

As ash borer claims more trees, researcher works for species survival

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Mark Widrechner looks at a few of the thousands of seeds currently in the storage facility. Widrechner is in charge of a nationwide effort to collect seeds from ash trees before they are destroyed by a pest accidentally imported from Asia to Michigan by an unknown source several years ago. Credit: ISU photo by Bob Elbert

Mark Widrechner may someday be known as the modern-day Johnny Appleseed for ash trees. As the devastating insect emerald ash borer is working its way across North America destroying almost all the native ash trees it encounters, Widrechner is rapidly collecting and storing ash tree seeds.

Like the legendary Appleseed who planted apple trees across the country, Widrechner's seed stocks can serve as a national source for reintroducing ash trees once the devastation can be controlled.

Widrechner, horticulturist for the United States Department of Agriculture's Agricultural Research Service (ARS) and assistant professor of agronomy and horticulture at ISU, is a curator at the North Central Regional Plant Introduction Station in Ames, Iowa, responsible for collecting and maintaining seeds for several species of trees, including ash, for the USDA's National Plant

Germplasm System.

As the pest devours ash tree populations on its way across North America, there may soon be few, if any, ash trees left.

"Where these borers have been present the longest, it has basically been a total wipeout," said Widrechner.

"That is something we rarely see in nature," he said. "It's uncommon for a pest to come in and just clean something out. It doesn't just attack sick trees. Emerald ash borer attacks healthy trees. It attacks small trees. So you don't have just big, old trees falling to this, you've got 2 to 3 inch saplings falling to this."

Estimates from New York - one of the states the insect will infest as the devastation grows in circles spreading outward from Michigan, where it was first discovered in June 2002 -- put the total number of ash trees destroyed at 70 million as of June.

Emerald ash borer is native to Asia, and North American ash trees have not shown any natural resistance to it. The pest's larvae burrow just under the bark and into the circulatory system of the tree. The larvae interrupt the tree's water and nutrient delivery system. Starved of nutrients, the branches die. Eventually the entire tree is lost.

Now, Widrechner is racing the clock to collect seeds from different ash species including green, white, blue, and black ash, and many variations within each species.

He thinks he may be about 10 percent there.

"When I first found out about the emerald ash borer, we had about 60 different types of ash tree germplasm (seed) in our system," said Widrechner. "Now we have about 220. Ultimately, I think we'll need at least a couple thousand to represent the

diversity that's out there. In the next two years, we should really start to make a dent in it."

The situation has mobilized members of the ARS, the United States Forest Service, the Animal and Plant Health Inspection Service, the Natural Resources Conservation Service, the Bureau of Land Management and many state agencies and public gardens all to find ways to contain the pest, save the ash trees and conserve their seeds.

In January, Widrechner became the national coordinator for all the agencies involved with seed collection and conservation.

"We've got a lot of people working on it," he said. "I just got back from southern Wisconsin and northern Illinois looking for good, natural populations that have seed. We find them, mark them with the GPS coordinates and then go back when the seeds are ready in September and October."

One of the problems this year is that many of the trees are not producing very many or very good quality seeds.

Widrechner says this happens in certain years and is not very well understood.

Widrechner's recent trips to New England and throughout the Midwest are designed to collect seeds ahead of the growing infestation.

"The strategy that we're following right now is focused on the area just outside the range of the insect or the area where the insect is just moving into," he said. "Places where the insect has been for a while we've lost. There's just so little ash to go back to."

Once Widrechner collects the seeds, he stores them in the Plant Introduction Station and also at a secure backup site at the National Center for Genetic Resources Preservation in Fort Collins, Co.

The Plant Introduction Station is a joint project of Iowa State University, the USDA and the State Agricultural Experiment Stations of the 12 north central states as part of the National Plant

Germplasm System. The facility keeps an inventory of many types of plant germplasm. The seeds are used in research locally and sent to researchers around the world as needed.

The effect of losing the nation's ash trees would be felt in many areas.

Throughout much of the U.S., ash is a popular shade tree along streets and in residential landscapes. The dead and dying trees pose major hazards and are expensive to remove, and will leave many city streets without trees for shade or beauty.

Also, Native Americans use ash trees for baskets and other crafts, and baseball bats are traditionally made from the wood.

The biggest problem might be in the hole that's created in the ecosystem.

"I'm really concerned," said Widrechner. "You take a major tree out of the forest and what is going to fill the hole? Another native tree might do it or something non-native could fill the gap and change the ecosystem."

Despite the challenges, Widrechner says there are reasons for long-term optimism.

Ash seeds tend to remain viable even after years of cold storage. If, and when, the germplasm in the Plant Introduction Station is needed, new [ash trees](#) should grow from the stored seeds.

A similar episode nearly wiped out the American chestnut nearly a century ago. In that case, fungus called chestnut blight brought in from Asia caused the devastation. After much work, researchers have developed blight-resistant trees.

Now American chestnut trees are being re-introduced into their historical home, primarily in the Eastern United States and in the Appalachian hardwood forest ecosystem where they can help restore those forests to their former diversity.

Source: Iowa State University ([news](#) : [web](#))

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