

Pine

- from tar to oil

Photo: Daniella Andersson



◀ Old, stately pine with crocodile bark and flattened crown, a suitable nesting place for eagle.

The pine tree has been found in Sweden since at least the last ice age and today, together with the spruce tree, is the most important tree species in Swedish forestry. Pine is used for not only houses, bridges, furniture and paper, but also fuels and chemicals. In the forest landscape, pine are appreciated by both flora and fauna and there are few things that inspire as much respect as a really old, gnarled pine with crocodile bark. Throughout history, pine have been used for various purposes. Old stumps, for instance, were used for tar production.

Pine - the tree species

After spruce, pine is the most common tree species in Sweden and accounts for almost 40% of the trees in the country's forests. There are about 90 different pine species in the world, with most of them found in the northern hemisphere. Sweden has one indigenous species, *Pinus sylvestris*, or Scots pine, but even lodgepole pine, *Pinus contorta*, which is found in managed forests. It was introduced to Sweden from North America in the 1970s for its timber qualities. Pine grows naturally throughout Sweden and thrives on slightly drier land.

In the mountain region, pine is the coniferous tree that grows closest to the barren mountains. In terms of appearance, the pine tree is a large conifer with a straight stem and a sparse crown. When young, the bark is thin and looks a little like paper, but as it ages the bark becomes coarser and rough. The needles on

Scots pine, *Pinus sylvestris*, sit in pairs for about five years before falling off. Pine is a relatively storm-resistant tree species thanks to its root system, which grows so-called taproots deep into the ground. The roots also interact symbiotically with fungi, called mycorrhiza, to increase nutrient and water uptake.

Pine is the tree species in the forest that best survives forest fires. This is in part due to its bark, which is extra thick and heat resistant. If a pine is a little younger when the forest burns, the fire can kill part of the tree, leaving what is known as a fire scar on the trunk. The scar most often resembles an upside-down V with the wood laid bare. Calluses form around the edges of the fire scar, which is how pine heal such damage. If the fire scar is smaller, in time it could become completely overgrown, eventually being recognisable only as a line on the outside of the bark. If a pine tree is exposed to fire already at a young age,

it becomes more resistant to insect infestations as the wood will contain more resin.

Pine uses seeds dispersed by wind to reproduce, and it takes a relatively long time for the seeds to mature. The male and female flowers are found on the same tree and cones develop from the female flowers following pollination. Eighteen months after the male flower fertilises the female flower, the cone is fully developed and the seeds can be dispersed by the wind.

If you are out in the woods in late winter/early spring, you can spot pine seeds on top of the snow covering, each a dark brown seed with a light brown wing. Other pine species, such as contorta, have cones covered in resin and require heat to open and spread their seeds, such as after a forest fire. Each year, pine grow offshoots from their trunks, so-called branch whorls, that is, new branches sitting like a wreath around the trunk. If a pine tree is relatively young, you can easily figure out how old it is by counting the number of branch whorls. As the tree



▲ Pine timber in the evening sun.

ages, this becomes harder as the lower branch whorls gradually die.

Although pine is called tall in Swedish, pinewood is referred to as furu, an older Swedish name for pine. This is because if the taproots developed properly and the tree grew tall and straight, it was called a fur in Swedish, but in forestland with shallow soil the tree would grow crooked and knotty, and it was then called a tall in Swedish.

Who likes pine?

Historically, pine has been of great importance. Pine stumps were used to produce tar and pinewood was used to produce charcoal. In the past, parts of the bark were used to make bark bread. A great deal of pine is grown in the Swedish forest industry today. In part this is because of the wood's finer qualities for use in building constructions, furniture and more and in part for its wood fibres for paper production. Other products are also extracted from pinewood. A substance



Photo: Helena Delborn, Sveaskog's image bank

▲ Elk enjoy grazing young pine forests, especially in winter.

called pine oil can be extracted during paper production. Pine oil can be added to diesel to make it a more environmentally friendly fuel. Pine oil is also used as an ingredient in some cleaning products.

In the forest, many animals appreciate pine trees. In winter, elk graze on pine shoots and black grouse feed almost exclusively on pine needles throughout this season. Pine needles are very nutritious, containing nutrients such as vitamin C. Black grouse seem to know which trees have the most nutritious needles and eat mostly from them. This gives the tree a very special appearance.

As they age, pine trees grow very thick branches, to the extent that sometimes it can almost look like a new tree is growing from the trunk. These thick branches are sturdy enough that large birds of prey, such as eagle and osprey, can build their nests on them. An eyrie can weigh upwards of one tonne, so sturdy branches and a sturdy tree are a must.

Pinewood is very hard and durable, and if a pine tree dies standing, it can remain standing for several hundred years. These snags are sometimes referred to as silver pine in Swedish. A silver pine or pine snag can provide food and a habitat for many species, such as the woodpecker pecking holes to forage for insects eating the wood. Or small pin lichen growing on the exposed wood and an owl nesting in an old woodpecker hole.

Old and short, but even young and tall

With their hard wood and fire resistance, pine can grow very old. Spruce, which prefer to grow on slightly damper ground, are easily infested by wood-decay fungus and die, not very often reaching as old an age as pine, which prefer to grow on slightly drier ground. Normally, a pine will reach somewhere between 200 and 450 years of age if allowed to grow reasonably undisturbed without too much shade or competition. However, they can reach considerably older ages than this. For a long time, Sweden's oldest pine was

thought to be a tree in Muddus National Park outside Gällivare. The local fire history is well documented and by counting its fire scars you could tell that it had survived four forest fires, with the earliest burning in 1413. But then a few years ago, researchers examined a number of pine trees in Hornslandet, Hälsingland. They extracted core samples and counted the number of growth rings.

One pine, which was only 9.2 metres tall, had 757 growth rings, which means that it germinated when Erik Eriksson was King of Sweden and famous explorer Marco Polo was born. Some of the nearby trees were also very old, over 600 years. This unusual pine has survived at least three forest fires and in 2018 is estimated to be 761 years old. Researchers believe that the barren landscape and recurring forest fires have enabled the pine to survive for so long.

Sweden's tallest documented pine was for very many years a pine in Böda Ecopark on Öland, which stood 36 metres tall. By chance, an even taller pine was discovered when an altimeter was being tested in a forest in Sunne Municipality in Värmland. This tree measured in at 37.8 metres tall, which is remark-

able in that it is quite a northern part of Sweden at a relatively high altitude. Its age was estimated to be around 110 years and the reason why the trees here have grown so well is the special bedrock that enriches the soil with extra minerals, which is advantageous when it comes to producing tall trees.



This unusual pine has survived at least three forest fires and in 2018 is estimated to be 761 years old.

Sweden's largest-diameter pine is probably Ullebottallen, or the 'Prostate Pine' as it is also known, which stands in Bottnaryd in Jönköping Municipality. In 2016, it measured 482 cm in circumference and is over 500 years old. If we consider volume, then Ullebottallen shares first place with Krontallen in Uppsala, both of which contain an estimated 21 cubic metres of wood. By comparison, logged pine trees yield about one cubic metre of wood each.