

# BioHab

## A framework for the coordination of Biodiversity and Habitats

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## Monitoring

Collecting, analysing,  
evaluating and  
synthesising information

**Conservation  
status**



**Tools  
and  
methods**

- Remote sensing data
- Field observations

Relevant to regional, national  
and international policies

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## BioHab objective

### Development of a **method**

- to **consistently collect** European habitat information from **each country**
- to contribute to an **unified dataset** across national borders recognising individual national interests



**Support of European biodiversity policy**

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## Objectives

- to ensure **service function** to EU policy implementation  
(national, regional and local level)
- to liaise with **stakeholders**  
(national policy makers, practioners and EU project coordinators, and incorporate their practical experience)

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## Statistical definitions are required, because:

- Many habitat classifications are defined by species, which vary according to region and ecological amplitude
- Regional names of habitats are not consistent:
  - matorral (ES), maquis (F), macchia (I),
  - Garrigue (F), carrascal (P), phrygana (GR)
- Environmental terms have different meanings:
  - dry in Scotland is not the same as dry in Greece
  - Urban is not the same in the Carpathians and Belgium

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## BioHab

Designed for

- Statistical estimates of habitat extent
- Monitoring Pan-European habitats e.g. EUNIS
- Combining extant data on habitats/species
- Linking detailed monitoring sites eg ECN
- Links to world biome models
- Acceptance of landscape heterogeneity

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## BioHab principles

- Based on the regression of life form on the environment
- Classic science as defined by Raunkiaer (1908)
- Transcends species
- No biogeographical terms used
- No local names used
- The key is based on statistical rules at all stages

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## Mapping

- Sixteen life forms and 128 General Habitat Categories (GHC's)
- All European life forms covered
- 100% land surface coverage
- 1km<sup>2</sup>
- 400 m<sup>2</sup> minimal mappable units
- 30 m minimal mappable length

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## Mapping 2

- All categories areal or linear
- Six rules for a new unit
- Only three percentage bands 30%, 40-60 and >70%
- One week field training required
- Quality assurance and control essential

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## BioHab Results

- BioHab is a system for Europe-wide monitoring habitats that can be learned and used by non botanical specialists
- GHC's can be used to link existing projects involving biodiversity
- Tested in the field in all major environmental zones of Europe and now in Israel (desert zone)
- GHC's are appropriate for monitoring change, because they relate to habitat structure and environment

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## BioHab Results

- Refereed scientific papers have been published;
- Cooperation between major research groups on monitoring established;
- Handbook available;
- Analysis of monitoring procedures and representativeness have been carried out.

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## The BioHab Field Monitoring Handbook

- Published October 2005
- Contains
  - basic instructions for field recording and definitions
  - scientific background information.
- Bunce et al 2008. A Standardized Procedure for Surveillance and Monitoring European Habitats and provision of spatial data. Landscape Ecology, 23:11-25

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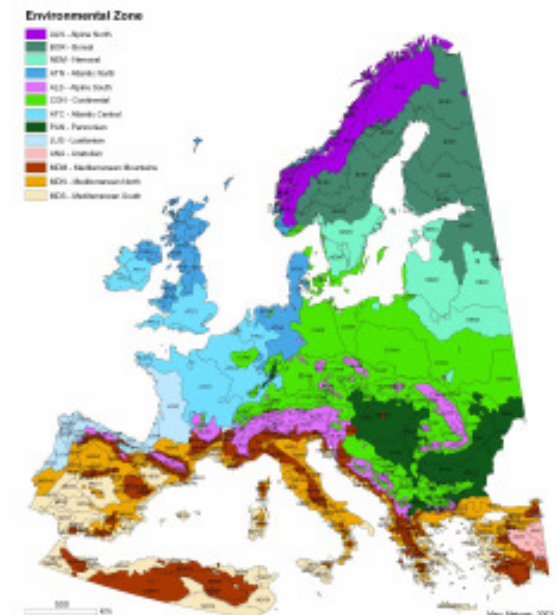
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## ENV Stratification

- Resolution 1 km<sup>2</sup>
- Total 13 zones and 84 strata
- The zones, subdivided in altitudinal bands have been used for identification of important habitats at the European level base on the land cover map.

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Environmental Stratification of Europe



## European Environmental stratification

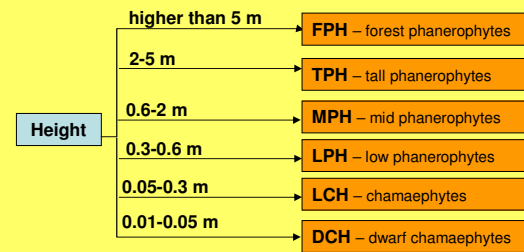
- Metzger M.J. et al 2005 A statistical stratification of the environment of Europe. *Journal of Global Ecology and Biogeography* 14: 549-563
- Jongman, R.H.G. et al 2006, A statistical Environmental Stratification of Europe: objectives and applications. *Landscape Ecology*: 21:409-419
- Metzger M.J. et al 2008. Impacts on biodiversity of changing climates in Europe. *Environmental Conservation* (in press)

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## Example of rules: strict height definitions



- Because of species plasticity some species may be in several categories, whereas other species may only be in one.

Criterion

Life form

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## Habitat Information recorded

- Environmental codes (humidity and trophic level) e.g. wet, basic
- Global codes e.g. height of linear units
- Site qualifiers e.g. sand dunes
- Management qualifiers e.g. cattle grazing
- Detailed habitats and species e.g. Pinus 60%, Deschampsia 40%
- European classifications, eg EUNIS
- Regional classifications eg Estonia
- Phytosociology eg Erico-Pinion

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## Organisational aspects: information system

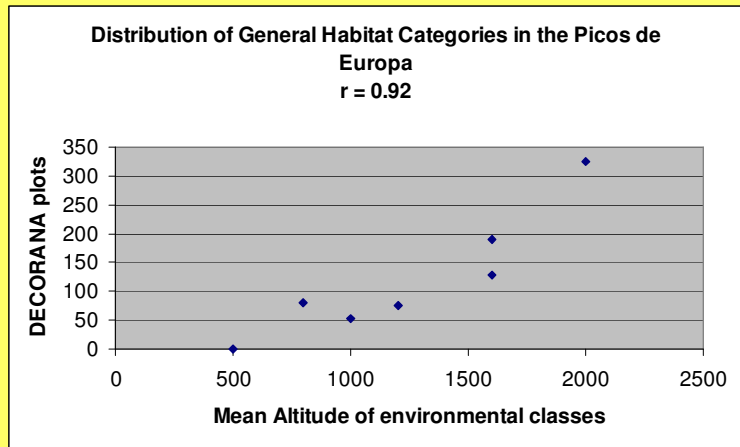
- Data must have the same format or be possible to shared through a common format;
- A European database is needed, pilot already available in BioHab
- Agreement on statistics is needed;
- Sampling pattern must be balanced over Europe

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## Relationship Habitats and Environment (student survey of 73 sites, 0.25 km<sup>2</sup>)



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## Potential for surveillance, monitoring and modelling

- Provision of framework for statistical links
- Ground truth
- Remote sensing
  - Aerial photographs
  - Satellite
- Existing Pan-European habitat classifications
- Association between habitats and biodiversity
- Coordination of the above data streams is currently being tested in Spain

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## Research themes

- Coordination of existing data on stratified random samples (pilots have been carried out in UK, Belgium, Denmark Spain and Italy)
- Comparison of the representativeness of Natura 2000 sites by country and character (in progress)
- Integration of remote sensed data and in situ data; the EBONE project starts in April 2008

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## Modelling

- Habitat implications of climate change (methodological approach by ATEAM)
- Competition between land uses including socio-economic parameters and their link to biodiversity (methodological approach tested in the Netherlands)
- Statistical policy scenario testing (so far only developed for GB)
- Life forms are the basis for world biomes and can lead to coordination between continents (GEOSS task)

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