



Forest Health Note

Hosts:

Ponderosa pine, lodgepole pine, shore pine and western white pine.

Importance:

The pine engraver beetle (*Ips*) is a threat to sapling and pole-size ponderosa and lodgepole pine in recently thinned stands. *Ips* prefers to infest green slash or wind breakage, but will also infest standing green trees when beetle populations are high. This beetle is very aggressive during drought years and often kills the tops of mature trees (Figure 1) as well as clumps of up to pole-size ponderosa pine (Figure 2).

Pine Engraver Beetle

(*Ips pini*)

Look For:

April - August

Orange brown boring dust in the bark crevices of slash is frequently the first sign of *Ips* activity. When the bark is peeled off near the boring dust, a

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gallery in the tree's sapwood created by the beetle is usually present (Figure 3). The galleries radiating from a central chamber form an inverted "Y" pattern. Often the adult beetles are found in the gallery (Figure 4).

July - August

During July and August there are rapid changes in the appearance of an infested tree's crown. The foliage of infested pines changes from green through yellow, and eventually to a reddish-brown. *Ips* most often infest standing pine or slash with a diameter of 2 - 8 inches, but occasionally kill larger trees.

Infestation Characteristics:

In most areas of eastern Oregon, *Ips* have two generations per year (Figure 5). Mild conditions in southwest Oregon allow the pine engraver beetle to have up to four generations per year. The overwintering beetles seek out fresh slash, windthrown trees or trees with snow breakage as breeding material in the spring. It is the following generation(s), flying from mid-June into

Photo: Wm. Ciesla, FHM Intl, Bugwood.org



Figure 1: Top kill in large ponderosa pine from *Ips* attack is common during drought periods.

Photo: Ladd Livingston, IDL, Bugwood



Figure 2: *Ips* caused mortality often occurs in dense stands of pole-size ponderosa pine.



Photo: Steve Munson, USDA FS, Bugwood

Figure 3: Pine engraver galleries are 5-10 inches in length and often form an inverted "Y." Galleries may not be as distinctive several months after the attack.



late summer, that often attacks standing green ponderosa pine.

Ips outbreaks usually occur when the precipitation during the months of April through July is 75 percent of normal or less. In these dry years, overstocked stands of sapling and pole-size ponderosa pine are particularly vulnerable to attack.

Management:

Avoiding Tree Mortality from Ips Attack Following Thinning:

Do not create green slash with diameters greater than 3 inches during the period January - July. Slash creation during this period can result in *Ips* attacks on leave trees. Slash with diameters less than 3 inches can be thinned all year. This small-diameter slash is often attacked, but does not afford a breeding area sufficient to produce large beetle populations. Small diameter slash dries out rapidly and beetles avoid partially dried slash as a breeding site.

Do not leave thinning slash in the shade. Whenever possible, slash should be scattered in openings for rapid drying. Piling slash results in shading that slows the drying process.

Do not leave green slash around the boles of leave trees. Slash attracts *Ips* and may result in attacks on standing trees.

Options When Slash Creation In January - July is Unavoidable

Reduce the amount of suitable breeding material for *Ips* by dozer trampling slash, using a slash-buster, or scattering pieces in open areas to facilitate drying.

For large acreage, using a technique called the "green chain" may help avoid damage to leave trees. This technique involves creating new slash at two-week intervals or con-

tinuously during July - August. The new slash, which *Ips* preferentially attacks, absorbs beetles emerging from the slash created by thinning trees from January - June. If fresh slash is not available in July - August, attacks on leave trees may occur.

Another technique for thinning large stands of pine in the January - July period is to use mechanical harvesters to create very large piles of slash, at least 10 feet high and 10 feet long. Several of these large slash piles must be placed in the thinning unit and be separated by no more than 1/4 mile. The creation of very large slash piles prevents tree killing because the slash in the interior of the piles remains fresh and attractive to *Ips* during the summer months.

Preventing Ips Attacks with Insecticides:

Use of insecticides is only justified to protect high-value trees, typically those found around homes or in recreation areas. When treating small pines, the insecticide solution should be sprayed on the bark of the main bole to run-off. Insecticide should be sprayed as far up the trunk as possible. Because *Ips* have multiple generations, treatment of pines anytime during the spring and summer months may be beneficial.

The following insecticides can be used for preventing bark beetle attacks on standing pines:

- **Ground applications to forest trees**
Carbaryl
- **Ground applications to ornamental trees**
Carbaryl
Permethrin

Remember, when using pesticides, always read and follow the label.

For further information about the Oregon Department of Forestry's Forest Health Program,

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www.oregon.gov/ODF/PRIVATE_FORESTS/fh.shtml



Photo: Ladd Livingston, IDL, Bugwood.org

Figure 4: Adult pine engraver beetles are a dark brown color, 1/8- to 3/16-inch in length, and have four distinctive spines on the rear of the wing cover.



Photo: Dave Overhulser, ODF

Figure 5: Flight periods for the pine engraver beetle in eastern Oregon. The second flight infests green trees as well as fresh slash.