Biodiversity Observation Network

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GEO BON Implementation Committee

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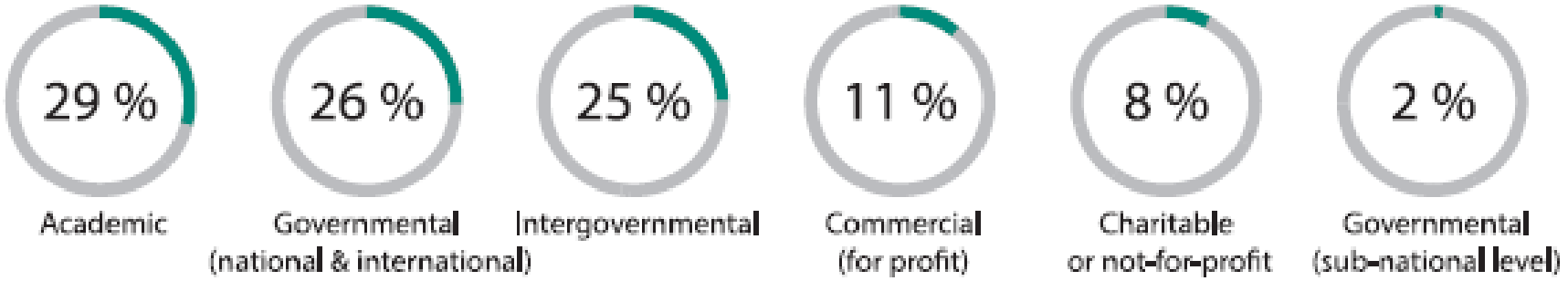
GEO Flagships

GEO BON GEO Biodiversity Observation Network	GEOGLAM GEO Global Agricultural Monitoring	GFOI Global Forest Observation Initiative	GOS4M Global Observation System for Mercury

GEO Initiatives

AfriGEOSS Reinforcing Regional African Engagement	AmeriGEOSS	AOGEOSS Asia-Oceania GEOSS	Aquawatch	Climate Change Impact Observation on Africa's Coastal Zones	GEO-DARMA Data Access for Risk Management
EO4EA Earth Observations for Ecosystem Accounting	EO4SDG Earth Observations in Service of the 2030 Agenda for Sustinable Development	EuroGEOSS	GEO Carbon and GHG Initiative	GEOCRI GEO Cold Regions Initiative	GNSL GEO Geohazard Supersites and Natural Laboratories
GEO ECO GEO Global Ecosystem Initiative	GEO-GNOME Global Network for Observation and Information in Mountain Environments	GEOGLOWS GEO Global Water Sustainability	GEO Human Planet Initiative	GEOSS-EVOLVE	GEO VENER GEO Vision for Energy
GEO Wetlands Initiative	GDIS Global Drought Information System	GOS4POPS Global Observations System for Persistent Organic Pollutants	Global Urban Observation and Information	GWIS Global Wildfire Information Sytem	Ocean and Society: Blue Planet

Types of Organizations Contributing to the GEO Work Programme



The biodiversity crisis

REVIEW

doi:10.1038/nature09678

Has the Earth's sixth mass extinction already arrived?

Anthony D. Barnosky[1,2,3], Nicholas Matzke[1], Susumu Tomiya[1,2,3], Guinevere O. U. Wogan[1,3], Brian Swartz[1,2], Tiago B. Quental[1,2]†, Charles Marshall[1,2], Jenny L. McGuire[1,2,3]†, Emily L. Lindsey[1,2], Kaitlin C. Maguire[1,2], Ben Mersey[1,4] & Elizabeth A. Ferrer[1,2]

Palaeontologists characterize mass extinctions as times when the Earth loses more than three-quarters of its species in a geologically short interval, as has happened only five times in the past 540 million years or so. Biologists now suggest that a sixth mass extinction may be under way, given the known species losses over the past few centuries and millennia. Here we review how differences between fossil and modern data and the addition of recently available palaeontological information influence our understanding of the current extinction crisis. Our results confirm that current extinction rates are higher than would be expected from the fossil record, highlighting the need for effective conservation measures.

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Wildlife

World on track to lose two-thirds of wild animals by 2020, major report warns

Living Planet Index shows vertebrate populations are set to decline by 67% on 1970 levels unless urgent action is taken to reduce humanity's impact

Damian Carrington

@dpcarrington

Thursday 27 October 2016 00.53 BST

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GEO BON

Commitment for Biodiversity: Increasing Demand for Relevant and Accessible Biodiversity Data

2011-2020
United Nations Decade on Biodiversity

Intergovernmental Platform on Biodiversity & Ecosystem Services
ipbes
Science and Policy for People and Nature

Ramsar

UNCCD

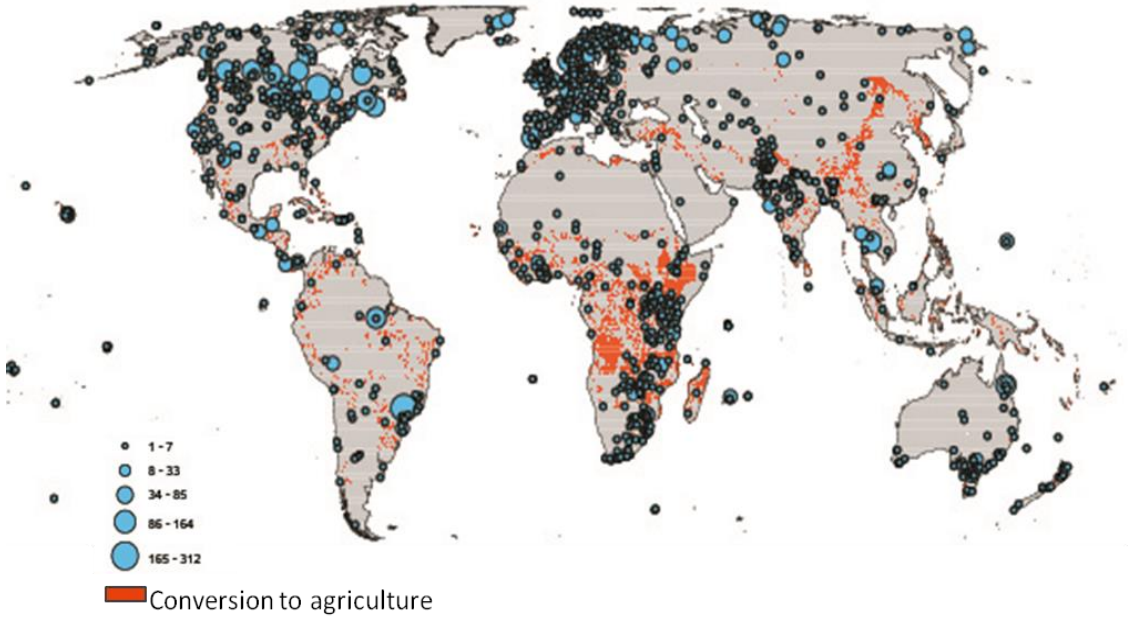
Convention on Biological Diversity

AICHI BIODIVERSITY TARGETS

SUSTAINABLE DEVELOPMENT GOALS

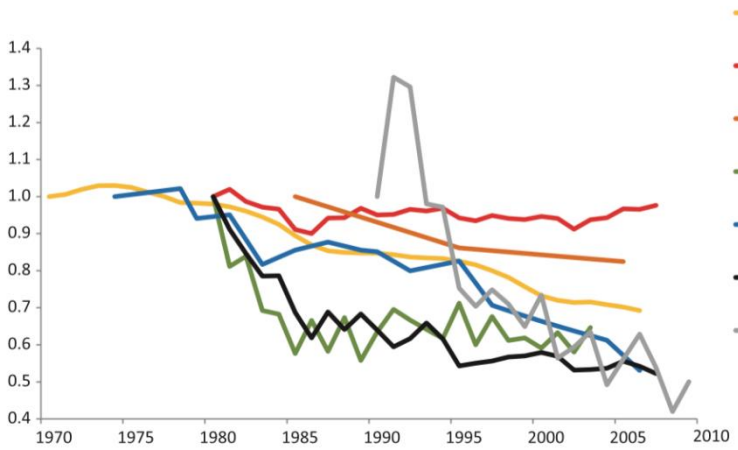
One challenge of biodiversity change: Knowledge gaps

Living Planet Index Populations



Spatial gaps

Temporal trends in biodiversity indicators



Taxonomic gaps

Temporal gaps

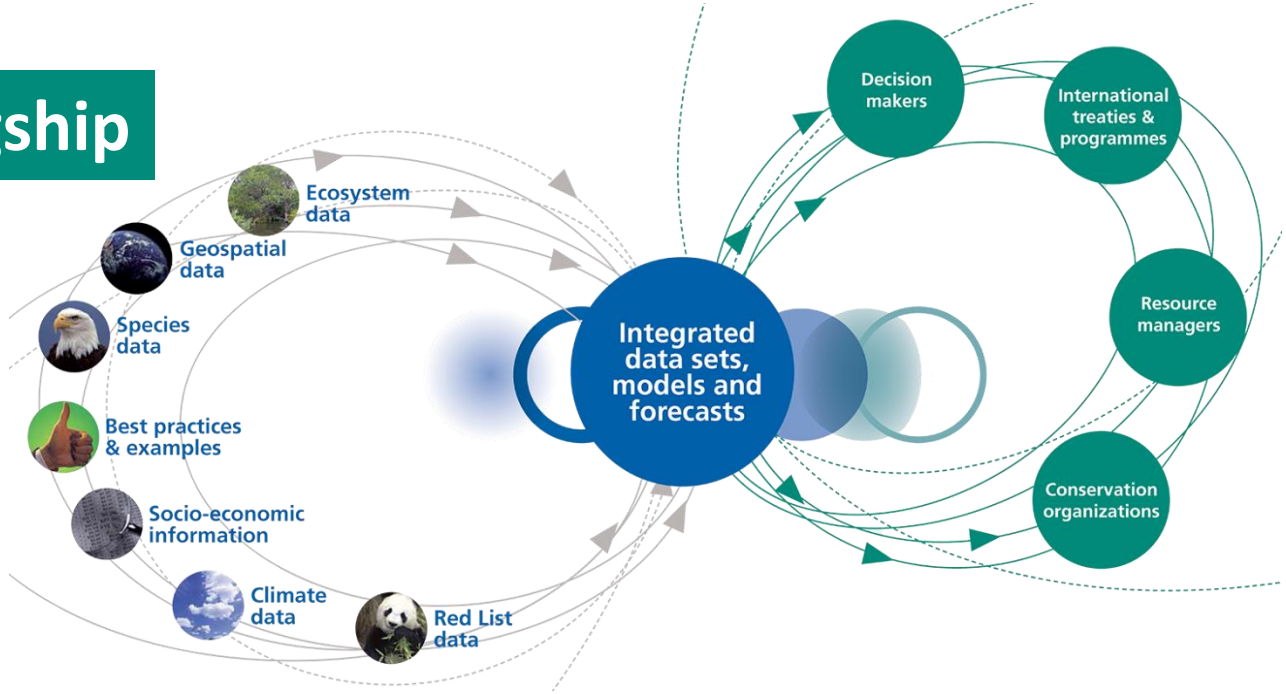
Pereira, H.M., Navarro L.M and Martins I.S. (2012) *Annual Review of the Environment and Resources*.

GEO BON in a nutshell

Mission

Improve the **acquisition**, **coordination** and **delivery** of biodiversity observations and related services to users including decision makers and the scientific community.

GEO Flagship



Vision

A **global biodiversity observation network** that contributes to effective **management policies** for the world's biodiversity and ecosystem services.

Flagship of GEO – The Group on Earth Observations

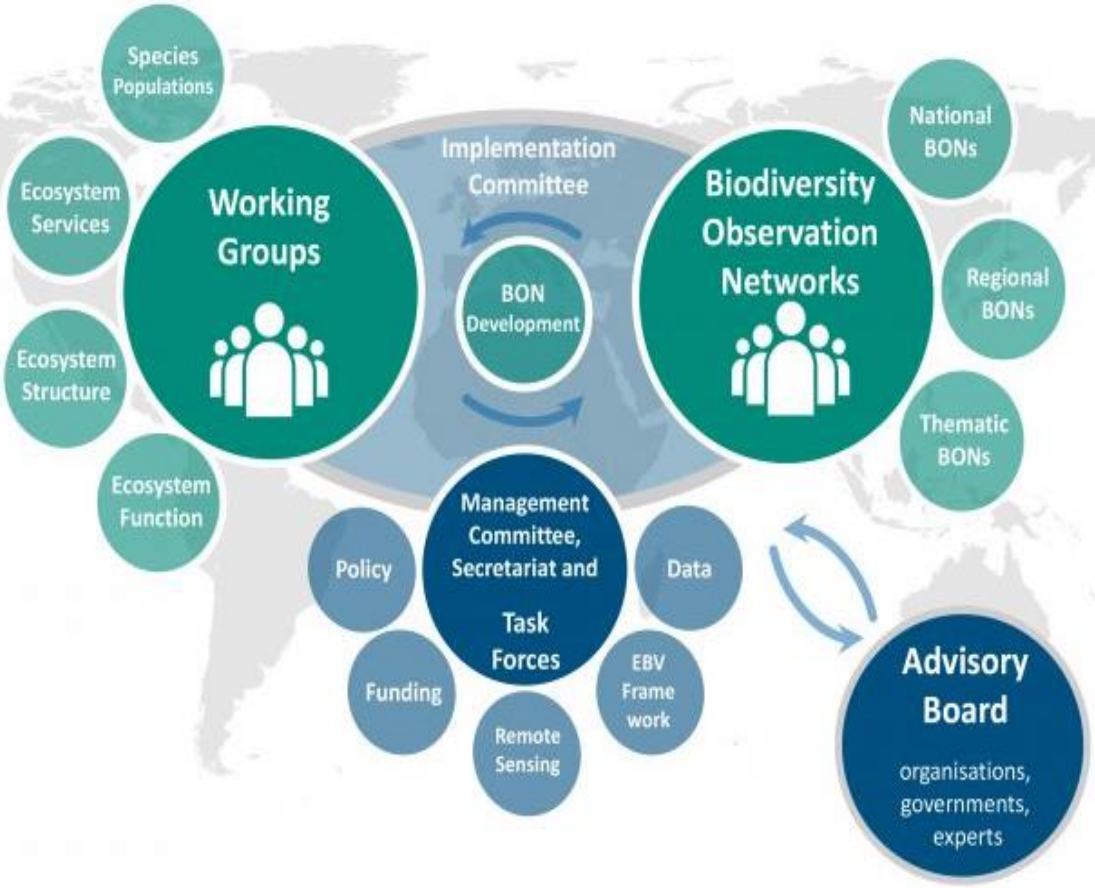
A Global, Coordinated, Comprehensive and Sustained System of Observing Systems

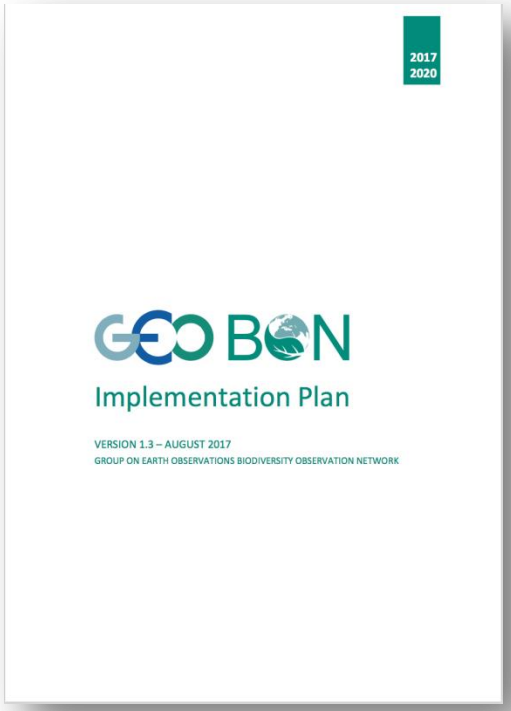
”Countries have borders, Earth Observations don’t”

GEO BON

A Global Partnership

Structure and governance





GEO BON core focus

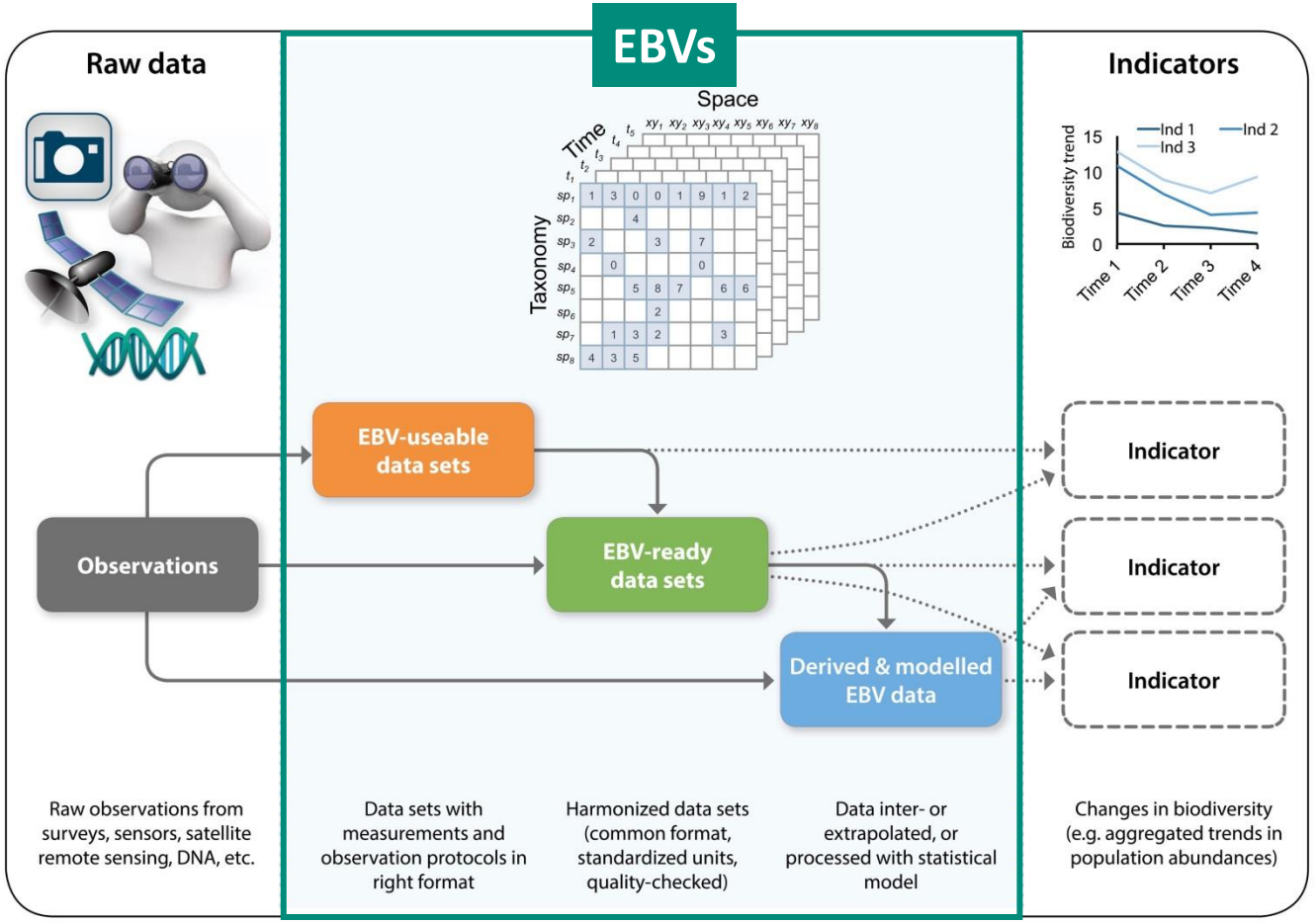
Developing a standard and flexible framework for biodiversity observations

Supporting the development of Biodiversity Observation Networks

Producing Policy Relevant Outputs

Earth System Science product development : the Essential Biodiversity Variables

EBVs: Minimum set of measurements, complementary to one another, that can capture major dimensions of biodiversity change.



Users

National Governments

CBD

ipbes Science and Policy for People and Nature

SUSTAINABLE DEVELOPMENT GOALS

Kissling et al., (2017) Biological Reviews

Acquisition, Mobilization and Integration of biodiversity observations

Genetic Composition
e.g. Allelic diversity

Species Populations
e.g. Species distribution

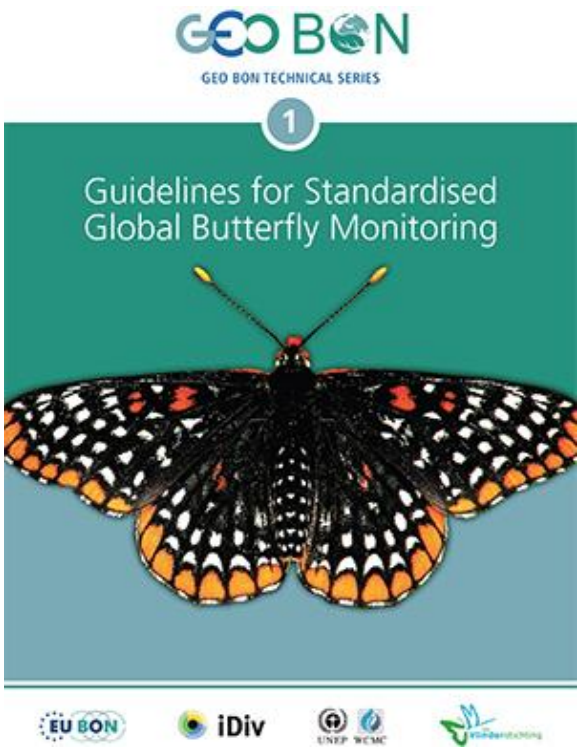
Species Traits
e.g. Body size, phenology

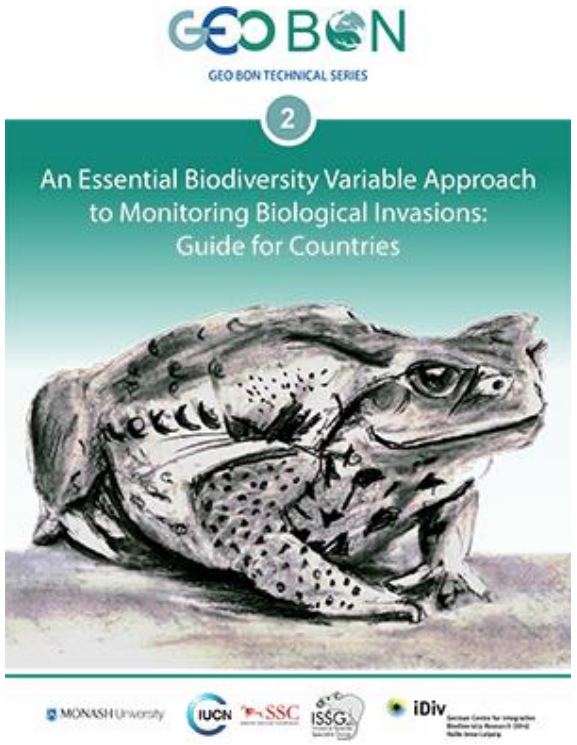
Community Composition
e.g. Species interactions

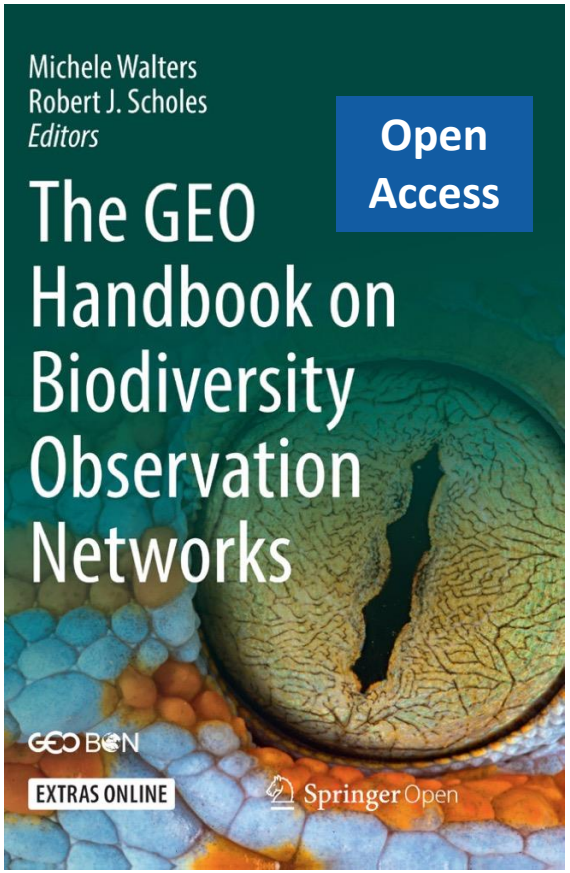
Ecosystem Structure
e.g. Ecosystem extent

Ecosystem Functions
e.g. Disturbance

Developing a standard and flexible framework for biodiversity observations





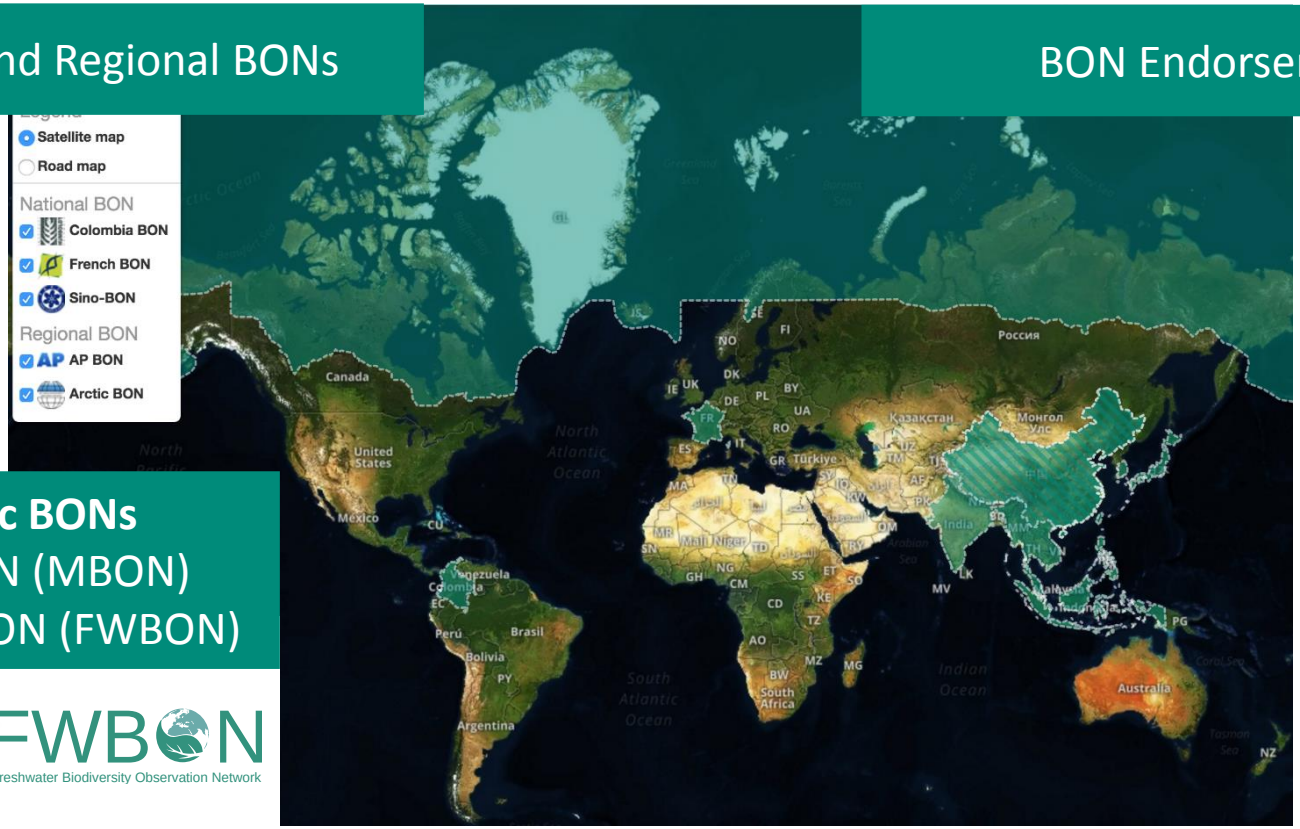


Building a Network of National, Regional and Thematic BONs

Contribute to the **collection** and **analysis** of **harmonised biodiversity observations**, the development of integrated and interoperable **biodiversity monitoring programs**, the development of **data standards**.

National and Regional BONs

BON Endorsement



Thematic BONs

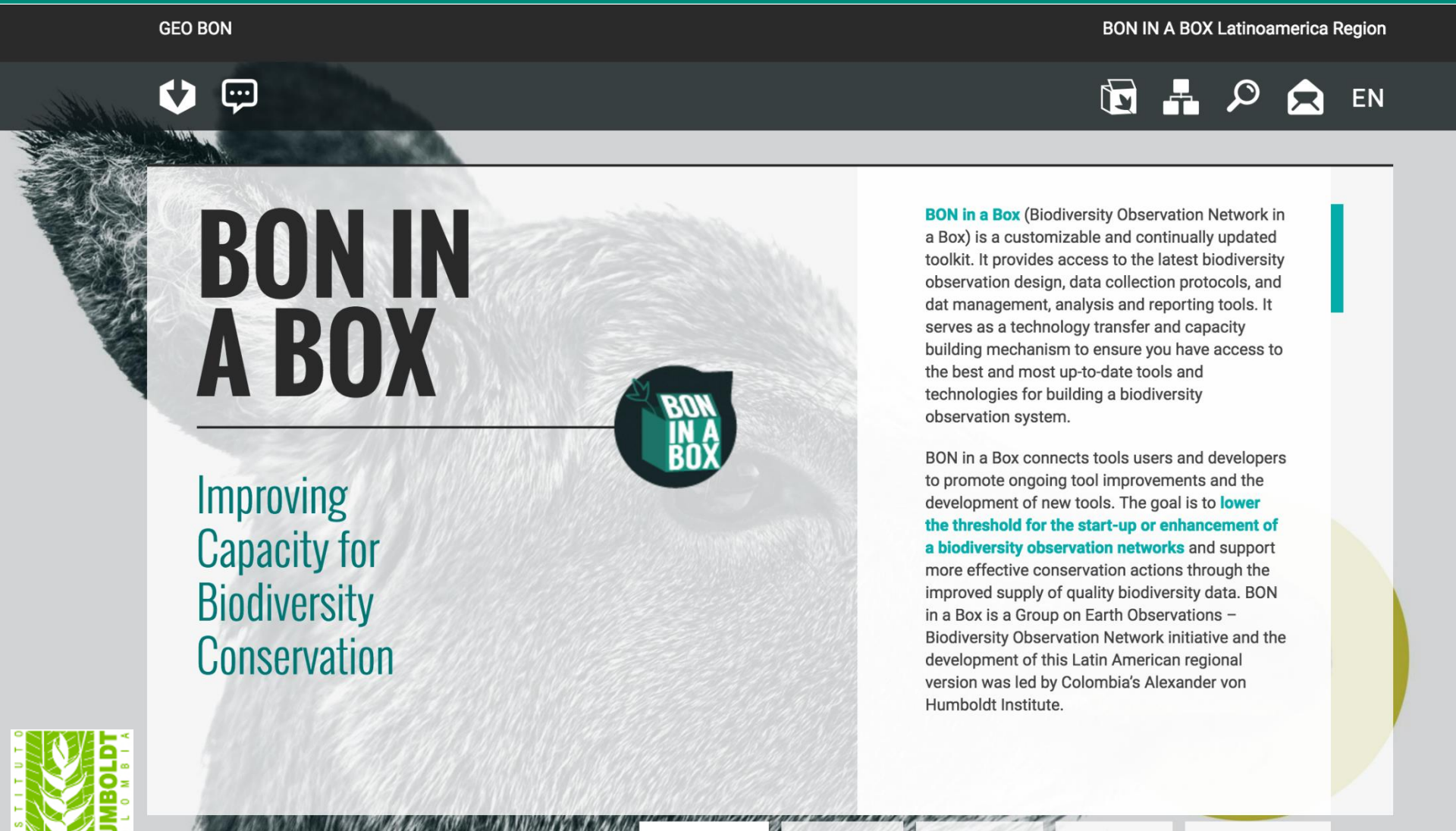
Marine BON (MBON)

Freshwater BON (FWBON)

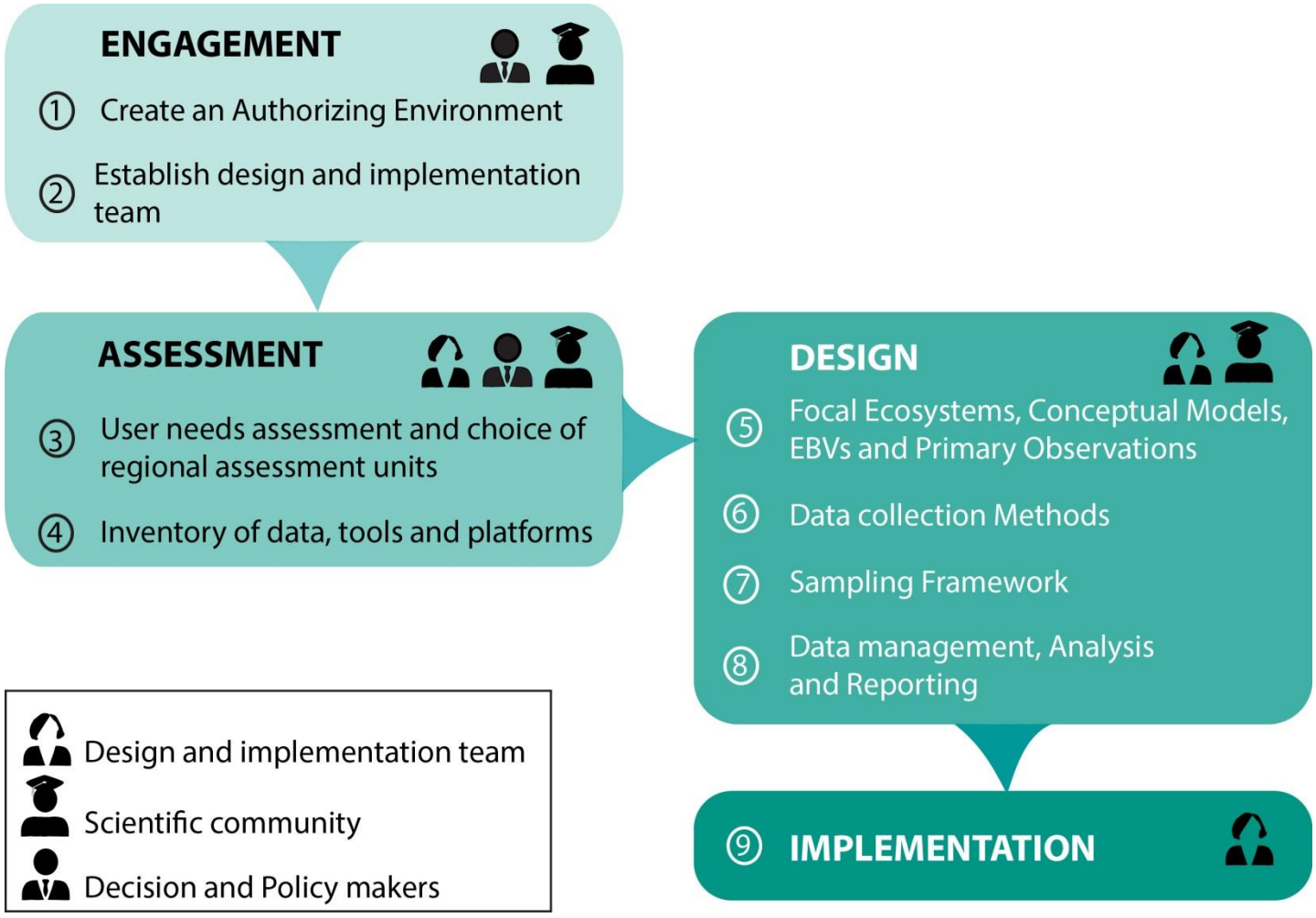
MBON Marine Biodiversity Observation Network

FWBON Freshwater Biodiversity Observation Network

Supporting the development of BONs – Capacity building and knowledge exchange



Supporting the development of BONs – BON development process

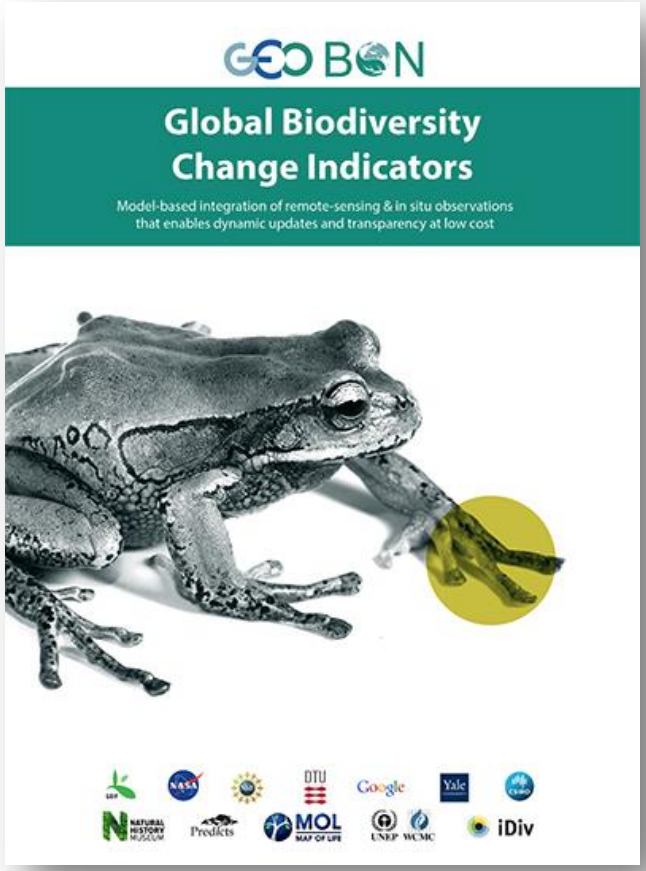


Policy relevant outputs: Supporting users' reporting needs

Convention on Biological Diversity

EBV based indicators: integrating in situ and remote sensing observations for open access & real-time indicators

SHI Species Habitat Indices (MOL Map of Life)	5, 12	**Essential Biodiversity Variables:** Species distributions; Ecosystem extent and fragmentation
BHI Biodiversity Habitat Index (CSIRO)	5	**Essential Biodiversity Variables:** Ecosystem extent and fragmentation; Taxonomic diversity
SPI Species Protection Index (MOL Map of Life)	11	**Essential Biodiversity Variables:** Species distributions; Ecosystem extent and fragmentation
PARC Protected Area Representativeness & Connectedness (PARC) Indices (CSIRO)	11	**Essential Biodiversity Variables:** Ecosystem extent and fragmentation; Taxonomic diversity
GERI Global Ecosystem Restoration Index (iDiv)	15	**Essential Biodiversity Variables:** Ecosystem extent; Net primary productivity
SSII Species Status Information Index (MOL Map of Life)	19	**Essential Biodiversity Variables:** Species distributions; Taxonomic diversity



Policy relevant outputs: Supporting users' reporting needs

Candidate EBV classes

2 ZERO HUNGER	2.4 2.5	Ecosystem structure Ecosystem function Genetic composition
3 GOOD HEALTH AND WELL-BEING	3.D	Species populations
6 CLEAN WATER AND SANITATION	6.3 6.6	Ecosystem function Species Populations Ecosystem Structure
11 SUSTAINABLE CITIES AND COMMUNITIES	11.3	Ecosystem Structure
14 LIFE BELOW WATER	14.4 14.5	Species Populations Ecosystem Structure
15 LIFE ON LAND	15.1, 15.2, 15.3, 15.4, 15.5, 15.7, 15.8, 15.c	Ecosystem Structure Species Populations Ecosystem Function

14 LIFE BELOW WATER

MBON
Marine Biodiversity Observation Network

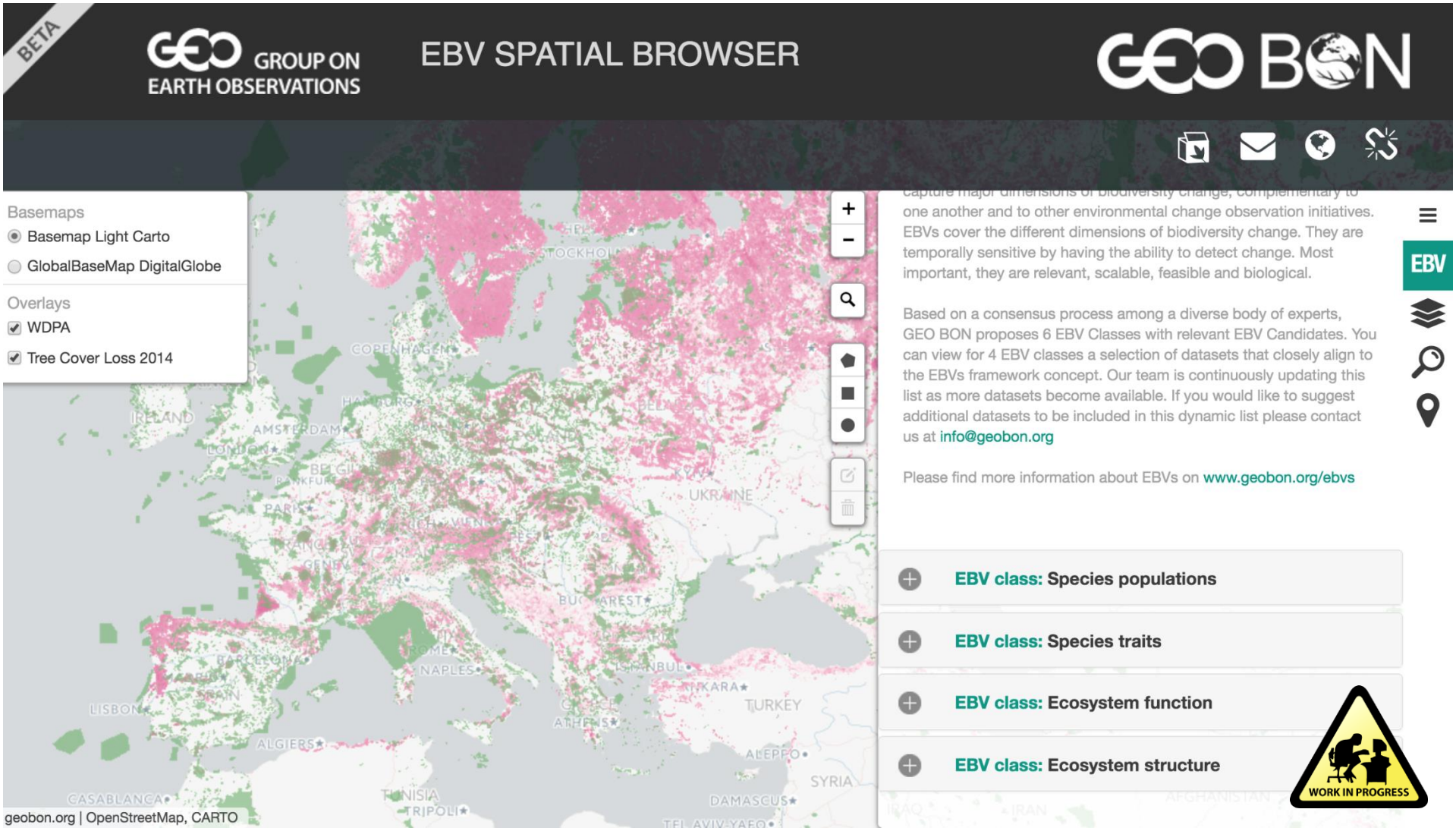
Indicator 14.5.1.
Coverage of protected areas in relation to marine areas

UNEP WCMC

Target 14.2
Prototype product to integrate EO, OBIS data, local surveys

OBIS

Delivery of biodiversity related products to end-users



Thank you

For more information:

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