

EMERALD ASH BORER: A Lethal Pest of North American Ash

A New Invasive Threat in New York

Emerald ash borer (EAB) was discovered for the first time in North America in 2002 near Detroit, Michigan. The beetles probably arrived in solid wood packing materials on cargo ships or airplanes arriving from Asia. Although discovered less than 10 years ago, research indicates EAB has been here since the early 1990s. The known infested area now encompasses significant portions of many northeastern states and provinces. Within these areas, more than 50 million ash trees have already been killed by EAB. The beetle was discovered in New York's Cattaraugus County in 2009, and since then has been detected in several other NY counties. **Costs to municipalities, property owners, nursery operators and forest products industries will easily range into the billions of dollars.**

Although adult EAB can fly over one mile, the greatest risk of long-distance spread is from human movement of infested ash trees or firewood. Regulations now in effect in many areas prohibit or limit movement of these items. Management efforts are being directed at retaining beetles within infested areas and minimizing their spread. Nevertheless, the beetle has been found in an increasingly wide area each year since its discovery.

Adult beetles are metallic green and about a half-inch long. Adults feed only on ash foliage but the key damage is inflicted by larvae feeding on the inner bark of ash trees. They have a one- or two-year life cycle completed entirely in association with ash trees. Adult emergence in late spring is followed by mating, feeding and egg laying. Newly hatched larvae penetrate the tree and feed in the area between the bark and the wood, which is where tree nutrients are transported. Beetle larvae overwinter in the outer portions of wood or bark and pupate in the spring.



Emerald ash borer



Infested ash trees



Larvae and feeding galleries exposed beneath bark



Can Emerald Ash Borer Be Controlled?

Research results can help understand the EAB life cycle, detect and contain infestations, and control adults and larvae. Chemical insecticide treatments may be effective at protecting selected trees but cannot be used feasibly over large areas. **Research focused on developing safe, environmentally compatible biological management options is needed.** The use of early detection methods, destruction of infested trees, and the use of girdled trap trees to concentrate beetle populations may slow the rate of ash mortality. A successful management program will also involve the integration of releases of highly specific stingless wasps. These wasps lay their own eggs on or within EAB eggs or larvae. The wasps then develop and kill EAB naturally. Research done by USDA has resulted in rearing and field releases, beginning in 2007, of three species of wasps in many EAB-infested states. The first releases of these insects to combat EAB in New York were done in 2011 in Ulster, Greene and Cattaraugus Counties. Additional releases are planned for 2012.

► *By understanding beetle and wasp biology* ◀



Oobius agrili
laying its own
egg within an
EAB egg



*Tetrastichus
planipennisi*
searching for
EAB larvae
beneath the
bark of an
ash tree.

D. Cappaert

► *By developing effective ways to deploy biocontrol agents* ◀



First New York
release of stingless
wasps to kill EAB.
Ulster County,
August 2011.



Adult female
Spathius agrili

T. Ayer

Working Partnerships Are Keys to Success

The current emerald ash borer program comprises many municipal, state, federal and provincial entities. Private landowner cooperation plays a crucial role in program success. In New York, several state and federal agencies are working to implement an integrated management approach to limit the spread of EAB and minimize its impacts. These agencies include the U.S. Department of Agriculture, N.Y. State Departments of Agriculture & Markets and Environmental Conservation, SUNY Environmental Science and Forestry, and Cornell University.

For information on beneficial insect releases in New York: John Vandenberg (John.Vandenberg@ars.usda.gov).

For information on biocontrol of EAB: Juli Gould (Juli.R.Gould@aphis.usda.gov) or Leah Bauer (lbauer@fs.fed.us).

For information on EAB in the U.S.: <http://www.emeraldashborer.info>

The Biological Integrated Pest Management Research Unit (BioIPMRU), located in the Robert W. Holley Center for Agriculture and Health on the Cornell University Campus has, for more than 20 years, developed the knowledge & tools to provide sustainable pest and disease control through biologically-based and environmentally compatible strategies that minimize chemical pesticide use & limit pest damage to sub-economic levels. Our researchers conduct biologically-based pest management research on numerous key microbial, insect and nematode pests of field, nursery and greenhouse crops and on weeds. Please visit us on the web at: <http://www.ars.usda.gov/naa/ithaca/BioIPM>. USDA is an equal opportunity provider and employer.