



## Recent Work from The Sustainable Wood Production Initiative

## Red Alder Management in the Pacific Northwest

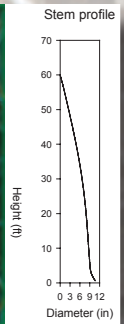
Dave Hibbs



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### Why Red Alder?

The Pacific Northwest is recognized worldwide as a region conducive to growing Douglas-fir—so why are landowners and forest managers thinking about red alder? According to Dave Hibbs, Professor at Oregon State University, red alder (*Alnus rubra*) is important from a market perspective, with harvest rotations typically shorter than that of Douglas-fir and with the stabilization of commodities through a diversified species pool for timber supply. Also according to Hibbs, red alder stands out ecologically as the most common hardwood in the region, facilitating a diverse community of wildlife, mosses, and even salmon. Alder forests and their understory shrubs are associated with a high biomass of invertebrates that fish use for food. And, being a nitrogen fixer (turning nitrogen from the air into a form usable by plants), red alder provides an essential nutrient that is limiting in most forest ecosystems. Soils in the Oregon and Washington Coast Range are known to be rich in usable nitrogen owing a legacy of alder forests. Alternating rotations between red alder and Douglas-fir has been known to add as much nitrogen into soils as do typical fertilizer treatments. Managers



Taper-based volume relationships (right) are used to predict diameter of red alder at any given tree height (left), a formula that translates into tree volume.

thinking about diversifying their timber supply or managing for objectives other than market values want to know more about red alder, and Hibbs's research, funded in part by the Sustainable Wood Production Initiative (SWPI), is helping to provide this information.

### Research Supporting Red Alder Management

In 1987, Hibbs and his collaborators started putting together a series of research sites that would later become a network of plots from Coos Bay, Oregon, to Vancouver Island, B.C. Today, a series of 26 sites aged 9 to 17 years exists, each with variable densities of red alder and different forestry treatments (thinning, patch cut, etc.). At each of the sites, tree volume and structure characteristics are measured once every 3 years, providing data for growth

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Photo by Dave Hibbs.

Managing for diverse forest resources in the Pacific Northwest includes managing for red alder.

models similar to those commonly used for Douglas-fir. Hibbs indicates that a 15-year-old red alder, for example, can be 12 to 15 inches diameter at breast height (d.b.h.) and 70 feet tall. By linking structural characteristics that are easy to measure to produce growth models, this research supports red alder management by providing important information on the available and future hardwood resource. This work is coordinated through the Hardwood Silviculture Cooperative ([www.cof.orst.edu/coops/hsc](http://www.cof.orst.edu/coops/hsc)) at Oregon State University's College of Forestry (HSC 2005).

## Taper-Based Volume Equations

Complex math is required to determine the volume of a red alder from its structural characteristics. Hibbs is (involved with research) developing “taper-based volume equations,” or formulas that account for the tapering diameter from trunk to crown of a tree. Essentially, managers could use these equations to predict tree diameter at any given height, an important piece of information for calculating tree volume. These equations have previously been developed for unmanaged alder; Hibbs and collaborators have found that their new equations for managed stands are more accurate than the old ones based on data from natural stands. One advantage of

taper-based equations is that limits can be set for small-end tree diameter. This way, tree volumes can be calculated in terms of diameter limits set by sawmills, which have logistical constraints on the sizes of logs they can process. By knowing the volume of red alder available for processing, this project contributes to the economic component of sustainable wood production, making information about harvest resources more available to landowners and forest managers.

## Reference

**Hardwood Silviculture Cooperative [HSC]. 2005.** College of Forestry, Oregon State University. <http://www.cof.orst.edu/coops/hsc/>. (22 October).



Photo—Courtesy of Erik Ackerson



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## More on the Sustainable Wood Production Initiative

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