

## Borers

**Borers tunnel through cambium and sometimes cause serious damage to the wood in the tree as well.**

- Emerald ash borer
- Bronze birch borer
- Red oak borer
- Locust borer
- Twolined chestnut borer

# Emerald ash borer



The emerald ash borer feeds only on ash trees. Larvae make galleries in the inner bark and outer sapwood, girdling and often killing the tree within two to three years of infestation.

Adult beetles are about 1/4" to 1/2" long. The body is brassy-green, with darker, metallic, emerald green wing covers. Females begin depositing eggs on bark in May or June. When the eggs hatch the larvae chew through the bark into the cambium, feeding and producing S-shaped galleries packed with fine frass. Adults emerge in Spring through D-shaped exit holes that are 3 to 4 mm in diameter (about the diameter of a cell phone charging cord).



*Howard Russell, Michigan State University, Bugwood.org.*



*Pennsylvania Department of Conservation and Natural Resources—Forestry Archive, Bugwood.org.*

## **Emerald ash borer, continued**



***D-shaped exit hole.***

*Pennsylvania Department of Conservation and Natural Resources—Forestry Archive, Bugwood.org*



***Damage to cambium.***

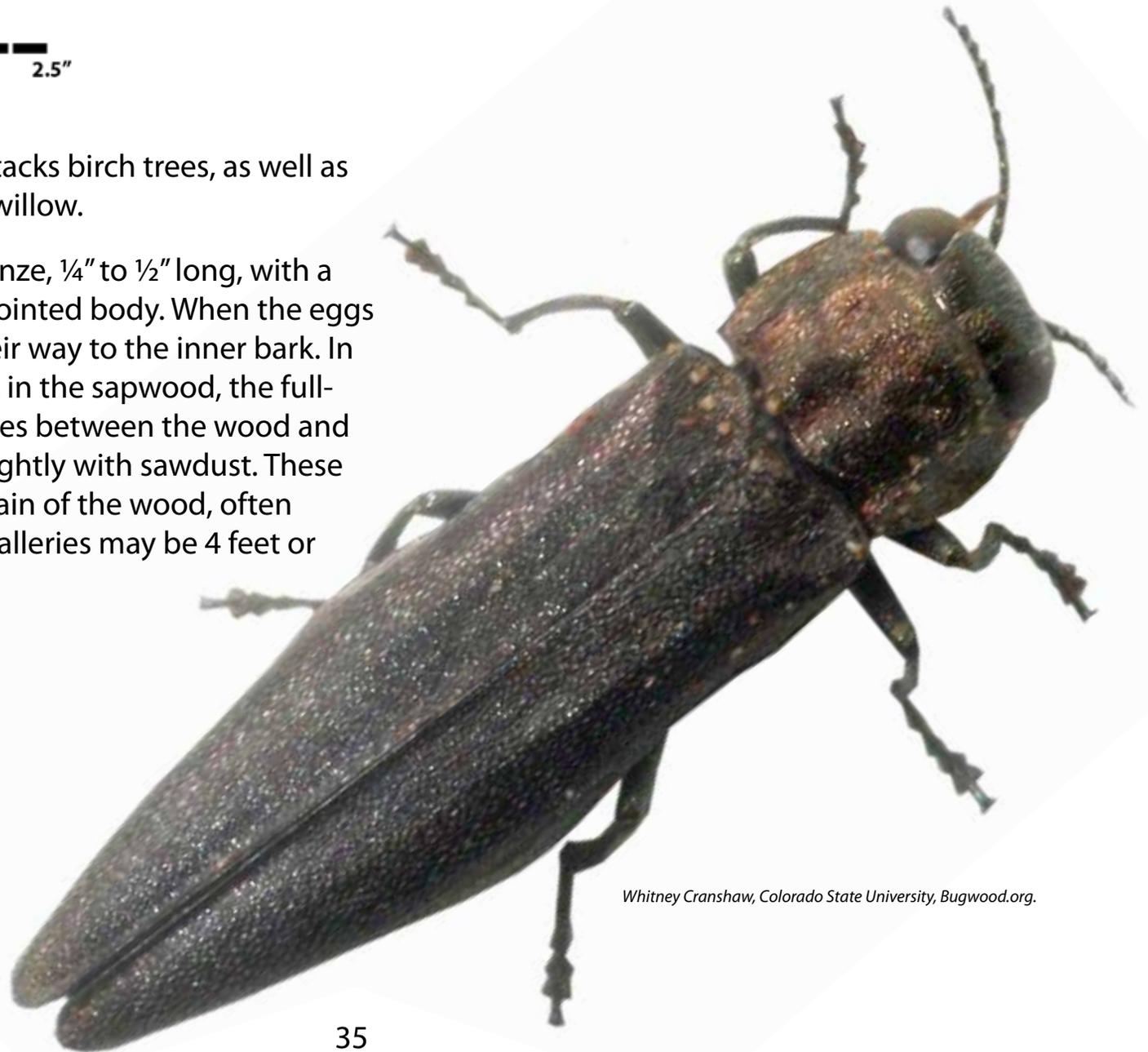
*Art Wagner, USDA APHIS PPQ, Bugwood.org.*

## Bronze birch borer



The bronze birch borer attacks birch trees, as well as poplar, cottonwood, and willow.

The beetle is greenish bronze,  $\frac{1}{4}$ " to  $\frac{1}{2}$ " long, with a blunt head and slender, pointed body. When the eggs hatch, tiny larvae bore their way to the inner bark. In the fall, after forming cells in the sapwood, the full-grown larvae make galleries between the wood and the bark and pack them tightly with sawdust. These galleries run across the grain of the wood, often girdling the trees. Some galleries may be 4 feet or more in length.



*Whitney Cranshaw, Colorado State University, Bugwood.org.*

## Bronze birch borer, continued



### ***Larva in cambium layer.***

*Whitney Cranshaw, Colorado State University, Bugwood.org.*

### ***Callus formation in response to feeding of the larvae in the cambium region creates noticeable ridges.***

*Daniel Herms, Ohio State University, Bugwood.org.*

## Red oak borer



Adult red oak borers are longhorned beetles. Their antennae are very long, almost doubling their 1" body length. Their rust brown color blends well with the bark surface, and they are rarely seen.

The first signs of attack resemble the fine frass produced by ambrosia beetles. As the larvae bore into the tree, sap begins to extrude from the attack points. Within the tree, tunnel diameters gradually increase from pinhole size to about ½" in diameter as larvae grow. Tunnels are 6" to 10" long and are often accompanied by discolored and decaying wood. They are usually within 6" of the pith.

*Gerald J. Lenhard, Bugwood.org.*



## Red oak borer, continued



**Damage to red oak timber.**

*Herbert A. "Joe" Pase III, Texas Forest Service, Bugwood.org.*

***The mint is in the picture for scale so you can see how large the borer entrance/exit holes are (one on the right, one on the left). Notice the streaks of dried sap.***

*Timothy Haley, USDA Forest Service, Bugwood.org.*

# Locust borer



The only host plant for the locust borer is black locust, and the locust borer is its most serious insect pest.

The adult is an attractive longhorned beetle, often seen feeding on goldenrod in late summer and early fall. It has bright yellow bands across a jet black thorax and wing covers, and the third band on the wings forms a "W" design. Legs are reddish and long. Not counting the antennae, the locust borer is about  $\frac{3}{4}$ " long.

The first sign of attack occurs in the spring, around the time of bud burst. Oozing sap at the point where the larva bores into the tree causes a wet spot on the bark. Eventually, the larva begin to tunnel into the wood, pushing granular frass out of the entry hole. Wood infested by locust borers can be virtually "honeycombed" by the larvae.



**Damaged black locust timber.**

*James Solomon, USDA Forest Service, Bugwood.org.*

*Clemson University—USDA Cooperative Extension Slide Series, Bugwood.org.*

## Twolined chestnut borer



The twolined chestnut borer attacks red and white oaks throughout the East.

Adult beetles are about  $\frac{1}{5}$ " to  $\frac{1}{2}$ " long, slender, and black, with a light yellowish stripe on each wing cover. Larvae excavate winding mines in the inner bark and outer sapwood of the trunk and large branches, frequently girdling the tree. Attacks usually begin in the upper tree canopy and extend downward as the tree continues to weaken. D-shaped adult emergence holes are evidence of infestation.



*Pennsylvania Department of Conservation and Natural Resources—Forestry Archive, Bugwood.org.*

## Twolined chestnut borer, continued



**Notice the two yellowish lines on the twolined chestnut borer's back.**

*Robert A. Haack, USDA Forest Service, Bugwood.org.*

**Larvae and cambium damage.**

*James Solomon, USDA Forest Service, Bugwood.org.*

