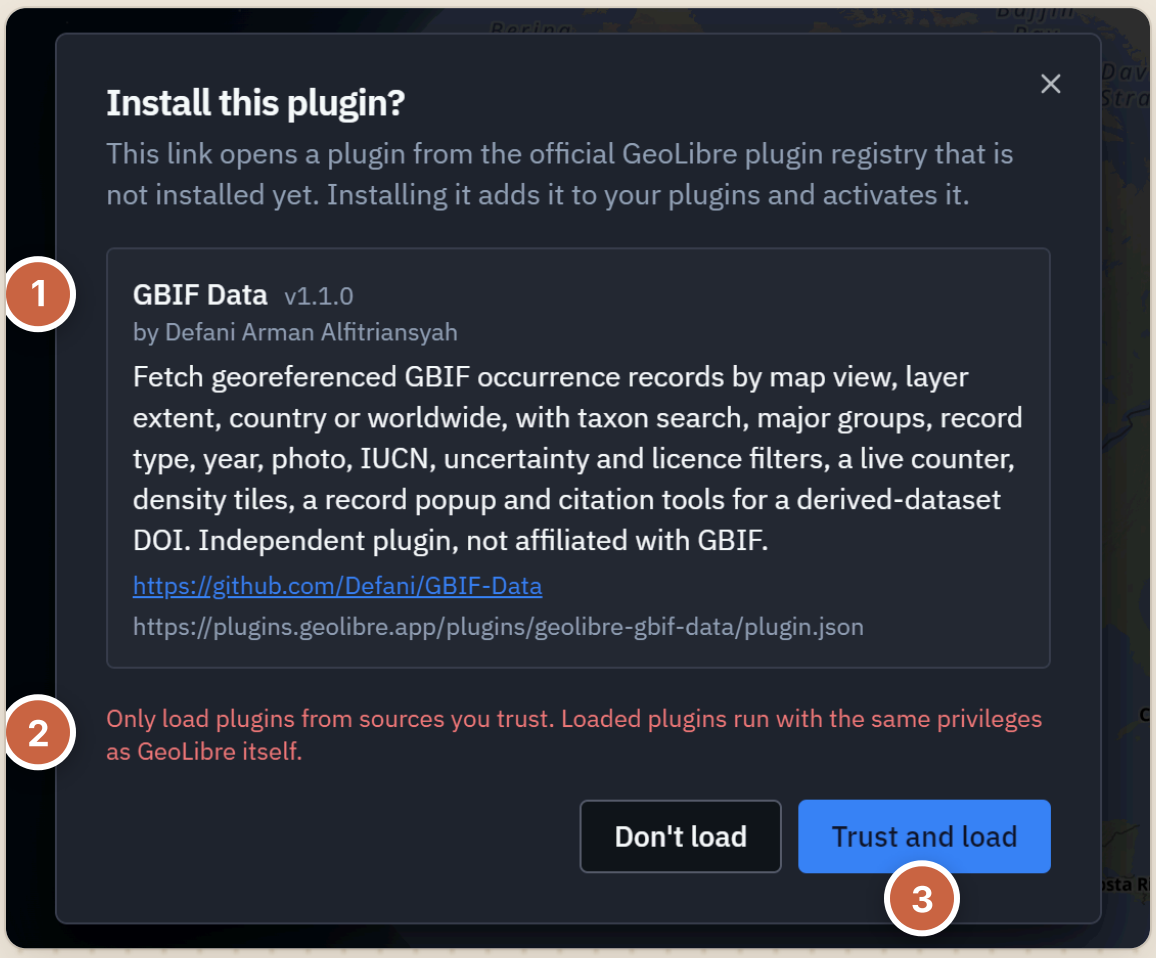
Installation and the Panel

Three ways to install, how to open the panel, its parts, and how to read the live counter.

Install from a link | Manage Plugins | Activate | Panel anatomy | Live counter

Installing from the Catalog Link

The quickest way on GeoLibre for the web: open the plugin's catalog page, **plugins.geolibre.app/catalog/geolibre-gbif-data**, and click **Open in GeoLibre**.

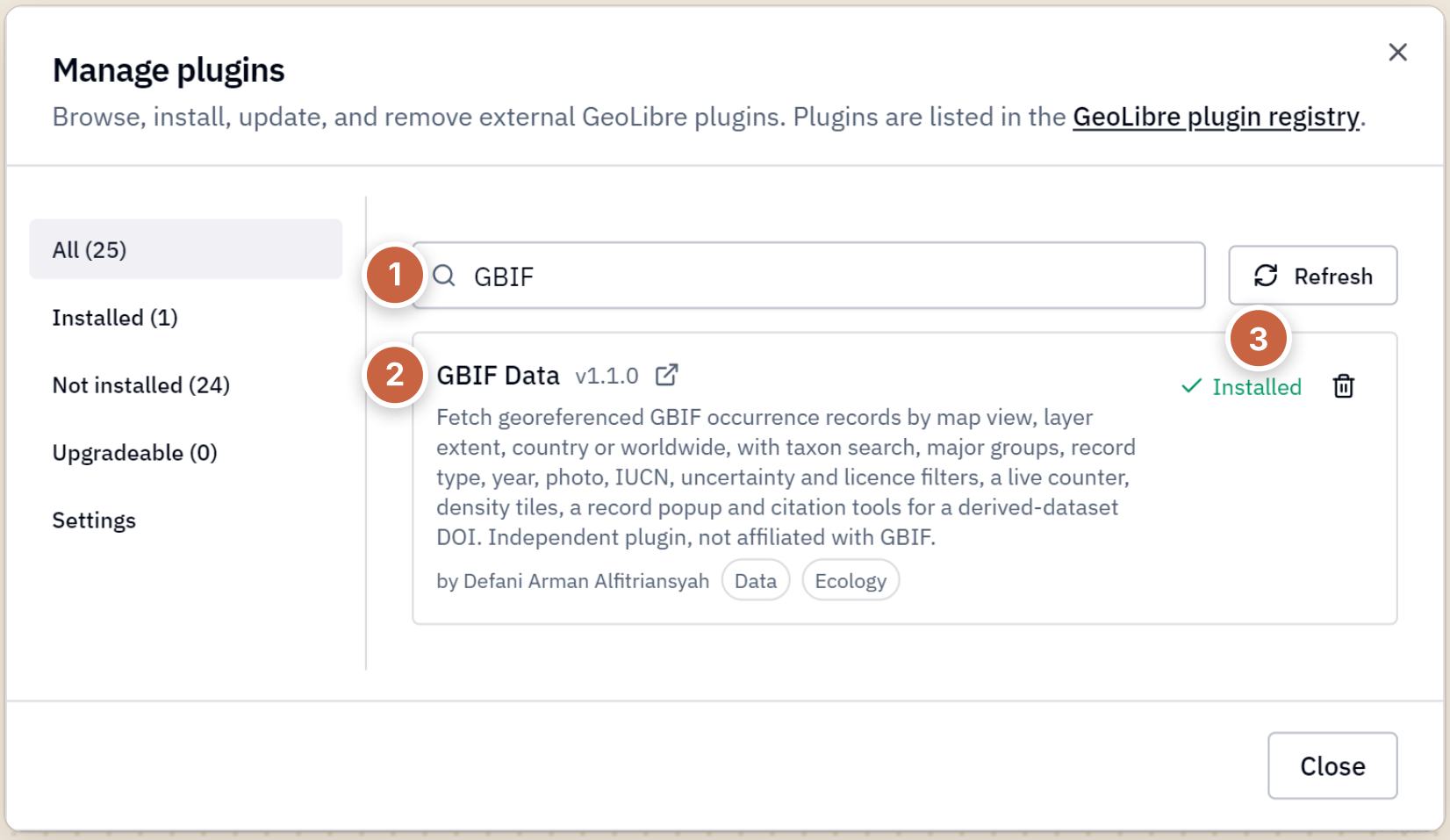


The install dialog that GeoLibre shows for a registry link

1. Check the plugin card: name **GBIF Data v1.1.0**, author, description, the source repository and the manifest URL on plugins.geolibre.app.
2. Read the warning: plugins run with the same privileges as GeoLibre, so only load plugins from sources you trust.
3. Click **Trust and load**. The plugin is installed and activated; a leaf button appears among the map controls.

Installing from Manage Plugins

In any GeoLibre, including the desktop app, use the built-in plugin manager. Recent GeoLibre releases check the downloaded code against the bundle SHA-256 published in the registry before running it.



Settings or Plugins → Manage plugins..., search "GBIF"

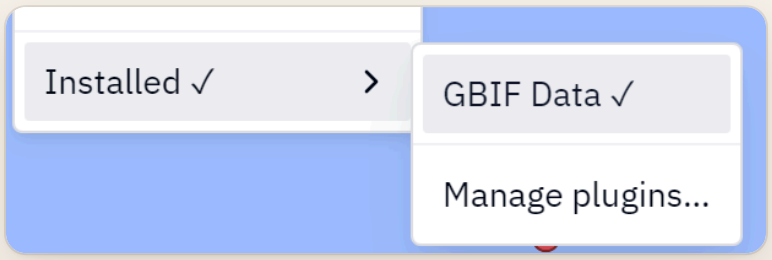
1. Open **Plugins → Installed → Manage plugins...** (or **Settings → Manage Plugins**).
2. Type **GBIF** in the search box. The card shows version, description, author and the categories **Data** and **Ecology**.
3. Click **Install**. Once installed the card reads **Installed** and offers a bin icon to remove it.

> Offline or behind a firewall? Download `geolibre-gbif-data-1.1.0.zip` from the GitHub Releases page and use **Install from file** in the same dialog.

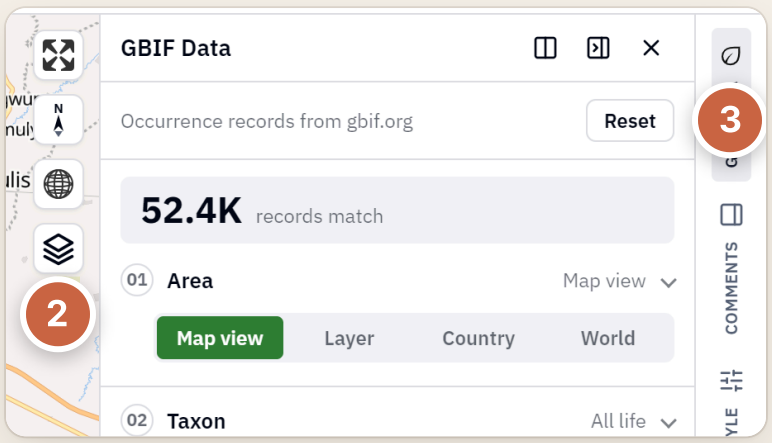
Activating and Opening the Panel

An installed plugin can be switched on and off from the **Plugins** menu. When it is active, a **leaf button** opens the GBIF Data panel on the right.

1. **Plugins → Installed → GBIF Data.** A tick shows it is active. GeoLibre may ask again after a restart.
2. Click the **leaf** button in the map controls (top right of the map).
3. The panel opens in the right sidebar. The leaf also appears on the right-hand rail as **GBIF DATA**, so you can switch back from Style or Comments.



Plugins → Installed → GBIF Data ✓

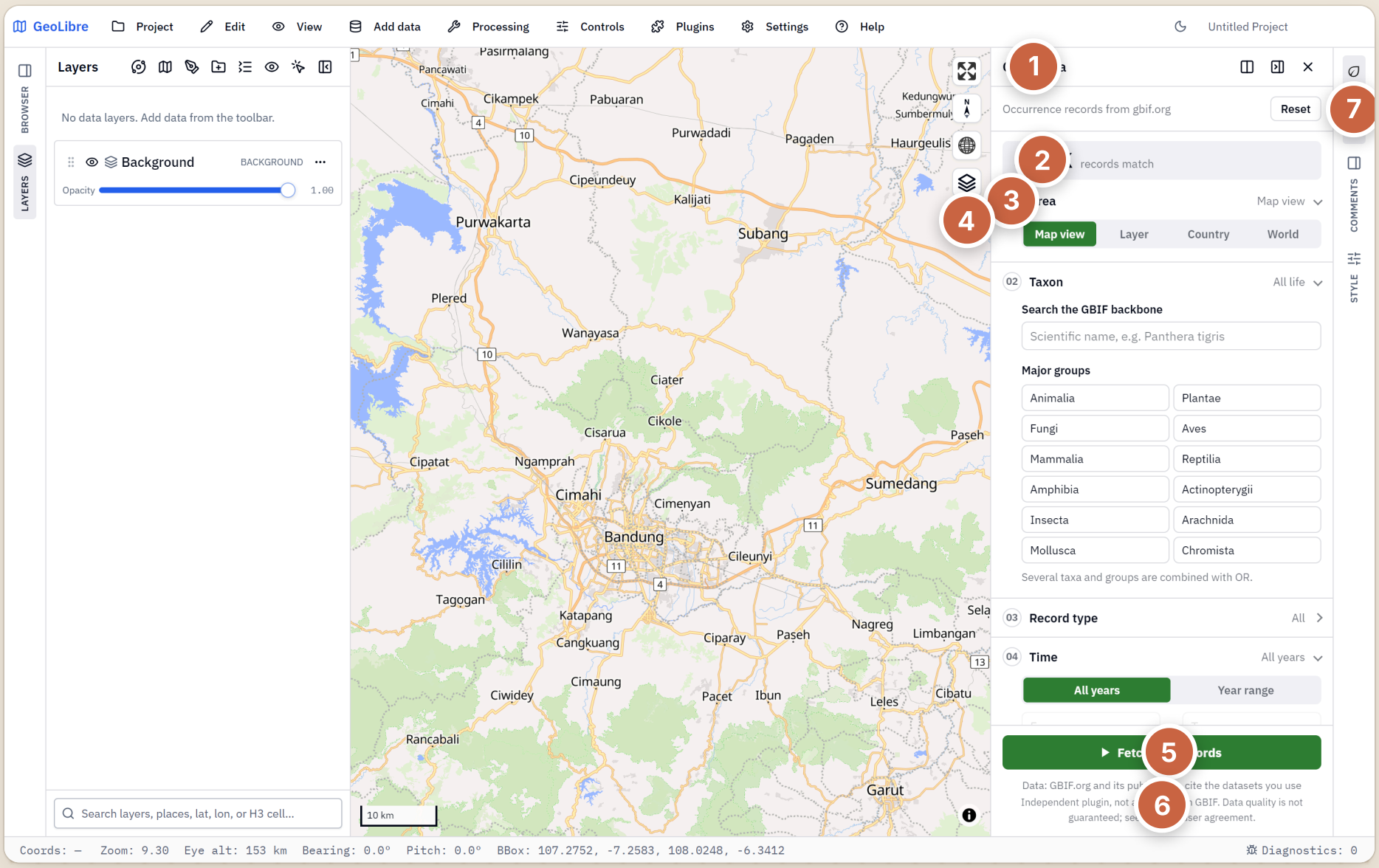


Leaf button and the GBIF DATA rail tab

> GBIF Data needs the MapLibre renderer (2D map or globe). It reads clicks from the MapLibre map, which does not exist on the Cesium 3D globe.

Panel Anatomy

The panel has a fixed header and counter at the top, six folding steps in the middle, and the output and Fetch button at the bottom.



1 Header and Reset

Panel title, dock and close buttons; **Reset** clears every filter back to the defaults.

2 Live counter · 3 The six steps

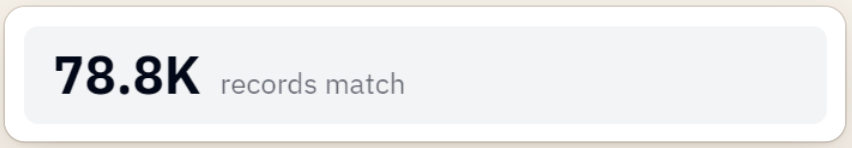
Records that match now; steps 01 to 06 each fold open and show a short summary on the right.

4 Leaf control · 5 Fetch button · 6 Credit · 7 Rail tab

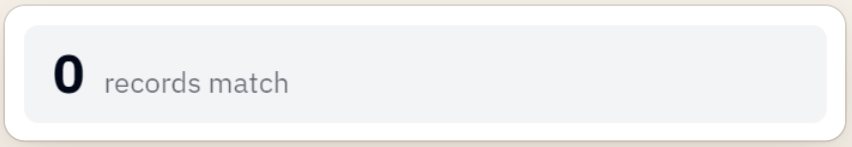
Opens the panel; runs the query; data credit and disclaimer; switches back to the panel.

The Live Counter

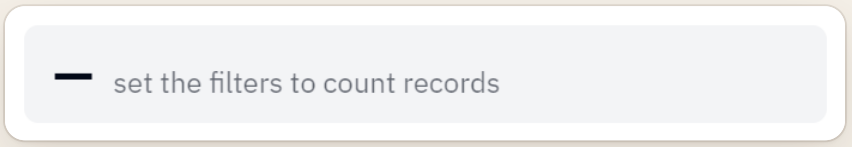
The grey box under the header tells you, before you fetch anything, how many records in GBIF match your filters. It updates about 0.7 seconds after you stop changing a filter and follows the map while the area is **Map view**.



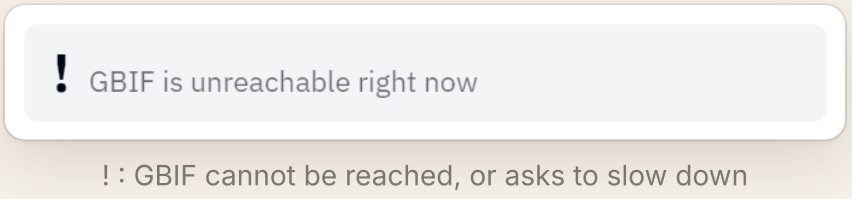
A number: records that match now



0 records: the filters are too narrow



— : the filters are incomplete (World with no narrowing filter)



! : GBIF cannot be reached, or asks to slow down

Rounded numbers
Large totals are shortened, for example **52.4K** or **1.7M**. Hover the number to see the exact figure.

One small request
The counter asks GBIF with `limit=0`, so it only returns a count. Requests are debounced, one per change.

When it shows !
No network, GBIF down, or HTTP 429 (too many requests). The next change tries again.

Use it to plan
If the count is far above 5,000, narrow the filters or use the Density output or a GBIF.org download.

03

The Six Filter Steps

Every control in steps 01 to 06: area, taxon, record type, time, quality including the IUCN Red List and data licence, and more filters.

01 Area · 02 Taxon · 03 Record type · 04 Time · 05 Quality · IUCN Red List · Data licence · 06 More filters

Step 01 · Area

The area decides **where** GBIF searches. Four choices are offered as a segmented switch.

Map view (default)

The bounding box of what you see on the map. The counter follows the map as you pan and zoom.

Layer

The bounding box of a vector layer in your project (its extent, not its exact shape). Raster and tile layers cannot be used.

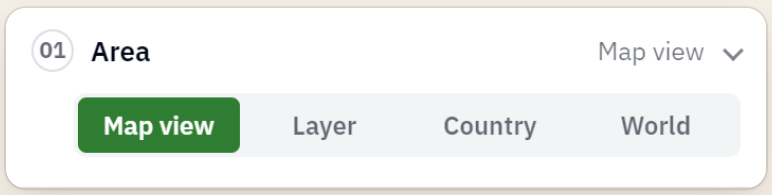
Country

Records GBIF assigns to that country (ISO 3166-1 code), wherever the map is. With Country or World the map zooms to the new points.

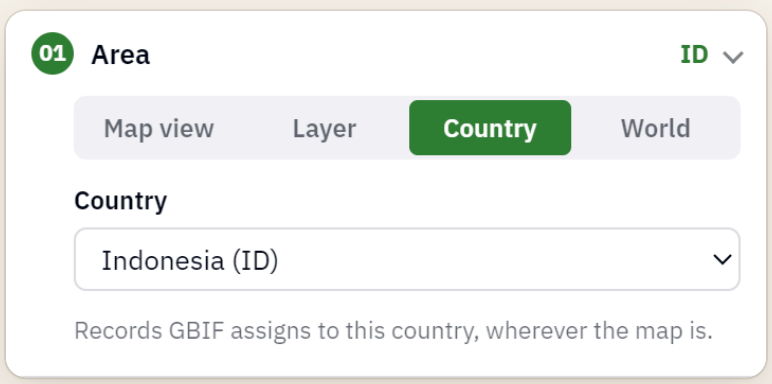
World

No area limit. It needs a narrowing filter (a taxon, dataset, recorder, institution or keyword) so a query is never "all of GBIF".

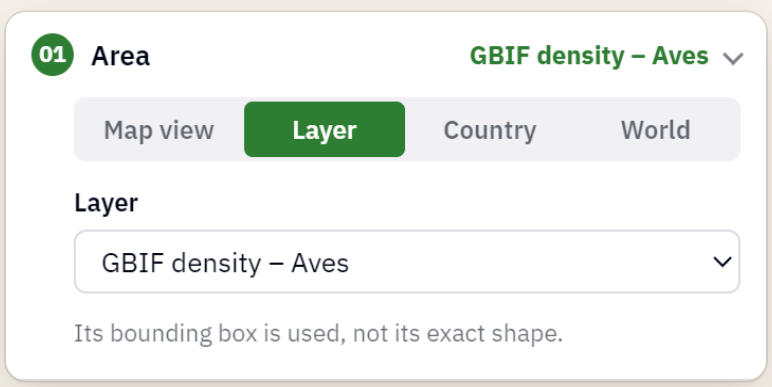
> For a concession or village boundary, use **Layer** and then clip the points to the exact polygon with GeoLibre's processing tools.



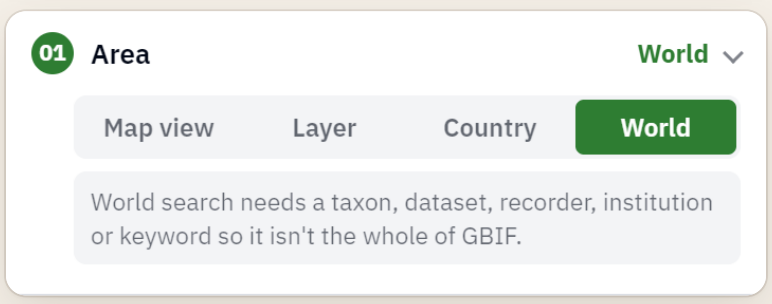
Map view



Country: Indonesia (ID)



Layer: pick a vector layer

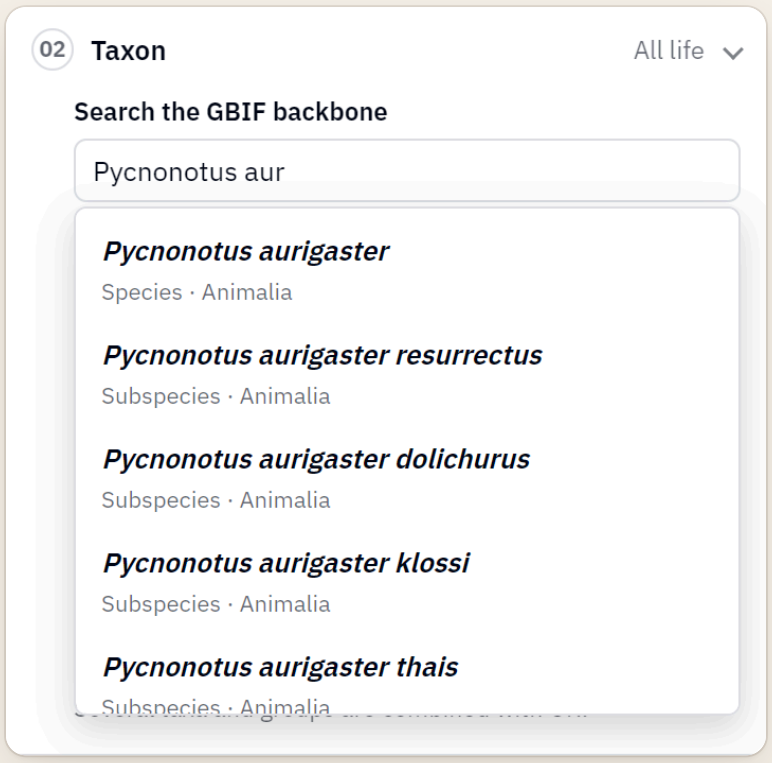


World

Step 02 · Taxon: Searching the GBIF Backbone

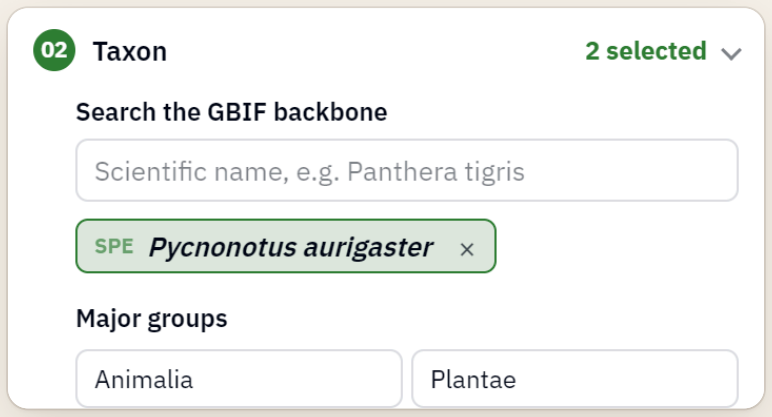
Type at least two letters of a scientific name. Suggestions come from the **GBIF Backbone Taxonomy** with their rank and kingdom.

1. Type, for example, **Pycnonotus aur**.
2. Use the arrow keys and Enter, or click a suggestion. Pressing Enter without picking asks GBIF for its best match.
3. The chosen taxon becomes a token, for example SPE ***Pycnonotus aurigaster*** ×. Click × to remove it.
4. Add more taxa if needed. Everything selected is combined with **OR**.



Suggestions with rank and kingdom

> Picking a species includes its subspecies; picking a genus includes all its species. Synonyms are resolved by the GBIF backbone.

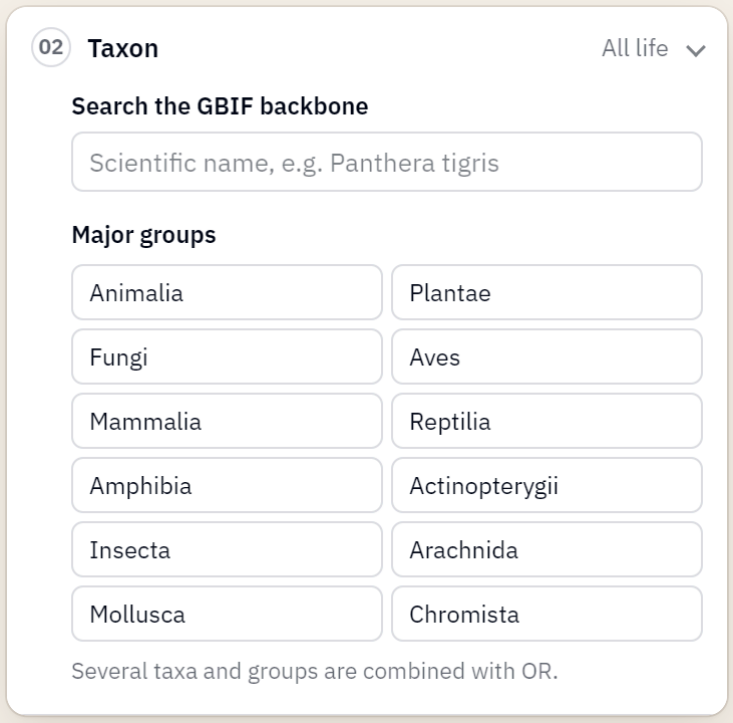


The species token and the Aves group, both selected

Step 02 · Taxon: Major Groups

Twelve one-click buttons select whole kingdoms or classes. They combine with searched taxa using **OR**: *Panthera tigris* + **Aves** means tigers *or* birds. With nothing selected the search covers all life.

Button	Rank	Covers
Animalia	kingdom	all animals
Plantae	kingdom	all plants
Fungi	kingdom	fungi, incl. lichens
Aves	class	birds
Mammalia	class	mammals
Reptilia	class	reptiles
Amphibia	class	frogs, salamanders, caecilians
Actinopterygii	class	ray-finned fishes
Insecta	class	insects
Arachnida	class	spiders, scorpions, mites
Mollusca	phylum	snails, bivalves, squid
Chromista	kingdom	brown algae, diatoms and kin

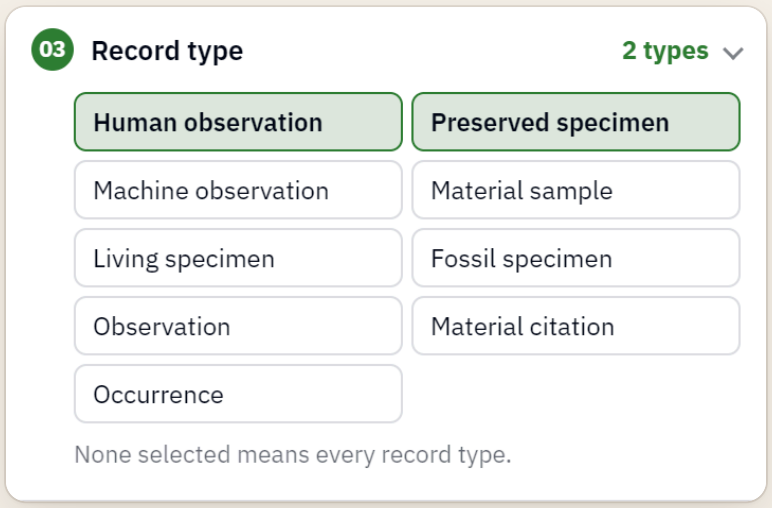


Step 02 with search box and major groups

Step 03 · Record Type (Basis of Record)

GBIF's **basis of record** tells you how a record was made. Nothing selected means every type; several selected are combined with OR.

Type	Typical source
Human observation	field surveys, citizen science (iNaturalist, eBird)
Preserved specimen	herbaria, museum collections
Machine observation	camera traps, acoustic sensors
Material sample	soil, water, eDNA samples
Living specimen	botanic gardens, zoos
Fossil specimen	palaeontological collections
Observation	generic observation, method not stated
Material citation	records cited from literature
Occurrence	generic occurrence, type unknown



Human observation and Preserved specimen selected

> For a herbarium check before a field survey, pick **Preserved specimen**. For recent presence, pick **Human** and **Machine observation**.

Step 04 · Time

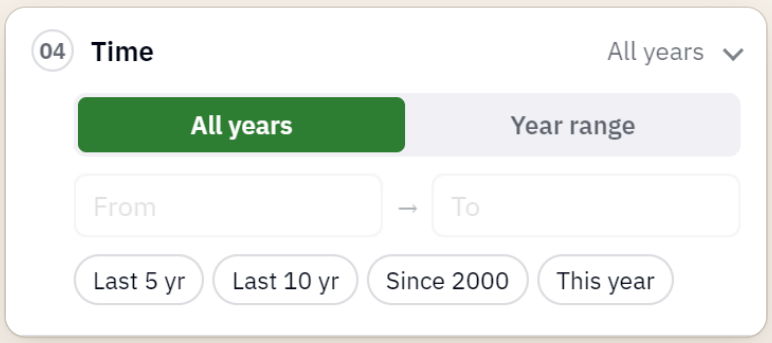
Limit records by the year they were made. **All years** is the default.

All years
No time limit.

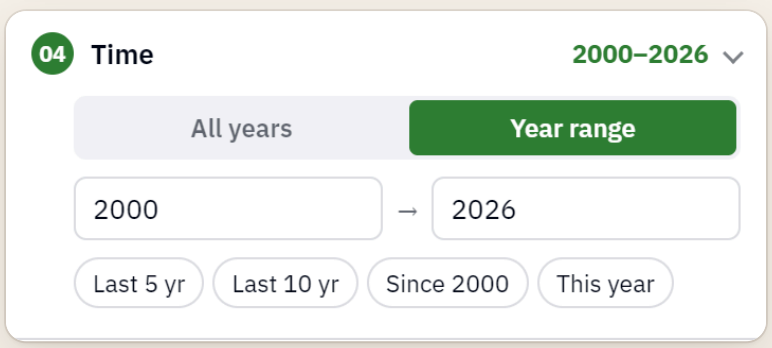
Year range: From, To
Type the years. Leave one end empty for an open range, for example only **From 2015**.

Presets
Last 5 yr, **Last 10 yr**, **Since 2000**, **This year** fill the range in one click.

Step summary
The header shows the range, for example **2000–2026**, and a removable tag appears above Add to map.



All years



Year range with the Since 2000 preset

> Old specimens are valuable for history and range change, but many lack precise coordinates. Combine an old range with **Coordinate uncertainty** carefully.

Step 05 · Quality: Switches and Uncertainty

Quality filters remove records that are unlikely to suit spatial work. Two switches are **on** by default.

Only records with photos (off)

`mediaType=StillImage`: only records that carry at least one image.

Drop geospatial issues (on)

Skips records that GBIF flags as badly placed, for example coordinates at the country centroid or swapped latitude and longitude.

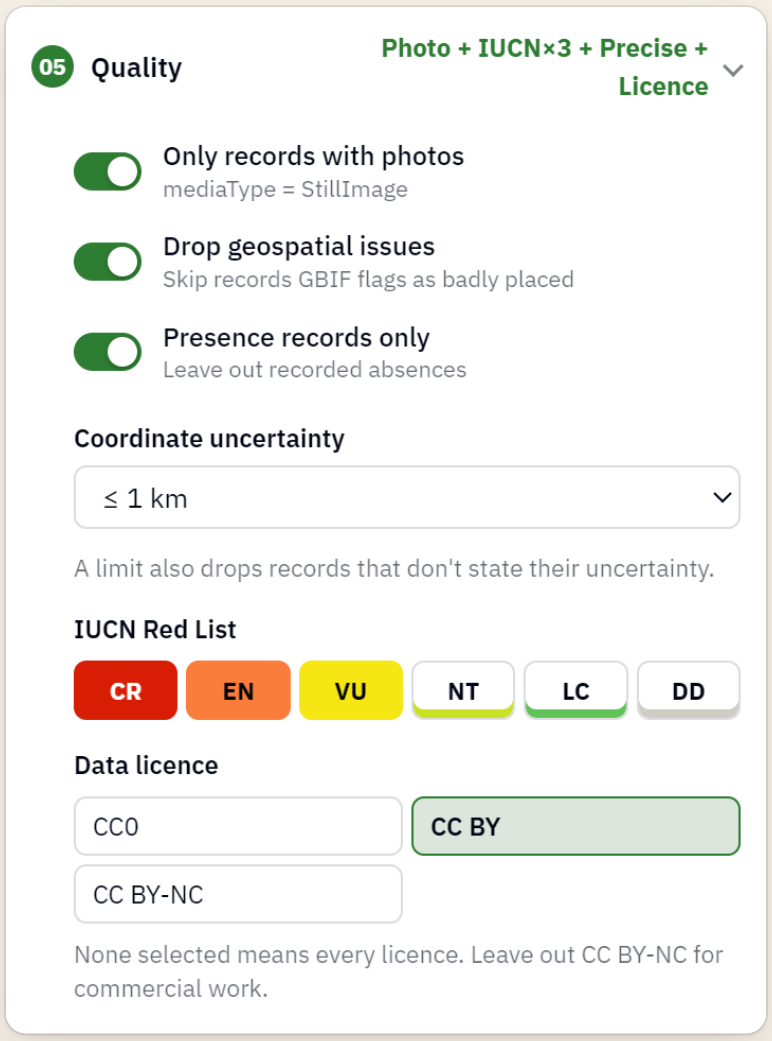
Presence records only (on)

Leaves out recorded absences (a survey that looked and did not find the taxon).

Coordinate uncertainty

Any, ≤ 100 m, ≤ 1 km or ≤ 10 km. A limit also drops records that do not state their uncertainty: that is how GBIF's range filter works.

> A popup that says **Uncertainty 31,337 m** usually means the location was deliberately generalised, which iNaturalist does for sensitive species or on the observer's request. Use **≤ 1 km** to leave such records out of fine-scale maps.



Step 05 with photos, ≤ 1 km, IUCN CR/EN/VU and CC BY selected

The IUCN Red List Filter

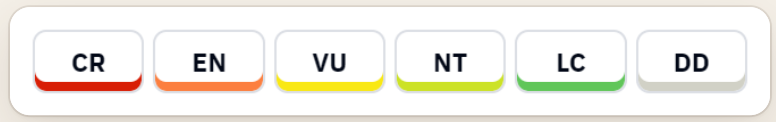
The **IUCN Red List of Threatened Species** assesses the global extinction risk of species. GBIF attaches the global IUCN category to each record through the taxon, and the plugin lets you filter by it in the official IUCN colours.

	Category	Meaning (IUCN 2012, v3.1)
CR	Critically Endangered	extremely high risk of extinction in the wild
EN	Endangered	very high risk of extinction in the wild
VU	Vulnerable	high risk of extinction in the wild
NT	Near Threatened	close to qualifying for a threatened category
LC	Least Concern	widespread and abundant
DD	Data Deficient	not enough information to assess

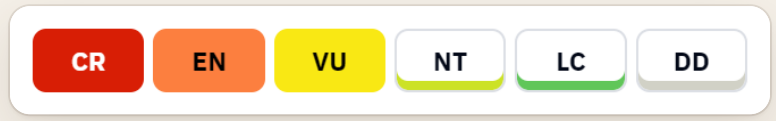
Threatened species
CR, EN and VU together are the **threatened** categories. Select all three for a threatened-species map.

Several buttons
Are combined with OR. A pressed button is filled with its colour; the step summary shows **IUCN×3**.

Not offered
EX, EW (extinct) and NE (not evaluated) are not filter buttons.



None selected



CR, EN and VU selected



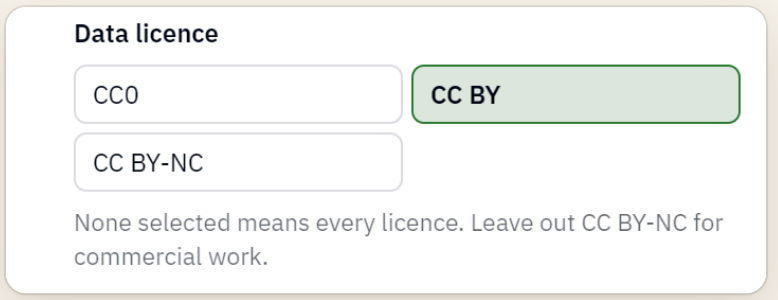
The same colours as a badge in the popup

> The category is the **global** IUCN assessment. National protection lists (for example Indonesia's protected species regulation) are separate and are not used by this filter; check them for permits and reports.

Data Licence Filter

Below the IUCN buttons, **Data licence** keeps only records published under the licences you pick. Each publisher chooses one of three Creative Commons licences for the whole dataset.

Button	Licence	You must
CC0	CC0 1.0, public domain dedication	nothing legally; GBIF still asks you to cite
CC BY	CC BY 4.0, attribution	credit the source; commercial use allowed
CC BY-NC	CC BY-NC 4.0, attribution, non-commercial	credit the source and not use it commercially



CC BY selected: only CC BY 4.0 records

None selected
Every licence (the default).

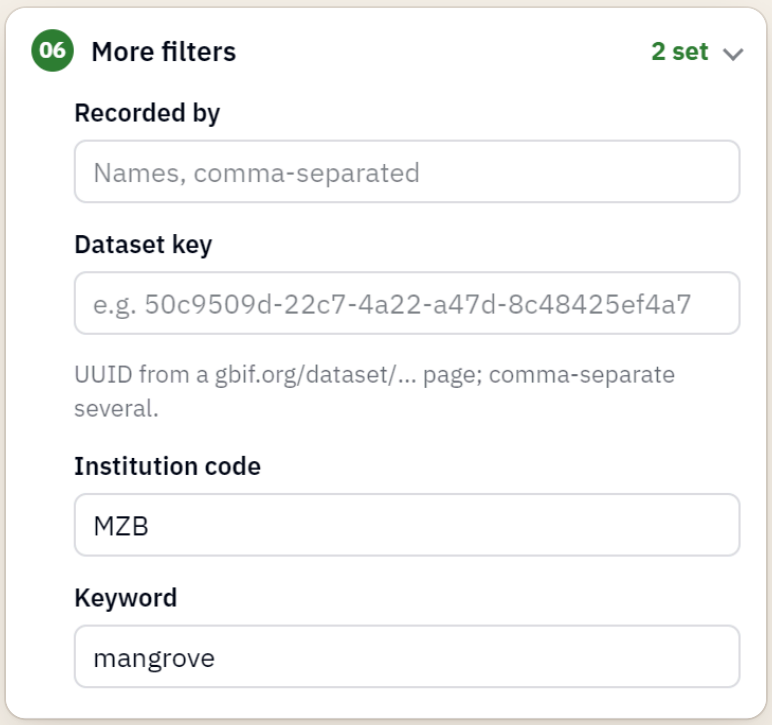
Commercial work
Select **CC0** and **CC BY** to leave CC BY-NC records out, for example for paid consulting.

After fetching
The results card still counts records per licence and warns when some are non-commercial (Chapter 6).

Step 06 · More Filters, Tags and Reset

The last step narrows by people, datasets, institutions or text. Every active filter of every step also appears as a removable **tag** above Add to map.

Field	Example	Note
Recorded by	Ani Rahmawati, J. Smith	names as written in the records; comma-separated
Dataset key	50c9509d-22c7-...	UUID from a gbif.org/dataset/... page
Institution code	MZB, LIPI, NHMUK	as published by the institution
Keyword	mangrove	GBIF full-text search across the record



Institution code and keyword filled in



Tags of active filters; click × on a tag to remove that filter

Reset in the header clears every filter at once. Folded steps keep a summary on the right, such as **1 selected**, **2000–2026** or **Photo + IUCN×3 + Precise + Licence**, so you can check the query without opening them.

04

Fetching Records onto the Map

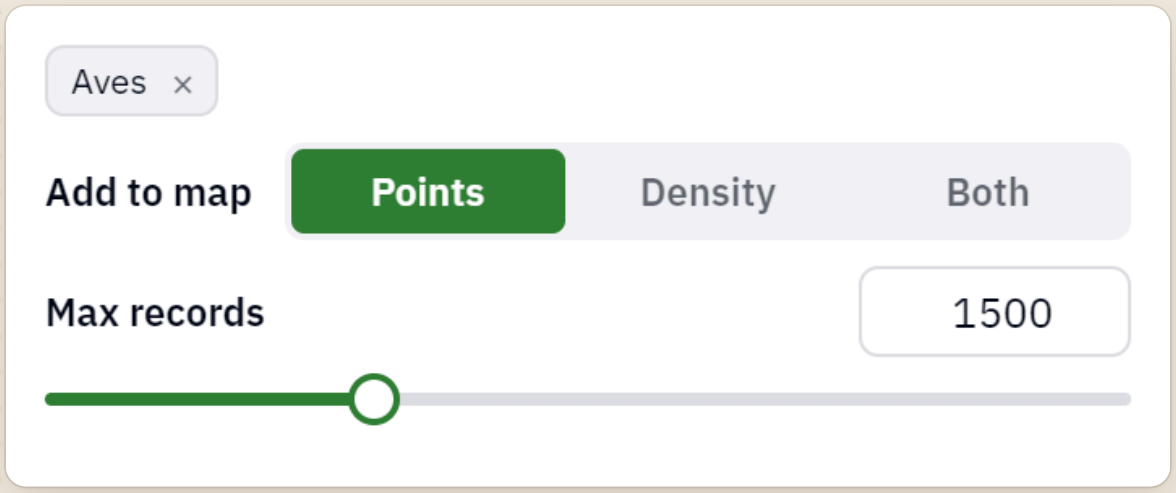
Choosing points, density or both, the Max records limit, the fetch progress, the results card, and three worked examples.

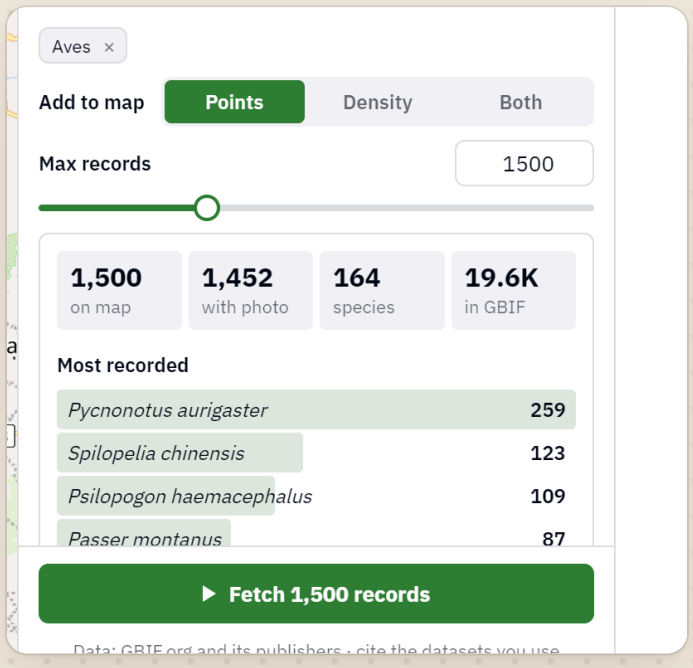
Points · Density · Both | Max records | Progress and errors | Results card | Example: birds of Bandung | Density | Worldwide range

Output and Max Records

At the bottom of the panel, **Add to map** chooses what the Fetch button produces, and **Max records** limits how many points are downloaded.

Output	What you get	Good for
Points	A GeoJSON layer with up to Max records records (default 500, maximum 5,000)	inspecting, attribute table, export, analysis
Density	A tile layer of GBIF hexagons summarising **every** matching record	full distribution, very large queries
Both	Both layers at once	points on top of their wider context





Points selected, Max records 1500

Max records

Drag the slider (50 to 5,000 in steps of 50) or type a number. The Fetch button repeats it: **Fetch 1,500 records**; with Density it reads **Add density layer**.

Why 5,000?

GBIF asks API users to keep requests reasonable and to use a GBIF.org download for large extractions. For more records, see Option B in Chapter 6.

Fetching: Progress, Cancel and Errors

Records are fetched in pages of up to 300, about 0.2 seconds apart. A progress bar shows the count and the button turns into **Cancel**.

Progress
For example **900 / 1,500 records**. Nothing is added to the map until the fetch finishes.

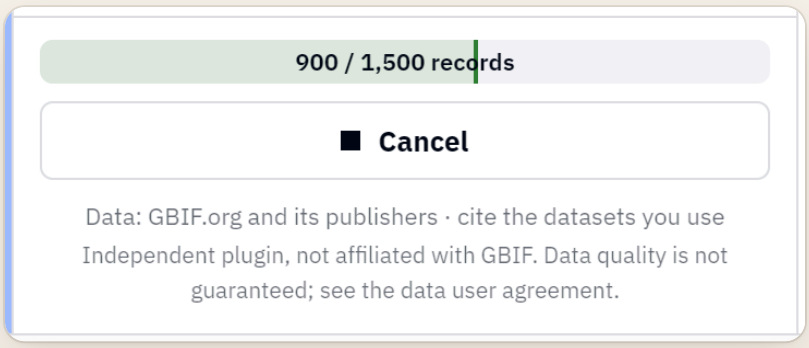
Cancel
Stops at once; the panel reports **Cancelled - nothing was added.**

HTTP 429
If GBIF asks to slow down, the plugin waits 3 s, then 8 s, then stops with a message that points to a GBIF.org download.

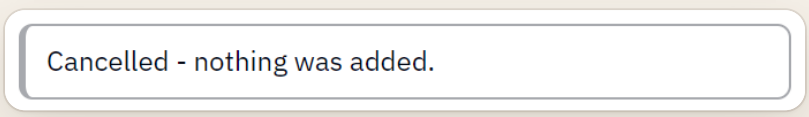
Network error
Could not fetch records: Failed to fetch means GBIF could not be reached. Wait a moment and try again.

Timeouts
30 s per page (10 to 15 s for suggestions and the counter), so the panel never hangs.

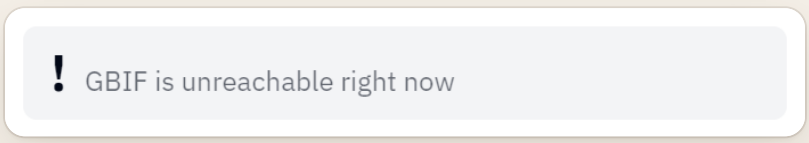
> These polite limits are part of GBIF's fair-use rules. Please do not raise them in a fork of the plugin.



Fetching in progress



After Cancel



Counter while GBIF cannot be reached

The Results Card

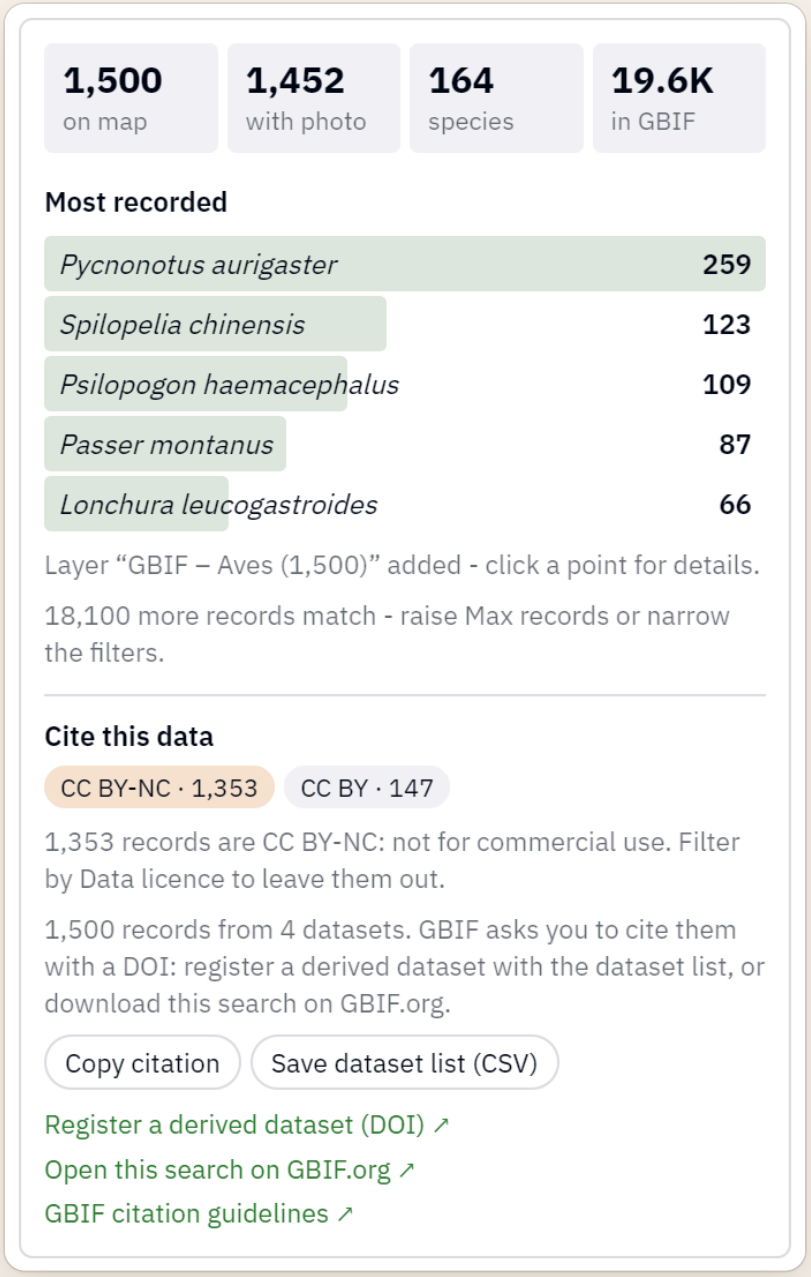
When the fetch finishes, a results card summarises what arrived. This is the card for the first worked example, birds around Bandung.

Stats
1,500 on map · **1,452** with photo · **164** species · **19.6K** in GBIF (all that match).

Most recorded
The five most frequent taxa, with bars: here *Pycnonotus aurigaster* (sooty-headed bulbul, 259), *Spilopelia chinensis*, *Psilopogon haemacephalus*, *Passer montanus* and *Lonchura leucogastroides*.

Notes
The new layer's name, and how many more records match (here 18,100): raise Max records, narrow the filters, or use a download.

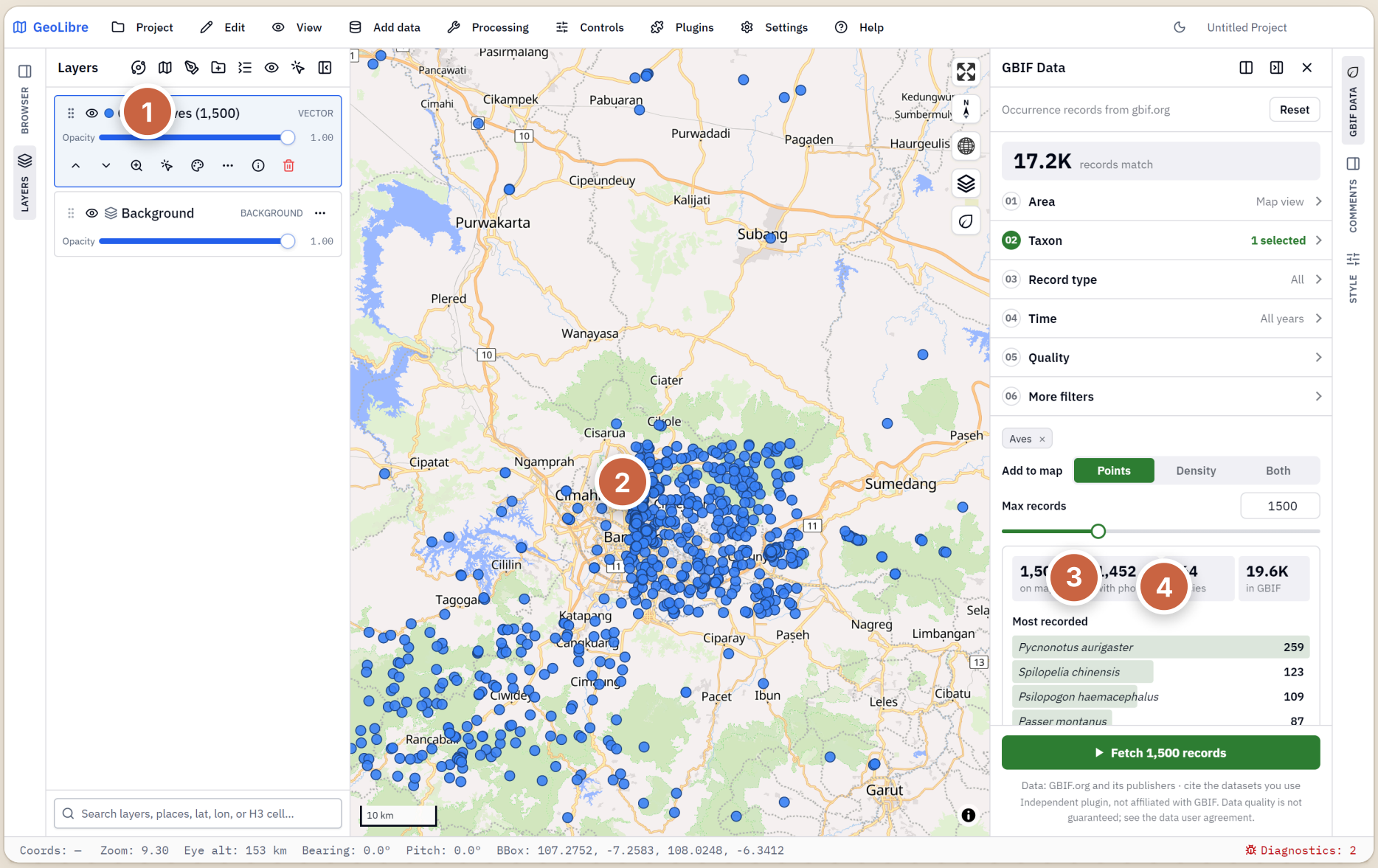
Cite this data
Licence chips, warnings and citation tools, explained in Chapter 6.



Results card after fetching 1,500 Aves records

Example 1 · Birds around Bandung

Area **Map view** over Bandung and Purwakarta, West Java · Taxon **Aves** · default quality · Points, **1,500** records. The layer **GBIF – Aves (1,500)** appears in the Layers panel like any other vector layer.



1 The layer

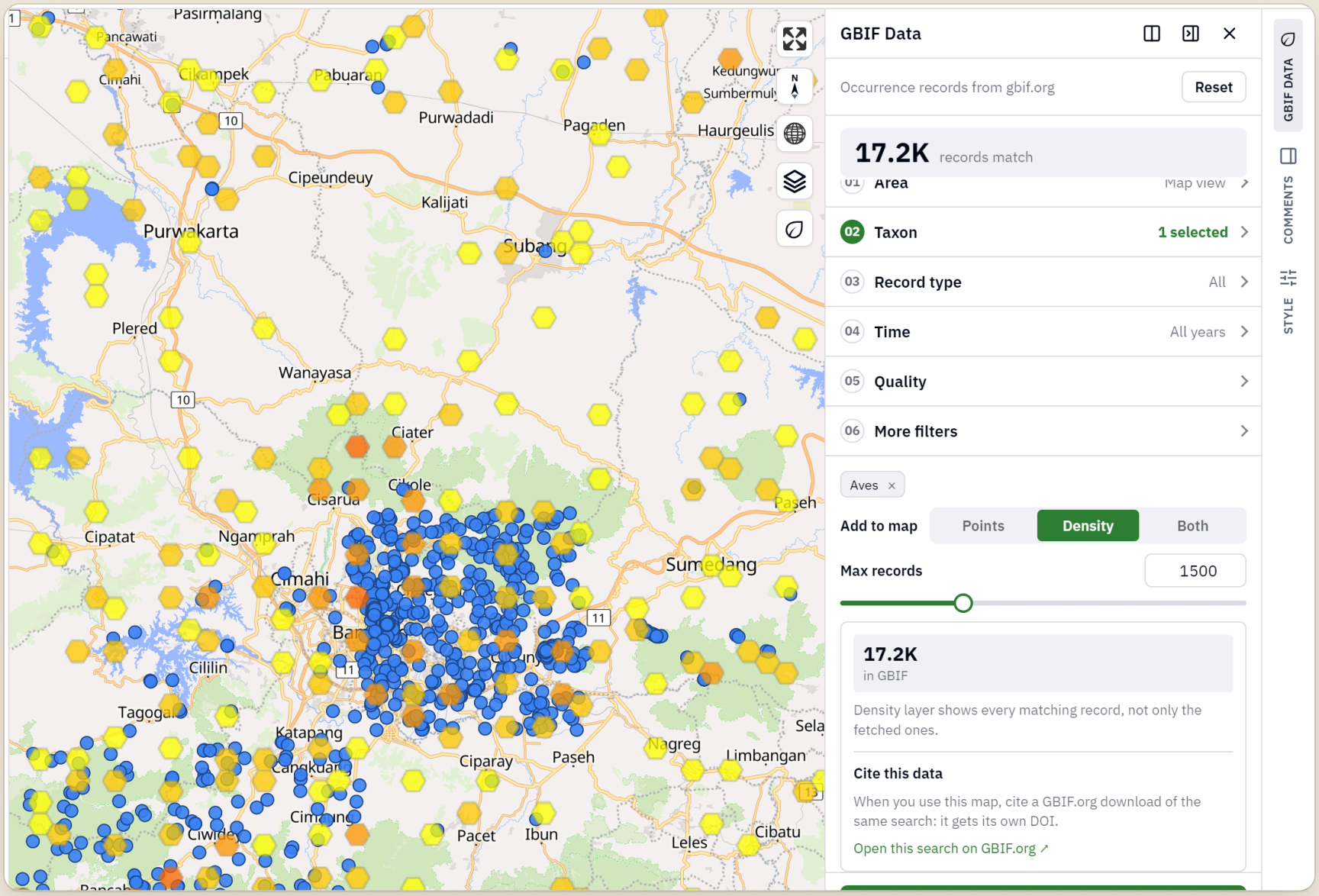
Named after the taxon and count; it is saved with the project, so it is still there when you reopen it.

2 The points · 3 Most recorded · 4 Stats

Records cluster where people look: Bandung city, parks and the volcano slopes. Absence of points is not absence of birds.

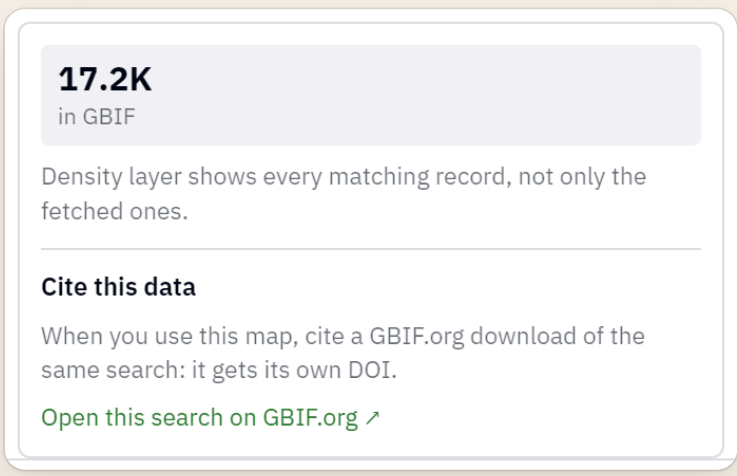
Density: Every Matching Record

Density adds GBIF's own hexagon tiles. Unlike points, they summarise **every** record that matches (here 17.2K birds), not only the ones you fetched, and they redraw at every zoom.



Colours
Yellow to red hexagons: more records in a cell means a warmer colour.

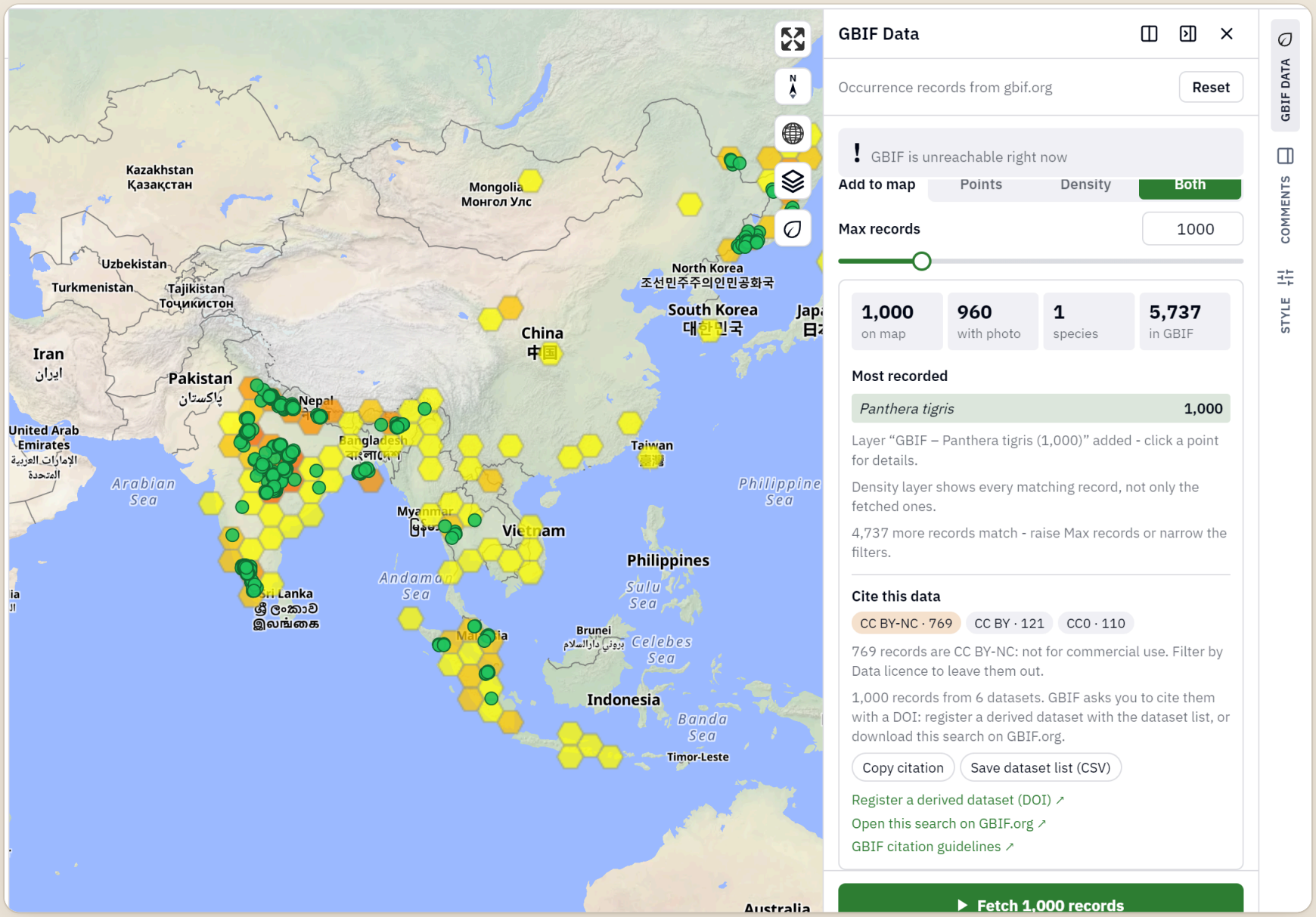
Metadata
The density layer stores its query, GBIF.org search link and access date in the layer metadata.



Results card for a density layer

Example 2 · A Species' Worldwide Range

Area **World** · Taxon *Panthera tigris* (tiger) · Output **Both** · 1,000 records. The density hexagons show all 5,737 matching records across Asia; green points show the 1,000 fetched ones.



> World searches always need a narrowing filter. When a query matches many thousands of records, use **Density** for the picture and a GBIF.org download for the data.

05

Records, Popups, IUCN and the Layer

Reading a single record and its photo, a threatened-species case study for Java, and working with the attribute table.

Record popup · Photo credits · Case study: threatened species · Attribute table · Columns · Layer tools

The Record Popup

Click any point (with no Identify, selection or editing tool active) to open a record card. It stays inside the map: it slides sideways at the edges and scrolls if it is too tall.

1 Header
Basis of record and the name (species or the identified taxon).

2 Photo
A resized copy from GBIF's occurrence image cache. Click it for the full-size original.

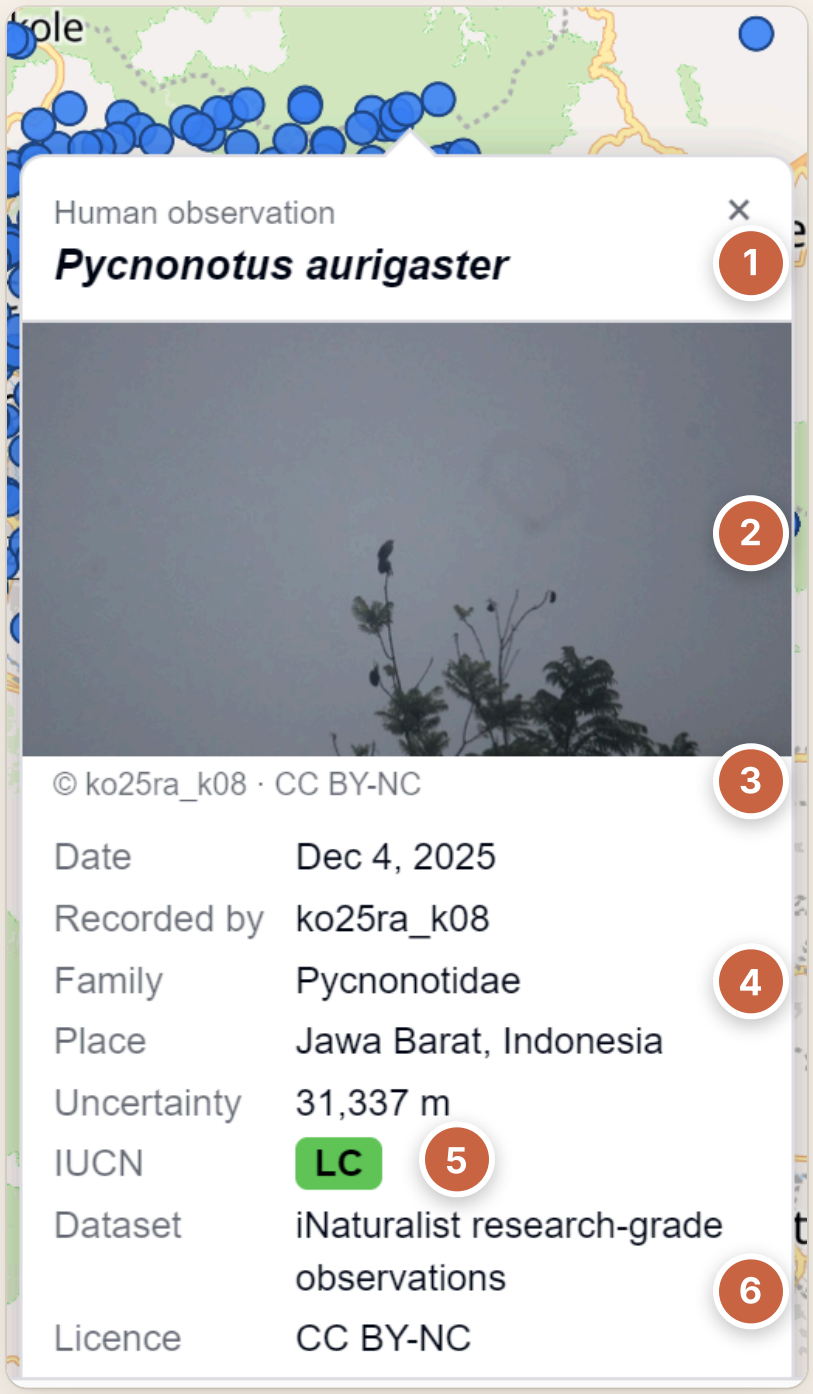
3 Photo credit
© creator · licence, the licence linked to its legal text.

4 Rows
Date, Recorded by, Family, Place, coordinate Uncertainty.

5 IUCN badge
The category in IUCN colours.

6 Dataset · Licence
Dataset linked to its GBIF page (with its own citation) and the record licence.

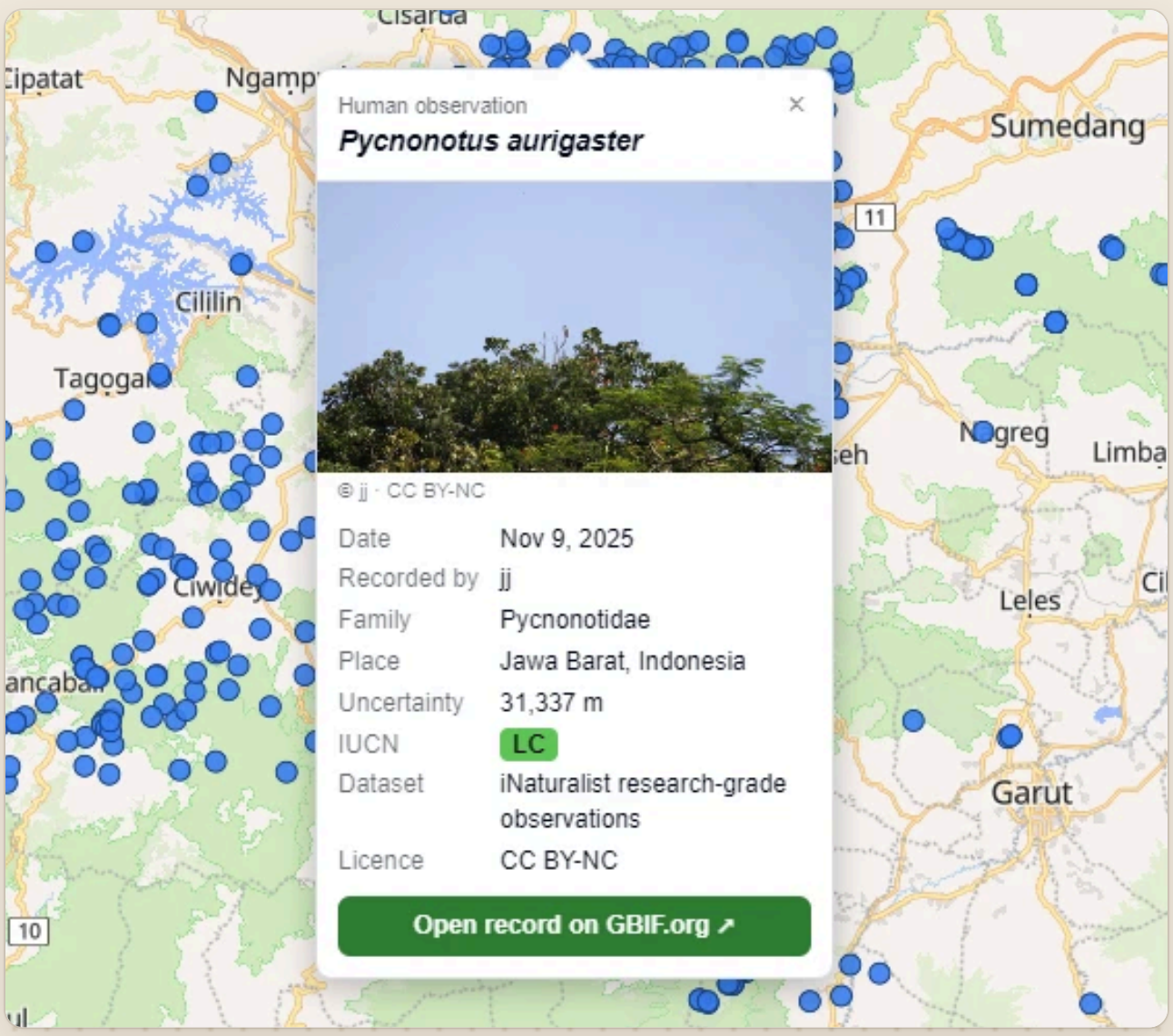
Open record on GBIF.org
The record page with its suggested citation.



Popup of a sooty-headed bulbul record

Photos and Their Credits

Photos belong to their creators and carry **their own licence**, often stricter than the record's. The popup always shows the creator and licence under the photo.



Popup in the desktop app; photo © jj, CC BY-NC (via iNaturalist and GBIF)

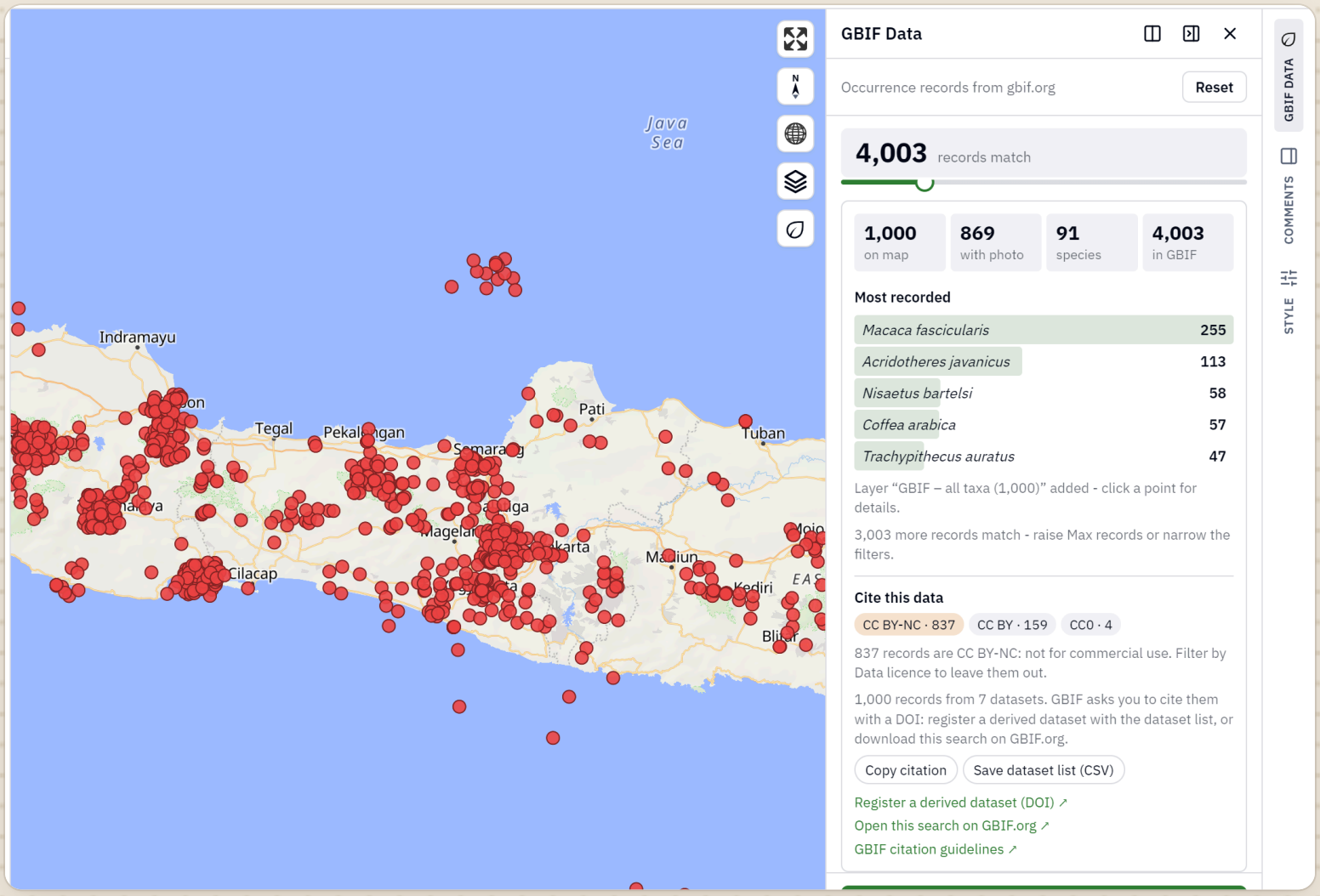
Reusing a photo
Check its licence first and credit its creator. Typical values are CC0, CC BY, CC BY-NC, CC BY-SA, CC BY-NC-ND or all rights reserved.

Missing photo
The image is not yet in GBIF's cache, or the publisher's server is down; the popup then simply hides the photo row.

Display only
Showing a cached thumbnail does not change the photo's licence.

Case Study · Threatened Species of Java

Area **Map view** over Java · Taxon **all life** · Quality IUCN **CR, EN, VU** · Points, 1,000 of **4,003** matching records, from 91 species in 7 datasets.



Most recorded	IUCN	Records
Macaca fascicularis (long-tailed macaque)	EN	255
Acridotheres javanicus (Javan myna)	VU	113
Nisaetus bartelsi (Javan hawk-eagle)	EN	58
Coffea arabica (arabica coffee)	EN	57
Trachypithecus auratus (Javan langur)	VU	47

Read with care

Wild arabica coffee is globally Endangered, yet most Javan records are cultivated plants. Check the basis of record and the remarks.

Planning use

Overlay a planned activity, then raise Max records or download the full 4,003 records.

Reading a Critically Endangered Record

A click on one of the points shows *Globba maculata*, a ginger (Zingiberaceae) assessed as **Critically Endangered**, observed in Central Java.

IUCN CR
The red badge comes from the global IUCN category that GBIF attaches to the taxon.

Uncertainty 31,331 m
The location is generalised by about 31 km, as iNaturalist does for sensitive species. Do not use such a point for site-level decisions.

Dataset and licence
iNaturalist research-grade observations; record and photo CC BY-NC.

What to do next
Open the record on GBIF.org to see the full data and citation, and contact the publisher if you need precise locations for conservation work.

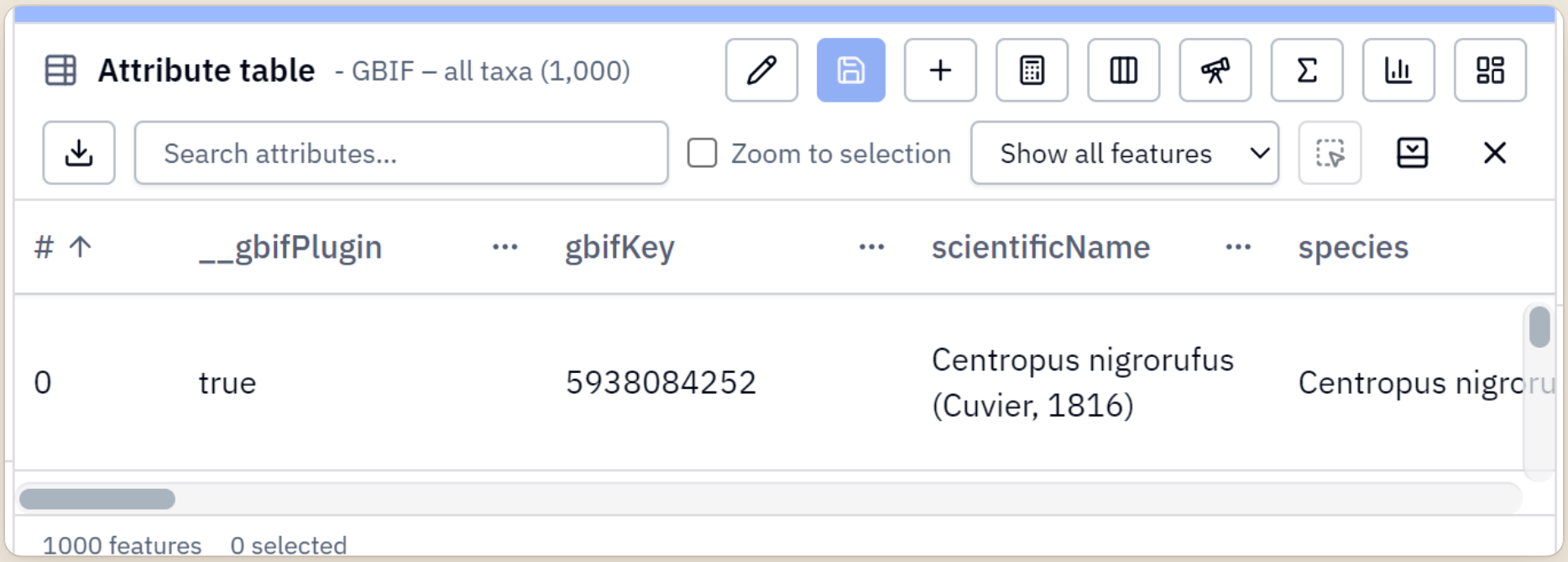
> Sensitive species are often hidden or blurred on purpose to protect them from collection. The plugin never tries to recover withheld coordinates.



Popup of a CR record; photo © Galih Alamsyah, CC BY-NC

The Attribute Table and Columns

The points layer is an ordinary GeoLibre GeoJSON layer. Open its ⋯ menu → **Open attribute table** to sort, search, select and export the records.



Attribute table of GBIF – all taxa (1,000)

Group	Columns
Identity	`gbifKey` `gbifUrl` `occurrenceID`
Taxon	`scientificName` `species` `taxonRank` `kingdom` … `genus` `taxonKey` `speciesKey`
Event and place	`basisOfRecord` `eventDate` `year` `recordedBy` `country` `countryCode` `stateProvince` `uncertaintyM`
Status	`iucnRedListCategory` `occurrenceStatus`
Ownership	`datasetName` `datasetKey` `datasetUrl` `institutionCode` `publisher` `rightsHolder` `license` `licenseLabel` `accessed`
Photo	`imageCount` `image` `imageCreator` `imageLicense`

> Keep the **ownership** columns whenever you share or export the layer: the GBIF data user agreement requires the identifier of ownership to travel with every record.

Working with the Layer

Because the result is a normal layer, all of GeoLibre's tools apply. The layer's ⋯ menu is the starting point.

Open Style panel
Colour points by `iucnRedListCategory`, `family` or `basisOfRecord`.

Select by expression
For example `uncertaintyM ⩽ 1000` or `year ⩾ 2015`.

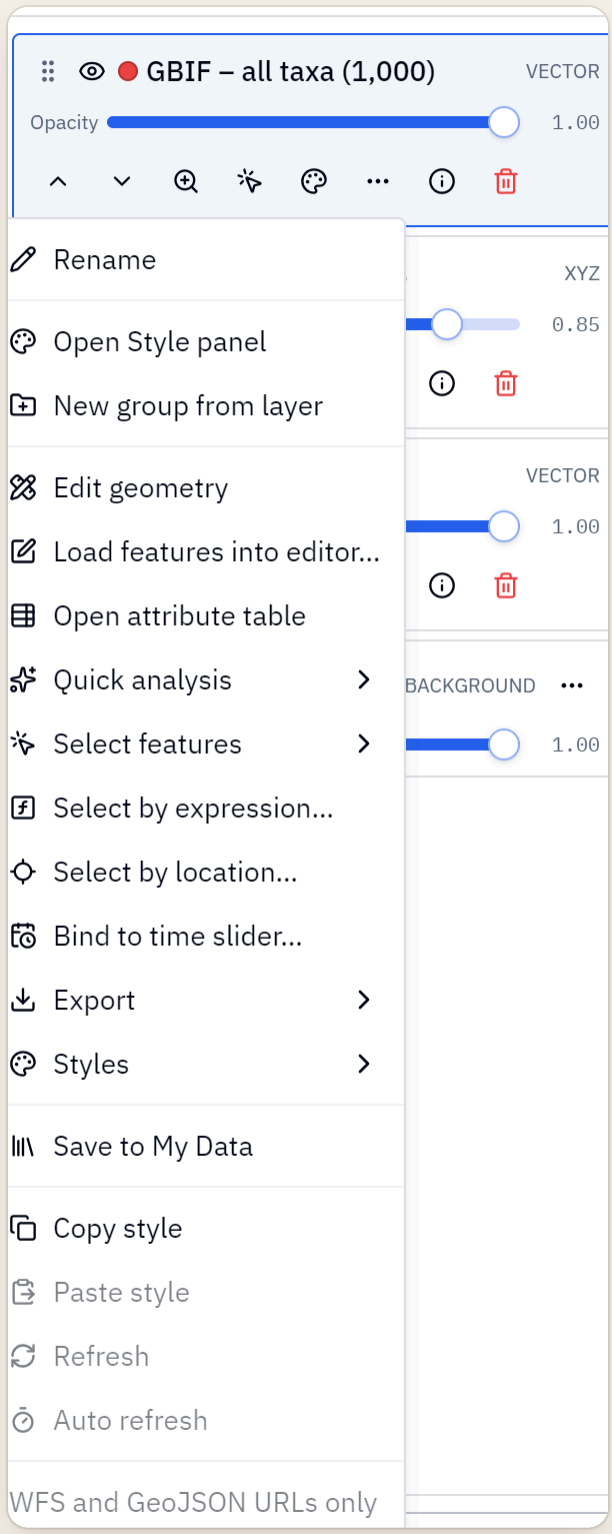
Select by location
Keep only records inside a protected area or concession polygon.

Quick analysis
Counts and charts per column.

Export
GeoJSON, CSV, GeoPackage and other formats; keep the ownership columns.

Layer order and opacity
Move the points above a density layer so they stay visible; density defaults to 0.85 opacity.

> Save the project to keep the layers. Before you publish a map made from them, follow Chapter 6.



The layer ⋯ menu

06

Licences, Citation and GBIF Policy

Four kinds of licence, what you may do with the data, the Cite this data block, two ways to get a DOI, and how the plugin follows GBIF's rules.

Four licences · What you may do · Cite this data · Derived dataset DOI · Download DOI · GBIF compliance

Four Things, Four Licences

Four different things meet in this plugin, and each has its own licence. The MIT License covers **only the plugin code**.

What	Licence	Who sets it
Plugin code (index.js, style.css, plugin.json, documentation)	**MIT** © 2026 Defani Arman Alfitriansyah	the author
Icons inside the plugin (Material Symbols)	Apache-2.0	Google
Occurrence records	CC0 1.0, CC BY 4.0 or CC BY-NC 4.0	each dataset's publisher
Photos and other media	the creator's choice, often stricter	each creator or rights holder
GBIF Backbone Taxonomy	CC BY 4.0 · doi.org/10.15468/39omei	GBIF Secretariat
Density tiles	follow the licences of the records they summarise	GBIF and publishers
GeoLibre · MapLibre GL JS · basemaps	MIT · BSD-3-Clause · their own terms	provided by the host

You want to...	CC0 data	CC BY data	CC BY-NC data	Photos
Use it in a study or government report	✓ cite	✓ cite	✓ cite	check licence, credit
Publish a map in a paper	✓ cite	✓ cite	✓ cite	check licence
Use it in paid consulting work	✓ cite	✓ cite	ask the publisher	check licence
Sell the data or a product built on it	✓ cite	✓ cite	✗	usually ✗

> A guide, not legal advice: the licence texts and the publisher's terms decide. If you are unsure whether a use is commercial, GBIF asks you to act in good faith and contact the publisher.

The Cite This Data Block

Search results have no DOI of their own. The **Cite this data** block in the results card prepares everything you need to get one.

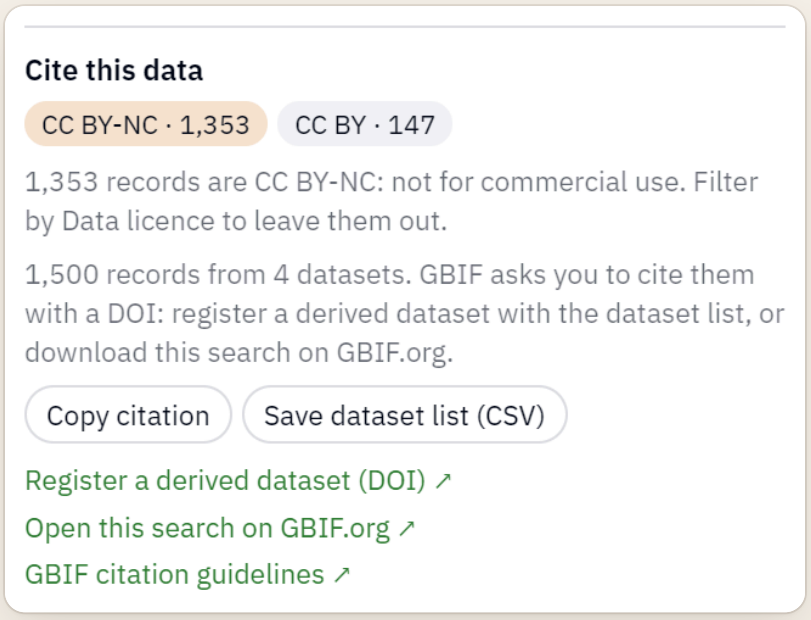
Licence chips
Records per licence, e.g. **CC BY-NC · 1,353**, **CC BY · 147**, with a warning when some are non-commercial.

Dataset count
1,500 records from 4 datasets: the datasets you must credit.

Copy citation
Copies a ready citation text (below). The button briefly reads **Copied ✓**.

Save dataset list (CSV)
Saves `gbif-datasets-DATE.csv`: one `datasetKey,count` per line, no header, the format of GBIF's derived-dataset form.

Links
Register a derived dataset (DOI), **Open this search on GBIF.org**, **GBIF citation guidelines**.



Cite this data

```
// text placed on the clipboard by Copy citation (shortened)
GBIF.org (29 October 2026) GBIF Occurrence Data, 1,500 records accessed via the GBIF occurrence
search API:
https://api.gbif.org/v1/occurrence/search?taxonKey=212&decimalLatitude=…

Source datasets (datasetKey, records, title), 4 in all:
50c9509d-22c7-4a22-a47d-8c48425ef4a7   1353   iNaturalist research-grade observations
…
Register these as a derived dataset to get a DOI to cite: https://www.gbif.org/derived-
dataset/register
```

Option A · Register a Derived Dataset

A **derived dataset** cites exactly the records you used. GBIF gives it a DOI that credits every source dataset.

1. In **Cite this data**, click **Save dataset list (CSV)**. You get `datasetKey,count` lines with no header.
2. Deposit the data you used somewhere public and persistent, for example Zenodo, an institutional repository or a data paper supplement. GBIF asks for its URL.
3. Sign in at GBIF.org and open **Derived datasets → Register** (the **Register a derived dataset (DOI)** link).
4. Give a title and a description of how you prepared the data (area, filters, date of access, any cleaning), add the URL, and upload or paste the dataset list.
5. GBIF assigns a DOI such as `10.15468/dd.xxxxxx`. Cite that DOI in your report, paper or map.

> Use Option A when you used only what the plugin fetched, for example 1,500 bird records for a site report.

Option B · A GBIF.org Download, and Citation Formats

A **download** is a snapshot of the whole search, any size, with its own DOI. Use it for big or repeatable extractions, or more than 5,000 records.

1. Click **Open this search on GBIF.org.** The same filters open on the GBIF website.
2. Check the filters there, sign in and request a download (simple CSV or Darwin Core Archive).
3. GBIF e-mails you a link and a citation with a DOI.

What you cite	Example reference (adapt to your journal's style)
Derived dataset	GBIF.org (2026) Filtered export of GBIF occurrence data. https://doi.org/10.15468/dd.xxxxxx
Download	GBIF.org (29 October 2026) GBIF Occurrence Download. https://doi.org/10.15468/dl.xxxxxx
A single record	The citation at the bottom of its GBIF.org occurrence page.
Taxon matching	GBIF Secretariat. GBIF Backbone Taxonomy. https://doi.org/10.15468/39omei
The plugin	Alfitriansyah, D. A. (2026). GBIF Data: a GeoLibre plugin (v1.1.0). https://github.com/Defani/GBIF-Data

> Also: keep the ownership columns, respect each record's and each photo's licence, and credit photo creators when you reuse images.

How the Plugin Follows GBIF's Rules

The plugin was reviewed against GBIF's data user agreement, terms of use, citation guidelines and API documentation. The main requirements and how they are met:

GBIF requirement	How the plugin meets it
Keep the identifier of ownership with every record	Dataset, publisher, institution, licence, GBIF key and access date on every feature
Cite the data publishers, with a DOI where possible	Cite this data block: citation text, dataset CSV, links to derived datasets and downloads
Comply with each licence; the publisher's licence prevails	Licence in every popup and feature; counts and a non-commercial warning; licence filter
Media have their own licences; credit the creator	Photo: © creator · licence under every photo
Use the image API for display	Thumbnails from GBIF's occurrence image cache, one per popup, only on click
Do not disrupt the API; slow down on HTTP 429	Pages ≤ 300, ~200 ms apart, 5,000 cap, debounced counter, back-off 3 s then 8 s
The website is not an API	Only api.gbif.org is called; GBIF.org links are opened by you
No guarantee of data quality	Credit line with disclaimer; Drop geospatial issues on by default
Respect sensitive data	Only public API results; generalised coordinates are never recovered
Do not imply endorsement	Independent-plugin statement in the panel, catalog and docs; no GBIF logo

> One recommendation cannot be met from inside a browser: GBIF suggests apps send a User-Agent header with a contact URL, but browsers do not let page scripts set it. The conservative limits above compensate.

07

Recipes, Troubleshooting and Closing

Ready-made settings for common tasks, fixes for common problems, theming, the licence of this guide, and references.

Recipes · Troubleshooting · Light and dark · Checklist · Guide licence · References

Recipes

Ready-made settings for common forestry, conservation and research tasks.

Goal	Settings
Threatened species around a planned activity	Area **Map view** or **Layer** · Quality IUCN **CR, EN, VU** · Points
Threatened mammals in a province	Area **Layer** (province boundary) · Taxon **Mammalia** · IUCN **CR, EN, VU**
Herbarium records of a genus before a field survey	Taxon: search the genus · Record type **Preserved specimen**
Recent bird sightings with precise locations	Taxon **Aves** · Time **Last 5 yr** · Uncertainty **≤ 1 km**
Everything known for one species, worldwide	Area **World** · Taxon the species · Output **Density** or **Both**
Camera-trap records of a project	More filters **Dataset key** · Record type **Machine observation**
Data for commercial consulting	Data licence **CC0** and **CC BY** only
Photo-verified records for teaching	Quality **Only records with photos** · Record type **Human observation**
Mangrove-related records on a coast	Area **Map view** · Keyword **mangrove**

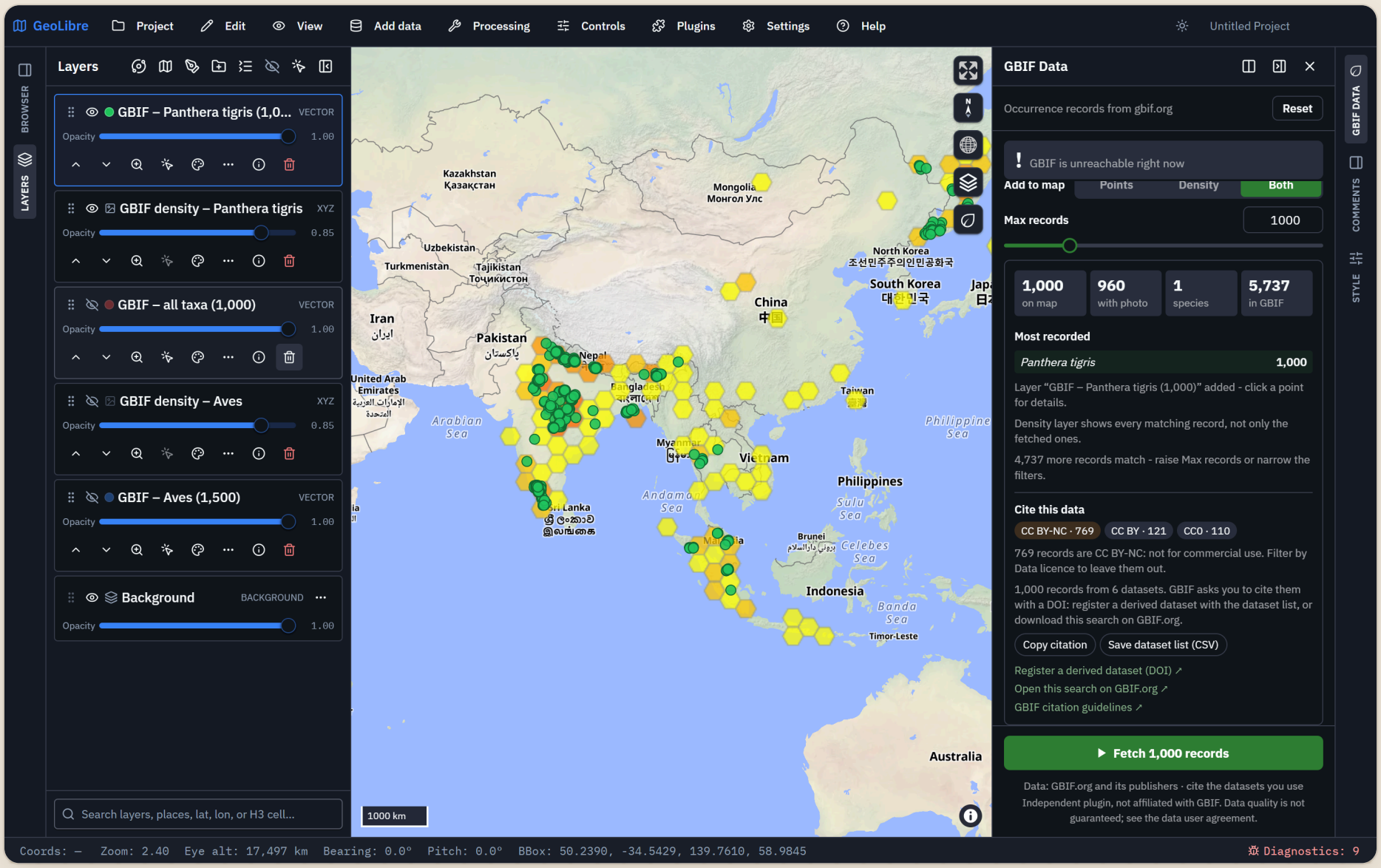
Troubleshooting

The most common problems and their fixes.

Symptom	Cause and fix
No leaf button	Activate the plugin (Plugins → Installed → GBIF Data); switch the renderer to MapLibre (2D or globe).
Counter shows —	The filters are incomplete, e.g. World without a taxon, dataset, recorder, institution or keyword.
Counter shows !	GBIF is unreachable or asks to slow down. Check the connection; wait a few minutes.
"That layer has no vector features..."	Pick a vector layer; tile and raster layers have no extent to read.
"GBIF is rate-limiting requests"	Wait, lower Max records, or use a GBIF.org download.
Could not fetch records: Failed to fetch	Network interruption during paging. Try again; nothing was added.
Popup has no photo	The image is not in GBIF's cache yet, or the publisher's server is unavailable.
Density layer hides points	Move the points layer above it in the Layers panel.
Copy citation says Copy failed	The webview blocks the clipboard; use Save dataset list (CSV) and the GBIF.org links.
Points far from where expected	Check `uncertaintyM`: large values mean generalised locations.

Light and Dark Mode

The panel takes every colour from GeoLibre: light or dark mode and the accent chosen in **Settings → Appearance**. It measures the live colours and keeps all text at **WCAG AA** contrast (4.5:1) for any accent.



Step numbers
Sit in an accent-coloured disc; a step with a filter set gets a ring (black in light mode, white in dark mode).

Fixed colours
Only the official IUCN Red List colours stay the same in every theme.

Checklist Before You Publish

Run through this list before a report, paper, poster or web map that uses GBIF-mediated data leaves your desk.

- ✓ Filters recorded (area, taxon, time, quality)
- ✓ Access date recorded
- ✓ Record licences checked
- ✓ No CC BY-NC data in commercial work
- ✓ Photo licences checked, creators credited
- ✓ Ownership columns kept in shared files
- ✓ Uncertainty suits the map scale
- ✓ Sensitive species not exposed
- ✓ Absence of points not read as absence of species
- ✓ Derived dataset or download DOI obtained
- ✓ DOI cited in the text and map credit
- ✓ Backbone Taxonomy cited if used

A short map credit that works: **Occurrence data: GBIF.org and its data publishers, https://doi.org/10.15468/dd.xxxxxx, accessed 29 October 2026.**

Licence of This Guide and Image Credits

This guide follows the same policy as the plugin: each part keeps the licence of its owner.

This guide (text, layout, diagrams)
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The plugin code
MIT License, github.com/Defani/GBIF-Data. Material Symbols icon paths: Apache-2.0, Google.

Occurrence data in the screenshots
GBIF.org and its data publishers, accessed 29 October 2026, mainly *iNaturalist research-grade observations* (CC BY-NC 4.0) and other datasets under CC BY 4.0 and CC0. Shown for illustration only.

Photos in the screenshots
© ko25ra_k08 (CC BY-NC), © Galih Alamsyah (CC BY-NC) and © jj (CC BY-NC), via iNaturalist and the GBIF image cache.

Basemaps
GeoLibre default basemaps; map data © OpenStreetMap contributors (ODbL), tiles © OpenFreeMap / OpenMapTiles.

Software
GeoLibre (MIT) and MapLibre GL JS (BSD-3-Clause). IUCN category colours follow the IUCN Red List.

> GBIF, IUCN, GeoLibre and other names are used only to identify sources. No endorsement by any of them is implied.

Closing Words

Thank you for reading to the end. Every point on a GBIF map stands for a person who looked carefully and an institution that chose to share. I hope this guide helps you use their work well, and give them the credit they deserve.

GBIF Data is an open project. The source code, releases and documentation are on GitHub. If you find a bug or have an idea, please open an *issue* or send a *pull request*; every piece of feedback, however small, makes the plugin better for the next forester or researcher.

github.com/Defani/GBIF-Data
Source code, releases, usage, licensing and GBIF-compliance docs · MIT License

Install
plugins.geolibre.app/catalog/geolibre-gbif-data → Open in GeoLibre, or Manage plugins → search GBIF.

Report a bug or an idea
github.com/Defani/GBIF-Data/issues

Cite this guide
Alfitriansyah, D. A. (2026). *GBIF Data for GeoLibre: Complete Guide* (English edition, plugin v1.1.0). CC BY-NC 4.0.

Happy mapping,

Defani Arman Alfitriansyah
PLUGIN DEVELOPER · FORESTER

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Software, services and datasets behind the screenshots, and further reading on biodiversity data.

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