

THE HEAT IS ON

Species feeling the effects of climate change



MARY STENSDAL/USDA/FS

Yellow-Cedar

Callitropsis nootkatensis

Region:

Pacific Northwest, Alaska

Area affected:

British Columbia,
Southeast Alaska

Climatic change:

Changing snow patterns

Impact:

Die-offs

ABOUT THIS SPECIES

A medium-size tree that can grow to nearly 80 feet tall and 35 inches in diameter, the yellow-cedar is found along the Pacific Coast from northernmost California to Prince William Sound in Alaska. It is one of the most culturally and economically valuable trees in the Pacific Northwest, due to the unique properties of the wood: it is unusually strong and even-grained and has a pleasant aroma and yellow color. It is also virtually rot-proof: living trees and even downed logs are highly resistant to both insect attack and fungal decay. This combination of qualities makes yellow-cedar ideal for carving durable wooden products, particularly ones that will be used outdoors. Native peoples of the Pacific Northwest have long used yellow-cedar to make everything from canoe paddles to totem poles, and it is sought after for boat hulls, bridge supports, decks and other construction. Yellow-cedars live an average of 500 to 750 years and, given their resistance to rot, can persist as standing snags or fallen logs for hundreds of years more, providing habitat structure, cover and habitat for generations of seeds to germinate.

DESCRIPTION OF IMPACT

In contrast to the usual pattern of decline beginning in the southern portion of the ranges of climate-affected species, yellow-cedar trees are dying across large areas of the northern part of their range. This loss of large numbers of such famously insect- and disease-resistant trees was puzzling to scientists, until they traced the source of the dieback to the freezing of the tiny roots that supply the tree with water and nutrients. They also noticed that the hardest-hit trees were those on either poorly drained bottomlands or steep slopes with thin soils. It turns out that while yellow-cedar, like all trees growing in northern climates, is tolerant of cold temperatures, it is less so than other species in the region. The roots are especially susceptible to freezing in early spring, as the tree prepares for summer growth. During this time, the trees are highly dependent on snow cover to insulate the soil and protect their fragile roots from freezing injury. **Climatic changes at the northern part of the yellow-cedar's range have reduced early-spring insulating snow cover at a time that the area is still cold enough to experience damaging freezing in the upper soil layers.**

Reference

Hennon, P.E. et al. 2016. A climate adaptation strategy for conservation and management of yellow-cedar in Alaska. Gen. Tech. Rep. PNW-GTR-917. U.S. Forest Service, Pacific Northwest Research Station. Portland, OR. <http://www.treesearch.fs.fed.us/pubs/50115>



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1130 17th Street, NW
Washington, DC 20036-4604

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