

Linden borer

C. A. JOHNSON and R. C. WILLIAMSON

The linden borer (*Saperda vestita* Say) is a native insect found throughout northeastern North America. This pest belongs to the long-horned beetle family, a group of beetles with antennae that are as long as or longer than their bodies. The larval stage of the insect is particularly destructive. Feeding just below the bark of the tree, the large white borers cut off the flow of nutrients and water between roots and leaves. Trees that are already weakened or damaged are more susceptible to attack, although even apparently healthy trees will be attacked. The linden borer is a serious pest of basswood and linden.



The waxy white larvae burrow beneath the bark, cutting off the flow of nutrients and water.

Symptoms

Early signs of borer damage are subtle and may easily be overlooked. The bark bulges out over areas where borers are feeding; on older trees, it may crack. The leaves of infested trees will be less abundant and smaller than normal, especially in the upper crown. As borer feeding intensifies, branches will begin to die back beginning at the top of the tree.



The adult female beetle (left) is typically larger than the male.

Extensive feeding damage often causes rapid tree decline and death. Larger trees often show no symptoms until about 2–5 years after they're first infested and tend to die slowly. Trees smaller than about 4 inches in diameter may show symptoms the year they're infested and often break off at ground level during strong winds.

Life cycle

Adult linden borers are olive-green beetles with three distinct black spots on each wing cover. They are approximately $\frac{1}{2}$ – $\frac{3}{4}$ inch long and have long, segmented antennae. The adults feed on leaf petioles, leaf veins, and the bark of new shoots. Feeding damage by adults is minor compared to that caused by the larvae.

Between June and August, adult females lay eggs near the base of the tree or in lower branches in small



Round exit holes ($\frac{1}{4}$ – $\frac{3}{8}$ inch diameter) chewed through the bark by adult beetles.

holes in the bark. The eggs hatch a few weeks later and the larvae begin boring (chewing) their way into the tree to feed.

The creamy white, legless larvae grow to about 1¼ inches long. As they feed, the larvae create large, broad irregular mines etched into the sapwood surface. These mines are typically packed with frass (sawdust with excrement). At the egg-laying site, frass may be pushed from the hole. The frass eventually breaks off, collecting in small piles at the base of the tree.

Linden borers overwinter as larvae within their feeding galleries. In the spring, they pupate. Adult beetles emerge beginning in late May continuing through September. They chew round exit holes through the bark that are ¼–¾ inch in diameter.

The complete life cycle of the linden borer is not fully understood. It's possible that each generation lives 2–3 years.

Control

Biological

Published literature suggests that certain species of native braconid wasp parasites attack linden borer; however, it is unclear what level of control they provide. Both woodpeckers and sapsuckers are also known to occasionally feed on linden borer larvae.

Cultural

Because the linden borer appears to prefer stressed or damaged trees, maintaining tree health and vigor is an important preventative strategy. Proper fertility and irrigation can minimize potential infestations and subsequent damage.

It's important to remove and destroy dead and dying trees to prevent further spread of the linden borer. These trees may serve as a source of large numbers of borers, which can attack nearby trees. Heavily infested trees should be cut and burned before adults emerge in summer.

Chemical

Currently, only permethrin and bifenthrin (Onyx) are suggested for management of the linden borer. Either product should be applied as a bark spray application to lower branches and trunks before adults emerge in late May. Follow label directions carefully for season-long control. Bark sprays do not control larvae already feeding within trees; only newly hatched larvae on the surface will be affected.

References to products in this publication are for your convenience and are not an endorsement of one product over other similar products. You are responsible for using chemicals according to the manufacturer's current label directions. Follow directions exactly to protect the environment and people from chemical exposure.



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Authors: C.A. Johnson is research assistant of entomology, University of Wisconsin-Madison; R.C. Williamson is assistant professor of entomology and holds a joint appointment with the University of Wisconsin-Madison and University of Wisconsin-Extension. Produced by Cooperative Extension Publications, University of Wisconsin-Extension.

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