

Emerald Ash Borer: Potential Impact on Iowa

A new pest of trees from Asia was discovered in July 2002 feeding on ash trees (*Fraxinus* spp.) around the Detroit area of SE Michigan. It was identified as *Agrilus planipennis* or commonly called the "Emerald Ash Borer".

The larvae of emerald ash borer or EAB feed in the cambium between the bark and wood, producing galleries that eventually girdle and kill branches and entire ash trees.

Evidence suggests that EAB has been established in Michigan for at least 6 to 10 years. More than 3000 square miles in SE Michigan around Detroit metro area are infested and more than 6 million ash trees are dead or dying from EAB. New populations of EAB have been found in several counties of the lower peninsula of Michigan, Windsor, Ontario, in scattered locations in Ohio, Indiana, and recently in nursery stock in Maryland and Virginia.

Emerald ash borer is native to Asia and is known to occur in China, Korea, Japan and Mongolia, eastern Russian, and Taiwan. In North America, EAB has been found feeding only on green ash (*Fraxinus pennsylvanica*), white ash (*Fraxinus americana*) and black ash (*Fraxinus nigra*). These ash species are common in native Iowa forests and are a predominant species in the urban landscape.

This insect is a serious threat to the native forest and urban ash tree population in Iowa.

IDENTIFICATION

EAB adult beetles are generally larger and a brighter green than the native species of *Agrilus*. EAB adults are slender (1/16 inch wide) and are approximately 1/4 to 1/2 inch in length. EAB male beetles are smaller than females. Color varies but beetles are a unique bronze to golden green overall, with darker, metallic emerald green wing covers.



Emerald ash borer adult. Note the bronze head and thoracic area and the emerald green wing covers.



Emerald Ash Borer larvae are a white to cream colored 10 segmented flat worm that reach 2/3 to 1 1/4 inch in length.

EMERALD ASH BORER BIOLOGY

EAB is thought to have a one year life cycle with adult beetles beginning emergence in early June and living for about 3 weeks; field records indicate adults are present into mid-August. EAB beetles are active during the day, particularly when conditions are warm and sunny. Most beetles remain in protected locations in bark crevices or on foliage during rain or temperatures above 90 degrees F. Adults feed on ash leaves producing small, irregularly-shaped notches along the leaf margins.

EAB females can mate several times. Approximately 60-80 eggs are deposited individually in bark crevices on the trunk and branches. After 7 to 10 days, EAB larvae chew through the bark and into the cambial region. Larvae feed on phloem and the outer sapwood for several weeks. The S-shaped feeding galleries wind back



Characteristic S-shaped galleries made by larvae are apparent when the bark of a host tree is removed.



D-shaped emergence holes on the trunk of host trees. Native borers infesting ash produce round-shaped emergence holes.

and forth, becoming progressively wider as the larva grows. Galleries are packed with fine, sawdust-like frass.

Feeding is completed in the fall and the larvae overwinter in shallow chambers in the outer sapwood. Pupation begins in late April into May. Adult EAB beetles emerge head first through a D-shaped exit hole that is 1/8 inch in diameter.

EMERALD ASH BORER DAMAGE

Damage by EAB populations typically go undetected until ash trees show symptoms.

Larval feeding interrupts the transport of nutrients and water within the tree during the growing season. Tree leaves wilt and the canopy thins as branches die. Infested trees lose more than 30% of the canopy after 2 years of infestation and trees often die after 3-4 years of EAB activity.

