



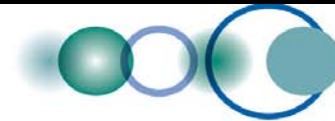
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Terrestrial species monitoring

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Biodiversity
Observation
Network



Introduction

▶ Question addressed

- ▶ What is happening to terrestrial biodiversity at the species level?

▶ Goals

- ▶ Integrate available data, identify gaps, develop standard protocols and stimulate new monitoring programs.

▶ Members

- ▶ Henrique Miguel Pereira (Portugal), Becky Kao (USA), Ben Collen (UK), Bruce Jones (USA), Chris Van Swaay (Netherlands), Denis Couvet (France), Dirk Schmeller (France), Haigen Xu (China), Jon Paul Rodriguez (Venezuela), Michael Opige (Uganda), Mike Hoffman (UK), Neil Brummit (UK), Richard Gregory (UK), Roman Julliard (France), Selwyn Willoughby (South Africa)
 - ▶ Technical support: Vânia Proença (Portugal)
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Concepts

- ▶ **Changes in species distribution and abundance**
 - ▶ Establish a coordinated in situ sampling scheme to inform on
 - ▶ (1) changes in species' distributions
 - ▶ (2) the direction and rate of changes in their abundances
 - ▶ Rather than duplicating existing in-situ monitoring efforts, GEO BON seeks to complement and coordinate these efforts
 - ▶ Extend time lines backward using retrospective monitoring based on a range of different historical data
- ▶ **Providing distribution range maps for a large number of species**
 - ▶ Compile global distributional ranges for a set of species much larger than the ones that will be monitored in situ

Activities (1)

- ▶ **Developing a monitoring network to support global bird indicators**
 - ▶ Survey techniques would include assessing changes in abundance and/or geographical ranges, to develop two indicators:
 - ▶ **Wild Bird Indicator**
 - Covering widespread bird species
 - Already operational in Europe and North America. There are some similar initiatives starting in Australia, and Asia. New monitoring would have to be established in many regions.
 - An issue that needs to be discussed is the need (or not) for standard sampling designs and count methods
 - ▶ **Threatened Bird Indicator**
 - Covering globally threatened species
 - It would improve the current data being used on the Red List Indicator for Birds, which is largely expert based, and would become population census based

Activities (2)

- ▶ **Developing a monitoring network to for other vertebrates**
 - ▶ This network would focus on species extinction risk, population abundance, and presence/absence
 - ▶ Species to be monitored would be choosed according to one or more of the following criteria
 - ▶ Provisioning species
 - ▶ Treaty species
 - ▶ Key functional groups
 - ▶ Charismatic species
 - ▶ State of the art
 - ▶ Extinction risk: databases and standards available
 - ▶ Population abundance: In development for bats. Not much in place for anything else.
 - ▶ Occurrence data: Available databases are biased spatially and incomplete temporally and taxonomically.

Activities (3)

- ▶ **Developing a monitoring network to support a global butterfly indicator**
 - ▶ Butterflies are well documented, easy to recognize and popular with the general public
 - ▶ Could be designed towards collecting presence/absence data
 - ▶ State of the art
 - ▶ European Butterfly Indicator in place, with annual data from 14 countries
 - ▶ In North America there are similar initiatives in the USA, Canada and Mexico, although coverage is not extensive yet
 - ▶ Would have to be developed in most other world regions

Activities (4)

- ▶ **Developing a monitoring network to support a global plant indicator**
 - ▶ About 400 000 species, with 2 000 described new each year
 - ▶ The network would focus on improving distribution databases and on developing monitoring standards and sampling schemes for population based time series data
 - ▶ State of the art
 - ▶ Time series data only exist for a tiny proportion of species
 - ▶ Most species are poorly known, often with no more than an initial description ever published
 - ▶ Range maps available for Europe and North America. Not much elsewhere

Activities (5)

▶ Other activities

- ▶ Expanding monitoring for other insect groups and fauna
- ▶ Making distribution databases available for a large number of species and niche models for past, present and future
 - ▶ Establishing historical baselines
- ▶ Stimulate regional networks to coordinate observation collection
 - ▶ Combining data, integrating monitoring schemes, developing supra-national analysis
 - ▶ Identifying gaps and developing an earth observation network
- ▶ Implementing a global indicator
 - ▶ Would combine data from these activities, and would go beyond abundance and rank changes to explore issues such as changes in community structure.

Deliverables

- ▶ Global bird monitoring data and indicators
- ▶ An improved RLI and LPI for terrestrial vertebrates
- ▶ Global butterfly monitoring data and indicator
- ▶ Global plant monitoring data and indicator
- ▶ Models for historical and future ranges
- ▶ A database of current ranges for a large set of species
- ▶ A global indicator at the species level

Implementation Partners

- ▶ Birdlife International, International Waterbird Census, North America Bird Conservation Initiative
- ▶ IUCN, WWF, Conservation International, NatureServe, ZSL
- ▶ USGS
- ▶ Butterfly Conservation Europe, North America Butterfly Association
- ▶ Royal Botanic Gardens, Missouri Botanical Garden, Natural History Museum, Muséum National d'Histoire Naturelle, Komarov Botanical Institute, New York Botanical Garden
- ▶ NEON, ILTER, Australian Centre for Ecosystem Analysis and Synthesis, Terrestrial Ecosystem Research Network, EBONE, LifeWatch
- ▶ GBIF
- ▶ CBD
- ▶ Diversitas
- ▶ And others

Coordination and schedule

- ▶ Working groups would be established for each activity during 2010
- ▶ Regional workshops would be organized in 2011 and 2012
- ▶ Implementation 2012-2020
- ▶ Major trend analysis by 2020

Budget

▶ Bird monitoring

- ▶ In Western Europe, national schemes may cost \$200k-400k per annum, but in Eastern Europe as little as \$30k. Coordination costs around \$120k per annum. In Africa, national breeding bird surveys cost around \$20k-40k per annum to run.

▶ Butterfly monitoring

- ▶ In Western Europe, national schemes may cost €50k-€100k per year, but in Eastern Europe sometimes less than €20k. About €100k for coordination.

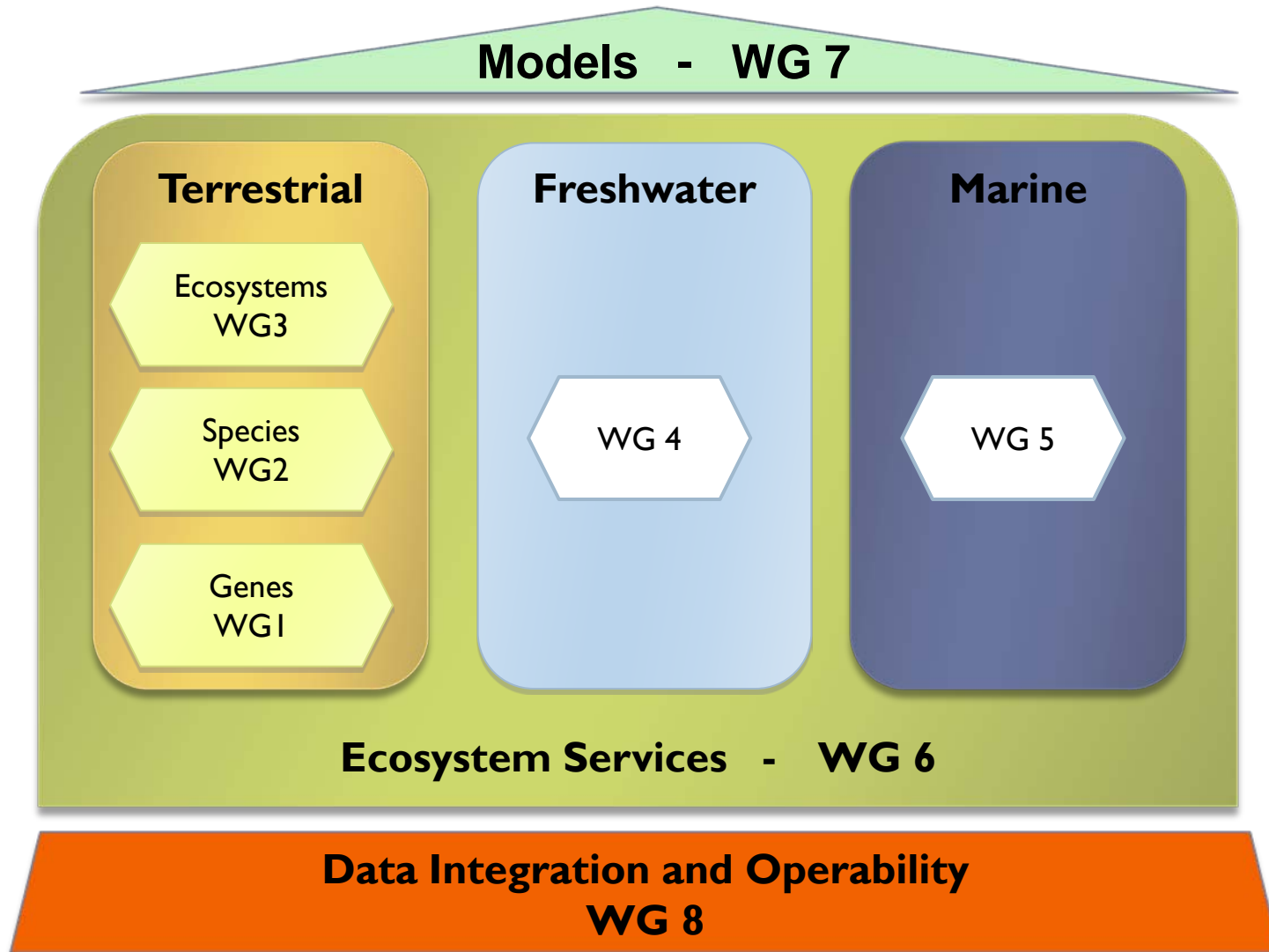
▶ Plant monitoring

- ▶ Filling in existing data gaps: £350,000
- ▶ Additional data gathering and assessments: £500,000
- ▶ Establishment of global monitoring network and testing monitoring standards: £50,000
- ▶ Provision of identification tools: £100,000

Barriers

- ▶ Lack of consensus on what is needed
- ▶ Data property rights
- ▶ Lack of global organizations/regional organizations
- ▶ Agreement on responsibilities for monitoring in each nation and how the budget should be shared among developing and developed nations

Linkages to other WGs



Linkages with other WGs

- ▶ Interaction with WG7 on using models to estimate retrospectively species ranges and abundances, and to formulate future scenarios
- ▶ Information management would be developed under the guidelines from WG 8.
- ▶ Providing species data to WG6, for the development of models of ecosystem service change.
- ▶ Integration with WG1 and WG3, so that we improve our understanding of the relationship between changes at the genetic level, at the species level, and at the ecosystem level.
- ▶ Cross-biome interactions with WG4 and WG5.