

IMPORTANCE: Pines of all ages and sizes are attacked by Ips bark beetles (*Ips grandicollis*, *calligraphus* and *avulsus*). They usually attack injured, dying or recently felled trees, and logging debris. They often kill only a few trees in a given spot, but under certain conditions become epidemic and destroy hundreds of trees. Damage is very high and compounded by the blue-stain fungus they carry that degrades lumber from infested trees.



IDENTIFICATION: Ips beetles are easily recognized by a scooped out rear end surrounded by spines. Black to reddish brown adults vary in size from 3/32 to 1/4 inch in length. Adults not fully mature, found under the bark, are usually yellowish to light brown. Fully-grown larvae and pupae are yellowish white and vary from 3/32 to 3/16 of an inch in length. Eggs are very small and white.



SIGNS OF ATTACK: Infested trees usually have numerous white to reddish brown pitch tubes, about the size of a wad of gum, on the bark. In trees of low vigor, pitch tubes may be lacking and the earliest signs will be reddish bark crevices at the tree's base.



HABITS: Adult beetles are attracted to weakened trees and chew round holes through the outer bark into the cambium layer. "Y" or "H" shaped egg tunnels are in the soft inner bark parallel with the grain of the wood, and generally free of boring dust. The distinct gallery pattern is used for identification purposes even when larvae and adults are absent. Eggs are laid singularly in small egg niches cut along the main tunnel. Larvae hatch and feed in generally distinct lines. Larvae feeding tunnels are usually filled with boring dust. Larvae mature, pupate and transform to adults in 25 to 40 days, depending on the temperature. Emerging adults may or may not attack nearby trees.

CONTROL: Predators, parasites, diseases and starvation take a toll on Ips beetles, but usually not until the tree is beyond saving. These factors, changes in weather conditions and proper harvesting practices can reduce Ips attacks and timber losses. Salvage cutting and good forest management are the most practical control measures.

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