Emerald Ash Borer Updates

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Mississippi's ash trees are living on borrowed time. Every day the emerald ash borer (EAB, Fig. 1) is not detected in Mississippi is a minor victory. Infestations in surrounding Tennessee (detected 2010 near Nashville), Arkansas (detected in 2014 near Hot Springs) and north-central Louisiana (2015) continue to expand, despite quarantines in those areas. Additional new states since our last update include New Jersey (2014), and 2016 has been a busy year with Texas, Nebraska, Delaware, and Oklahoma (2016) all confirmed with EAB infestations. Most frighteningly, EAB was confirmed in Calhoun county, Alabama in October 2016. Prior to 2014, the closest EAB infested areas were in Tennessee, Georgia, and the boot heel region of Missouri. EAB now has Mississippi surrounded, and it is likely

Figure 1: Adult emerald ash borer

only a matter of time before it finds its way here.

The EAB (*Agrilus planipennis*) is a metallic wood-infesting beetle (Order Coleoptera, Family Buprestidae) native to eastern Russia, northern China, Japan, and Korea. EAB was first detected in Michigan in 2002, but likely arrived and went unnoticed for at least ten years before being discovered. EAB was probably introduced via solid wood packing materials in cargo containers. Since arrival, it has spread across the eastern U.S.A and portions of Canada (Fig. 2).

The adult emerald ash borer is a metallic green insect about one-half inch long and

one-eighth inch wide making it hard to detect in the wild. Female EAB lay eggs on the bark of ash trees, which hatch into larvae that bore into the bark to the fluid-conducting vessels underneath. The larvae feed and develop, cutting off the flow of nutrients and, eventually killing the tree. EAB attacks and kills all species of North American true ash (genus *Fraxinus*), and tree death occurs three to five years following initial infestation.

To make matters worse, Professor Don Cipollini at Wright State University reported in 2015 that white fringetree (*Chionanthus*
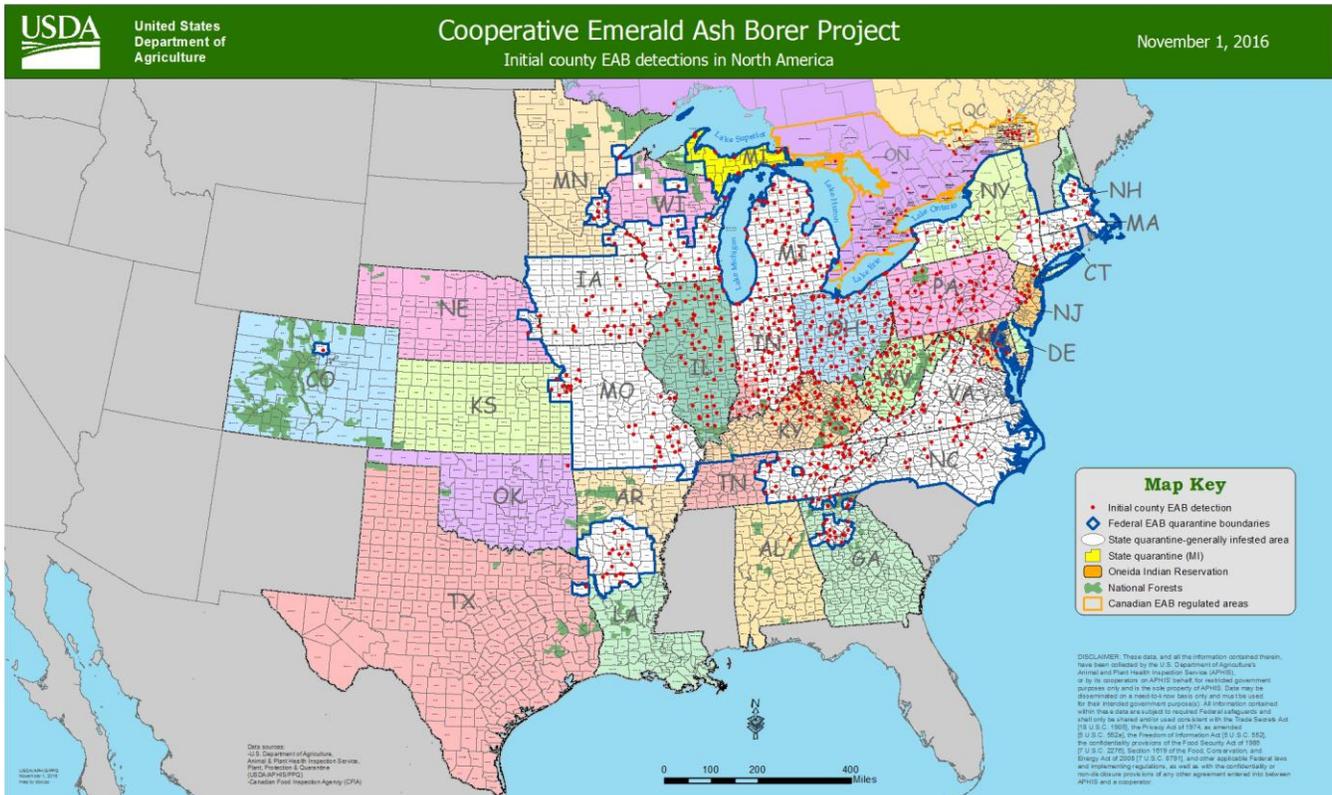
Figure 2: Emerald ash borer infestations and quarantines in North America as of November 1, 2016. Source: http://www.emeraldashborer.info/files/MultiState_EABpos.pdf

virginicus) was a viable EAB host. White fringetree is a native tree in the United States, and naturally occurs in the wild from Texas and Oklahoma east to Florida, and north to New Jersey and is a popular ornamental tree in other parts of the country. This added host is the first reported North American host outside of the Ash genus, and is important because it offers new places of refuge and procreation, as well as another potential avenue for spread via movement of infested hosts in the horticultural industry. This discovery also led Dr. Cipollini to investigate the closely related Manzanilla Olive tree, a globally-grown Spanish variety that yields green table olives. Olives were commonly grown in the SE USA during colonial times, but fell out of production in the region in the late 1800's. However, in recent years olive production has begun to rebound in certain parts of the southeastern USA. Therefore, in addition to the millions of ash trees already killed by EAB, an agricultural food commodity is also at risk here in the USA, as well as abroad.

Signs of EAB include: canopy dieback beginning at the top of the tree and progressing through the year until the tree is bare; sprouts growing from the roots and trunk;

split bark with an S-shape gallery; D-shaped exit holes; and more woodpecker activity, creating large holes as they extract the larvae. Please see this link for photos of EAB adults, larvae, damage, signs and symptoms.

EAB poses a distinct threat to Mississippi Forests. Mississippi Forest Inventory (MIFI) estimates indicate that Mississippi contains approximately 192 million ash trees in forests around the State. This is approximately 4% of trees in the Mississippi River Delta, the region of the State with the most ash trees. Ash trees account for approximately 15 million tons of timber, or 20% of the harvest value in the Delta. Statewide, ash trees make up about 1% of our forest trees, or approximately 5% of the timber value. These estimates do not take into account the countless ash trees in urban areas throughout Mississippi.

After EAB is confirmed in a new area, it usually results in a federal quarantine being established. It is most likely that EAB was spread to surrounding states through the movement of firewood. Many wood-infesting pests like EAB and another recent non-native pest in Mississippi, the redbay ambrosia beetle, are moved around the Country in firewood. Each newly infested area costs taxpayers millions of dollars in lost timber, mitigation, and quarantine costs. To prevent the spread of this and other non-native beetles, **do not move firewood**. Firewood is a vehicle for movement of tree-killing forest pests including EAB and Asian longhorned beetle. Use locally-sourced firewood when burning it at home. When travelling, burn firewood where you buy it. Make sure to burn all wood purchased. The Mississippi Forestry Commission, Mississippi Department of Wildlife, Fisheries, and Parks, and Mississippi State University are partnering to deliver outreach and education about the dangers of moving firewood to campers in Mississippi State Parks, as well as conducting camper knowledge surveys and examining insects brought to Mississippi parks in firewood to better understand how we might be more effective at minimizing future spread of non-native forest pests to Mississippi. For lots more information on EAB, see this site.

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