**Taxus baccata** in Europe: distribution, habitat, usage and threats

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**Taxus baccata** L., known as European or English yew, is a conifer native to Europe. It is an unusual conifer in that it does not actually bear cones, but berries. Unlike other conifers it is also non-resinous and is tolerant to repeated pruning. It has a very large environmental tolerance but is susceptible to waterlogging. Extremely long lived but very slow growing, yew’s strategy is that of survival. It is highly shade tolerant, normally found within the forest singularly or in small groups. European yew is extremely toxic, which has led to its removal in many locations, resulting in one of the largest declines of any European species. It is now protected: forests harbouring yew have been designated as special protection areas by the European Community (Habitats Directive 92/43/EC). In recent times its importance as a source of taxane alkaloids for the manufacture of cancer-treating pharmaceuticals has come to the fore.

The European or English yew (**Taxus baccata**) L. is native to most of Europe. It is an extremely long-living tree, with reports of some specimens of up to 5000 years old. However, since it is very difficult to determine age accurately as the oldest specimens are almost always hollow making tree ring-based age estimation impractical, opinion is divided about the exact age of the oldest specimens. Yew is often multi-stemmed and its height rarely exceeds 20 m, but its longevity means that trunks can be very large: up to 4-m diameter. Root systems are shallow with extensive horizontal roots. A non-resinous conifer, the needles are very dark green above and yellow to matt green below; they are 2-3 cm long and 3 mm wide and linear in shape with a sharp point. Needles are set spirally about the shoot in two ranks and are not whorled. Male flowers are small green globules along the underside of last season’s shoots, whilst the female flowers are minute green flowers borne in the leaf axils of the previous year’s growth. After wind pollination scarlet berries approximately 7 mm in diameter are produced with a single white seed enclosed. These fruits encase 2,3 seedlings surrounding the dark central seed. Seeds are dispersed by birds which feed on the red flesh and pass the seeds. The yew is also capable of vegetative reproduction.

**Distribution**

The yew is native to most of Europe, the Atlas Mountains and Asia Minor. In Europe, yew woodland can be found over most areas, to higher elevations on northern slopes and sandy soils with adequate moisture. It is capable of vegetative reproduction. Its distribution is limited in northern Europe beyond Britain, Ireland and southern Scandinavia by low temperatures and waterlogging and in the south by drought and high temperature. Elevation increases from north to south with moisture demand for this reason and in the Mediterranean area, yew is usually restricted to higher elevations on northern slopes. It is thought to be the oldest tree genus in Europe, the oldest fossil record for Taxus in Europe dates to the Lower Miocene.

**Habitat and Ecology**

The yew normally appears as individuals or small groups of trees within the understorey, but natural stands can be found across its entire range. It normally occupies the mid to lower tier of a forest. Yew can grow on almost all soil types with adequate drainage, typically on humus and base-rich soils, but also on dry rendzina and sandy soils with adequate moisture. The yew is intolerant of prolonged frost and cold although its tolerance varies by region and season. They are moderately drought tolerant and can cope with temporary flooding but are susceptible to long-term poor drainage. The temperature range for photosynthesis is greater than any other European tree species, allowing the yew to photosynthesise in winter when deciduous trees are bare of leaves; this contributes towards the yew’s extreme shade tolerance, which is almost comparable to that of silver fir (**Abies alba**) and beech (**Fagus sylvatica**), the two most shade tolerant tree species of Europe. The yew’s root system is capable of penetrating the most compressed soils meaning they are able to survive under extreme conditions such as rocky terrain and vertical cliff faces.

**Importance and Usage**

The properties of yew timber, heavy but elastic, made it historically important. One of the world’s oldest wooden artefacts is a wooden spear dating from the Palaeolithic era (around 150000 years ago). In the Middle Ages it was used for a wide variety of items including musical instruments, furniture and longbows, and the wood was in such demand that it was felled almost to extinction across much of Europe. Today it is not considered to be a commercial crop due to its extremely slow growth rate. However, it is highly valued as an amenity tree for hedging and topiary. In recent years yew has become important due to the taxane alkaloids found in its foliage which have been developed as an anti-cancer drug.

**References**


**Field data in Europe (including absences) ● Observed presences in Europe ●**

This is an extended version of the chapter. The full version of this chapter, including page numbers, will be published online at https://doi.org/10.1007/978-3-662-53554-6. This purpose of this web-based version is to provide an accessible dissemination of the related main topics.

This QCA scale plots to the ordination axes, where the most updated content may be freely accessed.

**Threats and Diseases**

Yew has experienced one of the sharpest declines of all European tree species. Historically it was felled to provide wood for longbows and destroyed to prevent the poisoning of livestock. It is now endangered in many parts of its range where intensive land-use has caused a decline in numbers. The tree naturally loses many of its cones to herbivory and can be affected by diseases such as stem canker. In Switzerland it has been identified as the cause of death of some yews.

**Autoecology diagrams based on harmonised field observations from forest plots.**

**Map 1: Plot distribution and simplified chorology map for Taxus baccata.** Frequency of Taxus baccata occurrences within the native spatial range for T. baccata is derived after Meusel and Jäger, and Jalas and Suominen21, 22.