

Emerald Ash Borer in Indiana: The New Reality

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The Scope of the Problem

The emerald ash borer (EAB) is a devastating exotic insect pest of North American ash trees. First found in Detroit in the summer of 2002, this insect has killed over 15 million ash trees in Michigan and has since been discovered in parts of Ohio and Indiana. If EAB is not managed, it could eliminate ash trees as a species from these states and North America.

The USDA Forest Service estimates that there are 8 billion ash trees in the forests of the USA. In Indiana forests, there are 147 million ash trees accounting for 6% of overall forest tree species. Because ash trees are known to tolerate adverse sites, they have been extensively planted in urban settings and often comprise from 20 to 40% of street trees in Indiana's towns and cities.

All native North American ash trees (*Fraxinus* spp.) are vulnerable to attack by EAB without exception. No resistant varieties have been found in North America and the mortality rate of ash trees attacked by the insect is 100%.

Coping with EAB is expensive and time-consuming. It devours manpower and time from multiple agencies at all levels of government and drastically impacts budgets at the Federal, State, County, City, and Municipality levels. Emerald ash borer has damaged businesses including the nursery, logging, tourist, recreation, and manufacturing industries. It has harmed forests and parks in urban and rural areas and negatively impacts people from homeowners to Native Americans. Everyone in areas threatened by EAB has a stake in its management and control.

Where Did EAB Come From?

Emerald ash borer is an Asian insect that under normal circumstances can only be found in parts of the Russian Far East, China, the Koreas, and Japan. Sometime in the 1990s, EAB "hitchhiked" a ride to the Detroit/Windsor area from Asia in solid wood packing material made from ash. Adult beetles emerged from the packing material and flew to nearby ash trees near the docks or warehouses and began to establish and reproduce. In 2002, a Michigan extension educator concerned about the declining health of ash trees in the Detroit area captured an EAB adult and sent it to the USDA for identification. After its identity as EAB was confirmed, Michigan authorities began to actively search for the outer limits of the infestation, a search which expanded into Ohio and Indiana and continues to this day. Unfortunately during the years before the beetle was recognized, it was spread through movement of infested ash material from Michigan (ash nursery trees, logs, and firewood) into the Lower Peninsula of Michigan and into parts of Indiana and Ohio.

What is EAB?

Emerald ash borer (*Agrilus planipennis* Fairmaire) belongs to the beetle family Buprestidae which are referred to as “jewel beetles” because of their beautiful shiny metallic colors. Buprestid larvae (worm-like immatures) live under bark or in wood where they feed and develop.

In its native environment in Asia, EAB seldom causes serious damage to forests as there are many factors in place (inborn resistance of native trees, native diseases, and natural enemies) that keep EAB populations in check. In Asia, EAB acts as a *secondary pest*, attacking only those ash trees already stressed from other causes such as disease, injury, or environmental problems. In North America, because our trees lack native resistance, EAB acts as a *primary pest*, attacking and killing healthy ash trees. Since EAB is not native to North America it therefore thrives here; there are no naturally occurring checks and balances to impede its progress.

For more information on the biology of EAB, visit:

www.entm.purdue.edu/EAB

How Does EAB Harm Ash Trees?

During the summer months, adult female beetles lay tiny eggs on furrows in the bark of ash trees. Immediately after larvae hatch from these eggs, they burrow down into the tree’s cambial layer (the tissue layer located directly under the bark) and begin to feed, leaving tightly curved S-shaped tunnels filled with excrement in their wake. Unfortunately, the cambial tissue that they feed on constitutes the vascular tissue of the ash tree and, after enough damage is done, the tree loses its ability to circulate nutrients and starves to death.

Where Is EAB?

Emerald ash borer has been found throughout Michigan’s Lower Peninsula and in areas in Ohio and Indiana. Following is a list as of February 21, 2006 of quarantined counties and infested townships in Indiana:

Adams County:

- *Root Township*
- *Washington Township*

Hamilton County:

- *Clay Township*
- *Delaware Township*

LaGrange County:

- *Clay Township*
- *Lima Township*
- *Newbury Township*
- *Van Buren Township*

Marion County:

- *Lawrence Township*
- *Washington Township*

Randolph County:

White River Township

Steuben County:

- *Jamestown Township*
- *Millgrove Township*

Huntington County

- *Huntington Township*
- *Union Township*

What Is Being Done About EAB in Indiana?

Until recently, when an EAB infestation was found in Indiana, the Indiana Department of Natural Resources (IDNR) with funding from the USDA followed a management goal of eradication and removed ash trees in a one-half mile radius of any known infestation. In January 2006, because of limited federal funding for EAB eradication and the difficulty of determining infestation boundaries for eradication projects, the IDNR amended the procedures required when dealing with an infestation. The IDNR decided to stop eradication as a primary management tool and will no longer require nor fund the removal of trees in an infested area. With these policy changes, the IDNR will continue to survey and monitor EAB infestations to support quarantines and management guidance to landowners.

Indiana's current program consists of statewide surveys of high risk sites (campgrounds, mills, nurseries, etc.) to detect EAB infestations, implementing and maintaining quarantines when EAB is found, public outreach and education, management guidance to landowners and ash reduction and removal by landowners.

Quarantines

As most people know, a quarantine is an excellent way to keep potentially harmful agents contained and this is certainly true for EAB. Prior to January 2006 when EAB was confirmed in an Indiana township, only the infested township (and not the entire county) would be quarantined for ash and ash products. Under current regulations, the entire county will be quarantined, meaning that ash and ash products may be moved within the county but may not be moved out of the county without paperwork certifying the product free of EAB from the IDNR or USDA. In addition, to give the quarantine an even better chance of succeeding, the infested township(s) where EAB was actually found undergoes a "quarantine-within-a-quarantine" in which ash products may not be moved from the infested township(s), not even into the rest of the quarantined county without certified paperwork from IDNR or USDA.

If you are interested in moving quarantined ash items outside of the quarantine borders, you may seek permission from the IDNR and USDA APHIS (Animal and Plant Health Inspection Service) to do so under terms of a **compliance agreement**. A compliance agreement is a contract that regulates the movement of quarantined articles under specific terms and conditions set forth and maintained by the INDR, Division of Entomology and Plant Pathology, and USDA APHIS. Compliance agreements may be appropriate for shippers, businesses wishing to operate a marshalling yard, or business owners managing a landfill that wishes to receive ash products from quarantined areas. Please contact the IDNR, Division of Entomology and Plant Pathology, at (317) 232-4120 for information. If you are a mill operator **or a logger or shipper who conducts business outside of Indiana** who would like more information about becoming an **approved mill** (one that can process ash material from quarantined areas) **or an approved shipper**, please contact the USDA APHIS at (765) 446-0267.

Ash and ash products included in the quarantine include:

- The insect itself
- Entire ash trees
- Ash limbs, branches
- Cut firewood (ANY TYPE except pine)
- Logs or untreated ash lumber with bark
- Uncomposted ash chips greater than 1 inch (**ash chips less than 1 inch are not regulated and can be moved freely without certification**)
- Any article presenting risk of spread

For specific information on EAB quarantines in Indiana, visit:

www.in.gov/dnr/entomolo/pestinfo/ashborer.htm

What Should Property Owners Do With Their Ash Trees In Areas Quarantined for EAB?

Homeowners may exercise personal choices regarding ash trees on their own property. Choices include:

FOR YARD OR URBAN TREES:

- Allowing nature to take its course, removing ash trees only when and if they become hazardous after dying.
- Removing/replacing ash trees with non-susceptible types of trees before/after the beetle kills the ash trees.
- Chemically protecting ash trees from infestation before the beetle arrives.

Yard and Urban Tree removal

Property owners who choose to remove ash trees must place safety first when deciding how to proceed. It is best to consult a certified arborist or licensed tree care company to discuss costs and procedures. The cost of removing ash trees depends on several factors:

- How large is the tree?
- Where is the tree located?
- Will an arborist or tree care professional be needed to remove the tree or will the landowner be able to safely accomplish removal?
- What disposal methods are required in the quarantined area?
- Are the trees of any value for salvage, requiring the use of a portable mill or removal to a compliant mill?
- For tips on how to hire a tree care company, visit:

www.emeraldashborer.info/hiringtreeco.cfm

For information on how to hire an arborist, visit:

www.ipm.msu.edu/CAT05_land/L05-20-05.htm#3

Where do I take ash material after my trees are cut down?

It depends on where you are. Some counties will provide marshalling yards where people and businesses may take ash debris, limbs and trunks for processing. In other counties, the person or business removing the trees may need to contract with a business that owns an appropriate chipper that can process the material into chips less than 1 inch in size. If there are no ordinances restricting it, ash trees may be burned or chipped on site as arranged by the property owner. For information, call IDNR Entomology and Plant Pathology at (317) 232-4120 for information.

Replacing yard or urban ash trees

- Replace ash trees that are dying from EAB infestation with a site-appropriate tree other than ash.

See this link for a list of possibilities:

www.in.gov/dnr/forestry/pdfs/ashalternatives.pdf

- For tips on how to hire a tree care company, visit:

www.emeraldashborer.info/hiringtreeco.cfm

For information on how to hire an arborist, visit:

www.ipm.msu.edu/CAT05_land/L05-20-05.htm#3

Chemical protection of yard or urban ash trees

If landowners decide to use pesticides to protect their ash trees from EAB, they must take the long term cost of prevention into account. Ash trees must be treated every year for an indefinite period, and the cost of chemical protection may shortly exceed the worth of the tree. Below are some basic considerations when making a decision to protect or replace your ash trees:

Basic financial considerations:

- Protecting an ash tree from EAB requires a long term commitment of both money and time as ash trees will require constant protection to survive where EAB is present. This means that each ash tree you wish to protect must be treated with pesticides every year for the rest of its life.
- The costs of preventative treatments range from about \$50 to \$200 each year per tree depending on whether the owner or an arborist does the application and the size of the ash tree. Costs of annual insecticide treatments eventually exceed the costs of tree removal.
- Replacement trees such as maple, oaks, beech, horsechestnut, or linden increase in value as they grow and can exceed the value of protected ash trees in a relatively short period. The value of a replacement tree will surpass the value of a protected ash tree (8-14 inch diameter) in 15 years or less. (*Note: the larger an ash tree is when protective treatments begin, the longer it takes to reach the break-even point, more than 40 years in the case of an 18 inch diameter ash).*

For information on using pesticides to prevent EAB infestations in ash trees, please visit:

www.emeraldashborer.info

or contact a certified arborist or licensed tree care professional.

FOR FOREST TREES:

Infested Township and County

Forest owners in infested townships should consider managing their forest to remove ash through timber harvests and timber stand improvement practices after the harvest to kill remaining ash. This should be done immediately or within the next two years.

Forest owners in a quarantined county but outside of the county's infested township should manage their forests to remove/reduce ash through harvest and timber stand improvement practices. This should be done within the next 3-5 years. If future surveys detect an infestation in your township or within 10-15 miles of your forest, you should immediately remove/reduce ash in your forest.

Forest owners in counties without EAB infestations should evaluate their management plan and amend the plan to remove/reduce ash in their forests. Forest owners should reevaluate the plan annually after IDNR reports new infested counties. The closer to an infested county the sooner plans should be amended and action taken to remove/reduce ash.

Where to Go For Help:

For general information on EAB in Indiana or to report a possible find:

Jodie Ellis

Exotic Insects Education
Department of Entomology
Purdue University
901 W. State Street
West Lafayette, IN 47907
Phone: (765) 494-0822
Fax: (765) 494-0535
e-mail: ellisj@purdue.edu

Indiana Department of Natural Resources

Division of Entomology & Plant
Pathology
402 West Washington Street, Room
W-290
Indianapolis, IN. 46204-2739

**Indiana Department of Natural
Resources' toll-free hotline:
(866) NO EXOTIC**

Purdue's EAB Website:

www.entm.purdue.edu/EAD

Your local Purdue Extension office:

1-888-EXT INFO

To find the office in your county, visit:

www.ces.purdue.edu/counties.html

For information on managing ash trees in forest or woodlots, visit:

www.in.gov/dnr/forestry/news/eabashguide.html

or contact:

Phillip T. Marshall

Forest Health Specialist

Vallonia State Nursery

2782 W. Co. Rd. 540

Vallonia, IN 47281

Phone: (812) 358-3621 or 9034

Fax: (812) 358-9033

e-mail: **pmarshall@dnr.IN.gov**

- For regulatory information, for example, moving ash and ash products from quarantined areas, compliance agreements and approved facilities certifications, contact the DNR (Telephone: 8:30am-4:30pm Monday through Friday @ 317 -232-4120, or by email: **depp@dnr.IN.gov**)
- Suspect specimens of emerald ash borer taken from ash trees may be taken to your local county extension office (See above) where they may be forwarded to **the Purdue Plant and Pest Diagnostic Laboratory** (Email: **ppdl@purdue.edu**) or website: **www.ppdl.purdue.edu** . Please provide exact location, address, city, county, a contact telephone number where you can be most easily reached, how many trees appear to be affected, site (woodlot, home landscape, campground, etc.), how EAB might have arrived at the site, (new landscaping 5-10 years ago, firewood, etc.)

For regional information on EAB:

www.emeraldashborer.info

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