



# US Forest Service R&D PNW Research Station

**Project Title:** Yellow-Cedar Decline: Management of a Tree Sensitive to Climate in Southeast Alaska

**Project Personnel:** Paul Hennon, Pacific Northwest Research Station/State and Private Forestry, and David D'Amore, Pacific Northwest Research Station

**Project Contact:** Paul Hennon, Pacific Northwest Research Station/State and Private Forestry, phennon@fs.fed.us, 907-586-8769

## Project Description

Extensive mortality on more than 500,000 acres in southeast Alaska initiated by climate change complicates the management of yellow-cedar, a species of cultural importance and the most economic value of any tree in the state.

Although favorable wood properties of this species provide an opportunity to shift timber harvest to large areas of dead yellow-cedar, developing a conservation and management strategy for yellow-cedar is a critical need.

## Current accomplishments

- Detection projects have produced a distribution map of dead yellow-cedar that aligns closely with areas of low snowpack in late winter and spring.
- Research on causes has revealed that the problem is a form of root freezing injury that occurs when soil temperatures drop below  $-5^{\circ}\text{C}$  and snow is not present to protect roots.
- Climate, snow, and cedar decline projections are being made to determine suitable areas to favor yellow-cedar as the climate continues to warm.
- Evaluation of dead trees demonstrates high recovery rates and that wood properties (i.e., strength, decay resistance, and heartwood chemistry) are retained decades after tree death.
- Silvicultural methods of artificial regeneration and active management are being developed.

**Project Outcomes:** This research is of interest to private industry, including small operators in southeast Alaska; small towns dependent on timber (e.g., Wrangell); US Forest Service land managers; and climate scientists. Valuable yellow-cedar can be harvested in a manner that meets economic and social needs over large areas. Yellow-cedar will be sustained regionally by planting and managing the species in areas outside of those places where decline is expected to occur, even with a warming climate.

