



8th International  
Conference on  
**BIG DATA**  
& Data Science for Official Statistics

**BILBAO 2024**

Informing Climate Change and  
Sustainable Development Policies  
with Integrated Data

**BILBAO. SPAIN** | **10-14 JUNE 2024** | **#UNBigData2024**

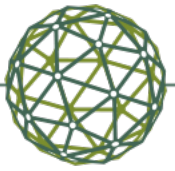
# A Global Picture on Data of Biodiversity Observation and Monitoring

**Andrés Mármol-Guijarro**

12<sup>th</sup> June 2012

**EUROPABON**

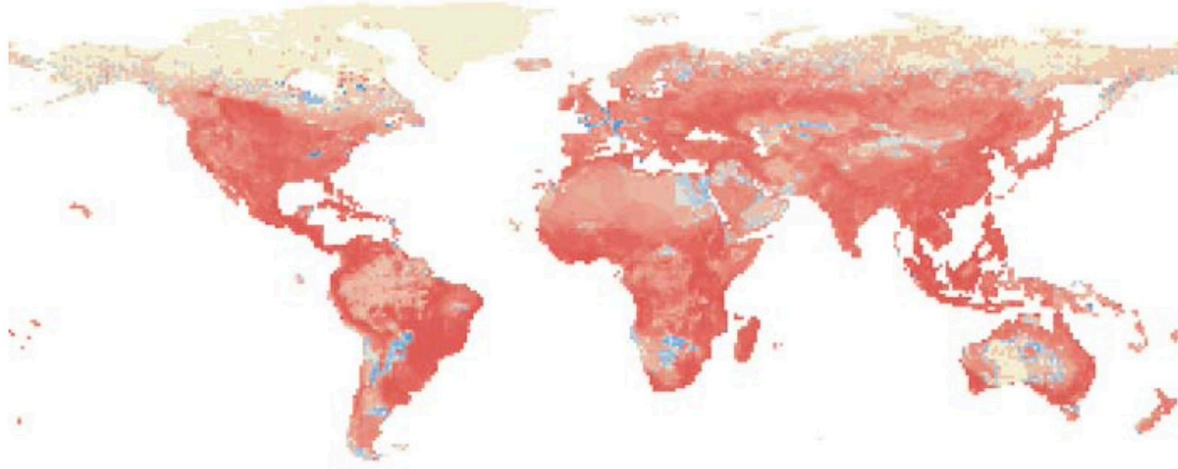




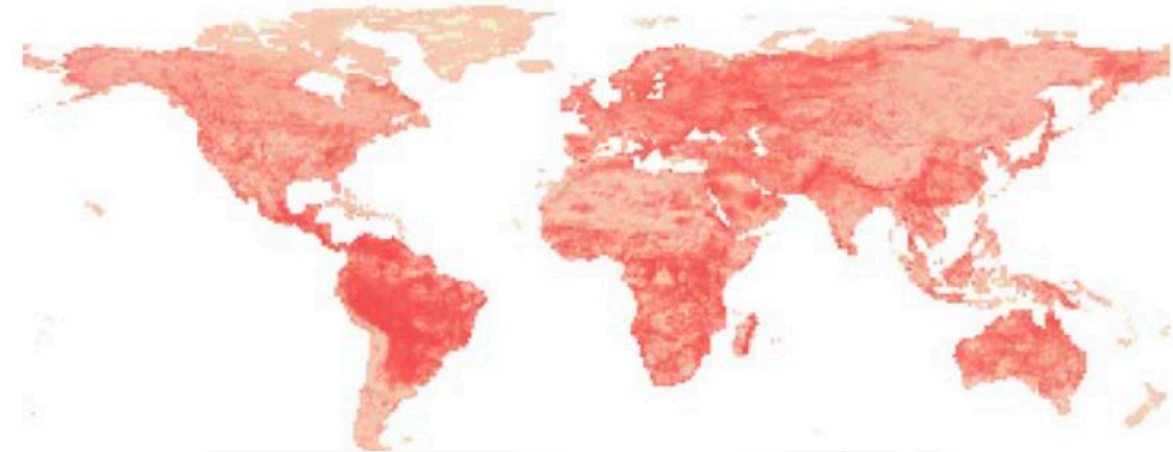
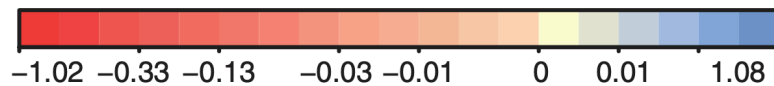
# Why to monitor biodiversity? (Global biodiversity trends)

Projection 2050 under Land Use and Climate Change  
Global Sustainability Scenario

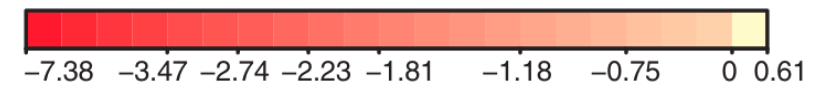
Historical trend species lost 1900 - 2015



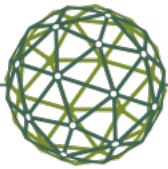
% spp. decade<sup>-1</sup>



% spp. decade<sup>-1</sup>

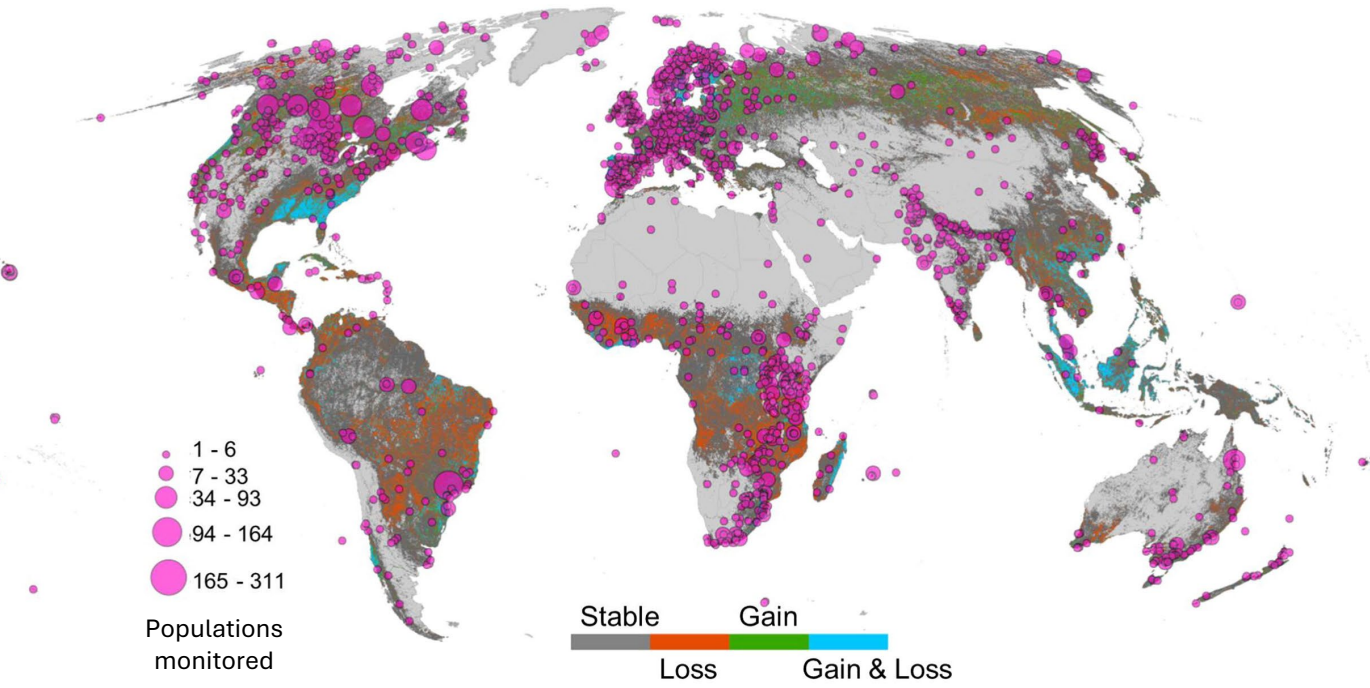


Pereira *et al.* (2024) *Science*



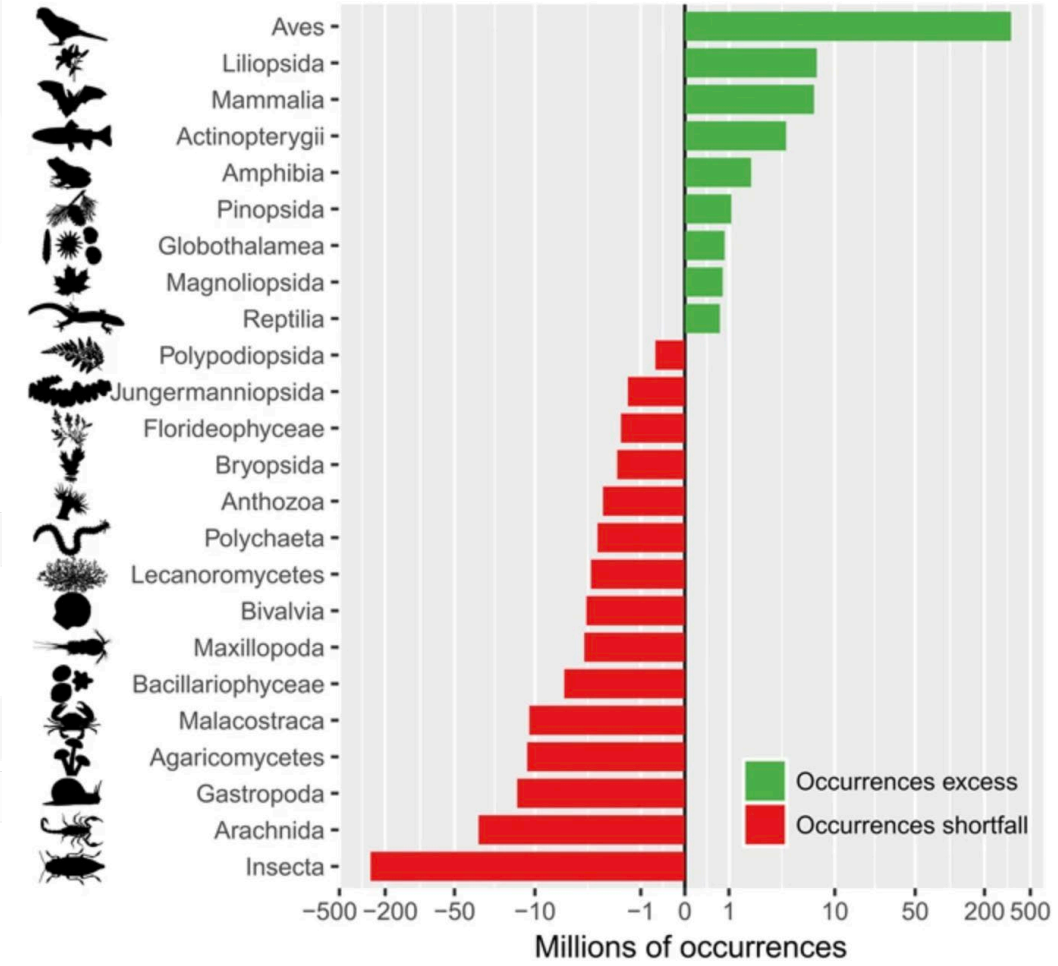
# Shortfalls in existing Biodiversity Data

## Monitoring effort – Spatial coverage

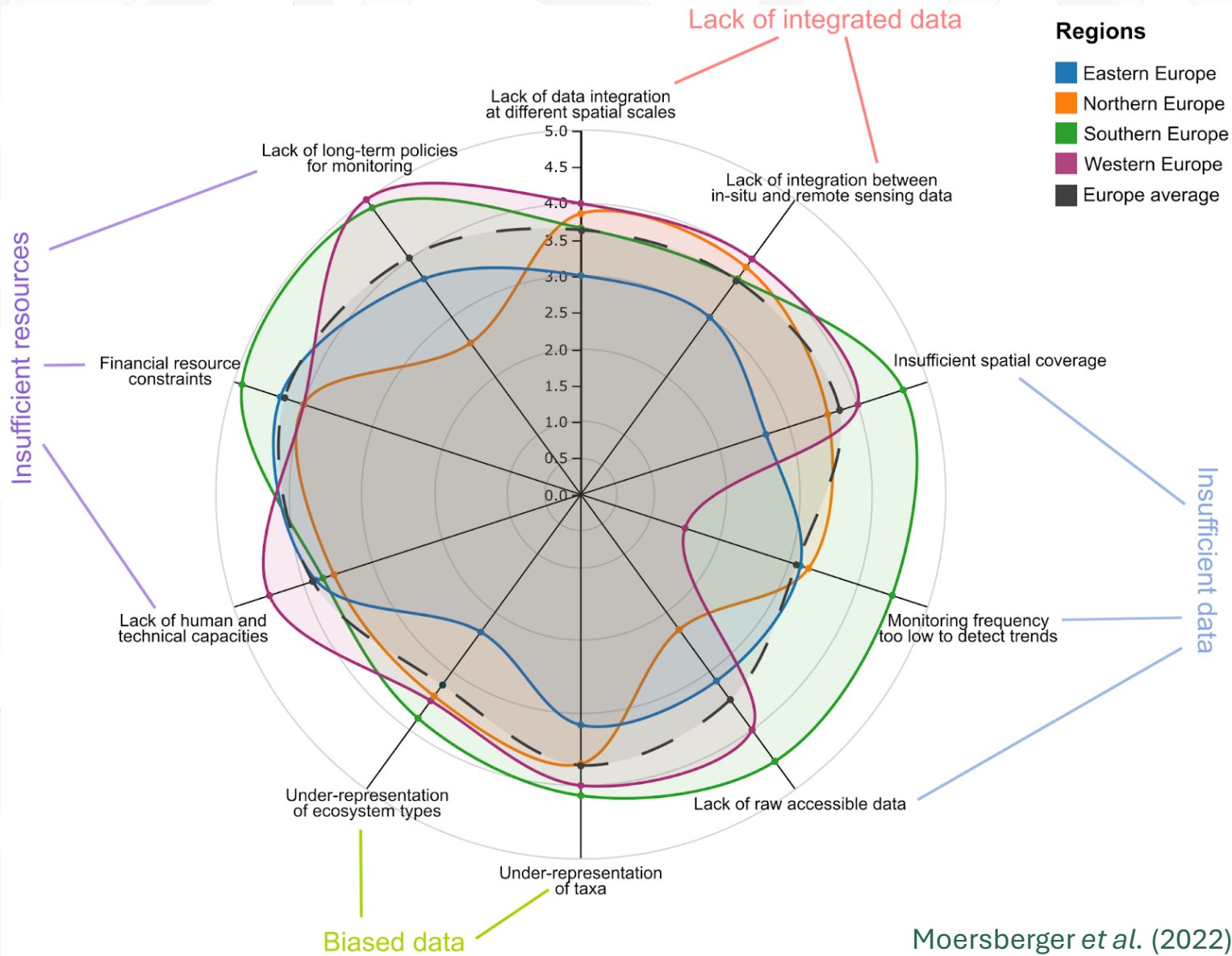
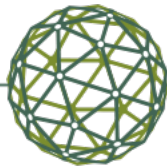


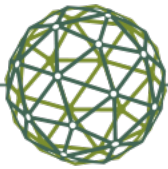
Proença et al. (2017) *Biol. Con.*

## Taxonomic Bias

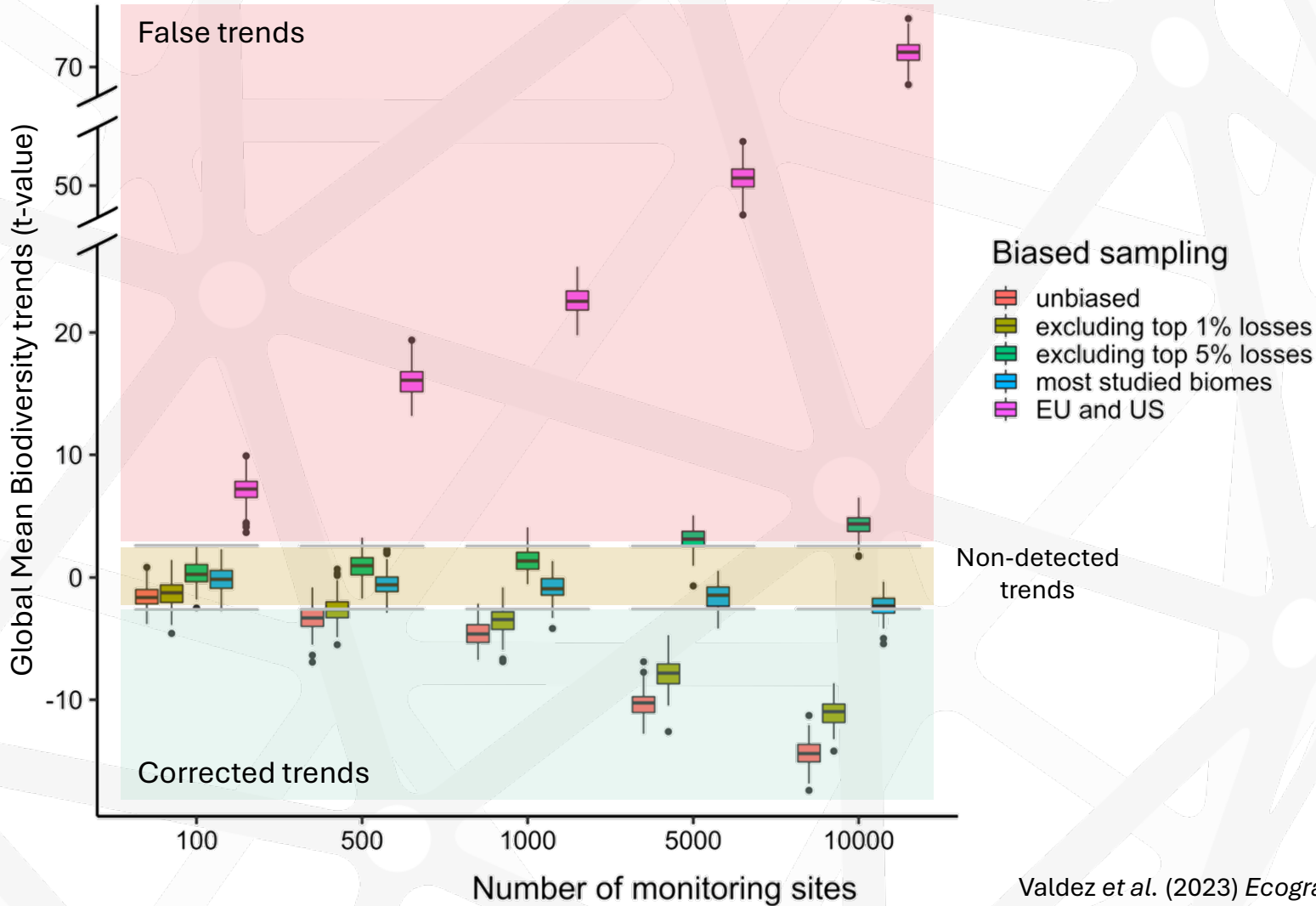


Troude et al. (2017) *Scientific Reports*

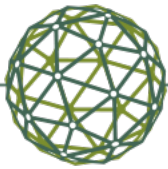




# Shortfalls in existing Biodiversity Data



Valdez et al. (2023) *Ecography*



# The Essential Biodiversity Variables (EBV) Data Framework for Biodiversity Data

Standardised and coordinated Biodiversity Monitoring



[www.geobon.org](http://www.geobon.org)

Minimum set of variables capturing major dimensions of biodiversity

Species-focused



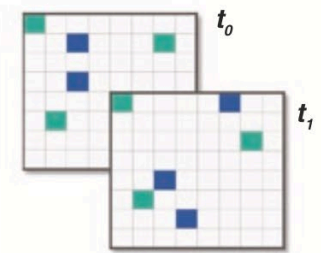
Genetic composition    Species populations    Species traits

Eco-system-focused



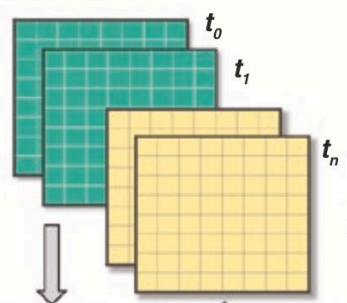
Community composition    Ecosystem function    Ecosystem structure

In-situ observations



Calibration and Validation  
(State variable)

Remote sensing observations and modeled drivers

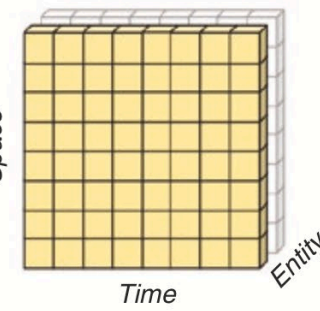


Driver Models

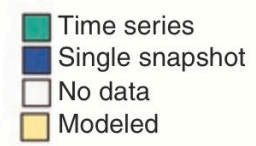
Biodiversity model

Spatiotemporal predictors

Estimated EBV

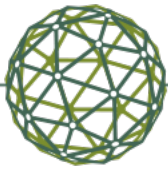


- (1) Which EBV are policy relevant?
- (2) What taxa and ecosystems?
- (3) What spatial and temporal resolution?



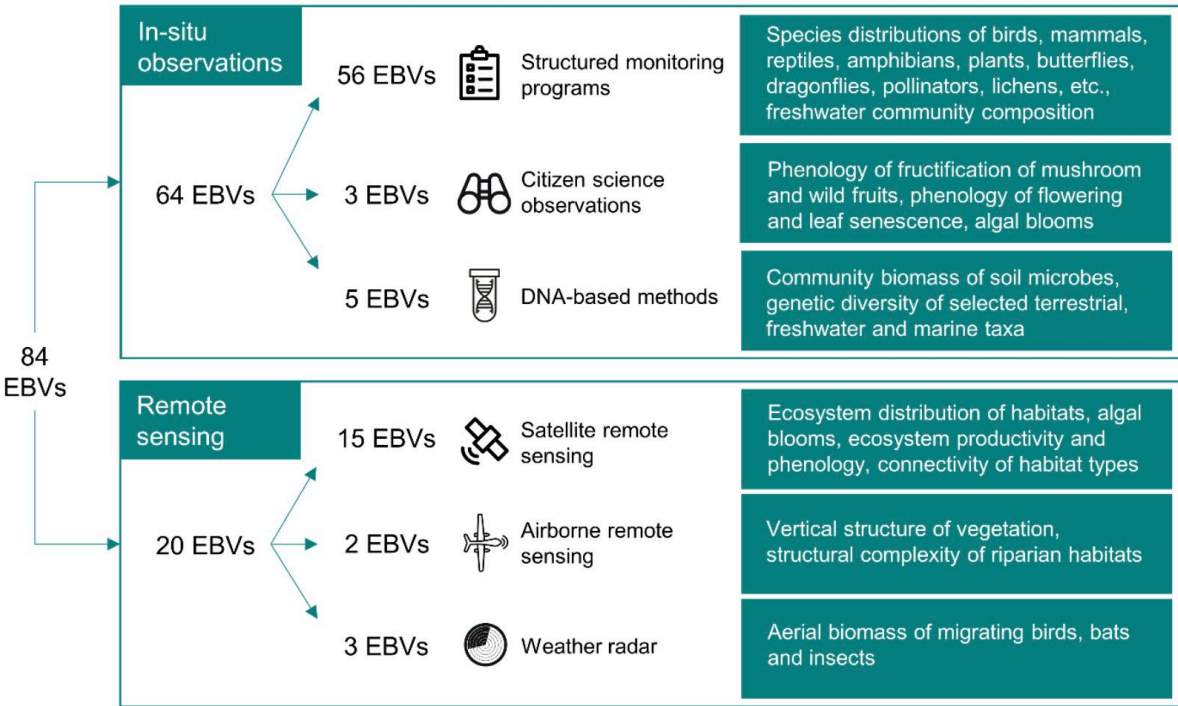
- (1) Where and how to monitor?
- (2) How to integrate data?
- (3) What models to use?

Fernández N. et al (2020) in Remote Sensing of Plant Biodiversity

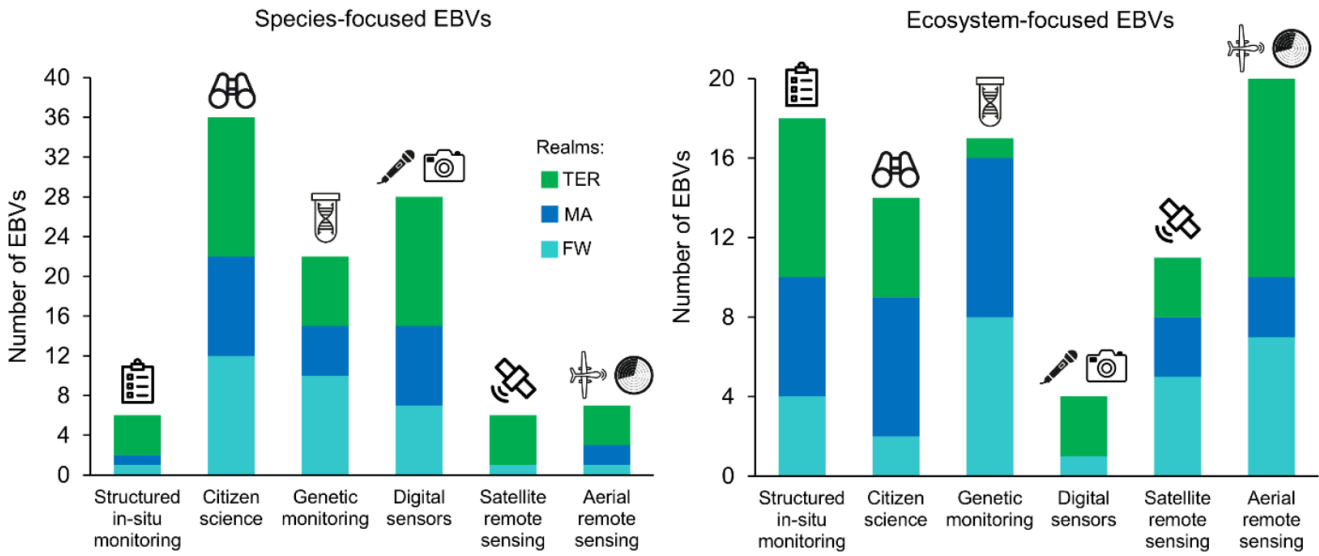


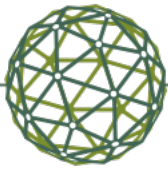
# The role of emerging (and not so emerging) monitoring techniques

## Primary monitoring techniques



## As supplementary approaches



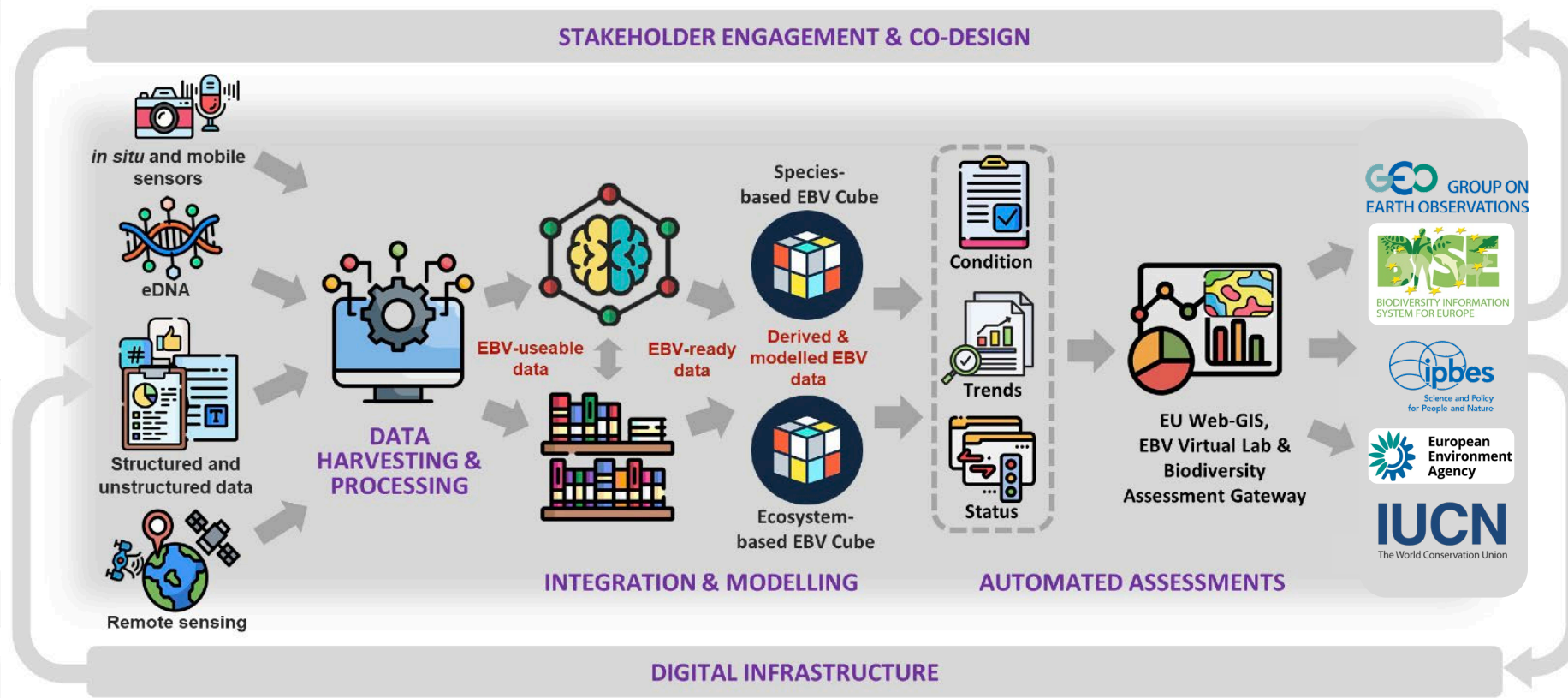


# Biodiversity monitoring needs coordination

Assessment of users and policy needs, data gaps, models and tools

Coordinating existing Biodiversity monitoring schemes

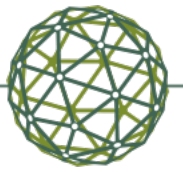
Support: Funding opportunities, collaboration, reporting



## EBV Data Portal

Fernández M. *et al.* (in prep)





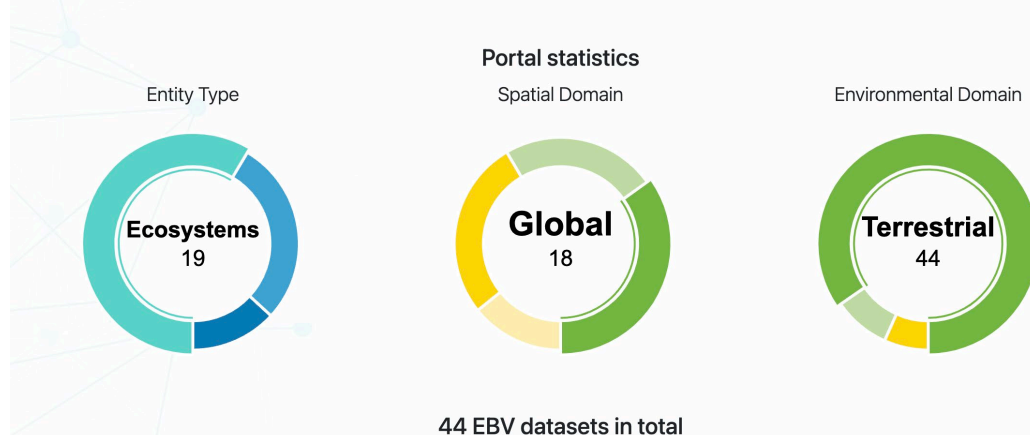
# Findable, accessible, interoperable, reusable products: EBVs Data Portal

## Online Catalogue

Home Discover Map How-to Login

### EBV Data Portal

The EBV Data Portal includes a variety of EBV raster datasets. You can import these datasets into the map with a single click. You can also upload your own EBV dataset for sharing with others.



## Web Gis Viewer with Indicator Selection

Discover more 1900

### Geobon

EBV Class: Community composition

EBV Name: Taxonomic and phylogenetic diversity

EBV Dataset: Global trends in biodiversity (BES-SIM cSAR-iDiv)

by Inés Martins (German Centre for Integrative Biodiversity Research (iDiv))  
with license <https://creativecommons.org/licenses/by/4.0>

Projections from the cSAR-iDiv model from 1900-2050 using LUH2 and SSPs-RCPs, done in the BES-SIM inter-model comparison for IPBES.

Scenario: SSP3-RCP6.0 LU

Regional Rivalry (SSP3-RCP6.0), with only effects of land-use.

Metric: Species richness (S)

Species richness per cell

Entity: Forest birds

Show

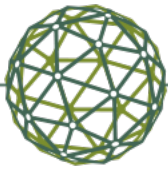
Country

Calculate

Legend (in Number of species): 1008, 864, 720, 576, 432, 288, 144, 0



<https://portal.geobon.org/home>



# Findable, accessible, interoperable, reusable products

**PENSOFT** About Pensoft Books Journals News & Blog Contact Register | Login

**RIO** Search this journal... Submit manuscript

Full Text Author Title

About Articles Topical collections RIO Blog Why Publish in RIO Unique Features Editorial Team Contacts

**In this collection**

**EUROPABON** Papers published: **28**  
Papers in press: **4**  
Printed version: **Paperback**  
Unique views: **2571**  
Total views: **3747**

OPEN ACCESS

**Filter**

by Subject

- Agriculture and Forestry
- Architecture
- Arts
- Chemistry
- Computer & Information sciences
- Earth & Planetary sciences

**Europa Biodiversity Observation Network: integrating data streams to support policy** Sort by: Publication date newest

*Edited by* Henrique Pereira, Jessica Junker, Andres Marmol-Guijarro, Joachim Maes

Observations are key to understand the drivers of biodiversity loss, and the impacts on ecosystem services and ultimately on people. Many EU policies and initiatives demand unbiased, integrated and regularly updated biodiversity and ecosystem service data. However, efforts to monitor biodiversity are spatially and temporally fragmented, taxonomically biased, and lack integration in Europe. EuropaBON aims to bridge this gap by designing an EU-wide framework for monitoring biodiversity and ecosystem services. EuropaBON harnesses the power of modelling essential variables to integrate different reporting streams, data sources, and monitoring schemes. These essential variables provide consistent knowledge about multiple dimensions of biodiversity change across space and time. They can then be analyzed and synthesized to support decision-making at different spatial scales, from the sub-national to the European scale, through the production of indicators and scenarios. To develop essential biodiversity and ecosystem variables workflows that are policy relevant, EuropaBON is built around stakeholder engagement and knowledge exchange (WP2). EuropaBON will work with stakeholders to identify user and policy needs for biodiversity monitoring and investigate the feasibility of setting up a center to coordinate monitoring activities across Europe (WP2). Together with stakeholders, EuropaBON will assess current monitoring efforts to identify gaps, data and workflow bottlenecks, and analyse cost-effectiveness of different schemes (WP3). This will be used to co-design improved monitoring schemes using novel technologies to become more representative temporally, spatially and taxonomically, delivering multiple benefits to users and society (WP4). Finally, EuropaBON will demonstrate in a set of showcases how workflows tailored to the Birds Directive, Habitats Directive, Water Framework Directive, Climate and Restoration Policy, and the Bioeconomy Strategy, can be implemented (WP5).

This collection only admits publications that are a direct product of the EuropaBON project.

doi [10.3897/rio.coll.145](https://doi.org/10.3897/rio.coll.145)

Add document to this collection

Select: All None Download: Citation XML PDF

<https://doi.org/10.3897/rio.coll.145>

## EVB Workflows

<https://doi.org/10.5281/zenodo.10971094>



<https://boninabox.geobon.org/>

<https://doi.org/10.3897/arphapreprints.e128042>

Europa Biodiversity Observation Network:  
Proposal for an EU Biodiversity Observation Coordination Centre (EBOCC)

EUROPABON

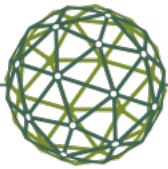
European Commission Horizon 2020 European Union Funding for Research & Innovation

Europa Biodiversity Observation Network:  
User and Policy Needs Assessment

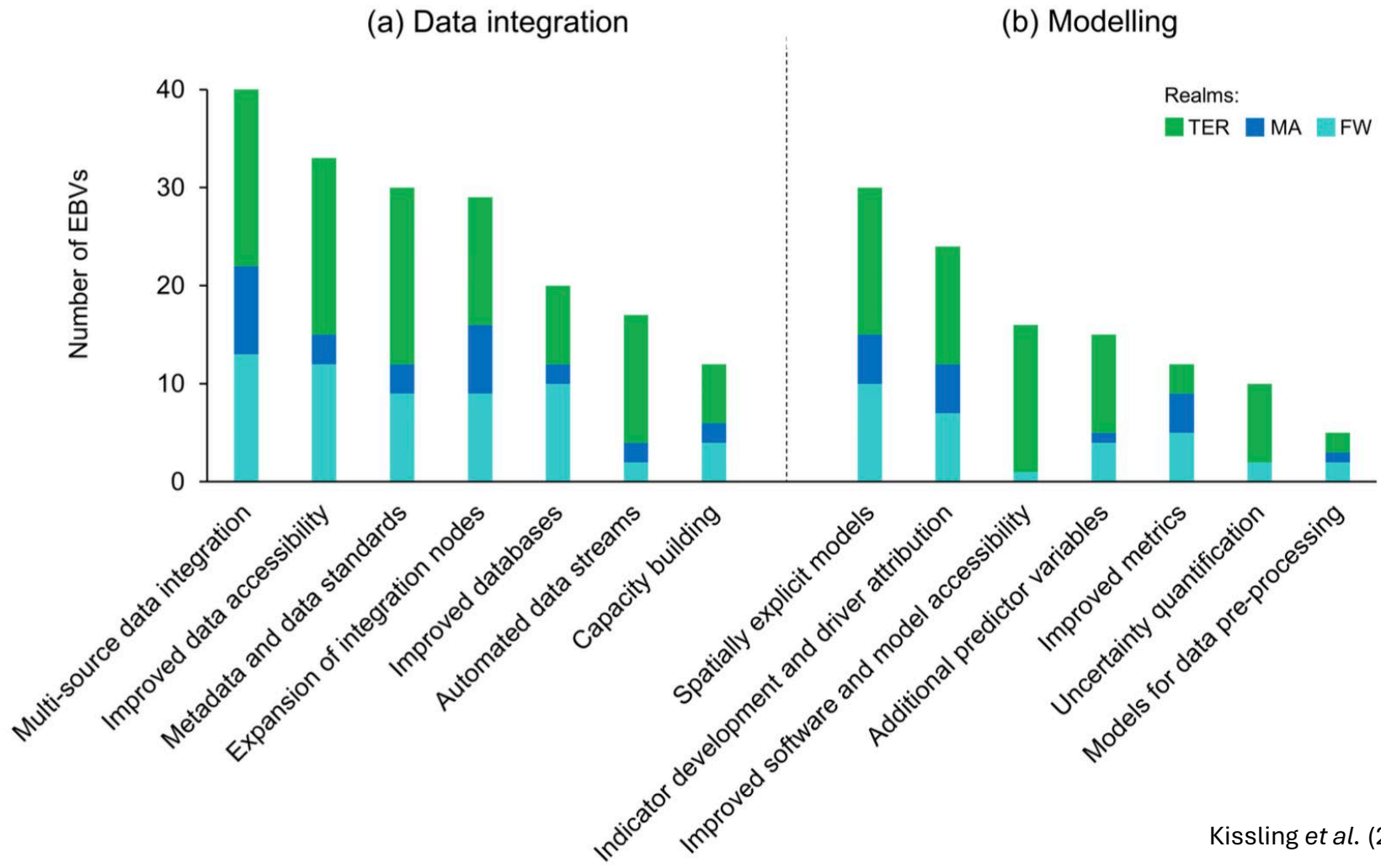
EUROPABON

European Commission Horizon 2020 European Union Funding for Research & Innovation

<https://doi.org/10.3897/arphapreprints.e84517>



# What is next...



Kissling et al. (2024)

# THANK YOU



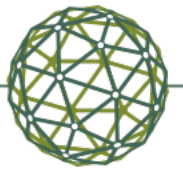
**iDiv**



MARTIN-LUTHER  
UNIVERSITÄT  
HALLE-WITTENBERG



europabon.org



## NetCDF file structure

