

Emerald Ash Borer, *Agrilus planipennis* Fairmaire (Coleoptera: Buprestidae)

INTRODUCTION: The emerald ash borer (EAB), *Agrilus planipennis* Fairmaire (Coleoptera: Buprestidae), is an exotic beetle discovered in southeastern Michigan in the summer of 2002. It probably arrived in the United States on solid wood packing material carried in cargo ships or airplanes originating in its native Asia. Since then it has spread to several surrounding states, where it has killed tens of millions of ash trees. It is slowly approaching the Southeast and may pose a threat to trees in Florida (Map 1, present and potential distribution). With the EAB on its way to the Southeast, the purpose of this alert is to educate our inspectors and the public of the potential threat and to be on the lookout should it ever become established here.

DIAGNOSIS: The EAB is a member of the beetle family Buprestidae, also known as metallic wood-borers. Adult EAB (Fig. 1) have a narrow body approximately 1/2 inch (7.5-13.5 mm) in length with a flat back and are bright green above with a purple abdomen under the wing covers. When disturbed adults fly readily to avoid capture and are often difficult to observe. In the Southeast, adult EAB differ from native metallic wood borers by their large size, narrow body, and bright green coloration. Compare Fig. 1 with Fig. 4, which shows several other beetles with which EAB may be confused. Larvae (Fig. 2) are flat-headed wood borers that can be found in serpentine galleries under the bark. These larvae are cream colored and dorsoventrally flattened with an enlarged prothorax.

HOSTS: The EAB attacks only ash trees (*Fraxinus* spp.), showing a preference for the green and black ash. There are four species of ash in Florida; white ash (*Fraxinus americana* L.), pop ash (*Fraxinus caroliniana* Mill.), green ash (*Fraxinus pennsylvanica* Marshall), and pumpkin ash (*Fraxinus profunda* (Bush)), which primarily occur throughout the northern half of the state. All Florida ash species are potential hosts for EAB (Map 2).



Figure 1. Dorsal and lateral views of adult emerald ash borer (DPI Photograph by Natasha Wright).



Figure 2. Emerald ash borer larva in its gallery under the bark of an ash tree (Photograph by David Cappaert, Michigan State University, Bugwood.org).



Figure 3. Emerald ash borer galleries and exit holes (Photograph by Toby Petrice, USDA Forest Service, Bugwood.org).

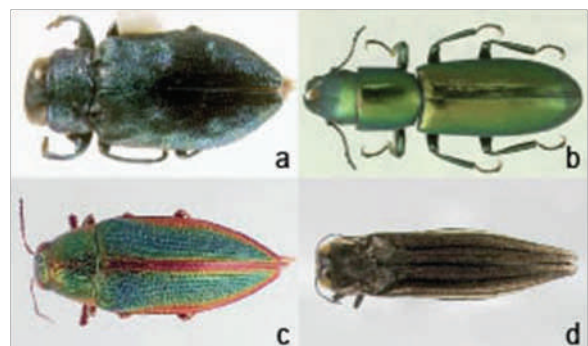


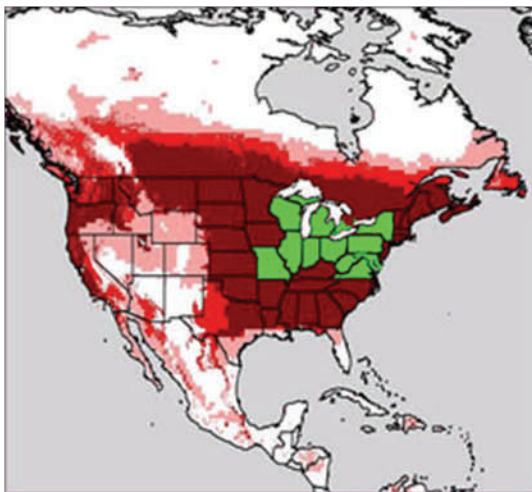
Figure 4. Florida beetles with which emerald ash borer could be confused: **a)** *Chrysobothris azurea* LeConte; **b)** *Temnoscheila virescens* (Fabricius); **c)** *Buprestis decora* (Fabricius); **d)** *Agrilus macer* LeConte.

Plant Damage: Adult beetles nibble on ash foliage, but cause little damage. Larvae feed on the inner bark of ash trees, disrupting the tree's ability to transport water and nutrients. Infested trees initially show canopy dieback. Extensive larval damage can lead to tree death.

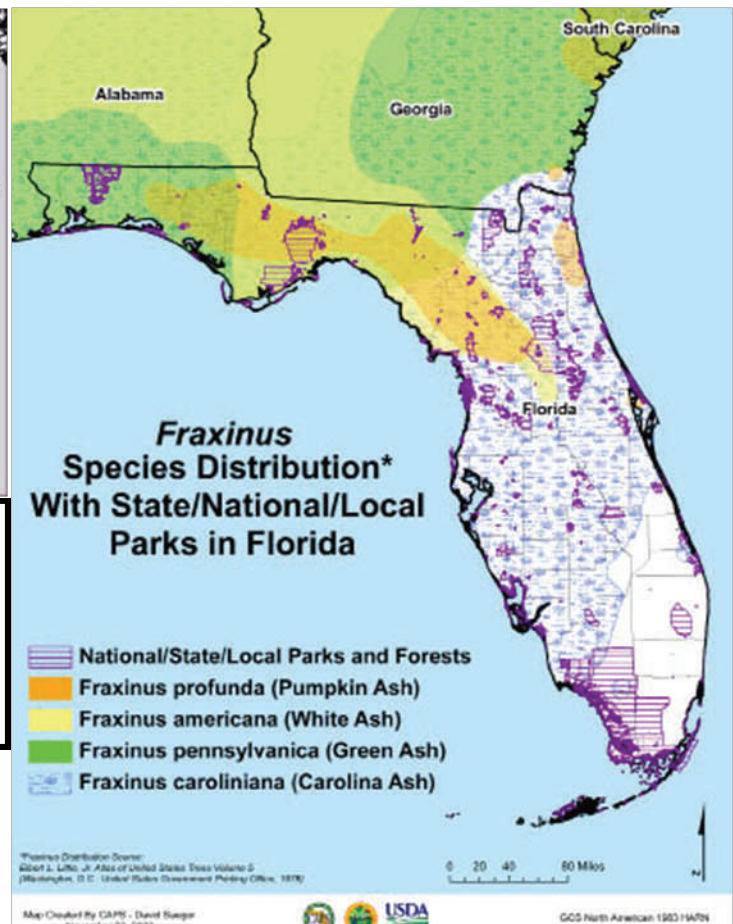
Range: By the end of 2008, EAB was established in Ontario, Michigan, Ohio, Indiana, Illinois, Missouri, Wisconsin, Pennsylvania, Maryland, West Virginia and Virginia (Map 1).

Survey: In the northeastern US, adult EAB are active in May and early June. If established in the Southeast, adult activity would probably be earlier in the spring. Adults are short lived, living about three weeks, and are active on sunny, warm days. Otherwise, adults may hide in crevices or other sheltered areas on host trees. For larvae, look for trees with signs of decline and canopy dieback. On trees with those symptoms, look for split bark, serpentine larval galleries, and D-shaped exit holes (Fig. 3). Look for larvae under the bark in the galleries. The life cycle of EAB is generally one year. In all cases, specimens are needed for confirmation of the presence of EAB.

Control: Control of any wood-boring insect, once established, is very difficult. The best cure is prevention. Moving firewood, nursery stock, and other ash wood materials in areas infested with emerald ash borer is regulated by the infested states and federal government. Florida is in the process of developing regulatory rules that will limit the movement of firewood and other unprocessed wood products into and within the state.



Map 1. Potential distribution of emerald ash borer (*Agrilus planipennis*) in North America in red, based on niche modeling by Daniel A. Kluza and Eduard Jendek (used with permission); present known distribution in green.



Map 2. Distribution of four species of ash trees in Florida. (Map prepared by David Saeger, CAPS)