**Populus alba**

**Populus alba** in Europe: distribution, habitat, usage and threats

G. Caudullo, D. de Rigo

The white poplar (**Populus alba**) is a medium-sized tree commonly occurring in coastal and riparian forests of central and southern Europe. Its wide range covers from the Mediterranean region to Central Asia. It is a fast-growing pioneer tree, which thrives in a broad range of latitudes and altitudes due to its high adaptability. The tree species exhibits high genetic diversity, allowing it to cope with environmental changes and threats.

### Habitat and Ecology

The white poplar is a fast-growing and light-demanding tree, reaching maturity at approximately 30 years of age and attaining heights of up to 40 meters tall. It is found in a variety of habitats, including meadows, wetlands, and riparian zones, and it can also establish in urban environments. The tree is known for its extensive root system, which can develop a dense and large colony, enabling it to quickly adapt to new environments.

### Distribution

This tree is native to riparian steppe and coastal forest communities of central and southern Europe. It occurs over a wide range, from Northern Africa to Poland and from the Iberian Peninsula to western Siberia and Central Asia. It was introduced in the United States in the 18th century as a shade and ornamental tree and is now found in many other countries, becoming naturalised in many areas and invasive in some.

### Threats and Diseases

Like other poplars, the white poplar is host to a large number of insects, but only a few of these need to be controlled especially in plantations. Among the leaf defoliators, the main ones are the moth *Hyphantria cunea* and the large poplar-leaf beetle *Cryphornolinus populi*. Wood diseases can occasionally be caused by the goat moth *Cossus cossus* and the longhorn beetles of genus *Saperda*, even if the *xylophagous* caterpillars are found mainly in other poplar species. The soil are established for wood industries, where other poplars do not perform well, for example where the water table is inaccessible or the soil is poor or saline. In such cases, the wood can be used for biomass energy, as pulpwood for paper, for packaging (crates and boxes), pellets and partially as saw-logs. Plant density on pure plantations can be higher than other poplars and the rotation reaches 18-25 years. It is widely planted as an ornamental tree in parks and gardens, for its attractive double-coloured foliage. Poplar leaves can be used as cattle feed and as bio-moitors for soil pollution. White poplar is among the group of plants with an important emission of isoprene, which is one of the biogenic volatile organic compounds affecting a complex chain of feedbacks between the terrestrial biosphere and climate, with relevant although not yet completely understood implications under the ongoing climate warming. This poplar covers an important ecological role as a component of floodplain forests. These forest ecosystems host a very high diversity of plants and animals, providing corridors through the landscape, sites for water storage and groundwater recharge during floods, opportunities for timber extraction, and diffuse pollution control by recycling nutrients in farmland runoff.

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**Map 1**: Plot distribution and simplified chorology map for *Populus alba*. Frequency of *Populus alba* occurrences, within the field observation as reported by the National Forest Inventories. The chorology of the native spatial range for *P. alba* derives from histograms and Richardson.

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**Image**: Creamy white bark with small black diamonds. (Copyright Silvano Radivo, www.actaplantarum.org)
bacterium Agrobacterium tumefaciens can cause serious damage with canker infections. The main fung affecting leaves and roots causing premature defoliations are Melampsora spp., Marssonina castagnor, and Venturia spp. on young plantations.\textsuperscript{13, 14} The Asian longhorned beetle (Anoplophora glabripennis) may attack the white poplar which, however, shows a remarkable resistance and may potentially act as an overwintering reservoir of the beetle.\textsuperscript{15, 16} Lecanora solici may infestate this tree, although outbreaks in central Europe may be mitigated by numerous natural enemies.\textsuperscript{17} Chrysomeloidea, a leaf-feeding beetle, can damage young plantations of the hybrid P. tremula × alba as well as of the white poplar.\textsuperscript{18} This species forms with other hygrophyllous broadleaves the floodplain mixed forests, one of the most threatened natural ecosystems in Europe, which has seen during the last centuries a 90% of the original area for settlement development, agricultural land use, flood defence, etc., remaining in fragments and often in critical conditions.\textsuperscript{19, 20} For this reason several riparian habitats are now protected by European legislation.\textsuperscript{21, 22} On the other hand, the white poplar can be an aggressive exotic tree species, so that in many countries like the United States and Canada, Australia, New Zealand and South Africa it is considered an invasive plant (noxious weed). In some cases a control programme has been activated using herbicides for limiting its invasiveness, especially in natural communities.\textsuperscript{23–25}

References

\textsuperscript{5} J. L. Dimitri, L. Halupa,\textsuperscript{6} L. Duretto, ed. (Tasmanian Herbarium, Tasmanian Flora of Tasmania Online).
\textsuperscript{7} J. Jalas, J. Santamaria, Allen d'Europe ( triumph, 1995).
\textsuperscript{8} A. G. Tutin, N. H. Rees, P. V. Heywood, A. Scopoli, Flora Europaea, distribution of vascular plants in Europe vol. 1, Sabinian to Bilocolumnare (Kew Board of Trustees (Kew), 1993).
\textsuperscript{9} B. Lang, B. Schütt, ed. (Wiley-Vch Verlag, Weinheim, 2001).
\textsuperscript{12} S. Tognetti, C. Cocozza, M. Marchetti, Science and Society (2005).
\textsuperscript{15} J. M. de Rigo, D., Caudullo, G., de Rigo, D., Caudullo, G., Houston Durrant, T., Mauri, A. (Eds.), in Europe: Policy Contexts and Project Guidelines for policy makers and river managers in Europe on the restoration of floodplain forests. (Wetlands, Department of Geography, University of Cambridge, UK, 2009).
\textsuperscript{19} M. F. Duretto, ed. (Tasmanian Herbarium, Tasmanian Flora of Tasmania Online).
\textsuperscript{25} A. Praciak, B. Lang, B. Schütt, ed. (Wiley-Vch Verlag, Weinheim, 2001).

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