Picea sitchensis

Picea sitchensis in Europe: distribution, habitat, usage and threats

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Sitka Spruce (Picea sitchensis (Bong.) Carr.) is a large conifer native to North America and Canada, where it grows along the Pacific coast in areas favoured by maritime climate and high humidity. It is the largest of the spruces and can live up to 500 years, reaching heights of nearly 100 m. It is a fast-growing tree that produces good-quality timber, making it an important plantation tree in some European countries, notably Britain and Ireland.

Sitka Spruce (Picea sitchensis (Bong.) Carr.) is a large fast-growing conifer with a straight buttressed base trunk and an open, conical crown of horizontal branches. Unusually for a conifer, it is able to develop epicormic branches along the stem. It is long-lived (up to 500 years) and is the largest of the spruce species. It can attain heights approaching 100 m in its native habitat, although in Europe it rarely exceeds 50 m. The bark is thin and broken into large reddish to brown scales. The needles are rigid and sharp, 1.5-2.5 cm long and blue-green to light yellow-green in colour. It is wind-pollinated and starts to produce seed at 20-25 years of age. Pollen cones are red and between 2 and 4 cm long. Seed cones are from 5 to 10 cm long, composed of papery scales with wavy, irregularly toothed margins and producing seeds from 2 to 3 mm long with a wing of around 8 mm in length.

Distribution

Sitka Spruce is native to the west coast of North America where it extends along the north Pacific coast from southern Alaska to northern California. It was introduced in Europe in the 1800s and it is now planted in more than 16 countries worldwide. The majority of the area planted is in the United Kingdom where it comprises over 25% of the national forest area and is now the most widely planted conifer, and Ireland (52% of national forest area) but it is also important in Denmark (comprising 16% of the softwood timber harvest). Sitka Spruce is also planted in Iceland and Norway where it was introduced at the beginning of the twentieth century.

Habitat and Ecology

The natural range of Sitka spruce is a maritime climate with high humidity. It normally requires a minimum of 1000 mm of rainfall per year and cannot tolerate a dry Mediterranean climate. Unlike several other conifers it is tolerant of exposure and salt spray, making it particularly suitable for planting on wet coastal upland sites. However, it cannot tolerate atmospheric pollution. It is usually planted along the northern and western coasts of European countries, which provide a similar environment to that of its native range. It grows on a variety of soils but prefers deep, moist but not waterlogged soils. Sitka spruce shows a noticeable soil-acidifying ability. It is a pioneer species that can quickly colonise disturbed sites (e.g. following landslides).

Important and Usage

Although relatively rare at European level it is commercially very important in some countries, particularly in the United Kingdom and Ireland, and to a lesser extent in France and Denmark. The timber is pale in colour and long fibred, making it suitable for paper production. It is light and easy to work with and its good strength to weight ratio makes it suitable for fencing, pallets and general construction. Early aircraft frames, including the first Wright brothers’ aeroplane were made of Sitka spruce wood. Due to its long fibres, high strength-to-weight ratio and absence of knots its wood is also an excellent conductor of sound.
Picea sitchensis

Sitka spruce

Sitka spruce (Picea sitchensis) is a species of spruce native to the northwestern coast of North America, particularly along the British Columbia coast. Its natural range extends from the south coast of Alaska to the central coast of British Columbia, Canada. Sitka spruce is known for its rapid growth and hardiness, making it a popular choice for reforestation and industrial purposes. However, it can also cause significant damage to other conifer species, such as Picea abies, when injured. This is due to the transfer of fungal symbionts that can attack Sitka spruce and spread to other conifers, leading to root attacks and bark damage.

Sitka spruce is also prone to windthrow on certain soil types, particularly on deep soils such as those found in the San Juan Islands. Sitka spruce is therefore widely used for soundboards in musical instruments (e.g., guitar, piano, violin). Sitka spruce may be suitable for bioengineering applications due to its high tensile root strength.

Threats and Diseases

Sitka spruce is prone to windthrow on certain soil types, particularly in established plantations in the United Kingdom, while elsewhere in Europe it has been shown to be more wind-resistant on deep soils than other conifers such as Picea abies. Fortunately, the white pine weevil, the most serious pest in North America, is not currently present in Europe. However, the green spruce aphid can cause significant damage, and the species is susceptible to fungal attack when injured. The large pine weevil (Hylobius abietis) is among the most serious pests affecting young coniferous forests in Europe. Sitka spruce partly coexists with the natural niche of this weevil, to which it is highly susceptible.

References


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