

Birch disorder: Bronze birch borer

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Bronze birch borer (*Agrilus anxius* Gory) is a serious pest of birch trees in the Midwest. It can severely injure or kill most birch species; European white birch varieties are particularly susceptible.

Like most wood-boring beetles, the bronze birch borer is really a secondary problem. It usually attacks trees under stress or in a weakened condition because of drought, disease, nutrient deficiency, construction injury, or excessive exposure to the sun. Planting birch in a poor location is the most common reason for problems with bronze birch borer in Wisconsin. Vigorous healthy trees, planted in favorable surroundings are less attractive to the borer and more likely to survive an attack.

Symptoms

The usual first sign of attack is a thinning or dieback of branches in the upper third of the tree. Leaves on infested branches may be unusually small or may show browning along the edges in May or June. Larvae cause the damage by feeding under the bark and girdling the branches. Girdling prevents movement of food and water to tissues above the attack site. Extensive feeding may kill the branch by July or August.

Over time, the attacks progress downward to lower branches and the trunk. Typically, borers kill trees in 3–4 years. Trees planted in very poor sites or planted in borer-infested areas may die in 1 year.

Life cycle

Bronze birch borers belong to a group of beetles called the metallic wood borers because of the adult beetles' iridescent color. They spend the winter as larvae in small cells just beneath the bark. Full-grown larvae are ½–1 inch long, white, and slender with dark brown jaws. They have a slightly flattened, enlarged area directly behind the head, and two brownish projections on the last segment of the body.

Larvae pupate in spring and adults emerge during May, June, and July. The adults chew their way through the bark, leaving characteristic ⅛-inch, D-shaped exit holes, which are useful in identifying birch borer problems. Adults are slender, greenish- to bluish-black metallic

beetles. They are ⅜ inch long with blunt heads and pointed bodies. Adult females live for 3 weeks and deposit eggs under loose bark or in cracks or crevices on the trunk.

Eggs hatch within 2 weeks, and larvae bore into the tree and feed on the inner and outer wood layers. Larvae usually reach maturity by late fall. However, predicting wood borers' exact stage of growth at any given time of year is not possible; factors like tree vigor and weather conditions make it possible to find all larval stages during winter.



Adult bronze birch borer beetle.



White birch severely weakened by bronze birch borer infestation.



Typical D-shaped exit holes.

Control

Cultural

Among the white birches, native stock appears less susceptible than many introduced cultivars. But native trees often have less desirable growing characteristics. *Betula platyphylla* var. *japonica* 'Whitespire' is the most borer-resistant, white-barked birch in Wisconsin. The Heritage river birch (*Betula nigra* 'Heritage') has a pale salmon-colored bark and has been relatively free from borer attacks.

Selecting the proper site is very important. Avoid exposed terraces and locations subject to severe soil compaction or drought conditions. Planting a white birch by itself in a sunny, southerly exposed lawn will surely lead to water or temperature stress problems and ultimately to borer attack. Planting trees in semi-shaded, moist sites leads to fewer problems.

Try to keep trees healthy. Because birches have a shallow root system, water them during droughty periods or if they are growing on light soil. It also helps to keep the soil around the birch cool by planting low-growing bushes or shrubs. Fertilizer helps trees withstand light infestations and fight off borer attacks.

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Bronze birch borers are often an ongoing problem. Borer damage means environmental stresses or other factors have made trees susceptible to attack in the past. Therefore, future attacks are possible.

If more than a third of the tree has died back, saving the tree will be difficult. Commercial arborists have rescued some infested trees using a combination of tactics. Consultation with an arborist may be helpful.

To prevent the breeding and spread of adult bronze birch borers, remove or destroy dead and dying trees. Use all birch firewood before the next spring.

Chemical

Lightly infested trees often return to full health with a regular preventive insecticide program. Two insecticides are available to homeowners and professional applicators: permethrin and imidacloprid.

Permethrin acts as a chemical barrier that kills young larvae as they try to tunnel into the bark. It must be in place before the adults lay eggs. Because eggs are laid throughout the late spring and summer, spray three times—about May 20, June 15, and July 15. Infested branches and trunk must be thoroughly sprayed. You may need a commercial arborist to help treat large trees. These sprays do not

kill larvae already tunneling beneath the bark, but they prevent succeeding generations from infesting the tree. During this period, fertilize and water trees as needed.

Imidacloprid (Merit) is a systemic insecticide that can be applied as a soil injection or as a soil drench near the base of the trunk. Treatment timing depends on the size of the tree. For tree trunks larger than 4 inches in diameter at chest height, treatments must be made in the fall (late September until early November). Smaller trees can be treated in the spring. Treat only once per year.

Injecting chemicals such as Bidrin directly into trees is not recommended because the process creates new wounds and offers limited control (less than 50%).

Heavy infestations of other insects, particularly birch leafminer, reduce tree vigor and increase chances of successful borer attack. Extension publication *Birch Leafminer* (A2117) explains how to manage this problem.

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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