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# BWSR FEATURED PLANT

## NORTHERN WHITE CEDAR *Thuja occidentalis*

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Northern white cedar is a slow growing evergreen found in coniferous bogs, lakeshores and streambanks of northeast Minnesota. The tree provides important wildlife habitat, including cover for deer during severe winters; it is also used by snowshoe hares, porcupines, red squirrels, warblers, white throated sparrows, and kinglets. There is a relatively high demand for white cedar trees for fence posts, lumber, poles, shingles, and for the construction of saunas and log cabins - but it has not been regenerating for around 70 years, primarily due to winter grazing by deer and rabbits. As a result, moratoriums on cutting have been implemented on some state and federal lands. White cedar can be a very long lived species, particularly when grown on cliffs, away from deer and fire. A tree growing on a cliff along Lake Superior was described by a French explorer as being a mature tree in 1731, and the tree is still alive today. White cedar was likely the first tree from the northeast United States to be planted in Europe in the 1500s, and it is widely cultivated today, often labeled as "American Arborvitae". There are increasing efforts in Minnesota to restore white cedar in its historic range.



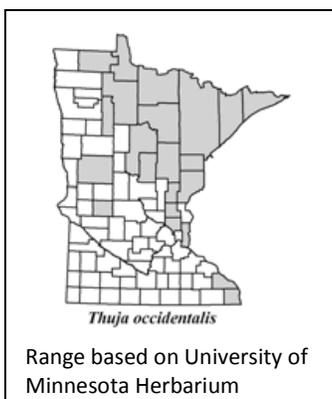
### Identification

There are four *Thuja* species worldwide in addition to *Thuja occidentalis*. Western red cedar is found in the western United States, and three species are found in Asia (China and Japan).

The species has flat, fan-like branches and leaves. The leaves have overlapping scales that are soft to the touch (unlike eastern red cedar that has sharp pointed, awl shaped leaves). The tree typically grows to a height of around 40-50 feet tall with a 1.3 ft trunk diameter. It can also grow in a very stunted form on rock outcrops, sometimes only being several feet tall. The bark is reddish-brown (turning grey with age), and peels in narrow, longitudinal strips. The cones are yellow-green, have overlapping scales, and are relatively small (< 1/2 inch). The tree also has a distinct cedar smell.



Flat leaves of northern white cedar



### Habitat/range

White cedar is well suited to wet forests such as coniferous swamps with mineral rich groundwater, where taller, faster growing species are not competitive. It is also found along lakeshores, as well as in upland areas such as cliffs, and old fields. It prefers soils that are limestone derived, neutral, or slightly alkaline, moist, but well drained. The fact that the species can grow in shade or full sun makes it adaptable, and able to survive as both an early and late successional (climax) species. The tree has shallow roots due to high moisture conditions, so

The extent of white cedar stands has been decreasing due to logging and a lack of regeneration from grazing.

windfall tends to be the most common disturbance affecting the species. Fires are rare in white cedar swamps due to moist conditions and relatively low fuel loads.

## Uses

White cedar is a species of great historical and cultural significance. The Ojibwe called the species "Nookomis Giizhik" (Grandmother Cedar). It was considered a gift to the Ojibwe for its many uses including crafts, construction material and medicine. It is one of the four sacred plants of the Ojibwe medicine wheel.

The leaves are a rich source of vitamin C, and were used as a cure for scurvy. The leaves contain a neurotoxin (thujone), so prolonged use can be harmful. Fresh and dried leaves, as well as oil and ash from the plant have been used for a variety of ailments including coughs, viruses, bacterial infections, psoriasis, eczema, dysentery, rheumatism, burns, headache and cancer. The oil has also been used as a disinfectant, insecticide, cleaner and for making soaps.

*Thuja occidentalis* is widely used as an ornamental tree, particularly for screens and hedges. Over 300 cultivars exist. The plant is used in residential landscapes and parks, as well as cemeteries where it is a symbol of eternal life.

## Planting Recommendations

In natural settings, white cedar can reproduce from seed, as well as through rooting from branches and stems. Significant seed production starts when trees reach about 30 years of age. Seed can germinate on decaying logs, as well as sphagnum moss. In some cases, a row of trees will establish from the branches of a mature tree that has blown over.

Both bare-root and containerized white cedar trees are commonly planted. They generally have good survival rates in cultural landscapes, as long as grazing pressure is low. They tend to grow relatively slowly, averaging less than 12 inches a year. The species has been difficult to restore in natural plant communities, and field trials are underway to find more effective methods of establishment.

Careful site selection and planning is needed to ensure successful establishment.

It can be important to plant trees on mounds (1-2 feet above saturation) when planting in a wetland situation, as seedlings will not grow well when planted directly into saturated soil. In natural settings they tend to establish on elevated surfaces such as rotting logs. Fencing is also needed in most cases to protect the slow growing seedlings from grazing. Fencing efforts have typically involved either creating exclosures (approx. 10 feet tall) around entire planting areas, or wire cages around individual trees. Creating canopy openings can also improve growth rates of seedlings.

White cedar can establish relatively well from seed, though germination rates tend to be low (30-40%). Fall planting is recommended to allow a winter to break dormancy.



Wire fencing providing protection for seedlings

## Additional References

[http://www.dnr.state.mn.us/trees\\_shrubs/conifers/whitcedar.html](http://www.dnr.state.mn.us/trees_shrubs/conifers/whitcedar.html)

<http://www.myminnesotawoods.umn.edu/2007/04/minnesotas-northern-white-cedar-forest-type/>