EBONE
EUROPEAN BIODIVERSITY OBSERVATION NETWORK

Habitat definition and estimation: improving our data

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GEO

SEVENTH FRAMEWORK PROGRAMME

What is our biodiversity information need ?

Information <u>needs</u> revealed by MA (2005):

- Genuinely global databases
  - Consistent, reliable, all ecosystems
- Time series
- Information beyond richness
- Functional biodiversity
  - Ecosystem services: particularly support, regulation and spiritual/recreational services
- Linked, georeferenced social and economic data
- <u>Present clients:</u> CBD, IPBES, IPCC, EC

The opportunity: GEOSS

GEOSS

- Global Earth Observing System of Systems
  - Disasters
  - Health
  - Energy
  - Climate
  - Water
  - Weather
  - Agriculture
  - Ecosystems
  - Biodiversity

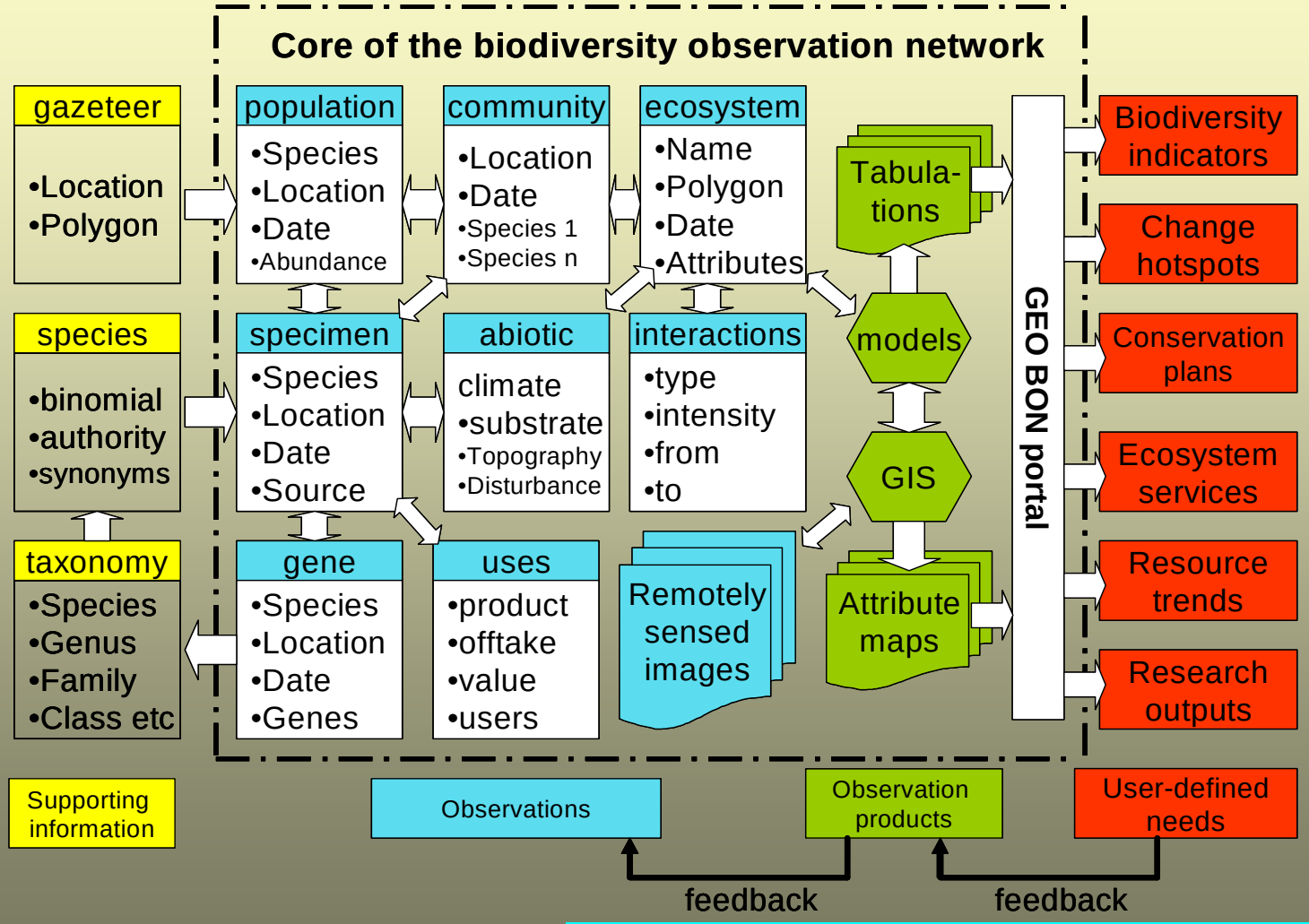
9 SBAs

GEOBON, EBONE

What is GEO BON?

- GEO BON (GEO Biodiversity Observation Network) is a global partnership to help collect, manage, analyse & report data relating to the status of the world's biodiversity (http://www.earthobservations.org/geobon.shtml)

Integrated biodiversity observation system



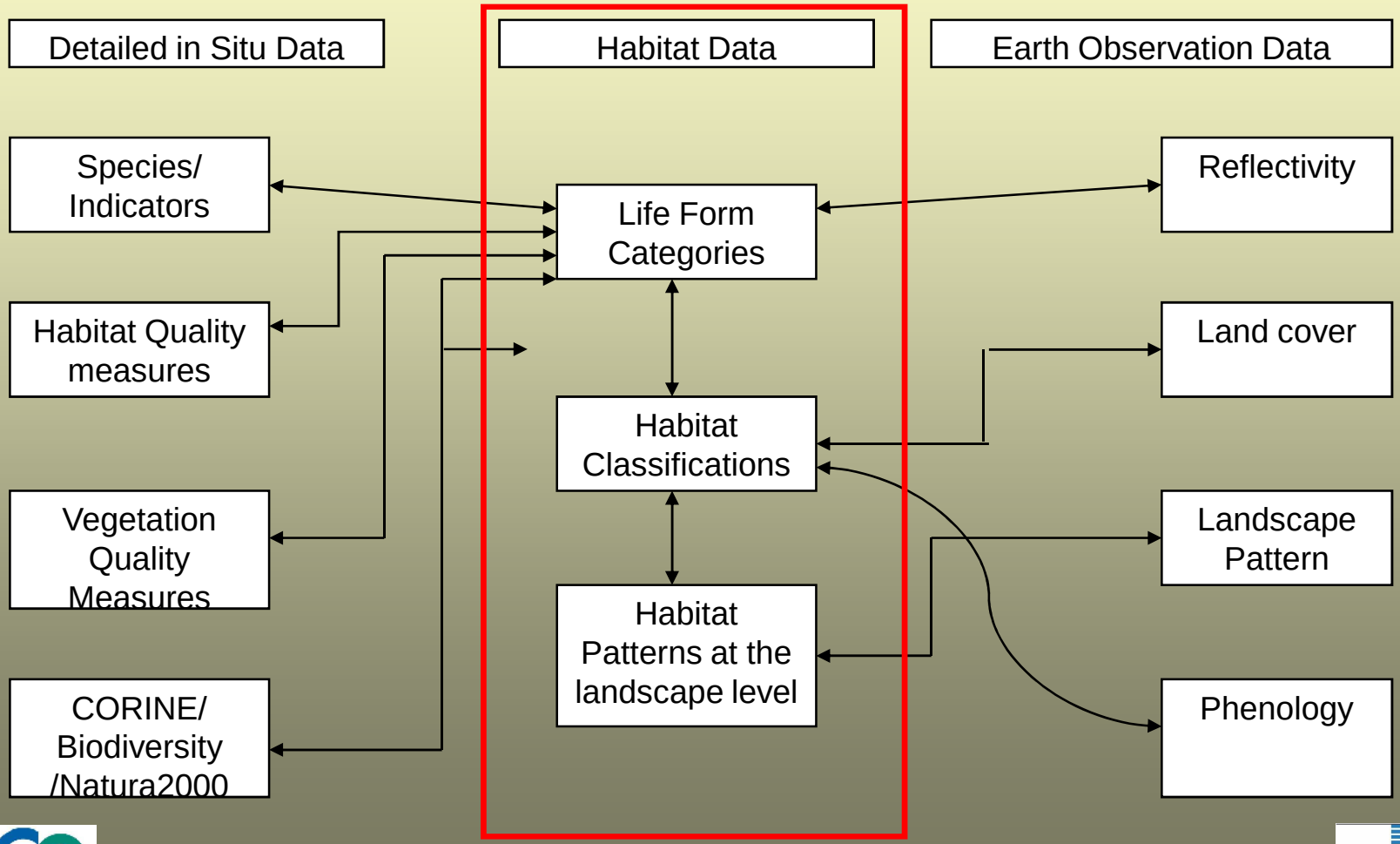
http//:www.ebone.wur.nl

Scholes et al., **Science 22 Aug 08**,
Towards a Global Biodiversity Observing System

What is EBONE?

- A European project for…
  - Interoperating biodiversity observation systems in Europe
  - A pilot on global biodiversity monitoring (GEO BON)
- Improving systems to collect, manage, analyze, share data on biodiversity
- Stimulating the science-policy interface on biodiversity

Habitat Data: linking in Situ and RS

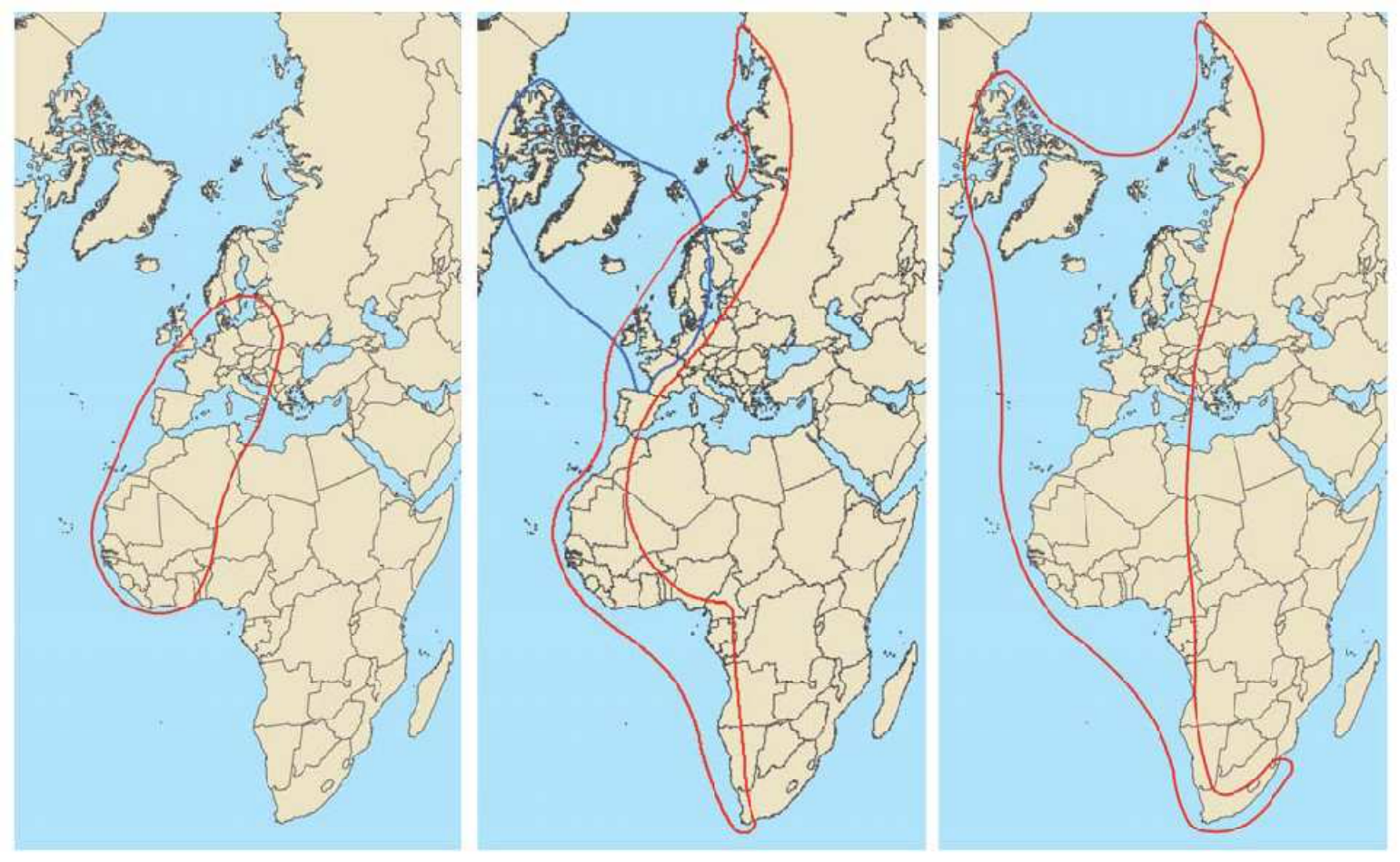


Newts are habitat related

Foto: Jeanne Soetens

Badgers are multiple habitat species

Wetland birds: global species

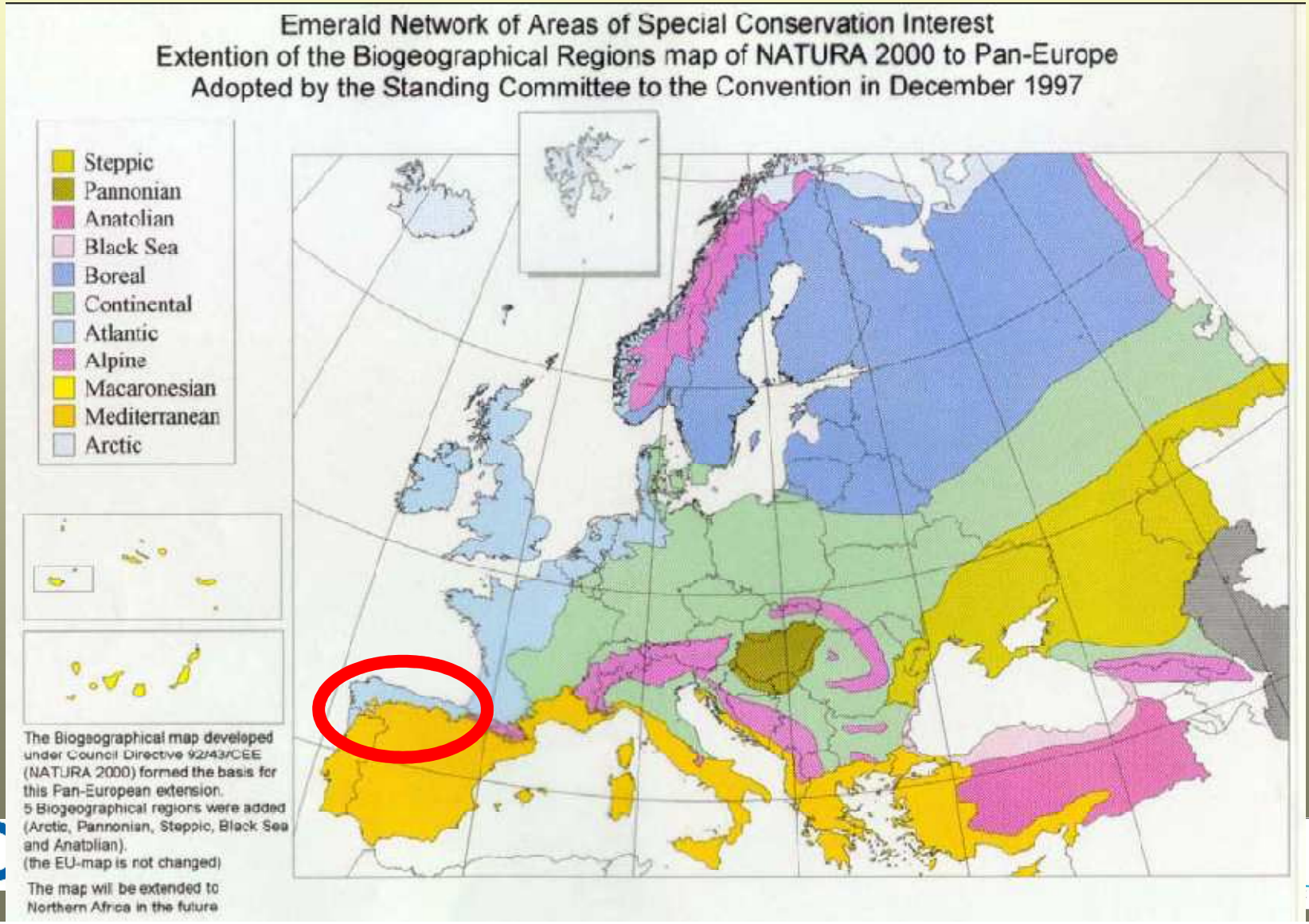


Boere et al 2006, JNCC

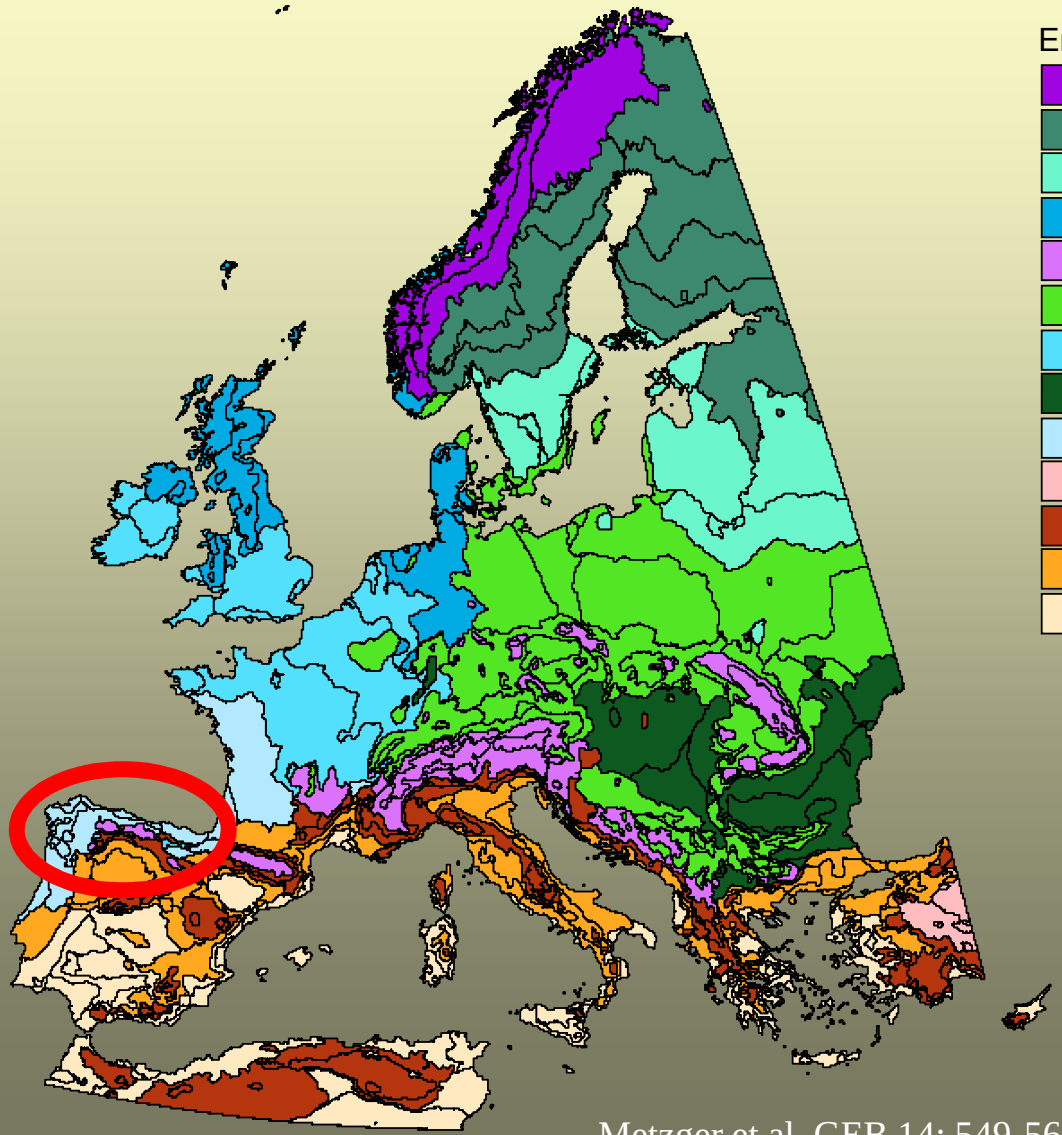
Stratification for monitoring the wider landscape

- Biogeographical regions do not deliver a proper basis for monitoring as they are too generalised;
- The European Environmental Stratification (EnS, Metzger et al 2005) can form an appropriate stratification;
- At present it is used to provide basis for sample allocation and analysis is made to see in which regions EnS performs well and where subdivision may be needed.

EU Biogeographical regions

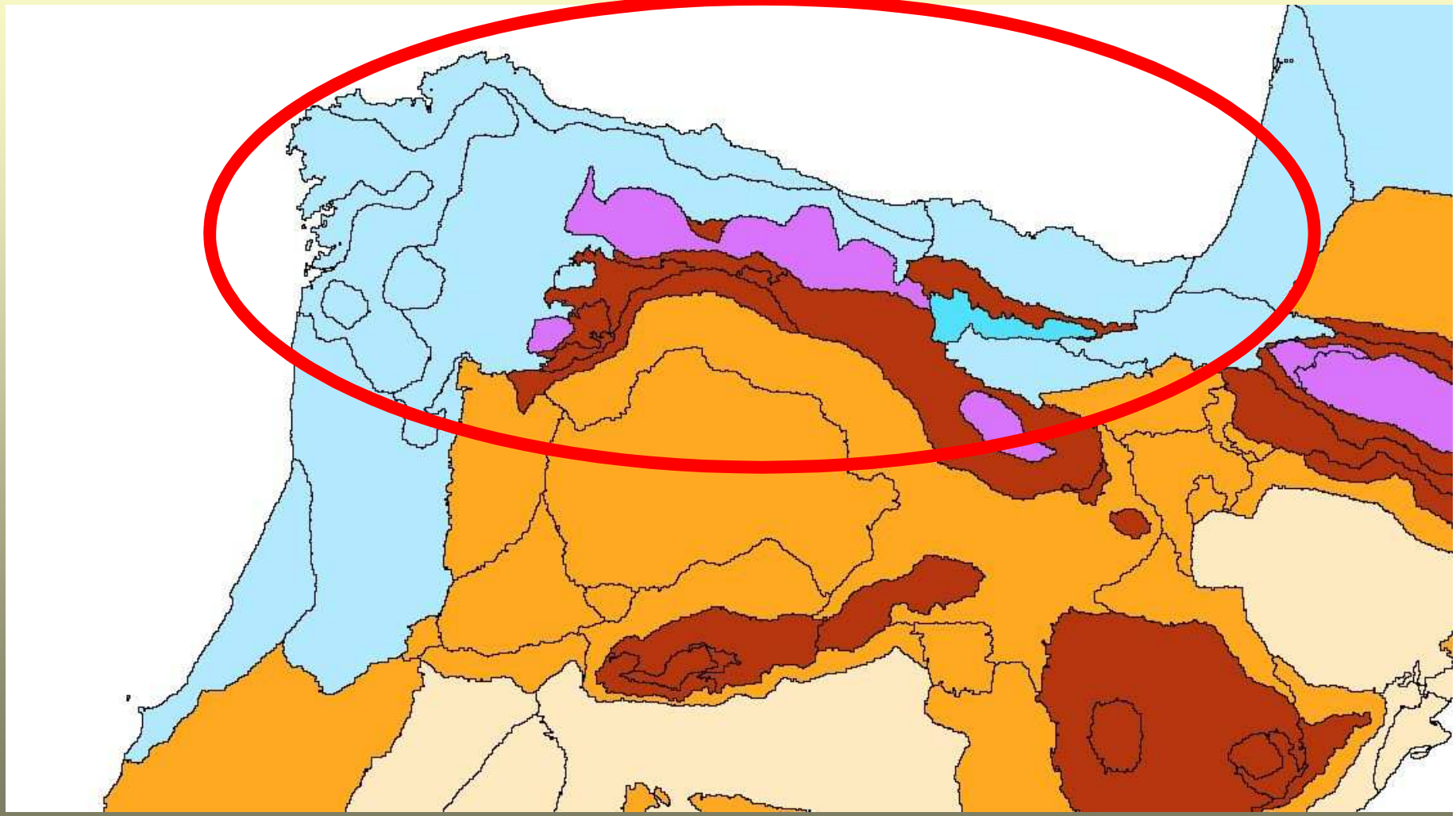


Environmental Strata Europe



Metzger et al, GEB 14: 549-563, 2005

Gradients: important and tricky



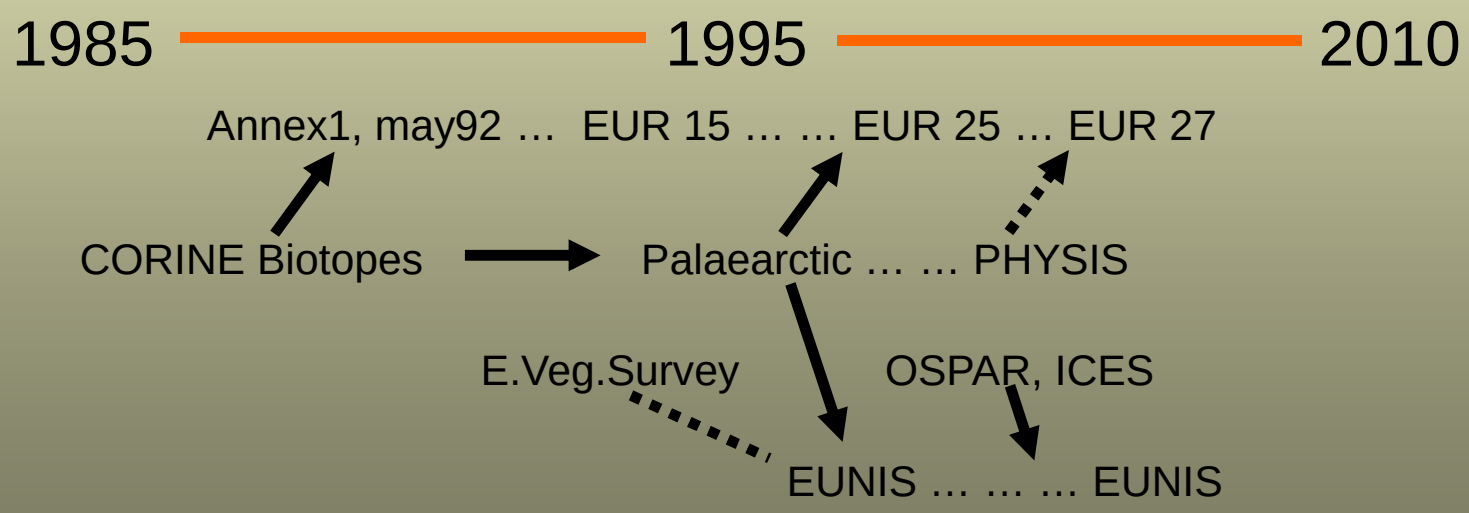
Classifying ecosystems/habitats

- There are 27 EU member states
- Over 100 agencies are responsible for biodiversity
- There is nearly no cooperation
- The article 17 report published in 2009 was a disaster
- However, European classifications exist

Pan-European habitat classifications

All based on expert judgement:

- CORINE Biotopes
- Palaearctic Habitat Classification
- EU Habitats Directive Annex 1
- EUNIS Habitat Classification



Conclusions on European classifications

- Hierarchical class lists are common;
- National classifications often relate to specific national contexts (histories, policies, environmental conditions);
- Use of terms based on the local value ranges;
- Linear and point features are under-represented;
- Many of the classifications are based on phytosociology, few on unvegetated habitats.

What do we foresee?

- There is an increasing need for standardised data at the European level for policy development, evaluation and reporting;
- Global efforts such as IPCC, CBD and IPBES require a European cooperative approach
- INSPIRE will guide spatial data standardisation;
- Common methodologies will allow more realistic and reliable data; these will make work more cost-effective

Biodiversity data requirements

- Link to Annex 1 and EUNIS classifications and use European definitions
- Link biodiversity inside and outside protected areas
- Be based on work by universities, institutes, national and regional agencies (EU+: >100) and NGO's
- Be statistically interpretable for trends in habitats and species at the European level;
- Link in situ and RS approaches if possible
- Cost effective and exchangeable

The challenge for the future

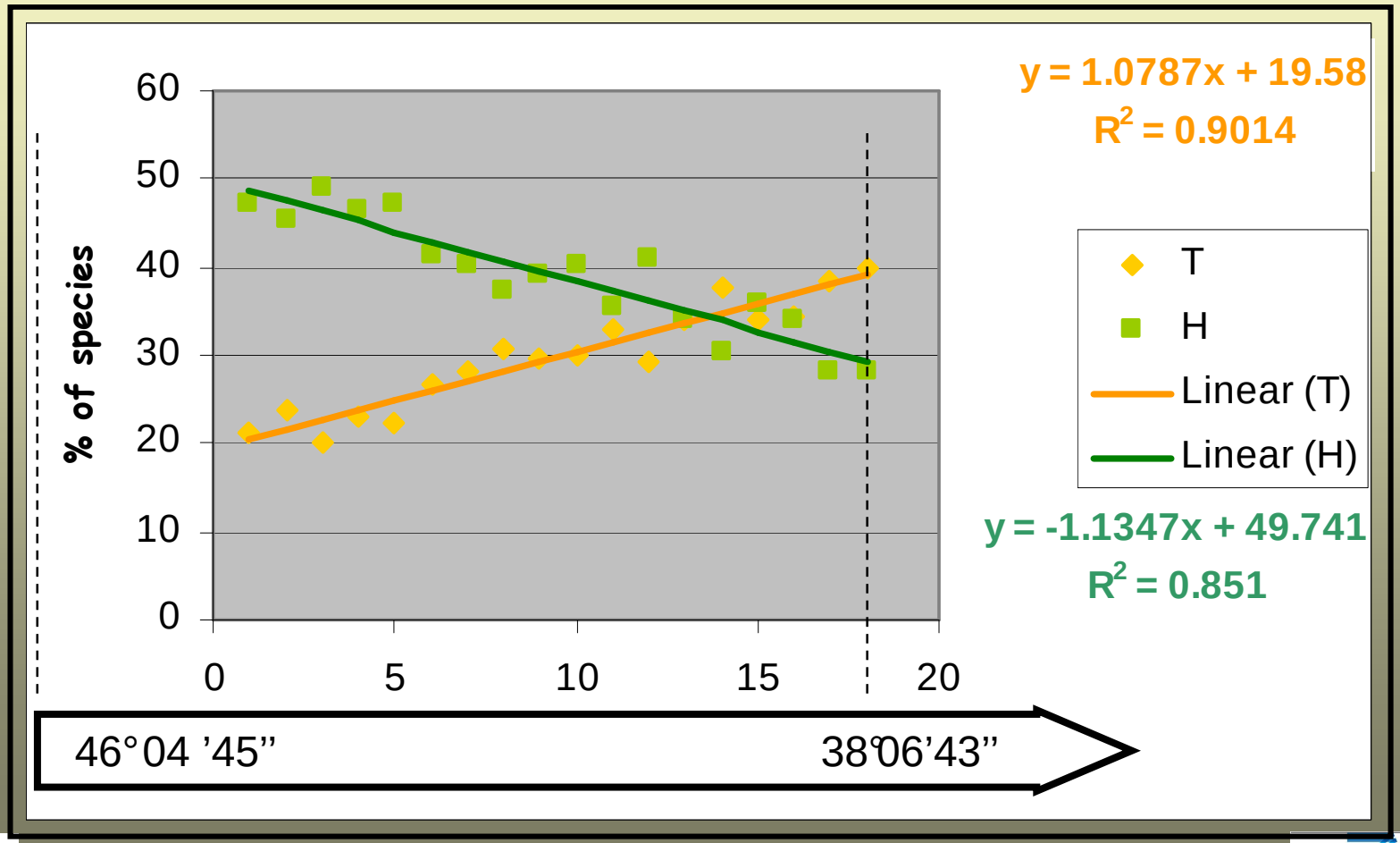
- Harmonise communication between countries and regions;
- Develop a system to harmonise habitats at the European level;
- Translate regional environmental references into European references;
- Share tools and databases to be cost-effective;
- Develop data collection and data management according to INSPIRE.

EBONE: General Habitat Categories

- General Habitat Categories (GHC) are based on the regression of Life Forms on the environment;
- They are based on classic science as defined by Raunkiaer (1908) and transcend species;
- No biogeographical terms or local names;
- Explicit rules for definition and determination in the field of GHC's and its qualifiers;
- GHC's allow integration between national approaches on habitat monitoring.

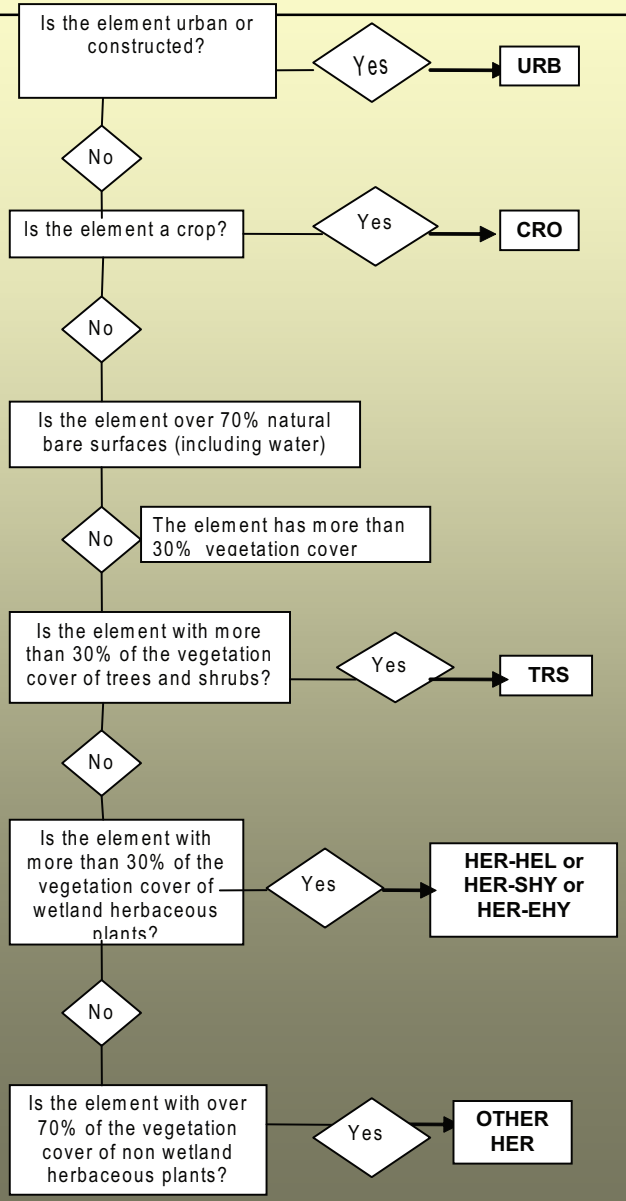
Bunce et al 2998, Landscape ecology 23:11-25

Life forms can be integrators, such as for the Italian flora



Emilo Padoa Schioppa, data from Pignatti, 1994

GHC, highest level

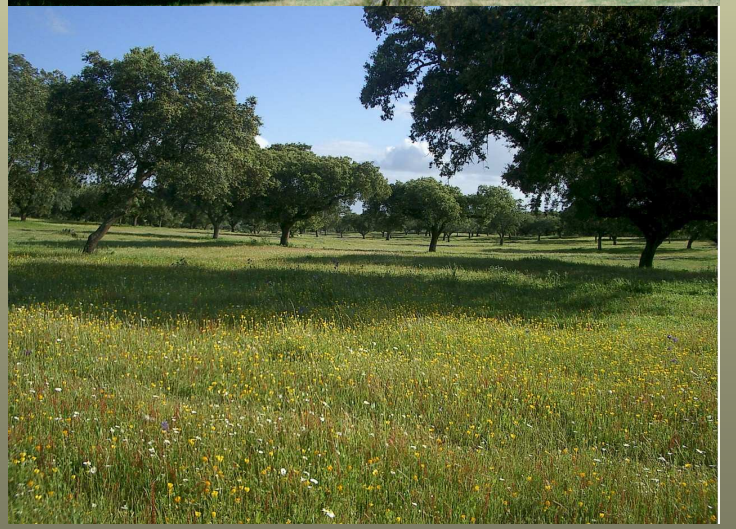


Use: interpreting landscapes

Simple ecosystems

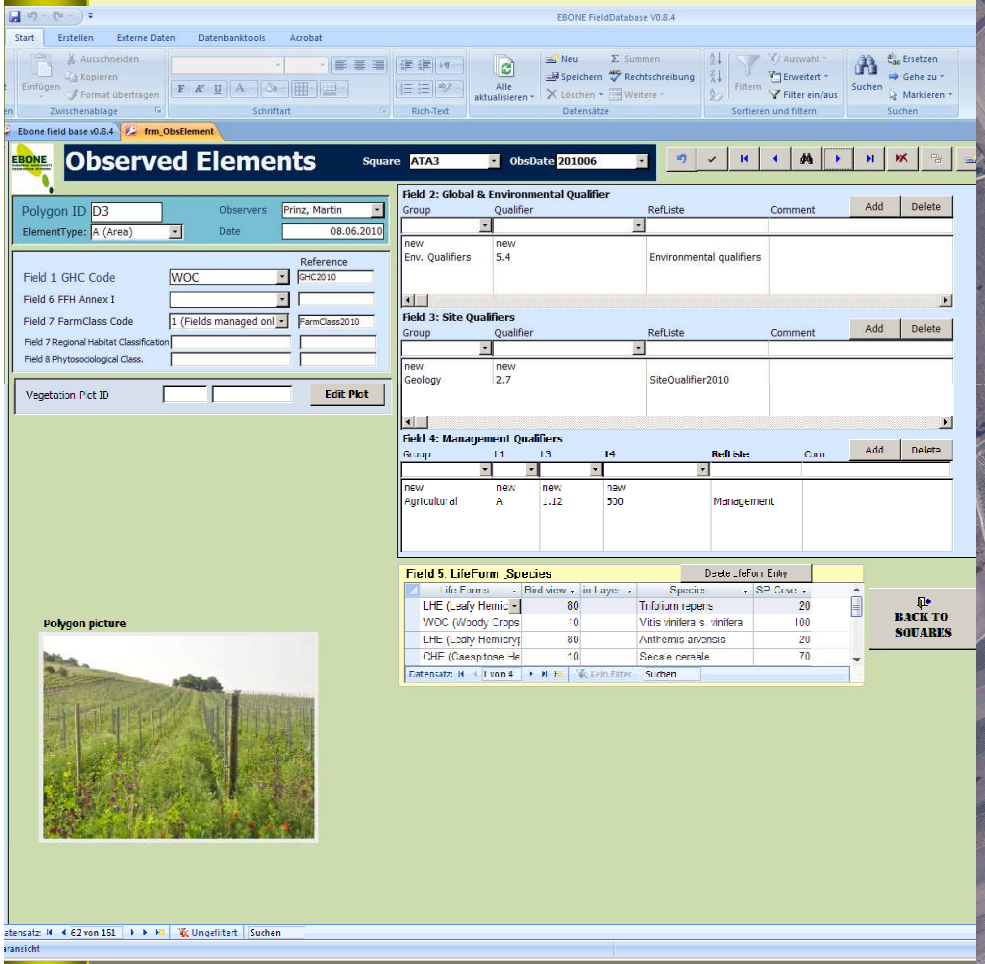
Complex ecosystems

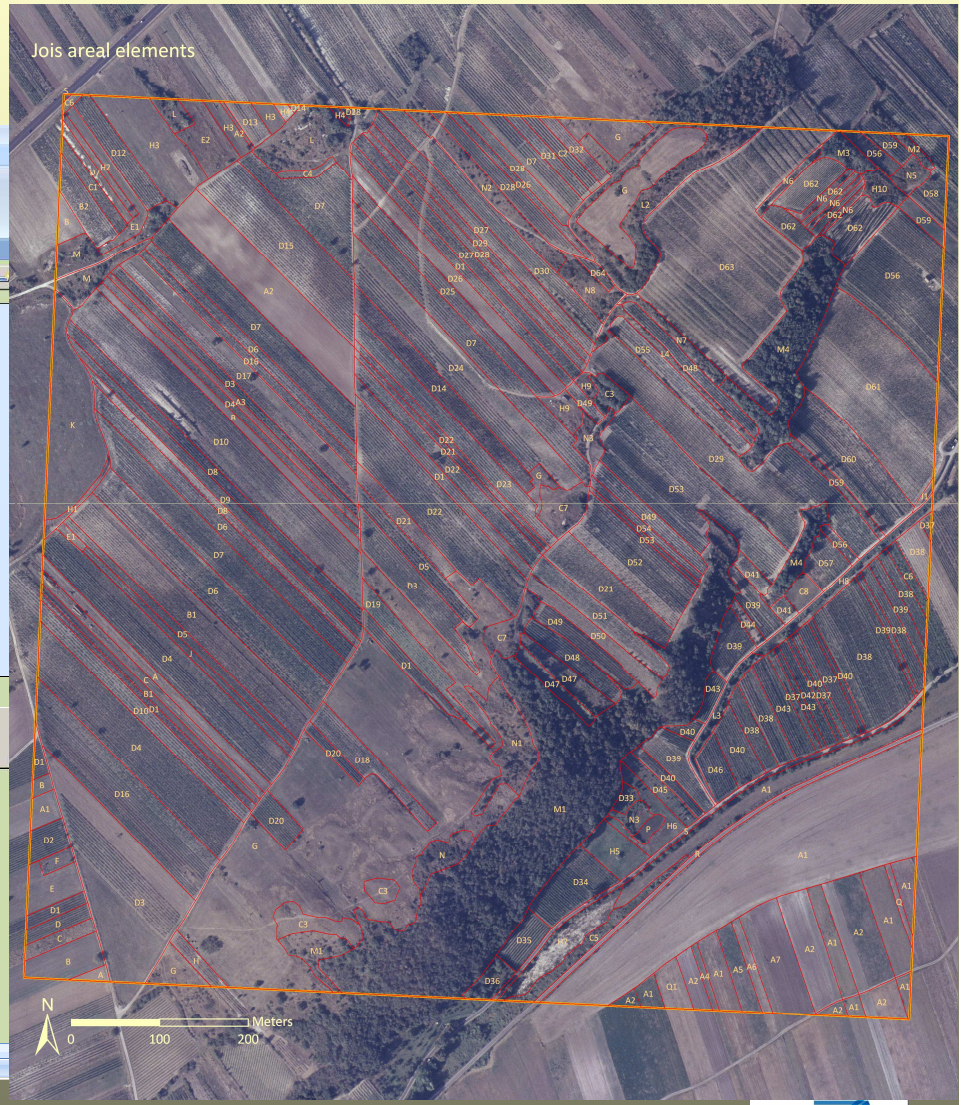
Interpreting forest change



EBONE - European Biodiversity Observation Network

Habitat mapping in Austria





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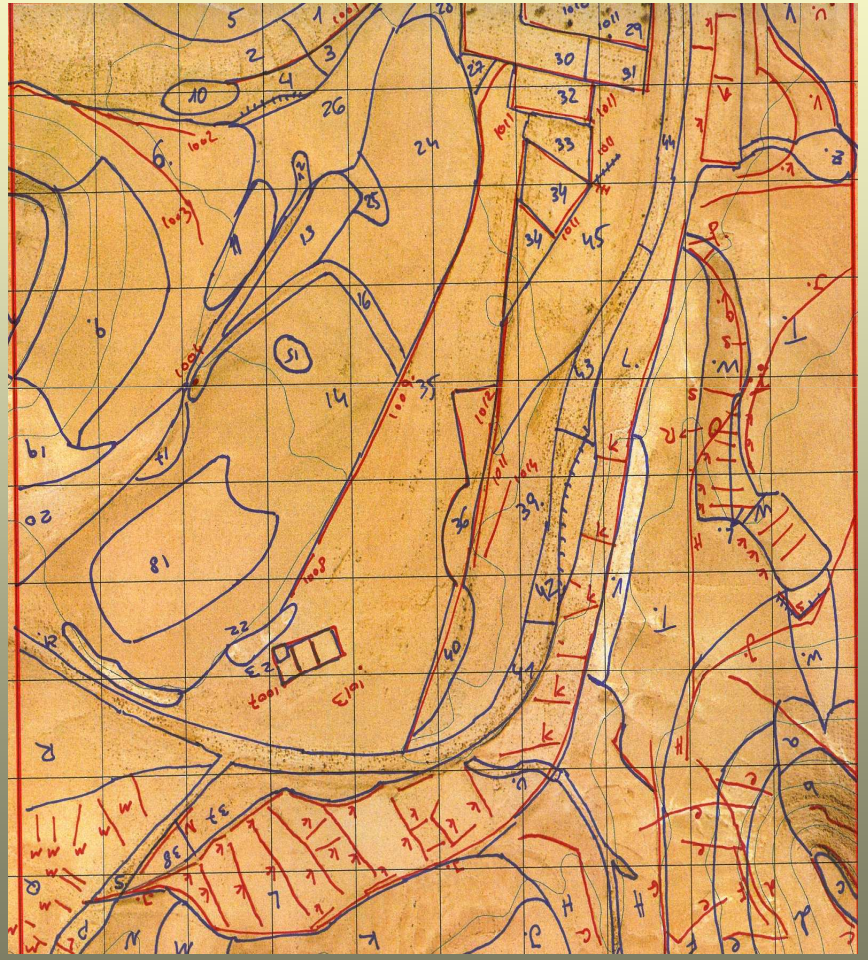
Habitat mapping in the desert

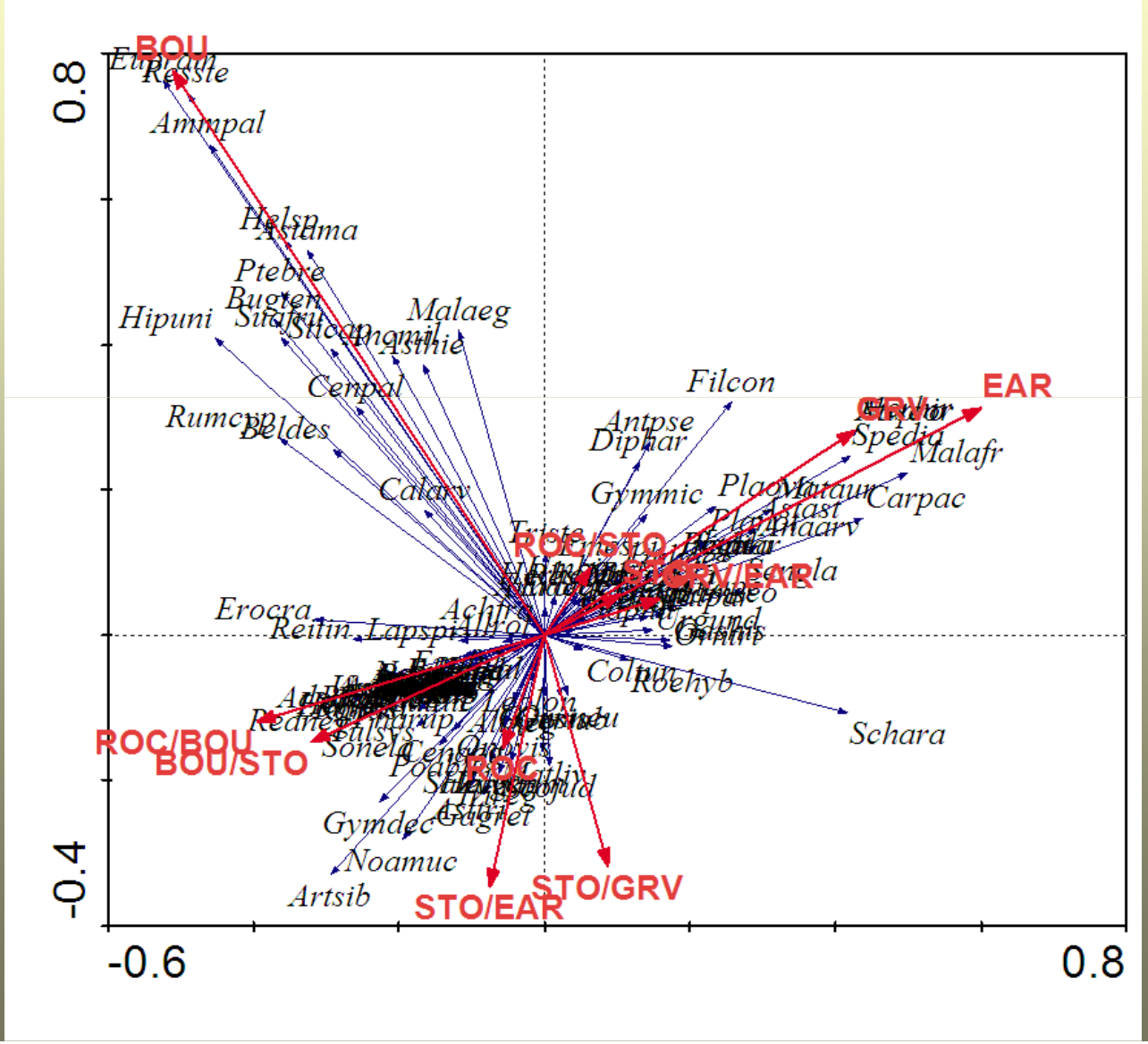


Main desert Habitat Categories

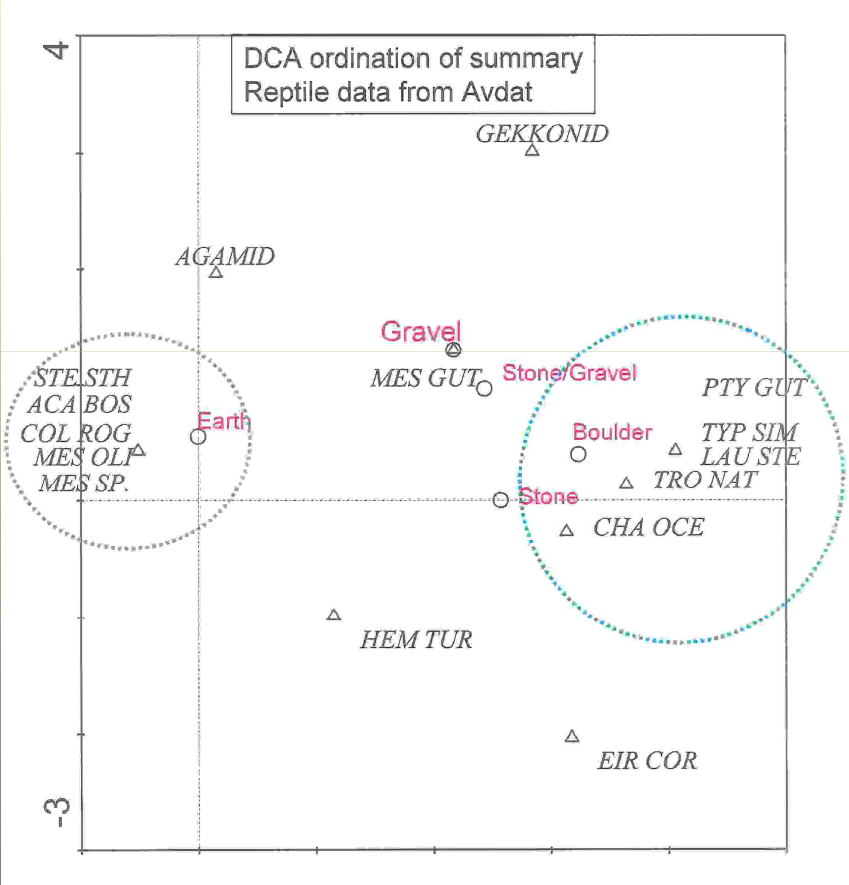
Bare Rock	ROC	Boulders/Stones	BOU/STO
Boulders	BOU	Boulders/Gravel	BOU/GRV
Stones	STO	Boulders/Sand	BOU/GRV
Gravel	GRV	Boulders/Earth	BOU/EAR
Sand	SAN	Stones/Gravel	STO/GRV
Earth, Mud	EAR	Stones/Sand	STO/SAN
Rock/Boulders	ROC/BOU	Stones/Earth	STO/EAR
Rock/Stones	ROC/STO	Gravel/Sand	GRV/SAN
Rock/Gravel	ROC/GRV	Gravel/Earth	GRV/EAR
Rock/Sand	ROC/SAN	Sand/Earth	SAN/EAR
Rock/Earth	ROC/EAR		

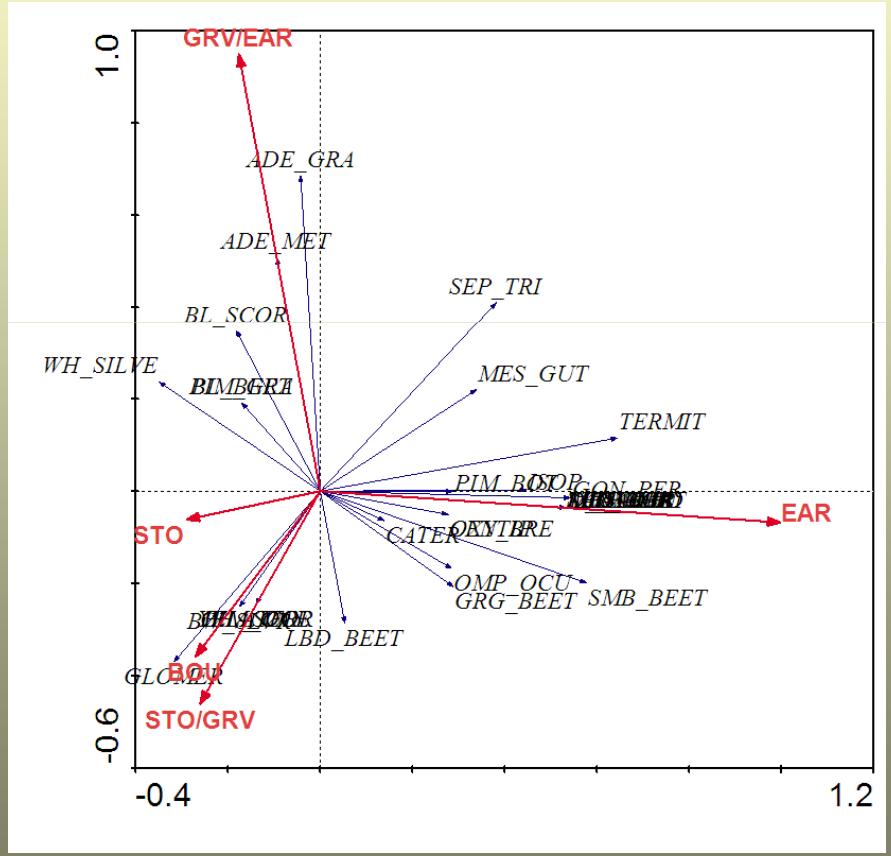
Relation flora-habitats

Flora-habitat relationship



Reptile and insect-habitat relation in the desert





Upscaling of habitat data from national to European level:

- Countryside Survey Great Britain (CS-GB);
- National Inventory of landscapes (NILS) in Sweden;
- Spanish Rural Landscape Monitoring Systems (SISPARES) in Spain;
- Spatial Indices for land-use sustainability (SINUS) in Austria;
- Northern Ireland Countryside Survey (NICS);

Conclusions from EBONE:

- Proper estimates of biodiversity at national and EU/EnZ level is required for European and global tasks;
- It is feasible to design a European biodiversity information system;
- It is possible to design a European monitoring system using European environmental references;
- Collaboration between countries and regions will be important for designing cost effective sampling;
- The issue of data sharing and confidentiality has to be solved;

The European Challenge:

- To harmonise the European biodiversity monitoring system (Natura 2000 + wider countryside);
- To get the willingness of institutes, regions and countries to cooperate;
- Improve cost-effectiveness by sharing efforts, knowledge and database systems;
- Improve the international reporting mechanism and the science-policy interface.

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Thank you

www.ebone.wur.nl

http://www.earthobservations.org/geobon.shtml

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