

# Scots Pine (*Pinus sylvestris*)



## General information

The Scots Pine is the largest and longest-lived tree in the Caledonian Forest. It is the most widely distributed conifer in the world and is found everywhere from the Arctic Circle to southern Spain and from western Scotland to eastern Siberia. Despite this wide distribution, the Scots pine forests in Scotland are unique and distinct from those found elsewhere because of the absence of any other native conifers.

The Scots pine has a natural range confined to the Highlands in Scotland, with the native pinewoods covering approximately 17,000 hectares in a number of separate, isolated remnants. However that is thought to be just over 1% of the estimated original 1,500,000 hectare area.

Scots pine is unusual amongst conifers in having a number of different mature growth forms, ranging from tall and straight-trunked with few side branches, to broad, spreading trees with multiple trunks.



## Vital

### statistics

Scots pine can grow to 36 metres (120 feet) in height, but in most of the pinewood in Scotland the largest trees are about 20 metre tall. Scots pine usually lives up to an age of 250-300 years, although a tree in one of the western pinewoods was recently discovered to be over 520 years old.



## Ecosystem

The Scots pine is central to the forest ecosystem and many species depend on it. Some of these live on the pine itself such as lichens and mosses. The shade provided by the canopy of mature Scots pines also makes for a good habitat for blaeberrries and cowberries. They also play a role in the development of the hummocks which are commonly found in the pinewoods. These occur when lichens and mosses colonise boulders or tree stumps, the organic matter builds up and this allows the blaeberrries and cowberries to flourish. Eventually a living carpet of vegetation is formed, creating the gently -rounded, hummocky forest floor which is characteristic of many pine forests.

Like most trees, the Scots pines also have a symbiotic relationship with many fungi. The fungi are unable to photosynthesise; they receive their carbohydrates and sugars from the pine. In return the tree receives certain nutrients and minerals from the fungi, which it is unable to access directly in the soil. Through this symbiotic relationship, both the tree and the fungi benefit.

### Box of Knowledge:

If a Scots pine dies while it is still standing, the skeleton can persist for 50 or even 100 years before falling down, because the high resin content in the sap makes the wood very slow to decay.



## Ecosystem (continued)

The Scots pine attracts the attention of various insects. Some of these live in the fissures of the tree's bark. Birds such as the treecreeper, specialise in winking them out of the cracks and crevices. Pine weevil larvae burrow into the wood of the tree, aphids suck the sap and some species of caterpillar eat the needles. Wood ants feed on these caterpillars, thereby helping to protect the trees from defoliation, and also 'milk' the aphids for their honeydew. These ants live in large social colonies, and their mounds of fallen pine needles and forest debris.

A variety of birds are associated with the Scots pine, ranging from common insect- or seed-eating species like the chaffinch and treecreeper to large birds of prey such as the very rare golden eagle. Black grouse and capercaillie both live in the pinewoods and eat the buds and shoots of the pines and the main component of the Scottish crossbill's diet are the seeds contained in the cones.

Scot's pine also support the red squirrel which extracts and eats the seed from pine cones while they are still on the trees. Mice and voles feed on pine seeds on the ground, and in turn the pine marten, eats the voles, red squirrels, small birds and also the blaeberrries that grow under the Scot's pine canopy.

Both roe and red deer browse on Scots pine seedlings, eating the needles and shoots of young trees. Unfortunately, the overgrazing pressure from their high numbers has prevented the natural regeneration of the native pinewoods throughout the Highlands. Red deer also damage or kill sapling Scots pines by de-barking or thrashing them with their antlers. In a natural, healthy forest ecosystem, the deer numbers would be in balance with the regenerating trees in the forest, but the imbalance in our pinewoods has created a situation where there are no trees younger than 150 years in most locations. This has been improved in the last 10-20 years through the use of fencing and intensive deer-culling measures.



## Flowers, Seeds, Bark and leaves

Scots Pine is monoecious, which means both male and female flowers occur on the same tree. They appear in May with the females on the tips of the higher and more exposed branches and the males clustered together on the branches just below. Pollination is by wind, and fertilised female flowers take two years to become a fully-grown cone.

The cones ripen in April, opening while they are still on the tree, and the tiny winged seeds are dispersed by the wind.

The seeds require a high level of light to germinate and grow, so seedlings are found in open areas and clearings.

The bark of the Scots pine varies: young bark on small branches is papery thin and often orange-red in colour. The mature bark can vary from grey to reddish-brown and forms layered plates or flakes up to 5 cm thick, with deep fissures in between. Several species of lichen commonly grow on the bark.

The needles grow in pairs, are blue-green in colour and about 5 cm long. They normally remain on the trees for 2-3 years, with the old needles turning yellow in September or October before they are shed.





## References

Trees for Life (2014) *Scots pine*. Available at: <http://www.treesforlife.org.uk/tfl.scpine.html> (Accessed 13 April 2014).

Forestry Commission (no date) *Scots pine - pinus sylvestris*. Available at: <http://www.forestry.gov.uk/forestry/INFD-5NLFAP> (Accessed: 13 April 2014).