United States Department of Agriculture
Agricultural Research Service

BIOLOGICAL INTEGRATED PEST MANAGEMENT RESEARCH UNIT
Robert W. Holley Center for Agriculture and Health, Ithaca, New York

FACT SHEET

EMERALD ASH BORER

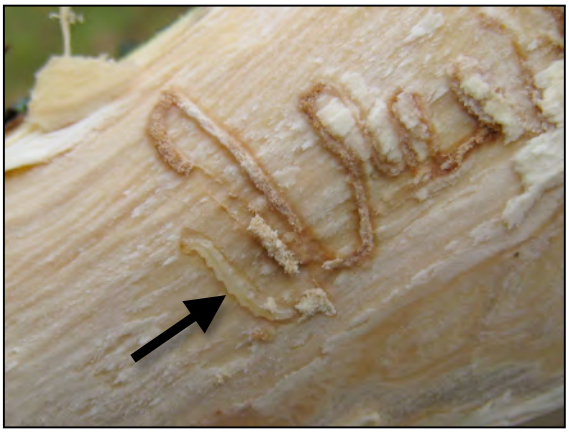
A Lethal Invasive Threat to North American Ash

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. Research indicates EAB has been in North America since the early 1990s. The known infested area now encompasses significant portions of several states and provinces. Within these areas, more than 25 million ash trees have already been killed by EAB. **Costs to municipalities, property owners, nursery operators and forest products industries will easily range into the billions of dollars.**

Although adult EAB can fly up to a few miles, the greatest risk of long-distance spread is from human movement of infested ash trees or firewood. Regulatory efforts are now being undertaken that include prohibitions on the movement of these items. Eradication efforts are now directed at small, localized infestations. Nevertheless, the beetle has been found in an increasingly wide area each year since its discovery. **Two Ithaca-based ARS entomologists made the first discovery of EAB in New York in June 2009.**

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 (EAB) adults



EAB larva (arrow) within its feeding gallery

Ash trees killed by EAB in Randolph the site of the first New York discovery

EAB larval galleries under bark

Can Emerald Ash Borer Be Controlled?

Research is being done to help understand the EAB life cycle, detect and contain infestations, and control adults and larvae. Removal and destruction of infested trees is not always cost-effective and success depends on early detection. Chemical insecticide treatments may be effective at protecting selected trees but cannot be used safely over large areas. **Research focused on developing safe, sutainable, environmentally compatible biological management options is needed.** A successful management program will likely require several approaches, including the integration of arthropod biological control agents, microbial pathogens of EAB and other biological control organisms. The delivery and timing of the release of these agents must be studied to optimize effectiveness against emerald ash borer within infested areas.

➤ *By understanding beetle and natural enemy life cycles* ➤

Emerging EAB killed by a pathogenic fungus
(USDA FS photo)

Parasitic wasps attacking EAB egg (above) and larva within wood (below)
(USDA FS photos)

➤ *By developing effective ways to deploy biocontrol agents* ➤

Fungal spores being applied to ash trees

A cluster of girdled ash trees attracts EAB and will serve as release point for parasites
(SUNY ESF photo)

Research Partnerships Are Keys to Success

The current emerald ash borer program comprises many municipal, state and federal entities. A key component of the multiagency effort is a research team representing USDA Agricultural Research Service, SUNY-ESF, Cornell University, NYSDEC, USDA Forest Service, and USDA APHIS. Research is jointly conducted on assessing the status of EAB infestations and deploying safe, effective biological control agents for managing this pest. In addition, municipal officials and private landowners are cooperating in the research by providing access to trees on their properties.

The USDA ARS Biological Integrated Pest Management Research Unit (BioIPM) is located in the Robert W. Holley Center for Agriculture and Health on the Cornell University Campus. The Unit has, for more than 20 years, played a critical role in world-wide efforts to develop insect pathogenic fungi for biological control of insect pests of agriculture. The BioIPM Unit maintains the world's largest collection of entomopathogenic fungi and conducts biologically-based pest management research on key pests of greenhouses, nurseries and forests, including the emerald ash borer. For more information on this project, contact: Dr. John D. Vandenberg at **www.ars.usda.gov/ithaca/BioIPM**