Wisconsin Emerald Ash Borer Response Plan

Updated: July, 2008

Participating Agencies

Wisconsin Department of Agriculture, Trade and Consumer Protection
Wisconsin Department of Natural Resources
USDA Forest Service
USDA Animal and Plant Health Inspection Service
University of Wisconsin

State of Wisconsin
Jim Doyle, Governor

Department of Agriculture, Trade and Consumer Protection
Rod Nilsestuen, Secretary

Department of Natural Resources
Matthew J. Frank, Secretary

This document accompanies the 2006 Wisconsin Emerald Ash Borer (EAB) Response Plan, developed by the Wisconsin Department of Agriculture, Trade and Consumer Protection and the Wisconsin Department of Natural Resources, and updated in May of 2008. The plan details a response to EAB infestations that may be found in Wisconsin.

The plan is based on the most recent scientific studies and recommendations from key partners and multiple state and federal agencies. Updates to the plan will be made available in a timely manner in electronic format and posted on the Wisconsin EAB Web site at **www.emeraldashborer.wi.gov**.

Consideration of current scientific knowledge, the current strategies employed in states battling infestations, and the plan developed by the National EAB Science Panel have all greatly influenced this plan.

This plan is in a dynamic state. Progress in other states' management programs, research findings, and changes in the recommendations from the National EAB Science Panel and the National EAB Management Team will likely impact the Wisconsin Emerald Ash Borer Response Plan.

This plan will be reviewed annually or more often as new developments such as survey tools and more effective treatments become available.

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Date: July 10, 2008

Wisconsin Emerald Ash Borer
Response Plan

EAB Executive Summary

The Emerald Ash Borer (EAB) is an invasive species from Asia that arrived in the United States in wood packing material. The pest was first detected in Michigan in 2002 and has subsequently spread to Canada and a number of other states including northern Illinois. The pest kills all species of North American ash trees and has killed an estimated 30 million trees to date.

To date, EAB has not been detected in Wisconsin.

When it comes to the potential devastation of EAB, there is a lot at stake in Wisconsin. There are an estimated 737 million ash in our forests and another 5 million in our communities where ash makes up, on average, 20 percent of urban trees. Impacts to the forest products industry and tourism could also be substantial.

The Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP) and the Wisconsin Department of Natural Resources (DNR) have developed a response plan for EAB. The plan was created using a multi-agency partnership with input from the University of Wisconsin, US Department of Agriculture – Animal and Plant Health Inspection Service, the US Forest Service and many other key partners and stakeholders. This response plan – revised in May of 2008 – identifies new strategies based on the science that has been advanced since the original response plan was developed several years ago. With this new information and plan, we are reengaging partners in discussions concerning EAB.

This response plan provides state agencies with immediate guidance on implementing a response to a confirmed infestation of EAB by identifying appropriate and effective actions to minimize the destructive effects of EAB on Wisconsin's ash resource. The plan does not cover long-term management of generally infested areas. A broader EAB management plan is currently under development to address long-term management.

In the event that EAB is detected in Wisconsin, a delimitation survey will be conducted to determine the extent of the infestation. Following the survey, a plan of action will be recommended to manage or control the infestation. Wisconsin's EAB science panel has summarized research findings on a range of management options. This information, coupled with careful consideration of key factors outlined in the response plan, will guide Wisconsin's strategy for managing EAB.

Each infestation will be individually examined and evaluated to determine the most appropriate course of action for that particular EAB find. The response to an infestation must take into account the unique circumstances surrounding the specific infestation. Wisconsin is committed to using the best available science, and information about the economic, environmental and social consequences of the available options, as the basis for making appropriate management and control recommendations.

While there is much work yet to be done to fully prepare for EAB's ultimate arrival, Wisconsin is well positioned and has been taking proactive steps to prevent EAB from arriving, and to find it early, before populations become established. DATCP and DNR staff and our colleagues at the University of Wisconsin, along with other partners at the state and federal level, continue to work diligently on matters of early detection, regulatory safeguards and public outreach in an effort to protect and preserve the ash resource across the entire state.

The Response Plan

The Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP) and the Department of Natural Resources (DNR) have devised a response plan for emerald ash borer, or EAB. This plan was created with the input of the University of Wisconsin-Madison, USDA Animal and Plant Health Inspection Service – Plant Protection and Quarantine (APHIS-PPQ) and the USDA Forest Service. Many key partners and stakeholders have contributed to this plan. There are more who have valuable insight to give. We invite all who read this document to contribute ideas and suggestions.

This Wisconsin Emerald Ash Borer Response Plan is a working document that provides agencies immediate guidance on implementing a response to a confirmed emerald ash borer infestation. The agencies will modify the document on a regular basis. Annually, the agencies will seek input from partners and constituencies on appropriate enhancements or adjustments to the plan.

As previously stated, this plan will assist with a response to an EAB infestation. It is limited in scope. This plan does not cover long-term management of generally infested areas. Management strategies for challenges that will require long term solutions, such as ash disposal and utilization, will be covered in an EAB Management Plan that is currently being developed.

Goal

The goal of the Wisconsin Emerald Ash Borer Program is to identify appropriate and effective response actions to be taken by federal and state agencies when it arrives. These actions include prevention, detection, communication, regulation and management activities. Stakeholders, private institutions, tribal governments and local units of government are contributors to this plan and may be active partners in the response.

Objective

The objective of the plan is to minimize the destructive effects of EAB on Wisconsin's ash resources. Ash trees are a valuable Wisconsin resource as a component of our northern hardwood, oak-hickory and bottomland hardwood forests. They also are widely planted throughout our urban areas and parks. Ash also is valuable to Native Americans in Wisconsin for its excellent basket-making qualities and cultural importance.

I. Background

EAB is native to Asia and appears to have been introduced on solid wood packing material to the Detroit, Michigan area sometime in the early to mid 1990s. The beetle went unnoticed for many years for a variety of reasons: EAB is small, ash often don't show symptoms in the first years they are infested, and many ash in the Detroit area were in poor heath for other reasons. EAB was finally recognized in 2002 when the borer started causing widespread death of ash in the Detroit area and across the Canadian border in Windsor, Ontario. Quarantines on nursery stock, logs, firewood and other potential vectors of EAB were instituted, but EAB had already become established in many areas and it was just a matter of time before they were detected.

In 2003, EAB was found in northwestern Ohio. Nursery stock shipped to Maryland in violation of quarantine led to its introduction in that state and in northern Virginia. Populations of the borer found in Indiana in 2004 and in Illinois in 2006 may also have become established prior to the recognition of EAB in Detroit in 2002. EAB continues to spread and, in 2007, was found in western Pennsylvania. A recent introduction in West Virginia appears to have a firewood origin.

In Wisconsin, DATCP and DNR have been surveying for the pest since 2004. Surveys have been done using commonly accepted delimitation strategies in counties nearest established populations and using other common techniques in areas of high risk such as campgrounds.

As of spring 2008, emerald ash borer is yet to be discovered in Wisconsin.

II. Current Activities

Surveys

Targeted surveys of high-risk areas have been ongoing since 2004. At the time of this writing, the following three survey methods are being used to detect the presence of emerald ash borer in Wisconsin. Ash trees selected for any of these three survey methods should be open grown and well exposed to the sun. Trees that exhibit visible signs of emerald ash borer infestation such as crown thinning, vertical bark splits, D-shaped exit holes, dead and dying branches, woodpecker damage and epicormic sprouts, or are located in high risk areas for EAB introductions are also preferred.

1. Detection Tree Survey

The establishment of a detection tree survey (girdled ash trees that are cut and peeled) consists of locating and girdling ash trees before spring beetle flight. These girdled trees are then felled the following fall or early winter and the bark peeled to the sapwood in order to detect any emerald ash borer larvae or galleries present. Suspect larvae are collected and sent to the USDA-APHIS lab in Brighton, Mich. for identification.

2. Destructive Survey (ash trees peeled without being girdled)

A destructive survey involves the same survey method as the Detection Tree Survey, but the ash trees are not girdled.

3. Purple Prism Trap Survey

Purple prism traps are placed in ash trees prior to beetle flight and left in place for the duration of beetle flight. Suspect adult beetles are collected and sent to the USDA-APHIS lab for identification.

Management and Planning

In August 2007, the Secretaries of DATCP and DNR signed a joint letter outlining the state EAB Program organizational structure and how this structure will function. The structure provides coordination, oversight and direction to the state's interagency preparations for the arrival of and eventual response to EAB. Prior to the development of this structure, the partners were informally coordinating efforts.

The EAB Program structure consists of a six-person Advisory Group made up of managers from DATCP, DNR, University of Wisconsin, UW-Extension, USDA-APHIS and USDA-Forest Service. The Advisory Group sponsors three working groups: Communication and Outreach, Operations, and the Science Panel. These groups have specific charges and assignments and provide input and recommendations to the Advisory Group. In addition, an interagency team, lead by DNR is drafting a comprehensive management plan that will extend beyond the initial response laid out in this plan.

Meeting with Partners

A series of meetings with industries that may be able to utilize infested material have occurred. Five utilization groups have been identified: pulp and paper, sawmills, wood residue (mulch), arborists and loggers. A valuable dialog has taken place with each of the first four groups. Loggers are yet to be included in the utilization discussion.

Outreach

Outreach has focused on internal and external stakeholders who are most likely to detect EAB through the course of their day-to-day activities. This would include municipal and private arborists, landscapers, nursery personnel, utility rights-of-way clearance crews, private and public foresters, loggers and master gardeners. Presentations and articles in trade magazines have been targeting these groups. Information has been given to the State Legislature to apprise them of the threat and ongoing activities. Press releases have been timed to warn the public of the dangers of moving firewood. DATCP has established a toll free hotline, 1-800-462-2803, for reporting potential sightings of EAB. Each caller has been sent an informational packet, and numerous calls have been followed up with personal visits. A number of publications have been created or made available to a wide variety of individuals and organizations.

Research

Investment in research is a key component of the Wisconsin EAB Program, specifically in the areas of detection and management techniques. The Program will continue to pursue opportunities for research funding and partner with scientists who are conducting research related to detection, monitoring and management.

Projects previously or currently supported by the Program through a combination of USDA Forest Service and WI DNR funding include a comparison of detection trees with baited purple panel traps for detection of EAB; the use of hyperspectral imagery to detect early symptoms of

declining health in ash; and the use of multitemporal Land Sat imagery to detect ash in rural forest lands.

III. Response Structure

Incident Command System

An outbreak of EAB has local, state, national and international impact. Because of the threat to other states and Canada, there will be a joint response to the infestation using local, state and federal authorities and resources, and managed using the Incident Command System (ICS), with Unified Command established at the onset of the response. Unified Command is a team effort, allowing all agencies with responsibility for an incident to establish a common set of incident objectives and strategies. This is accomplished without losing or abdicating agency authority, responsibility or accountability.

In addition to the ICS Response Organization, the EAB Advisory Group will review and offer advice on action strategies, recommend research and public outreach objectives, and support funding initiatives. This group possesses the scientific expertise, legal authority, and program responsibility to evaluate and recommend changes in the response actions and those not covered in the plan. The Advisory Group will help resolve issues not easily addressed by any individual involved in the ICS Response Organization.

ICS Response Organization

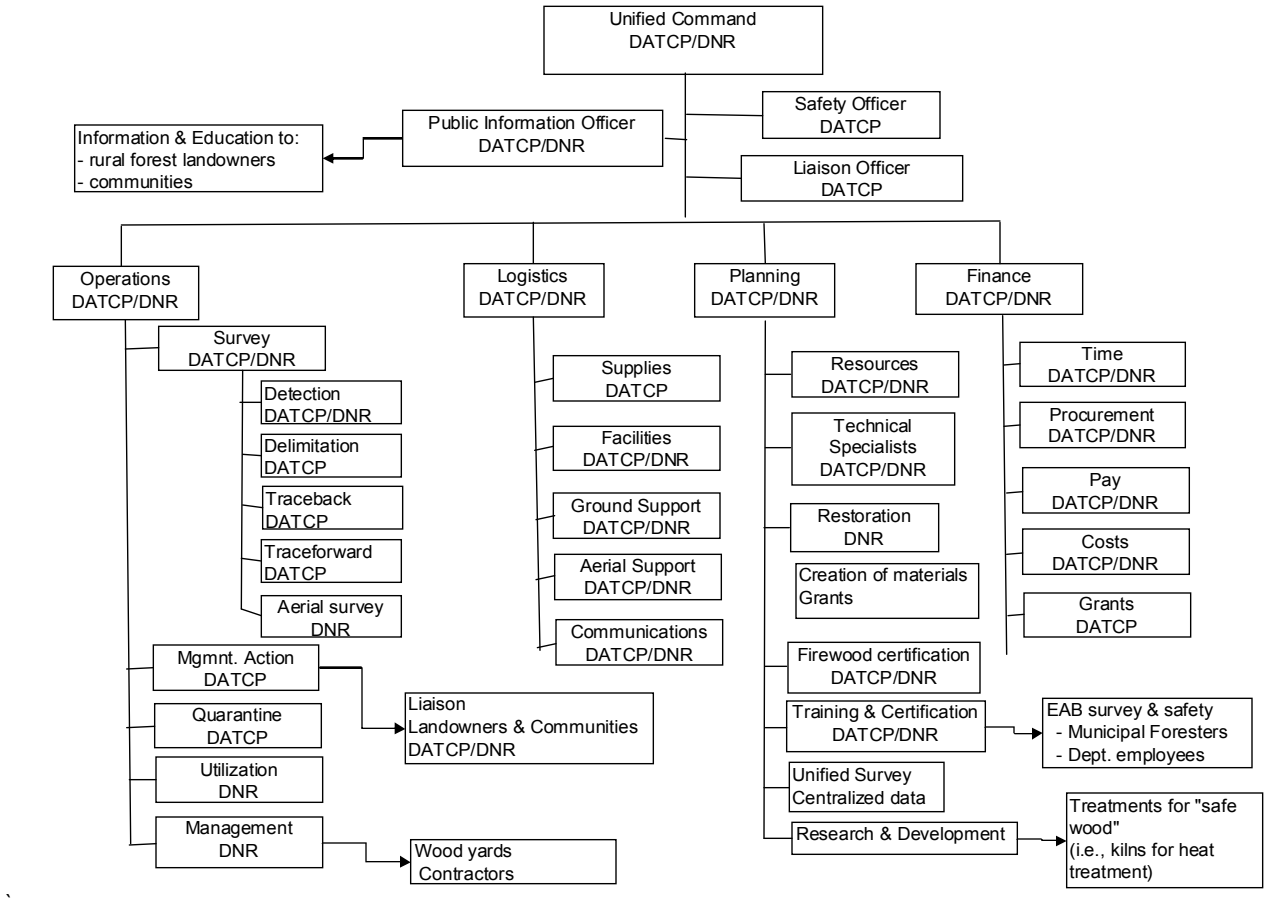
This organization will manage an EAB outbreak by coordinating all activities at the state level. The organization will develop and implement the response plan, gather and assess data, support or conduct investigations, and manage all state aspects of investigative and response functions. Communications activities will be part of the response organization's responsibilities.

DATCP and DNR will develop and assign positions, using ICS. In the field, the assigned Incident Commanders (IC) will each manage all response operations in an infested area.

The ICS Response Organization, under the direction of the IC, will organize workforce activities and other resources. Workforce organization will reflect the needs of the event, including staff assignments for operations, finance, logistics, communications, records, and other needs.

Most of the command staff positions will be filled with representatives from DATCP, DNR and USDA-APHIS. Depending on the location and nature of the response, it is likely that local and tribal representatives will be part of the incident command structure, and may indeed hold command staff positions.

Emerald Ash Borer ICS Response Structure



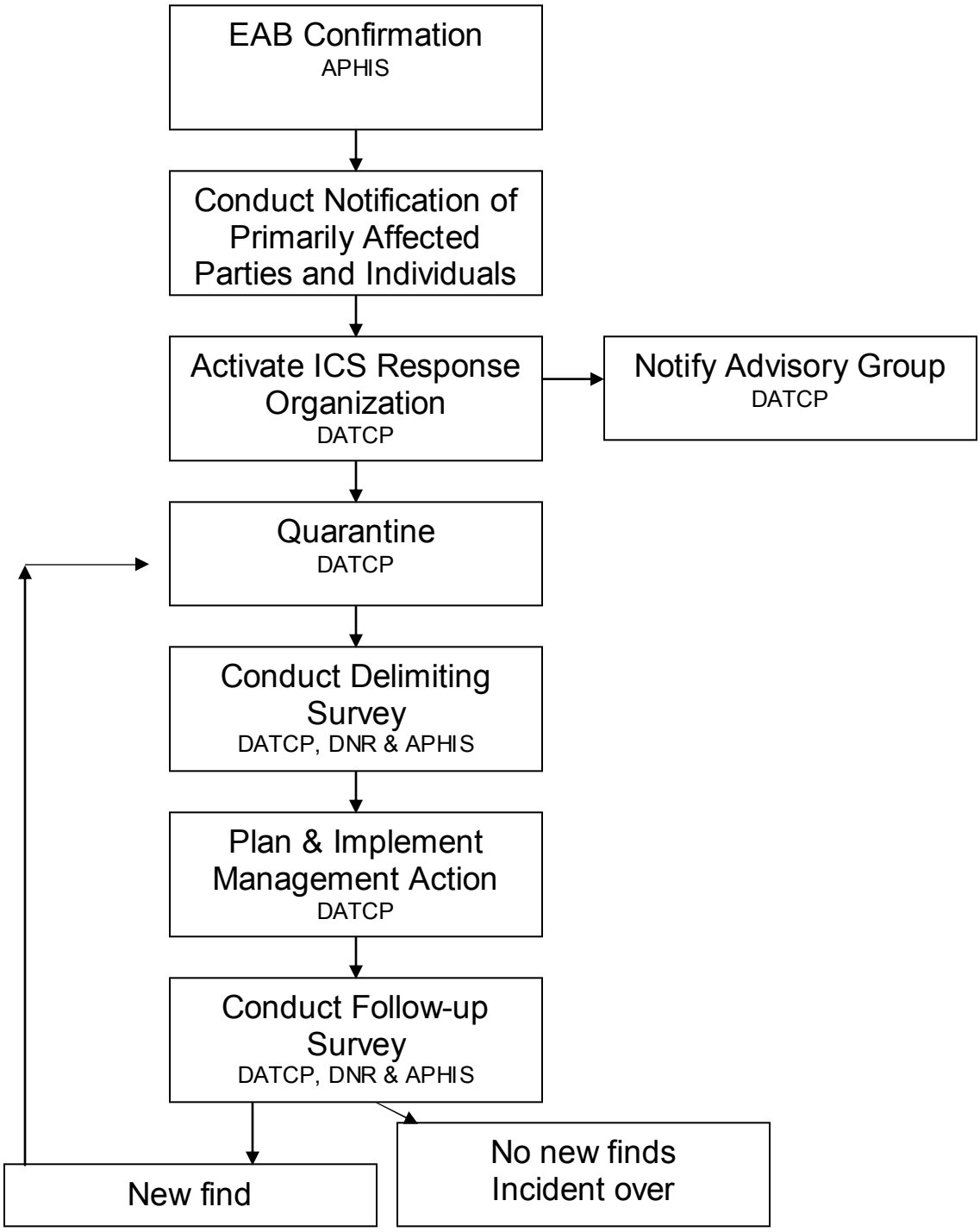
Notification System

There are a number of ways in which the first emerald ash borer may be discovered in Wisconsin. It may be noticed by nursery personnel, a homeowner, or as part of a survey. Regardless of who makes the discovery, the first find must be confirmed by the USDA-APHIS-PPQ laboratory in Brighton, Michigan. Additionally, any new finds in previously uninfested counties must also be confirmed in that lab or by a specialist with WI DATCP. Subsequent specimens may be confirmed by entomologists at the UW-Madison, DNR, DATCP, USDA-Forest Service or USDA-APHIS-PPQ.

Following positive identification of the first or subsequent sample, notification of a variety of individuals must occur prior to the general release of the information. The list of individuals to be notified may vary somewhat depending on the location of the find. Appropriate agency managers and core staff will be among those who are notified early in the response. Others to consider receiving advanced notification include local, state and federal lawmakers and elected officials, agency staff with associated responsibilities, stakeholder and partner groups, and property owners or managers where the finds occur.

Each partner agency will be responsible for determining and carrying out its own internal notification plan.

Notification Following New or Subsequent Confirmations of EAB in Wisconsin



Responsibilities Based on Authorities

The following chart applies to private and public lands. Lands that are generally NOT covered here include tribal and federal land. Federal lands are specifically the responsibility of federal agencies. DATCP may work on federal lands under a cooperative agreement. Each tribal government has the autonomy to determine its own plan of action. Work remains to engage each of the tribe's representatives and federal landowners to determine whether, or how, each would like to proceed on EAB activities. Each group listed in the following chart has responsibilities that are based on federal law, state statute or administrative rule (see following page). Responsibilities that apply to EAB are listed here. Some activities are agency specific, while others are shared across agencies. Moreover, one agency may have the authority for specific actions, but another agency may, at times, have the resources to conduct the work more efficiently. A Memorandum of Understanding (MOU) between DNR and DATCP will help to sort out some overlapping duties.

Government or Organization	Detection	Regulation	Control	Communication
USDA – APHIS	Technical support and funding. Official identification.	Quarantine. Interstate movement. Emergency action notification. Compliance agreement.	Assist with containment.	Participate in activities with other agencies and affected groups. Printed materials.
USDA- FS National Forest System		Restriction of movement of firewood onto national forest land.	May assist with implementation.	
USDA-FS State and Private Forestry	On all federally owned land. Technical support and funding.		Assist with management.	Participate in activities with other agencies and affected groups. Printed materials.
DATCP	On all properties, private and public.	Quarantine. Intrastate movement. Holding and destruction orders.	Delimitation survey. Control and containment. Contracting services.	Notify and coordinate activities with other agencies and affected groups. Press releases and other printed materials.
DNR	On non-federal forest lands. This excludes urban forests, which will be coordinated by DATCP.	On land owned or managed by DNR, they may regulate users, including their use and possession of firewood.	Development of management recommendations in cooperation with other state and federal agencies.	Coordinate activities with other agencies and affected groups. Press releases and other printed materials.
Univ. of Wisconsin	On university property and other by permission.			Printed materials and established professional networks in counties and communities

Applicable laws, statutes or administrative rules

Federal Regulations
Plant Pest Act 2000
7CFR 301.53 – 301.53-9 - EAB regulations
7CFR 319.40 - Solid wood packing material

Wisconsin State Statutes
23.11 - General Powers
23.22 - Invasive Species
23.09(2)(h) - Conservation Cooperation
26.30 - Forest insects and diseases, department jurisdiction and procedure
26.97 - Law enforcement and police power
93.06(11) - Interagency Cooperation
94.01 - Plant inspection and pest control authority
94.02 - Abatement of pests
94.03 - Shipment of pests and biological control agents permits
94.10 - Nursery stock, inspection and licensing
94.46 - Stop sale, penalties, enforcement
94.67-94.715 - Wisconsin Pesticide Law

Wisconsin Administrative rules
ATCP 21 - Plant Inspection and Pest Control.
ATCP 21.17 - Emerald ash borer; import controls and quarantine
ATCP 21.20 - Relating to Voluntary Certification of Firewood Dealers
NR 35 - Zones of Infestation of Forest Pests
NR 45 - Use of Department Properties
NR 45.04(1)(g) - Regulation of firewood entering Department of Natural Resources lands

Public Policy

DATCP has developed two rules which have become law. Both are under ATCP 21 Plant Inspection and Pest Control. The first rule establishes import controls on plants, plant products, soils or other materials that are likely to harbor pests such as emerald ash borer, sudden oak death and Asian longhorned beetles. The second, ATCP 21.20 Relating to Voluntary Certification of Firewood Dealers, allows for certification of firewood dealers and allows for the movement of non-infested firewood. Additionally, DNR developed a rule, NR 45.04(1)(g) Firewood Management on State Lands, that states firewood that is certified by DATCP or originates within 50 miles of the camper's destination is allowed onto DNR-managed properties.

Mobilization and Early Response

Once there is official confirmation of EAB in Wisconsin the ICS Response Organization will be activated and the Operations Section will guide a number of immediate actions.

1. Regulation of Pathways to Prevent Spread

DATCP has the authority to issue a quarantine to restrict the movement of EAB and infested host material. The intent of quarantines is to slow the artificial (human assisted) movement of injurious pests. Federal quarantines are primarily focused on interstate movement and state quarantines are primarily focused on intrastate movement of regulated articles.

Federal regulations for EAB can be found in the Code of Federal Regulations at 7CFR301.53-1 through 9. The state regulations can be found in Wisconsin Administrative Code at ATCP 21.17. There are also several counties that have enacted ordinances that restrict the import of firewood onto county lands.

For practical purposes, quarantine areas need to be big enough that regulated articles can be processed in an orderly manner. The minimum level of quarantine will be at the county level. Additional surrounding counties may have to be quarantined in order for regulated articles, such as wood waste, to be processed without a significant cost increase to municipalities. Communication of regulatory initiatives to affected industries will take place.

The following entities will be affected by EAB quarantines:

Nurseries
Nurseries in quarantined counties would not be allowed to move ash nursery stock to non-quarantined counties or states without inspection and certification. The instances where DATCP would certify ash nursery stock would be rare. Currently, most nurseries have already dramatically cut back on planting ash nursery stock because of the potential restrictions on its movement and also on the declining demand for ash, both in the public and private sector. Nurseries would be able to continue selling and transporting other, non-quarantined species.

Firewood Dealers
Firewood movement would be severely limited in a quarantine situation; all hardwood firewood would be regulated as most people cannot distinguish ash from other species. Only businesses that are able to treat firewood to DATCP and federal standards to mitigate the spread of EAB would be certified and allowed to move wood out of quarantined areas.

Mills
Mills would have restrictions placed on them as to handling of ash logs and the time of year they could process the logs for pulp or saw logs to minimize the risk of transport of EAB.

Other potentially affected industries include pallet and waste product management facilities, landfills and waste transfer stations, wood-fired industrial boiler facilities, arborists and tree care companies. Municipal public works departments and property owners may also be impacted by quarantines.

2. Conduct a Delimiting Survey to Determine the Extent of the Infested Area

Intensive surveying of the immediate and surrounding area will be the first response to any EAB detection to delimit (determine the borders of an infestation) the extent of the infestation. This effort may include a variety of survey techniques such as tree climbers or bucket trucks, the

felling and peeling of suspect trees, or a combination of these to determine the extent of the infested area.

Determining the number and distribution of infested ash trees helps to provide an initial assessment of the control efforts needed. Additionally, tracing the movement of potentially infested materials backward or forward may uncover the source of the infestation or reveal additional infestations elsewhere.

3. Develop a Results-based Plan of Action

Once the delimiting survey is complete, the Incident Commander will request that a plan of action be developed to minimize the spread of the EAB from the initial infestation site and to ensure the most appropriate management of the specific site. Mobilization of additional resources (i.e. public information officer, other agencies, laboratory analyses, and field/technical staff) and implementation of the ICS structure will ensue, ensuring a coordinated effort, including timely and effective communication, as well as a system for record-keeping and documentation.

Efforts will be made to determine the original source of the EAB infestation. This will help identify whether additional actions need to be taken to locate additional infestations or prevent further introductions of the pest.

Disposal and Utilization

Ash trees killed by EAB or those taken as part of a management plan may result in a significant number of trees. As a result, one of the largest challenges in EAB management projects is the disposal or utilization of ash material. Because quarantine regulations restrict the movement of ash material out of quarantined areas (with some exceptions), wood utilization becomes even more difficult. These restrictions may limit the ability to use this material as commercial landscape mulch, wood pulp chips and solid wood products (lumber, railroad ties).

As defined in the ICS chart, one group of the Operations Section will focus on utilization issues. They will gather information regarding the location of potential utilization assets, such as biomass fuel users, firewood processors, tree care firms, sawmills, pulp mills, mulch manufacturers, and landfills.

Additional information about other potential users of ash and the specifications they require will be needed. New markets also may be available or can be developed. For example, wood chips can be used as a bulking agent for sewage sludge composting or as feedstock for creation of pyrolysis oils. Pyrolysis oils can be used as heating oil, a carrier for creosote treating, or as a feedstock for the production of various wood chemicals and wood pellets.

IV. Emerald Ash Borer Management Alternatives

We are committed to using the best available science and keeping current with scientific information. Additionally, we recognize that each site must be evaluated to determine the

benefits of control measures versus the costs. In addition to the review of scientific data, site surveys will be conducted to determine accessibility, environmental sensitivity and endangered resources, in consultation with the US Fish and Wildlife Department, DNR Endangered Resources Program and traditional ecological knowledge.

Implementing Management Strategies

Implementing one or all of the management strategies would perhaps slow, or in some cases stop, the movement of EAB. While researchers continue to develop tools to manage EAB, delaying the spread and population expansion of the insect allows more time to develop even more effective management tools. In addition, Wisconsin communities, homeowners and woodland managers would have time to implement practices that could buffer the effects of quickly losing large numbers of ash trees.

Management strategies are based on research findings and the experience of managers currently working with EAB. Some of the management options are considered experimental and may change based on new information. The most current and best information must be used when evaluating options.

Management Strategies

1. Prevention: Prevention strategies strive to keep EAB out of the state and from moving within the state. Prevention typically includes a strong program of regulation, education and outreach.

2. Early Detection: Early detection strategies focus on detecting an EAB introduction through the use of strategically developed risk-based surveys.

3. Integrated Control or Containment: Integrated control or containment includes employing one to several management techniques to stop or slow the movement and spread of EAB and the rate at which EAB infests ash trees across the landscape.

Management Strategies

Prevention: Regulation

Rationale

EAB life stages (egg, larva, adult) can be moved long distances in or on various articles including nursery stock, logs and firewood. Stopping or minimizing this movement should slow the beetle's ability to spread and colonize new areas.

Considerations

1. Natural spread rates are limited by the ability of adult beetles to fly over long distances. Most female beetles stay within ½ mile of their emergence point; some mated females may fly several miles. Nevertheless, natural spread would be relatively slow.

2. Artificial movement can occur over hundreds or even thousands of miles. The beetle arrived in Michigan from Asia probably on infested wood packing material. The Maryland infestations arrived via infested nursery stock originating in Michigan. Many outlying EAB discoveries have been associated with the movement of infested firewood.

3. Firewood, nursery stock and logs have transported EAB to new locations. In 2003, shipments of infested nursery stock from Michigan arrived first in Maryland and later in Virginia. Logs and nursery stock accounted for several of Ohio's infestations. Firewood was credited with several infestations in Michigan, Indiana and Illinois. Firewood most likely infested a site in West Virginia. This is why ash wood must be certified free of EAB if it is to be moved out of infested areas.

4. Despite regulatory activities to limit artificial movement of EAB, prevention of all artificial EAB movement is difficult. For example, cash sales of nursery trees are hard to trace. Further, it is difficult to regulate homeowners moving firewood, or businesses such as firewood dealers that are not formally organized into associations. Some types of artificial movement may go undetected or are discovered late in the regulatory process. One example of this is movement of municipal tree pruning waste across county and state lines, including movement from northern Illinois into a Wisconsin landfill. Finally, only some of the wood that is certified for movement is actually inspected.

5. The amount of work required to sufficiently inspect all the human-assisted movement of EAB within or across state lines exceeds the available workforce. Cooperation among a variety of public and private entities will be necessary to address this issue.

Tools and Options

1. Interstate and Intrastate Regulation

Goal: Prevent movement of EAB infested materials outside of known infested areas.

a. Regulation of EAB involves preventing movement of EAB with host material including firewood, timber and nursery stock. USDA-APHIS-PPQ regulates interstate movement of host material; intrastate movement is regulated by DATCP. The state and federal agencies work in concert to regulate specific areas. Each agency enacts and enforces laws to accomplish this goal.

b. Compliance agreements between a state or federal agency and a wood utilization business allow for the movement of ash wood from infested areas to non-infested areas. The agreement allows the business to move the wood under certain conditions that will protect against an EAB introduction and at the same time allow the business to continue with their operations.

c. Monitoring of nurseries and mills that process logs is part of ongoing regulatory activities and uses established relationships. Additionally, in the last several years, monitoring for wood-boring pests has been included at manufacturing businesses that receive shipments from overseas that may be associated with wood packing materials. Since firewood has been the most effective vehicle for EAB transport, attempts have been made to monitor and regulate the movement of firewood.

d. A federal quarantine prohibits the movement of all ash tree material and hardwood firewood out of all of lower Michigan and portions of the Upper Peninsula, the states of Ohio, Indiana, Illinois and portions of West Virginia, Pennsylvania and Maryland unless it is federally certified. Under the Plant Protection Act of 2000, violations of a domestic quarantine may result in a monetary fine and/or imprisonment.

2. Firewood Restrictions
Goal: Reduce the likelihood of EAB introduction into Wisconsin through infested firewood.

a. The firewood regulations for Wisconsin Department of Natural Resources State Lands are authorized under Wisconsin State Statutes: 23.11 and implemented under NR 45.04(1)(g)

b. The firewood certification program administered by DATCP is authorized under Wisconsin State Statutes: 93.06 (1p), 93.07(1), 93.07(12) and 94.01 and implemented under ATCP 21.2, Wis. Adm. Code.

c. Firewood restrictions on the Chequemegon-Nicolet National Forest are in place and are similar to those implemented by the Wisconsin DNR.

d. The Apostle Islands National Lakeshore has banned firewood that does not originate on park islands.

e. Several county and private campgrounds have also instituted restrictions on firewood.

Management Strategies
Prevention: Education and Outreach

Rationale

Restricting movement of infested materials, especially firewood, through regulatory actions, is not always feasible or effective. Accidental movement of EAB may occur by someone unfamiliar with regulatory restrictions. Further, movement of infested material could occur from an area prior to the placement of a quarantine or other regulatory action.

Most individuals and industries made aware and educated on the risks of moving high risk materials such as firewood and nursery material will voluntarily alter their practices to reduce the risk of moving EAB.

Considerations

1. Long distance transport of firewood is a common practice for the camping and recreating public. Changing this behavior could eliminate many new, outlying infestations.

2. Several steps can be taken that would greatly reduce the likelihood of moving infested wood, including bark removal and seasoning or drying the wood prior to movement.

3. Informed advocates will often inform and educate friends, family and other associates.

Tools and Options

1. Informing and educating high risk industries
Goal: Identify, contact and inform those industries (including but not limited to nurseries, firewood dealers and those involved in the wood processing industry) that could have some association with the movement of items considered as high risk for movement of EAB.

a. Symptoms and signs of an EAB infestation can be observed on pieces of firewood, logs and nursery trees.

b. Infested material could be found and treated before beetle emergence occurs or before widespread distribution of an infested product occurs. Management practices can be implemented in many industries that would significantly reduce the likelihood of EAB movement.

2. Informing and educating the public
Goal: Inform and educate the public on EAB and on how to avoid inadvertently moving the insect.

a. Maps and location information is available on known infested areas. Anyone living within these areas should be aware of existing quarantine regulations and should be aware of the risk and penalties of transporting EAB on firewood or other articles.

b. Campers and others using firewood should obtain wood from local sources. All firewood should be properly seasoned before moving. The larval stage of EAB is unlikely to survive in wood that has bark removed and is dried over a period of 2 years.

Management Strategies

Early Detection: Surveys

Rationale

Detection of EAB is feasible using survey tools to attract and collect EAB life stages. Formalized surveys conducted by state, federal, Native American and other public entities are underway. These can be supplemented by educated and informed professionals, and others who could encounter infested materials and provide early detection.

Considerations

1. Early detection and monitoring surveys should both be implemented as part of a rigorous survey program. Early detection activities should focus in areas where risk factors are high for introduction. Monitoring activities should focus on the spread, impact and effectiveness of management.

2. Survey techniques should be tailored to the expected insect population. Detection trees are considered more effective in detecting EAB when the insect populations are low whereas baited traps may be more appropriate in areas where EAB populations are high.

Tools and Options

1. Formal surveys
Goal: Develop a coordinated, risk-based survey program that targets the areas most likely for EAB introduction.

a. Risk-based models are available to identify locations where risk of introduction is greatest.

b. Girdled living ash trees are attractive to adult EAB for egg laying. Therefore, girdled trap-trees can be monitored for EAB visitation and later cut and peeled to survey for evidence of EAB presence.

c. Purple panel traps, baited with chemical blends that mimic ash volatiles, are becoming available. Various colors appear to attract EAB adults, and chemical cues further enhance attraction. The traps are covered with a sticky substance that captures insects attracted to the trap and bait.

2. Informal surveys
Goal: Supplement formal surveys with other means of detecting EAB.

a. Tree care professionals, nursery managers, campground hosts, master gardeners and others can be a critical part of the survey effort as these individuals work directly with the ash resource on a regular basis.

b. Use of tools such as the EAB hotline, Web site and a formalized reporting and follow-up system will expand the potential for early detection of EAB.

Research on survey techniques is currently evaluating and comparing the effectiveness of a variety of detection methods. New methods and guidance that clarify detection and monitoring protocols are forthcoming.

Management Strategies
Integrated EAB Control or Containment

Factors that Influence Feasibility of Control or Containment Strategies

1. Age and Size of Infestation
Recent research has provided a reliable method for determining the age of an infestation. Infestations that have been present for several years have had the opportunity to become established and spread. It is much more difficult to determine the boundaries of these infestations. Large infestations covering a range of habitats and landowners are typically more difficult to manage aggressively.

2. Ash Density and Distribution Within and Adjacent to Infestation
This information, obtained from a combination of existing resource maps, database and newly collected data will give decision-makers insight into the amount of resource at risk in the local area. Areas with higher densities of ash will provide management challenges.

3. Confidence in Delimitation Data
Delimitation should employ the best techniques for detecting infested trees. A high level of confidence in the delimitation data allows managers a better chance to predict the outcome of a management action.

4. Proximity to Other Infestations
Examining how each infestation fits in the bigger picture of a larger infested area will help guide management decisions strategically, and use resources more effectively. The proximity to existing infestations affects the likelihood for success of certain management strategies. This factor is closely related to the likelihood of reintroduction.

5. Risk of Reintroduction
Areas where reintroduction is highly probable will require diligent attention to movement of infested materials into the area and monitoring of the area for new infestations. If the likelihood of reintroduction is great, the effort made to manage EAB in that location may be altered accordingly.

6. Risk of Artificial Spread from a Location
Knowledge of the level of risk of artificial spread and how it may occur will help determine the likelihood of successfully managing an infestation and determine the management strategies needed to minimize artificial spread. If a site is deemed a high risk for further spread then managers may wish to focus additional efforts at reducing that risk.

7. Presence of Natural Dispersal Corridors
The presence of natural dispersal corridors could provide additional challenges and require managers to focus on options for limiting spread through these corridors. The presence of such corridors may increase the likelihood of a particular management strategy designed to restrict movement through that corridor. In contrast, a site that is very isolated with limited corridors for dispersal may be managed differently since spread may be less likely.

Making decisions related to the implementation of control or containment options must include evaluation of the factors that influence feasibility and selection.

Factors that Influence Selection of Control or Containment Options

1. Environmental impact

2. Land ownership

3. Land use and classification (e.g. state natural area, agricultural, river edge, swamp, etc.)

4. Cost of implementing management

5. Availability of resources to carry out management

6. Sociological impact

7. Size of infestation

8. Traditional Ecological Knowledge (TEK is the cumulative knowledge and history of the land and resources acquired and interpreted by indigenous peoples.)

The above factors have been identified as important to analyze as part of the process for selecting a control or containment option. The order of the factors is not significant. The influence of one may outweigh others and each infestation should be analyzed separately.

Management Strategies

Integrated EAB Control or Containment: Taking No Action

Taking no action means EAB is permitted to multiply and expand without any human intervention. The rate of spread of EAB across the landscape will be much greater if no action is taken.

Considerations

When choosing to take no action, EAB management is reactive instead of proactive. The general consensus based on research findings and survey work concludes that most ash will be eliminated from the landscape.

1. There is little or no evidence of any inherent resistance or tolerance in any species of native ash in North America.

2. There is little or no evidence of any environmentally based resistance due to soil types, moisture, nutrients, light, heat and topographic position.

3. There is little or no evidence of any associational resistance due to stand or stocking density, tree age mixtures and tree species mixtures.

4. Based on information collected in southeast Michigan, the spread of EAB approached 18 miles per year in the six to 10 years after the initial introduction. The rate of spread over the first one to five years was approximately four miles per year.

Management Strategies

Integrated EAB Control or Containment: Biological Control

Rationale

The use of natural enemies such as insect parasites, predators and pathogens to kill various stages of pests has played an important role in integrated pest management (IPM) strategies. The goal would be for the natural enemies to kill enough life stages of EAB so that the population growth of the beetle would be minimal. This would not eliminate EAB but could slow spread rates and reduce the overall level of tree mortality. EAB, like many introduced insects, has an array of natural enemies in its native range but few here in North America.

Considerations

1. Successful biological control programs have occurred on introduced pests in North American forests yet many biological control release programs have not resulted in noticeable control of the pest species. The likelihood of the current release program being successful will not be known for a number of years.

2. Biological control is often more effective when the host population is at a high density. This may not be the case with EAB, given the low tolerance of ash to invasion by EAB. Other factors such as the efficiency of the biocontrol agent in locating EAB and the host specificity of the agent will affect the success of biological control.

3. Release of biological control agents that are not native is regulated by USDA-APHIS.

4. Availability of biological control agents is affected by many factors, including program support for rearing the biological control agents.

5. There is a possibility that some native natural enemies, perhaps those feeding on native *Agrilus* beetles, could switch hosts to include EAB. Some evidence for this exists, but to date the overall impact from these agents has been minimal.

6. Woodpeckers are commonly observed feeding heavily on EAB larvae and pupae within infested ash trees. However, the impact this feeding has on EAB population growth is probably not significant.

7. Future work includes evaluating the three species released to date, further foreign exploration for any additional natural enemies including insect pathogens, and

monitoring native natural enemies and existing non-native species that could begin to utilize the very abundant EAB as a host.

Tools and Options

Release of biological control agents
Goal: Establish one or more biological control agents that will target EAB and become established in the EAB population.

a. Three parasitoids from China have been identified as potential candidates for the biological control of EAB in North America. Two larval parasitoids, *Spathius agrili* (Hymenoptera: Bracondiae) and *Tetrastichus planipennisi* (Hymenoptera: Eulophidae); and one egg parasitoid, *Oobius agrili* (Hymenoptera: Encyrtidae). Non-target studies on these three species appeared to indicate minimal risk to native insect fauna; therefore field releases of all three species were approved for Michigan in the summer of 2007. At this time, the available number of insects for release in the field is very limited and so field releases to date have been targeted at specific research projects.

b. Currently registered bioinsecticides (*Beauveria bassiana* and *Meterhizium anisopliae*) have been field and lab tested against EAB. Adult and larval mortality does occur, especially with *Beauveria*, but application problems exist, making field applications impractical at this time.

Management Strategies
Integrated EAB Control or Containment: Attract & Remove

Rationale

Girdled trees are consistently effective at attracting EAB when populations are at low to moderate densities. Girdled trees act as "sinks" because EAB females preferentially oviposit (deposit eggs) on them. Removal and destruction of a girdled tree after oviposition eliminates the larvae in that tree.

Considerations

1. Annual removal of sink trees will eliminate a portion of the EAB population. Whether that portion is enough to affect EAB density in the subsequent year will depend on EAB density, number and distribution of girdled trees and possibly competition from other stressed ash trees.

2. It is unknown whether or not attraction to sinks limits dispersal of EAB.

3. Lures are improving but are not yet effective enough for this application.

4. Sinks could be used in combination with ash reduction, insecticides or other strategies.

5. Research data support preferential EAB attraction and oviposition on girdled trees but it's not yet clear what proportion of an EAB population can be removed using sinks.

6. At high EAB densities, sinks will not work. There is no attraction because all ash is stressed (no differential attraction). At high densities, EAB compete for whatever ash phloem is available.

Tools and Options

1. Sinks
Goal: EAB adults are attracted to girdled trees. After beetles oviposit on the girdled trees, the trees are removed during the winter or early spring, eliminating a source of EAB. This should decrease the density of EAB and slow the spread.

a. Sink trees serve to identify trees that should be removed (versus unknown oviposition pattern).

b. Should be done over time.

c. If sink trees are merchantable, they could be utilized.

d. Although some information is available, the optimal density and spatial distribution of sink trees has not been determined. Details outlining deployment of sinks would likely need to be done on a site-specific basis.

2. Lethal Trap Trees
Goal: Minimize EAB dispersal out of a designated area, protect a designated area, or attract and kill the residual population of EAB as a follow-up to other management actions. Similar to sinks but these trees would be treated with an insecticide. Trees are trunk-injected then girdled roughly 3 weeks later (to allow for translocation of insecticide). Alternatively, trees could be girdled then sprayed with a topical insecticide application.

a. May be most appropriate to attract and kill a residual EAB infestation following selective harvest or other cutting activity or to protect a designated area. Specific trees could be left to serve as lethal trap trees or balled and burlaped ash trees (treated, girdled) could be brought in for this purpose.

b. Could use trees for 2 years. The first year, trees could be lethal trap trees. The second year, they could serve as stressed sink trees that are removed during the winter.

c. Treatment success could vary with tree size and the EAB population pressure. The optimal density & spatial distribution of lethal trap trees is unknown.

3. Combine Sinks and Lethal Trap Trees
Goal: Create sinks by girdling ash trees. Prior to girdling, treat half of the trees with an insecticide. Remove girdled, untreated trees during the winter. Allow girdled, treated trees to stand an additional year to serve as sinks and remove during the winter.

a. Costs would be lower than treating all trees.

b. Should help to limit dispersal. Emerging beetles are attracted to foliage for feeding, but killed before they can oviposit or disperse.

4. Islands of Attraction
Goal: Combine sinks, lethal trap trees and ash removal to create islands of attraction to attract and kill the residual population of EAB after eradication or other ash reduction activities.

Selected "attract and remove" techniques outlined in the above section are currently being tested in Michigan and Maryland. There is significant evidence that EAB is attracted to girdled ash trees, yet research is still needed on the effectiveness of employing these techniques on reducing the EAB population and how that translates to injury to trees. Information is also needed on the effectiveness of these strategies on limiting dispersal of EAB.

Management Strategies

Integrated EAB Control or Containment: Insecticides

Rationale

Insecticides are available that target the larval or adult stages of EAB. Some products target both. On individual trees, insecticides may be used to prevent an infestation or to reduce the impact of an infestation.

Considerations

1. Use of pesticides on a large-scale (rural or urban forest) as opposed to individual tree management will require addressing issues such as environmental impact on a variety of ecosystems and objections to pesticide applications.

2. If numerous untreated infested ash trees are nearby, insecticides are less likely to protect trees due to the potential for repeated attack on trees by a large population of EAB.

3. Control strategies that include the removal of ash trees may include removal of treated and untreated trees.

4. Availability of effective registered products.

5. Research results have shown that insecticides can protect ash trees from being killed by EAB however, results are variable and success is not guaranteed.

6. Research on the use of insecticides to control EAB is in the early stages and more information is needed to understand the role insecticides may play in managing EAB in the long term.

Tools and Options

1. Systemic Insecticides (soil drenches, trunk-injections or trunk-sprays)
Goal: Limit the dispersal of adult beetles and kill larvae and/or beetles before they oviposit.

a. The number of available products and application methods is increasing, but product effectiveness and costs of treatments vary.

b. Products could be used to reduce the density of EAB or protect individual trees or groups of trees.

c. Once trees become infested, systemic insecticides may be less effective due to the tree's reduced ability to distribute the insecticide.

d. A summary of insecticide management options has been developed by Dr. Chris Williamson, UW-Madison Extension Exotic Insect Specialist. This summary can be found at **www.entomology.wisc.edu/emeraldashborer**.

2. Cover Sprays
Goal: Limit the dispersal of adult beetles and kill newly hatched larvae on the bark before they enter the tree, and/or adult beetles as they feed on the foliage, before they oviposit.

a. Protective cover sprays must be timed precisely to be effective.

b. Depending on the product, non-target insects may be killed.

c. Some products may have restrictions on where they can be applied, limiting broad-scale use over the landscape.

Management Strategies

Integrated EAB Control or Containment: Ash Reduction (Phloem Reduction)

Phloem tissue is the innermost layer of the bark and serves as the source of food for the larval stage of EAB.

Rationale

EAB, like other phloem-feeding insects, is primarily regulated by availability of phloem.

Considerations

1. Limiting, reducing or eliminating ash phloem slows EAB population growth.

2. Population density is related to rate of spatial expansion of invasive pest populations. Reducing the rate at which populations build will reduce rate of spread.

3. Research has indicated that population densities of EAB can be minimized by reducing its food resource through the harvest of ash trees (McCullough and Siegert, 2007).

4. It must be emphasized that reducing phloem availability will not necessarily prevent EAB from infesting remaining trees. Gandhi et al. (2007) found no relationship between EAB induced ash mortality and stand-level variables, including ash density, ash basal area, total basal area, total tree density and species diversity. Nonetheless, by minimizing EAB densities, the rate of EAB infestation may be slowed, at least at the forest stand level. More research needs to be conducted to determine if phloem (ash) reduction can slow EAB infestation at larger scales, such as the watershed level.

Tools and Options

Models

Goal: Assist land managers with calculating number of ash trees to remove to meet a phloem (ash) reduction target.

a. To assist land managers in determining how many ash trees should be harvested to meet phloem (ash) reduction targets, an ash reduction model has been developed by Michigan Technical University (ashmodel.org). Based on the number of trees-per-acre and the diameter class data, the model calculates ash tree phloem basal area (a good indicator of the relative amount of phloem available to EAB) based on tree size and canopy closure conditions. Outputs for the model include diameter limits for removal of either small or large ash trees. Management objectives that require the harvest of larger ash trees, with their greater phloem availability, will result in fewer harvested trees.

Selective harvest

1. Infested Ash Tree Removal

Goal: Remove or destroy ash trees with symptoms of EAB infestation or otherwise known to be infested with EAB.

a. Eliminates a portion of the EAB population if done after ovipostion, but before adult emergence.

2. Large Ash Tree Removal

Goal: Phloem (ash) reduction will decrease the number of EAB that can be produced in a specific area but will not necessarily prevent EAB from infesting remaining trees; lower EAB density equates to slower EAB spread. Large ash trees produce many more EAB than smaller trees.

a. Large ash are typically much less abundant than small ash trees (e.g. only 5-6% of all ash trees at 3 Michigan outlier sites were 10" in diameter at breast height {DBH} or larger).

b. Trees ≥ 10" DBH are merchantable and could interest timber buyers or other value-added producers, providing money back to landowners.

c. Large trees are generally more difficult to successfully treat with insecticides than smaller trees.

d. Need to consider post-harvest regeneration.

e. Models have been developed to estimate area of phloem removed or retained and number of EAB that will be produced under different scenarios. Models provide a means to compare alternative options and justify actions.

3. Cut and Leave
Goal: Felling trees but leaving them on site is more efficient than felling and removing trees. Most late instar or prepupal EAB already developing in trees will likely emerge from felled trees. The felled trees no longer serve as brood material, however, so EAB density builds more slowly and spread rate slows.

a. Requires access to trees; felling trees may be a problem in wet areas, ecologically sensitive or culturally significant sites.

b. Can combine this with other options. For example, merchantable ash trees are harvested and removed first leaving only small ash trees to be felled. No effort would be made to remove or destroy small trees or logging slash.

c. Could combine with sink trees or lethal trap trees as defined later in the document under attract and remove.

4. Herbicides
Goal: Use registered herbicide to kill ash trees, reducing ash phloem. EAB larvae already developing in trees will likely emerge but dead trees will no longer serve as brood material. Population density builds more slowly and spread rate slows.

a. May be suitable in combination with other options such as sinks or large tree harvest.

b. Less damage to soil than felling trees, faster and more efficient.

c. Can be used where water or topography limit access for tree felling.

5. Preemptive Removals
Goal: Preemptive removals, done on a large enough scale, could potentially reduce EAB movement across a landscape by making it difficult for dispersing beetles to find host trees.

a. Ash tree removal occurs prior to the arrival of EAB into a local area. Preemptive removals are most commonly considered in urban landscapes. City managers may consider this in order to provide flexibility in tree removal budgets. Preemptive removal can avoid a period of extensive tree mortality that overwhelms city forestry budgets. It is also a forest management approach in woodlots and forested stands to capture existing value in logs prior to the establishment of quarantine zones or loss of value from tree mortality.

b. The scale of preemptive removal can vary. Some cities have proposed complete removal of all ash trees over a relatively short time period (ie. 10 % removal each year for 10 years). Other communities view preemptive removal as a tactic aimed at reducing, but not eliminating, the existing ash component over a period of time. Existing ash trees are discriminated against, especially if in poor health, but the elimination of all ash is not a goal. Under this scenario, the removal of ash trees when EAB arrives should be more manageable. Many Wisconsin communities have a large ash component currently existing on city and private property.

c. Existing forest management guidelines for Wisconsin forests discourage complete preemptive removal of ash. However, they do recommend reducing the ash component in stands where ash is very prevalent as part of regularly scheduled harvests. Doing this prior to EAB arrival in an area should provide land managers more flexibility.

Management Strategies

Integrated EAB Control or Containment: Eradication

Rationale

It is possible to eradicate isolated, relatively small EAB population centers. If eradication is successful, a local reproducing population is eliminated and the risk of spread out of that area will no longer exist.

Considerations

1. In Virginia, 3 years of surveys yielded no evidence of emerald ash borer after 287 trees from an infested shipment of Michigan nursery stock were destroyed. This was a known source of EAB that was discovered soon after the initial introduction.

2. An eradication treatment in Brimley State Park in Michigan's Upper Peninsula appears to have been successful. The infestation was found early and there were not many ash trees in the Brimley area. Eradication has been a favored option on occasion for outlier sites that are separated by some distance from generally infested sites.

3. Two scientific studies conducted in 2003 and 2004 provided the basis for an eradication strategy. Each of the studies included a known source of infested firewood or nursery stock. Sampling showed that most larvae were found close to the source of the infestation. Further, infested trees were within less than a ½ mile radius of the source.

4. Though some eradication successes have occurred, many eradication projects have failed. One of the reasons for this is that it is very difficult to adequately determine the extent of an infestation. Implementation and follow-up surveys are labor intensive and expensive.

Tools and Options

1. Complete host removal
Goal: Complete elimination of a localized population of EAB by removing all existing infested trees and removing all potential host trees that could harbor undetected beetles.

a. Removal of all ash trees within a prescribed area of known EAB-infested trees. Seemingly healthy ash trees are removed because they may be infested but without obvious symptoms. Felled trees are typically chipped and burned. Stumps are removed and ground or treated with an herbicide to prevent sprouting. Subsequent monitoring of eradication sites should occur for three years to determine the success of the eradication effort and the need for follow-up.

2. Combination of host removal and other tools
Goal: Complete elimination of a localized population of EAB by removing all existing infested trees and employing other tools that attract and/or destroy residual EAB populations.

a. All known infested ash trees are cut and destroyed.

b. Remaining ash trees within a prescribed area around the known infested trees may or may not be cut and destroyed.

c. A variety of tactics are considered for the remaining ash trees and are described in the previous sections as sinks, lethal trap trees, islands of attraction, and cut and leave.

d. Emerald ash borer beetles that remain in the area after removal of the known infested trees should be concentrated and killed, with the end result being eradication of the local population.

The WI EAB Science Panel does not endorse any single management option but encourages a thorough review of factors affecting management decisions and analysis of each management option.

V. Communication

Overview and Audiences

Recent natural disaster and disease outbreaks underscore the importance of timely and accurate communication from public officials charged with responding to the situation. Poor communication may erode support for the Program, needlessly increase losses of a social or

economic nature, and lead to a general misunderstanding or distrust of the public or private agencies and organizations involved. Accurate and timely information may help encourage cooperative behaviors such as abiding by quarantine guidelines and reporting possible new infestations, limit false rumors about the Program, and calm potential anxiety over possible solutions.

It will be the responsibility of all agencies involved to cooperate to the fullest extent possible, with the appropriate staff and resources, to provide information to a wide variety of audiences. The audiences may vary depending on the size and location of an EAB infestation, but may include homeowners; property owners or managers; green industry businesses; public and private foresters and tree care professionals; local, state, federal and tribal government officials, both elected and appointed, municipal or county employees, and staff and managers within the responding agencies. In some cases, agency staff will be among the first people notified and supplied information in anticipation of responding to public inquiries.

The media will also be an important group that will require considerable effort to keep abreast with clear and accurate information. Each agency has special expertise and working relationships with members of media and will be able to provide support to the overall Program. A joint information center will be established as part of the ICS response to help ensure that coordinated, effective communication occurs. The responsibilities of various agency staff assigned to the communication effort will likely vary day to day, depending on the unique circumstances of the infestation and the goals and priorities of the Program.

Communication Tools

A combination of communication and outreach tools will likely be necessary to reach the largest possible number of affected individuals, businesses and organizations within an area of infestation.

1. Internet

A growing number of people rely on the Internet for news and information. The Wisconsin Emerald Ash Borer Web Portal will be one of the primary ways that the Program communicates with the public and media. The portal address is **www.emeraldashborer.wi.gov**. The portal may also be reached through this address, **www.banthebeetle.wi.gov**. Additional Internet resources for EAB information exist at **www.emeraldashborer.info** and within each of the state agencies (DATCP, DNR, UW) responding to the infestation. The USDA Forest Service and APHIS-PPQ also have Web pages dedicated to emerald ash borer information.

2. Press Releases

Information to the media is primarily delivered through press releases. Press releases, or press advisories, may be issued as necessary to announce Program initiatives, community meetings, delimitation survey results, and related information. Agency professionals will prepare and disseminate press releases with the approval of the Advisory Group, the Incident Commander, or a chosen representative of either. It is expected that each agency may also issue separate press releases on related topics, but not regarding the Program as a whole. All press releases and advisories should be shared with appropriate agency colleagues, partners, stakeholders, lawmakers, and the like.

3. Informed Partners
There exist in some agencies specific groups or individuals who may not be directly involved in a response to an EAB infestation, but because of their positions or connections to people or groups in the state, county, municipality or region, will be important avenues for communicating Program information. Examples include UW-Extension agents and master gardeners, DNR regional urban forestry coordinators, and DATCP nursery inspectors.

4. Community Forums
Face-to-face communication with affected individuals and parties is important and will be given high priority throughout all phases of the response. Forums or open houses allow local citizens the opportunity to speak directly to Program representatives and agency staff to express concerns or to simply gather additional information.

5. Printed Materials
A number of materials already exist that cover a variety of Program components or specific EAB information. Additional materials to address local, specific needs may be necessary to produce. In-house graphic artists or private contractors are readily available to do this work. Normal state printing procedures and guidelines may need to be temporarily circumvented in order to provide materials to affected citizens and businesses in a timely manner.

6. Commercial Advertising
While a considerable amount of information will likely be disseminated through unpaid media channels in the way of news reporting, it may also be necessary to procure advertising on radio, television or newspapers to reach a greater audience. Budget constraints must be considered prior to moving forward with any paid advertising plans.

Communication with Native American Tribes in Wisconsin

Native American Indian Tribes in Wisconsin are separate governmental entities, and Governor Doyle has instructed Wisconsin state agencies to interact with tribes on a government-to-government basis.

Wisconsin agencies charged with preparing for, and responding to, the threat of emerald ash borer have been, and will continue to be, in communication with the Tribes and with federal agencies that work on their behalf, including the Bureau of Indian Affairs and the Great Lakes Indian Fish and Wildlife Commission.

Communication with affected Native American Tribes should be timely and consistent, placing a high priority on cooperation with the Tribes to seek an effective control plan for areas in and around Tribal lands.