OBSERVED SPECIES RICHNESS

Indicator type

State indicator

Explanation

Observed species richness represents the total number of unique species discovered and recorded. For maps, the value is calculated for each spatial cell. For time-series analyses, the value is calculated per time step over the complete data cube.

- **High value**: A high number of unique species, indicating a diverse local community.
- **Low value:** A low number of unique species, signalling a species-poor habitat.

Applicability for policy

This metric is necessary for determining biodiversity hotspots on a map or tracing potential declines in species richness over time. With taxonomic filtering, one can quantify the number of species in a particular cohort, such as known alien species, tree species, or carnivores.

Limitations

Observed species richness is highly sensitive to sampling bias and human observation effort. If certain grid cells are studied more carefully or visited more frequently by volunteers than others, they will artificially appear to have more species. Therefore, this metric should be interpreted within the context of a measure of survey effort, such as total occurrences or occurrence density. Furthermore, results are skewed by species detectability. Rare or widely dispersed species are easily missed by citizens, whereas highly conspicuous or easy-to-find species will often be reported (Hillebrand et al. 2018).

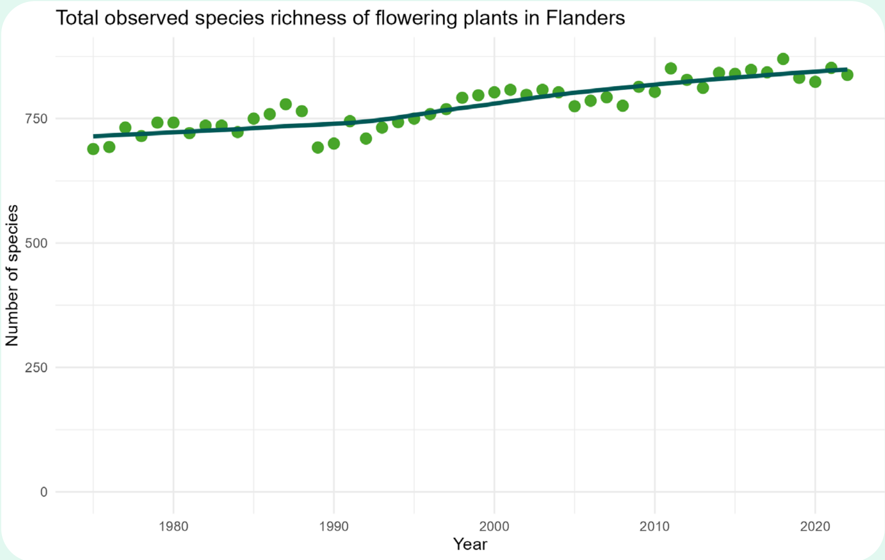


Figure 1: Total observed species richness of native flowering plants in Flanders reported since 1975, based on the Florabank dataset. GBIF Occurrence Download https://doi.org/10.15468/dl.jep66n Accessed from R via rgbif (https://github.com/ropensci/rgbif) on 2026-03-20.

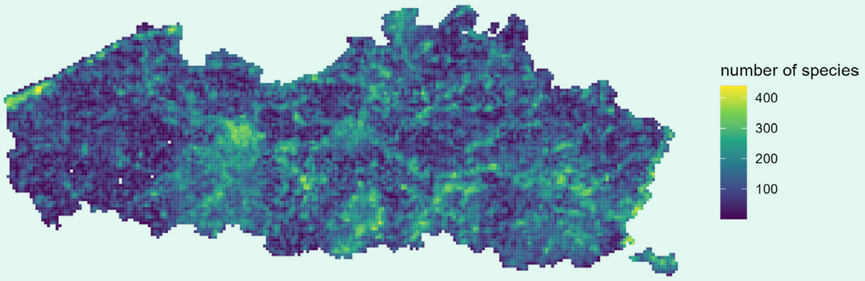
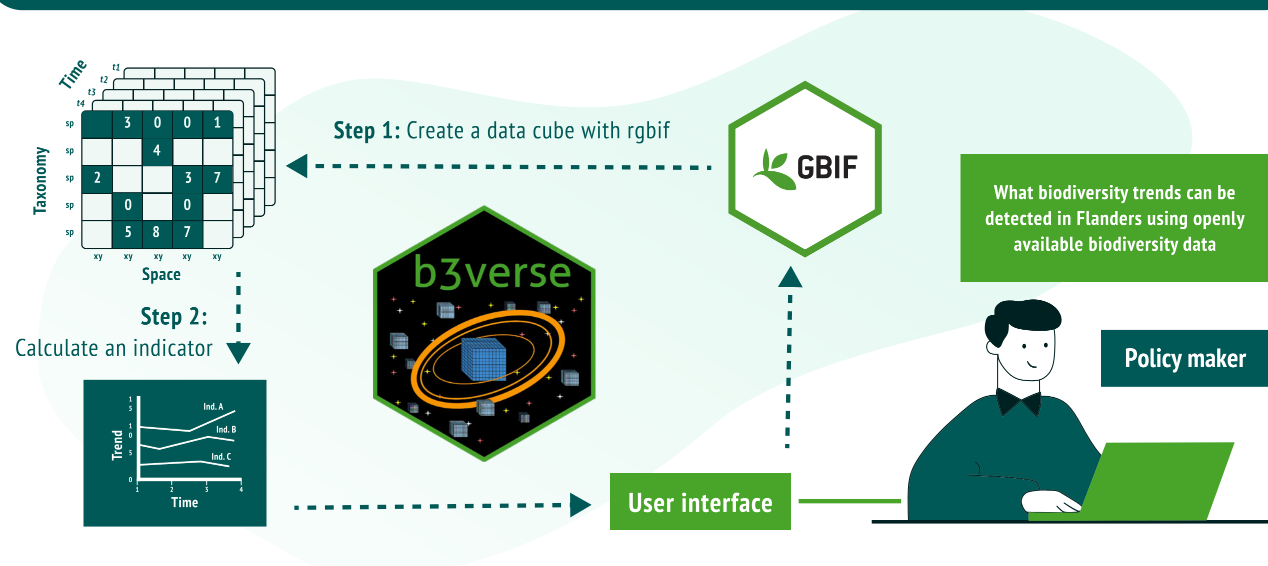


Figure 2: Spatial distribution of observed species richness of native flowering plants in Flanders reported since 1975. GBIF Occurrence Download https://doi.org/10.15468/dl.knsn44 Accessed from R via rgbif (https://github.com/ropensci/rgbif) on 2026-03-16.

References

Hillebrand, Helmut & Blasius, Bernd & Borer, Elizabeth & Chase, Jonathan & Downing, John & Eriksson, Britas & Filstrup, Christopher & Harpole, William & Hodapp, Dorothee & Larsen, Stefano & Lewandowska, Aleksandra & Seabloom, Eric & Van de Waal, Dedmer & Ryabov, Alexey. (2017). Biodiversity change is uncoupled from species richness trends: Consequences for conservation and monitoring. *Journal of Applied Ecology*. 55. 10.1111/1365-2664.12959.

The B-Cubed workflow supports the creation and analysis of a data cube based on GBIF data. Further documentation is available at https://docs.b-cubed.eu/. Overview of all available packages at https://b-cubed-eu.r-universe.dev/builds.



BIODIVERSITY BUILDING BLOCKS FOR POLICY

b-cubed.eu

B-Cubed aimed to standardise access to biodiversity data, helping transform fragmented biodiversity records into timely, policy-relevant indicators. This was achieved by developing a service to create “species occurrence cubes”, which then served as the basis for models and indicator of past, current and future biodiversity. To ensure its results can be reused, the project created exemplary workflows for modelling and indicator calculation, as well as a suite of guides, tutorials and hands-on training sessions. The application and usefulness of B-Cubed’s algorithms and software are demonstrated through the project’s four case studies.

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DURATION

1 March 2023 – 31 August 2026

Funded by the European Union

B3 (Biodiversity Building Blocks for policy) receives funding from the European Union’s Horizon Europe Research and Innovation Programme (ID No 101059592). Views and opinions expressed are however 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.