

Pine *Ips* Species (Engraver Beetles)

Attracted to green slash

Name and Description—*Ips* spp. [Coleoptera: Curculionidae: Scolytinae]

Adult beetles are cylindrical, dark red-brown to black, and typically $\frac{1}{8}$ - $\frac{3}{16}$ inch (3-5 mm) long. Some species may be as long as $\frac{1}{4}$ inch (6 mm). They have a dish-shaped depression on the end of their abdomens with spines along each side (fig. 1). Larvae are typical C-shaped and are indistinguishable from other bark beetle species larvae.

Hosts—All pine species are attacked.

Life Cycle—Normally, there are two generations of the beetle each year (fig. 2). In dry years, three or even four generations may occur. Winter is passed primarily in the adult stage beneath the duff on the forest floor or within infested material. Adults become active early in the spring, infesting fresh slash or winter-damaged trees. Initial flights vary with weather but probably occur most often in late April to early May. This brood develops into adults after 40-55 days, and they attack slash and standing trees by August. Attacks are initiated by male beetles, which construct nuptial chambers beneath the bark. Each one then attracts several females, which, after mating, construct egg galleries radiating from the nuptial chamber (fig. 3). Egg galleries are kept free of boring dust and frass, unlike those of many other bark beetles. Beetles prefer fresh debris from logging, construction activity, or natural events, but living trees may be attacked during outbreaks.

Damage—In standing trees, fading tops of large trees or whole crowns in small trees can be indicators of *Ips* spp. infestation (fig. 4). Other external evidence consists of accumulations of boring dust in bark crevices and at the base of the tree (fig. 5). Occasionally, pitch tubes can be found on the trunk. Characteristic egg galleries may be found under the bark, slightly engraving the sapwood, hence the common name, engraver beetle. In slash, look for boring dust and galleries.

Management—Most pine engraver problems are associated with disturbances such as windthrow and ice breakage, drought in spring and early summer, thinning, logging, fires, road construction, housing development, or tops of trees being weakened or killed by other agents. Pine engraver beetles overwinter in the adult stage and normally infest green slash only in the spring. Logging slash created from December through June can be especially hazardous because it provides large amounts of breeding material. Slash should not be created during this time period unless it can be treated prior to beetle emergence. During years of extremely low spring soil moisture, overwintering beetles have been known to attack and kill living trees. Silvicultural strategies are effective, particularly thinning stands to maintain tree resistance to attack. Thinned, vigorous stands of ponderosa pine are less attractive to pine engraver beetles. During drought years, stand vigor is even more important. Stands in which basal area has been reduced to 80-100 square ft per



Figure 1. Adult *Ips pini* beetle with depression and spines on end of elytra. Photo: Natasha Wright, Florida Department of Agriculture and Consumer Services, Bugwood.org.

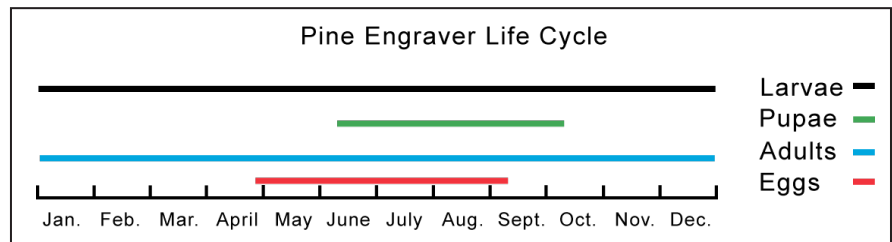


Figure 2. Life cycle of pine engraver beetles (from Johnson 1982).



Figure 3. Egg galleries of *Ips* sp. radiating from nuptial chamber. Photo: Jerald E. Dewey, USDA Forest Service, Bugwood.org.

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acre (18-23 square m per hectare) have been found to be less susceptible to beetle attack. Recently thinned stands may temporarily be more attractive because of the presence of fresh slash or logging damage to residual trees.



Figure 4. Top-kill from *Ips pini* attack. Photo: William M. Ciesla, Forest Health Management International, Bugwood.org.



Figure 5. Boring dust on bark of pine attacked by pine engraver beetles. Photo: Kenneth E. Gibson, USDA Forest Service, Bugwood.org.

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1. Furniss, R.L.; Carolin, V.M. 1977. Western forest insects. Misc. Publ. 1339. Washington, DC: U.S. Department of Agriculture, Forest Service. 654 p.
 2. Johnson, D.W. 1982. Forest pest management training manual. Lakewood, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Region. 138 p.
 3. Kegley, S.J.; Livingston, R.L.; Gibson, K.E. 1997. Pine engraver, *Ips pini* (Say), in the western United States. Forest Insect and Disease Leaflet 122. Washington, DC: U.S. Department of Agriculture, Forest Service. 8 p.