

Minimum Information Standards for Essential Biodiversity Variables



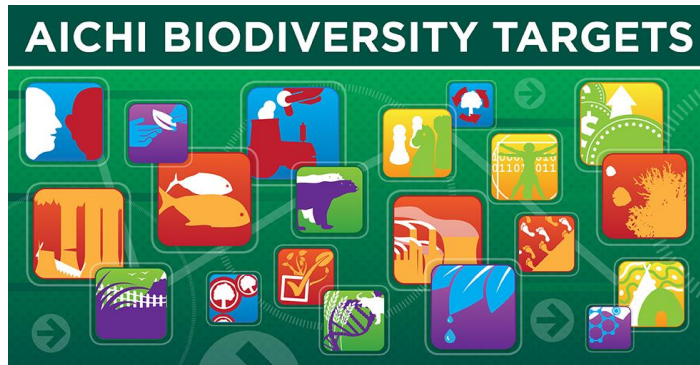
Néstor Fernández

German Centre for Integrative Biodiversity Research
Halle-Jena-Leipzig

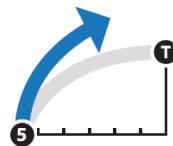


iDiv

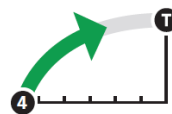
Global demand for open-access biodiversity change information: Policy-relevant and easily accessible data



SUSTAINABLE DEVELOPMENT GOALS



On track to exceed target (we expect to achieve the target before its deadline)



On track to achieve target (if we continue on our current trajectory we expect to achieve the target by 2020)



Progress towards target but at an insufficient rate (unless we increase our efforts the target will not be met by its deadline)



No significant overall progress (overall, we are neither moving towards the target nor away from it)



Moving away from target (things are getting worse rather than better).

“Currently available indicators only provide a partial picture of progress towards the Aichi Biodiversity Targets”
(GBO4 2014)

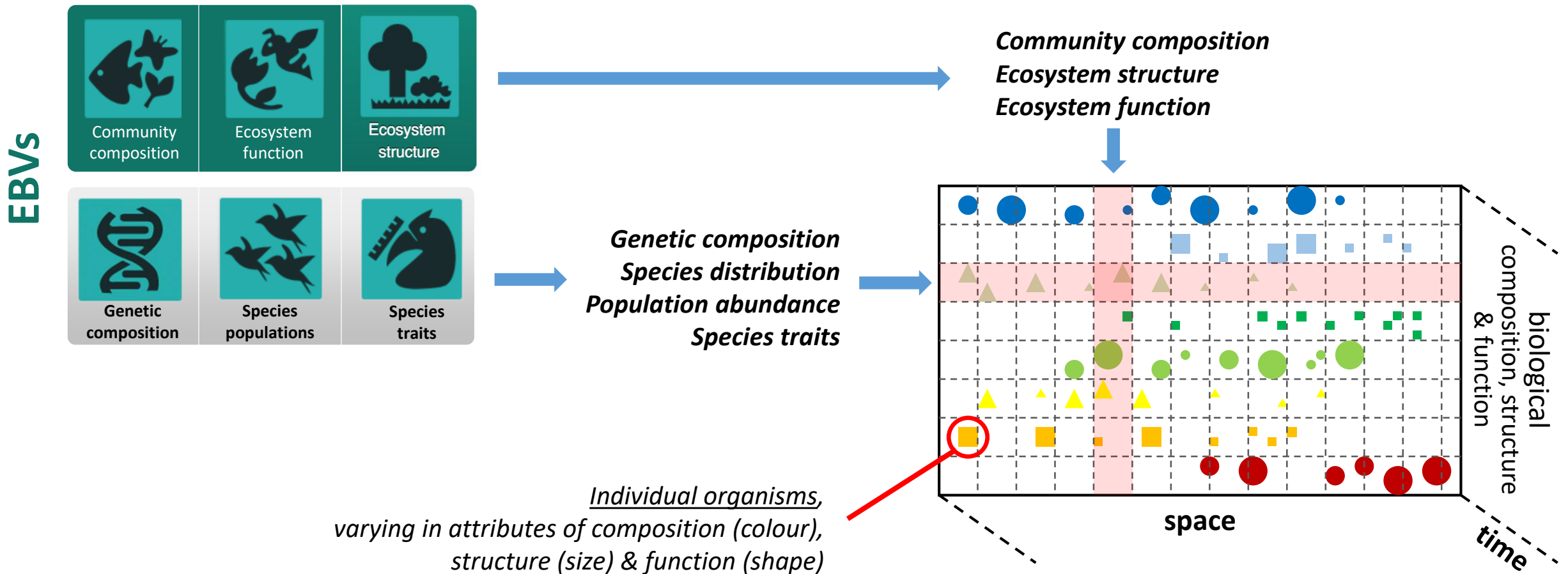


How can we make best use of information to detect, report on and respond to biodiversity change?

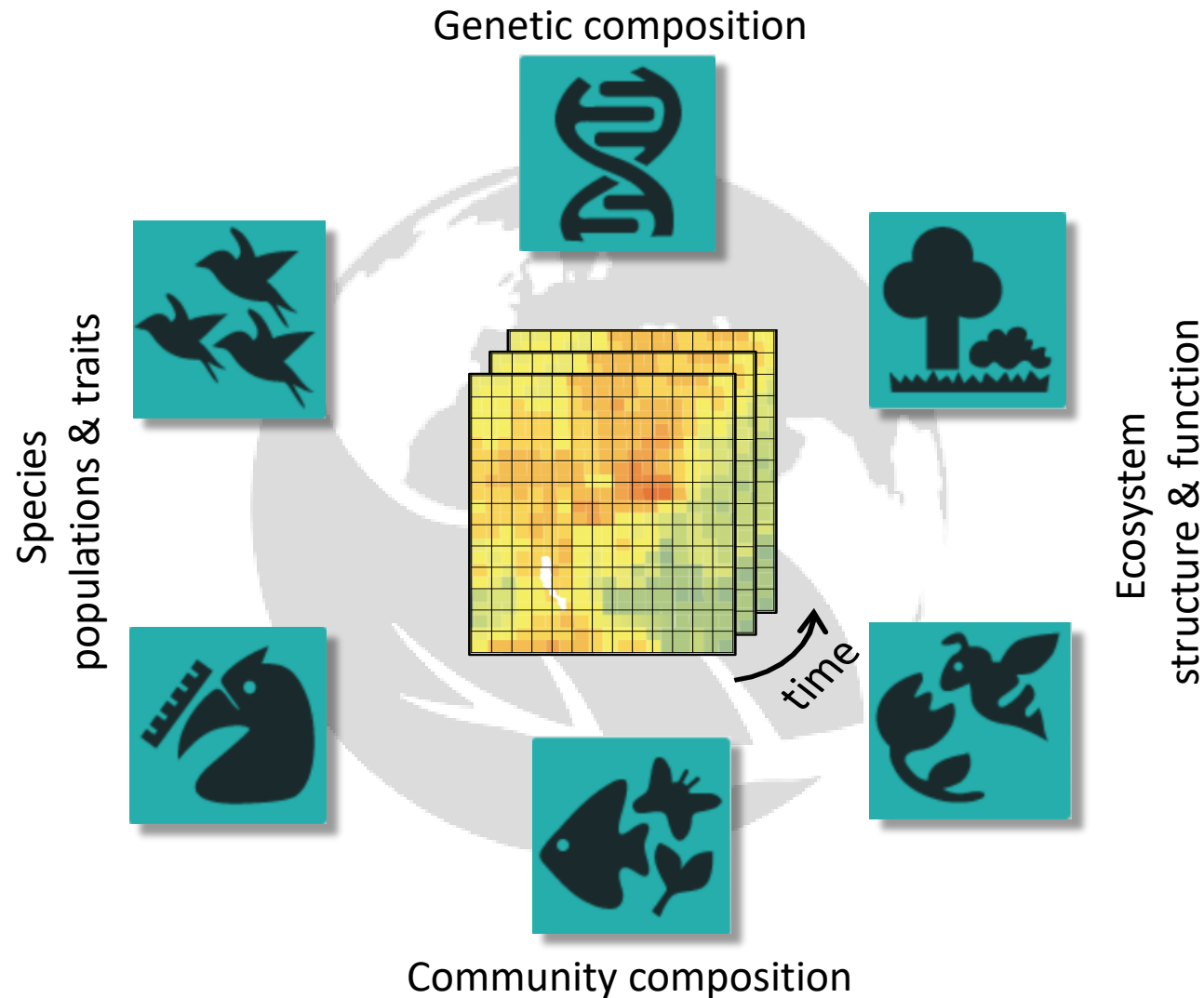
Essential Biodiversity Variables as a minimum set of measurements, complementary to one another, that can capture major dimensions of biodiversity change.



EBV classes differ in the type of data and the organization of this data, but integration must be feasible



Integrate access and reporting for EBVs of very different characteristics

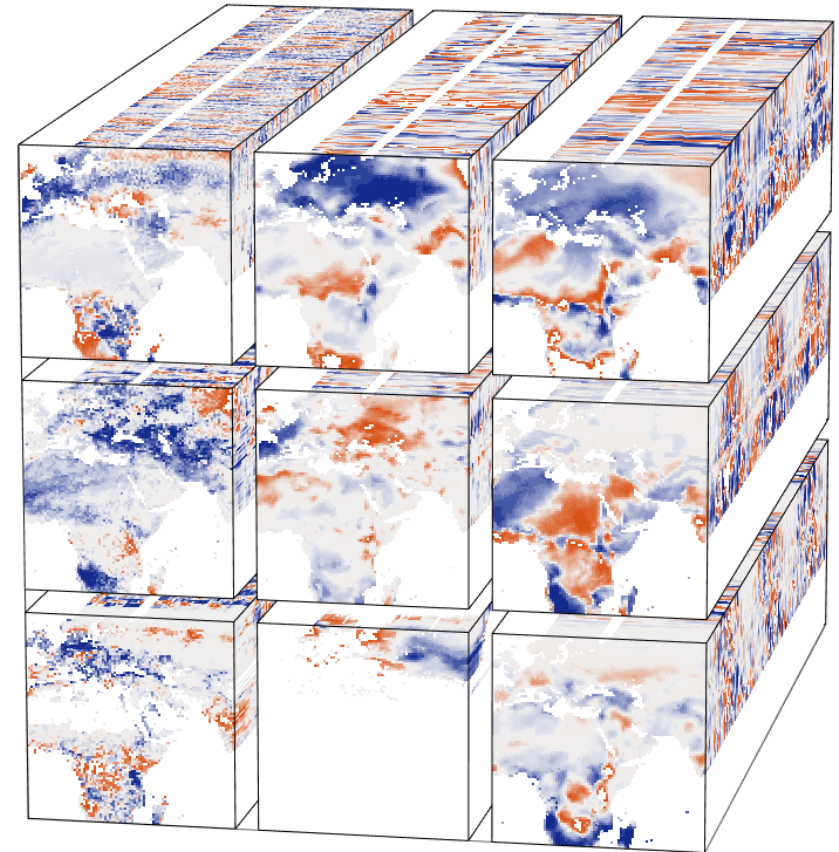


- **Global products**
- **Regional BONs**
- **EBVs at pilot sites?**
- **Etc.**

Data and metadata standards

Specification of a minimum information standard for an EBV

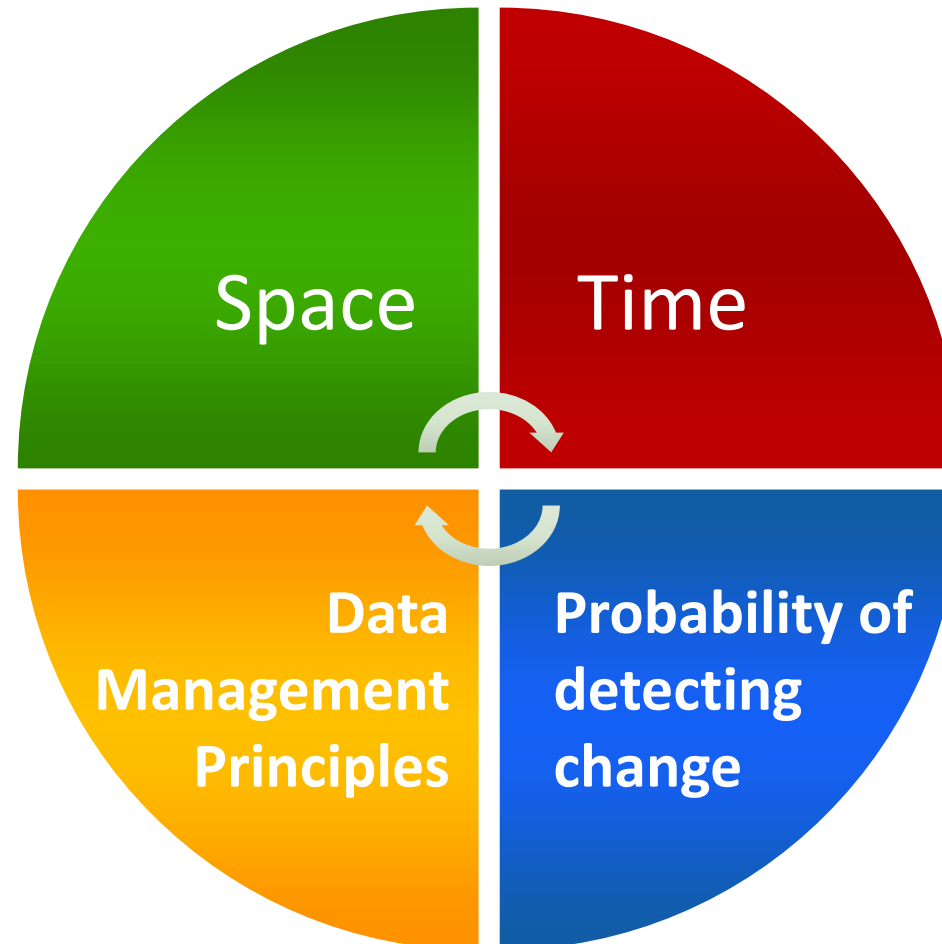
- *Standardized description of biodiversity datasets ensuring accurate and comprehensive reporting*
- *The standard should capture all the relevant information of the hypercube (space, time, biological entity) consistently across EBV classes*



EBV Labeling System: Minimum Information Standards for an EBV

Is the EBV dataset fit for purpose?

- *Informs on biological states*
- *Sensitive to change*
- *Generalizable across realms*
- *Relevant for policy (current and future)*
- *Scalable*



EBV Labeling System: Minimum Information Standards for an EBV

Is the EBV dataset fit for purpose?

- Report on the maturity / readiness of EBV products
- Template for reporting biodiversity change at different levels from subnational to global, and in a way that datasets are flagged according to their usability at each of these levels



EBV Labeling System: Minimum Information Standards for an EBV



Temporal domain:

- Does the time period allow for detecting relevant change?
- Predominantly built from direct state measurements across time?

Temporal extent

High: Temporal length of observations allows to inform long-term biodiversity change (e.g. across generations)

Medium: Temporal length of observations fits reporting needs of international policy targets

Low: Temporal length only can inform short-term (regional to local) decisions

Temporal coverage

High: Robust time series from biological data allowing the direct quantification of change

Medium: Sparse or inferred time series (e.g. Space-by-time substitutions)

Low: One temporal slice (no possibility to detect change)

EBV Labeling System: Minimum Information Standards for an EBV



Spatial domain:

- Extent to which biodiversity change can be reported
- Density of spatially explicit information

Spatial Extent

High: Global

Medium: National to supranational (inc. marine exclusive zone)

Low: Subnational (e.g. P.A. network)

Spatial coverage

High: Fully continuous

Medium: Interpolated (incl. modelled)

Low: Site sampling distribution

Spatial resolution

High: Relevant for local management

Medium: Relevant (supra) national

Low: Only for global-level applications

EBV Labeling System: Minimum Information Standards for an EBV



Usability and replicability

- Spatially explicit uncertainty assessment
- Traceability of data, methods and models

Data uncertainty

High: Uncertainty and data quality reported. Likelihood of capturing significant changes is reliable

Medium: Uncertainty or data quality reported but with uncertain likelihood of capturing significant change.

Low: Insufficient or missing uncertainty assessment

Traceability

High: Source data comprehensively documented and stored in public, endorsed repositories. Production methods and models achieved with version history.

Medium: Data and models are publicly available

Low: Data is restricted. Production process is not traceable

Data and metadata standards: Adherence to GEOSS Data Management Principles

DMP system:

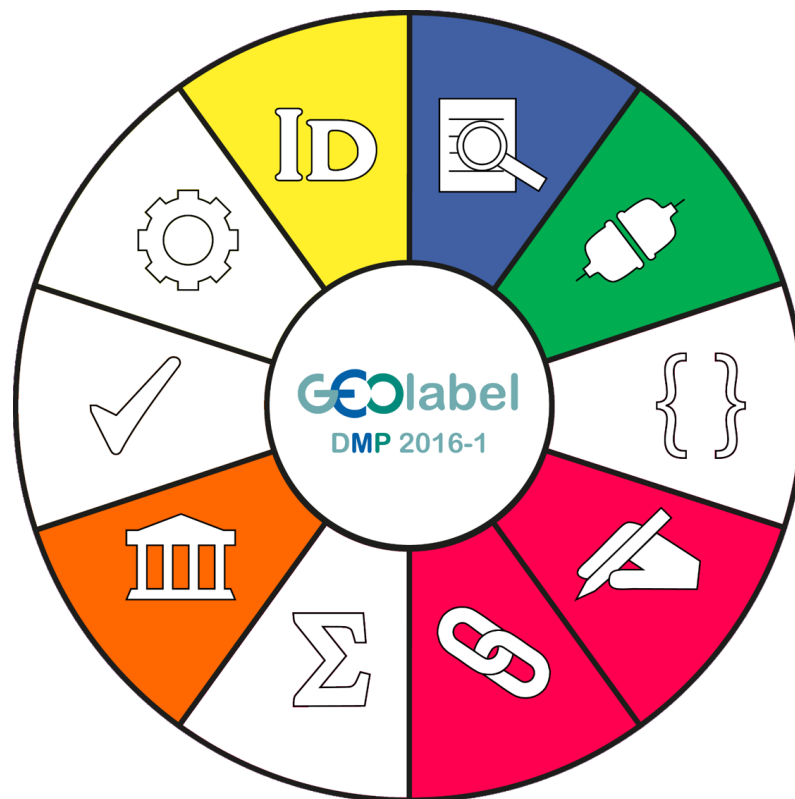
Discovery

Accessibility











Usability

Preservation

Curation

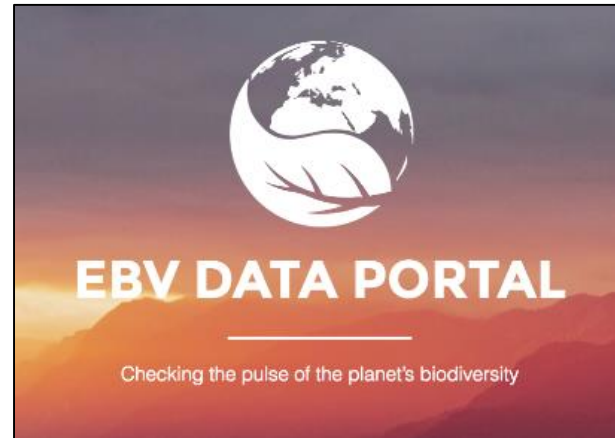


<http://www.geolabel.info>

DMP label			
	Discoverable	1	D
	Accessible	2	A
	Standard encoding using	3	Usability
	Well documented metadata	4	
	Traceable	5	
	Quality documented	6	
	Preserved	7	Preservation
	Periodically verified	8	
	Reviewed and refreshed	9	Curation
	Tagged with permanent ID	10	

EBV flow from standardized information to policy relevance

EBV labeling system
Traceability information
GEOSS DMP



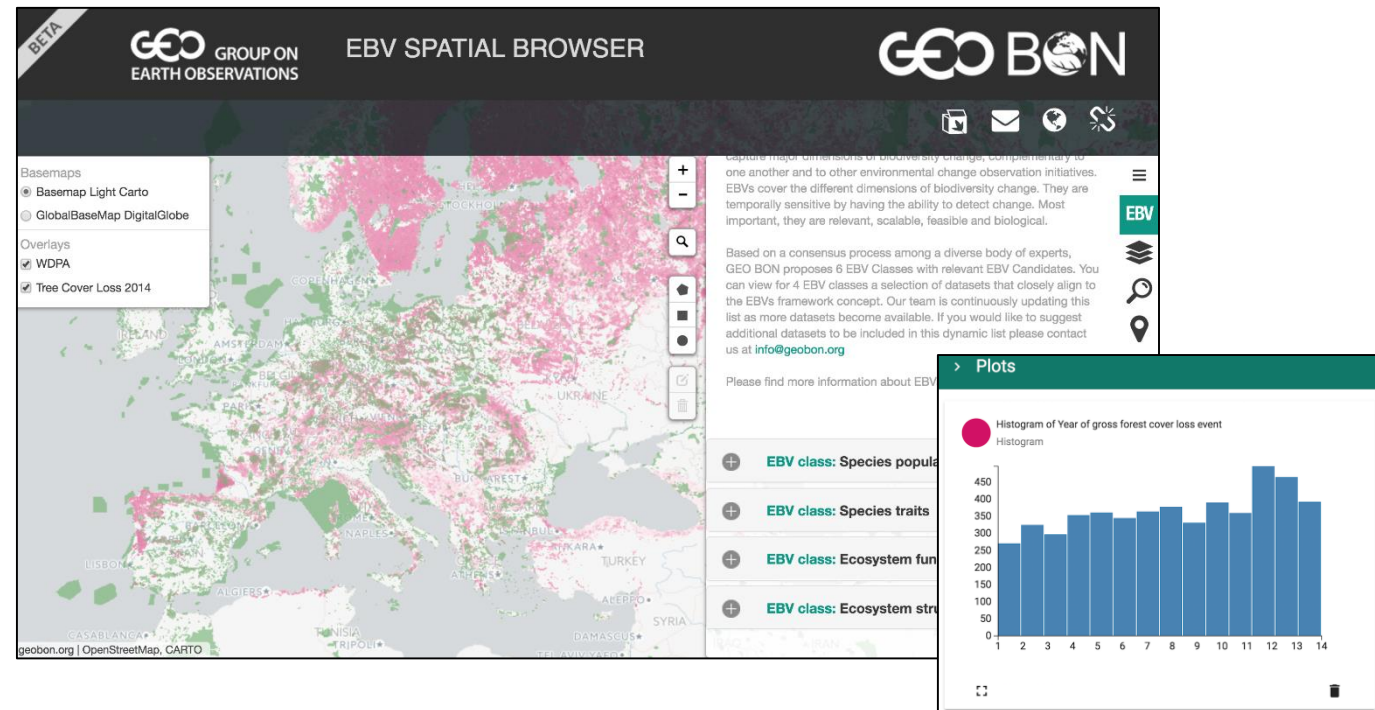
Indicators and projections



Conservation targets

Data and metadata standards: EBV Data Portal

GEO BON							
		UNDERSTANDING	VISUALISING	ACCESSING			
EBV	Metric	Name	Conceptual definition	Spatial Scope	Temporal Scope	Taxonomic Scope	Access
POPULATION ABUNDANCES	Population occupancy	Wildlife Picture Index	The TEAM Wildlife Picture Index (WPI) consists of occupancy time series coming for more than 250 species and approximately 500	Global, 120-180 km2	2007-2016, yearly	Mammals & birds	Download metadata Download data
	Population abundances	eBird	eBird engages volunteers via the Internet and mobile apps to collect bird observations in the form of checklists. The checklists contain	Global, 3 km	1900-, yearly	Birds	Download data
	Population abundances	Living Planet Index	The Living Planet Index (LPI) tracks trends in a large number of populations of species. The data used in constructing the Index are	Global, point data	1970-2015, yearly	Animals	Download metadata Download data
SPECIES POPULATIONS	Population abundances	North American Breeding Bird Survey	The North American Breeding Bird Survey (BBS), a survey that has been conducted for more than 45 years across much of North	North America, transects of 29.4 km	1966-2014, yearly	Birds	Download metadata Download data



INDEXING



VISUALIZING



ANALYSING /
SUMMARIZING

GEO BON EBV-Data

Future steps:

Key partners



1. Community consultation process to define criteria for reporting EBVs as a set of GEO BON EBV standards + Pilots
2. Adapt + promote adoption of GEOSS Data Management Principles. Implement GEO BON Pilot
3. Develop EBV Portal. Set the process to stream EBV datasets through the portal

GEO BON EBV–Data Task Force



W. Daniel Kissling
Universiteit van Amsterdam



Rob Guralnick
University of Florida



Néstor Fernández
iDiv



GEO BON EBV-Data Workshop, Leipzig 2017, 14 – 15 Dec



Thank you

www.geobon.org

GEO BON • German Centre for Integrative Biodiversity Research (iDiv) Halle-Jena-Leipzig, Deutscher Platz 5a,
04103 Leipzig, Germany • info@geobon.org