



Ips Beetles

Forest Health Fact Sheet

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Christine Buhl, ODF

Ips beetle adults are 3-5mm long and have distinct spines (red arrow) along the posterior.

Bark beetles in the *Ips* genus that are of particular importance in Oregon forests are the pine engraver (*Ips pini*) and the California fivespined Ips (*Ips paraconfusus*), both of which are pests of pine. *Ips* prefer to attack slash and then move to standing green trees. Outbreak potential is high due to their ability to produce multiple generations per season and multiple broods per generation. They attack sapling and pole sized trees as well as the thin-barked or small diameter portions of larger trees (e.g., branches and tops). Topkill in the upper 1/3 portion of the crown is often the first obvious indication of an *Ips* attack. Improper slash management and recent droughts have resulted in *Ips* outbreaks that have persisted for longer than usual. See ODF ‘[Slash Management](#)’ fact sheet for more information.

Hosts

- Major: most native and non-native pines

The pine engraver is transcontinental in distribution whereas the California fivespined is restricted to pine ranges in states along the West Coast. Monterey *Ips* (*Ips mexicanus*) is also present in Oregon but attacks mainly shore pine, the coastal cultivar of lodgepole.

Biology

Pine-infesting *Ips* beetles initiate attack flights in April and may continue into October. Adults fly approximately ¼ mile seeking hosts. Development is completed in 4-6 weeks and there are 2-3 generations per year. As many as 50% of the adults may re-emerge after laying eggs to re-attack fresh host material and produce a second brood. Winter is most frequently spent in the adult stage of the last generation. Although adult size (3-5mm) and color (reddish brown) can be variable, number and shape of spines along the posterior can be used to identify species, although sexes may differ.

Ips beetles are associated with a variety of other beetles that also infest pine. *Ips* beetles attack the top of a tree, western (ponderosa only) and mountain pine beetles



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Pitch tube (left) and ‘X’ or ‘Y’-shaped galleries (right)

attack the main bole, and red turpentine beetles colonize the lower bole and root collar as secondary pests.

Damage

Ips preferentially attack fresh 3-8” diameter slash. Once slash has been fully utilized, the subsequent generation will emerge and attack stands of overstocked sapling or pole-sized trees, or branches and tops of larger trees. Orange-tan boring dust (frass) in bark crevices or tiny pitch tubes are early signs of *Ips* activity. Bark beneath boring dust or pitch tubes can be removed to reveal galleries etched in the sapwood. Channels radiating from a central chamber form an ‘X’ or ‘Y’ pattern. Quite often



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Progression of topkill to whole crown fading and dieback.

adult beetles can be found in galleries. Frass and pitch tubes may be absent or hard to see, especially in larger trees where *Ips* attack more near the top. Droughted trees may not have enough moisture to produce pitch tubes (“blind attacks”).

In larger trees, faded or red needles at the top 1/3 portion of the crown are a more obvious indicator

that *Ips* are present, but by this time the tree is often lost. When the tops of large trees or clusters of small, overstocked trees turn red, silvicultural management strategies should be initiated quickly to reduce the spread of *Ips* to green trees.

Ips outbreaks usually occur when precipitation from April through July is 25% lower than normal. In these dry years, overstocked stands of sapling and pole-sized ponderosa and other pines are particularly vulnerable to attack.

Management

Silvicultural

Preventing the build-up of *Ips* populations in slash is the best method to minimize damage from this beetle. Proper timing of slash creation during thinning and harvest operations can prevent *Ips* attacks on residual trees. *Ips* prefers fresh slash (moist phloem) that is 3-8” in diameter. Slash outside of this size range may still produce brood but likely not enough for an outbreak.

Fresh slash within the 3-8” diameter range can be lopped and scattered in a sunlit area, from October through December, which is enough time for it to dry before beetles attack in April. Outside of this timeframe, avoid creating 3-8” diameter slash, or destroy it immediately. Reduce the amount of suitable breeding material for *Ips*

Management highlights

- *Ips* prefers 3-8” diameter slash
- October - December: scatter slash
- January - July: avoid creating slash or destroy immediately (within a month)
- Burn, chip or masticate slash
- Pile and burn, green-chaining, solarization

by doze trampling, slash-busting, chipping or burning (be aware of fire risks). Avoid leaving slash or firewood near live pine trees unless it is sufficiently dried. 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 currently infested trees (pines with frass, pitch tubes, yellowing or orange foliage but no exit holes) can reduce bark beetle populations.

Pile and burn, green-chaining and solarization slash management techniques may be applicable, although they are hard to manage and may accelerate an outbreak.

“Pile and burn” involves creating piles of slash at least 20’ wide and 10’ deep from January - July. Several of these large slash piles must be placed in the thinning unit and be separated by no more than 1/4 mile. Slash in the interior of the piles remains fresh and attractive to *Ips* during the summer months and is later burned.

“Green-chaining” involves creating slash at 2-3 week intervals April - August. Slash is scattered individually or in small piles throughout the unit and later chipped, masticated or burned. Beetles emerging from previously created slash will attack newly added slash. If sufficient amounts of fresh slash are not added frequently, beetles may emerge and attack standing trees.

Small slash piles may also be ‘solarized’ - covered with clear, 6 mil plastic in sun-exposed areas where they can reach 113° F (45° C) to kill beetles before they can chew their way out.

Insecticides

There are preventative insecticides that can protect high-value trees but they are expensive and difficult to apply. Insecticides are not labeled for use on slash.

When using pesticides, always read and follow the label

More information:

Oregon Dept. of Forestry, Forest Health
<http://tinyurl.com/odf-foresthealth>
 2600 State St. Bldg. D, Salem, OR 97310
 503-945-7200

Other references:

USFS Forest Health Protection
www.fs.usda.gov/goto/fhp/fidls

OSU Forestry Extension
<http://extensionweb.forestry.oregonstate.edu/>