

Forest maintenance work leads to questions

BY SANDY SHAFFER

It's been 10 years since my husband and I took advantage of fuel reduction grants and had almost all of our forested property thinned. This spring as I was pruning, mowing, weed whacking and such in preparation for fire season, I noticed that too many of our stands had closed up, and the ladder fuels were plentiful.

Maybe it's because we were short on stacked firewood, or maybe because we haven't had a fire out in this part of the Applegate in a decade, but I realized it was time to do some major thinning! My husband and I feel that protecting our trees from wildfire is just as important as protecting our home.

So out came the blue ribbon to mark trees for removal this fall. Sometimes I found it easy to tag a tree, but much of the time I wasn't sure how to decide between two perfectly healthy trees of different species. I realized that while I've learned a lot about defensible space over the years, when it came to trees and fire, I had more questions than answers! So I called on our local OSU Extension forester, Max Bennett, for some advice on how to decide which types of trees I should cut and which I should leave.

Our 20-acre parcel here in the Applegate is basically a hilltop, so that gives us a 360-degree changing aspect. Consequently, we are lucky to have four conifer species (ponderosa pine, Douglas fir, sugar pine and incense cedar) and three species of hardwoods (Pacific madrone, Oregon white oak and black oak) on our property. It's fun (and challenging) to manage this mix of species, and I like to maintain a good balance for wildlife habitat and stand resilience, as well as for our firewood supply.

My questions for Max mainly revolved around the fire resilience of these seven various tree species. (But first, a quick clarification on the difference between fire resistance and fire resilience, because they do have "practical implications" per Max. "Resistance means the ability to resist change from a disturbance like fire. A ponderosa pine is resistant to fire. Resilience means the ability to return to the original state after the disturbance. Madrone is pretty resilient to fire, but not very resistant." So resistance means surviving a fire, and resilience means being able to bounce back from fire, usually by resprouting.)

So here are my questions, with Max's responses in italics:

Q1: If a ground fire were to come

through my mixed stands, how would these seven species fare with a scorching of the bark?

A1: *Fire kills trees by killing the cambium layer just underneath the bark near the base of the tree, and by killing leaves (needles) and buds. Death can result from either one of these, but usually it's a combination of the two. Trees with thicker bark are more resistant to cambial damage. Trees with larger buds and longer needles are more resistant to crown scorch. Of the trees listed, ponderosa pine is the most fire-resistant. It has thick bark and can survive surface fires at the sapling/pole stage (a few inches in diameter). Its large buds, long needles (which help protect the buds) and elevated crown make it less vulnerable to scorch. Douglas fir is the next most fire-resistant species. When small/young, it is more vulnerable to cambial damage than pine, but old-growth Douglas fir trees have very thick bark and are just as, or perhaps even more, fire-resistant than ponderosa pine. Sugar pine and incense cedar have thinner bark and are more vulnerable to fire than pine and Douglas fir. Of the hardwoods, Oregon white oak is the most fire-resistant, California black oak is in the middle, and madrone is least fire-resistant. Of course, the hardwoods sprout right back after fire, while local conifers lack that ability. (See photo, top right.)*

Q2: Does this depend upon the size of the tree—are smaller trees always more susceptible to scorched bark?

A2: *Yes, smaller trees are generally more susceptible to bark scorch and cambial damage. The bigger the tree, the thicker the bark. Some trees, such as pine, can survive fires at relatively small sizes while others must grow much larger to attain the same degree of fire-resistance. (See photo, bottom right.)*

Q3: So, in general, how would you rank these seven species for fire resistance?

A3: *Here's a table summarizing fire-resistance of the species and the size/age at which they attain medium to high fire-resistance.*

Species	Size	Fire-resistance at maturity
Ponderosa pine	Sapling/pole	High
Douglas fir	Pole/mature	High
Sugar pine	Mature	Medium
Incense cedar	Mature	Medium
Black oak	Mature	Low/medium
White oak	Pole	Medium
Madrone	None	Low

Q4: Which of these seven species are the most flammable?

A4: *Conifers are generally more flammable than hardwoods due to the chemical compounds in needles that burn readily when*

ignited. Differences in the flammability of the foliage between individual conifer species are less important than the density of foliage and how close the branches are to the ground. (So keep pruning up those branches!)

Deciduous hardwoods are less flammable, because their leaves do not contain those types of resins that conifer do.

Q5: If I were choosing between one of the three hardwoods to keep near my house, which would be safer and more fire-resistant?

A5: *Choosing among the hardwoods when close to the house, I'd prefer to have an oak, all other things equal. Madrone foliage (live on the tree and dead on the ground) seems a little more flammable, its bark sheds, and its habit of dropping leaves in the summer make it a maintenance headache near the house.*

Q6: Which of these seven species can withstand low water years or a drought best?

A6: *The species in order of drought tolerance, from highest to lowest, are:*

*Oregon white oak
California black oak
Ponderosa pine
Incense cedar and Pacific madrone
Douglas fir
Sugar pine*

Well, I hope that these questions and answers have helped some of you a bit in your forest-stand management decisions. Thanks to Max, I feel a lot more comfortable walking around with my blue



Pacific madrones (right) peel off a thin layer of their bark each year, unlike thick ponderosa pine bark (left).



This old white oak (left) has a much better chance of surviving a ground fire than the smaller oak saplings (right).

ribbon! You know, private landowners don't need to do this alone. There are tons of resources across our valley to help us out, so use them! The more acres being managed, the better for all of our lands here in the Applegate. (FYI: Max and his colleague Steve Fitzgerald have an article on page 16 on how to thin stands for optimum management—check it out.)

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“A banker is a fellow who lends you his umbrella when the sun is shining and wants it back the minute it begins to rain.”

—Clarence Darrow



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