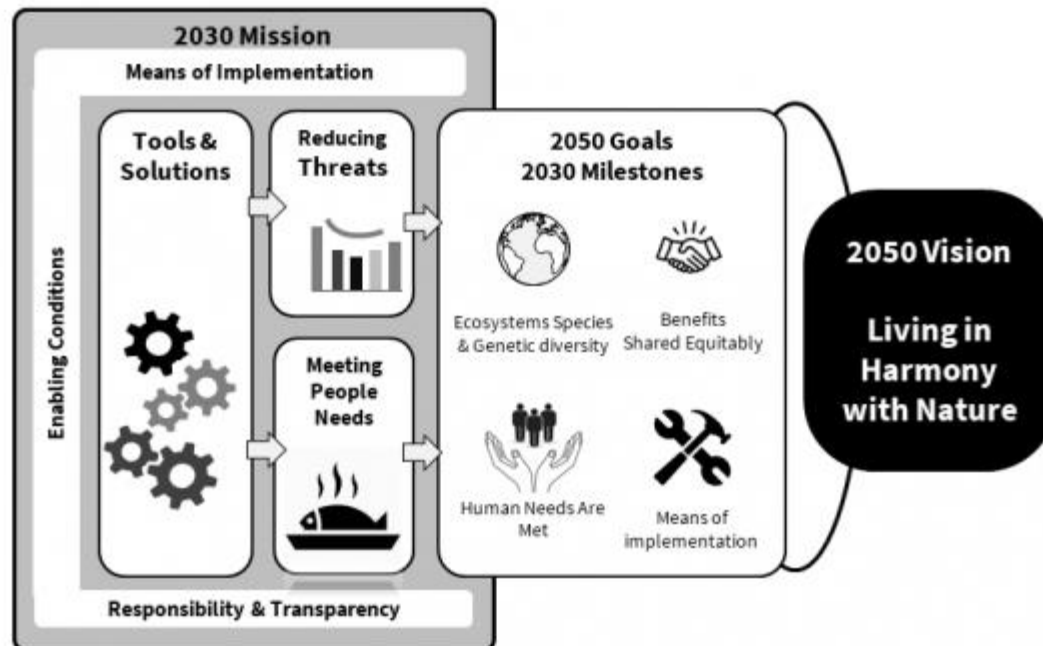




NatureServe's Biodiversity Indicators Program: *From Data to Decision*

Political Commitment for Biodiversity = Increasing Demand for Biodiversity Data and Indicators



SUSTAINABLE DEVELOPMENT GOALS



Four 2050 Outcome-Based Goals and Twenty-Three Action-Oriented 2030 Targets

#COP15: It's time to roll up our sleeves

The United Nations Biodiversity Conference (COP15) ended in Montreal, Canada, on 19 December 2022 with a landmark agreement to guide global action on nature through to 2030. Chaired by China and hosted by Canada, COP 15 resulted in the adoption of the Kunming-Montreal Global Biodiversity Framework (GBF).





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Uneven use of biodiversity indicators in 5th National Reports to the Convention

Conservation Genetics
<https://doi.org/10.1007/s10592-022-01492-0>

RESEARCH ARTICLE

Genetic diversity goals are insufficient for clear implementation in biodiversity framework

Sean Hoban^{1,2} · Michael W. Bruford¹
Michael J. Gill⁷ · Catherine E. Grueb
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Abstract

Genetic diversity among and within populations is changing world. Over the past three years, specific under the Convention on Biological Diversity. Perspective article comments on how genetic diversity is learned from this process, and comments on how to maintain, protect, manage and monitor genetic diversity within and among populations. Conservation strategies, and to report on

Keywords Adaptive capacity · Gene flow

nature
ecology & evolution

Ensuring effective 2020 global

Haigen Xu ^{1,6} , Yun Cao
Henrique M. Pereira ³

Biodiversity underpins the fu
clean water. In 2010, the Aic
servation efforts, none of the
terms of implementation mec
effective national targets in
sity conservation have been i
the post-2020 Global Biodive
2050 Vision. We propose tha
of sources, including the depl
ence-policy interfaces at all l
decision-making. We sugges
provide transparent and cred

PERSPECTIVE

<https://doi.org/10.1038/s41559-020-01375-y>

Comment

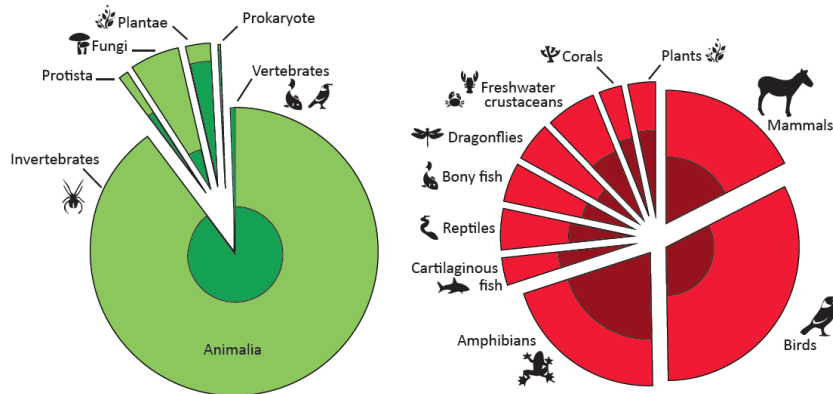
<https://doi.org/10.1038/s41559-023-02171-0>

A global biodiversity observing system to unite monitoring and guide action

Andrew Gonzalez, Petteri Vihervaara, Patricia Balvanera, Amanda E. Bates, Elisa Bayraktarov, Peter J. Bellingham, Andreas Bruder, Jillian Campbell, Michael D. Catchen, Jeannine Cavender-Bares, Jonathan Chase, Nicholas Coops, Mark J. Costello, Maria Dornelas, Grégoire Dubois, Emmett J. Duffy, Hilde Eggermont, Nestor Fernandez, Simon Ferrier, Gary N. Geller, Michael Gill, Dominique Gravel, Carlos A. Guerra, Robert Guralnick, Michael Harfoot, Tim Hirsch, Sean Hoban, Alice C. Hughes, Margaret E. Hunter, Forest Isbell, Walter Jetz, Norbert Juergens, W. Daniel Kissling, Cornelia B. Krug, Yvan Le Bras, Brian Leung, Maria Cecilia Londoño-Murcia, Jean-Michel Lord, Michel Loreau, Amy Luers,

Biodiversity Data: Many Deficiencies

Taxonomic Bias



Pereira, H.M. et al (2012) *Annual Review of the Environment and Resources*.

Impact & personal bias



‘Not so Fun’ Facts:

82% of all biodiversity records come from just 10 countries (Europe, USA, Australia, South Africa)

44% of the world’s terrestrial vertebrate records are from USA

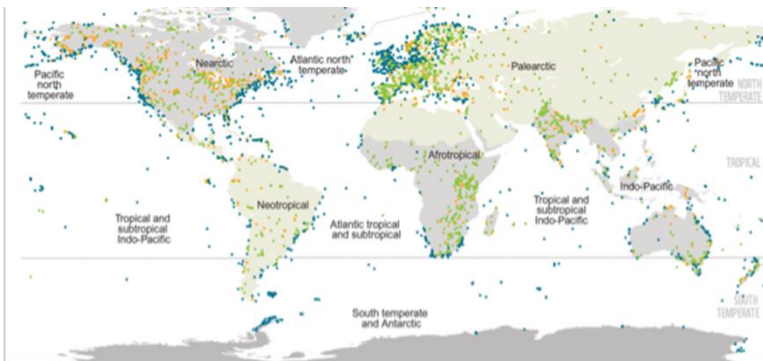
Over 50% of records for most groups account for <2% of species in that group

100 bird species in GBIF account for 56% of all records (2% from Mallards and European Starlings)

From: *Hughes et al. 2021 Sampling biases shape our view of the natural world.*

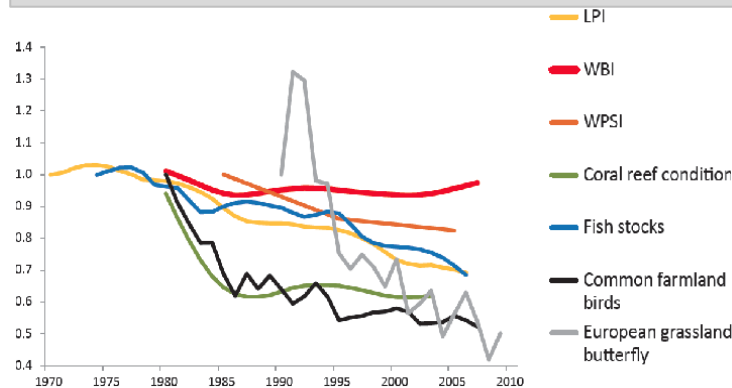


Spatial dimension



McRae et al. (2014) WWF

Temporal dimension



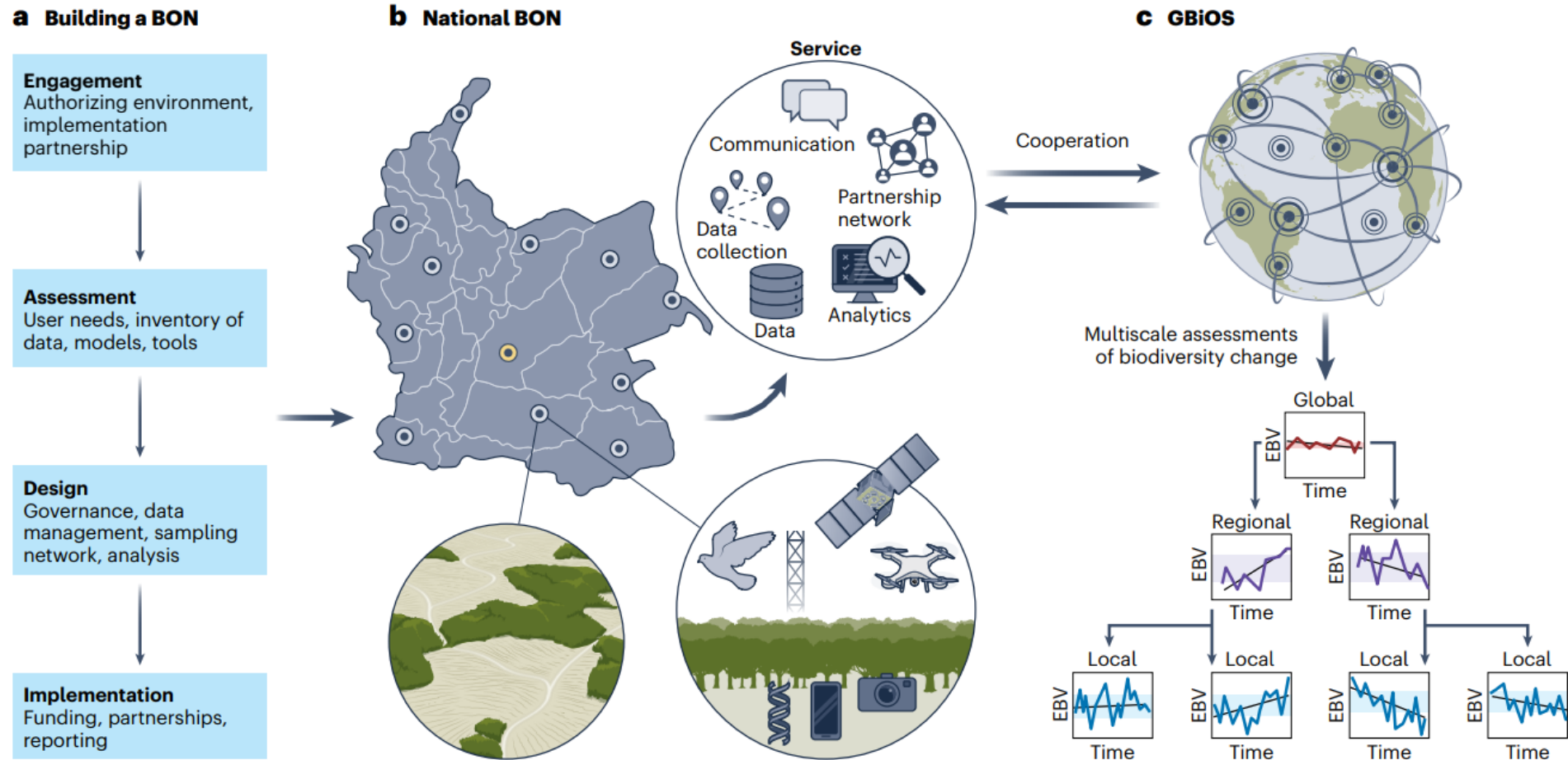
Pereira, H.M. et al (2012) *Annual Review of the Env. & Resources*.

NatureServe's Biodiversity Indicators Program

- **Co-developing national and regional capacity** for sustained biodiversity monitoring and reporting systems:
 - Track and report on **conservation targets**
 - Identify key **conservation trends & issues**, and **prioritize conservation efforts**
 - Establish **current and historical baselines** to measure trends against
 - Inform **sub-national assessments and planning**
 - Evaluate **conservation policy impacts**
- Partnerships in:
 - Asia, Latin America & Caribbean, Arctic, Sub-Saharan Africa



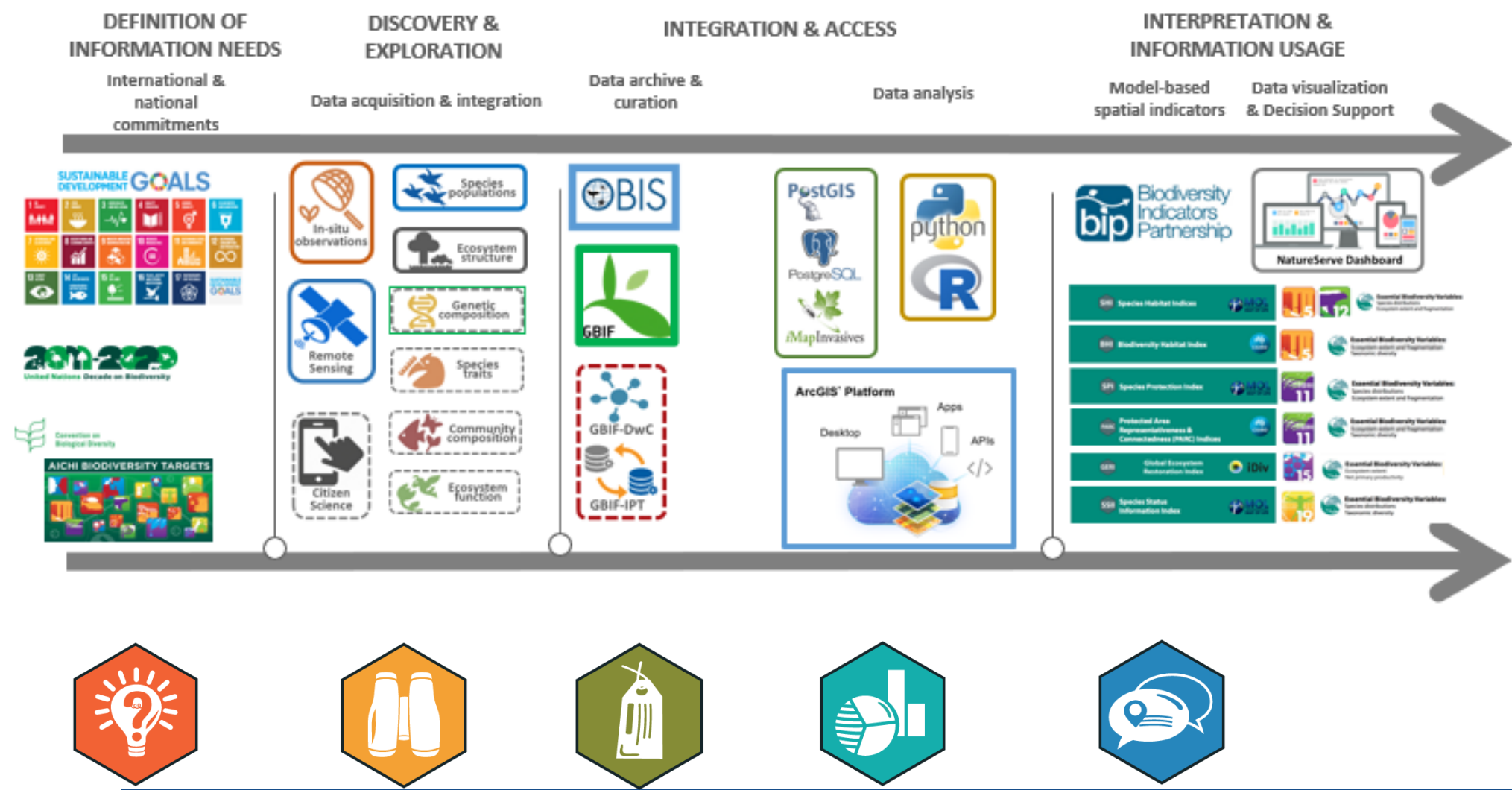
Building a Global Network of Biodiversity Observation Networks (BONs)



From Gonzalez et al. A global biodiversity monitoring system to unite monitoring and guide action. Nature Ecology & Evolution 2023.

Biodiversity Indicator Program: User-Driven, Modular Approach

Biodiversity Observation and Information Systems: From Data to Decision

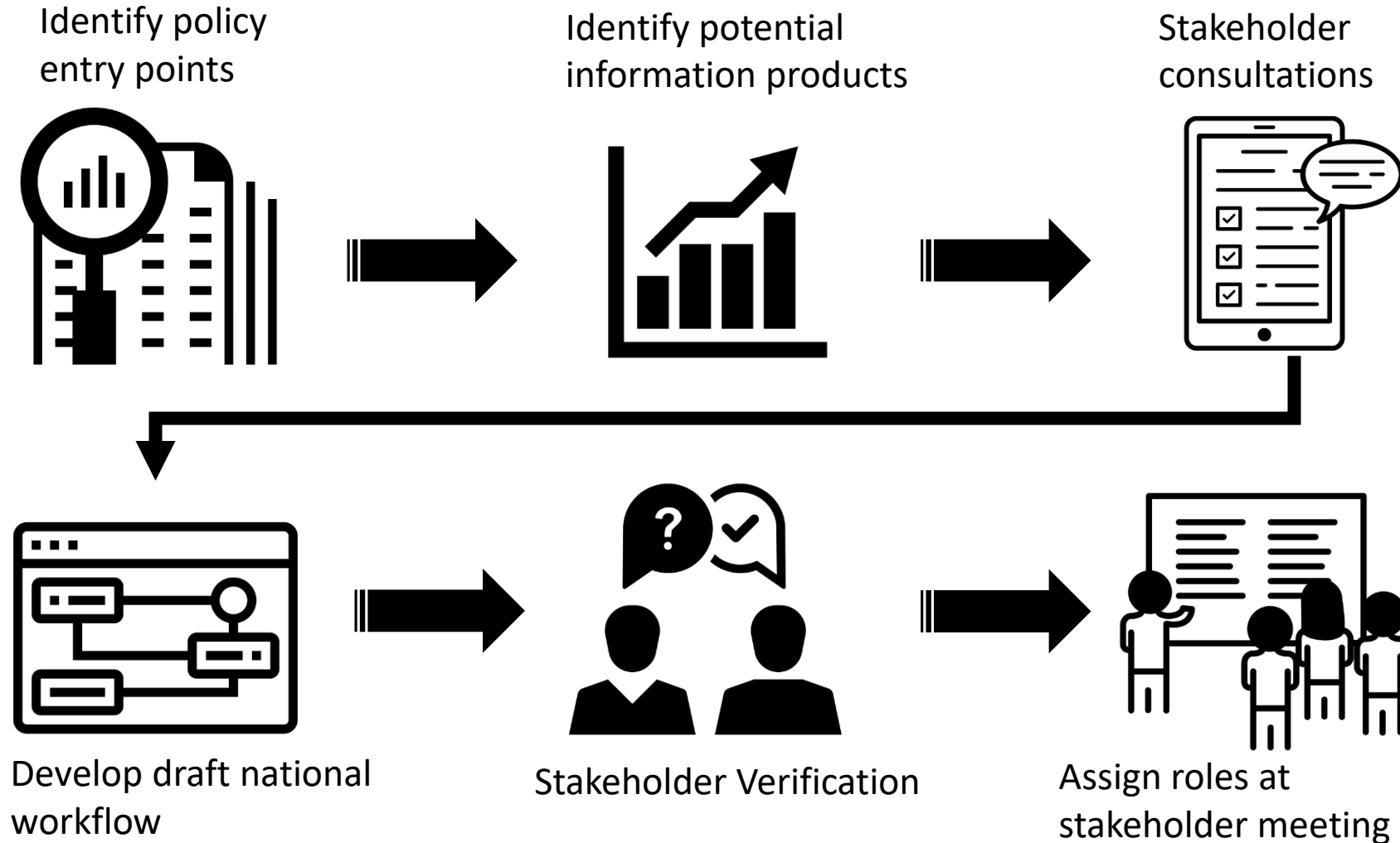


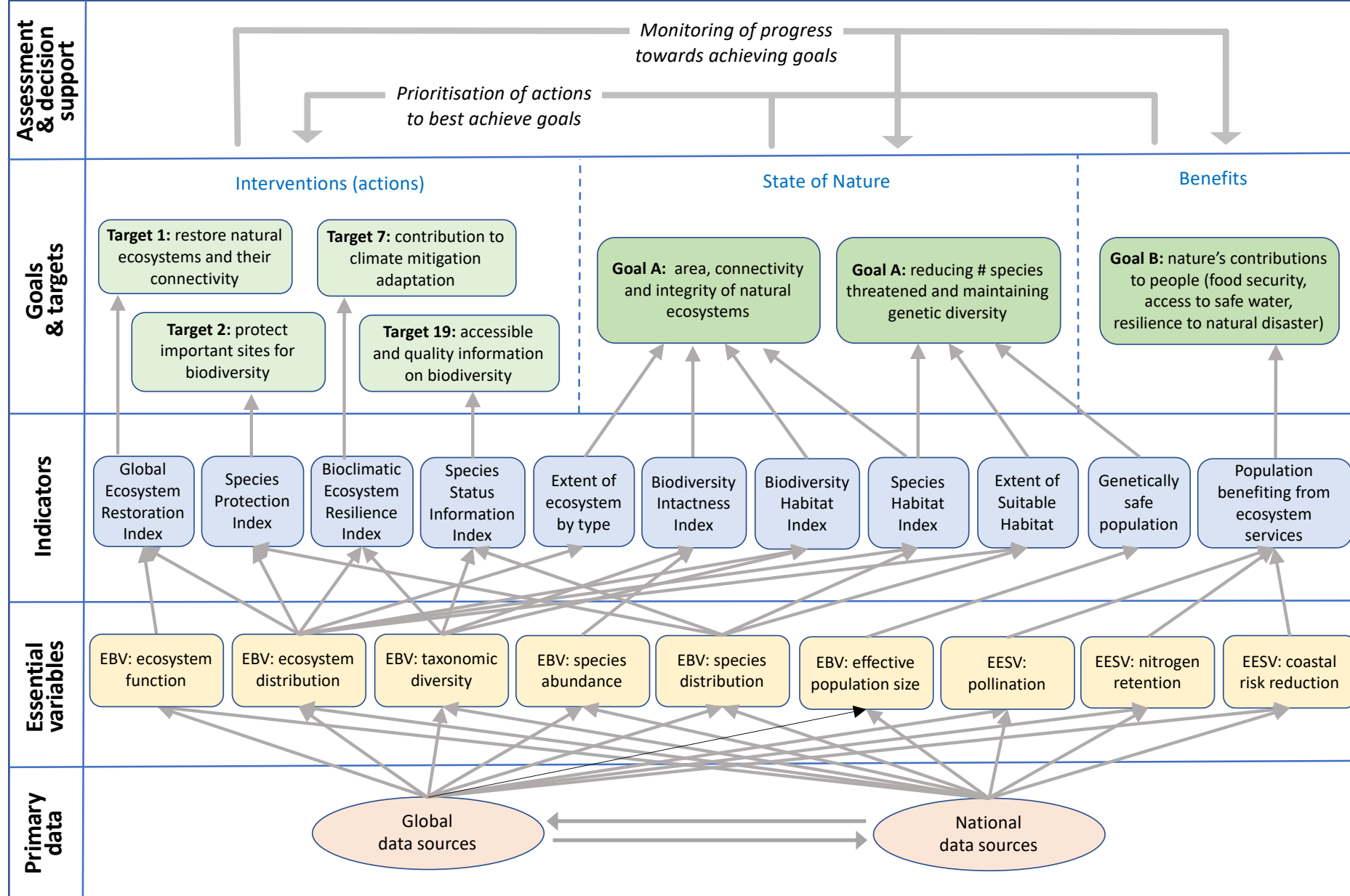
Recent and Current NatureServe Projects

Location	User-Needs Policy Target Mapping	Indicator Prioritization	Monitoring & Reporting Framework	Indicator Production	Data System	Biodiversity Dashboard
Pan-Arctic						
Bahamas						
Namibia						
Tropical Andes						
Southeast Asia						
South Korea						

- Based on GEO BON 9-step BON Design Process;
- Modular, interoperable and workflow based;
- Nations/Regions serve as convenors and bring in indicator and other partners (e.g. CSIRO for Korea)
- Mostly focused on strengthening implementation capacity for KM-GBF monitoring and reporting but extends into other conventions (UNCCD – Namibia) and UNFCCC (Namibia and Korea)
- Mostly focused on Goal A, Targets 1-8 but others may be covered in certain instances

Workflow Process: Blueprints for Data Visualization, Data System and Data Products

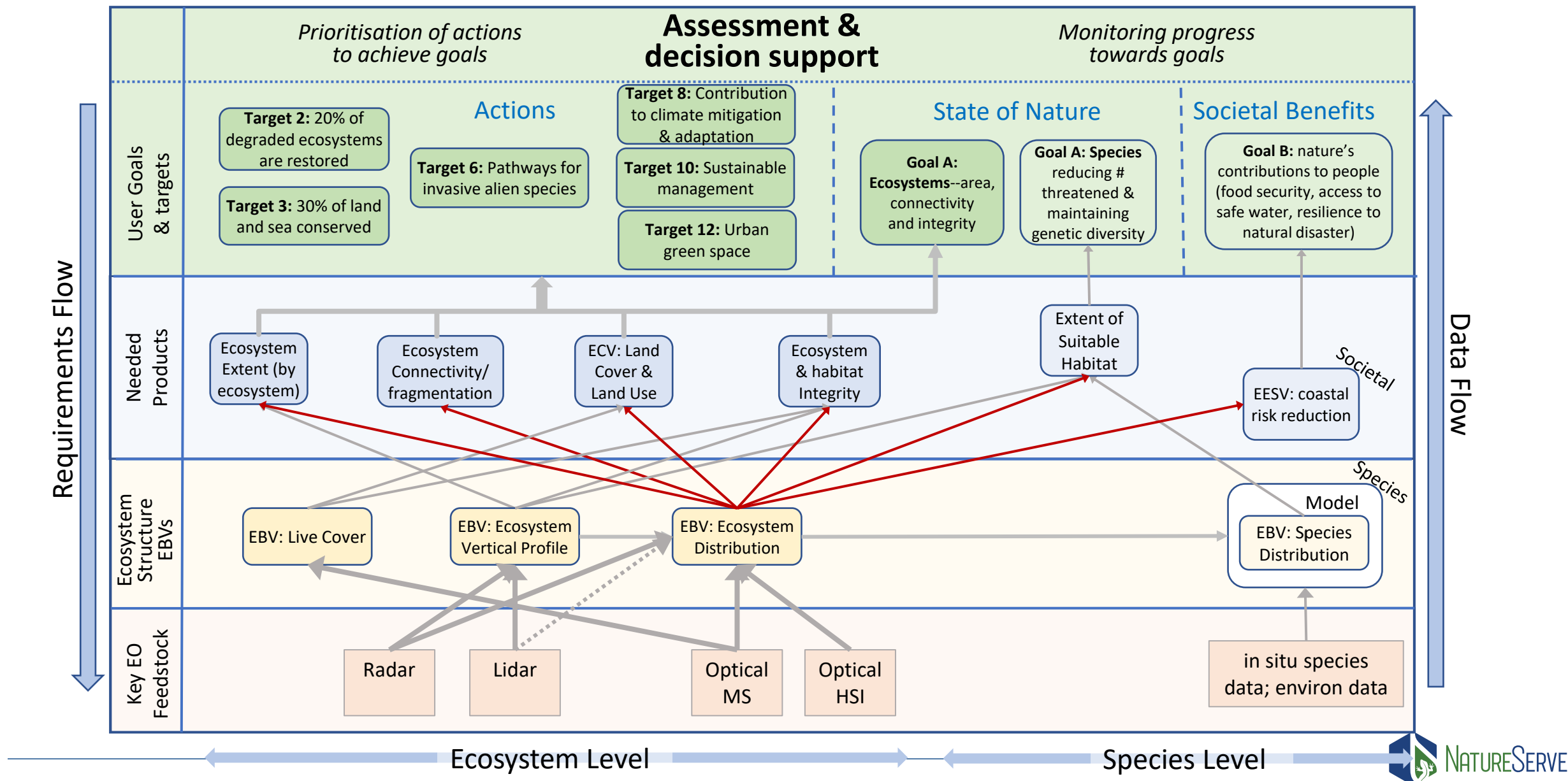




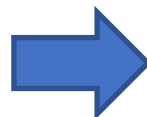
Data to EBVs to Targets: a National Indicator Reporting Framework

From: Kim et al. PrePrint. Essential Biodiversity Variables and Essential Ecosystem Services Variables for Post-2020 Policy Development and Implementation

Satellite Inputs to National Indicator Frameworks



From This...

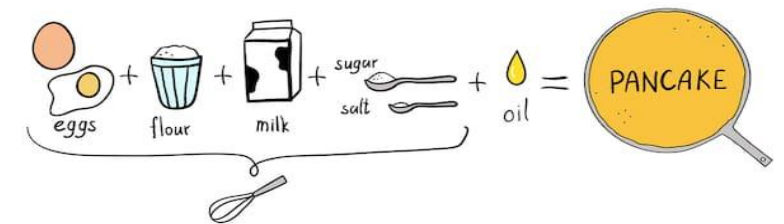


...To This!



Leveraging National Capacity and Data for Smarter Conservation Outcomes

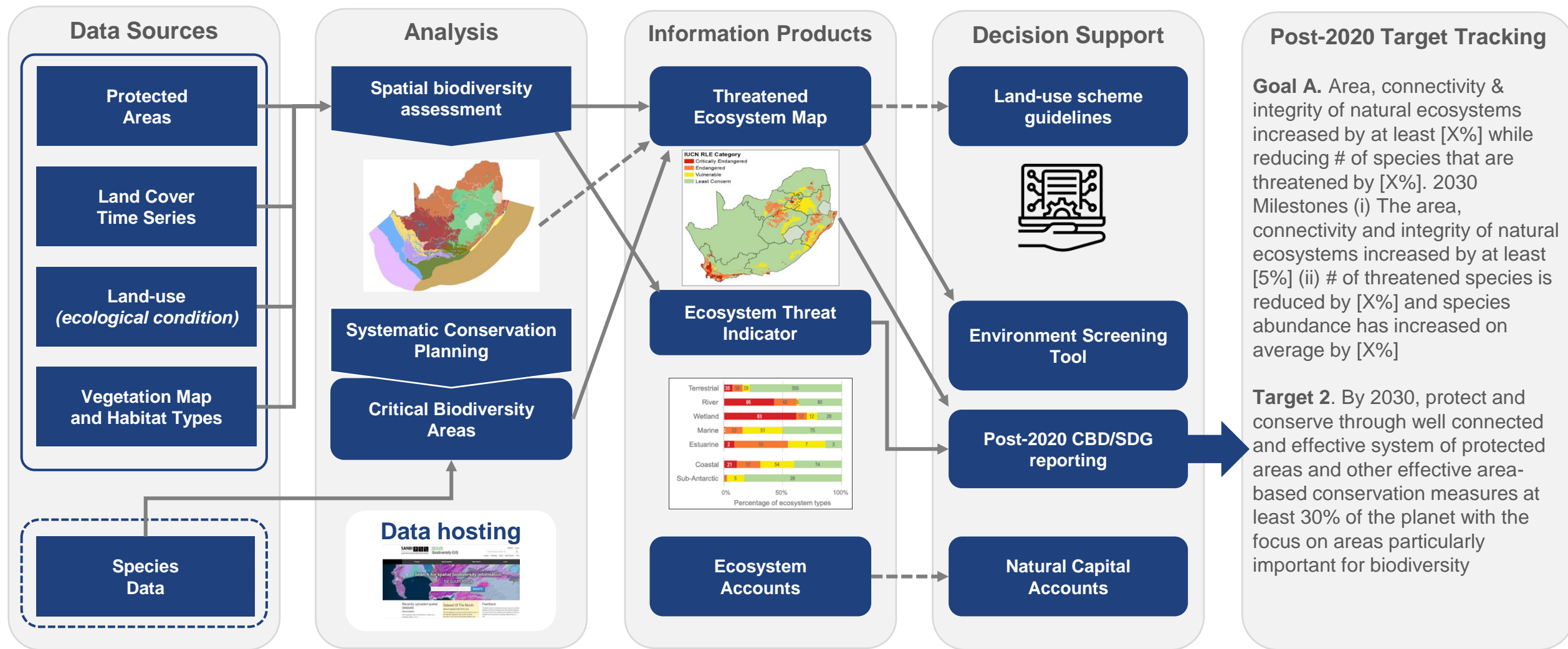
- *Repeatable* indicator workflows based on core data:
 - **Discover & integrate existing data** (national, global) for sustained production of locally valid, scalable & relevant indicators
 - Clearly **define the ‘what’** (data, analytics and tools needed), the **‘who’** (which institutions will play key roles) and the **‘where’** (where these institutions will sit within the workflows)
 - **Application** in Africa, Arctic, Caribbean and Latin America
 - **Design frames** for biodiversity information and observation systems



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Transforming Data to Conservation Intelligence

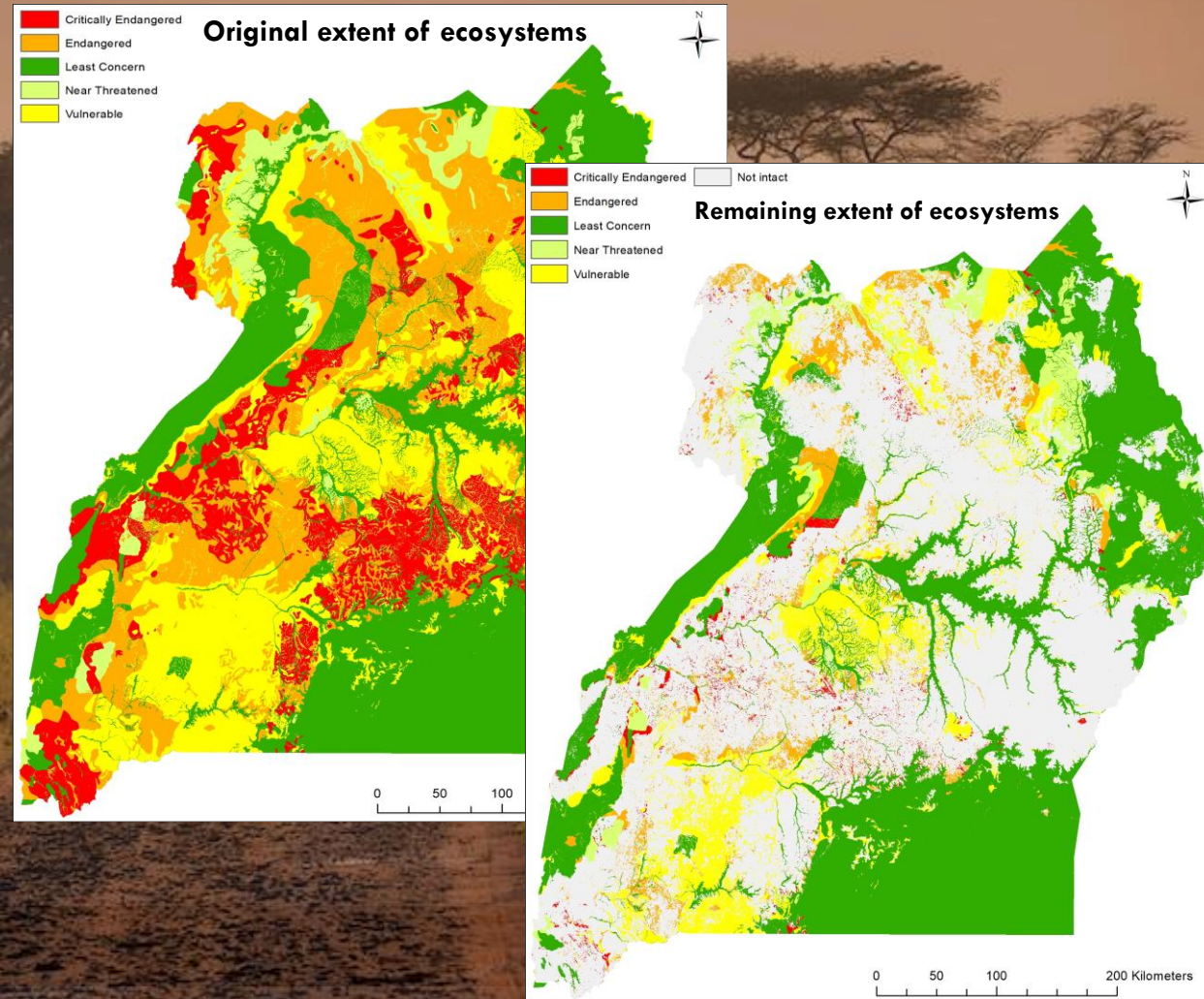
Repeatable, Harmonized Workflows for Biodiversity Assessment and Indicators



CONNECT Africa (Ghana/Uganda)

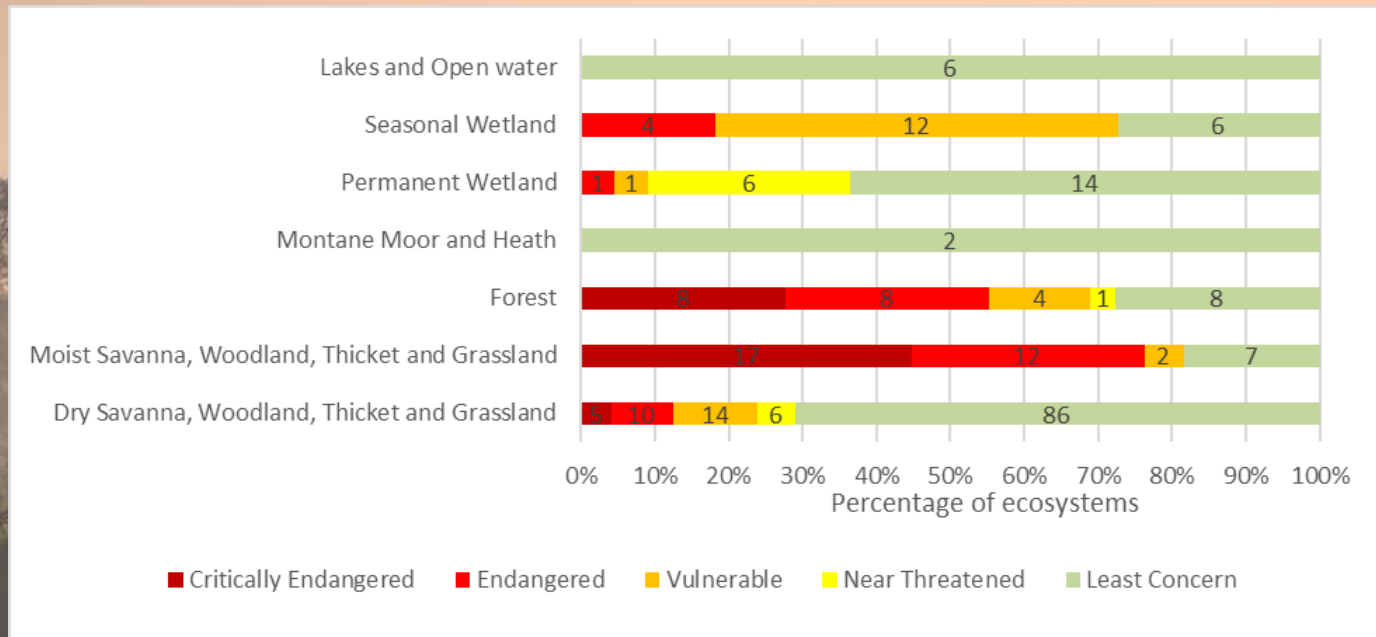
Assessment

Ecosystem Threat Status



From: Uganda Spatial Biodiversity Assessment (Stephen Holness Nelson Mandela University)

Outputs: Indicators



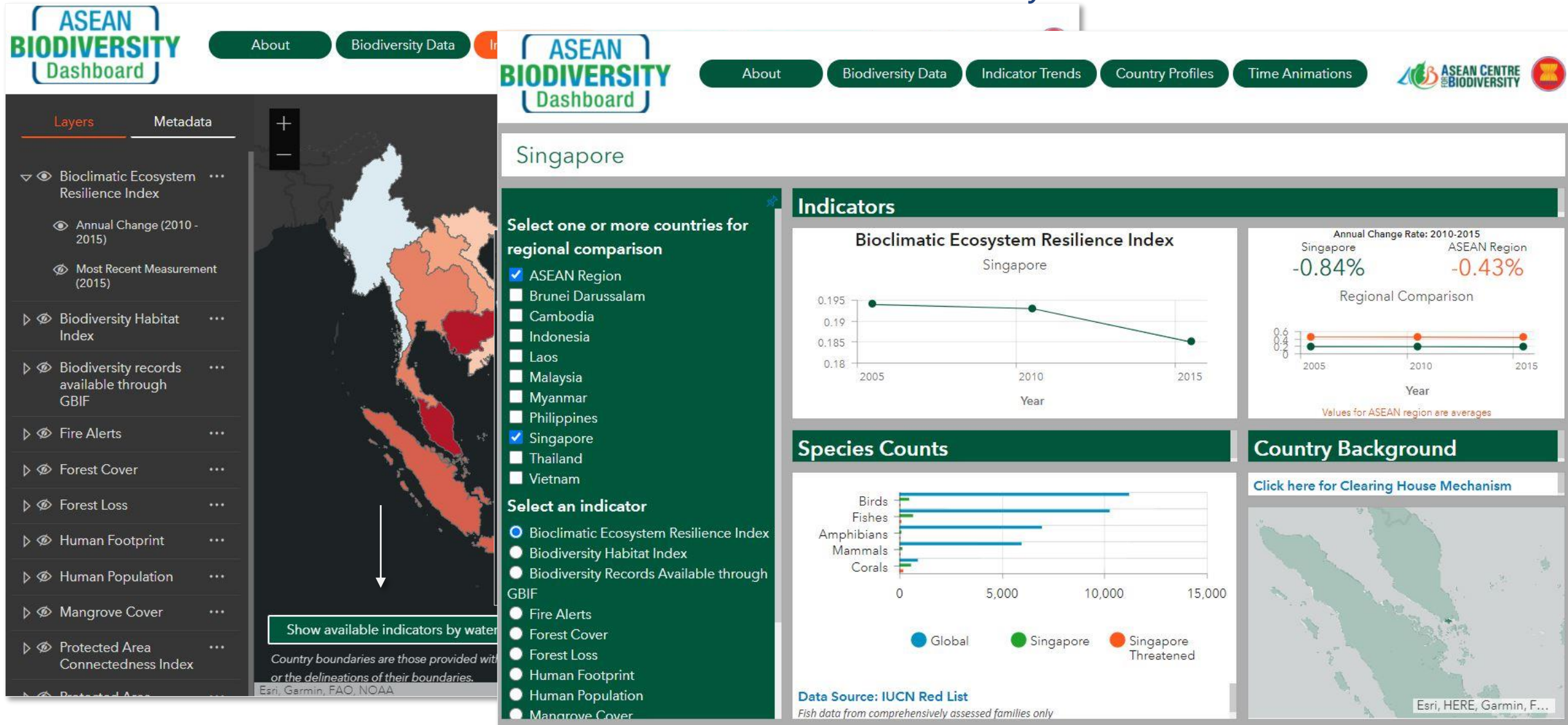
Assessment

Ecosystem Threat
Status

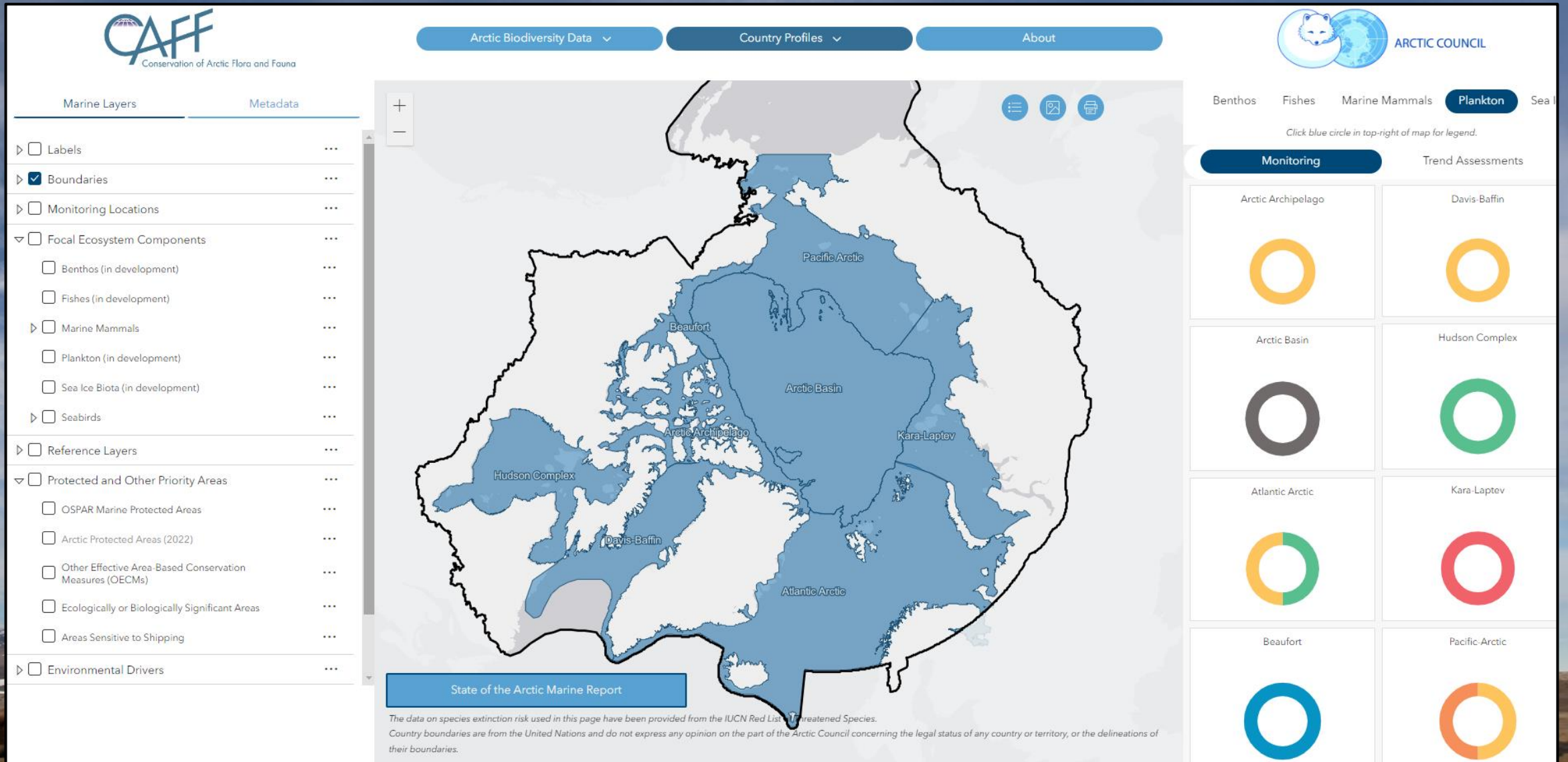
From: Uganda Spatial Biodiversity Assessment (Stephen Holness, Nelson Mandela University)

Transforming Data to Conservation Intelligence: ASEAN Biodiversity Dashboard

Data Visualization to Streamline Effective and Timely Conservation



Arctic Biodiversity Dashboard



Courtesy: Carsten Egevang Arc-pic, Greenland.

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