Flatheaded Borers On Hardwoods

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Coleoptera Order – beetles Buprestidae Family – flatheaded borers
Common species: *Chrysobothris adelpha, Chrysobothris azurea, Chrysobothris femorata, Chrysobothris sexsignata, Chrysobothris veridiceps*

Flatheaded borers are some of the most common of wood borer in the United States. They occur throughout the United States and Canada. There are more than 150 species and varieties of flatheaded borers east of the Mississippi. Please seek the assistance of professional entomologists for proper identification and control recommendations for this pest.

Tree Species Impacted

As a group, flatheaded borers attack a wide and diverse set of tree species. Some of the common hardwood trees attacked include, (but are not limited to): sycamore, soft maple, boxelder, walnut, white and black oaks, yellow poplar, elm, beech, chestnut, hickory, hackberry, mountain-ash, serviceberry, hawthorn, redbud, basswood, buckeye, persimmon, apple, pear, peach, cherry, and willow. Young, thin-barked trees are most susceptible to attack.

Tree Susceptibility

Newly planted / moved trees, trees newly exposed to full sunlight, trees highly stressed by changes in the environment (i.e. drought, flood, soil compaction, etc.), downed logs, newly cut stumps, and declining and dead branches in trees can all be susceptible to attack. Excavated tunnels can be several inches long, especially in young trees, and cause tree injury and death. Larger trees are often seriously injured through the loss of large patches of living materials and bark over mined areas.

Generally, flatheaded borers come into and consume trees that are having other negative environmental stress problems. Borer injury to the trunk can open the tree to a number of bark-resident pathogens.

Tree Damage Symptoms:

White, bacteria and yeast-infected liquids can be seen oozing from localized areas on the bark surface over newly damaged locations. Bark eventually darkens, appears wet, and shiny. Little exterior frass or wood dust is evident except in bark cracks. Hot, sunny portions of the main stem and branches are favored for attack.. Excavated galleries are broad, irregular, and packed tightly with frass. The living phloem, cambium, and last annual ring of sapwood are consumed.

In young, thin-barked trees under stress, galleries can be long and winding, sometimes girdling the tree. Injured areas appear depressed or sunken with bark eventually splitting and falling away. In older, thick-barked trees, galleries are large round chambers just under the bark surface. The same wound may be enlarged by each successive generation. Pathogens that utilize borer injuries for entrance to the tree may be more of a health risk than the borer damage.

These borers attack trees which have been recently transplanted, environmentally stressed, or have sustained bark damage. Localized damage from heating and drying of bark (sun-scald or soil heat reflectance) are opportune sites for attack. Drought-stressed trees are especially vulnerable. The native forest harbors significant populations of borers. Plantings in wooded settings, along wooded roads, and near pockets of native forest

University of Georgia Daniel B. Warnell School of Forest Resources Extension publication FOR99-001
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would be susceptible to attack. Vigorous trees usually out-grow and over-grow injury areas. The impacts and problems with this pest tends to decline as tree diameter increases and the tree ages.

Example Pest Life Cycle

To assist in understanding pest life-stages, the most common flatheaded borer which attacks broad-leaved trees in Eastern North America will be reviewed. This species' scientific name is Chrysobothris femorata , the flatheaded apple tree borer. Maple, apple and yellow poplar are preferred hosts, but it will attack a wide diversity of broad-leaved trees. This borer shares many general behavior and appearance traits with other common flatheaded borers which attack hardwoods. This species serves as a good example for understanding borer-associated tree problems.

ADULTS: The adult of this species is oval, flatten, dark green, bronze-colored on its upper-side. Its lower side is bright brassy-colored copper-bronze. Underneath the wing covers, the color is a metallic turquoise. The adult is 1/4 to 2/3 inch (7 - 16 mm) long. The wing covers are marked with two pale, gray, wavy, depressed light bands.

Adult beetles appear from March until November, being most abundant in May and June. These beetles like sunlight and favor the sunny side of tree trunks as well as trees in full sun. The adults run and fly rapidly if disturbed. The adult females probe the bark for egg-laying spots. Each female is fertilized within a week and lives approximately one month. The adults can be found throughout the summer and feed on tree foliage. The adults can occasionally cause serious tree foliage defoliation.

EGGS: Adult females lay about 100 eggs deposited singly. Eggs are firmly attached under bark scales or in bark crevices on the main stem or larger branches. The eggs are light yellow, wrinkled, flat, and about 1/20 inch (1.5mm) in diameter. Eggs hatch in 1-2 weeks.

LARVAE: The young larvae chew through the bark and feed on the living phloem and outer sapwood. Larvae are whitish-yellow and legless, with several front body segments which are extra wide and flat. These enlarged and flattened segments are part of the animal's thorax, but appear to be a large flat head, thus the common name. Depending upon the health of the tree, larvae can develop slowly and die in vigorous trees, or develop quickly in trees which are badly stressed. The weaker and less-vigorous the tree, the more damage (longer and larger feeding galleries) produced by the larvae. Full grown larvae are about 1 inch (25 mm) long.

When fully developed, larvae are ready to pupate. They tunnel radially deeper into the sapwood and excavate a pupal chamber where they overwinter, then pupate for 1-2 weeks the following spring and early summer. The adults can overwinter in the pupal cells within the wood. Adults emerge by chewing their way out through the bark, leaving an oval hole. There is usually one generation per year, although three years per generation is not unusual.

Control Strategies

There are several natural parasites and predators that keep this insect under control. Usually it is most effective to manage host health rather than control pest populations, especially where wooded sites abound.

Tree wraps, tree shade screens, white trunk paint, and some types of tree growth shelter for new trees might be used for minimizing attack success. Pruning or other types of bark injuries should be avoided when the adults are present and active. Sanitation of fallen and standing dead-wood, and removal of any pruned materials, is critical.

Chemical control for trees already attacked is possible but difficult. It is difficult to deliver a large enough dose to the site of feeding to kill the larvae. Chemical control for preventing further attacks is possible and should be applied over the bark early enough in the year to prevent successful adult egg-laying and new larvae penetration.

Reference Literature:

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