

Salix alba in Europe: distribution, habitat, usage and threats

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Salix alba L., known as white willow, is one of the largest and most well-known willows. Its common name comes from its distinctive pale silvery leaves. It is one of the species of willows cultivated as osiers, characterised by having pliable branches and narrow-leaves. It has a wide distribution, ranging from Europe through central Russia up to the Chinese borders. This fast-growing willow occurs in temperate climates, and tolerates a wide variety of soils, provided roots have access to water.

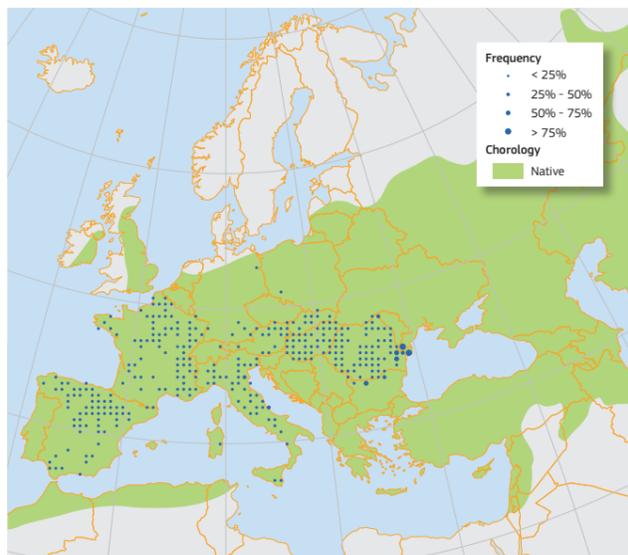
Salix alba L. (white willow) is a fast-growing **dioecious** broadleaved tree. It is one of the largest of the willow species and can reach heights of up to 30m and a diameter of 1m or more¹. It is not long lived: usually surviving only 20-30 years². The deeply fissured bark is dark grey with corky ridges. The leaves are long and narrow (**lanceolate**), silver-grey on the top side and with dense silky white hairs on the underside, giving the tree a distinctive pale appearance^{3, 4}. The yellow male **catkins** are up to 5 cm long; the female ones are shorter and greenish-yellow, becoming fluffy white, and attract pollinating insects^{3, 3}.



••• Silver-grey lanceolate leaves with hairy upper side. (Copyright Rosendahl, commons.wikimedia.org: PD)

Distribution

The white willow is widely distributed throughout Europe except in the northern regions, though Asia Minor and central Russia to Chinese borders. In the west at its southernmost extent it can be found around the Mediterranean basin, including North Africa (Morocco and Algeria). In the north its range includes the British Isles, the Netherlands and the eastern Baltic coast (Latvia and Lithuania). Its natural range is difficult to determine as it has been extensively cultivated^{1, 2}.



••• Map 1: Plot distribution and simplified chorology map for *Salix alba*. Frequency of *Salix alba* occurrences within the field observations as reported by the National Forest Inventories. The chorology of the native spatial range for *S. alba* is derived after Meusel and Jäger, and Skvortsov^{20, 21}.

Habitat and Ecology

The white willow is a riparian species of temperate climates, with mild winters, warm summers with short drought periods¹. It typically grows near water on the banks of rivers and lakes or by ponds, streams, wet hollows and ditches⁵. It occurs from sea level to 2 400m in the most southerly parts of its range¹. It tolerates a wide variety of soil types, preferring sandy, silty or calcareous soils, but the roots need access to water. It is strongly light-demanding and does not tolerate shade. It can be pollarded or coppiced and can readily reproduce from suckers or from **adventitious** roots⁶. Adults of white willow are noticeably tolerant to inundation, performing better even in comparison with flood-tolerant taxa such as *Ulmus laevis*, *Ulmus minor* and *Quercus robur*⁷.

Importance and Usage

The timber of white willow has a number of commercial uses. These include wooden kitchen utensils, archery bows, hoops, wicker baskets, canoes, and some construction use (e.g. log cabins)¹. The variety *Salix alba* var. *caerulea* is known as cricket bat willow, as its timber is particularly suited for this purpose⁸. There are a number of non-wood products, including tannin from the bark and salicycin (from which aspirin was produced), but these generally have little commercial importance now². A number of cultivars with attractive stem colours have been bred for ornamental purposes. The white willow distribution range overlaps with many



••• White willow in a riparian forest near Bingen (Rhineland-Palatinate, West Germany). (Copyright Willow, commons.wikimedia.org: CC-BY)

areas in Europe with high erosion rates, in particular in moist slopes with high drainage-area within the European mountain systems⁹. In these critical areas, the white willow contributes to mitigate erosion, and more generally it is also useful for erosion control and stabilising the banks of waterways, as well as for ecosystem restoration and **phytoremediation**¹⁰⁻¹².

Threats and Diseases

This species is particularly susceptible to watermark disease, caused by the bacterium *Erwinia salicis*^{13, 14}. Diseased trees suffer from wilting, withering, and browning of leaves and tips of new shoots, followed by die-back of affected branches and eventually the death of the tree. Wood from affected trees becomes brittle and unsuitable for use. The white willow is also attacked by the Asian longhorned beetle (*Anoplophora glabripennis*), despite showing noticeable resistance and thus potentially acting as overwintering reservoir of the beetle¹⁵⁻¹⁷. It suffers from occasional but severe outbreaks of the gypsy moth (*Lymantria dispar*)^{15, 18, 19}. Furthermore, it is susceptible to *Phytobia barnesi*, which impairs the wood quality, and to the defoliators *Porthetria obfuscat* and *Yponomeuta rorella*¹⁷.

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••• Male catkins with yellow stamens in spring. (Copyright AnRo002, commons.wikimedia.org: CCO)

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