Peer-to-Peer-

(Continued from Page 10)

The Minikahda Club will be taking a complete inventory of our ash trees and will evaluate what ones will be worth trying to save. We will also develop an estimate for the cost of the removals as well as the cost for treatments. We will also assess which areas we will need to replant and develop a cost analysis for the replacement of these trees. We will prepare for the worst case scenario. - *Jeff Johnson, The Minikahda Club*

At **Southview CC** we began preplanting other species in heavily populated ash tree areas a couple of years ago. I plan on continuing with this and removing ash trees as necessary. - *Jeramie Gossman, Southview Country Club*

It's here! At **Minnesota Valley**, we've been proactive in discussing the Emerald Ash Borer at Green Committee meetings over the past year and a half. A decision was made last fall to treat approximately 150 of our 230 ash trees with imidacloprid this spring using the soil drench method. After the most recent discovery of the EAB in the metro, I've made the decision to treat all 230 ash on our course. We are using a flowable imidacloprid product at a rate of .2 ounces per inch of trunk diameter, and 4 gallons of water for every 1,000 sq. ft. sprayed. We sprayed an area around the base of the tree approximately 4 feet out, with a concentration of the product within 2 feet of the trunk using a spray gun. May is the proper month to apply the product using this method, it's needed annually, and it's fairly economical. -*Mike Brower, Minnesota Valley CC*

Monticello CC has had a fairly aggressive tree planting program in the past; however, that has tapered off over the years as the younger trees have started to mature and fill in the thin areas. We stopped buying ash trees 4-5 years ago due to the threat of EAB. I believe we also learned our lessons with Dutch Elm disease and therefore purchased a variety of trees in the past, mixing them up in stands as we planted them. That having been said, we still have plenty of ash trees and one particular tree stands 15 feet taller than the whole grove of oak and hackberry. It makes a great target on our 9th hole. As far as the future, we will handle it like the Elm trees, cut them down as we have to and continue to plant other species where a larger population of ash trees exist in case they do get EAB. - Rick Traver, CGCS, Monticello CC

My Green Committee and Board of

ARTMÁ

Directors at North Oaks have been aware of the EAB for a couple of years now. However, we don't have a proactive replacement plan going quite yet as the borers are slow to get about, a max of .5 miles each year. We have been told that the EAB is a devastating insect, but my research indicates that it preys upon weaker trees (although does kill healthy ones as well) and the really, really wiped out areas are those that were quarantined and strip cut. I understand the theory behind this proceedure, but don't all tree varieties have issues? Oak wilt, Sudden Maple Decline, DED? What about the simple girdling root? Did those cities that strip cut have to go through that painful and expensive process? With today's economy I might suggest taking a wait and see approach and have some Merit or the chain saw ready to go as well as a tree spade! - Jack MacKenzie, North Oaks GC

At **Meadowbrook**, the plan is to read them their final rights. Cut them down. and have a bonfire! - *Scott Austin*, *CGCS*, *Meadowbrook GC*

Tanners Brook GC is a links-style course with very few trees. If we lose a few ash trees, so be it.- *Kevin Clunis CGCS, Tanners Brook GC*

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From the U to You...Studies Funded by the MTGF



EMERALD ASH BORER

By JEFFREY HAHN

Assistant Extension Entomologist, University of Minnesota

The emerald ash borer (EAB), Agrilius planipennis, is a very destructive insect pest of ash trees (Fraxinus spp.), the only known hosts of this borer in the United States. This exotic borer is a native of Asia with its natural range including China, Japan, Mongolia, Korea, the Russian Far East and Taiwan.

It was first discovered in North America in southeast Michigan in June, 2002, although it was likely introduced at least 10 years earlier. It has since been found in the U.S. states of Ohio (2003), Indiana (2004), Maryland (2006), Illinois (2006), Pennsylvania (2007), West Virginia (2007), Wisconsin (2008), Missouri (2008) and Virginia (2008). It has also been found in the Canadian provinces of Ontario (2002) and Quebec (2008). In May 2009, it was discovered in St. Paul, Minnesota.

Why is this insect important?

This destructive beetle has killed tens of millions of ash trees where it has been discovered. There are about 870 million ash trees in Minnesota, one of the largest concentrations of ash of any state in the country. Not only are these trees abundant in our forests, but they are also an important component of our urban landscapes. Research has not found any resistance in our native



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ash. We could lose much of this resource.

How do I recognize this insect?

EAB is a slender, elongate insect about 1/3 - 1/2 inch long. It is widest just behind the head, gradually tapering back to the abdomen. It is a bright iridescent green to copper-green color, often with a copper-colored area behind the head. Its body underneath the wings is a purplish-magenta color.

This borer is a type of metallic wood-boring beetle (family Buprestidae) and is closely related to the bronze birch borer and the two-lined chestnut borer, both native insects in Minnesota. EAB, however, is a bit larger and much more brightly colored than these species.

Not every green insect you see is an EAB. There are several common insects that look similar, especially the six-spotted tiger beetle and the polydrusus weevil. A six-spotted tiger beetle is a similar size, about 3/8 - 1/2 inch long but with a conspicuous, large head and eyes. It is also a different shape with the abdomen being wider than the head. The polydrusus weevil is a small, 1/4- inch long, oval insect with a short snout. It has a black body covered with pale metallic green scales.

Also, not every insect you find attacking ash is an EAB as there are many native ash borers present in Minnesota. The most common are redheaded ash borer, bark beetles and clearwing borers.

Biology

EABs generally have a one year life cycle although that can be extended to two years in a vigorous host. These insects overwinter as fully grown larvae in chambers constructed under the bark of ash trees. They pupate in early spring and emerge as adults, leaving characteristic D-shaped emergence holes. Depending on where you live in Minnesota, expect adults to emerge any time from late May to August.

After feeding on leaves, adults mate and females lay eggs on the bark or in small cracks in it. Eggs hatch in 7 to 10 days. The whitish larvae, called flatheaded borers, tunnel under the bark, creating a series of winding, S-shaped galleries in the phloem and outer sapwood. These tunnels girdle the trunk and branches, interrupting the flow of water and nutrients. The larvae feed until fall then overwinter as prepupal larvae.

Symptoms and Damage

Trees typically are killed in two to four years. When trees are first attacked by EABs, the symptoms are inconspicuous and hard to notice. By the end of the second year, thinning foliage and dieback in the crown begins to be apparent. By the third year, there is severe dieback and little foliage. Ash can tolerate small numbers of EAB larvae but trees are girdled and killed when populations become more numerous.

(Continued on Page 15)

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From the U to You-

(Continued from Page 14)

When the adults emerge, they create small, 1/8 inch D-shaped exit holes that are characteristic of this insect, although they can be hard to see. If you were to remove the bark on the trunk of a tree showing these symptoms, you should also find the larval galleries. Epicormic sprouts may form on the lower trunk and major branches as the tree responds to Emerald Ash Borer activi-

"On its own, EAB will generally move only about 1/2 mile a year from infested sites. But with help from people, it can travel hundreds of miles when carried in firewood,..."

ty. Woodpecker attacks on ash could also indicate the presence of Emerald Ash Borers. Vertical splits in the bark due to callous tissue forming over old galleries may also be seen.

All species of ash are attacked, including all ash species found in Minnesota: green (*F. pennsylvanica*), black (*F. nigra*), and white ash (*F. americana*). Mountain ash (*Sorbus. spp.*) is not a true ash and is not attacked. Emerald Ash Borer attacks ash of different sizes from as small as one inch diameter to large mature trees. They commonly attack stressed and unhealthy trees first, similar to the native bronze birch borer and two-lined chestnut borer. However, unlike these insects, EABs will also successfully attack vigorously growing trees. Once an ash is attacked by EABs, it will be killed.

Keep in mind there are other problems that can cause an ash tree to decline. Go to What's Wrong With My Ash? for help in diagnosing an ash problem.

What can I do to help?

First, don't transport firewood when you go camping or are buying it for home use, even if it is within Minnesota. Just buy the wood you need at local sites or at the campgrounds you are visiting. On its own, EAB will generally move only about 1/2 mile a year from infested sites. But with help from people, it can travel hundreds of miles when carried in firewood and other wood products or nursery stock.

Next, be aware of what an EAB looks like as well as the symptoms of an EAB infested tree. Report any suspect insects or declining ash trees (see "*What Can I Do If I Suspect I Have Found EAB*?"). There have been many cases where the public was the first to find an initial infestation in an area.

What can I do if I suspect I have found EAB?

First, use the diagnostic page [PDF] to see if you can clearly rule out EAB. If, after you have gone through this page, you can not easily rule out EAB, then you will be asked to contact the Forest Resources Extension and Outreach to find an EAB First Detector near you. They will help you determine whether your situation needs to be examined more closely. You can also contact the Minnesota Department of Agriculture on their Arrest the Pest Hotline at 651-201-6684 or 1-888-545-6684 to report your suspicions.

Should I be planting or removing Ash?

Because of the overabundance of ash in urban landscapes and other sites, it is strongly recommended not to plant additional ash. Consider the other woody plant options that are available to Minnesotans. However, if you have an ash in your yard and it is healthy, there is no reason to remove it. As long as it is a low maintenance plant, keep it in your landscape.

Should I be treating my ash?

There are insecticides that are available to protect ash from EAB. However, the odds of any given tree becoming infested with EAB are very low.

It is true that infestations in other states usually have gone undetected five years or more before they are discovered, which might also be the case in Minnesota. However, EAB does not kill every tree in an area overnight. University experts throughout the EAB-infested states do not advise insecticide treatments without a confirmed infestation within 12 to 15 miles.

This advice is based on the probability of a tree becoming infested with Emerald Ash Borer. There will be enough time to decide whether to treat your trees once EAB is actually found in Minnesota. Some of the chemicals used to protect trees from EAB can be highly effective but such treatments in the absence of a confirmed infestation are very likely to add years of unnecessary applications and expense.

(Editor's Note: In accordance with the Americans with Disabilities Act, this material is available in alternative formats upon request. Please contact your University of Minnesota Extension office or the Extension Store at 1-800-876-8636.)

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IN THE CROSSHAIRS

Surprise! Emerald Ash Borer Takes Shortcut to the Twin Cities

By PAUL DIEGNAU, CGCS Keller Golf Course, St. Paul

EAB has done some serious leap-frogging in the past year. Who would have thought that the Twin Cities would be its first recognized stop in Minnesota? On May 14 of this year, that scenario became fact with the discovery of an infestation in St. Paul. Unless you have been living under a rock for the past few weeks, you are no doubt aware of this finding and the potential economic, ecologic and aesthetic impacts this pest brings with it.

Back in the Spring of 2008, I joined the EAB First Detector program established by the University of Minnesota Extension Service in conjunction with the MN Department of Agriculture and the MN Department of Natural Resources. The program uses trained volunteers to help MN property owners identify the first incident and subsequent spread of EAB. There are currently about 200 volunteers located throughout the state.

In mid-May, I was contacted by the MDA with my first "case" to investigate. This was exciting! I contacted the homeowner to arrange a meeting on his property in a suburb of St. Paul. He was leaving for the remainder of the day but suggested I stop by, take a look and let him know what I find. The suspicious tree, as I understood it, was located behind the mailbox in his front yard. I was anxious to get going. I arrived at the property and began my inspection...one problem though...I could not find an ash tree in his front yard! Surely, he had not mistaken that sickly elm tree for an ash tree. I left a follow-up voice message explaining the "missing" ash tree and asked the homeowner to call me back in the event I had misunderstood his directions or to arrange another meeting. The return call never came.

The point of my ramblings is this; when dealing with the public take nothing for granted. Even the most basic of information may be incorrect. This in turn leads me to the purpose of my prose. Members and clients at our golf facilities constantly approach us as Golf Course Superintendents (experts) for advice on subjects pertaining to turf, landscaping and the great outdoors. With EAB confirmed in the state, homeowners need guidance and a source for accurate information when it comes to the trees on their property. The call volume for the MDA's Arrest the Pest hotline has increased dramatically since the local discovery. This is a great opportunity for you to step up as an "unofficial" EAB First Detector at your club or golf course.

To summarize, the most important EAB identifiers are:

• Adult metallic green beetles exit the tree via D-shaped holes

• The segmented larval stage moves beneath the bark of the tree and leaves behind S-shaped galleries

• Initial canopy dieback occurs in the upper one-third of the tree and continues to spread throughout the entire tree

• Epicormic growth (water sprouts) growing from the base of the tree

• Vertical splits occur in the bark on the trunk of the tree

(Editor's Note: Please go to www.mgcsa.org to find information from Michigan State University and the MDA website that will assist you when answering questions or inspecting potential EAB-infested trees. Post this information at your facility for your golfers. It will initiate discussion and promote you as a valuable resource. The Minnesota Department of Agriculture's "Arrest the Pest" Hotline is 651-201-6684 for the Metro Area and 1-888-545-6684 for Greater Minnesota.)

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Maintenance Tips to Keep Weeds at Bay and Balls in Play

By DAVID MAUBACH BASF Professional Turf & Ornamentals

In an industry pressured for cost savings, superintendents are considering every option, including going natural. These areas, called by many names, including native, natural and naturalized, can also help make a golf course more marketable during these difficult economic times, by providing increased aesthetic interest for golfers.

Naturalized areas help create a contrast to intensely managed turf and improve wildlife habitat. While an aesthetic case for naturalized areas can be easily made, many superintendents are converting intensely managed turf to naturalized landscapes to cut their input costs related to fuel, fertilizer, irrigation, pesticides and labor. The deep root systems of these naturalized areas, for example, are more tolerant to environmental stresses and require less irrigation. But properly going natural should not be confused with letting Nature take over.

Naturalized areas left to grow at Nature's will are bound to become large weed patches and over-grown eye sores that can become a noman's land for irretrievable golf balls. Unlike turf and groomed landscapes, a naturalized area's success relies on a different type of plant management, and a low maintenance, but methodical approach that includes both pre-emergence and post-emergence herbicides.

Choosing plants and planning maintenance

The types of indigenous or non-native plants a superintendent chooses for naturalized areas have a significant impact on maintenance needs.

Monostands or mixes consisting of fescues, lovegrass, bluestems, broomsedge, wheatgrass, indiangrass and others can provide a clean contrast to playable turf and require minimal maintenance inputs. They are great for sloped areas prone to erosion and some varieties even have natural weed defenses.

Native flowers and wildflowers add color to a course's green-scape but require more care to ensure seasonal blooms and growth succession over invasive, aggressive weeds. When grown from seed, wildflowers may take up to three years to provide the impact desired. Some of the most popular choices for golf courses include cosmos, yarrow, baby's breath, black-eyed susan, primrose, poppy and Shasta daisy to name a few.

Controlling weeds in a naturalized area inhabited by wildflowers can be a challenge for superintendents. Herbicides meant to knock down broadleaf weeds may also kill wildflowers-which are categorized as broadleaf species. As a result, these wildflower areas may require hand weeding and spot spraying to remove unsightly broadleaf weeds. Weedy grass-

"... properly going natural should not be confused with letting Nature take over."

es, however, can be controlled with selective herbicides. If planting wildflowers, superintendents should consider the size of the planting area realizing that these areas will require some hand-weeding to achieve the full benefits.

Getting started on going natural

Establishing strong, healthy plants is key for weed management in low-maintenance, naturalized areas. When beginning a new area, use a non-selective chemical treatment to eliminate weeds and then lightly till. Then use a low seed rate per acre to avoid thick stands of vegetation. Be sure to time seeding with seasonal rains to minimize the need for irrigation. With new areas, it is important to communicate progress to members, because plants may take years to develop and achieve the desired effect.

One way to avoid waiting for the area to develop is to use established plants if available. Plant them in the fall to make the most of favorable soil temperatures and decreased weed pressure. Superintendents could also cut costs by building an out-of-sight nursery to grow native varieties until they're ready for planting. Mature plants should be spaced apart so players have room to walk in and play a missed shot back onto a fairway. A number of grass options, including love grass, fescues, broomsedge and bluestem, work well in these areas.

Managing weeds and promoting healthy, playable growth

Seasonal thinning, trimming, mowing and spraying naturalized areas should be

> included in a golf course's routine maintenance in order to sustain the integrity and playability of the course landscape.

A management plan should start with an inventory of current herbicides in the chemical storage building. Categorize your existing herbicides by application timing, use areas and weeds controlled (see chart). Note pre-emergence and post-emergence herbicides,

whether use sites are appropriate for wildflower areas and native grass areas, and their control of broadleaf weeds, sedges and grassy weeds. While many herbicide products labeled for golf course use do not list native grasses and wildflowers specifically, language on the label usually allows you to evaluate the herbicide on your particular species. You should test the product on a small area to determine tolerance before making applications to larger areas. In addition, many product labels include native grasses and wildflowers that are tolerant to a particular herbicide in the ornamental section of the label.

Pre-emergence herbicides should be the pillar of any naturalized area maintenance plan. Most pre-emergence herbicides labeled for golf course use evolved from crop applications, which typically control tall and unsightly weeds commonly found in naturalized areas. These include grassy weeds such as barnyardgrass, foxtail,

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Naturalized Areas-

(Continued from Page 18)

johnsongrass, panicum and witchgrass, as well as broadleaf weeds like lambsquarter, pigweed, spurge and smartweed. Since most pre-emergence herbicides only affect the roots of germinating weed seeds, they are generally labeled for use on mature grasses with a well-established root system. Using herbicides to preventatively control weeds will be the most cost-effective strategy. If superintendents can prevent outbreaks with one product application, they'll save themselves the time and expense of applying multiple products on multiple weed varieties.

Superintendents should apply herbicides annually as part of their routine maintenance. Other strategies such as mowing and thinning the vegetation will promote healthy growth and keep the area playable.

Superintendents should consider mowing naturalized areas twice a year, once in the spring to provide for a clean, fresh growing season and then again in the fall before plants go into dormancy. Spring and fall are ideal times for superintendents to apply a pre-emergence herbicide to control weeds.

After an area has been established for a few years, superintendents may consider getting a permit for a controlled burn of the area. Scheduling an annual burn during the early spring months will encourage hearty growth and renew soil.

Once new growth appears, apply a preemergence herbicide before grassy and broadleaf weeds invade the area. Postemergence broadleaf herbicides are effective on naturalized grass areas, but eliminating unsightly grassy weeds can be more challenging. There are several postemergence grass herbicides that can be used, but study product labels closely to determine if your stand is tolerant to the herbicide.

Naturalized areas on golf courses continue to be a developing trend. And while they are not maintenance free, naturalized areas can reduce the amount of management required on the overall course and increase aesthetics. Properly managed naturalized areas can be mutually beneficial to superintendent budgets and player expectations. And when created and managed methodically, naturalized areas can give superintendents a visually appealing contrast to the manicured playing areas.

Maintenance Schedule

Breakdown

- 1. Mow in the spring and apply a pre-emergence herbicide.
- Monitor the amount of wildlife living in the naturalized area-if animals or insects have become pests to players, decrease the amount of foodand shelter-giving plants.
- Spot spray and hand weed as needed if weed pressure increases during summer months.
- 4. Mow in the fall and apply a pre-emergence herbicide before dormancy hits.
- If allowed, consider burning to clean out debris and vegtation to promote new growth.
- 6. If desired, label the indignous grasses and flowers to both educate players and help remind maintenance crews which plants are intentional.



Glencoe Team Wins Assistants Spring Mixer At Bellwood Oaks

The MGCSA held its Spring Assistants' Mixer at Bellwood Oaks Golf Course on May 18. Host Superintendent Bill Gullicks and his staff had the course looking very healthy.

Luke Dant, Syngenta Professional Products, gave an informative talk about sprayer calibration and nozzle selection.

The group from Glencoe Country Club finished the day with a one-shot victory. Superintendent Jeff Vinkemeier and his team of Gregg Urban, Marv Huwe and Manley Vinkemeier shot 16under-par.

Finishing second at 15-under was the team of David Newinski, Herfort Norby; Gregg Paulus, The Ponds at Battle Creek; Ron Manske, Versatile Vehicles, and Charlie Miller, Goodrich Golf Course.

The closest- to-the-pin winners were Arik Hemquist, Brackett's Crossing CC; Kurt Knox, Island View GC, and Ron Manske.

The longest putt was drained by David Newinski.

Long Drives of the day went to Riley Kieffer, Dacotah Ridge GC, and the University of Minnesota's Brian Horgan.



SPRING ASSISTANTS' MIXER WINNERS AT BELLWOOD OAKS From the left, Marv Huwe, Jeff Vinkemeier, Manley Vinkemeier and Gregg Urban



20 June 2009 Hole Notes