



The genetic conservation of WILD APPLE and WILD PEAR

Conservation

Wild apple and wild pear are species with great intraspecific variability (morphological, phenotypic and ecological) due to their large natural distribution areas, covering regions with different environmental conditions. Their genetic resources, however, are seriously endangered as result of extensive felling for commercial purposes (mainly wild pear), intensive forest management that excludes these economically less important species (mainly wild apple), genetic pollution by spontaneous hybridization with cultivated varieties, uncontrolled seed transfer and the spread of several, especially viral, diseases.

The natural situation of these rare fruit tree species and their occurrence as single individuals or in small groups restricts the possibilities for implementation of in situ conservation measures. For both species the establishment of ex situ conservation seed orchards seems to be the most effective and efficient conservation measure to undertake. Here it is of utmost importance to omit, as much as possible, putative hybrids with cultivated varieties. Molecular markers have proven excellent for this purpose in *Malus sylvestris*.

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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Wild apple and wild pear

Wild apple (*Malus sylvestris* (L.) Mill.) and wild pear (*Pyrus pyraeaster* (L.) Burgsd.) are indigenous in nearly all European countries and occur in a scattered distribution pattern, often in small groups. Owing to their high light requirement for reproduction and a weak competitive ability, these two species exist mostly at the edge of forests, in hedges and scrubs on farmland or on very extreme sites, where they can overcome the stronger competitors as they are more indifferent to soil types.



Distribution area of *Pyrus pyraeaster* from www.euforgen.org

Wild apple

Wild apple is a small tree that grows up to 10-15 m high, with more or less thorny twigs and a stem of 30 -100 cm in diameter. The tree can live up to 80-100 years. The morphology of the leaves is very variable, crenate-serrate, deep green above, whitish green and glabrous to slightly hairy at the lower side, clustered on glabrous to pubescent spur branches. The flowers are white, faintly pink, insect pollinated and appear in clusters with the leaves. Fruits are globular, depressed each end, up to 3.5 cm in diameter. The color of the fruit can be yellow to green, but never shows stripes. The latter indicates introgression from cultivated varieties. Bark is dark brown, deeply cracked into small square plates. Other than in forestry, wild apple trees are used mainly as basic material for breeding resistant apple cultivars, as well as rootstocks for new ornamental forms. The timber is of low economic value but can be used in furniture, machines, cog wheels, boat knees, walking sticks and umbrella handles, drawing instruments, pianos, etc.

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Wild pears

Under good conditions wild pears have a remarkably slender form with narrow, rising crown. They are medium sized trees up to 20-22 m high, the twigs are thorny and the stem shows a diameter of 45-80 cm, reaching up to 130 cm in century-year-old trees. Wild pear usually lives 80-150 years (maximum 250 years). The leaves are alternately arranged, broad oval. The flowers are white, insect pollinated and blossom with the burst of the leaves. Although they are hermaphrodite, the species has developed an effective self-incompatibility system that restricts mating opportunities in small populations of closely related individuals. In the long term, such reproductive bottleneck could lead to population extinction. The fruits vary from spherical to bell-shaped in form and from green to golden yellow in color. They are 1.3-3.5 cm long and 1.8-5.5 cm in diameter. The wood is highly valued in the market and is preferred material in manufacturing high-quality woodwind musical instruments.

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