Establishment of a European Information System on Forest Genetic Resources

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24th meeting of the AGRI GEN RES Committee, Brussels
2 Dec 2010

Background – needs for good-quality data

Work of the European Forest Genetic Resources Programme (EUFORGEN)

- Assessment of FGR conservation efficiency and representativeness
- Development of pan-European FGR conservation strategies

Various reporting requirements

- Pan-European C&I for sustainable forest management (Forest Europe, previously MCPFE)
- FAO State of the World's FGR report (2013)
- Other reporting needs (e.g. SEBI2010, the Forest Strategy of the European Union)

EUFORGEN

Pan-European programme promoting conservation and sustainable use of forest genetic resources

Established in 1994 to facilitate the implementation of commitments made by the Forest Europe process (previously the Ministerial Conference on the Protection of Forests in Europe, MCPFE)

- Resolution S2: Conservation of forest genetic resources, Strasbourg Conference (1990)
- Resolution V4: Conserving and enhancing forest biological diversity in Europe, Vienna Conference (2003)
- Warsaw Declaration (2007)

EUFORGEN

Funded by member countries (26) (Nov 2010)

National Coordinators → Steering Committee

Secretariat at Bioversity International

Phase IV (2010-2014) objectives

1. Promote appropriate use of forest genetic resources as part of sustainable forest management to facilitate adaptation of forests and forest management to climate change
2. Develop and promote pan-European gene conservation strategies and improve guidelines for management of gene conservation units and protected areas
3. Collate, maintain and disseminate reliable information on forest genetic resources in Europe

FGR assessment and monitoring: lessons

European countries have organized FGR conservation in various ways (not a problem as such)

- Variety of documentation and management efforts

Most countries use similar *in situ* conservation approach

- Networks of reserves, protected areas etc

What is a ‘gene conservation unit’ and how it should be managed?

Lack of harmonized data on the units

Reliable assessment of FGR conservation at pan-European level difficult, if not impossible

EUFGIS Action

Project period: April 2007-March 2011

Co-funded by the European Commission (DG Agriculture and Rural Development) (50%), total budget € 1,1 million

Seven partners:

- Bioversity International
- BFW, Austria
- State Forest Tree Improvement Station, Denmark
- INRA, France
- National Forest Centre, Slovakia
- Slovenian Forestry Institute, Slovenia
- Forest Research, United Kingdom

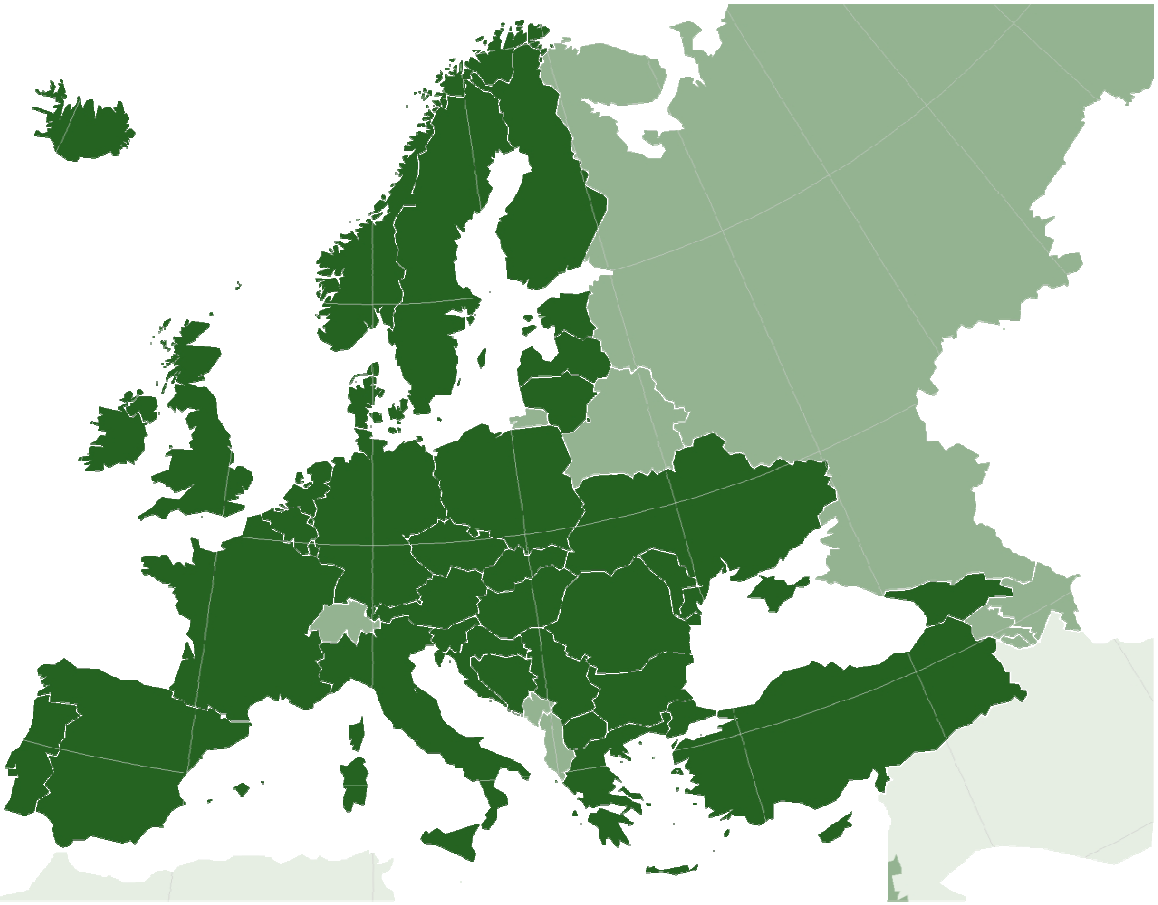
Implemented in collaboration with EUFORGEN (member and associated countries)

EUFGIS objectives

1. To create an on-line information system to serve as the European documentation platform for national FGR inventories
2. To establish a network of FGR inventories in 40 countries to provide data for the information system
3. To develop minimum requirements for dynamic gene conservation units of forest trees and common information standards for these units at pan-European level
4. To make available, as a first step, harmonized data on the dynamic gene conservation units of 20 tree species from at least 80 % of the countries within each species' distribution range in Europe
5. To provide training on FGR documentation to national focal points

EUFGIS results

A network of National Focal Points in 35 countries



EUFGIS results

Workshop on FGR inventories in Europe, Birkerød, Denmark, 23-24 October 2007

- National Focal Points, EUFORGEN Networks, project partners, FAO and other stakeholders

The workshop analyzed the state of FGR documentation in different countries

- Overall implementation of *in situ* gene conservation of forest trees
- How countries have organized the FGR documentation efforts
- IT tools and national information systems used

EUFGIS results

Pan-European minimum requirements and data standards for dynamic gene conservation units of forest trees developed by the EUFGIS expert group

- EUFORGEN Networks, FAO, project partners

Expert group meetings

- 1st meeting, Denmark, 25 October 2007
- 2nd meeting, France, 8-9 April 2008
- 3rd meeting, Slovenia, 1-2 October 2008

Minimum requirements

Based on the concept of dynamic gene conservation

- The dynamic nature of forest genetic resources (continuous evolution)
- Active management is necessary for effective conservation of forest genetic resources

Clarifies the role of protected areas and production forests in gene conservation

- Most protected areas established for habitat or species conservation, no management intervention often allowed
- Gene conservation can be integrated with other management goals of forests

Gene conservation units

Should have a designated status as genetic conservation areas of forest trees at national level

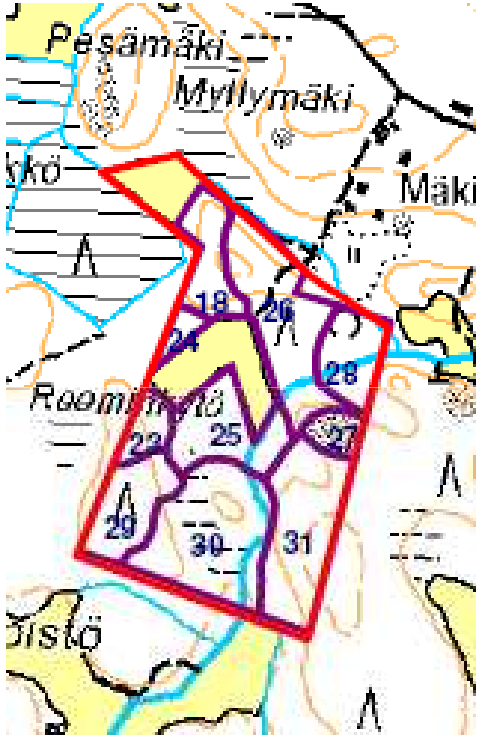
- legal status, administrative status or similar arrangements

Can be located in forests managed for multiple uses, protected areas or seed stands (not in seed orchards)

Should have a certain minimum population size

Should be managed for genetic conservation of target tree species

Should be monitored frequently

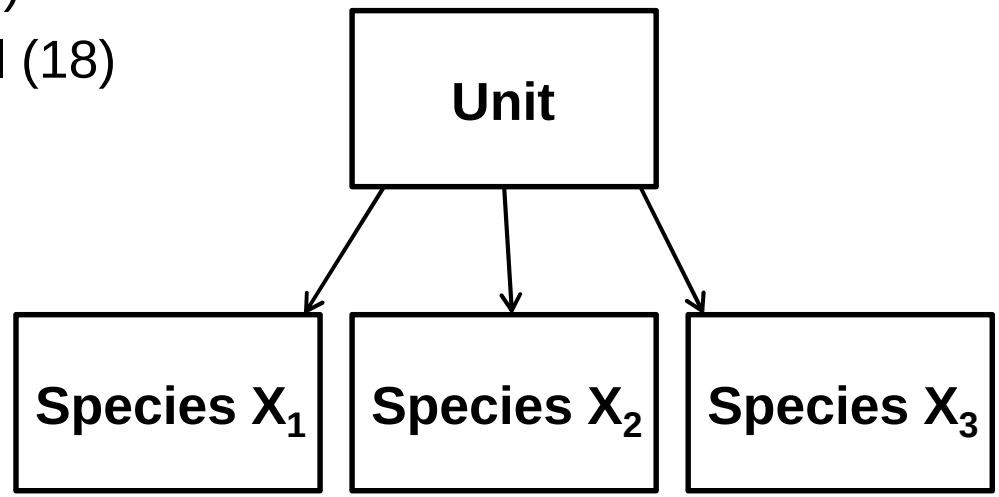


Data standards

Define the format and accuracy of the data to be entered into the EUFGIS database

Data on the gene conservation units

- Unit level (26)
- Species level (18)

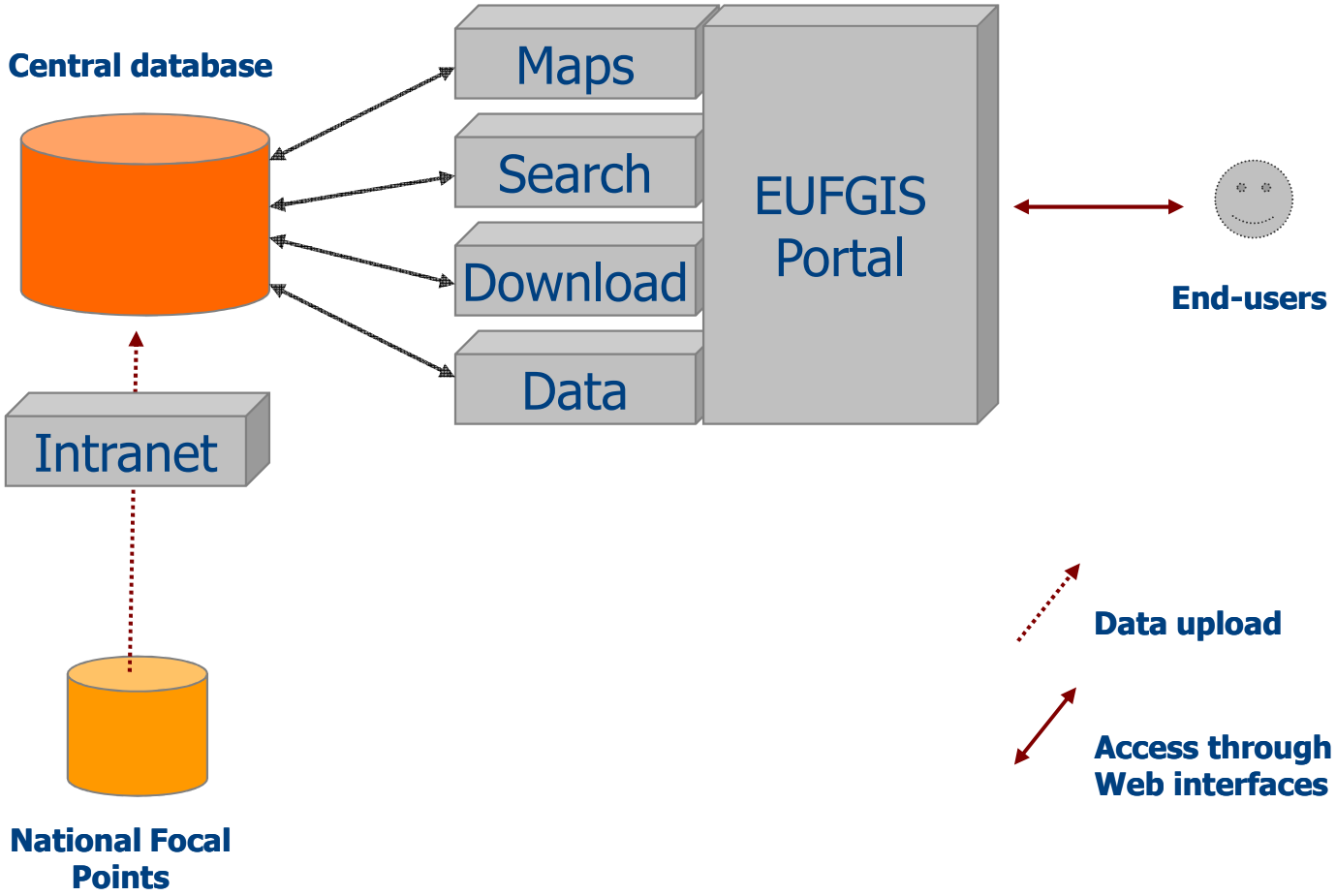


EUFGIS results

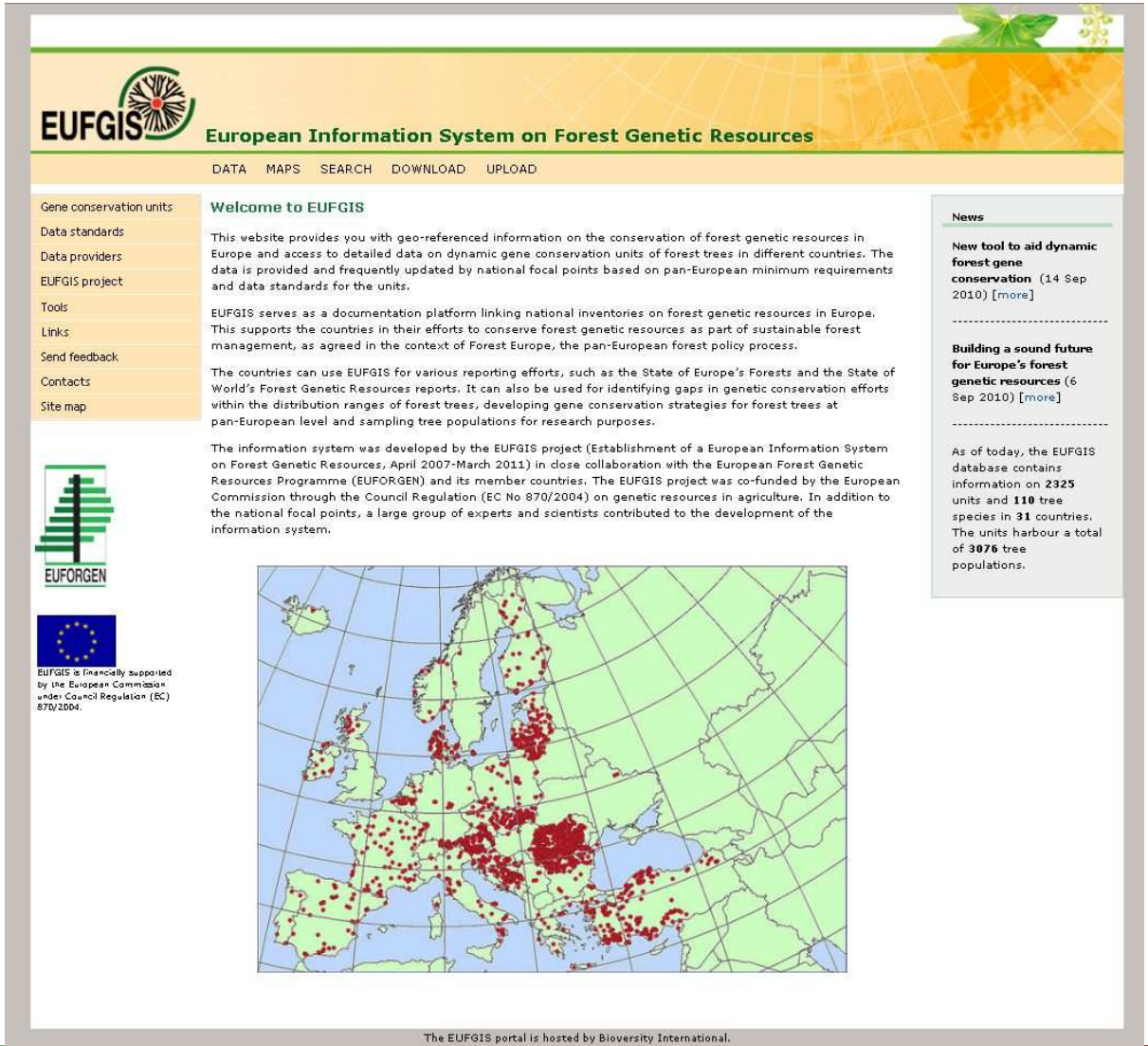
Information infrastructure created and tested

- Database and intranet
- User manual and helpdesk support
- Pilot data gathering and uploading by the project partners
- Four regional training workshops organized for the National Focal Points in 2009
- Large-scale data gathering and uploading
- EUFGIS Portal was launched in Sep 2010
- Currently the EUFGIS Portal includes data on 2367 units and 105 tree species in 32 countries (a total of 3146 tree populations)

EUFGIS infrastructure



EUFGIS Portal (http://portal.eufgis.org)



EUFGIS results

Memorandum of Agreement (MoA) for sharing and using national data

- Adopted by the EUFORGEN Steering Committee in 2010

Final meeting, Vienna, Austria, 13-15 Sep 2010

- Data-quality, assessment methods for FGR conservation, impact of climate change, improvement the EUFGIS Portal (including the intranet)

Development of a documentation manual for national FGR inventories and case studies underway

- Assessment of FGR conservation efforts in selected tree species
- Impact of climate change on FGR conservation

Use of the EUFGIS Portal

European countries and their international reporting needs

- Indicator 4.6 of the pan-European C&I for sustainable forest management -> State of Europe's Forests 2011
- FAO State of the World's FGR report (2013)

The Portal will be maintained by EUFORGEN and used by its working groups to

- Assess gene conservation status of forest trees in Europe and develop of pan-European gene conservation strategies (2011-2012)
- Review genetic monitoring methods for gene conservation units of forest trees (2011-2012)

Further development of the EUFGIS Portal

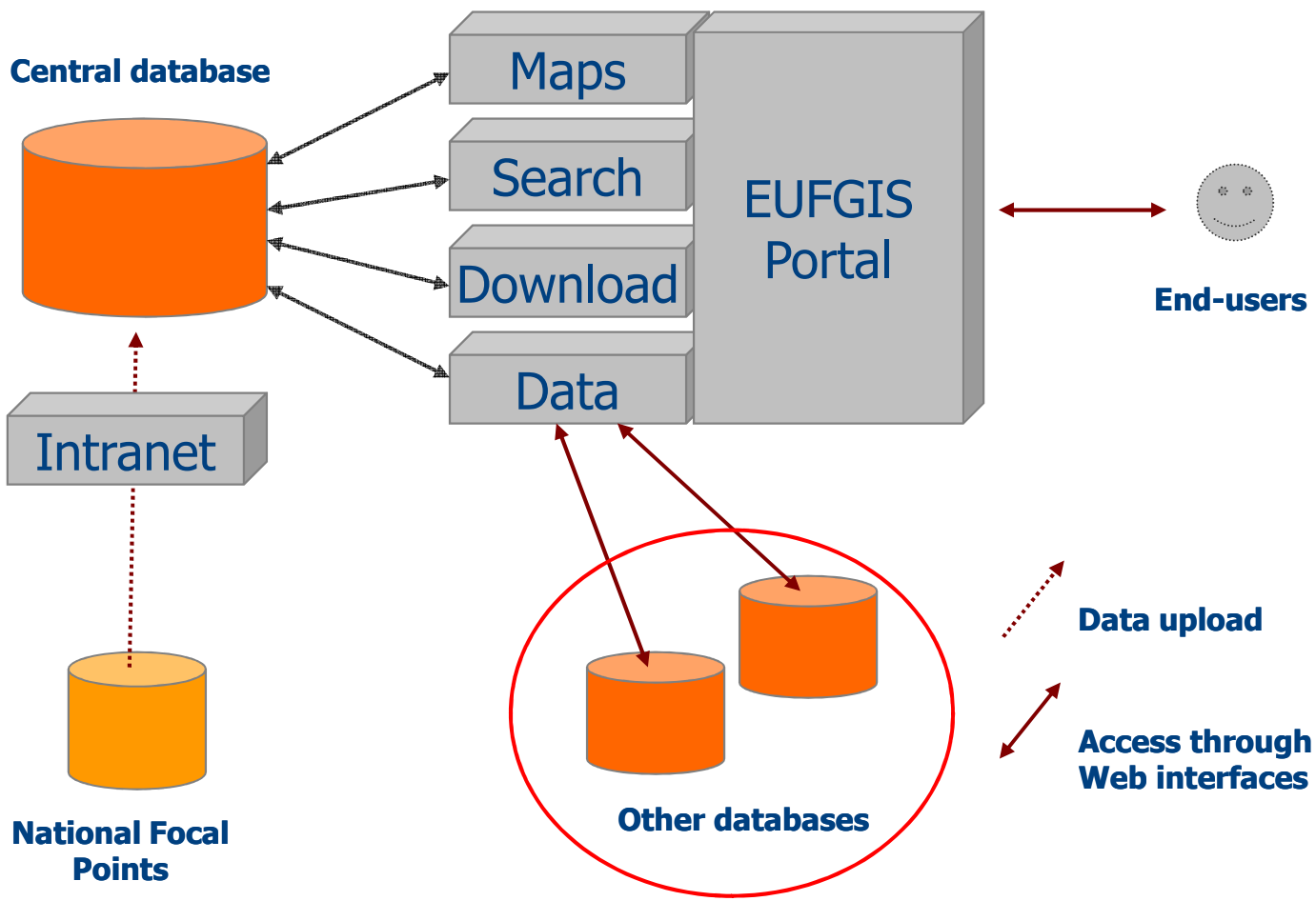
The EUFGIS action has prompted discussion and action at national level on

- Documentation efforts
- Designation of the gene conservation units
- Management plans

More detailed FGR assessment and monitoring requires linkages between different data sources

- Geographical coverage of the gene conservation units
- Genetic diversity
- Genes
- Adaptive traits

Further development of the EUFGIS Portal



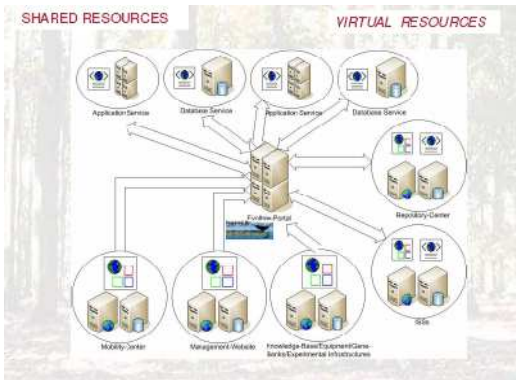
Further development of the EUFGIS Portal

Recent build-up of genetic and genomic resources in Europe offers new opportunities for assessment and monitoring efforts

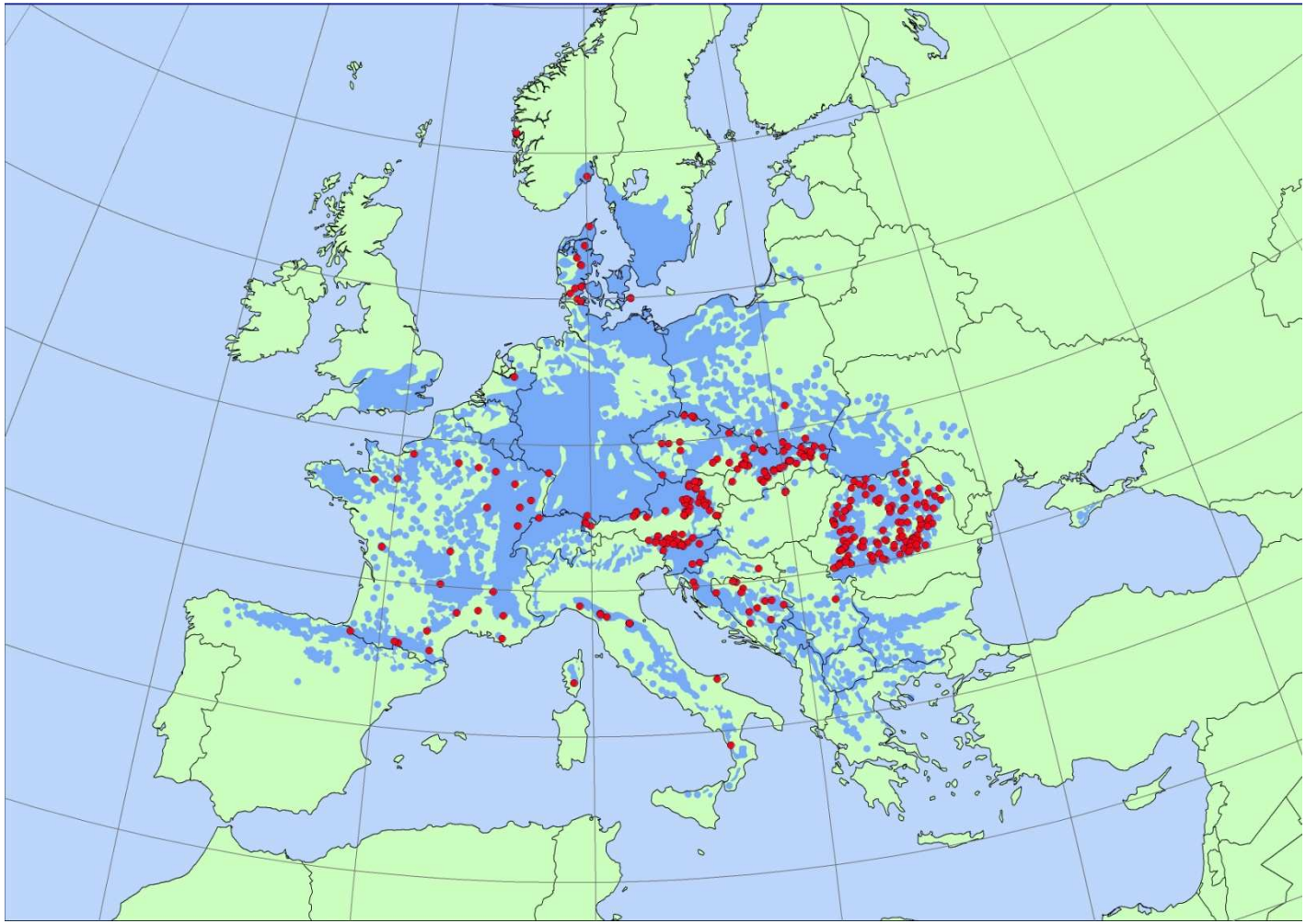
- Discovery of genes with adaptive significance
- Diversity of genes

EVOLTREE Network of Excellence

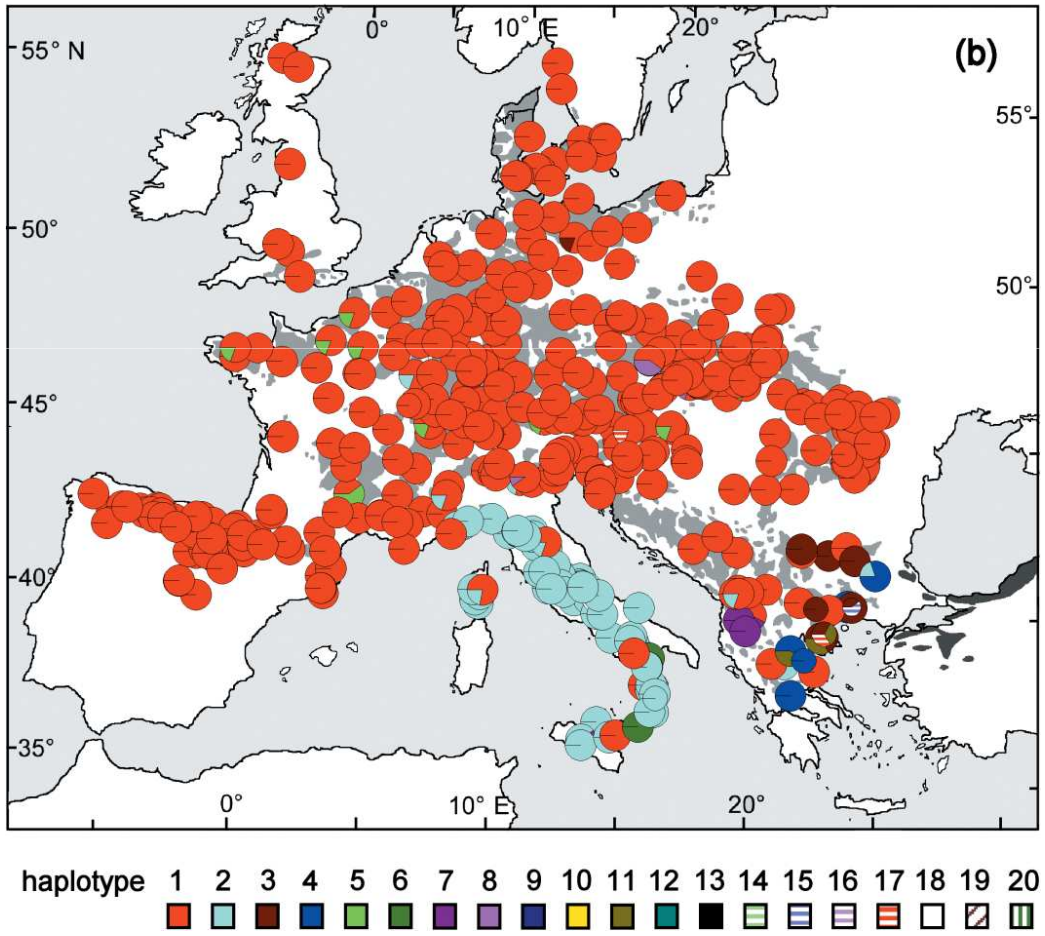
- Databases on genetic diversity of forest trees (11)
- Repository Centre for DNA samples (340,0000)



Beech (*Fagus sylvatica*) gene conservation units

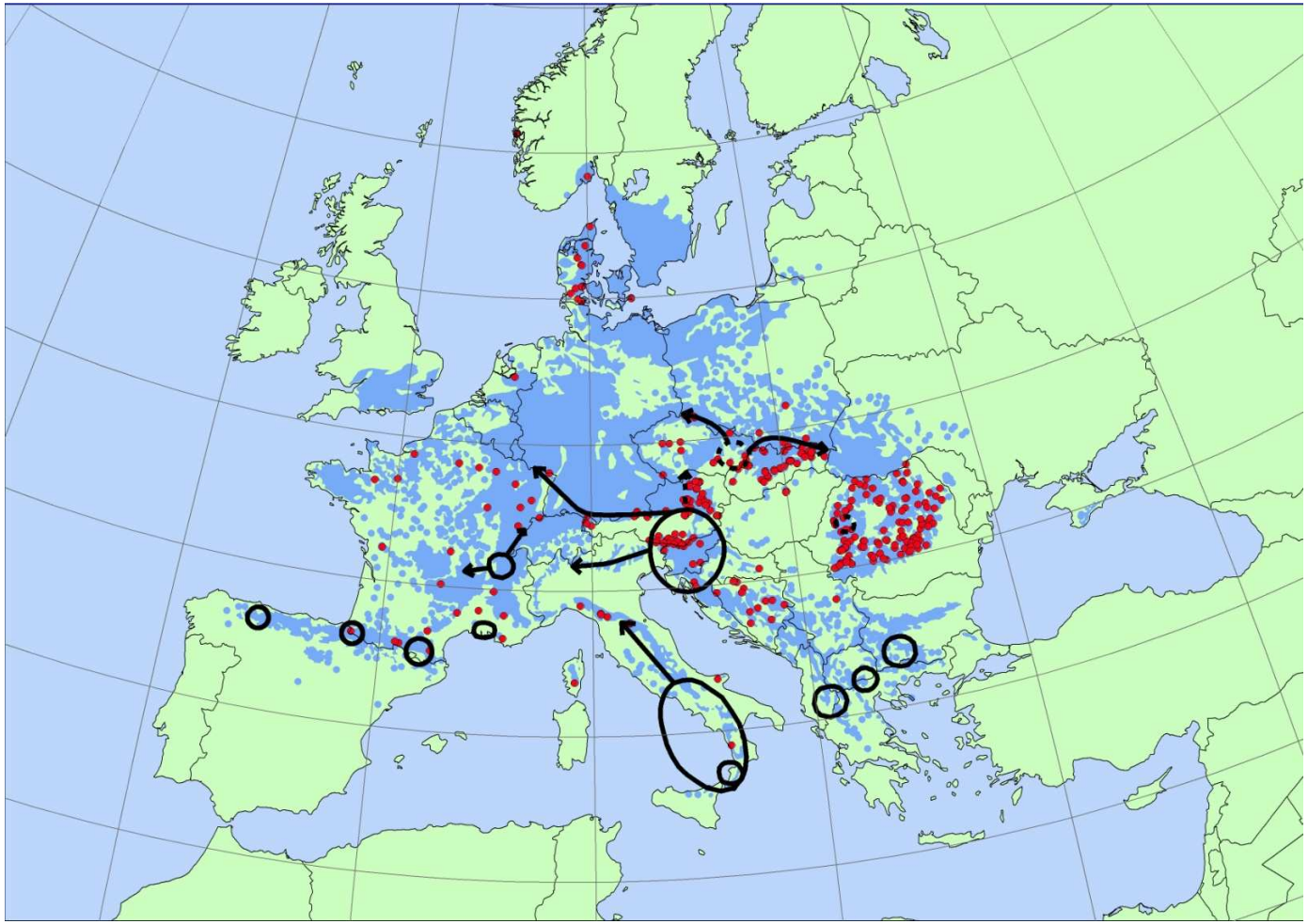


Beech genetic diversity (SSRs)



Magri et al. 2006 New Phytologist 171: 199-221

Beech units vs refugia areas



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Further development of the EUFGIS Portal

Current funding opportunity in the 7th Framework Programme (Theme 2. Food, Agriculture, Fisheries and Biotechnology)

- Call KBBE.2011.1.1-04 Sustaining and managing forest genetic resources

A consortium of 9 institutes is preparing a new project proposal focusing on

- Linking existing FGR inventories in Europe (EUFGIS Portal, EVOLTREE databases)
- Measuring and monitoring genetic diversity
- Improving management of FGR (gene conservation units, production forests)

Further information

http://portal.eufgis.org

www.eufgis.org

www.euforgen.org

www.evoltree.eu