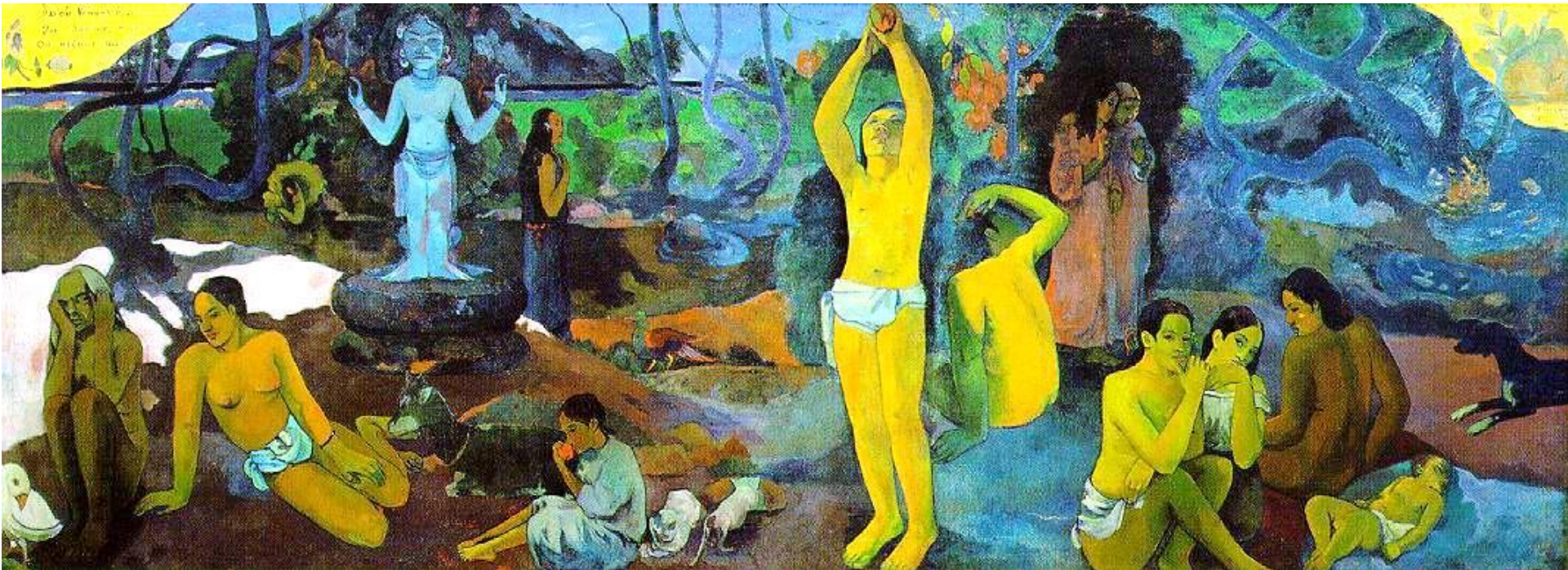


GEO, GEOSS, GEO BON:

Where do we come from? What are we?
Where are we going?



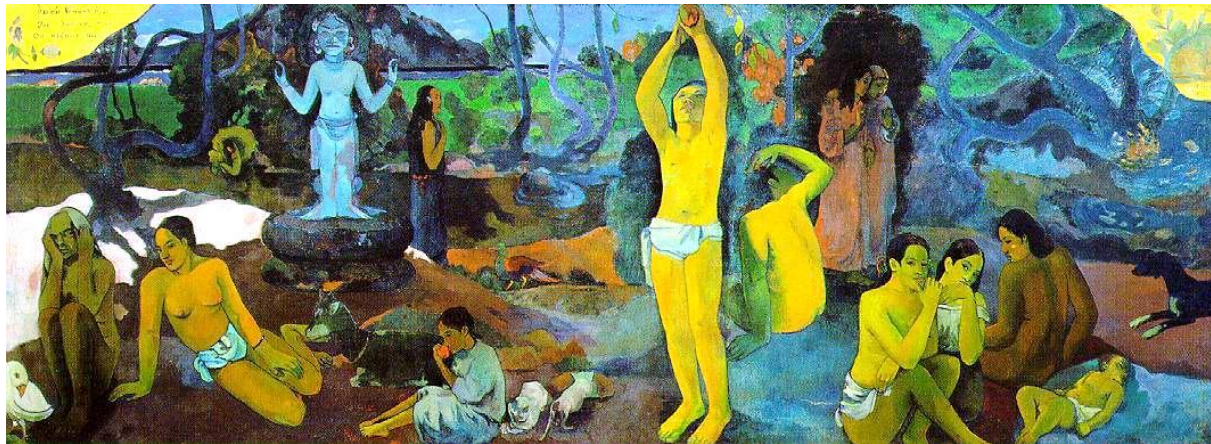
Paul Gauguin, 1897; Boston Museum of Fine Arts

**EU BON General Meeting
Cambridge, UK
2 June 2015**

**Gary Geller
Group on Earth Observations**

Introduction

- Overall purpose of talk
- Introspective
- Personal perspective



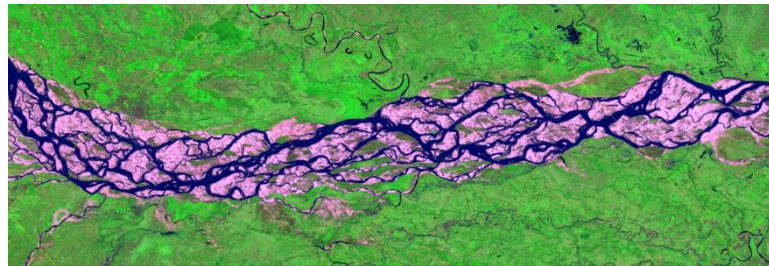
Where do we come from? What are we? Where are we going?

Take-Home Items

- **GEO BON focus areas**
 - **National observation systems**
 - **Essential Biodiversity Variables**
 - **BON in a Box**
- **Challenges**
 - **Balancing “Research” and “Applications”**
 - **Identifying specific user requirements**
 - **Prioritization**
- **Stimulate thoughts on where EU BON can help**

Group on Earth Observations (GEO)

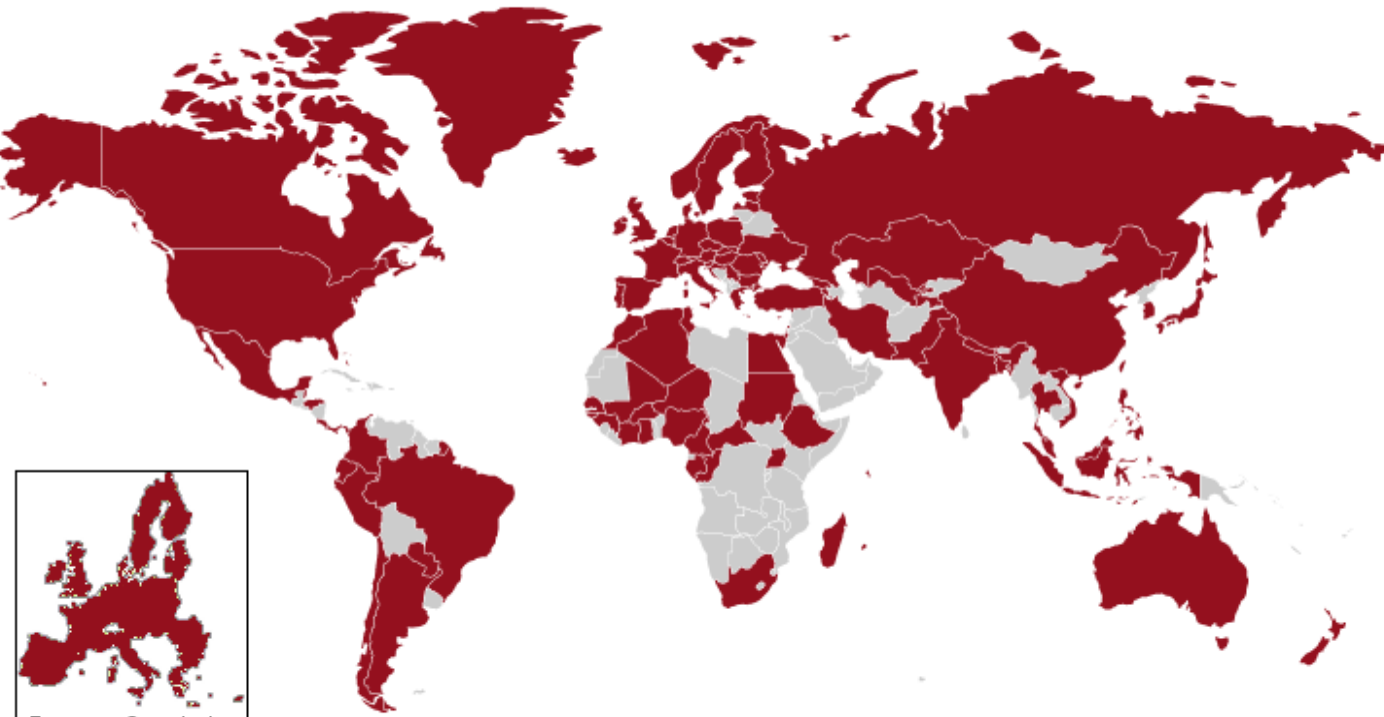
Global Earth Observing System of Systems (GEOSS)



97 GEO Member Countries

GEO Member Map for the year 2014

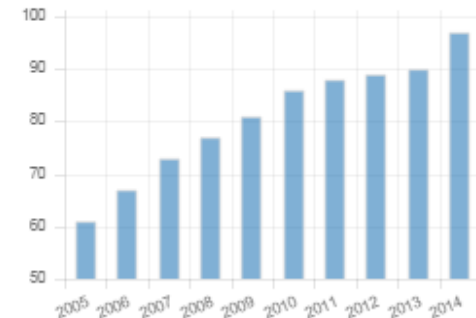
(Use slider under the map to change the year)



Number of Members (2014)

Africa:	24
Americas:	15
Asia/Oceania:	17
C.I.S.:	7
Europe:	34
Total:	97

Number of Members by year



87 Participating Organizations



GEO Vision

To realize a future wherein decisions and actions, for the benefit of humankind, are informed by coordinated, comprehensive and sustained Earth observations and information.

GEOSS: Global System of Systems



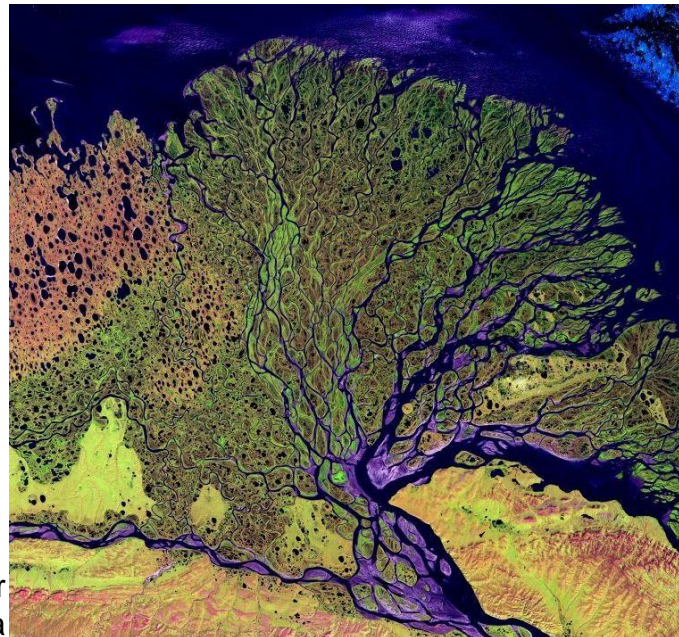
GEOSS

- **Most GEO members have their own data and information systems**
 - Targeted to their programs and user communities
- **GEOSS Vision**
 - Linked systems
 - All EO resources available to everyone
- **Theory vs Practice**



Some Key GEO Focus Areas

- Support for decision making
- Data sharing (and data management)
- Identifying and filling gaps
- Developing infrastructure:
 - **GEOSS Common Infrastructure (GCI)**



Lena River
delta

Some Changes Coming

- **Implementation Plan Working Group**
 - **Planning for 2016-2025**
- **Stronger ties to policy and SDGs**
- **Tighter commitments from implementers**
- **Core functions**
 - **Advocate**
 - **Engage**
 - **Deliver**



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 - **Advocate...importance of EO**
 - **Engage...with stakeholders**
 - **Deliver...data, information, knowledge to improve decision making**

Implementation Mechanisms

- **GEO Flagships**
- **GEO Initiatives**
- **GEO Community Activities**
- **GEO Foundational Tasks**



GEO Biodiversity Observation Network (GEO BON)



GEO BON Vision and Mission

Vision for 2025

A global network that monitors change in biodiversity and ecosystem services and provides information and tools for conservation management and decision-making

Mission

To improve the acquisition, delivery, and application of information describing biodiversity change and its implications, particularly for decision-makers

Some Basics

- **Scope**
- **Working Groups**
- **Key users**



Focus Areas

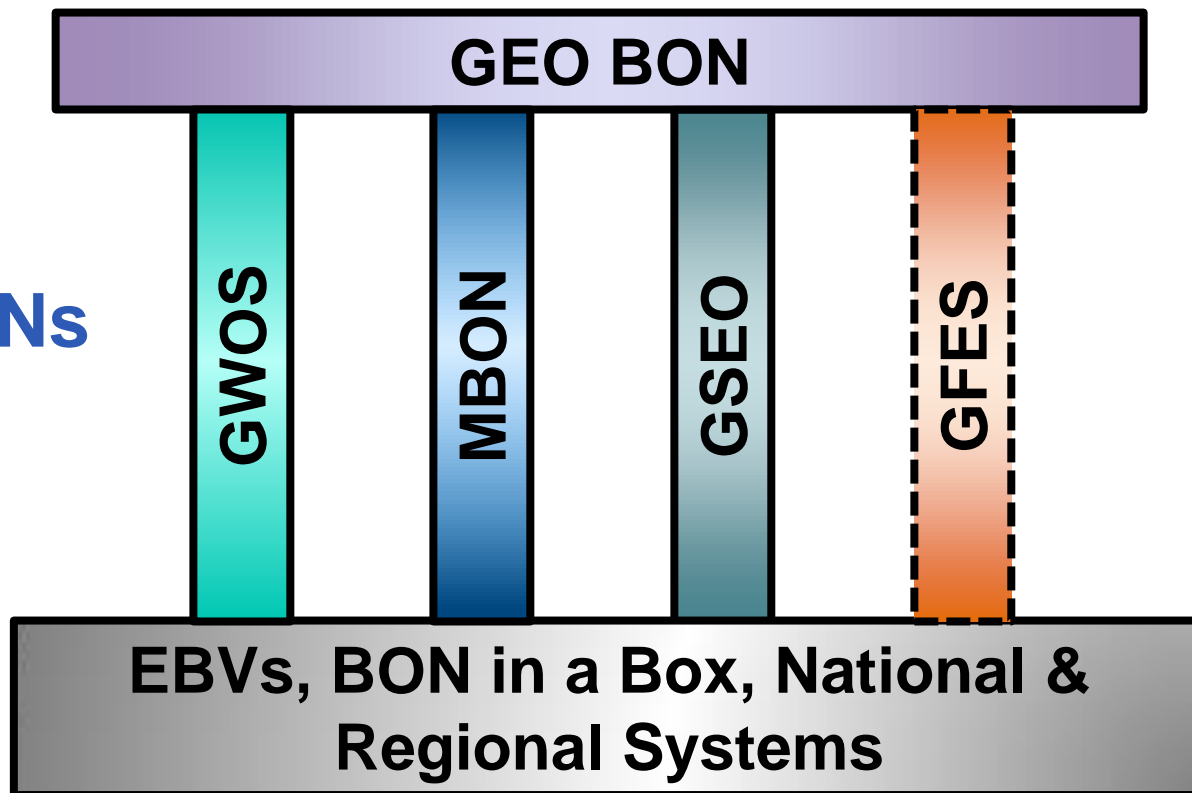
- **Enhancing national observation systems**
 - **Thematic and Regional BONs**
- **Essential Biodiversity Variables (EBVs)**
- **BON in a Box**
- **Apps for website**
- **Products**



Sakurai Midori, Wikimedia Commons

Thematic BONs

Thematic BONs



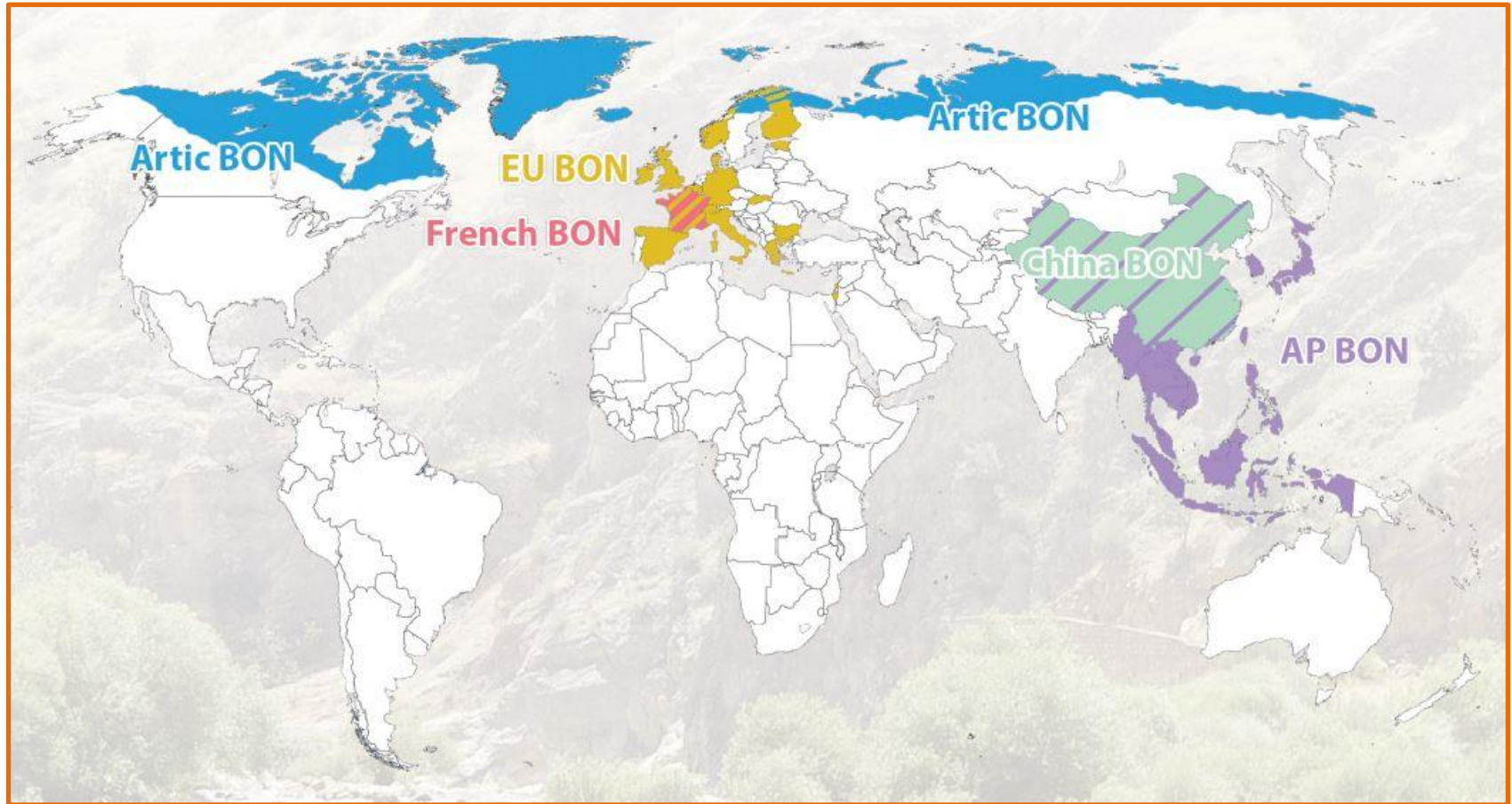
GWOS: Global Wetland Observing System

MBON: Marine Biodiversity Observation Network

GSEO: Global System of Ecological Observatories

GFES: Global Framework for Ecosystem Services

National & Regional BONs



Essential Biodiversity Variables



Essential Biodiversity Variables

- Key variables needed to answer these questions...

1. How is biodiversity changing?
2. Why is it changing?
3. What are the impacts?



Essential Biodiversity Variables

- Intermediate between primary measurements and indicators
- Provide guidance to the observation systems
- Provide organizational framework for implementation



EBV Classes

EBV Class

Genetic composition

Species populations

Species traits

Community composition

Ecosystem function

Ecosystem structure

Example EBVs (Candidates)

EBV Class

Genetic composition

Species populations

Species traits

Community composition

Ecosystem function

Ecosystem structure

EBV Examples

Population genetic differentiation

Species distribution

Population abundance

Phenology

Taxonomic diversity

Productivity

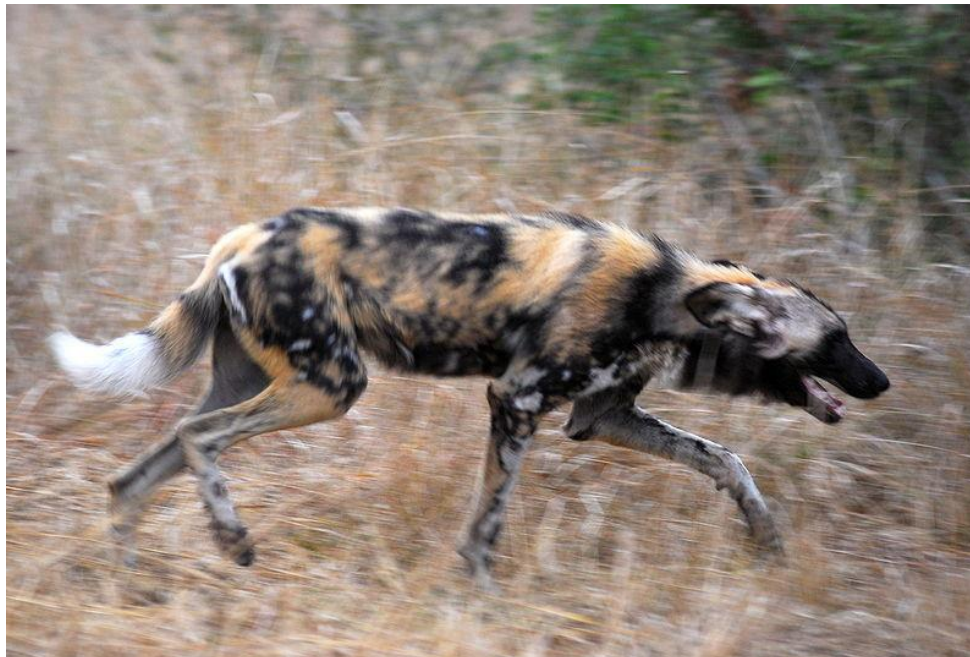
Nutrient retention

Habitat structure

Extent and fragmentation

Essential Biodiversity Variables

- **2013: Paper in Science**
- **Now...Phase 2**
 - **Re-evaluating EBV development process**
 - **Several EBV-relevant workshops**
 - **Ties to BON-in-a-Box**



EBV Challenges

- **Biodiversity is not physics**
- **Lack of “globalness” in availability**
- **“Pet” EBVs and convergence on the EBV list**
 - **Who are EBVs for?**
 - **Driving requirements?**



BON in a Box



BON in a Box

- **Setting up and operating an observation system is hard**
- **Simplify development of national BONs**
- **Increase probability of implementation**
- **Most needed in developing countries**
 - **Linked with capacity development**



BON in a Box

- **A box of tools**
 - **Observation system design**
 - **Data gathering**
 - **Data management**
 - **Data analysis**
 - **Reporting**

- **And a way to organize and find them...**



Prototype Website



Bon in a Box | Monitoreo | Herramientas | Contacto

BON IN A BOX

Herramientas de monitoreo para necesidades específicas



Bon in a Box es un set de herramientas en línea para monitoreo, customizable y en constante actualización. Todo esto con el motivo de facilitar el inicio o la mejora de los sistemas de observación de la Biodiversidad.

Bon in a Box proporciona un conjunto de variables de biodiversidad científicamente validadas, herramientas de diseño, métodos y directrices de monitoreo, lo que reduce el umbral para la puesta en marcha o mejora de un sistema de observación de la biodiversidad.

LA CAJA

PÚBLICO

MOTIVO

MANEJO

GEO BON

Prototype Website

COMPONENTES DEL MONITOREO



DATA ANALYSIS

Primeras preguntas claves en monitoreo

Bon in a Box es un set de herramientas en línea para monitoreo, customizable y en constante actualización. Todo esto con el motivo de facilitar el inicio o la mejora de los sistemas de observación de la Biodiversidad.



Prototype Website

HERRAMIENTAS

Filtros



CATÁLOGO DE LA BIODIVERSIDAD

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BIOMODELOS

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BioModelos

BIOREPORTES

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HERRAMIENTA 4

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DIRECTORIO

Filtros



HUMBOLDT

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GBIF

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Wrap Up



Implementation Challenges

- **Prioritization**
- **Balancing “Research” & “Applications” interests**
- **User and requirements definition**
- **Implementing vs Planning**
- **Diversity of participants**
- **Volunteer approach**



Focus Areas

- **Enhancing national observation systems**
 - **Thematic and Regional BONs**
- **Essential Biodiversity Variables (EBVs)**
- **BON in a Box**
- **Apps for website**
- **Products**



Sakurai Midori, Wikimedia Commons

EU BON & GEO BON

- **What do you think of GEO BON and its focus areas?**
- **What EU BON outputs and outcomes can add value to GEO BON?**
- **How do we transfer them?**
- **Do you have suggestions, guidance, lessons learned to share?**

