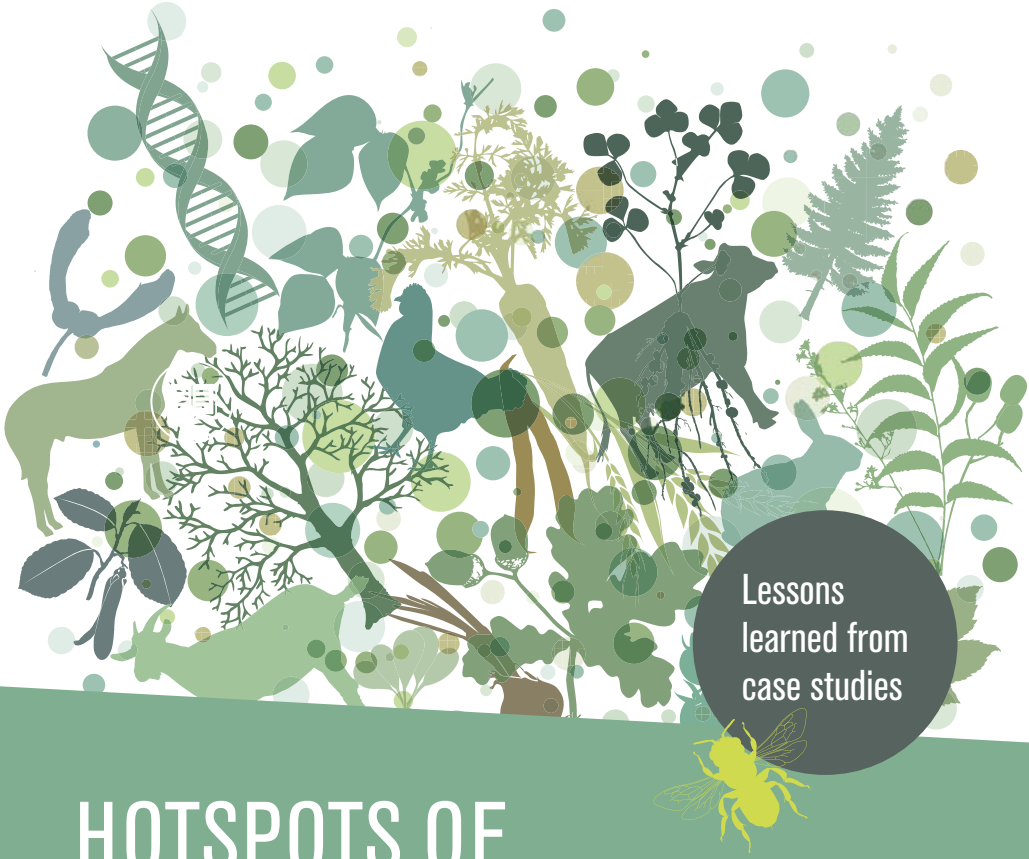
GenRes Bridge

Genetic resources for a food-secure and forested Europe

ECP/GR EUFORGEN ERFP



Lessons learned from case studies

HOTSPOTS OF GENETIC RESOURCES FOR ANIMALS, PLANTS AND FORESTS

Objectives

Knowing where genetic resources of forests, plants and animals are located at regional and local scales is critical for effective conservation. There is an additional need to explore new ways to conserve genetic resources in line with the EU's ambitions of preserving biodiversity, and to develop management options for the 10% of agricultural area the which EU targets under high-diversity landscape features (EU Biodiversity Strategy).

Therefore, we aimed to (a) identify European genetic diversity hotspots for plants, animals and forest trees, (b) characterise genetically diverse landscapes - a relevant scale for management, and finally (c) develop a concept for integrated management and conservation of the genetic resources across the forest, plant and animal domains at the landscape scale.

Why?

Conservation of genetic resources has historically taken place within the forest, animal and plant domains separately, focusing on breeds, varieties and species, rather than developing interdomain strategies to conserve and maintain genetic resources.

In parallel with agricultural intensification, since the 1950s, genetic resources' diversity has declined. Therefore, additional approaches are needed for conserving genetic resources to help guarantee future food security.

Who will do it?

Agricultural and forestry organisations and authorities will team up with municipalities, farmers and other local stakeholders, environmental agencies, and perhaps tourism organisations.

Activities

Relevant R&D activities could include:

- **Locating genetically-diverse sites** across Europe and neighbourhood countries (e.g. eco-topographic heterogenous landscapes, marginal production and local cultural associations, as well as potential for intensive exploitation).
- **Characterising social, economic,** and scientific (genomic) bases for genetic resource retention in genetically-diverse landscapes.
- **Developing protocols for genetic,** species and ecosystem conservation in genetically-diverse landscapes that manage resources, sustain historic cultural heritage, and maintain ecosystem services.
- **Ensuring that genetic diversity** is monitored and backed-up in agricultural and forestry holdings, as well as being available for commercial agriculture and forestry improvement.

Photos: (from left to right) local wild grains in Mont Lebanon (© Magda Bou Dagher Kharrat); representatives of the local breed, Norwegian Dairy Goat (© Eline Myking); pasture neighbouring Triglav National Park (© Peter Čadež); Undredal in Aurland (© Eline Myking).

The map. Genetically-diverse landscapes explored in the project – Aurland in Norway, Mont Ventoux in France, the Dolomites in Italy, Triglav National Park in Slovenia and Ehden/ Qadisha valley in Lebanon.

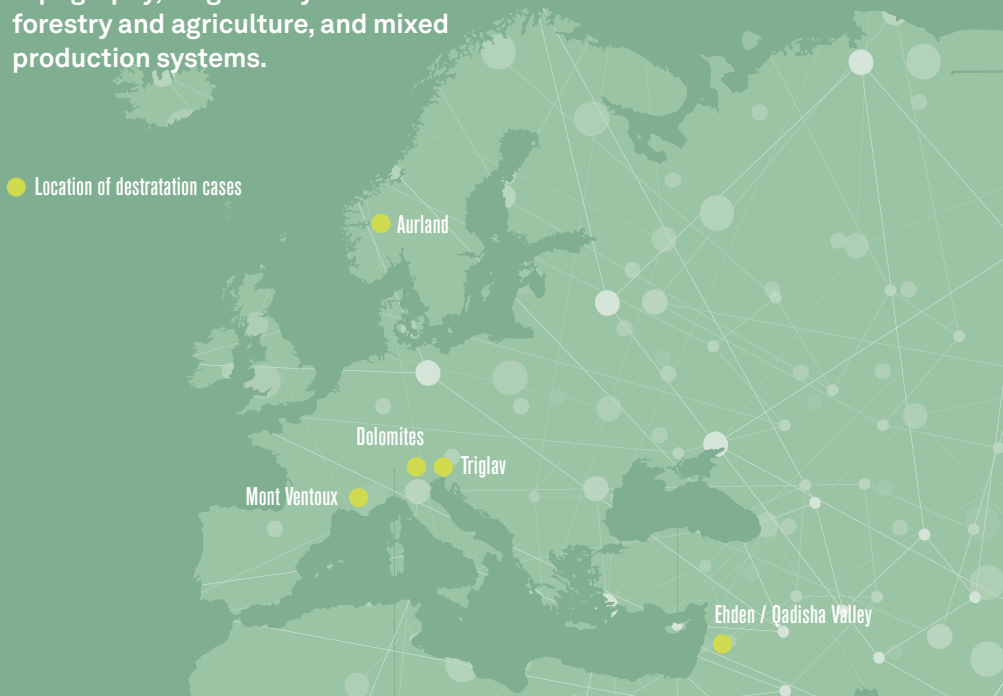
Results

Available European databases on genetic resources for animals, plants and forest trees did not contain sufficient information for identifying regional **genetic resources hotspots in Europe** and neighbouring countries.

Our effort in identifying **genetically-diverse landscapes** was based on expert knowledge. Landscapes within five countries (map below) were selected to showcase management, inter-domain dependencies in forest trees, plants and animals, and the interaction of these domains with the wider biodiversity and communities. The genetically-diverse landscapes are characterised by heterogeneous topography, long history of forestry and agriculture, and mixed production systems.

We suggest a **novel concept for integrated management and conservation of genetic resources** with a primary focus on genetically-diverse landscapes, backed up by management plans, and anchored in overarching policy and legal frameworks, as well as in local stakeholder (farmers, forest owners) initiatives. Each of these landscapes has a distinct regional identity, with significant potential for both branding and highlighting the links between local genetic resources, the landscape and local produce.

Using landscapes as a management unit, with all its genetic diversity, will complement more commonly applied species-, breed-, or variety-oriented management and conservation approaches.



What is next?

European-level funding will be crucial for conducting research aimed at exploring strategies for the joint conservation of genetic resources of the forest, plant and animal domains in common landscapes. This potential funding would be in line with the EU Biodiversity Strategy to 2030 and Farm to Fork Strategy, the new EU forest strategy for 2030 as well as Climate Action policies, and the new EU Common Agricultural Policy (CAP) and Genetic Resources Strategy for Europe, as each depend on improved genetic resource conservation to sustain usage.

Photos below: (from left to right) Cika cattle, Slovenia (© Mojca Simčič) and diversity of maize kernels (© Stegnar Kalan).

Watch a video depicting hotspots of genetic resources that has been developed by the project

www.youtube.com/watch?v=2JWWa1_SyOo

Download the Summary Report

HOTSPOTS OF GENETIC RESOURCES FOR ANIMALS, PLANTS AND FORESTS

www.genresbridge/HotSpots

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 817580

The three networks that represent plant, forest and animal genetic resources communities:

- European Cooperative Programme for Plant Genetic Resources (ECPGR) – www.ecpgr.cgiar.org
- European Forest Genetic Resources Programme (EUFORGEN) – www.euforgen.org
- European Regional Focal Point for Animal Genetic Resources (ERFP) – www.animalgeneticresources.net

EFI The GenRes Bridge project is coordinated by the European Forest Institute