

Biodiversity Viewer

an open tool for data-driven policy,
making Ukrainian GBIF data work

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Ukraine: from zero biodiversity records to data-driven policy

Until five years ago there were only very few biodiversity data records about Ukraine in GBIF. A project led by The Habitat Foundation in 2018-2019 put Ukraine on the map by publishing various datasets and by having iNaturalist translated into Ukrainian. Over one million records were added to GBIF. The team in Ukraine continued to digitize and publish data. In 2024, the number of Ukrainian occurrence records in GBIF is more than 2.6 million.

To enable authorities, scientists, conservationists, developers, and citizens of Ukraine to make use of all these data, the Ukrainian Nature Conservation Group (UNCG) created a tool: Biodiversity Viewer.

Biodiversity Viewer provides quick and convenient access to occurrence data of protected species under Ukrainian and EU legislation, drawing data directly from the ever-growing GBIF data repository.

Biodiversity Viewer is the Ukrainian tool to assist governance to move further towards a data-driven policy.

Technical details

Biodiversity Viewer is a **Shiny** web application, running R scripts on a backend. The primary tools used are the *rgbif* R package to communicate with the GBIF API and R packages for geocomputations and mapping (*sf*, *sp*, *baseMapR*, *leaflet* and others).

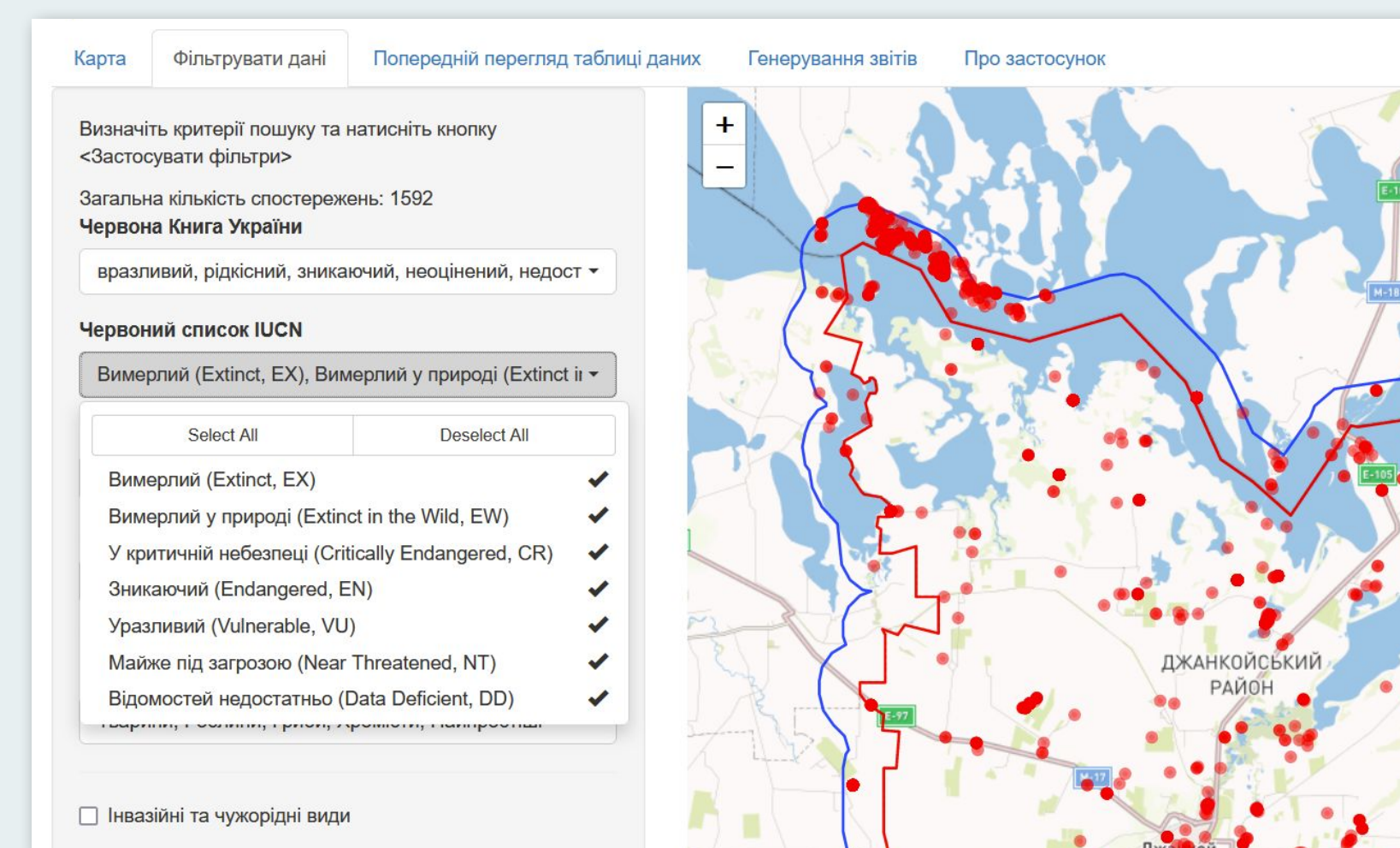
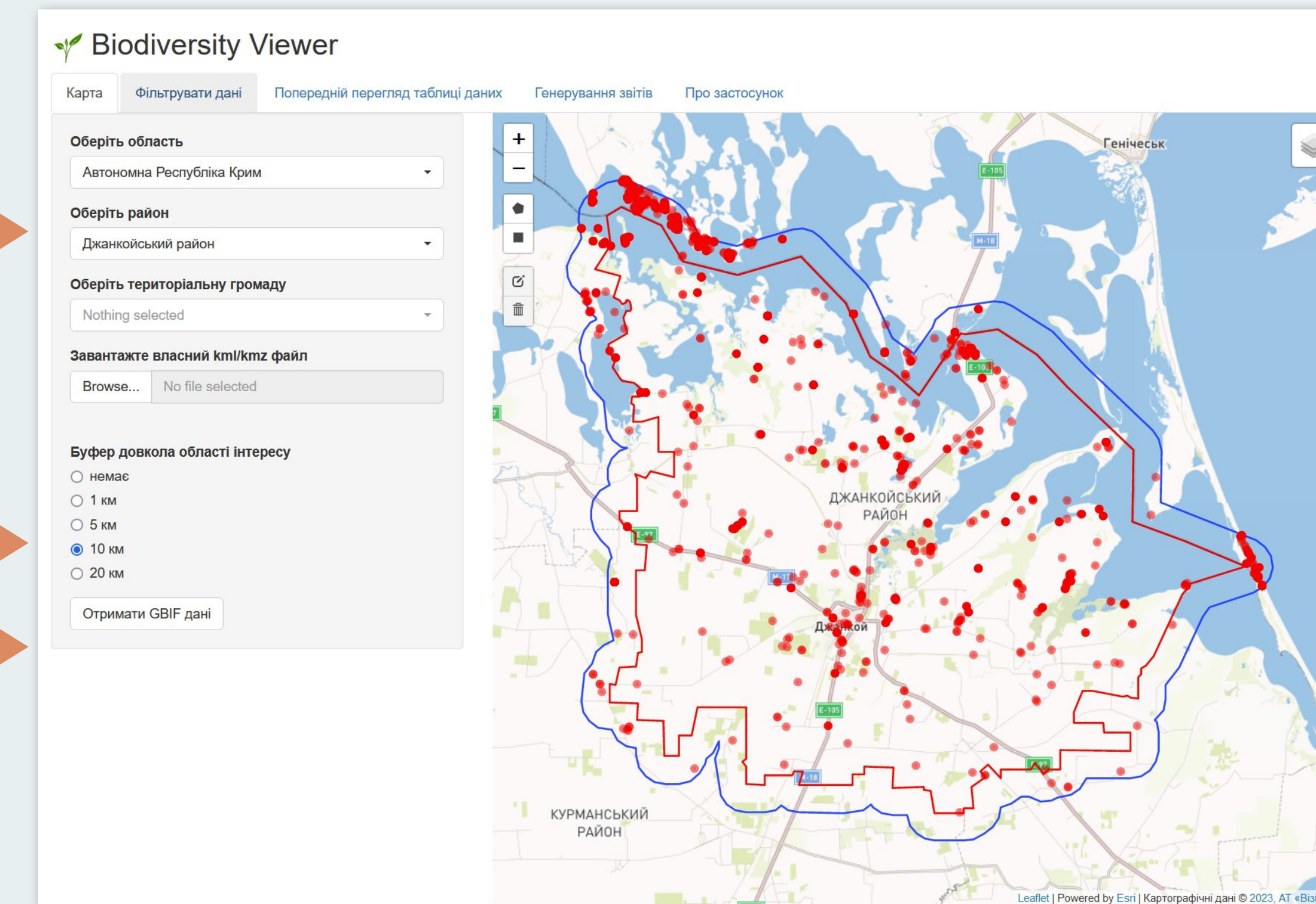
The software is open source and distributed under the Creative Commons Attribution (CC BY 4.0) licence, so others can deploy it on their own server or local computer and modify or adapt it for any other country in the world.

GitHub repository:
github.com/ABiatov/gbif_shiny_onlineviewer.git

How does it work?

Go to: uncg.org.ua/biodiversity-viewer

- 1 Define a **region of interest**:
 - choose an administrative region (various levels: province, municipality, region)
 - or draw a polygon on the map
 - or uploaded your own kml/kmz file.
- 2 Choose a **buffer distance** if desired.
- 3 Hit the **Retrieve GBIF data** button to extract the requested biodiversity data from GBIF. All available occurrence records will be plotted on the map.



- 4 Filter the records on one or more **conservation statuses** and a taxonomic group if desired.

Biodiversity Viewer is equipped with information on Ukraine's species conservation statuses on three levels:

- **regional: regional red lists**
- **national: the Red Data Book of Ukraine**
- **international: IUCN Red List, Bern and Bonn conventions, AEW, EUROBATS, ACCOBAMS and the EU Bird and Habitats Directives**

- 5 The next tab shows the filtered occurrence records in **tabular** form and with a fast search option. You can download a CSV or XLSX file for further use of the occurrence data.

nameUk	scientificName	year	Latitude	Longitude	kingdom	class	family	URL_record
Журавель сирій	Grus grus (Linnaeus, 1758)	2017	46.14583000000001	34.08248	Animalia	Aves	Gruidae	https://www.gbif.org/occurrence/2028935889
Журавель сирій	Grus grus (Linnaeus, 1758)	2017	46.14631000000001	34.08425	Animalia	Aves	Gruidae	https://www.gbif.org/occurrence/2028927854
Журавель сирій	Grus grus (Linnaeus, 1758)	2017	46.1458	34.08551	Animalia	Aves	Gruidae	https://www.gbif.org/occurrence/2028938216
Журавель сирій	Grus grus (Linnaeus, 1758)	2017	46.1459	34.08577	Animalia	Aves	Gruidae	https://www.gbif.org/occurrence/2028935774
Журавель сирій	Grus grus (Linnaeus, 1758)	2017	46.14587000000001	34.086	Animalia	Aves	Gruidae	https://www.gbif.org/occurrence/2028934906

Категорія	Кількість_записів
Загальна кількість спостережень: 1592	1592
Червона Книга України	71
Червоний список IUCN	19
Бернська конвенція, Директа 2	105
Бернська конвенція, Директа 3	55
Бернська конвенція, Рішення 6	55
Конвенція про іберомагістральні види даних (Боннська конвенція)	87
Рішення про іберомагістральні види даних (Боннська конвенція)	86
Рішення про іберомагістральні види даних (Боннська конвенція)	2
Список рідкісних видів рослинності Європи (EUROBATS)	2
Список рідкісних видів рослинності Європи (EUROBATS)	42

- 6 Go to the next tab: **generate reports**. It will give summary statistics about the selected data, including summaries per conservation status. You can download the report in html or docx format.

Царство	Клас	Родина	Українська_назва	Латинська_назва	Категорія_IUCN
Animalia	Aves	Accipitridae	Лунь степовий	Circus macrogypus (Gmelin, 1771)	NT
Animalia	Aves	Anatidae	Попелюх	Aythya ferina (Linnaeus, 1758)	VU
Animalia	Aves	Anatidae	Чиряк білобока	Aythya nyroca (Guldenstadt, 1770)	NT
Animalia	Aves	Charadriidae	Чапля	Vanellus vanellus (Linnaeus, 1758)	NT
Animalia	Aves	Columbidae	Горлиця звичайна	Streptopelia turtur (Linnaeus, 1758)	VU

Ukraine's Biodiversity Viewer lets you explore millions of species records to see where protected species live. It uses data from GBIF to help users understand and conserve Ukraine's biodiversity.



Launch and usage

Biodiversity Viewer was officially launched on February 12th and 13th, 2024, by the Ukrainian Ministry of Environment. The first day for ministry employees and the second day for anyone interested, such as ecological consultancies, NGOs and citizens. The Ministry recommended the tool to be used in environmental assessments.

Biodiversity Viewer has been used by over 500 users that generated over 1200 reports in total already. Users originate from almost all Ukrainian provinces.



Next steps

- Move the app to a stable server (probably outside Ukraine for stable power supply)
- 'Officialize' the biodiversity data in GBIF from Ukraine.
- Populate the map of Ukraine further with more data on biodiversity via data mobilization and citizen science data on common species as well.
- Further promote Biodiversity Viewer as a tool to support data-driven policy.

Acknowledgements

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