

Twig Beetles

Attack small diameters and can kill trees

Name and Description—*Pityophthorus* spp., *P. confertus* Swaine, *P. confinis* LeConte, *P. pseudotsugae* Swaine, *Pityogenes* spp., *P. knechteli* (Swaine), *P. carinulatus* (LeConte) [Coleoptera: Curculionidae: Scolytinae]

Twig beetles are a large group of difficult to identify tiny bark beetles in several genera. Adult beetles are light brown to almost black and less than 1/10 inch (<2.5 mm) long. Twig beetles in the genus *Pityogenes* have posterior spines, and those in the genus *Pityophthorus* have a smooth posterior. Most go unnoticed, feeding in shaded branches, weakened trees, newly felled small trees, or broken limbs. When trees are weakened by drought or disease, some species of twig beetles can kill trees by attacking the bole and/or by killing all the large branches. Tiny holes, small piles of orange-colored boring dust, and, occasionally, pitch tubes mark the beetles' entrances into the tree (fig. 1). Star-shaped galleries score the sapwood and inner bark (fig. 2).

Hosts—Hosts vary with twig beetle species. Pines and Douglas-fir are more affected than spruce and true firs.

Life Cycle—Life cycles vary by species and have not been well-studied. Amman and others (ref. 1) reported that *P. confertus* has only two larval instars and can complete development in eight weeks. Koch (ref. 3) reported one to two generations for twig beetles in lodgepole pine, and Furniss and Carolin (ref. 2) reported two or more generations per year, varying with species and locality. All twig beetles are polygynous, and female egg galleries radiate out from a central nuptial chamber just below the bark. Eggs are deposited in individual niches, and larvae mine away from the egg gallery in irregular patterns. Pupation occurs in the cambium region, and young adults emerge from individual exit holes.

Damage—Twig beetles are generally innocuous on healthy trees but can cause top-kill and tree mortality of drought-stressed or diseased trees. Populations of twig beetles can build in slash from activities like spacing and pruning and then can move into and kill small trees. Similarly, large populations of twig beetles can develop in the tops and branches of trees attacked by other bark beetles. The twig beetle, *P. knechteli*, has caused notable mortality in young lodgepole pines in Colorado in association with



Figure 1. Twig beetle frass at entrance holes in lodgepole pine; twig beetle activity is associated with a mountain pine beetle outbreak. Photo: Robert Cain, USDA Forest Service.



Figure 2. Twig beetle gallery on lodgepole pine. Photo: L. Machaughan, British Columbia Ministry of Forests, Kamloops Forest Region.

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mountain pine beetle epidemics (fig. 3). Twig beetles may also create habitat for endemic mountain pine beetle populations by attacking the upper portions of small-diameter suppressed or diseased trees. This allows mountain pine beetle to attack the basal foot or two of the tree trunk.

Management—Management techniques that maintain trees and stands in a healthy condition are probably the best defense against twig beetles. Strategies suggested for pinyon twig beetle may also be effective for other twig beetles.



Figure 3. Twig beetles contribute to mortality detected in younger lodgepole pine stands adjacent to mature stands killed by mountain pine beetle. *Photo: Brian Howell, USDA Forest Service.*

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1. Amman, A.G.; Amman, S.L.; Amman, G.D. 1974. Development of *Pityophthorus convertus*. *Environmental Entomology* 3(3):562-563.
 2. Furniss, R.L.; Carolin, V.M. 1977. *Western forest insects*. Misc. Publ. 1339. Washington, DC: U.S. Department of Agriculture, Forest Service. 654 p.
 3. Koch, P. 1996. *Lodgepole pine in North America*. Volume 1. Madison, WI: Forest Products Society. 343 p.