



Finding Value in Dead Yellow Cedar

A cooperative study shows that acres of naturally dying Yellow-cedar could be a large, relatively untapped forest products resource.

Yellow-cedar is a valuable tree in Southeast Alaska; its wood is strong and aromatic, it resists decay, and it consistently sells at a relatively high price.

Throughout most of Southeast Alaska, however, many stands of Yellow-cedar are dying from natural causes. The Forest Service has been investigating this natural decline, trying to gauge the extent and potential management implications.

We now have strong evidence that this decline is

a natural event that began about 1880 to 1900, and is not caused by a fungus, insect, nematode, or any other organism. Instead, the primary cause of tree death is probably associated with wet, poorly drained soils.

During the studies that led to this conclusion we found that trees remain standing for up to 100 years after death. That led to these additional projects and findings:

Extent and Distribution

While conducting annual, aerial surveys to detect insect outbreaks,

we began mapping stands of dead yellow-cedar, which can be seen from the air. The maps were made part of the Geographic Information System (GIS). They show more than 2500 areas of dead and dying cedar covering approximately 500,000 acres. Land managers have used that GIS information, along with other attribute layers such as road access, to help them consider recovery sales.

The next step will be to refine the GIS information into a classification of the volume of dead trees. A Forest Health Protection special technology development project has been funded that will look at ways to do this using remote sensing. Having this information will help managers target the stands of dead cedar with the greatest potential economic value.

Volume and Value

With the assistance of the Wrangell Ranger District and Pacific Rim Cedar, Inc., we worked to determine the quantity and quality of wood available from dead cedar trees. We sampled from live yellow-cedars and five classes of dead trees. (Trees that have been dead about 80 years and have no remaining limbs represent the last snag class). Trees were measured and then cut and milled into boards which were then graded.

The results are extremely promising. Trees from the first three dead



Throughout Southeast Alaska there are nearly 500,000 acres of dead and dying stands of yellow-cedar.

tree classes produced the same volume of wood and comparable value or lumber grade as that obtained from live trees. Trees dead for 50 and 80 years (the other two snag classes) produced more than 85% of the wood obtained from live trees with only a minor reduction in value.

Changes in Wood Properties

Over time does wood from dead, standing Yellow-cedars lose strength or become more prone to decay? Studies done in conjunction with the Forest Products Laboratory and Oregon State University show there is no reduction in various strength properties of wood from yellow-cedar snags, even from trees standing for 80 years after death. The studies also looked for changes in decay resistance in the aging wood.

Researchers are also examining decay of wood from dead Yellow-cedars challenged by fungi, decay of wood placed in the ground at several locations, and changes in wood chemistry as snags age.

Regrowing Yellow-cedar

Our studies indicate that yellow-cedar decline is not caused by a contagious agent and will not spread to new sites. Land managers have not given up on this valuable tree species and are interested in growing more Yellow-cedar in forests that are not naturally declining.

A test planting of yellow-cedar on harvested sites on Etolin Island showed that yellow-cedar seedlings planted on well-drained sites with good exposure to light do very well. Now yellow-cedar is being planted



High-grade sound lumber was milled from even the oldest snags, dead about 80 years.

in many parts of the Tongass National Forest in Southeast Alaska.

On the Ketchikan Ranger District the success of planting rooted cuttings of yellow-cedar (called “stecklings”) is being measured, and ways of protecting seedlings and stecklings from damage by deer are being explored.

Applying what we’ve learned

These studies have shown that the 500,000 acres of dead yellow-cedar in Southeast Alaska represents a valuable and relatively untapped forest product resource. Forest managers are using our GIS mapping of dead and dying cedar to help them find the best areas to consider for recovery harvests.

The first such harvests, on Wrangell Island, confirmed that the high value of the recovered cedar wood makes it economical to harvest with helicopters. That, in turn, makes it possible to retain the other conifer trees in the harvested stands, which lessens the visual impact. In other words, recovery treatments in dead yellow-cedar stands are an opportunity to produce high value forest products in an ecologically sensitive manner.

Other ranger districts are now considering similar recovery sales and are planting yellow-cedar in productive areas to offset losses of yellow-cedar from the natural decline.

A potentially high value forest resource that was previously ignored is now beginning to be developed. This is coming at a time when the forest products segment of south-

east Alaska’s economy, hit by a substantial reduction in traditional timber harvest, is in need of such a value-added opportunity.

Partners in this Project

- ♦ USDA Forest Service, Alaska State and Private Forestry
- ♦ Tongass National Forest, Wrangell Ranger District and Ketchikan Ranger District
- ♦ Forest Products Laboratory (Madison, Wisconsin)
- ♦ Pacific Rim Cedar, Inc.

To Find Out More

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