

# Carpenterworm

## Sapstaining on bark of hardwoods and frass at base of tree

**Name and Description**—*Prionoxystus robiniae* (Peck) [Lepidoptera: Cossidae]

The carpenterworm is widely distributed in the United States and southern Canada where it breeds in a variety of hardwoods. In Colorado, the insect is most common in shelterbelt settings in the eastern portion of the state. The adult is a large, stout-bodied moth with mottled forewings (fig. 1). The female is of lighter coloration than the male and has a wingspan of about 3 inches (7.6 cm). Full-grown larvae are greenish white with a shiny, dark brown head, approximately 2-3 inches (5.0-7.6 cm) long, and they have very few, simple hairs on their surface (fig. 2).

**Hosts**—Hosts include oak, elm, maple, willow, cottonwood, black locust, boxelder, sycamore, and ash, but the insect exhibits regional host preferences. In the Rocky Mountain Region, poplars are the major hosts in the mountain areas and green ash and elms are the major hosts in the Great Plains.

**Life Cycle**—Carpenterworms begin to appear in May in the Kansas and Nebraska and in June or early July in colder regions. The female deposits eggs in groups in bark crevices near wounds or under vines, lichens, or moss. Young larvae bore directly into the inner bark or enter it through openings and then bore directly into the wood. Larval development may require 1-3 or 4 years, depending on latitude. The larva maintains an open tunnel to the exterior, through which it expels boring dust (fig. 3). Mature larvae pupate near the tunnel opening. The pupa wriggles to the mouth of the tunnel and continues until its head and thorax are protruding from the tree. Even after the adult moth has departed the tree, the pupal case usually remains in place, sticking out of the opening.

**Damage**—The earliest sign of attack by carpenterworms are sap spots and fine frass mixed with the sap. Carpenterworms tunnel in the sapwood and heartwood of trunks and branches of cottonwoods. Carpenterworms seldom kill trees outright, although heavily riddled small trees may be broken off by the wind (fig. 4). Open-grown trees, or trees growing on poor sites with dry, shallow soils such as dry ridgetops or ridge slopes, are especially subject to attack and damage. Wounds, associate with the tunnel opening, usually heal in 1-2 years, leaving oval to irregular bark scars that remain as evidence of attack for 10-20 years.



Figure 1. Carpenterworm adult. Photo: James Solomon, USDA Forest Service, Bugwood.org.



Figure 2. Carpenterworm larva. Photo: William H. Hoffard, USDA Forest Service, Bugwood.org.



Figure 3. Carpenterworm tunnel and exit hole. Photo: James Solomon, USDA Forest Service, Bugwood.org.



Figure 4. Carpenterworm damage to wood of host tree. Photo: University of Idaho.

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**Management**—This insect mainly attracted attention due to its impact on shade, ornamental, and windbreak trees, but loss of oak timber value may also be significant. Natural enemies suppress the carpenterworm but do not keep damage at acceptable levels. Woodpeckers are able to excavate larvae from galleries, and many birds feed on the adults. Cultural practices that promote tree vigor, prevent bark injuries, and remove brood trees help to minimize damage. Trunk-applied insecticides timed with the use of sex attractants to correspond with egg hatch are effective in preventing infestation.

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1. Solomon, J.D. 1995. Guide to insect borers in North American broadleaf trees and shrubs. Agricultural Handbook 706. Washington, DC: U.S. Department of Agriculture, Forest Service. 747 p. Online: <http://www.forestpests.org/borers>.

