



# EBONE



## European Biodiversity Observation Network Design of a plan for an integrated biodiversity observing system in space and time

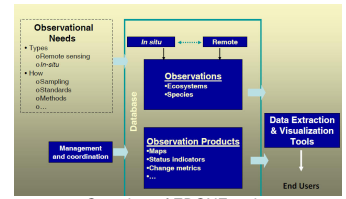
FP7-Collaborative Project  
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Contribution to a global  
biodiversity observation  
system

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### Why is an integrated Biodiversity Monitoring System needed?

Measuring and reliable reporting of trends and changes in biodiversity requires that data and indicators are collected and analysed in a standard and comparable way. However, at present, the responsible authorities in Europe (over 100 national and regional agencies) have different and uncoordinated approaches; worldwide the problem is even greater. Therefore there is a need to develop a coherent system for data collection that can be used for assessments at the European and global scales.

EBONE will deliver a European contribution to the development of a global biodiversity observation system that is spatially and topically prioritised. It will also build on existing information.



### Elaboration of a monitoring concept

The most significant gaps for the delivery of biodiversity indicators are in systems for monitoring changes in the extent and quality of habitats and the lack of systems and models for combining in situ observations with remotely sensed data to provide reliable European statistics and „wall to wall“ assessments of a broader range of biodiversity indicators.

EBONE would focus on three main headline indicators covering:

- habitats of European interest in the context of a broad habitat assessment;
- abundance and distribution of selected species (birds, butterflies and plants);
- fragmentation of natural and semi-natural areas.

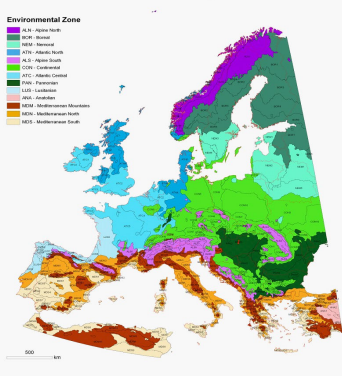
### Review of biodiversity monitoring in Europe

- Development and analysis of the EuMon database on European monitoring schemes, evaluating geographical and biodiversity coverage and gaps, methodological approaches, and costs of species and habitat monitoring schemes in Europe.
- Preliminary analysis on data availability and data format of European biodiversity monitoring programs

### European and global stratification for monitoring purposes

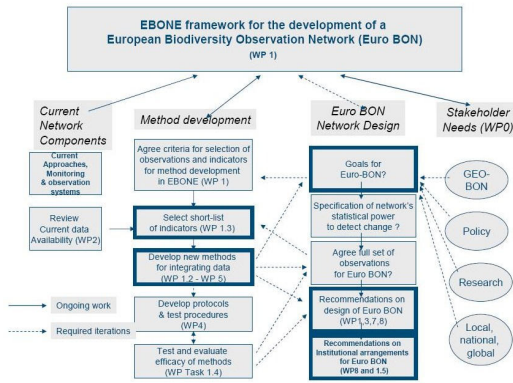
- European environmental stratification developed
- Progress in development of a global environmental stratification - in co-operation with GEO-BON: a new first tier classification using existing bio-climate data; the first map produced and tested

Environmental Stratification of Europe



### Field testing of methodology

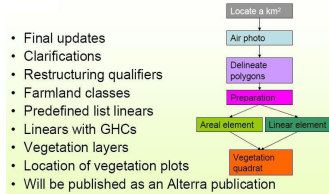
- Field training courses held in spring 2010
- European sample design for test sites prepared
- Main field testing in 2010 and 2011 across Europe started



### Development and testing of standard field site observations and database management

- Methodology based on life-forms and General Habitat Categories
- The methodology ready for massive field testing and application
- The field handbook completed and published in the web site
- Rule-based system for indicators and Annex I habitat developed and ready for the use
- The software for field mapping using field computers developed and successfully tested. Both software and database will be freely available

### Field handbook



- Final updates
- Clarifications
- Restructuring qualifiers
- Farmland classes
- Predefined list linears
- Linears with GHCs
- Vegetation layers
- Location of vegetation plots
- Will be published as an Alterra publication

### Example of the mapping and recording of areal elements

code	Field 1	Field 2	Field 3	Field 4	Field 5	Field 6
General Habitat Category	Global Env. Qualifier	Site Qualifier	Man. Qualifier	Habitats/Species	Life form and Non Life Form	Annex I
A	CHE	5.3	0	A1.6.7	CHE	90 Lol per ann 60
B	ART	0	5.1	0	ART	70 NON 30
C	CRO	0	0	A1.1.1	CRO	10 Wheat 100
D	LHE/ CHE	5.3	1.18/ 3.8	A1.8	LHE	60 Chr leu 10
E	NON	0	0	A5.21	0	CHE 40 Agr cap 50

Note: numbering of parcels with the same alpha-code

### Pilot monitoring system for global Mediterranean regions

- Monitoring methodology tested in Israel and South Africa and updated by new GHCs and parameters not occurring in Europe
- Correlation of Mediterranean mapped habitats with Lidar data was conducted, LandSat and QuickBird data used in similar way
- Correlation of Mediterranean mapped habitats with plant and bird biodiversity was conducted, similar work continues in desert

### Inter-calibration of field data with Earth observation data

- The software to produce correspondence matrices between in situ General Habitat Categories (GHC) observations and Earth Observation land cover maps has been developed and tested

- Field data are used for calibration and ground truth of all below described approaches and methods

### Phenology approach

- Analysis of time-series of vegetation indices – promising approach for determining life forms, General Habitat Categories (GHC), habitat types and management measures
- Approach tried on grasslands, forest habitats and tree species
- The approach may successfully improve the detection and classification of grasslands and forest types at regional scale.

### LIDAR – laser data

- Testing of LIDAR data potential for vegetation monitoring
- Lidar data acquired/identified in 4 countries, analysis started
- Conclusions: accurate vegetation height measurements, good characterisation of 3D vegetation objects and correlation with GHCs

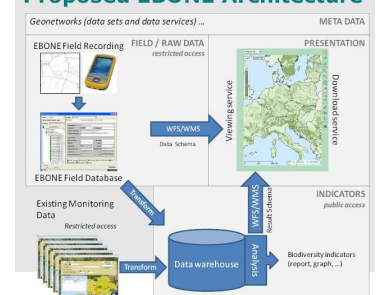
### Fragmentation and connectivity

- 3 methods (Morphological Spatial Pattern Analysis - MSPA, mosaic index, connectivity index) have been tested;
- Assessment of change in pattern, fragmentation and connectivity produced for EBONE sample subsets from 4 countries
- Correspondence matrices produced for the test sites used in the fragmentation study

### The main outcome

A fully integrated system based on key biodiversity indicators and implementation within an institutional framework operating at the European level

### Proposed EBONE Architecture



**Coordinator**  
Dr Rob Jongman  
Alterra, Wageningen UR  
PO Box 47,  
6700AA Wageningen,  
The Netherlands  
E-mail: [rob.jongman@wur.nl](mailto:rob.jongman@wur.nl)

**EBONE Partners:**  
Alterra, Wageningen UR, the Netherlands  
Centre for Ecology and Hydrology, NERC-CEH, UK,  
Helmholtz Centre for Environmental Research, UFZ, Germany  
EC-Joint Research Centre, JRC, Ispra, Italy  
Umweltbundesamt, Austria  
University of Bucharest, Romania  
CEMAGREF (France),  
Instituut voor Natuur en Bosonderzoek, INBO, Belgium,  
University of Edinburgh (UK),  
Israel Nature and Parks Authority, INPA (Israel),

Stiftelsen norsk institutt for naturforskning, NINA (Norway),  
Institute for landscape ecology, ILE SAS (Slovakia),  
Aristotle University of Thessaloniki (Greece),  
Estonian University of Life Sciences(Estonia)  
Universidad Politecnica Madrid (Spain)  
Sveriges lanbrukuniversitet SLU (Sweden).  
Council for Scientific and Industrial Research, CSIR (South Africa)  
University Vienna, Dept Conservation Biology, Vegetation Science and Landscape Ecology (Vienna)