

Forest Service 2006 Success Stories—

Creating New Tools For the Fight Against Emerald Ash Borer

In 2006, Northern Research Station (NRS) scientists developed new tools to help manage the Midwest's destructive emerald ash borer infestation and to prevent (or slow) the spread of this recently introduced invasive species.

The emerald ash borer (EAB) is just one of more than 400 species of non-native, invasive forest insects in the United States, which can build quickly to damaging levels once established in a new area. The emerald ash borer has infested and killed millions of ash trees (20 million trees in Michigan alone) and caused the loss of millions of cubic feet of timber products in just a few years since it was first seen here. This exotic pest presumably was introduced to North America via wood packing materials used to transport manufactured goods and has spread by way of infested ash firewood, logs, lumber, and nursery stock.

This year researchers greatly expanded the arsenal of techniques available to state agencies for detecting new EAB infestations. They determined that girdling ash trees is an effective survey technique for attracting EAB and they identified volatile compounds produced by ash trees that may improve EAB trapping efforts.



This Emerald Ash Borer became infected and died from an insect pathogenic fungus, one of the new tools discovered by NRS scientists to combat this invasive and destructive species.



Emerald ash borer adults emerging from an ash log.

NRS scientists also increased the effectiveness of state and federal regulatory programs by determining more effective guidelines for removal and disposal of EAB-infested trees—such as using heat treatment or chipping; ensuring that firewood is stored as split logs kept uncovered in the sun; and treating stumps with the herbicide Garlon® to prevent EAB colonization and stump sprouting. NRS scientists further found that the microbial product Botanigard®, formulated with the insect fungus *Beauveria bassiana*, readily kills EAB in laboratory tests and that trees injected with the insecticide imidacloprid had fewer EAB larvae than did untreated control trees.

NRS scientists developed laboratory rearing methods for two parasitic wasps that are natural enemies of EAB in China, and they evaluated whether the wasps attacked native insects. They also identified EAB-resistant tree species in Asia, which provides the first step in the development of North American-Asian hybrids that could someday restore the lovely and valuable ash tree to EAB-affected areas.