



The genetic conservation of the EUROPEAN ELMS

The European Forest Genetic Resources Programme (EUFORGEN) is a collaborative programme among European countries aimed at ensuring the effective conservation and the sustainable utilization of forest genetic resources in Europe.

EUFORGEN operates through Networks in which scientists, managers and policy-makers work together to analyse needs, exchange experiences and develop conservation methods for selected tree species. The Networks also contribute to the development of appropriate conservation strategies for the ecosystems to which these species belong and promote integration of gene conservation into sustainable forest management.

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Are the European elms endangered species?

The two Dutch elm disease (DED) epidemics that spread across Europe in the XXth century have killed nearly all the big elm trees, and the disease still represents a great threat for each individual elm. Because many young trees have sprouted from seed or from the roots of the diseased elms, the European elm species are not in danger of extinction. However, we need to take care of their genetic diversity, which can decrease dramatically when too few parent trees are reproducing in an elm population. Genetic diversity is a key factor for the adaptation of species to environmental changes, e.g. climate change.



Distribution area of *Ulmus laevis* from www.euforgen.org

How to conserve the Field elm

Even where mature trees have been lost to DED, field elms (*Ulmus minor* Mill.) are still very common in southern Europe, Turkey and the islands and coasts of the Mediterranean sea. Seedlings and resprouts of diseased trees are abundant in hedgerows and woodlands, and must not be cut to let them they grow old enough to produce flowers and seeds.

In the case of small or marginal populations, e.g. in islands or northern Europe, special conservation measures may be needed (stimulate natural regeneration, protect seedlings from competition of other plants and from damage by game, take cuttings for ex situ conservation).

How to conserve the Wych and the White elms?

The Wych elm (or Mountain elm) (*U. glabra* Huds.) and the European white elm (*U. laevis* Pall.) are forest species rarely found in other environments. Consequently, their conservation must be part of forest management.

The Wych elm belongs to northern Europe and can also be found in the montane forests of southern Europe. Its populations are suffering heavy losses due to DED, with no possibility for survival through root-suckering. The White elm thrives in the large flood plains of eastern Europe and can also be found in the valleys of major rivers in France and very occasionally in some places in Mediterranean and Nordic countries. Its populations are generally not badly affected by DED because it is disliked by the beetle which spreads DED. The White elm has been more damaged and is still threatened by changes in landscape use. The forests boarding large rivers,

which compose its typical habitat, have often been cut and replaced by maize fields or cultivated poplars plantations.

The problem with Wych elm stands and White elm fragmented populations is the number of flowering trees left in each population. If this number becomes too small, genetic diversity losses are likely to happen. Preservation measures should associate habitat protection (populations and corridors between populations) and silviculture (stimulate natural regeneration, protect seedlings). When such measures are not feasible, ex situ measures can be applied (collect seeds or cuttings and plant a conservation population). The size and diversity of a small fragmented population of White elm can also be reinforced with a few plants originating from another fragment of the original population.

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