BIODIVERSITY BUILDING BLOCKS FOR POLICY

M10. Interoperability strategy document

30/08/2024

Author(s): Lina M. Estupinan-Suarez, Henrique Pereira, Miguel Fernandez

Funded by the European Union

This project receives funding from the European Union's Horizon Europe Research and Innovation Programme (ID No 101059592). Views and opinions expressed are those of the author(s) only and do not necessarily reflect those of the European Union or the European Commission. Neither the EU nor the EC can be held responsible for them.

Table of contents

Summary 3
List of abbreviations 3
1 Introduction 5
2 Increasing interoperability between GBIF Occurrence Cubes and the EBV Data Portal 6
2.1 From occurrence cubes to EBV cube metrics for the Birds Directive Annex I Species: A 10 km prototype in EU27 6
2.1.1 EBV Cube Overview 7
2.1.2 Methods 7
2.1.3 Notebooks 8
2.2 From occurrence cubes to EBV cube metrics for Invasive Alien Species of Union Concern: A 10 km prototype in EU27 9
2.2.1 EBV Cube Overview 10
2.2.2 Methods 11
2.2.3 Notebooks 11
3 Acknowledgements 12
4 Annex 13

Summary

The Biodiversity Building Blocks for Policy (B3) project aims to enhance the impact and broaden the use of biodiversity information to inform policy making through the provision of clear, informative and reproducible biodiversity analyses. A key aspect of B3 is its commitment to the FAIR principles—Findable, Accessible, Interoperable and Reproducible—which serve as the cornerstone for interoperability. To achieve this goal, we developed a prototype for data mobilisation from the Global Biodiversity Information Facility (GBIF) to the EBV data portal, increasing the interoperability of occurrence cubes under FAIR principles. Both data portals provide a Digital Object Identifier (DOI) that ensures the location and citation of data. Additionally, the EBV Data Cube adheres to the metadata standard of the Climate and Forecast convention and is based on the NetCDF format.

In this milestone, we have worked with two species lists from EU legislation: the Birds Directive (Annex I) and the Invasive Alien Species (IAS) of Union concern. Our aim was to demonstrate data mobilisation between GBIF and the EBV Data Portal. For each legislation we cross-checked the taxonomy and created an occurrence cube through the GBIF API. We also conducted an initial data exploration at different taxonomic levels and over time. Finally, we calculated basic spatial metrics per species, such as the total number of occurrences, the earliest month and the latest month with occurrences in all years, among others. The results were published as spatial metrics in the form of EBV Cubes. To ensure open access to our code, we used GitHub, and prepared notebooks in Rmarkdown, which are available in HTML and PDF formats for easy reproducibility.

In summary, we successfully mobilised data of importance to the EU while providing accessibility to inputs and outputs via open data portals and DOIs. Additionally, all code for data analysis is open and documented, with notebooks published. We strongly believe that our results will foster data mobilisation beyond the B3 project and increase interoperability between biodiversity data formats.

List of abbreviations

B3	Biodiversity Building Blocks for Policy
DOI	Digital Object Identifier
EBV	Essential Biodiversity Variable
EEA	European Environment Agency
ETC BE	European Topic Centre on Biodiversity and Ecosystems
EU	European Union
FAIR	Findable, Accessible, Interoperable and Reproducible
IAS	Invasive Alien Species
GBIF	Global Biodiversity Information Facility
GEOBON	Group of Earth Observation Biodiversity Observation Network

1 Introduction

During the first year of the project, B3 and GBIF successfully launched the first implementation for the generation of occurrence cubes through the GBIF API. The specifications for the occurrence cube allow users to define the desired species, taxonomic levels, data span, spatial uncertainty, source of record, grid type, and other parameters. The resulting occurrence cube is provided in a CSV format that aggregates the species occurrence within each encoded grid cell, with the additional specifications included in adjacent columns. Each occurrence cube is assigned a DOI and can be downloaded from the GBIF website.

Meanwhile, the EBV Data Portal from GEO BON has, in recent years, developed an infrastructure to create[1] and publish[2] the spatial results of biodiversity data analysis. The output of the ebvcube R package is a multidimensional array in NetCDF format. Importantly, it incorporates metadata following the Climate and Forecast metadata standard, which facilitates interoperability with other data sets.

In this milestone, we aim to explore the data mobilization workflow between GBIF occurrence cubes and the EBV Data Portal (Figure 1) to subsequently improve the platform's interoperability. We intend to examine the diversity of the systems, tools, and data cube formats while demonstrating the power of the cubes for data analysis. Ultimately, this will facilitate biodiversity assessments for research and policy-making.

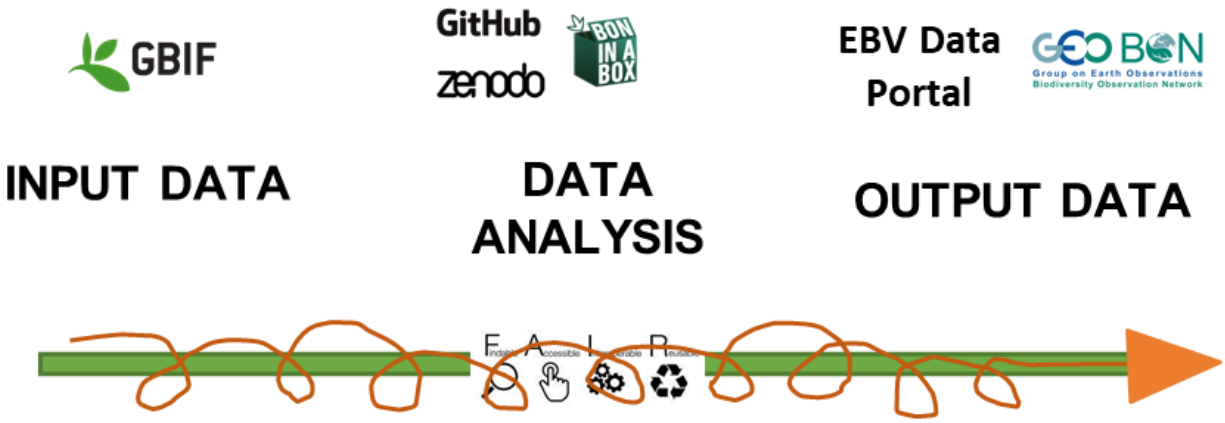


Figure 1: Schema of the main stages of data mobilisation using GBIF occurrence cube and ending at the EBV Data Portal.

[1] https://github.com/LuiseQuoss/ebvcube
[2] https://portal.geobon.org/

2 Increasing interoperability between GBIF Occurrence Cubes and the EBV Data Portal

This section documents the data mobilisation for two of the most important EU biodiversity legislations related to nature: The Birds Directive (Annex I) and the IAS of Union concern. The subsequent sections include an overview of the workflow. Section 2.1 and 2.2 begin with a table with freely accessible links to the corresponding inputs, outputs and code. This is followed by a brief description of the different datasets and methods and some examples of the results.

2.1 From occurrence cubes to EBV cube metrics for the Birds Directive Annex I Species: A 10 km prototype in EU27

This workflow focused on GBIF occurrences of 193 species listed in Annex I of the Birds Directive and subject to special conservation measures. Table 1 includes the web portals and repositories used in our workflow accompanied by the DOIs and links to access the input and output data, as well as the scripts.

Table 1: Open access details of the inputs, outputs and code used in the mobilisation of data and metrics for Annex I of the Birds Directive.

Open access dad portal/repository	DOI/URL	Description
GBIF Occurrence cube	10.15468/dl.m4694q	JSON query specifications for cube generation Occurrence cube as CSV link
GEO BON EBV Data Portal	10.25829/mbw554	Metrics: • Total number of occurrences • Earliest month with occurrences across all years • Latest month with occurrences across all years • Month with the highest total number of occurrences across all years • Month with the second-highest total number of occurrences across all years • Month with the third-highest total number of occurrences across all years
zenodo GitHub repository and Zendono DOI	https://github.com/EBVcube/B-Cubed_data_mobilisation DOI:10.5281/zenodo.13798783	Notebooks for all data mobilisation steps in R (see section 2.3)

2.1.1 EBV Cube Overview

The scientific names listed in the Annex I of the Birds Directive were cross-referenced with the GBIF backbone taxonomy. Using the GBIF accepted names and the EEA spatial grid at a 10 km resolution, we generated the occurrence cube via the GBIF API in R (DOI: 10.15468/dl.43ydtq). A total of 168 species met the criteria for inclusion in the cube.

The following preliminary occurrence metrics were calculated for each grid cell in the cube:

- Total number of occurrences
- Earliest month with occurrences across all years
- Latest month with occurrences across all years
- Month with the highest total number of occurrences across all years
- Month with the second-highest total number of occurrences across all years
- Month with the third-highest total number of occurrences across all years

2.1.2 Methods

These are the general steps to calculate the metrics of species listed in the Annex I of the Birds Directive:

1. The scientific name of species in the Annex I was matched against the GBIF backbone taxonomy to obtain the accepted scientific name in GBIF and the corresponding acceptedSpeciesKey.
2. A JSON query was prepared for the corresponding species. The acceptedSpeciesKey was used as speciesKey for all records available until 2024 and with a coordinate uncertainty of 10000 m. The complete query specifications are available at https://doi.org/10.15468/dl.43ydtq.
3. Using the species occurrence cube software developed by B3 and GBIF[3], we created species occurrence cubes in a CSV format matching the EEA grid at 10 Km.
4. We loaded the CSV occurrence cubes using the b3gbi library in R, and calculated the following metrics:
    - Total number of occurrences
    - Earliest month with occurrences across all years
    - Latest month with occurrences across all years
    - Month with the highest total number of occurrences across all years
    - Month with the second-highest total number of occurrences across all years
    - Month with the third-highest total number of occurrences across all years
5. After rasterization of the metrics, data was converted to the EBVCube format using the ebvcube package[4] in R.

All scripts used R language and are available at GitHub[5].

[3] https://techdocs.gbif.org/en/data-use/data-cubes
[4] https://github.com/LuiseQuoss/ebvcube
[5] https://github.com/EBVcube/B-Cubed_data_mobilization

2.1.3 Notebooks

Notebooks were designed to illustrate all steps of data mobilisation. They include the pre-processing phase, occurrence cube generation, data exploration, metrics calculation and EBV cube creation. The notebooks were written in Rmarkdown and available on GitHub as Rmd, HTML and PDF (Table 2).

Table 2. Data Mobilisation Notebooks from GBIF to the EBV Data Portal for the Birds Directive Annex I.

Title/Subtitle	File name
Pre-processing notebook - Harmonisation of species keys for the JSON query of species listed in the Annex I of the Birds Directive*	00_preparing_specieskey.Rmd
Notebook 01 - Prototype for creating a occurrence cube of birds listed in the Annex I of the Birds Directive	01_birds_create_occurrence_cubes.Rmd
Notebook 02 - Data exploration of species listed in the Birds Directive Annex I	02_birds_annex1_data_exploration
Notebook 03 - Calculation of Metrics for the Birds Directive Annex I Using Occurrence Cubes (Part I)	03_birds_annex1_computing_metrics_1_2_3.Rmd
Notebook 04 - Calculation of Metrics for the Birds Directive Annex I Using Occurrence Cubes (Part II)	04_birds_annex1_computing_metrics_4_5_6.Rmd
Notebook 05 - Creation of the EBV NetCDF for the Birds Directive occurrences cube metrics	05_birds_metrics2ebvcube.Rmd

** Preprocessing notebook*

Figure 3 shows some examples of the data exploration and metrics computation notebooks. Figure 3a shows the increasing amount of data for all species in the list, while Figure 3b shows only for the five species with the highest number of records. In addition, Figures 3c and 3d show two metrics for *Circus pygargus* (Montagu's Harrier). The first metric is the total number of occurrences over time and the second is the earliest month of GBIF records in all years.

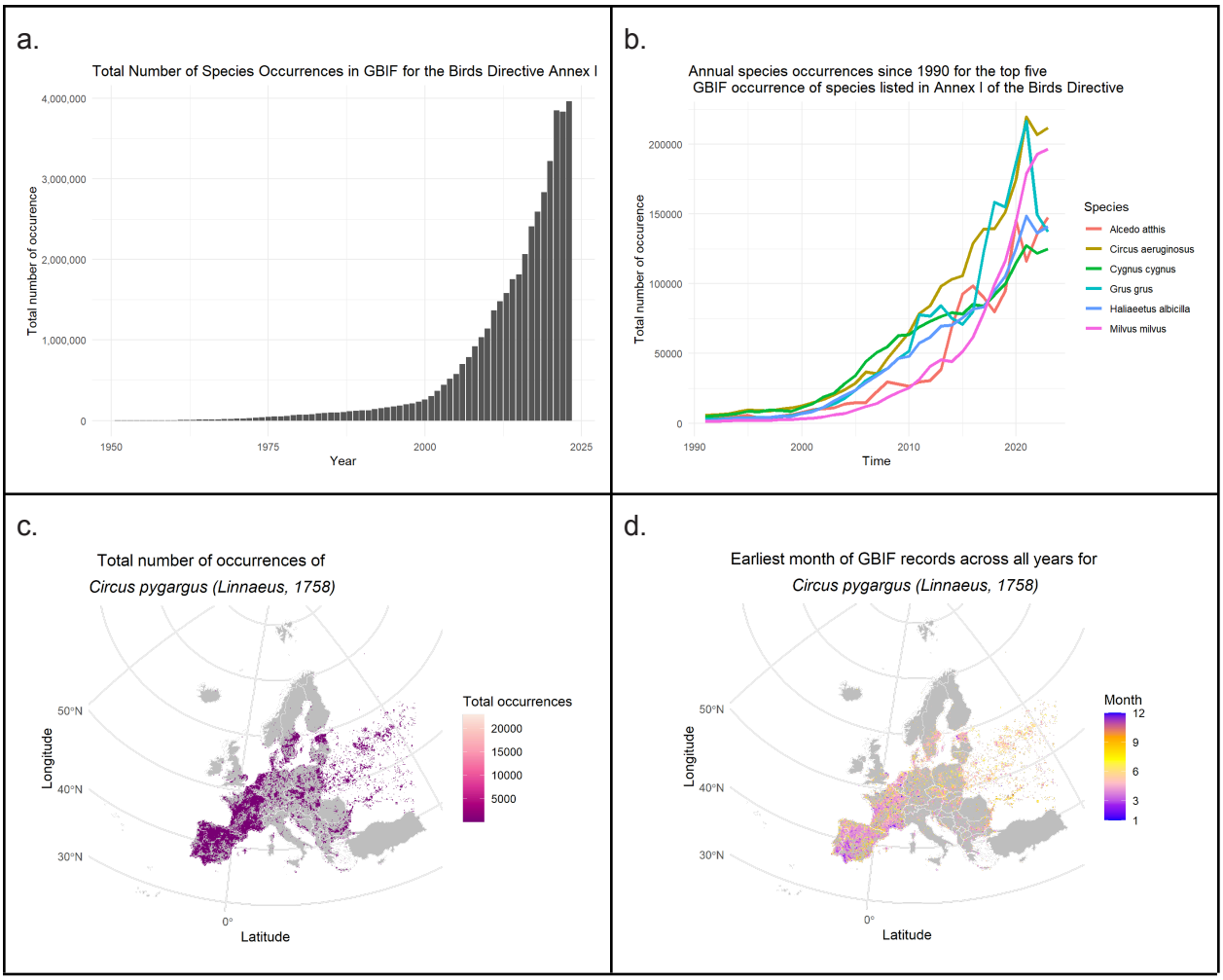


Figure 3. Examples of figures from the data exploration and metrics computation of the Birds Directive Annex I. a. Annual number of occurrences over time since 1900 for all species and b. Annual occurrence for species with the highest occurrence since 1990 (Notebook 2). Metrics of (c.) the total number of occurrences of *Circus pygargus* (waterweed) per pixel and (d.) the earliest month of records across all years for the same species (Notebook 3).

2.2 From occurrence cubes to EBV cube metrics for Invasive Alien Species of Union Concern: A 10 km prototype in EU27

This data workflow focused on GBIF occurrences of species listed under Regulation (EU) 1143/2014 on invasive alien species (IAS). Table 3 summarises the data portals and repositories used for the data mobilisation, and it also includes the DOIs and links to access the input and output data, as well as the code.

Table 3: Open access details of the inputs, outputs and code used in the mobilisation of data and metrics for the Invasive Alien Species of Union Concern.

Open access data portals /repositories	DOI/URL	Description
GBIF Occurrence cube	10.15468/dl.m4694q	JSON query specifications for cube generation Occurrence cube as CSV link
GEO BON EBV Data Portal	10.25829/w0vf54	Metrics: • Total number of occurrences • Earliest date of occurrences • Latest date of occurrences • Basis of record for the earliest date of occurrences • Basis of record for the latest date of occurrences
zenodo GitHub repository and Zendono DOI	https://github.com/EBVcube/B-Cubed_data_mobilisation DOI:10.5281/zenodo.13798783	Notebooks for all data mobilisation steps in R (see section 2.3)

2.2.1 EBV Cube Overview

The IAS list, adopted in 2016 and updated in 2017, 2019, and 2022, currently includes 88 species subject to strict environmental restrictions. For this study, we used the most recent IAS list from the European Topic Centre on Biodiversity and Ecosystems (ETC BE) and the European Environment Agency (EEA) as of June 2024. We matched these species' scientific names with the GBIF backbone taxonomy to obtain the accepted GBIF names and species keys.

Using the GBIF API in R, we generated CSV cubes of species occurrences, applying the EEA spatial grid at a 10 km resolution. Monthly occurrence data were collected for 77 species, and the following metrics were calculated for each grid cell in the cube:

- Total number of occurrences
- Earliest date of occurrences
- Latest date of occurrences
- Basis of record for the earliest date of occurrences
- Basis of record for the latest date of occurrences

2.2.2 Methods

These are the general steps to calculate the metrics of IAS of union concern based on GBIF records:

1. The field Currently valid full name from the latest IAS list by ETC in June 2024 was matched against the GBIF backbone taxonomy using the Species matching tool[6]. Thus, we obtained the accepted scientific name in GBIF and the corresponding species key. All names had an EXACT match, but four of them were considered SYNONYMS. We replaced all four SYNONYMS with the corresponding ACCEPTED scientific name and species key.

2. Using the Species occurrence cubes software developed by B3 and GBIF[7], we created species occurrence cubes in a CSV format matching the EEA grid at 10 Km for records available from 1900 until mid June 2024. The query is in a JSON file and available at GitHub as well as the R script to submit the JSON query using GBIF API. Importantly only records for 77 species were found.

3. We loaded the CSV occurrence cubes using the b3gbi library, and calculated the following metrics: total number of occurrences, earliest date of records, latest date of records, basis of record of the earliest date, and basis of records of the latest date.

4. After rasterization of the metrics, data was converted to the EBVCube format.

Steps 2 to 5 were conducted in R. All scripts are available on GitHub.

2.2.3 Notebooks

These notebooks were designed to illustrate all steps of the data mobilisation. They were written in Rmarkdown and are available as HTML and PDF in GitHub as well as the original code (Rmd).
The notebooks are listed in Table 4.

Table 4. Data Mobilisation Notebooks from GBIF to the EBV Data Portal for IAS of Union Concern.

Title/Subtitle	File name

[6] https://www.gbif.org/tools/species-lookup
[7] https://techdocs.gbif.org/en/data-use/data-cubes

Inputs for occurrence cubes rasterisation using the 10 Km EEA vector grid*	00_eeagrid10km_to_centroids.Rmd
Notebook 01 - Prototype for creating a occurrence cube of IAS	01_ias_create_occurrence_cubes.Rmd
Notebook 02 - Data exploration of the IAS occurrence cube	02_ias_data_exploration.Rmd
Notebook 03 - Metrics computation for the IAS occurrences cube	03_ias_computing_metrics_cubes.Rmd
Notebook 04 - Creation of the EBV NetCDF for the IAS occurrences cube metrics	04_ias_metrics2ebvcube.Rmd

** Preprocessing notebook*

Some examples of data exploration and calculation of metrics are shown in Figure 4. Thus, we observe the annual number of occurrences of all species since 1900 (Figure 4a), as well as the occurrences of the five species with the highest number of records since 1990 (Figure 4b). Furthermore, two spatial metrics of *Elodea nuttallii* (waterweed) are shown. Figure 4c shows the total number of occurrences per pixel, while Figure 4 corresponds to the earliest date of records.

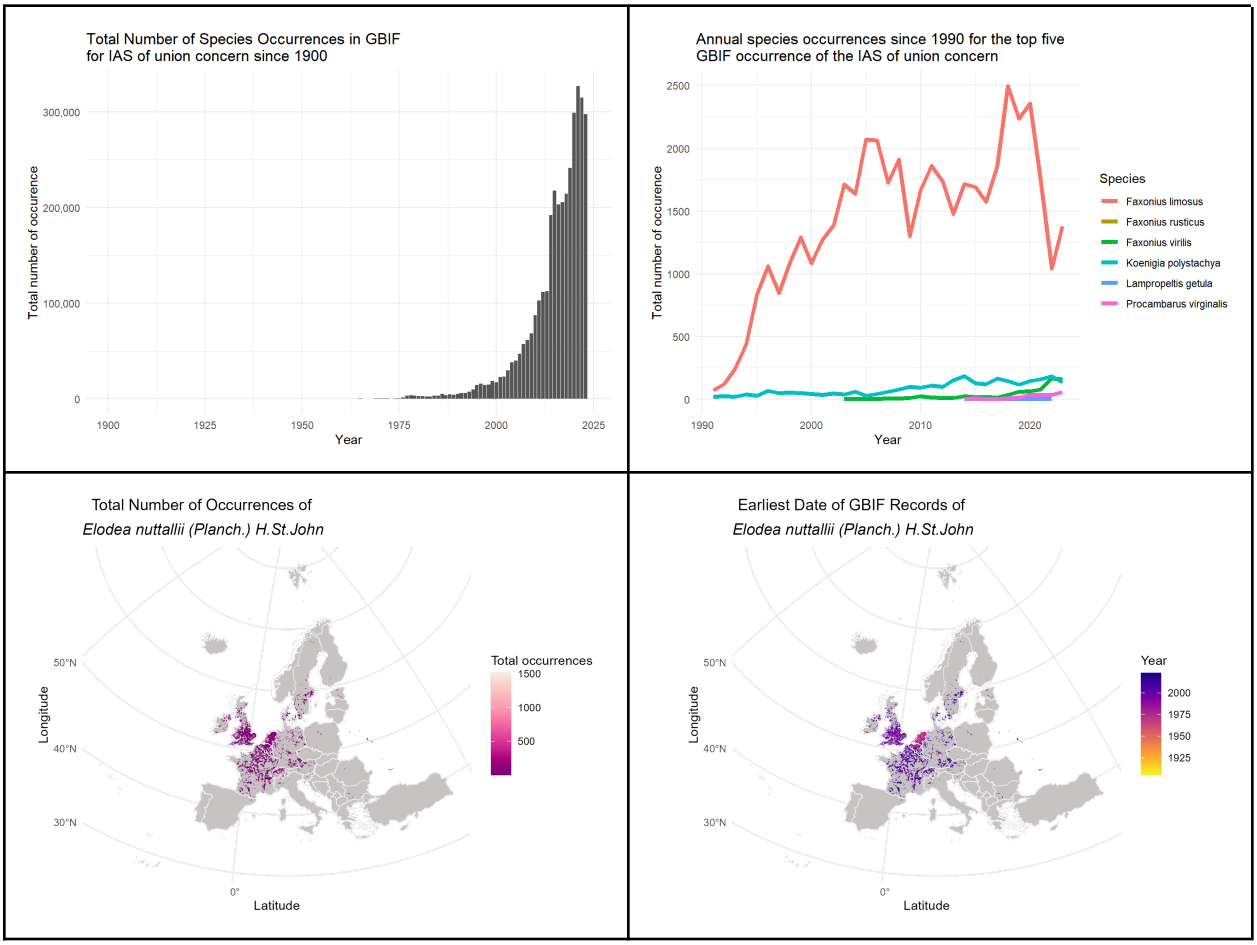


Figure 3. Examples of figures from the data exploration and metrics computation of the IAS of union concern. Upper row: Total number of occurrences over time (Notebook 2) . Bottom row: Metrics for *Elodea nuttallii* (waterweed)(Notebooks 3 and 4).

3 Acknowledgements

Special thanks to Emmanuel Oceguera and Luise Quoss for their support in defining the metric specifications and publishing the datasets. We thank Adriana Dechia and PENSOFT for editorial comments on the first notebooks draft, and Matthew Blissett and GBIF Helpdesk staff for assistance creating the JSON queries.

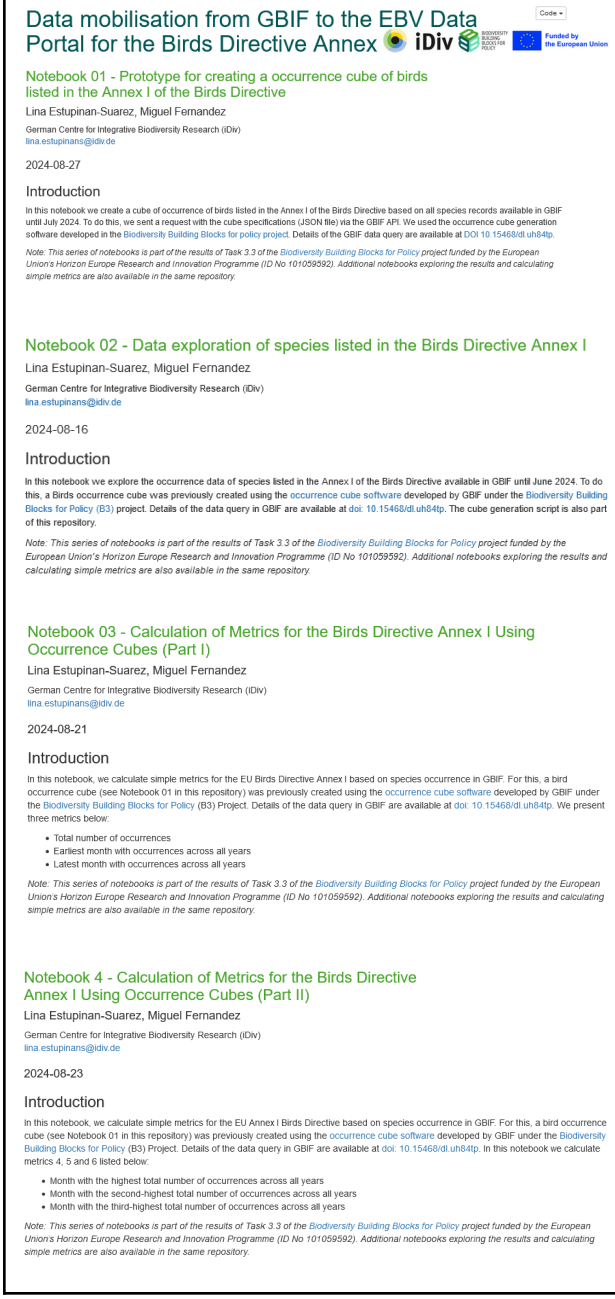
4 Annex

Annexes are available online at https://github.com/EBVcube/B-Cubed_data_mobilisation

Table A1. Images of the notebooks headers.

Notebooks for the Birds Directive Annex I

https://github.com/EBVcube/B-Cubed_data_mobilisation/tree/a0b031128c03e91b83619448844ec75ce5d29fbc/scripts/Rmd/birds



Data mobilisation from GBIF to the EBV Data Portal for the Birds Directive Annex

Code

iDiv

Funded by the European Union

Notebook 01 - Prototype for creating a occurrence cube of birds listed in the Annex I of the Birds Directive

Lina Estupinan-Suarez, Miguel Fernandez

German Centre for Integrative Biodiversity Research (iDiv)
lina.estupinans@idiv.de

2024-08-27

Introduction

In this notebook we create a cube of occurrence of birds listed in the Annex I of the Birds Directive based on all species records available in GBIF until July 2024. To do this, we sent a request with the cube specifications (JSON file) via the GBIF API. We used the occurrence cube generation software developed in the Biodiversity Building Blocks for policy project. Details of the GBIF data query are available at DOI 10.15468/dl.uh84tp.

Note: This series of notebooks is part of the results of Task 3.3 of the Biodiversity Building Blocks for Policy project funded by the European Union's Horizon Europe Research and Innovation Programme (ID No 101059592). Additional notebooks exploring the results and calculating simple metrics are also available in the same repository.

Notebook 02 - Data exploration of species listed in the Birds Directive Annex I

Lina Estupinan-Suarez, Miguel Fernandez

German Centre for Integrative Biodiversity Research (iDiv)
lina.estupinans@idiv.de

2024-08-16

Introduction

In this notebook we explore the occurrence data of species listed in the Annex I of the Birds Directive available in GBIF until June 2024. To do this, a Birds occurrence cube was previously created using the occurrence cube software developed by GBIF under the Biodiversity Building Blocks for Policy (B3) project. Details of the data query in GBIF are available at doi: 10.15468/dl.uh84tp. The cube generation script is also part of this repository.

Note: This series of notebooks is part of the results of Task 3.3 of the Biodiversity Building Blocks for Policy project funded by the European Union's Horizon Europe Research and Innovation Programme (ID No 101059592). Additional notebooks exploring the results and calculating simple metrics are also available in the same repository.

Notebook 03 - Calculation of Metrics for the Birds Directive Annex I Using Occurrence Cubes (Part I)

Lina Estupinan-Suarez, Miguel Fernandez

German Centre for Integrative Biodiversity Research (iDiv)
lina.estupinans@idiv.de

2024-08-21

Introduction

In this notebook, we calculate simple metrics for the EU Birds Directive Annex I based on species occurrence in GBIF. For this, a bird occurrence cube (see Notebook 01 in this repository) was previously created using the occurrence cube software developed by GBIF under the Biodiversity Building Blocks for Policy (B3) Project. Details of the data query in GBIF are available at doi: 10.15468/dl.uh84tp. We present three metrics below:

- Total number of occurrences
- Earliest month with occurrences across all years
- Latest month with occurrences across all years

Note: This series of notebooks is part of the results of Task 3.3 of the Biodiversity Building Blocks for Policy project funded by the European Union's Horizon Europe Research and Innovation Programme (ID No 101059592). Additional notebooks exploring the results and calculating simple metrics are also available in the same repository.

Notebook 4 - Calculation of Metrics for the Birds Directive Annex I Using Occurrence Cubes (Part II)

Lina Estupinan-Suarez, Miguel Fernandez

German Centre for Integrative Biodiversity Research (iDiv)
lina.estupinans@idiv.de

2024-08-23

Introduction

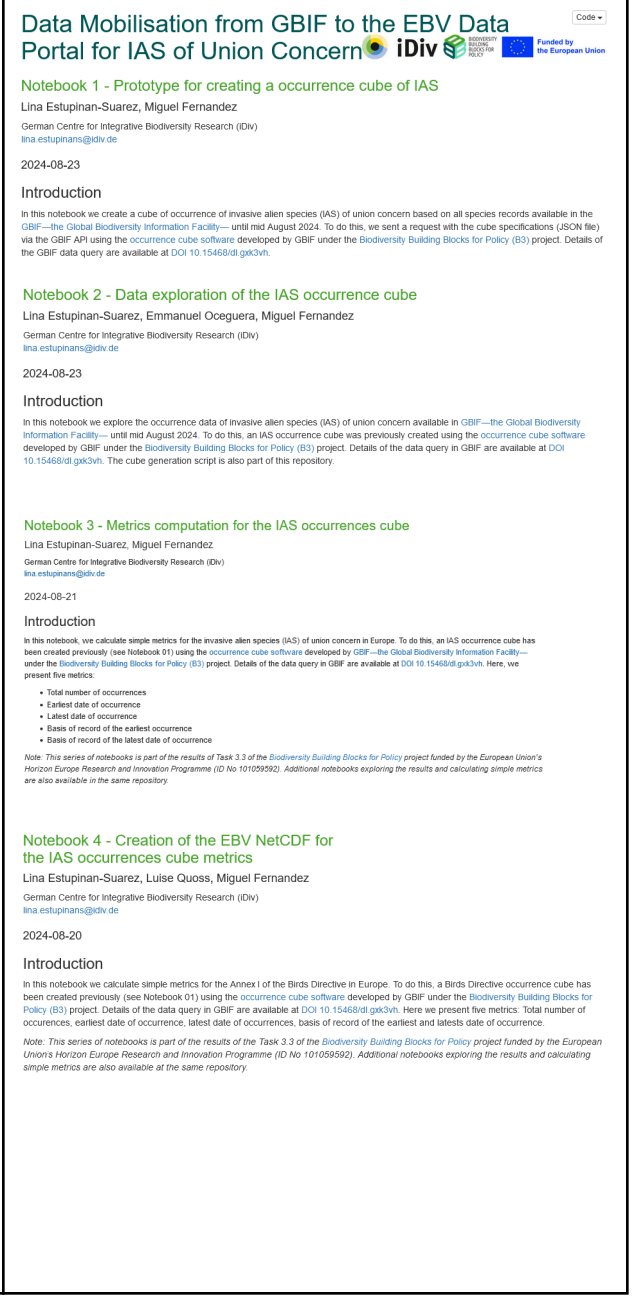
In this notebook, we calculate simple metrics for the EU Annex I Birds Directive based on species occurrence in GBIF. For this, a bird occurrence cube (see Notebook 01 in this repository) was previously created using the occurrence cube software developed by GBIF under the Biodiversity Building Blocks for Policy (B3) Project. Details of the data query in GBIF are available at doi: 10.15468/dl.uh84tp. In this notebook we calculate metrics 4, 5 and 6 listed below:

- Month with the highest total number of occurrences across all years
- Month with the second-highest total number of occurrences across all years
- Month with the third-highest total number of occurrences across all years

Note: This series of notebooks is part of the results of Task 3.3 of the Biodiversity Building Blocks for Policy project funded by the European Union's Horizon Europe Research and Innovation Programme (ID No 101059592). Additional notebooks exploring the results and calculating simple metrics are also available in the same repository.

Notebooks for the IAS of Union Concern

https://github.com/EBVcube/B-Cubed_data_mobilisation/tree/a0b031128c03e91b83619448844ec75ce5d29fbc/scripts/Rmd/ias



Data Mobilisation from GBIF to the EBV Data Portal for IAS of Union Concern

Code

iDiv

Funded by the European Union

Notebook 1 - Prototype for creating a occurrence cube of IAS

Lina Estupinan-Suarez, Miguel Fernandez

German Centre for Integrative Biodiversity Research (iDiv)
lina.estupinans@idiv.de

2024-08-23

Introduction

In this notebook we create a cube of occurrence of invasive alien species (IAS) of union concern based on all species records available in the GBIF—the Global Biodiversity Information Facility— until mid August 2024. To do this, we sent a request with the cube specifications (JSON file) via the GBIF API using the occurrence cube software developed by GBIF under the Biodiversity Building Blocks for Policy (B3) project. Details of the GBIF data query are available at DOI 10.15468/dl.gxk3vh.

Notebook 2 - Data exploration of the IAS occurrence cube

Lina Estupinan-Suarez, Emmanuel Oceguera, Miguel Fernandez

German Centre for Integrative Biodiversity Research (iDiv)
lina.estupinans@idiv.de

2024-08-23

Introduction

In this notebook we explore the occurrence data of invasive alien species (IAS) of union concern available in GBIF—the Global Biodiversity Information Facility— until mid August 2024. To do this, an IAS occurrence cube was previously created using the occurrence cube software developed by GBIF under the Biodiversity Building Blocks for Policy (B3) project. Details of the data query in GBIF are available at DOI 10.15468/dl.gxk3vh. The cube generation script is also part of this repository.

Notebook 3 - Metrics computation for the IAS occurrences cube

Lina Estupinan-Suarez, Miguel Fernandez

German Centre for Integrative Biodiversity Research (iDiv)
lina.estupinans@idiv.de

2024-08-21

Introduction

In this notebook, we calculate simple metrics for the invasive alien species (IAS) of union concern in Europe. To do this, an IAS occurrence cube has been created previously (see Notebook 01) using the occurrence cube software developed by GBIF—the Global Biodiversity Information Facility— under the Biodiversity Building Blocks for Policy (B3) project. Details of the data query in GBIF are available at DOI 10.15468/dl.gxk3vh. Here, we present five metrics:

- Total number of occurrences
- Earliest date of occurrence
- Latest date of occurrence
- Basis of record of the earliest occurrence
- Basis of record of the latest date of occurrence

Note: This series of notebooks is part of the results of Task 3.3 of the Biodiversity Building Blocks for Policy project funded by the European Union's Horizon Europe Research and Innovation Programme (ID No 101059592). Additional notebooks exploring the results and calculating simple metrics are also available in the same repository.

Notebook 4 - Creation of the EBV NetCDF for the IAS occurrences cube metrics

Lina Estupinan-Suarez, Luise Quoss, Miguel Fernandez

German Centre for Integrative Biodiversity Research (iDiv)
lina.estupinans@idiv.de

2024-08-20

Introduction

In this notebook we calculate simple metrics for the Annex I of the Birds Directive in Europe. To do this, a Birds Directive occurrence cube has been created previously (see Notebook 01) using the occurrence cube software developed by GBIF under the Biodiversity Building Blocks for Policy (B3) project. Details of the data query in GBIF are available at DOI 10.15468/dl.gxk3vh. Here we present five metrics: Total number of occurrences, earliest date of occurrence, latest date of occurrences, basis of record of the earliest and latests date of occurrence.

Note: This series of notebooks is part of the results of the Task 3.3 of the Biodiversity Building Blocks for Policy project funded by the European Union's Horizon Europe Research and Innovation Programme (ID No 101059592). Additional notebooks exploring the results and calculating simple metrics are also available at the same repository.

Code

Data mobilisation from GBIF to the EBV Data Portal for the Birds Directive An

iDiv

Funded by the European Union

Notebook 05 - Creation of the EBV NetCDF for the Birds Directive occurrences cube metrics

Lina Estupinan-Suarez, Luise Quoss, Miguel Fernandez

German Centre for Integrative Biodiversity Research (iDiv)
lina.estupinans@idiv.de

2024-08-27

Introduction

In this notebook we calculate simple metrics for the species in the Birds Directive of Europe. To do this, a species currence cube has been created previously (see Notebook 01) using the occurrence cube software developed by GBIF under the Biodiversity Building Blocks for policy project (B3) Details of the data query in GBIF are available at doi: 10.15468/dl.uh84tp. Here we present six metrics: Total number of occurrences, Earliest month with records, Latest month with records, Month with the highest number of records, Month with the second highest number of records, Month with the third highest number of records.

Note: This series of notebooks is part of the results of Task 3.3 of the Biodiversity Building Blocks for Policy project funded by the European Union's Horizon Europe Research and Innovation Programme (ID No 101059592). Additional notebooks exploring the results and calculating simple metrics are also available at the same repository.

Notebooks for preprocessing

Code

Data mobilisation from GBIF to the EBV Data Portal

iDiv

Funded by the European Union

Inputs for occurrence cubes rasterisation using the 10 Km EEA vector grid

Lina Estupinan-Suarez, Miguel Fernandez

German Centre for Integrative Biodiversity Research (iDiv)
lina.estupinans@idiv.de

2024-08-15

Introduction

This is a preparatory notebook for mobilising species occurrence cubes from GBIF—the Global Biodiversity Information Facility— to the EBV Data Portal. Specifically, here we use the European Environment Agency (EEA) grid in vector format at 10 km as spatial reference. The subsequent notebooks focus on the generation of species cubes, the calculation of metrics, and the conversion of the results into the EBV cube format for final upload to the EBV data portal.

Note: This series of notebooks is part of the results of Task 3.3 of the Biodiversity Building Blocks for Policy project funded by the European Union's Horizon Europe Research and Innovation Programme (ID No 101059592). Additional notebooks exploring the results and calculating simple metrics are also available in the same repository.

Code

Data mobilisation from GBIF to the EBV Data Portal

iDiv

Funded by the European Union

Pre-processing notebook - Harmonisation of species keys for the JSON query of species listed in the Annex I of the Birds Directive

Lina Estupinan-Suarez, Miguel Fernandez

German Centre for Integrative Biodiversity Research (iDiv)
lina.estupinans@idiv.de

2024-08-23

Introduction

In this notebook we prepare the `speciesUsageKey` for birds listed in Annex I of the Birds Directive. Subsequently, we will work with the GBIF occurrence data and therefore use the `speciesUsageKey` in its backbone taxonomy. We have previously prepared a list from Annex I of the Birds Directive that includes the taxonomy. proc

Note: This series of notebooks is part of the results of Task 3.3 of the Biodiversity Building Blocks for Policy project funded by the European Union's Horizon Europe Research and Innovation Programme (ID No 101059592). Additional notebooks exploring the results and calculating simple metrics are also available in the same repository.