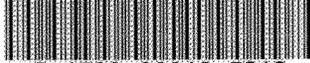


APR 12 1990

COLORADO STATE LIBRARY
State Publications LibraryIPS beetles—
characteristics
and controlWhitney S. Cranshaw,
David Leatherman¹

no. 5.558

COLORADO STATE PUBLICATIONS LIBRARY
UCSU20/6.22/5.558 c.2 local
Cranshaw, Whitney/IPS beetles : characte

3 1799 00013 5319

Quick Facts

Ips are a common group of bark beetles that infest pine and spruce.

Ips rarely attack healthy trees. Most problems with Ips occur to newly transplanted pines or when plants are under stress.

Several generations of Ips can occur in a season.

In general, preventive treatments for Ips are best applied by early May.

Ips beetles are a common group of bark beetles that develop within pine and spruce. Most commonly, Ips beetles occur in recently felled logs (including firewood) and dying trees. Ips beetles occasionally also will attack and kill living trees. Newly transplanted trees or trees placed in unsuitable locations are especially vulnerable. Root injuries, drought and other stresses also can make a tree susceptible to attack by Ips beetles.

Evidence of Ips beetle activity is the accumulation of very fine sawdust at an entrance hole on the trunk. Larger sawdust particles (2-3 millimeters) or the presence of pitch tubes on the bark usually are *not* indications of Ips beetle activity. Confirmation of Ips beetle infestation is best done by peeling off the bark. Egg galleries produced by these insects branch from a central chamber and remain largely clear of sawdust (fig. 2). Blue stain fungi generally infect wood that is colonized by Ips beetles.

Ips beetles are far less important threats to tree health than are *Dendroctonus* bark beetles. *Dendroctonus* beetles include some serious pests such as the mountain pine beetle (discussed in Service in Action 5.528) and the Douglas fir beetle. *Dendroctonus* bark beetles can be separated from Ips beetles by examining the hind wing covers of the adult insects (fig. 1).

Another group of quite small beetles (1/16 inch by 1/8 inch) called *twig beetles* also infest twigs, limbs and trunks of weakened coniferous

trees. They resemble miniature Ips or *Dendroctonus* beetles, but in general are confined to small diameter tree parts. Their biology, importance and treatment is similar to that for Ips.

History and Habits

Approximately 10 species of Ips occur in Colorado. Many are restricted to a few tree species but others can be found in almost all species of pine. They range from 1/8 inch to 1/4 inch in length.

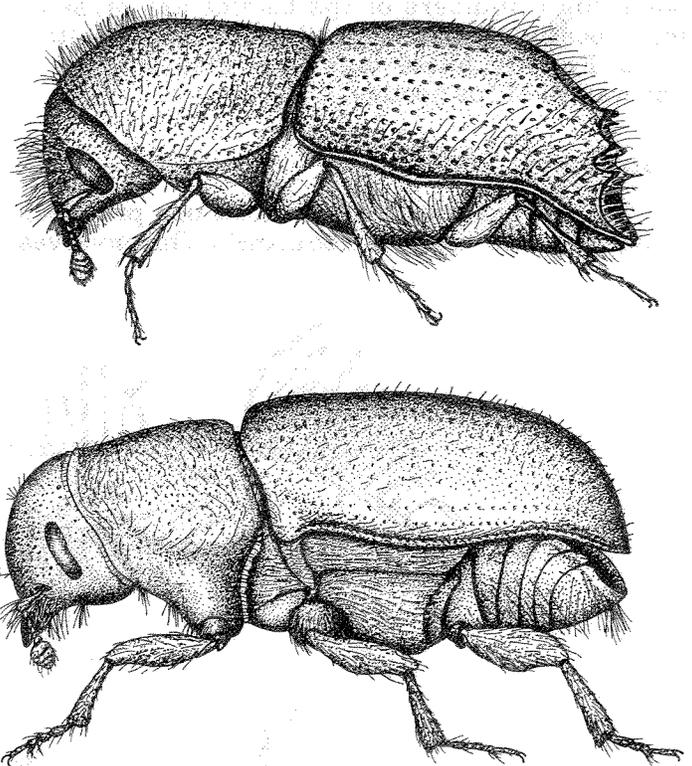


Figure 1: Adult Ips (top) versus *Dendroctonus* (bottom). Note jagged hind wing covers of Ips. Actual size of Ips from 3 to 6.5 mm; *Dendroctonus* 3 to 8 mm.

¹Whitney S. Cranshaw, CSU assistant professor, department of entomology; David A. Leatherman, entomologist, Colorado State Forest Service. Drawings by Thomas Weissling and David Leatherman.

Most Ips overwinter as larvae or adult beetles. In mid-spring to early summer, adult beetles emerge, fly about and begin to tunnel into logs, tree trunks and branches. Male beetles move into the trees first and construct a small (3-6 millimeter diameter) "nuptial chamber" in the cambium of the wood. Female beetles then follow and construct the radiating egg galleries, which often form a "Y" or "H"-shaped pattern (fig. 1).

After eggs hatch, the small, white grub-like larvae begin to feed and tunnel perpendicular to the egg galleries. The larvae and tunnels increase in size as the insect grows and when full-grown the larvae pupate at the end of the tunnel. Adult beetles bore through the bark and emerge to mate and infest other wood. As many as three to four generations of Ips beetles may occur in a single year. These generations overlap and all life stages may be found in a single tree.

Ips beetles are only able to successfully invade and breed in stressed or dead and dying trees. Healthy trees are less attractive to the beetles and are capable of "flushing out" the beetles. Rarely, when high numbers of Ips beetles are present, mass beetle attacks can kill apparently healthy trees. Freshly felled logs may also support a generation of Ips beetles.

Control

To prevent Ips beetle attacks use practices which promote vigorous tree growth. This involves

careful site location and soil preparation when transplanting trees. Adequate watering as trees get established is also very important in preventing Ips infestation.

Ips beetle populations can build up rapidly in felled timber and recently cut logs. The presence of these materials near susceptible trees can greatly increase the potential for damaging numbers of Ips attacks. These breeding materials should be removed, burned, or debarked before beetles emerge.

Insecticidal control of Ips beetles usually is not justified. However, newly transplanted landscape trees, particularly when located near Ips beetle breeding sites, may benefit from a preventive insecticide application. Products containing carbaryl (Sevin, Sevimol, Pine Tree and Ornamental Spray, etc.) commonly are used for this purpose, applied to the tree trunk and major limbs. Lindane and chlorpyrifis (Dursban) may also be used as preventive treatments. Once Ips have moved into the wood the tree can not be saved and beetle control is limited. Preventive sprays should be applied to susceptible trees before beetle activity in the spring. One application per year is usually sufficient. In general, applications made in early May are most appropriate but occasionally beetle attack can occur earlier. (Note: Lindane should not be diluted with petroleum products when application is to live trees. Such dilution is suitable only for application to cut logs.)

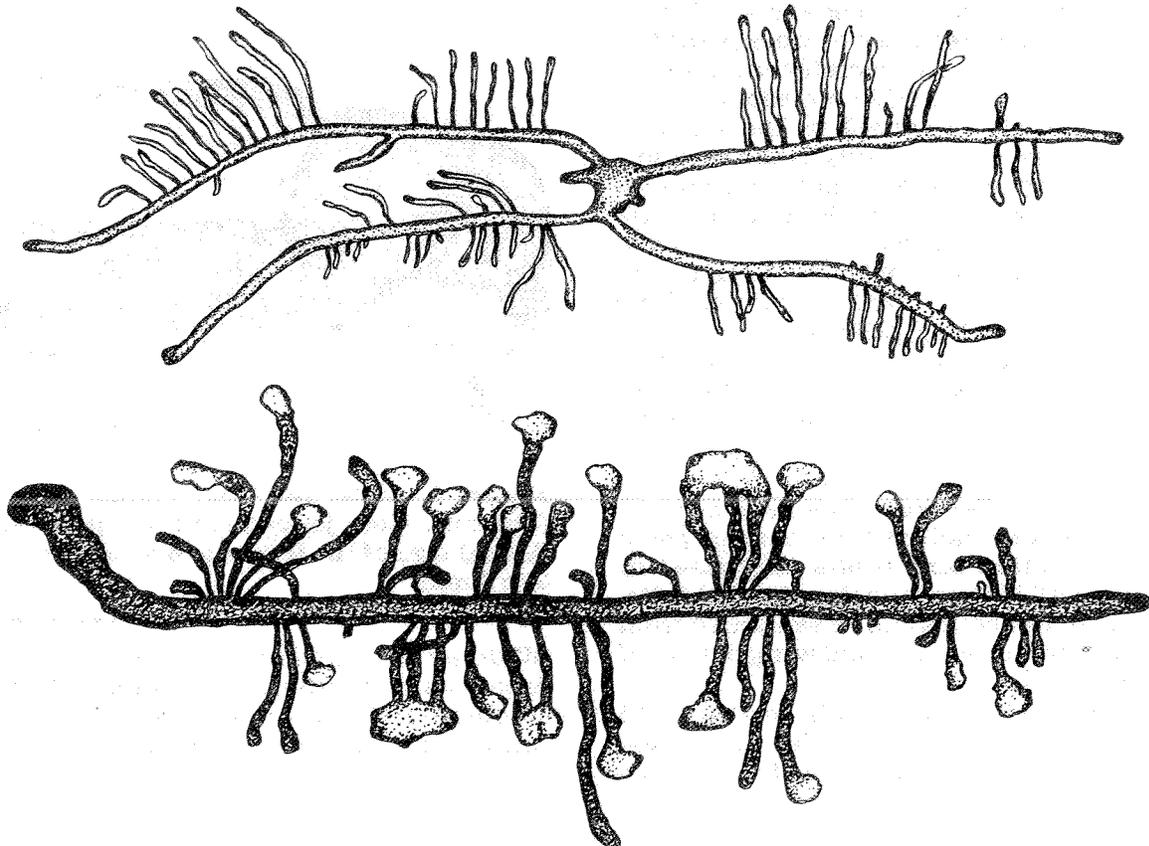


Figure 2: Typical egg and larval galleries produced by Ips (top) versus Dendroctonus (bottom). Note central chamber in Ips gallery.