

By now I assume everyone is aware of the Emerald Ash Borer (EAB). This small member of the beetle family is an introduced (non-native) pest that has killed tens of millions of native and landscape ash trees in eastern North America since it was discovered in SE Michigan in 2002. If you have heard of this pest, you may well have heard about it *ad nauseum* and are wondering what more is there to say? Plenty! On July 22nd, 2011 this pest became a reality for us in North Oaks when infected ash trees were reported in the vicinity of County I and Schutta Roads in Shoreview. This is approximately 2.5 miles from the northwestern border of the city of North Oaks! It is imperative that all residents of North Oaks be aware of and keep a lookout for this devastating insect.

The adult beetle is bullet shaped, dark, metallic emerald green in color, measuring approximately 1/2 of an inch in length and 1/16 of an inch in diameter (Fig. 1). EAB undergoes a multi-phase life cycle which generally encompasses one year (sometimes two years in colder climates such as MN). Adults are generally active from mid-June to mid-August. Females can mate multiple times and can lay from 60-90 eggs in their lifetime. Eggs are laid in bark crevices and take from 7-10 days to hatch. Upon hatching the larvae burrow into the nutrient conducting tissue of the tree (phloem) where they feed for several weeks. The white to cream colored larvae pass through four instar stages and ultimately range in size from 1 to 1.25" inch in length. The body is flattened with 10 bell shaped segments and a pair of brown pincers on the last segment (Fig. 2). Larval feeding results in a very characteristic S-shaped patterning under the bark (galleries) (Fig. 3). The larvae cease feeding in autumn and over-winter in a pre-pupal larval stage in the trees outer conductive tissue or bark. Pupation (transformation from larva to adult beetle) begins in late April or May with the adult beetles exiting the trees through characteristic D-shaped holes measuring about 1/8" in diameter (Fig. 4).

Larva feeding in the vascular tissue (tissue that conducts water up and nutrients down in the tree) disrupt movement of these vital nutrients resulting in wilting and yellowing of infested branches. As branches die-off, the tree becomes increasingly thin and sickly looking. Often the first sign of an EAB infested ash tree is the repeated visitation of woodpeckers feeding on the EAB larvae. Two to three years after the tree becomes infested with EAB another external sign of the infestation is a profusion of branches sprouting from the main trunk and primary branches of the tree (epicormic sprouting)(Fig. 5). Within 3-4 years after first becoming infested, the tree is usually dead. Currently ash is the only known host plant for EAB. All three of our native ashes, green, black and white ash are susceptible to EAB infestation.

EAB has posed a big problem due to the speed with which the insect has spread through eastern North America. While it was initially discovered in SE Michigan only in 2002, it has quickly been discovered infesting trees in 14 other states. This is not due to any physical prowess on the beetles' part; they are considered relatively weak flyers, capable of moving only about 1/2 mile per generation. The beetle 'spread' so quickly due to two factors. First, it is now estimated they had arrived in North America in packing crates from their native Asia (China, SE Russia, Korea, Japan) up to 12 years before discovery. Secondly, it has been documented that the beetles are traveling long distances in firewood moved by humans. It is most important that firewood is purchased from Minnesota Department of Agriculture certified sources or that firewood is burned where it was purchased and not moved. EAB is also a big problem due to the fact that ashes have no resistance to infestation. When EAB arrives, ash trees become infested *en mass*.

Finally, EAB is a big problem because ash trees are relatively brittle. Within two years after dying from an EAB infestation, the trees begin dropping large branches and the main trunk can topple shortly thereafter. These dead trees become a major liability for homeowners, municipalities and other public landowners. When thousands of trees begin dying simultaneously, removal becomes an economic and logistical nightmare. Planning for the arrival of this pest, which is a near-on certainty, needs to begin immediately.

The North Oaks Natural Resources Commission is currently working in conjunction with our City Forester Mark Rehder, consultants from the University of Minnesota, the MNDNR and neighboring municipalities to develop a comprehensive Emerald Ash Borer Preparedness Plan. When the plan is in a draft form it will be made available to the public for comment.



Figure 1. Mature EAB. University of Maryland Extension, Home and Garden Information Center.



Figure 2. EAB larvae. Emeraldashborer.



Figure 3. Characteristic S-shaped galleries under the bark of an EAB infested ash tree. Iowa State University Extension.



Figure 4. Characteristic D-shaped EAB exit hole on ash tree trunk. University of Illinois Extension.



Figure 5. Trunk sprouting (epicormic sprouting) on an EAB infested ash tree. University of Iowa Extension.