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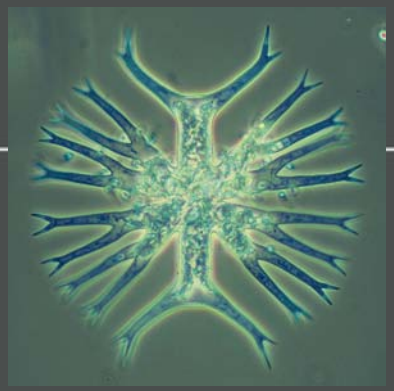
Advancing the field of freshwater biodiversity: from research to policy

Anne-Hélène Prieur-Richard

SSC-GWSP, 9-10 Dec. 2010



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- DIVERSITAS is an international programme dedicated to biodiversity science, under the auspices of:

- Missions:
  - To promote an integrative biodiversity science
  - To provide the scientific bases for the conservation & sustainable use of biodiversity

Biodiversity science-policy landscape

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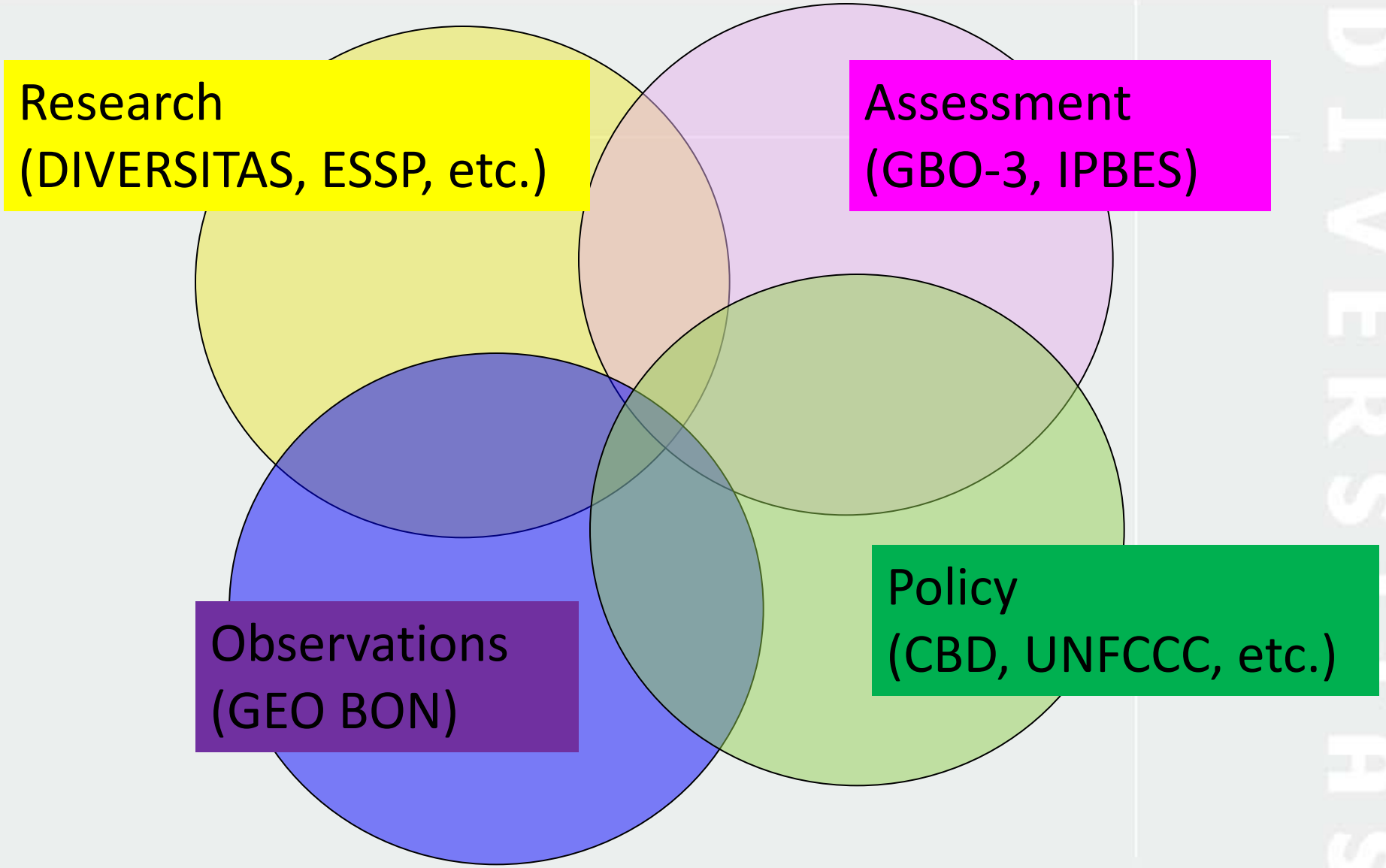

Outline

DIVERSITAS
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Research

- freshwaterBIODIVERSITY Cross-cutting Network

Observations

- GEO BON

Assessment

- GBO-3
- IPBES

Policy

- CBD




freshwaterBIODIVERSITY activities

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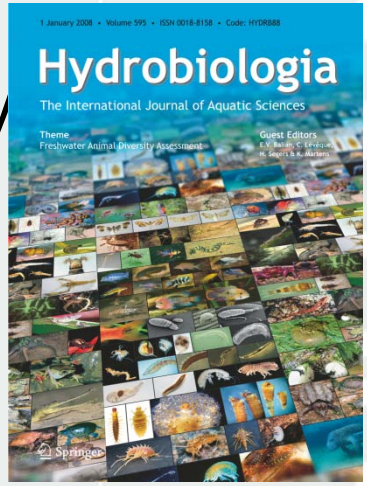
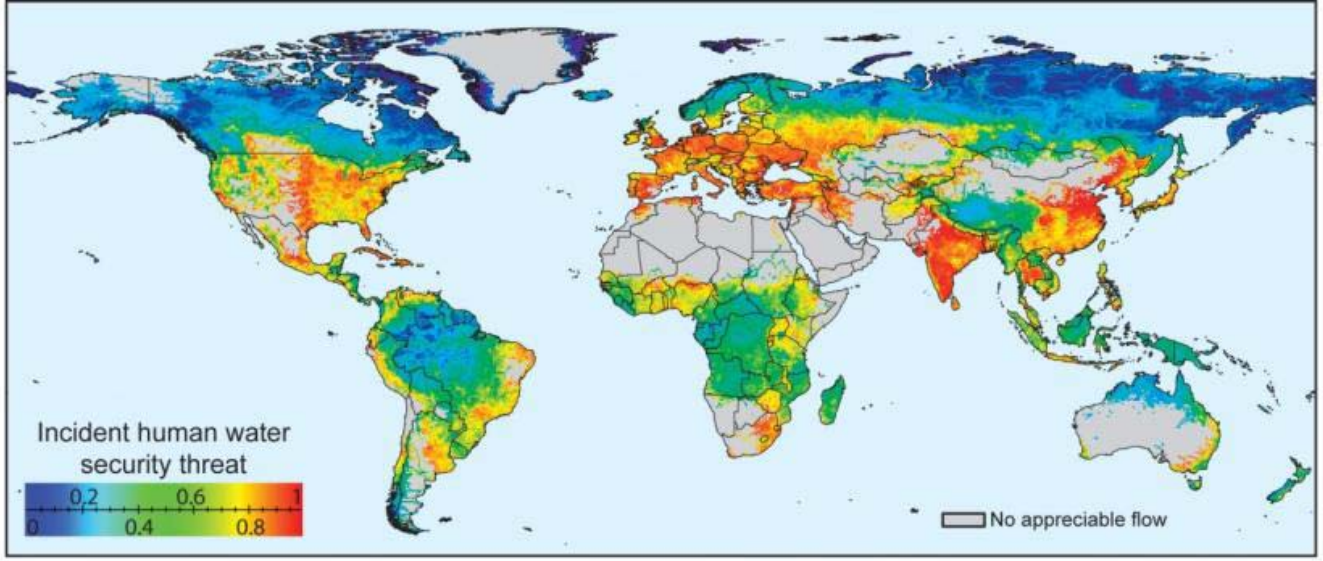
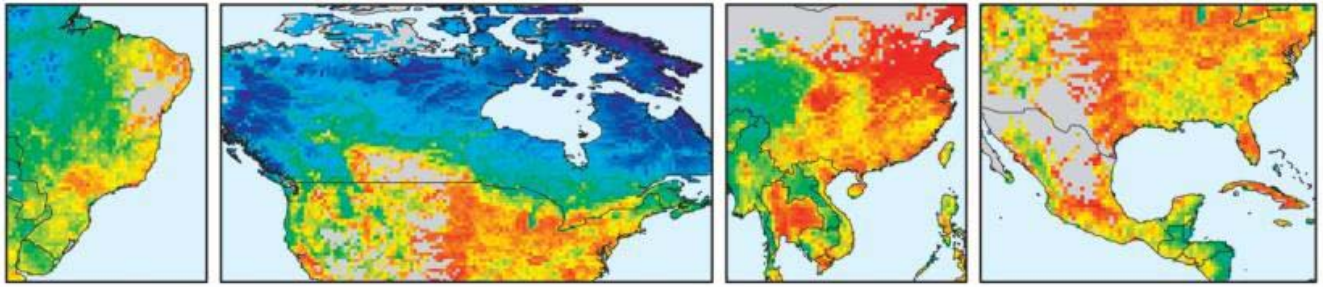
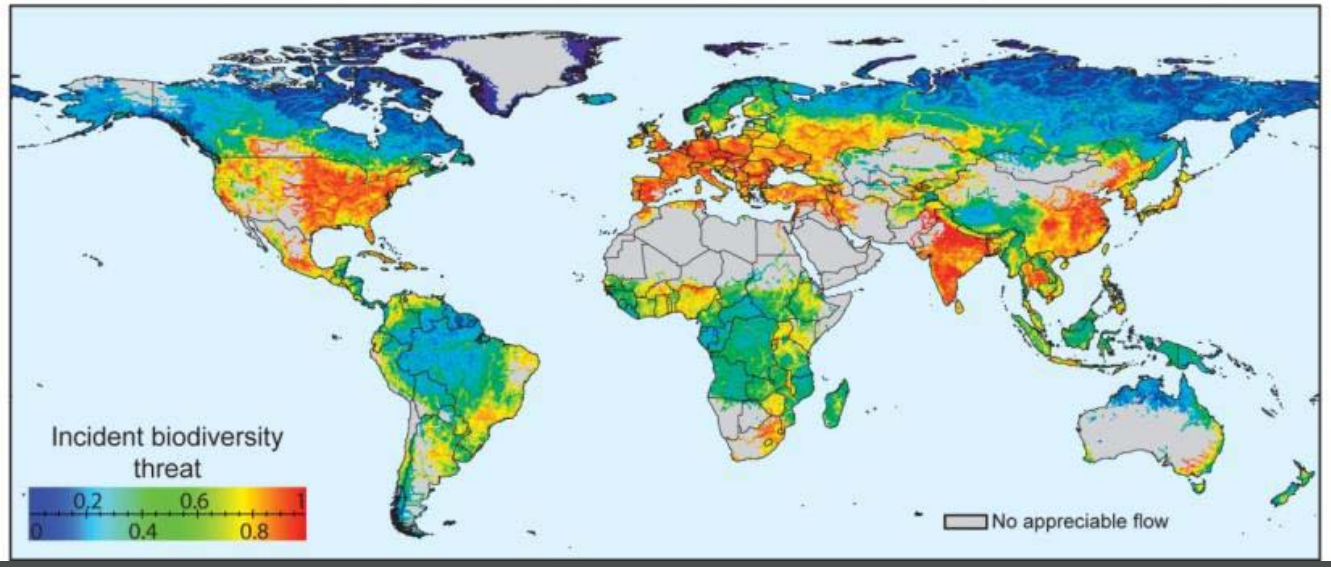
- eFLOWS: the quantity, timing, and q
  water flows required to sustain freshw
  the human well-being that depend on
  ecosystems
- FADA: Freshwater Animal Diversity Assessment
- Global threats to human water security
  freshwater biodiversity









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GWSP

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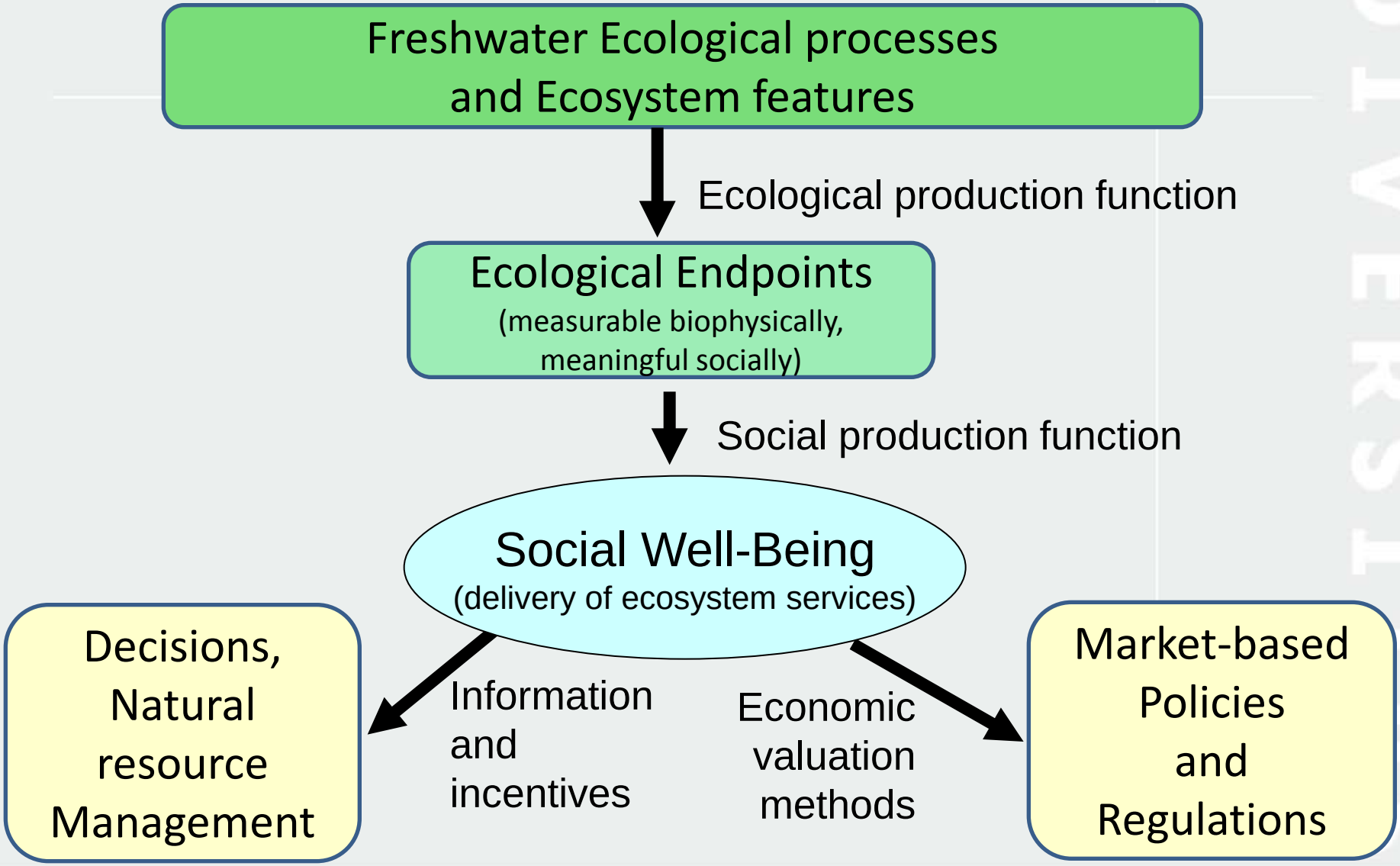
freshwaterBIODIVERSITY on-going activities

- Global Freshwater Consortium: Jointly communicate and coordinate research & conservation activities at international scales
- BioFresh
  - Biodiversity database for EU countries
  - Research on dominant stressors
- GEO BON freshwater biodiversity working group
- AquaBase: Develop ecosystem service production functions for freshwater

Aquabase conceptual framework



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GEO BON: GEO Biodiversity Observation Network

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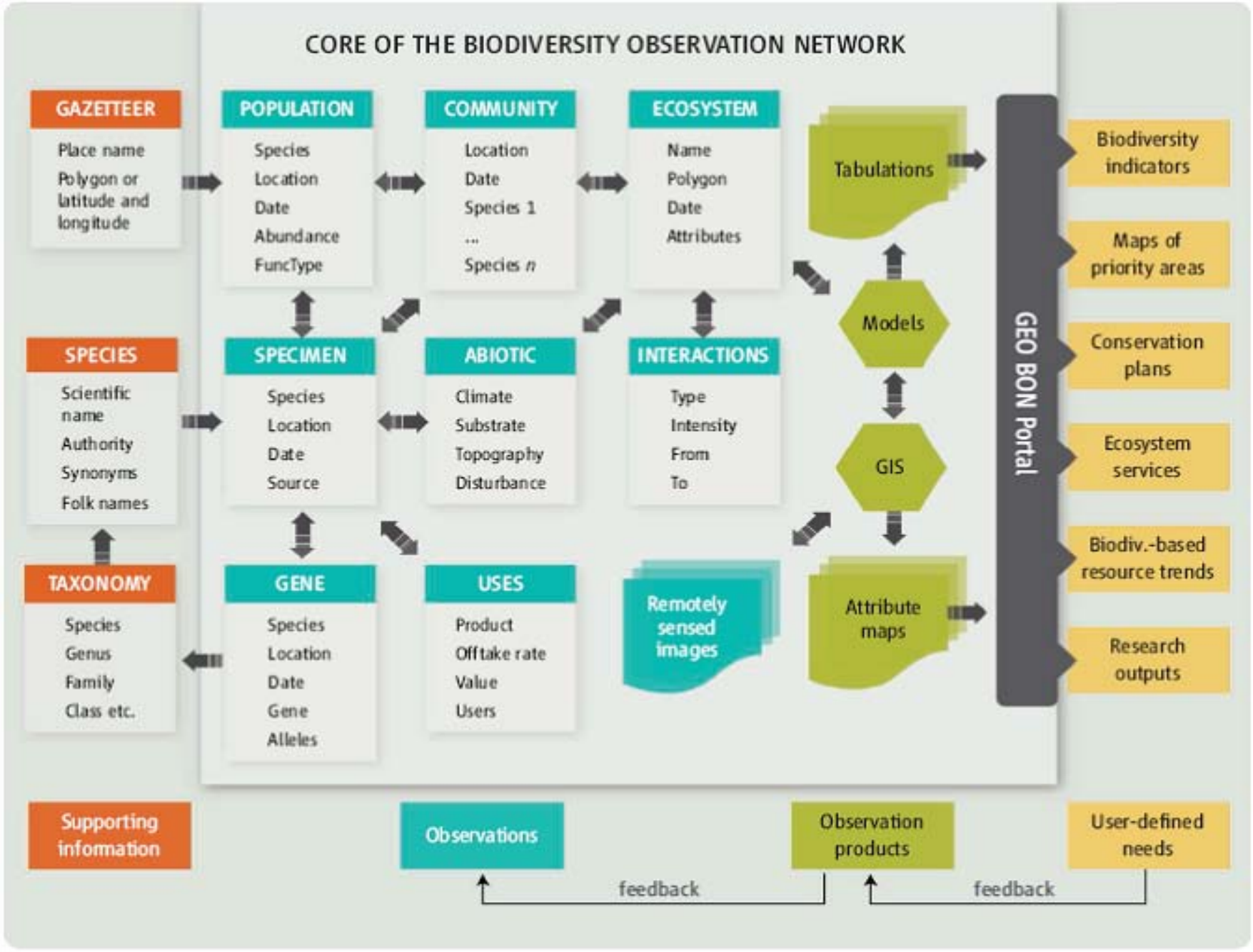
- Global partnership to help collect, manage, analyse and report data relating to the status of the world's biodiversity
- Conceptual framework (2008, Scholes *et al.)*
- Implementation plan (May 2010)

GROUP ON EARTH OBSERVATIONS

Biodiversity
Observation
Network



Scholes *et al*. 2008. Towards a global biodiversity observation system. *Science* 321,1044-5

GEO BON working group on freshwater ecosystem change

- Develop a consortium of organizations active in global analyses of freshwater ecosystems, that have programs to monitor and assess the sate of the world's freshwater ecosystems
- Partners: DIVERSITAS, Ramsar, IUCN, CI, Wetlands International, BioFresh, CUNY CrossRoads Initiative
- Early discussions are underway for the development of a Census of Freshwater Life

GROUP ON EARTH OBSERVATIONS

Biodiversity Observation Network

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Global Biodiversity Outlook 3

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Sciencexpress Review

Scenarios for Global Biodiversity in the 21st Century

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Quantitative scenarios are coming of age as a tool for evaluating the impact of future socio-economic development pathways on biodiversity and ecosystem services. We analyze global terrestrial, freshwater and marine biodiversity scenarios using a range of measures including extinctions, changes in species abundance, habitat loss, and distribution shifts, as well as comparing model projections to observations. Scenarios consistently indicate that biodiversity will continue to decline over the 21st century. However, the range of projected changes is much broader than most studies suggest, partly because there are significant opportunities to intervene through better policies, but also because of large uncertainties in projections.

Quantitative estimates of the future trajectories of biodiversity, which we broadly refer to as biodiversity scenarios, are typically based on the coupling of several complex components (Fig. 1). Socio-economic scenarios with trajectories of key indirect drivers of ecological change, such as human population growth and greenhouse gas emissions, are developed under different assumptions regarding society's development, often associated with 'storylines' (*1*). These trajectories are then fed into models that project changes in direct drivers of ecosystem change, such as climate and land-use change, in different regions of the world (*1*, *2*). Finally, the projected drivers are used as inputs to biodiversity models (Table 1). In some cases, associated changes in key ecosystem services are also modeled, although quantifying the link between biodiversity and ecosystem services remains a major scientific challenge (*3*, *4*). Here, we review recent model-based biodiversity scenarios, which have grown rapidly in number over the last few years due to major advances in modeling and data availability.

Biodiversity change has many metrics (*5*). Here we group these metrics into four classes: species extinctions, species abundance and community structure, habitat loss and degradation, and shifts in the distribution of species and biomes. Scenarios of species extinction risk (*6*, *7*) address the irreversible component of biodiversity change, but species

Launch 10 May 2010, CBD-SBSTTA14

Outline

- Biodiversity in 2010
- Biodiversity Futures for the 21st Century
- Towards a Strategy for Reducing Biodiversity Loss

Tipping Point of lake eutrophication
(Leadley et al. 2010, GBO3)

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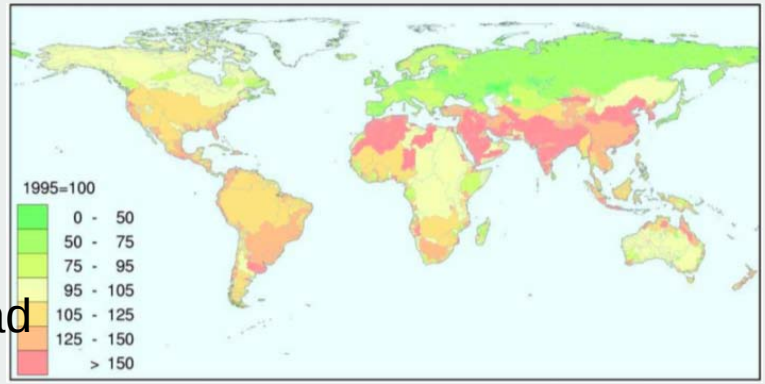
Current Path

- Drivers:
  - Buildup of nutrients from fertilizers and sewage (phosphorus)
  - Habitat change
- Impacts:
  - Extinction of fishes
  - Invasive species
  - Blooms of toxic cyanobacteria (undrinkable water & recreation)



Total river nitrogen load scenarios - 2030

Alternative Path

- Reduce nutrient inputs from sewage, detergents and agriculture
- Reforestation of watersheds
- Restoration of wetlands
- Economic incentives to close nutrient cycle on farms

IPBES

- Intergovernmental Platform on Biodiversity and Ecosystem Services
- DIVERSITAS role:
  - Helping in setting up the process
  - Informing & mobilizing the scientific community
  - Representing the scientific community in multi-stakeholder meetings

The Intergovernmental science-policy Platform on Biodiversity and Ecosystem Services: moving a step closer to an IPCC-like mechanism for biodiversity

ipbes.net
Intergovernmental Platform on Biodiversity and Ecosystem Services

Busan outcome

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- We conclude that an IPBES (intergovernmental science policy platform for biodiversity and ecosystem services) should be established to strengthen the science policy interface for biodiversity and ecosystem services for the conservation and sustainable use of biodiversity, long term human well being and sustainable development

UN General Assembly: Wed 1st Dec
To be confirmed

- The UN General Assembly,

Noting UNEP decision SS.XI/4, the Busan Outcome, the CBD COP 10 decision X-(L.25), and the decision adopted by the PX Commission of UNESCO in document 185 EX/43, requests UNEP, without prejudice to the final institutional arrangements of IPBES, and in consultation with all relevant organisations and bodies, in order to fully operationalize the Platform, to convene a plenary meeting providing for the full and effective participation of all Member States, in particular representatives from developing countries, to determine modalities and institutional arrangements for the Platform at the earliest opportunity.

- First Plenary of IPBES: second part of 2011

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2010 Année Internationale de la Diversité Biologique

Work with CBD

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- CBD COP10:
  - Adoption of a protocol on Access and Benefit Sharing (ABS)
  - Review of the CBD Programme of Work
  - Adoption of the new strategic plan (post 201 biodiversity targets)
  - Support to an IPBES
- DIVERSITAS input in these discussions:
  - Predicting biodiversity changes
  - 2020 biodiversity targets and indicators
  - Assessments: GBO3 and IPBES
  - GEO BON


Sciencexpress Review

Scenarios for Global Biodiversity in the 21st Century

POLICYFORUM

Ecosystem Services for 2020

Work with CBD

- DIVERSITAS is formally thanked in several decisions coming out of COP10:
  - Decision on revised strategic plan post 2010 (for scientific input into CBD on targets and indicators)
  - Decision on GBO-3 (for contribution to GBO-3)
  - Decision on mountain multi-years Programme of Work
  - Decision on implementing the revised CBD Strategic Plan (Acknowledged as a support mechanism of CBD for research)

www.diversitas-international.org