



Forest Health Note

California Fivespined Ips (*Ips paraconfusus*)

Hosts:

Ponderosa pine, sugar pine, western white pine, lodgepole pine, and knobcone x Monterey hybrid (KMX).

Importance:

The California fivespined ips (*Ips*) is the most important bark beetle threat to managed stands of ponderosa pine in western Oregon. In southwest Oregon, beetle populations build-up in thinning slash and emerge to attack residual trees. During drought years, *Ips* frequently attacks and kills the tops of mature trees or clumps of overstocked pole-size pine. As more acreage in the Willamette Valley is planted to ponderosa pine, this beetle is likely to become a significant pest.

Look For:

April - October

Ips prefer to infest green slash or wind breakage, and the first sign of beetle activity is orange-brown boring dust pouring out of bark crevices (Figure 1).



Photo: Ron Billings, TFS, Bugwood

Figure 1: Spots of orange-brown boring dust on the bark of pine slash infested by *Ips*.

When bark is peeled off near the boring dust, a characteristic “Y” shaped gallery is usually apparent (Figure 2). The adult beetles are often found when the bark is removed from recently infested trees



Photo: David McComb, USDA FS, Bugwood

Figure 2: Characteristic Y-shaped gallery of California Fivespined *Ips*.

(Figure 3). The beetles are reddish-brown and 3- to 5.5-mm in length and have five distinctive spines on the rear of the wing cover. Also found beneath the bark are actively feeding larvae approximately 3-mm in length. The “C” shaped larvae are legless white grubs with yellow heads. Mature larvae develop into the ivory colored pupae, approximately 5.5-mm in length. The immobile pupal stage lasts several weeks before transforming into the beetle.

July - August

Trees attacked by *Ips* in the summer usually take a month or more

to develop crown symptoms. The foliage of an infested tree fades from green to yellow, then to orange and finally to



Photo: Don Owens, CDF, Bugwood

Figure 3: Adult beetles are reddish-brown, 3- to 5-mm in length, and have 5 distinctive spines on the rear of the wing cover.

a reddish brown (Figure 4). If trees are attacked in late summer or the fall, foliage may not fade until the following spring.



Photo: William Ciesla, FHM Intl, Bugwood

Figure 4: Top-kill and orange foliage indicate recent attacks by California Fivespined Ips.

Infestation Characteristics:

The California fivespined ips has two generations per year in the Willamette Valley and possibly three generations in southwest Oregon. The overwintering beetles seek out fresh slash, wind-thrown trees or snow breakage as breeding material in the spring. This first Ips flight probably lasts from April into June. As many as 50% of these beetles re-emerge after egg laying to re-attack fresh host material and produce a second brood. The beetle's ability to establish more than one brood means Ips is capable of explosive increases in population whenever breeding material is abundant. Most of the attacks on pine come from the more numerous second or third generations that fly from mid-June into October. Periods of warm dry weather are believed to increase the susceptibility of pine to successful Ips attacks. Broods from the second or third generations overwinter under the bark, and emerge the following spring to repeat the cycle.

Management:

Preventing the build-up of Ips populations is the best method to minimize damage from this beetle. It is important to periodically thin pine stands so trees have sufficient light, moisture, and nutrients to maintain vigorous growth and resistance to bark beetle attacks. If tree mortality is occurring, sanitizing the stand by rapidly removing pines with yellowing or orange foliage can reduce bark beetle populations. Pines with yellowing foliage often contain Ips broods, and removing these off-color trees will also remove the beetles from the stand.

Proper timing of slash creation during thinning and harvesting operations can prevent Ips attacks on residual trees. The rule for timing slash creation is not to lay down green slash diameters greater than 3 inches during the period January through June. If slash is created during these months, there is a potential for Ips attacks on nearby standing trees. Slash with diameters less than 3 inches can be created at anytime since this small diameter slash does not afford the breeding area sufficient to produce large Ips populations. Other rules for managing fresh slash include scattering material in openings rather than piling



Photo: Dave Overhulser, ODF

Figure 5: Ponderosa pine plantation infested by the California Fivespined Ips.

it. Scattering slash in openings facilitates rapid drying and lowers its attractiveness to Ips. It is also advisable not to leave green slash around the bole of live trees. The volatile materials released from green slash are attractive to Ips and red turpentine beetles and may result in attacks on nearby trees (Figure 5).

Preventing Ips Attacks with Insecticides:

Attacks on standing trees typically last one season and are usually only detected after the damage has occurred. Use of insecticide is only justified to protect high-value trees, typically those found around homes or in recreation areas. Small pines can be protected from attack by spraying insecticide solutions onto the main bole until run-off. Because Ips have multiple generations, treatment of trees

anytime during the spring and summer months may be beneficial. Insecticides are not registered for treatment of slash piles.

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

- **Ground application to forest trees:**

Carbaryl

- **Ground application to ornamental trees:**

Carbaryl

Permethrin

**WARNING: WHEN USING PESTICIDES, ALWAYS READ
AND FOLLOW THE LABEL.**

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

Call or write to:

Rob Flowers, Forest Entomologist
(503)945-7396
rflowers@odf.state.or.us

Alan Kanaskie, Forest Pathologist
(503)945-7397
akanaskie@odf.state.or.us

Oregon Department of Forestry
2600 State St, Bldg D, Salem, OR 97310

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