BARK BEETLES:
Bane, Boon or Both for Ponderosa Pine?

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As WSU Extension forester serving Columbia River Gorge counties in Washington and Oregon, I have received many calls through the years from woodland owners, urban and rural dwellers, and tree-loving citizens concerned that their neighborhood ponderosa pine trees were dying. Is it the bark beetle and if so what could be done about it?

The most common signatures of bark beetle activity are pencil sized, pitch-filled holes from about waist height up to "real high" on the stem of the tree. These are caused by the female beetle boring in through the bark to lay her eggs. The next sign consists of numerous pencil dot sized hole all over the bark, looking a bit like a shotgun blast. These are the exit holes made by the baby beetles.

Looking under the bark, the trees are killed by the blue stain fungus introduced by the beetles and by the larvae mining out the rich cambium layer under the bark. One or both of two similar species of bark beetles are the culprit: the western pine bark beetle and the mountain pine bark beetle. The adults look very similar, but the western pine beetles tend to attack larger ponderosa pine and their larvae eat galleries under the bark, wandering around leaving a trail that looks like a pile of cooked spaghetti. The mountain pine beetles attack smaller ponderosa pine trees and their galleries instead have a vertical line with side branches.

How can the pine trees be protected? A tree's best defense is "pitching" out the female with a big pitch blob when she tries to bore through the bark. However, trees weakened by water stress can't produce enough pitch to do this. Excessive water stress occurs when too many trees per acre are growing relative to the water supply. The problem is more serious during drought years. That is when beetle kill really becomes widespread. The increased beetle activity we see now is also partly due to fire suppression which allows more trees to grow in an area than normally would.

In younger stands, the beetles typically do not kill every tree but naturally thin the stand so that the remaining trees have more water and are more vigorous. The dead trees, however, increase fuel loads and chances for excessively hot fires. The best strategy is to thin before the beetles arrive; this maintains tree vigor. For trees 6" and larger in diameter, consider thinning the tallest and best formed to between 20' to 40' apart, removing the smaller trees for firewood or posts.

What about the large beautiful "yellow" ponderosa pines that are so characteristic of our part of the world? Unfortunately, as trees get taller, it's harder for them to get water to their tops and this makes them less able to resist beetle attack. Only one insecticide is registered for bark beetle control for larger trees. It must be sprayed on the entire tree trunk in May before the female beetles fly and provides only about a 66% chance of protecting the tree. This insecticide, although environmentally short-lived, is toxic to many beneficial insects and should be used only as a last resort. No other pesticides are registered, nor does fertilization seem to be beneficial.

Bark beetles are ecologically fascinating. In addition to naturally thinning younger pines, the beetles communicate with chemicals called pheromones. When a few beetles find a feeding ground, the send out one chemical that acts as a dinner bell. But when too many beetles are in an area, they produce a chemical that tells others to stay away. The beetles also provide food for birds and other insects and the large pines that die are often excavated by woodpeckers providing homes for birds and squirrels.

So are bark beetles a boon or bane? For smaller trees, their overall influence is probably positive providing
fire does not get started in the dead trees. For larger esthetic trees in parks or yards, they are cause for concern, but they can benefit wildlife.

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