Tolerant and Valuable: A Good Coast Redwood Combination
By Steve Bowers, Spring 2005

Alternative species? How about coast redwood (*Sequoia sempervirens*)? Opinions are somewhat polarized on the viability of the species being managed in western Oregon and Washington: Either you believe or you don’t.

For the proponents of managing coast redwood north of 42º latitude (the Oregon/California border) the following information may reinforce some of your opinions and personal experiences. For the recalcitrant renegades of redwood management in the Pacific Northwest, maybe we can enlighten you into considering the tree as an alternative species in the region.

Redwood proponents will tell you that the coast redwood once permeated the Northern Hemisphere. Then again, the *Tyrannosaurus rex* once roamed North America and Asia. So, I’m not sure where that gets us…interesting, though. Today, redwoods range from the extreme southwest corner of Oregon into Monterey County, California—a coastal strip 450 miles long and five to 35 miles wide. There are three “races” of coast redwoods—northern, central and southern. First impressions might lead one to believe, due to geographic proximity, the northern race would have the best chance of survival in western Oregon and Washington. However, plantings from seed sources obtained throughout the native range have yet to prove which race is best suited for the more northern latitudes.

Before we proceed further, perhaps we can address some of the facts and myths about redwoods and their native growing region:

- **Coast redwood is an “off-site/off-species” to western Oregon and Washington.** Technically this is true, but upon reviewing the following facts, one might be inclined to believe it is a viable alternative species for many parts of the Pacific Northwest.

- **Large amounts of fog are essential for maximum growth.** Fog is an essential element in the native range because the “wet season” in northern California is shorter than western Oregon/Washington. Redwoods need the additional moisture.

- **It’s too dry to grow redwood north of the California border.** It is a fact that annual precipitation rates are greater in many parts of western Oregon and Washington—another reason why the native region requires fog for optimal growth.

- **It’s too cold north of the border.** Of all the arguments posed in opposition to growing coast redwood in the Pacific Northwest, freezing temperatures most likely has the greatest credibility. While there are instances where redwood has suffered frost damage growing outside its native range, very few instances of mortality exist. Numerous individual redwood trees well over 50 years of age are located in residential areas and farmlands throughout western Oregon and Washington.

- **Western Oregon and Washington suffer more extreme weather occurrences (wind storms) and the redwood is not a “windfirm” tree.** It will be difficult to convince anyone that a tree that lives for hundreds of years, regardless of weather conditions, is not a windfirm tree. Redwood roots have the ability to grow upward toward more oxygenated soils, increasing root mass, thus aiding in windfirmness. An added benefit is the tree’s ability to adapt
to the heavy clay soils and high water tables found in many parts of the interior valleys of western Oregon and Washington.

**Ready to get started?**

How about seedlings? Seed and seedling sources for coast redwood are in relatively short supply. Redwood seed loses viability in cold storage, requiring a constant search for nursery seed. Botrytis fungi is the greatest concern of nursery growers to propagating seedlings during the first year. An additional concern to nurseries in the Pacific Northwest is frost damage. And, similar to all commercial tree species, research is being done at the cell level for “super trees.”

Cost for seedlings is comparable to most common reforestation species. Seedlings are available in bareroot, plug and plug-1. Viability of seed source and seedling type for optimum growth outside redwood’s native region remains in doubt. Time and experimentation should give more definitive answers. It should be noted here that timber companies in California are now introducing redwood outside their native region, propagating the tree further inland into higher elevations and somewhat more “extreme” weather patterns. Why? Because the tree is extremely tolerant and very valuable.

Seedlings will be required for their start in the Pacific Northwest, but once established, redwood is a prolific sprouter. Sprouting dominates reforestation efforts in the native region. The two most important issues in the utilization of sprouting is cost (obviously cheaper to let a stump sprout than plant a tree) and survival/growth rate (sprouts grow much faster than seedlings, enabling them to outperform competing vegetation and at a higher survival rate. Browse is almost a non-issue in redwood planting outside its natural range, which is an enormous benefit to private woodland owners, many of whose properties possess optimal deer and elk habitat. However, racking is a serious issue with the long, fibrous barked redwood, but due to its rapid and extensive sprouting capacity, mortality is not an issue.

Like nearly all species, redwood grows best in full sunlight, but is extremely shade tolerant. Once established, coast redwood will capture the site because the tree can germinate in duff, downed logs, debris and under vegetation in full sun or shade. As one resource manager from Humboldt County stated, “You can’t kill this tree.” Coast redwood has very few health and insect issues. Twig canker (*Coryneum*) is occasionally sited in sapling-sized trees and brown cubical butt rot (*Poria sequoiae*) is mentioned as a minor issue in older stands. Insects are almost non-existent, with the flatheaded twig borer and redwood bark beetle cited as possible threats. And a very important fact to consider: The coast redwood is an excellent alternative species on laminated root rot (*Phellinus weirii*) sites.

Trees are valued for various and sundry reasons, but when “push-comes-to-shove,” the story becomes “show me the money.” Coast redwood is capable of awe-inspiring growth and yields. General observations show 60-year stands on high sites with basal areas in excess of 500 square feet and 100 thousand board feet (mbf) per acre and 40-year stands on mid-sites are capable of 250-300 square feet basal areas and 35-50 mbf/acre. Couple this with current values in excess of $900/mbf short log scale, one can realize tremendous potential economic benefits. Note, these numbers are generated from California’s *Empirical Yield Tables for Young Growth Redwood*, and these numbers may not be achieved outside the optimal growing areas of redwood’s native region. However, reduce these
estimates 10, 20 or even 30 percent and one still arrives with volumes comparable to western Oregon and Washington’s native Douglas-fir stands.

Redwood does command a strong market demand and high values/mbf, but those markets are far away from potential growers in western Oregon and Washington. Mills and their respective log buyers are located in northern California, requiring hauling costs ranging from nearly $500 in southern Oregon to upwards of $1,000 near the Oregon Washington border. However, considering the high value/MBF and potentially large volumes per acre, coast redwood is an economically viable species despite excessive hauling costs. And redwood is no longer an old-growth/large log industry. Merchantable lengths and diameters are comparable to all other commercial conifers grown in the Pacific Northwest.

There is much to learn about managing coast redwood. Research has shown there is good response to a range of stocking levels, but optimum levels remain in question and variability of thinning regimes is problematic. Periodic increments for mid-quality sites are approximately 60-70 years and mean annual increments in excess of 100 years exists on low- to mid-quality sites. Uneven-aged management, mixed species and longer rotations are becoming increasingly popular with many landowners throughout the Northwest, making redwood an extremely viable species due to its shade tolerance, durability, longevity and aesthetic appeal.

As stated previously: How about coast redwood? Redwood is capable of growing along coastal areas and lower elevations throughout western Oregon and Washington. It is an excellent species for understory plantings, riparian buffers and uneven-aged management. Avoid frost pockets and higher elevations, and the tree is at risk on droughty sites. Viable seedlings can be obtained from all California sites, although additional research and experimentation needs to be conducted to match seedling sources to site conditions north of redwood’s native range. In short, the coast redwood is a viable and potentially valuable alternative tree species for much of western Oregon and Washington.

Steve Bowers, aka Treeman, is with Oregon State University’s Lane/Linn County Forestry Extension in Eugene. He can be reached at 541-682-7311, 800-872-8980 or steve.bowers@oregonstate.edu.