# A New Threat to North Dakota Trees

By Michael Kangas

North Dakotans are all too familiar with the damage caused by Dutch elm disease. The stately American elm, once a fixture in North Dakota's valleys, towns and shelterbelts, has been replaced (whether naturally or planted) by green ash.

Now a new exotic pest threatens ash trees in North Dakota. The emerald ash borer, an ash-feeding beetle that has already killed millions of trees in the Upper Midwest, is headed this way.

Native to eastern Asia, the tiny green beetle was first discovered in the United States near Detroit, Michigan in 2002. Scientists believe it was unintentionally brought here through infested ash crating or pallets. Since then, the insect has emerged in southeastern Michigan, and several counties in Ohio, Indiana and Maryland. Two new infestations were detected near Chicago in 2006.

The damage has been astonishing. Unlike native ash-boring insects that only kill weakened and dying trees, the emerald ash borer can attack all ash trees regardless of health, size or age. Nearly 25 million ash trees have been destroyed. "Exotic tree pests are among the greatest threats to forest and shade trees of North America," said North Dakota State Forester Larry Kotchman. "North Dakota's elms were devastated by Dutch elm disease over the past 38 years. Our state's ash resource faces a similar fate because of EAB."

## Bug Biology

As its name implies, adult beetles are a dark, metallic green. The damage inflicted by this pest is not caused by adults, but rather by juveniles. Juveniles, or larvae, hatch from eggs deposited by adults in early summer and feed beneath the bark of ash trees, destroying nutrient-conducting tissues. Eventually, the tree dies from the top down. After spending winter within the tree, larvae turn into adults, bore through bark, and emerge in early summer through D-shaped exit holes.

Adults can fly up to one mile in search of ash trees to attack. Although the beetle's flight distance is relatively short, its reach is multiplied when people move ash trees and larvae-infested logs that show no external symptoms of infestation. Even though the emerald ash borer is still two states away, there's reason for concern because of its ability to hitchhike on logs and trees. A shipment of infested ash trees, or a person hauling a load of infested firewood into the state, could introduce the pest at any time.

## North Dakota Ash

If the emerald ash borer becomes established in North Dakota, the fallout will be hard felt. The native and planted forest and tree resources are a unique ecological and cultural feature. Although forests only represent 2 percent of the state's total land area, they are important habitat for wildlife, provide recreational opportunities, stabilize river banks, filter runoff from agricultural lands, provide wood products, and increase the state's botanical diversity.

Green ash, a highly adaptable, long-lived, resilient tree, is a major component of the state's forests. According to the U.S. Forest Service, North Dakota has 46.9 million ash trees in its forests and woodlands. The compensatory value of this resource is estimated at $3.55 billion. The species comprises as much as 90 percent of the total canopy cover of some of the state's woodlands. The loss of ash within riparian areas would have major deleterious influences on water quality, wildlife habitat and recreation.

The ash borer does not discriminate – natural forests, conservation plantings, or community shade trees are all at risk. "Green ash is the primary tall tree species used statewide in conservation plantings" said Greg Morgenson, manager of the Lincoln-Oakes Nursery. "The emerald ash borer could eliminate the ash component of a large percentage of the regions conservation plantings."

Tom Wilson, public works director for Westland, Michigan, said his area was one of the first hit by the pest. "EAB was confirmed in our community in 2002. By 2004, there was not a single live ash tree throughout the city," he said. "We literally could not keep up

*Left: A woody draw in the badlands in western North Dakota that is filled mostly with ash trees.*
*Below: Tell out-of-state friends to leave their firewood at home and use only local firewood. Something as simple as this will help dissuade the introduction of the emerald ash borer to North Dakota.*

CRAIG BIHRLE

Stay current with the status of the emerald ash borer by visiting the emerald ash borer website at www.emeraldashborer.info.

with the pace of the insect's destruction."

Many North Dakota communities are aware of this risk. "Once EAB arrives, we estimate that it would cost $5.2 million to remove dead ash trees from Bismarck's boulevards," said Jeff Heintz, Bismarck Public Works service operations director.

From the badlands in western North Dakota to the Turtle Mountains and Pembina Gorge in the state's northern tier, ash trees are part of the habitat mix that makes these areas so unique.

"The total elimination of ash from these forest ecosystems in the Turtle Mountains and Pembina Gorge would have a negative influence on the diversity of the forest," said Brian Prince, Department wildlife resource management biologist, Devils Lake.

Ash trees provide both shelter and food requirements for a variety of wildlife species in western North Dakota, said Jeb Williams, Department wildlife resource management biologist. "Many birds – both game and nongame birds – use these wooded areas for nesting and eat the insects provided from the presence of woody draws dominated with green ash," he said. "Big game species browse on young ash trees and use the mature stands for bedding and fawning areas. Also, green ash is a slow to moderate growing tree, so when they are lost, it will take some time for the trees to be replaced."

## Regulatory Issue

Quarantines have been imposed in infested areas to restrict interstate movement of

## Death From the Inside

*A. The damage to trees is not caused by adult emerald ash borers, but rather by the juveniles, or larvae.*

*B. Tunnels within an ash tree made by emerald ash borers.*

*C. Adult emerald ash borers emerge from ash trees in summer through unmistakable D-shape holes.*

regulated materials and prevent spread to areas not infested. Materials regulated by the quarantines include ash nursery stock, lumber, firewood and other living or dead ash material. Enforcement of these quarantines has been limited as movement of firewood, by both individuals and firewood sellers, remains relatively unregulated.

In addition, eradication efforts have been employed to eliminate insects once they are found outside quarantined areas. Unfortunately, eradication appears to be a losing battle because of the high cost and difficulty in detecting the beetle before it spreads.

"One of the major hurdles in slowing the spread of this pest is that there was very little information about the insect's life cycle, biology, control, or survey techniques at the time of its discovery" said Dave Nelson, North Dakota Department of Agriculture state entomologist. The insect causes apparently little if any damage to trees within its native range of Asia. As a result, the pest was of minor importance. "With all of the knowledge gaps regarding the insect's biology, scientists here in the U.S. had no information about detecting the pest and eradicating it before it spreads farther."

Several universities and federal agencies within infested areas have begun an aggressive research program, focusing on detection and controlling the pest. Research has shown that insecticides can delay the death of ash for a few years; however, none are 100 percent effective. Treatments can be costly and must be reapplied yearly, suggesting that insecticides would only provide marginal benefits for high-value, individual ash trees. Consequently, the ash resource within North Dakota's woodlands and river valleys cannot be spared.

The nursery industry has been cooperative with restrictions placed on the shipment of ash material and few North Dakota nurseries receive ash from states near quarantined areas. The transport of firewood by campers and others is troublesome, as interstate transport of firewood is commonplace. Travelers are accustomed to bringing firewood with them on trips. In a recent survey conducted by the Minnesota Department of Agriculture, 46 percent of campers bring firewood from home or from a source near home. Among those responding to the survey, only 17 percent have heard of the emerald ash borer.

In addition, a significant firewood industry exists. Many national retail chain stores work through local firewood providers to supply bundles for sale. Surprisingly, many stores receive their firewood from large distribution centers located throughout the country. It is not unusual to find firewood sold in North Dakota originating from a state that is alarmingly close to one that is quarantined. As such, there is a substantial risk of emerald ash borer-infested firewood being shipped throughout the country.

Some Midwestern states have begun outreach efforts that address the consequences of firewood transport. Wisconsin and South Dakota have banned out-of-state firewood within state-owned campgrounds. Minnesota and North Dakota now screen campers as they register at state-managed campgrounds.

## What Can We Do?

Although the emerald ash borer is still two states away, North Dakotans must help prevent its spread into the state. Adequate control techniques do not exist and the sole response is to remove and destroy infested trees. Preventing it from entering the state is the only option. If its arrival can be delayed for one or more decades, tools needed to manage this pest effectively might exist and some of North Dakota's ash resource will be spared.

All citizens can help stop the spread of this insect into the state. If someone you know is planning a trip to North Dakota, tell them to leave their firewood at home and only use local firewood.

In addition, North Dakotans are encouraged to diversify tree plantings. There has been an over-reliance on ash over the past two decades and now there is an overabundance in community and rural tree plantings. As a rule, diverse tree plantings are more resilient to damaging factors, including climate, insects and disease. Tree species selection should not hinge on substituting one tree for another, but rather diversifying overall species composition.

That is, don't put all your eggs in one basket.

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*MICHAEL KANGAS is a forest health specialist with the North Dakota Forest Service.*

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