

EMERALD ASH BORER

(*Agrilus planipennis*)

The emerald ash borer is an exotic Asian insect pest whose presence has been confirmed in Michigan, Ohio, Maryland and Ontario, Canada. Infested trees have been found in urban areas, woodlots and nursery stock. This borer has killed millions of trees, from small, young specimens to established, mature specimens.

HOSTS: In the United States, the borer has been detected only on ash tree species, including black ash (*Fraxinus nigra*), blue ash (*F. quadrangulata*), green ash (*F. pennsylvanica*) and white ash (*F. americana*).

IDENTIFICATION AND LIFE CYCLE: The adult beetle is elongate, metallic green and $\frac{3}{8}$ to $\frac{5}{8}$ inches long (Figure 1). In Michigan and Ohio, adults emerge from early to mid-June until early August, feeding on a small amount of foliage (this causes jagged leaf edges). Females lay one to two eggs deep into bark crevices and lower main branches. After eggs hatch, the larvae tunnel through the bark and feed on the phloem and outer sapwood for several months. The mature larvae are cream colored and 1 to 1 $\frac{1}{4}$ inches long (Figure 2). Fully-grown larvae overwinter under the bark or sometimes in pupal cells made of outer sapwood. There is one generation per year.

SYMPTOMS AND SIGNS: Initial symptoms include yellowing and/or thinning of the foliage and longitudinal bark splitting (Figure 3). The entire canopy may die back, or symptoms may be restricted to certain branches. Declining trees may sprout epicormic shoots at the tree base or on branches. Removal of bark reveals tissue callusing and frass-filled, serpentine tunneling. The S-shaped larval feeding tunnels are about $\frac{1}{4}$ inch in diameter. Tunneling may occur from upper branches to the trunk and root flare. Adults exit from the trunk and branches in a characteristic D-shaped exit hole about $\frac{1}{8}$ inch in diameter. The intense tunneling disrupts water and nutrient flow, causing trees to lose between 30 and 50 percent of their canopies during the first year of infestation. Trees often die within two years following infestation.

MANAGEMENT: Removal and chipping or incineration of infested wood is recommended. Stumps should be ground out. Quarantines have been set up to prevent movement of untreated ash lumber, firewood or nursery stock from the affected areas. Those who are concerned about protecting valuable trees should contact a Davey arborist.



Figure 1. Adult borers grow to $\frac{5}{8}$ " in length.



Figure 2. Larva (Photo credit: Michigan State University).



Figure 3. Bark splitting.