

Emerald Ash Borer



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

The emerald ash borer is an exotic Asian insect pest now occurring in both the United States and 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 North America, the borer has been detected on ash tree species, including black ash (*Fraxinus nigra*), blue ash (*F. quadrangulata*), green ash (*F. pennsylvanica*) and white ash (*F. americana*). In the U.S. there has been infestation recorded on the white fringe tree.



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

IDENTIFICATION AND LIFE CYCLE:

The adult beetle is elongate, metallic green and $\frac{3}{8}$ " to $\frac{5}{8}$ " long (Figure 1). Adults emerge from late May until early August, feeding on a small amount of foliage (this causes jagged leaf edges). Females lay 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 $\frac{1}{4}$ " 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, but some larvae can remain in the tree for two years.

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 $\frac{1}{4}$ " 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 $\frac{1}{8}$ " in diameter. The intense tunneling disrupts water and nutrient flow, causing trees to lose between 30% and 50% of their canopies during the first year of infestation. Trees often die within two years following infestation.



Figure 3
Bark splitting.

MANAGEMENT:

Ash trees that are not candidates for preservation may become hazardous if infested with EAB and should be removed if possible. A number of effective products and delivery systems exist for EAB management. For tree preservation consult your technical advisor for suitable treatment program. If quarantines are in place be sure compliance regulations are followed.