EUFGIS Portal - supporting gap analysis

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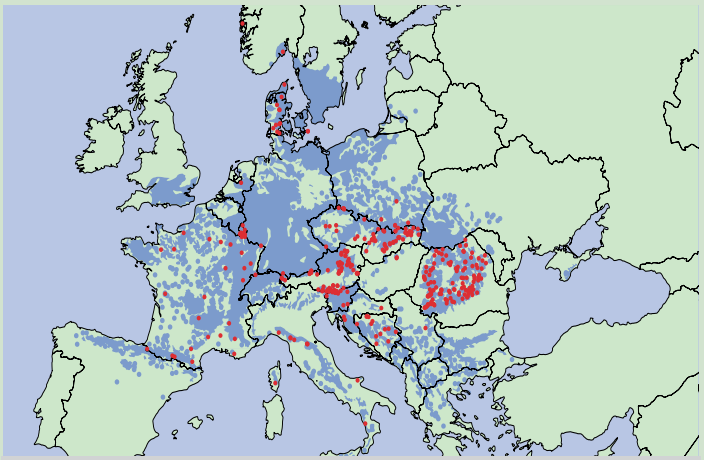

Distribution map of European beech (Fagus sylvatica) *and its gene conservation units (red dots). Map: EUFORGEN*

The EUFGIS project (Establishment of a European Information System on Forest Genetic Resources) ended in March by creating an online portal, providing geo-referenced information on dynamic conservation units of forest tree genetic diversity across the continent. Prior to creating the Portal, the project also developed pan-European minimum requirements and data standards for the conservation units. The project was co-funded by the European Commission and coordinated by Bioversity International. It was implemented in close collaboration with the member countries of the European Forest Genetic Resources Programme (EUFORGEN).

The Portal is now maintained by EUFORGEN and a network of national focal points, established during the project, continues to update the database.

In June 2011, the EUFGIS Portal contained data on 2360 units and 106 tree species in 31 countries. These units harbour a total of 3145 tree populations which are managed according to the concept of dynamic gene conservation. The units, with an average size of 118 hectares, are typically located in forests managed for multiple uses, protected areas and seed stands. About 90 percent of the tree populations are conserved at their natural sites within the environment to which they are adapted (*in situ*). The rest is dynamically evolving *ex situ* tree populations, including landraces of introduced tree species.

In Europe, the first national programmes on forest genetic resources were established in the late 1980s and additional programmes established until only recently. However, the countries involved used a variety of approaches in their practical conservation work and this led to a situation where it became difficult to assess the status of genetic conservation of forest trees across their often large geographical distribution ranges. The pan-European minimum requirements developed by the EUFGIS project have increased awareness among the countries, explaining how the units should be managed so that they contribute to long-term, dynamic conservation of forest genetic resources. Subsequently, many countries have taken action to improve their conservation efforts, including documentation work.

The national strategies aim at conserving a representative sample of the genetic diversity found within a country and, for this purpose, countries have usually created a network of conservation units. About 58 percent of the countries, which have provided their data for the EUFGIS Portal, rely on single-species units, while others manage two or more tree species within a unit for genetic conservation. However, there are also countries which have very few or no units established for conserving forest genetic resources. Furthermore, there are some countries which do have areas established for this purpose, but they do not meet the minimum requirements.

The selection between the single-unit or multi-unit approaches depends partly on the biology of tree species and the amount of forest area within a country but also on practical aspects, such as amount of resources available for this work. Quite often, countries also have different priorities for implementing genetic conservation and selecting tree species. As a result of this, there are still gaps in genetic conservation of forest trees at pan-European level. In some cases, countries also waste both human and financial resources by establishing too many units for a given species, although some level of duplication is needed to cope with storms, pests, diseases and forest fires.

The genetic conservation status of European beech (*Fagus sylvatica*) well illustrates the above mentioned problems. According to the EUFGIS Portal, there are a total of 354 units managed for genetic conservation of beech across Europe. This suggests that the genetic resources of the species are rather well conserved, but the location of the units within the species' distribution range reveals some gaps (see map). There are 15 countries with no genetic conservation units within the beech distribution range. According to recent range-wide studies on genetic diversity of beech populations in Europe, some of these countries harbour unique genetic diversity which is not present in the existing conservation units of beech. Many of the so called refugia areas in which beech populations survived during the last glacial period are also located in these countries with no conservation units. As not all European countries have yet provided their data on the conservation units to the EUFGIS Portal, these are still preliminary findings and further analyses are needed with more comprehensive data.

Gap analysis has been widely applied for assessing the efficiency and representativeness of conservation efforts and the EUFGIS Portal offers new opportunities for this purpose in cases of forest genetic resources. Moreover, the gap analysis is a first step in developing range-wide genetic conservation strategies for forest trees in Europe. Such strategies and their coordinated implementation can reduce the gaps and thus further improve the conservation of forest genetic resources at pan-European level.

More information on the genetic conservation units of forest trees in Europe is available on the EUFGIS Portal http://portal.eufgis.org.