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☞ Informational hearing May 1, 2007: Emerald Ash Borer

(FORM UPDATED: 08/11/2010)

WISCONSIN STATE LEGISLATURE ...
PUBLIC HEARING - COMMITTEE RECORDS

2007-08
(session year)

Assembly
(Assembly, Senate or Joint)

Committee on Forestry...

COMMITTEE NOTICES ...

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INFORMATION COLLECTED BY COMMITTEE FOR AND AGAINST PROPOSAL

- Appointments ... **Appt** (w/Record of Comm. Proceedings)
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- Hearing Records ... bills and resolutions (w/Record of Comm. Proceedings)
  (**ab** = Assembly Bill) (**ar** = Assembly Resolution) (**ajr** = Assembly Joint Resolution)
  (**sb** = Senate Bill) (**sr** = Senate Resolution) (**sjr** = Senate Joint Resolution)
- Miscellaneous ... **Misc**

* Contents organized for archiving by: Stefanie Rose (LRB) (July 2013)

Gary, Tim

From: DeLong, Paul J - DNR
Sent: Sunday, March 11, 2007 9:31 PM
To: Friske, Donald
Subject: Challenges facing our forests

During our discussion Thursday you asked for me to provide you a summary of items I have shared with the Council on Forestry in the recent past with respect to challenges facing our forests. I hope the following meets your needs. If you desire something more or different, please let me know.

Challenges facing our forests:

Invasive species: Invasive species are becoming an increasing threat to the long-term sustainability of our forests. The rate of introduction of invasives into the United States continues to escalate due to global trade. Although most exotic species are unable to survive here, and many others are not aggressive, a significant number of species do invade our forests, displace native species and cause significant environmental, economic and social damage. One such species is emerald ash borer. Although we have not found it here in Wisconsin yet, it is known to be within 35 miles of our border. This insect kills every ash tree it gets into, and has already killed tens of millions of trees in the Midwest and Canada. In Wisconsin we have an estimated 717 million ash trees in our forests. If these trees were consolidated in one area, it would cover over one million acres, which is an area equivalent to the total acreage of Langlade and Lincoln counties combined. Put another way, it is the equivalent of losing all the forested acres of Columbia, Dane, Dodge, Green, Iowa, Jefferson, Kenosha, Lafayette, Milwaukee, Ozaukee, Racine, Rock, Sauk, Sheboygan, Walworth, Washington and Waukesha counties combined. Furthermore, one in every five trees in our urban forest is ash. The replacement value alone of just our urban ash trees is $1.5 billion. This does not account for the array of functional values – such as storm water retention, energy use reduction, air purification, aesthetics, habitat, among others, that these tree provide.

Forest fires: Most people alive today were not alive when forest fires ravaged the state during and after the cutover era of the late 1800s and early 1900s. We have demonstrated a lot of success in suppressing wild fires over the last 70 years, saving countless lives and property. Although the technology and equipment used to suppress wild fires has improved over the decades, we face increasing challenges in addressing the threat of wild fire in the expanding Wildland-Urban Interface (WUI), the area where forest meets homes. As people build further out into the forest, the challenge of protecting lives, property and natural resources escalates. Partnerships with, and grants to, local fire departments have increased our collective capacity, but we remain challenged to effective address threats in parts of the state in which ever more homes reach into the forest.

State lands: The DNR has redoubled its efforts to implement prescribed forest management activities on state lands. With legislatively-directed shifts in responsibilities on private forest lands, increases in state lands accomplishments are being realized. However, a great deal more work needs to done to fully implement forest management activities consistent with property purposes and master plans.

Forest-based economy: Wisconsin's forests are critically important to the State's economy. The forest products industry is one of the top three economic sectors in the state, producing more than $20 billion in value and employing nearly 100,000 people. Furthermore, the forest-based recreation economy contributes another $5.5 billion to the Wisconsin economy. The forest products industry is increasing

challenged by global competition. Not only does this put at risk a critical component of the State's economy, it also has consequences to the environmental and social benefits our forests provide the people of Wisconsin. A robust forest products industry helps promote sustainable forest management practices, rather than the destructive practices so common in places without markets for smaller trees. We have been fortunate to have markets for a range of species and products, facilitating forest practices that are sustainable long-term. Further, healthy forest products markets create an incentive to maintain land in forest, particularly by those who own large blocks of forest land. Losing markets will increase the incentive to fragment the forest, which in turn has adverse environmental, economic and social impacts, including the loss of an economic base, and the closure to the public of forest land that has been open to activities such as hunting for generations.

Forest Fragmentation: There are nearly one million acres forest owned and managed by companies involved in the forest products industry. Almost all of these lands have undergone one or more changes in ownership in the last decade. The total acreage under these ownerships has declined, as parcels have been subdivided and sold to other interests. Of those that remain, just over 10% have long-term protection to assure their continued capability to be managed as large blocks of working forest land, producing raw materials needed by our industry, providing an array of environmental benefits – wildlife habitat, clean water, etc., and providing the settings for an array of recreational pursuits. Concerns exist for the future of the nearly 90% of these lands without any long-term protection and whether they will continue to be provide this array of benefits for future generations. Assuring long-term maintenance of public benefits while keeping the land in private ownership is an important objective for us to pursue to minimize the fragmentation of these lands.

Bio-energy: In our efforts to rely less on the Middle East and more on the Midwest for our energy, our forests will play an important role. Cellulosic ethanol is on the horizon, and wood will be a key source of cellulose, one that Wisconsin is in an excellent position to utilize with more than 16 million acres of forest land. Particularly promising is our ability to build on our existing pulp mill capacity and create biorefineries. The ability to produce both energy and pulp for making paper products will enhance both the economic value of our existing industry but also add a key source for producing energy locally. In addition to transportation fuels, trees are also a source for producing electricity through combustion, another key component of our energy portfolio. It is important that Wisconsin be positioned well to realize the economic and environmental benefits of producing bio-energy from our forests.

Private lands: With 70% of Wisconsin's forests in private hands, and an even greater percentage of the wood produced from our forests coming from these lands, their management is critical to the health and sustainability of both the forests and the public benefits they produce. Working in concert with the private sector, the State investment is focused on maximizing the public benefits from these forests, recognizing that market economic forces do not take into account the full range of benefits we all received from them. As these forests become more fragmented and the number of owners escalates – now exceeding 260,000 – we need to look at additional tools to ensure these forests can continue to provide valuable inputs into our State's economy (through both existing industry and emerging markets such as bio-energy) as well as continue to clean our water and air, provide habitat for a diversity of wildlife, sequester carbon, and provide the settings in which many of us live, work and recreate.

Climate Change: The globe is warming, and forests play an important role in mitigation of that warming. Further, our forest will be affected by changes in our climate. Given that forests change slowly over time, and the fact that decisions we make about our forests today will reverberate for generations, it is important that we carefully consider forests and our actions to sustain them. Given the role forest play in sequestering carbon, and the fact that forests provide an important source of renewable products, including energy, sustaining the capacity of our forests to provide these products and services is only growing in importance. What is clear is that forests can not do these things over the

long term if they are lost to developed or managed in an unsustainable manner.

Although there are other challenges, I think this gives you a sense of some of the major issues we face in our drive to protect and sustainably manage Wisconsin's forests.

Let me know if you have any questions or would like additional information.

Thanks.

Paul


FORWARD

Wisconsin State Legislature
Joint Committees on Forestry and Natural Resources
Legislative Hearing on Emerald Ash Borer
May 1, 2007

Good afternoon. I'm Philip Bell, U.S. Department of Agriculture (USDA) Animal and Plant Health Inspection Service (APHIS) Regional Manager for Emerald Ash Borer (EAB). I'm here with Vic Mastro, Laboratory Director for the APHIS Center for Plant Health Science and Technology (CPHST) Pest Survey, Detection and Exclusion Laboratory.

We appreciate having the opportunity to talk to you today about the Federal role in stopping the spread of EAB. But before I go into the details of our role, I'd like to emphasize that this is a cooperative process, being undertaken by numerous state and federal agencies, several universities, and also in collaboration with the Canadian Food Inspection Agency. In North America, this pest currently has infestations in Michigan, Ohio, Indiana, Illinois, and Maryland, as well as Windsor, Ontario, Canada. As you know, its impact goes beyond the boundaries of the infestations and affects states like yours, which are proactively working to prevent its spread. By joining together, we are best leveraging our resources and our experts to combat this harmful pest.

Today, there are approximately 1,256 cities and townships infested with EAB. According to a 2005 study by the U.S. Forest Service, if APHIS does not conduct an EAB detection and containment program, predictive rates of EAB spread could average 8 miles per year. If no action is taken to slow or impede the natural spread of EAB from currently known sites, in 10 years EAB will infest more the 3,000 cities and townships, and upwards of 12,000 municipalities in 20 years. Human assisted movement would aide in moving the beetle to unknown sites across the country. However, the study also indicated that if program actions endorsed by the EAB Management Team are applied, EAB expansion would affect less than half the municipalities of the no action scenario. If support for current program protocols and aggressive actions are employed that include population suppression procedures, pesticide treatment options, and release of biological control agents, EAB spread will be minimized and eradication may be realized.

I'd now like to discuss how APHIS and its partners are working to prevent the scenario presented by the U.S. Forest Service, and how the EAB program has evolved at the federal level, since the initial discovery of EAB in Michigan in 2002. Inherent challenges, unknown in 2002, greatly impacted the course and progress of the EAB program. These challenges included: (1) EAB was discovered some time after it had already arrived in the United States, (2) our knowledge of EAB was limited when it was discovered in the United States, and (3) additional EAB research and characteristic studies were needed prior to implementation of control and eradication studies due to the range and extent of EAB infestations. Initial surveys revealed the beetle inhabited much of the urban landscaped manufacturing areas of southeast Michigan, suggesting infested dunnage or infested wood crating may be responsible for its transit from foreign countries where it is not known to be a significant pest.

Following the initial discovery, a Science Panel made up of the top forest pest entomologists in the country was organized by APHIS to provide an assessment of the insect's possible impacts and recommend what type of response there should be to its introduction. In its first report, the Science Panel concluded that: 1) EAB is functioning (in North America) as a primary pest and it threatens the ash resource of North America, 2) there is no precedent for combating an invasive wood boring beetle and that effective control measures for wood boring pests are not readily available, and 3) that the underlying strategy should be to contain the pest by reducing the densities and spread along the leading edge and eliminate all outlier infestations. The initial report listed a number of research priorities and recognized that long-term success of efforts to manage EAB would depend on the output of any research efforts. The EAB Management Team utilizes recommendations from the Science Panel to establish protocols for program delivery and operations. Information provided by the Science Panel has been, and continues to be, critical in developing survey, control, regulatory, and outreach components of the program.

The underlying strategy outlined in 2002 continues to be the basis for approaching the management of this invasive species. In 2002, the Science Panel, nor anyone else, knew the extent of the EAB spread. The EAB populations were already far beyond the zones that the Science Panel suggested for management. Also, nothing was known about EAB adult dispersal propensity and ability at the time. The report recommended that all host trees within 820' (250m cut zone) of an infested tree be removed. Since then, research results from destructive sampling of ash around well documented spot introduction sites have shown a small proportion of adults can disperse to a half mile (804m). With this new information, the program's eradication protocol was established suggesting all ash host material be removed within a ½ mile of any outlying infestation. Evolving information is also showing that beetle dispersal distance is influenced by landscape characteristics, including distribution and abundance of host trees, vegetation edges, and other factors. Decisions on the size of treatment areas, therefore, in the future, should be based on a number of factors and not an absolute distance.

2003

I would now like to discuss the progression of the EAB program over the past several years. We began the formal EAB program in 2003 with a zonal concept recommended by the Science Panel, which was designed to identify various degrees of infestations and actions to take in each zone.

- The Core Zone was described as an area heavily infested with populations exceeding resistance of the available ash resource. This Core area included six counties around Detroit that expressed severe damage from EAB. The Core was identified as a research area to learn more about EAB including ash survival, host specificity, resistance, etc. The plan was to allow EAB to exhaust available ash resources in this area while applying actions on the leading edge. No control actions were recommended in the Core area.
- The Suppression Zone bordered the Core. A three mile wide buffer was designed to function as a population "sink" for beetles moving out of the Core zone. The

program used trap trees, systemic insecticides, adulticides and various treatments to depress the advancing population.

- The Fire-Break Zone identified a 3 mile action zone to establish and maintain a barrier by coordinating tree removals with the EAB program and United States Forest Service programs, treating trees with systemic insecticides, and sufficient surveying to find any new advancing populations of EAB.
- The Targeted Survey Zone extended out from the firebreak zone into much of the Lower Peninsula and northern Ohio. Survey focused on high risk sites including saw mills, newly landscaped commercial and residential areas, and nurseries. Sufficient survey would ensure that other large undetected populations of EAB did not exist.

Data from the 2003 surveys showed that numerous EAB populations were established past the Firebreak Zone. Over the next 24 months, 24 outlying sites received control cuts in an effort to eliminate EAB.

2004

In the winter of 2003, the U.S. Forest Service suggested a Reduced Ash Zone (RAZ) concept that would establish an area of low ash densities by coordinating Forest Service programs with voluntary and program tree removals. The RAZ would dissect the Lower Peninsula through the least ash corridors from Lake Ontario into Ohio. In addition to the RAZ concept, the Science Panel recommended piloting an experimental "detection tree" survey initiative in uninfested areas in the lower peninsula of Michigan, northwestern Ohio, and northeastern Indiana. Selected ash trees were wounded in the spring to release volatiles that appeared to be attractive to EAB egg-laying females. The detection trees were revisited following adult flight season and examined for EAB larva.

The 2004 detection tree survey proved to be the best tool available to identify outlier infestations with low density EAB populations. Detection trees, although labor intensive, facilitated the early detection of outlier infestations in Michigan, Ohio and Indiana.

2005

In early 2005, the EAB Management Team reviewed 2004 survey and control data. Noting the high incidences of EAB in the Lower Peninsula and the advancing of populations into northern Ohio and Indiana, a "Gateway" concept was adopted. The plan identified three gateways; (1) the northern gate cut off by the Mackinaw straights, (2) the eastern gate, bordered by the St. Clair River and (3) the southern gate bordered by Ohio and Indiana. The primary recommendations of the Gateway concept included:

- Employ a robust survey initiative by establishing detection trees
- Engage an aggressive regulatory program that identifies pathways of host material movement out of regulated areas
- Support an outreach and education program to delivery key program messages designed to increase awareness & understanding and garner compliance
- Give the highest priority for control funding to true outliers

- Continue collaboration with the Canadian Food Inspection Agency to stop EAB from transiting through Canada and back into the United States

2006

The 2006 response employed tactics identified in the 2005 strategy and lessons learned from previous years. Destructive sampling of trees selected in the detection and delimiting surveys provided the program with critical data to identify the leading edge of the general infestation area. In addition, several infestations distant from the general infestation area were discovered. One particular site in Prince Georges County, Maryland, was found in mid-August 2006. The site underwent an eradication cut in the spring of 2004 in response to an earlier detection. During the 2006 detection, swift response with a delimiting survey identified the outer limits of the infestation. A control action was developed based on data collected from previous eradication efforts and in early 2007, eradication efforts were completed.

The 2006 detection survey data provided the program with a better understanding of the extent of artificial movement that occurred years before the program began. With this knowledge we extended the boundaries of the quarantined area in December 2006 to include the entire states of Ohio, Indiana, Illinois and the Lower Peninsula of Michigan. This quarantine expansion was needed to protect neighboring states, such as Wisconsin, from movement of potential infested host material.

As you can see, the EAB program strategy has evolved with increasing knowledge and lessons learned. The federal EAB program continues to operate on the premise of detecting and removing infested trees. However, APHIS is reevaluating its strategy for dealing with EAB due to cost concerns and the need for more practical, accurate technology that can be utilized over larger areas. As part of this effort, Agency and cooperating scientists are researching effective trapping and more practical, cost-effective control tools. These officials have identified several promising chemical treatments and biological control agents for the EAB. Until these treatment options are available, the program is concentrating on survey and regulatory activities to detect the EAB and limit its spread.

The decisions we make regarding EAB are based on the best available science at the time, which emphasizes the important role that the Science Panel plays. I'd like to turn the discussion over to Vic Mastro, to provide more information on the importance of research.

Funding

The attached chart illustrates funding received by APHIS for the EAB program since the beginning of fiscal year 2003. Funding provides support for APHIS personnel, management, research, and education and outreach initiatives, as well as critical program operations carried out by our cooperators.

The distribution of funds is based on program priorities outlined in the 2005 Gateway strategy, and states' response to EAB outbreaks. Detection and delimiting survey is a

critical link in determining presence and densities of EAB. When an outlying infestation is discovered, delimiting survey is ordered to determine the geographical size and environmental make up of the infested area. Sites farthest from the generally infested area receive highest priority for control actions and support is distributed accordingly.

Specifically for your state, in 2006, USDA provided the Wisconsin State Department of Agriculture, Trade and Consumer Protection $945,000 for EAB efforts through a cooperative agreement. In addition, USDA provided $56,000 to the Wisconsin Tribal Conservancy for EAB activities. We recognize the ongoing financial needs of EAB survey and related efforts, and our officials are reviewing budgetary information and exploring funding options to support necessary EAB activities in Wisconsin.

The Role of Research

The national EAB strategy has evolved as we learn more about this pest and research results in better methods for combating it. I'd like to discuss several research initiatives that have helped shape the program, and others that we hope will provide innovative new ways to fight EAB.

The EAB program progress is, and has been, heavily influenced by the availability of sensitive detection and delimitation tools. Survey has first been dependent on visual survey, followed by destructive sampling of either standing or felled trees. In all cases, the intensity of the survey has been limited by the expense of survey. The survey information is also limited by the low efficiency of the applied techniques. Research has demonstrated that adults are responsive to specific colors. This knowledge has already been applied to trap design. Additional work has identified that specific volatile chemicals from ash bark and leaves are attractive to adults. These compounds have been tested with the previously mentioned trap and enhance its attractiveness. Additional work is underway to determine the best blends and release rates for these semiochemicals. Also, recent work to identify EAB pheromones has shown some promise. Continuing behavioral studies have given us a better understanding of how adults locate each other for mating. All of this information will enable the program to develop and utilize more effective and efficient survey tools and perhaps exploit the adult behavior for control. The improved survey capability will enable the program to not only detect outlying populations and define the leading edges of the generally infested area, but also be more effective with its control actions.

Research is also being aggressively conducted to develop chemical and biological control methods. These efforts have already identified several chemicals that can be used as systemic pesticides or cover sprays for reducing populations or protecting individual or groups of trees. These techniques could also be used in combination with host removal efforts for eradication efforts. Trials are currently being conducted to determine if groups of attractive but lethal trees can be used to reduce EAB populations and spread. Recent trials with a biological insecticide also show promise for reducing adult EAB densities.

A tremendous amount of effort focuses on foreign exploration in China, Korea, and Russia for natural enemies of EAB. So far, three organisms (*Spathius agrili*, *Oobius*

agrili, and *Tetrastichus planipennis*) have been identified and are undergoing host range testing to ensure that these parasitoids will not be harmful to non-target organisms. Thus far, all testing has indicated that they are safe to release and Biological and Environmental Assessments are being prepared. Experimental release could be as early as this summer (2007), however, wide-scale release could take several years.

The Science Panel continues to recommend that programs be developed for forest managers of public lands and private woodland owners that provide strategies for reducing the ash component in forest stands prior to EAB infestation. High ash density in stands of trees allows EAB populations to rapidly increase and cause damage. Also, any value in the ash resource is lost once EAB has killed the trees. Utilization of the harvested ash wood has been a focus of some research efforts and, although no unique uses of ash wood have been found, some industries have taken advantage of this resource.

A major reason why EAB populations are so widespread is because of the artificial movement by man's activities. Nursery stock, logs, green lumber, wood and bark chips, and firewood have all been shown to move EAB long distances. Research has focused on developing effective yet practical treatments for these commodities. Recently, a standard for wood and bark chips was developed for the industry using the results of research efforts. An effective heat treatment for firewood has also been developed. Additional treatments using fumigation, bark penetrating chemicals, heat, radiofrequency, and microwaves are also being tested. In addition, significant effort is being expended by regulatory staffs and an APHIS public affairs staff person dedicated solely to this task, on public education and outreach about the dangers of artificially moving EAB. These staff members regularly attend public meetings, visit industry, and distribute educational materials. Significant outreach projects include billboards, public service announcements, brochures, and DVDs about EAB.

Additional work is being carried out with the ash trees themselves. These studies are focused on: 1) determining which North American ash are susceptible to attack by EAB, 2) if there is any natural resistance in North American species, and 3) which mechanisms protect the North American and Asian species of ash. If resistance is found in North American species, resistant clones could be developed. Asian resistant species could possibly be hybridized with native species to develop resistant strains.

A large amount of background research activity is conducted to support the previously mentioned studies. This includes developing and utilizing rearing techniques so that EAB can be produced for testing insecticides and semiochemicals, and so that parasitoids can be produced. Additionally, thousands of ash trees have been "bark peeled" by hand to determine the efficacy of treatments, the insect behavior, or the effectiveness of survey techniques. The sum of all of this work is occupying the time and energy of dedicated scientists and students, as well as program personnel. The knowledge gained is slowly accumulating, though it is happening much more rapidly than when we learned how to manage pests such as the gypsy moth, which is managed under a sophisticated, environmentally sensitive program based on over 100 years of research. Research on EAB has provided a number of important findings in less than five full years of funding

and new information is on the horizon. The future of the EAB program and the ash trees in North America rests with the ongoing research efforts.

Conclusion

With few exceptions, such as the small infestation in Maryland, removal of infested trees as an eradication strategy is now considered too expensive and impractical to implement over large affected areas. However, we are optimistic about what options future research may present. Although tactics in carrying out program operations have changed and will continue to evolve, the mission remains the same—to identify new locations of EAB, stop the spread, and engage initiatives, policies, and procedures to eventually eradicate this invasive pest. USDA recognizes and appreciates the strong commitment your State has shown in combating EAB, and we commend you for your efforts in this regard. We look forward to continuing the partnership between the State of Wisconsin and USDA as we move forward with our EAB detection and eradication efforts.


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Testimony of
Kathy F. Pielsticker
Before the Joint Legislative Hearing of the
Assembly Committee on Forestry, and
Senate Committee on Environment and Natural Resources
May 1, 2007

Chairman Miller, Chairman Friske, Senate and Assembly Committee members: Thank you for this opportunity to testify before you today on Emerald Ash Borer (EAB). I am Kathy Pielsticker, Administrator of the Division of Agricultural Resource Management at the Department of Agriculture, Trade and Consumer Protection.

We have a number of people here to speak to you today and answer your questions on EAB, including my staff from DATCP, Paul Delong's staff from DNR and representatives from the USDA - APHIS. With your permission, Darrell Zastrow and I will provide very short introductory remarks. After that, with the help of a Power Point presentation, our staff: Melody Walker, Jane Cummings-Carlson and Brian Kuhn will present more detail about what we have been working on in anticipation of the arrival of EAB. Following those presentations, we will hear from Phil Bell and Vic Mastro with the USDA – APHIS, who have traveled from the East coast to be with us today.

Chairman Miller and Chairman Friske, with your permission, we would like to go through these presentations prior to taking your questions since many of your questions may be answered as we go along.

- EAB was first identified in Michigan in 2002. So, we've only known about it for five years. It is a pest unlike any we've had before – hard to detect, hard to eradicate.

- Wisconsin has a great advantage over our neighboring states, in that we may find this pest early, before it is well established. Michigan, Ohio, Indiana bought us time. This is especially important because research on methods to detect and control any living creature take time to develop.

- Michigan, Ohio, Indiana and recently Illinois have become laboratories to test out what works and what doesn't work. Testing which detection methods for EAB are effective and which controls are viable in the real world. In the five years we've known about this beetle there's much that we've learned, but still much more to learn.

- We first started developing a multi-agency response plan for Wisconsin in 2004 with our partners at the DNR, UW, US Forest Service, US Department of Agriculture and a variety of local groups. Working with our partners, we keep adjusting our plans based on new knowledge coming in from infested

states and from researchers. We work closely with our federal partners and our associates in other states to implement the most appropriate response possible when faced with an imminent EAB infestation.

- We can't be sure there will eventually be a better way to detect this beetle than taking trees apart, but we think there will be.

- We don't expect some magic chemical or biological cure to appear overnight, but we expect there will be a variety of better choices than we have now. There already are more alternatives than just a year ago.

- **What we do know for sure** is that we have an enormous economic natural resource at stake in Wisconsin. If EAB becomes established in Wisconsin, it could destroy all of Wisconsin's 717 million ash forest trees, at a cost of over $1 billion dollars and destroy 5.4 million ash street trees at a cost of $2 to $3 billion dollars.

- We know that we have a responsibility to those whose livelihood depends on our ash resource, and to those who enjoy the many benefits that it provides. We have an enormous responsibility to do our best to find, control and slow this pest before it destroys our precious ash resource.

- What is different in Wisconsin than in neighboring states that have already found EAB is that:

    - We have been looking for it now for five years. Recently our efforts have intensified and detection methods have improved.
    - We have been preparing, with the close cooperation of our partners, since 2004 to deal with an EAB find in Wisconsin.
    - We have been educating all of our citizens and our many, many visitors on how to identify this pest and who to contact if they have found it.

- My point is that it is easier to keep a healthy state healthy than to bring a sick state back from the brink. Wisconsin has a far greater ash resource than most of our neighboring states; and consequently, has a far greater motivation to do everything we can reasonably do to save it. To do nothing puts at risk a billion dollar ash tree industry and countless trees in yards and along streets in the state.

Again, thank you for your time. I will be here throughout the hearing to answer your questions.


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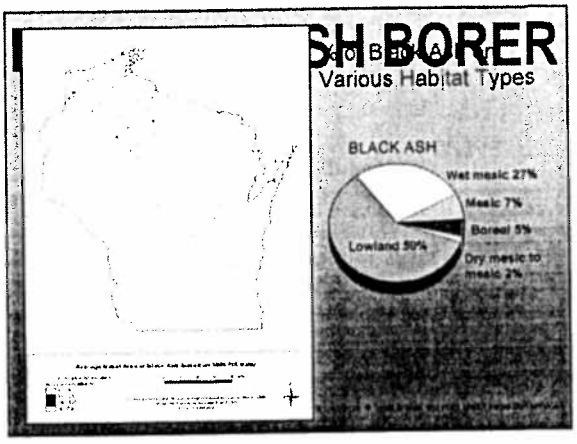
EMERALD ASH BORER

MAY 01, 2007

Emerald Ash Borer:

RESOURCES AT RISK IN WISCONSIN

Joint Committees on Forestry & Natural Resources
Legislative Hearing on EAB



EMERALD ASH BORER

Emerald Ash Borer Background

- *Agrilus planipennis* Fairmaire, is an exotic wood-boring beetle
- EAB is native to China, Japan, Korea and eastern Russia
- EAB attacks all species of ash (genus Fraxinus), and only ash
- All infested ash trees are killed
- EAB larvae feed between the bark and the wood
- First identified in Detroit area in [illegible]

EMERALD ASH BORER

Black Ash Values & Ecological Significance

- The Black Ash takes its name from the dark brown heartwood. Snowshoe frames, cane ribs and baskets are made from thin rough strips of split wood. Black ash is also used to make cabinets, interior finishing, and fence posts.
- Black ash swamps are rich in understory herbaceous diversity, sensitive to invasion by Reed canary grass.

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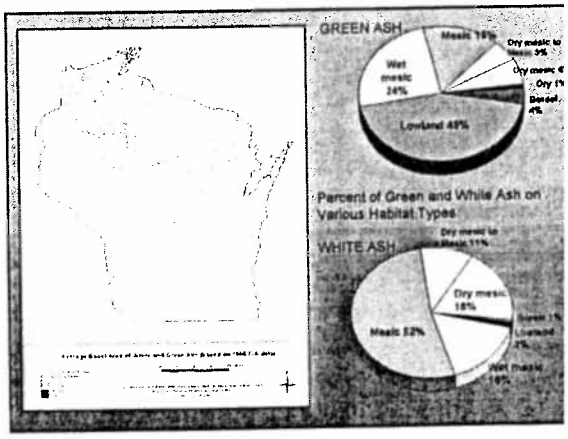
Forest Resources at Risk

ALL of Wisconsin's native ash trees, or 6.8% of all live forest trees (>1" in diameter), are at risk:

- 415 MILLION Black ash
- 144 MILLION White ash
- 166 MILLION Green ash

TOTAL = 717 million forest ash trees At Risk



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Uses for Ash

- Furniture
- Tool Handles
- Cooperage
- Boxes
- Flooring
- Baseball Bats, Boat Oars, [illegible]
- Logging
- Boats
- Veneers
- Railroad Ties
- Pallets
- Mulch
- Firewood

EMERALD ASH BORER

Urban Ash Trees at RISK

- The replacement value of Wisconsin's urban ash trees is $1.5 billion

THIS DOES NOT INCLUDE:

- Cost of removing existing trees and stumps
- Lost environmental benefits [illegible] carbon sequestration
- [illegible]

EMERALD ASH BORER

Value of Current Ash Resource

TOTAL ASH RESOURCE

- Volume of 2,532,598,173 BdFt
- $/1,000 BdFt (Green #2 Common)* = $365
- Total value of ash resource = $924,398,333

[illegible] 2004 Hardwood Market Report, 56/96
Including 10% Cherry

EMERALD ASH BORER

Emerald Ash Borer Partnerships

- Tribal, County and Local Governments
- Private Businesses
- [illegible]

EMERALD ASH BORER

Urban Ash Trees at RISK

- Ash is the second most common urban tree in the state
- A total of 5.1 million or 19% of all urban trees are at risk:

White Ash	3.6 million	13.5%
Green Ash	1.5 million	5.7%
Black Ash	41,000	0.2%

- Ash trees provide 10% of the total leaf area in Wisconsin's urban forests and save $2.7 million/year in energy costs by cooling the urban environment

EMERALD ASH BORER

Roles and Responsibilities

- DATCP: Control, survey, regulation and outreach
- DNR: Long-term management, survey and outreach
- APHIS: Technical and financial assistance, regulation and survey
- USFS: Technical and Financial Assistance; long-term management (on B lands), survey and outreach
- UW: Outreach and education, research and survey

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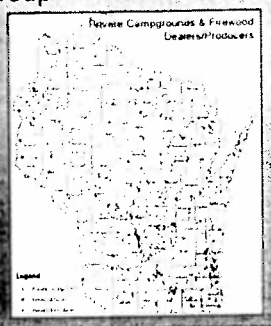
Firewood Working Group

Multi-agency group working together to effectively communicate firewood issues and develop statewide firewood management plan



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Firewood: Breaking the Pathways

Firewood inspections were conducted at ferry docks prior to July 4th and Labor Day weekends, 2005

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DATCP Firewood Outreach & Regulation

- Multiple mailings to private campgrounds and recreational areas
- Firewood Blitz
- Outreach at trade shows
- Pursuing emergency rule to provide specific approvable treatment options for certifying firewood as free from damaging pests. Rule goes to Ag Board May 9, 2007 for approval

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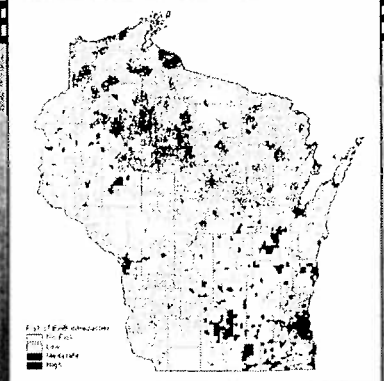

- density
- Ash volume
- Seasonal homes
- No. of campsites

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DNR Rule PR 19-06

Black River State Forest
Range of Allowable Firewood

On department lands, no person may possess firewood that originates from greater than 50 miles from the campground on that property where the wood would be used, or the property itself if there is no campground, or from outside the borders of the state of Wisconsin. Firewood from sources approved by the DATCP is allowable. Firewood includes all wood, processed or unprocessed, meant for use in a campfire.

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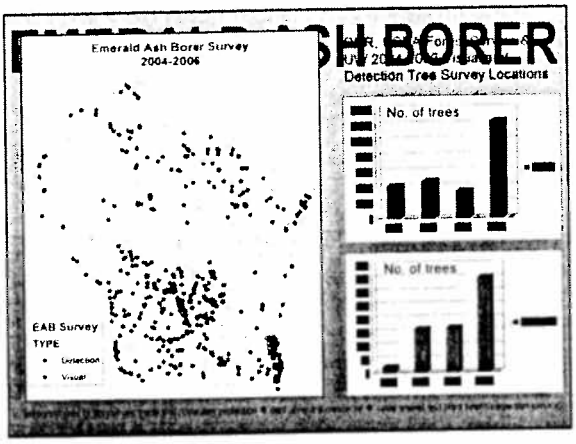

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DATCP and DNR Outreach Efforts

- WI EAB Internet portal www.emeraldashborer.wi.gov
- Presentations: WI RC&D, pest management companies, public health workers, county and local governments and municipal forestry staff members; woodland owners; loggers; workshops for communities; meetings with forest industry to discuss challenges
- Trade Shows and Conventions: WI Arborists, WI Association of Campground Owners, Tri-State Forest Stewardship, WI Association of Land Conservation Employees, WI Public TV Home and Garden Show, WI Deer Classic and Outdoor Show, Logging conferences
- Mailings: campers and out-of-state hunters; private campground owners
- [illegible] recreational hunting and fishing venues; radio and TV

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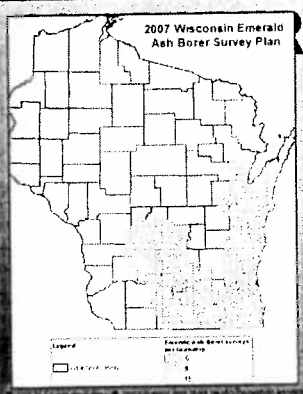
DATCP Survey

- DATCP Survey 2006-2007
- Target density of 18 trees per township or 9 trees per township
- At completion we anticipate 700 sample trees and 1,700 detection trees
- Focus on public trees in state and county [illegible]



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DATCP Outreach Efforts

- Milwaukee Realtor's Home/Garden Show
- Cabin and Lake Home Owner's Shows in Chicago, Milwaukee & Minneapolis, and the WI Assoc. of Lakes Convention
- Mailing to out-of-state landowners in the EAB quarantined states of Illinois, Ohio, Indiana and Michigan, reminding them not to bring firewood with them if they are traveling to WI this summer
- EAB Awareness Week, May 20-26
- [illegible] week statewide media campaign beginning near the [illegible] Move Firewood messages

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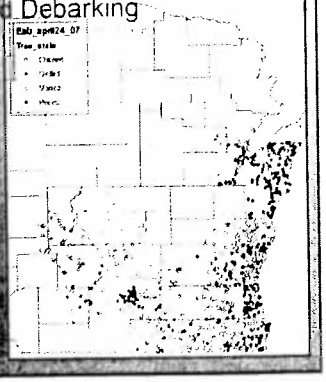
Debarking

DATCP Survey as of April 24, 2007

- 653 peeled
- 815 girdled
- 1203 marked



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Outreach – Preparing Urban Forests for EAB

TOOLKIT INCLUDES

- Information on creating a readiness plan and team
- A plan for assessing and preparing your community's forest
- Procedures to help detect and control EAB
- Information on removal and utilization of ash trees
- Sample mutual aid agreement and guide to receive assistance from other communities
- Resources for communicating with the media, community officials and the public
- References to educational resources
- Wisconsin Urban Forestry Insider [illegible] newsletter
- Wisconsin Urban Forestry Council EAB [illegible] a top priority
- Urban Ash Management Panel is developing [illegible] recommendations for urban areas

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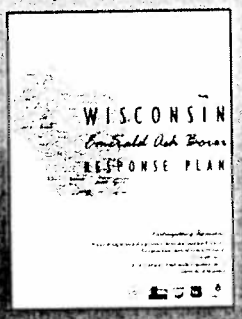
Response to EAB: Short & Long-term



INTEGRATED PEST MANAGEMENT

- Integrated approach to managing injurious agents
- Employs one or more of the following management techniques: cultural, mechanical, biological, chemical, and regulatory

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EAB Management Options - Chemical

Dr. R. Chris Williamson
Department of Entomology
University of Wisconsin-Madison

- Trunk spray
- Foliage spray
- Soil drench
- Trunk injection

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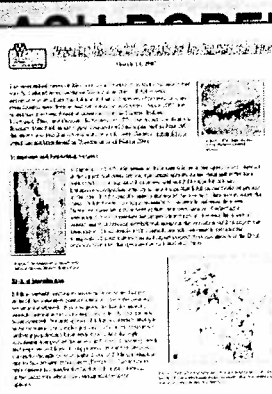
Cultural Control

Preparing our rural forests for the impact of EAB



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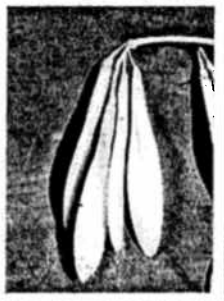
EAB Management Options - Seed Preservation



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Cultural Control: Preparing Urban Forests

Experimental Ash Plantation in Michigan

- Includes all North American, Asian and European species of ash
- Comparative Study of EAB /Host Interactions

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EAB Management Options - Biological Control

- Two larval parasitoids
  Spathius agrili
  Tetrastichus planipennisi

- One egg parasitoid
  Ooblus agrili

- Currently registered fungal bioinsecticides (*Beauveria bassiana* and *Metarhizium* sp.) may also kill a small number of larvae or pupae

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EAB Management Options – Islands of Attraction or "Sinks"

- Known infested trees are cut and destroyed. May or may not include removal of healthy trees
- "Islands or "sinks" of girdled trees are left in infested areas to attract EAB. These trees may also be chemically treated
- Islands or sinks are cut and destroyed during dormant season

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Federal Role in the EAB Effort

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Next Steps

- Update Response Plan
- Continue to Develop Strategic Plan
- Advisory Group
  - Operations
  - Science Panel (State) → National Science Panel & National Management Committee
  - Outreach and Education

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EAB Project Cooperators

- U.S. Department of Agriculture
  - Animal and Plant Health Inspection Service
  - Forest Service
- Michigan
  - Department of Agriculture
  - Department of Natural Resources
  - Michigan State University
- Ohio
  - Department of Agriculture
  - Department of Natural Resources
  - Ohio State University
- Indiana
  - Department of Natural Resources
- Maryland Department of Agriculture
- Virginia Department of Agriculture
- Illinois Department of Agriculture
- Wisconsin Department of Agriculture, Trade and Consumer Protection
- Canada
  - Canadian Food Inspection Agency
- Others

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EAB Response Plan

THE EMERALD ASH BORER RESPONSE PLAN:

- Is based on the National EAB eradication strategy
- Is not static-many factors could impact Wisconsin's response to EAB
- Seeks to maintain eradication as a possible option
- States that Wisconsin will use the best science available to develop an effective response to EAB

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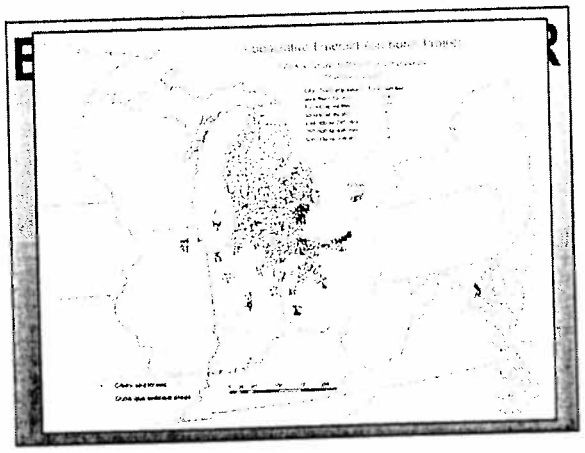
2005 U.S. Forest Service Study

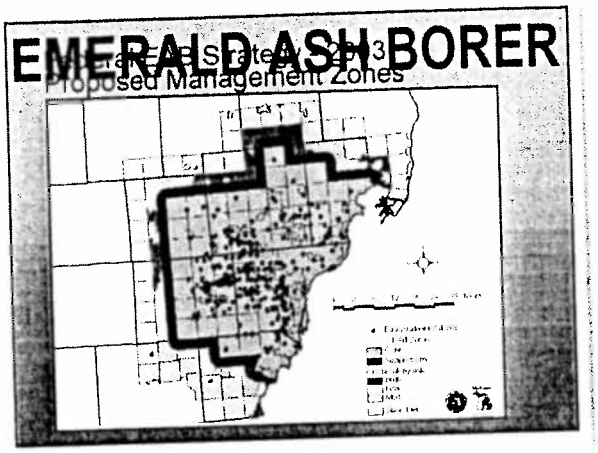
No EAB detection and containment program by APHIS

- EAB spread = 5 miles a year
- 10 years = >3,000 infested cities/towns
- 20 years = 12,000 infested municipalities

EAB Management Team recommendations are applied

- EAB expansion would be half that of no action

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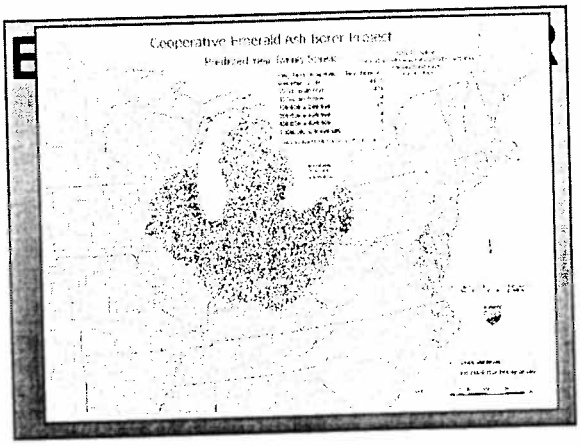
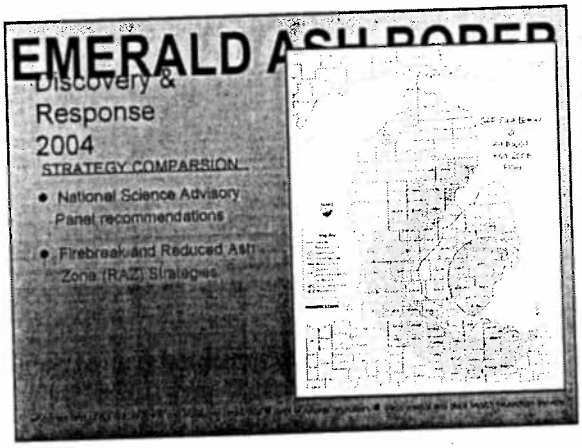
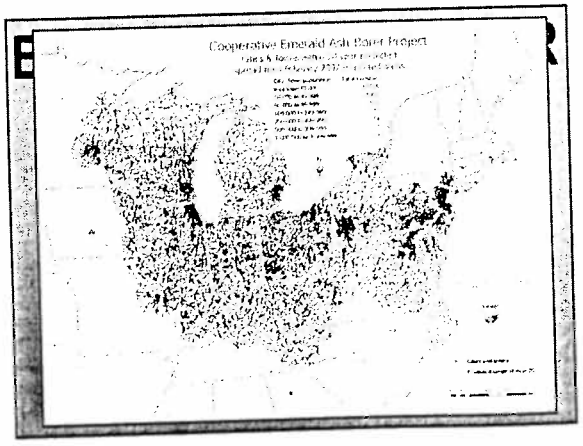
Proposed Management Zones


Cooperative Emerald Ash Borer Project


EMERALD ASH BORER
Discovery &
Response
2004
STRATEGY COMPARSION
• National Science Advisory Panel recommendations
• Firebreak and Reduced Ash Zone (RAZ) Strategies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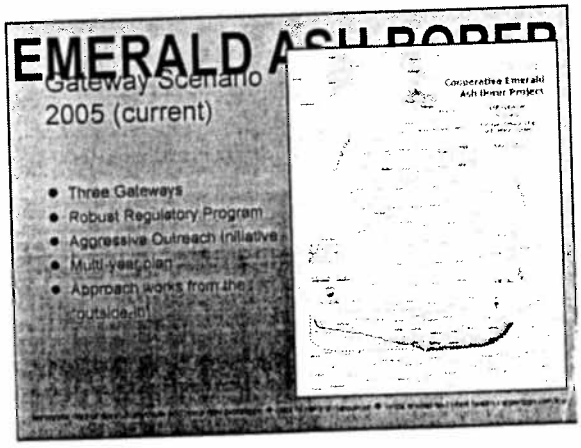
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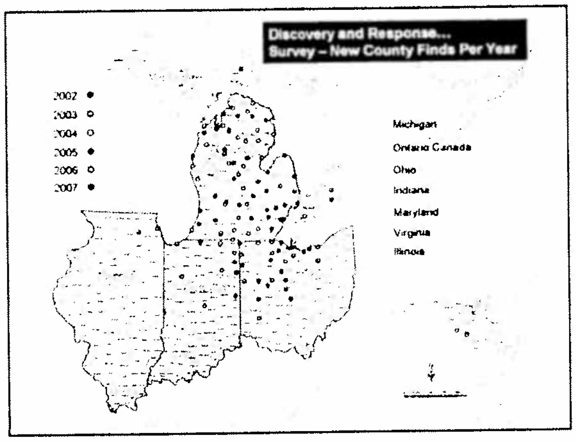
Gateway Scenario
2005 (current)
• Three Gateways
• Robust Regulatory Program
• Aggressive Outreach Initiative
• Multi-year plan
• Approach works from the outside in



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Available Funding	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007
Appropriation	--	1,491	4,961	9,900	9,900
CCC	14,553	43,364	18,800	15,167	
Other	--	--	1,000 a/	198 b/	
Total	14,553	44,855	24,761	25,265	9,900

a/ In FY 2005 [illegible]

b/ In FY 2006 APHIS [illegible]

Funds Provided to Cooperators	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007
Michigan	7,740	24,004	12,836	4,723	56[illegible]
Ohio	308	3,812	16,750	4,805	56[illegible]
Indiana		3,096	1,958	415	42[illegible]
Maryland		330	210	605	2,21[illegible]
Virginia		387	45	41	
Illinois				705	4,61[illegible]
Wisconsin (also includes Tribal org.)				1,001	
Total	8,048	31,629	31,799	12,296	8,39[illegible]

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Lessons Learned

- Multi-year infestations are difficult to eradicate
- Artificial movement of EAB prior to original detection is critical to understanding program objectives
- Outreach program is working well
- Destructive sampling survey is superior to visual survey
- Accelerated Research Initiative is critical
- Nursery stock, logs, pallets and firewood are primary pathways for spread

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Role of Research: Science Panel

- Review all the primary literature and other scientific information that is pertinent to the pest, its host, and the area that it has been introduced
- Review program procedures, techniques, actions, and outcomes
- Provide for analysis of program generated data
- Provide recommendations for new or accelerated research needs
- Provide a forum for reporting research results and their possible impacts on the program's direction or tactics
- Provide an analysis of research results

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2007 Management Strategies

1. Detect outlier infestations
   - Statewide Surveys
   - Targeted Surveys in non-regulated states
   - Public Awareness
2. Continue with outreach activities
   - Public Awareness
   - Printed Materials
   - EAB Clinics
3. Continue regulatory efforts to decrease artificial movement of EAB
   - Regulatory Activities (Billzes)
   - Identify High Risk Pathways
   - Compliance Agreements
   - Inspections
4. Support Methods and Development work as well as other research initiatives

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Research Focal Areas

- Survey: Sentinel trees, traps, attractants (pheromones and kairomones)
- Control: Chemical pesticides, bio-pesticides, biological control, stand management, and tree resistance
- Regulatory Treatments: physical (heat, vacuum, R.F., microwave and chipping etc.), and chemical (fumigants and pesticides)
- Behavior & Biology: dispersal propensity and ability, mating and host finding, population dynamics
- Supporting Work

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APHIS Funding for EAB Research

Researcher	Work Plans	2006 Funding	2005 Funding
APHIS – 1	Fumigation with MeBr and Sulfuryl Fluoride as a Quarantine Treatment for Emerald Ash Borer in Merchantable Logs and Timber	22,470	28,600
APHIS – 2	Emerald ash borer: alternative control strategies	71,200	57,000
APHIS – 3	Methods development for control of exotic wood borers	25,600	28,000
APHIS – 4	Pesticide residue determination and assay development	50,250	67,000
APHIS – 5	Development of Survey Tools for EAB	199,500	153,000
APHIS – 6	Development of dry heat, chipping, mulching, and microwave applications for use as quarantine treatments for EAB	27,760	0
APHIS – 7	Distribution of EAB, and its host in China	30,000	30,000
APHIS – 8	Evaluation of systemic insecticides in China for the control of EAB	35,500	90,500
APHIS – 9	Application of remote sensing technology to the survey and detection of exotic invasive plant pests	290,427	279,300
APHIS – 10	Studies on the ecology of the emerald ash borer: adult movement and biological control by natural enemies	41,900	27,000
APHIS – 11	Semiochemical communication in EAB adults, host finding	0[1]	125,000
Total		$794,607	$885,400

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When to Conduct Eradication Efforts

- When a population is delimited
- When a population size is limited
- Proximity of a population to a source of re-infestation
- When adequate funding is available

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APHIS Additional Funding

Researcher	Work Plans	2006 Funding	2005 Funding
Penn State University	Development of Attractant-Based Survey Tools for the Emerald Ash Borer	198,000	0
USDA ARS	Identification & Synthesis of Sesquiterpene	10,000	0
Michigan Technological University	Multistate Comparison of EAB Trapping	63,655	0
Michigan State	Evaluation of Alternative Techniques	133,650	0
USDA, Forest Service	Classical Biological Control of EAB	48,000	0
APHIS	Expediting Release of the Parasitoid	48,106	0
Michigan State University	Evaluation of Spinosad for Control	56,000	0
Ohio State University & Wright State University	Mechanisms of Inter & Intra-Specific Variation in Resistance of Ash to Emerald Ash Borer	52,406	0
APHIS	Accelerated Trap Design Studies	42,000	0
Total		$649,817	$0
TOTAL ALL APHIS RESEARCH FUNDING		$1,444,424	$885,400

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USDA Research Funding in 2006

AGENCY	AMOUNT
APHIS	$2,591,000
ARS	$404,000
FOREST SERVICE	$1,248,000

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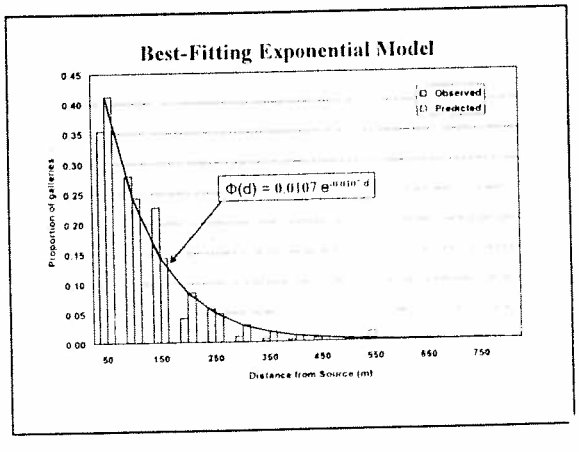

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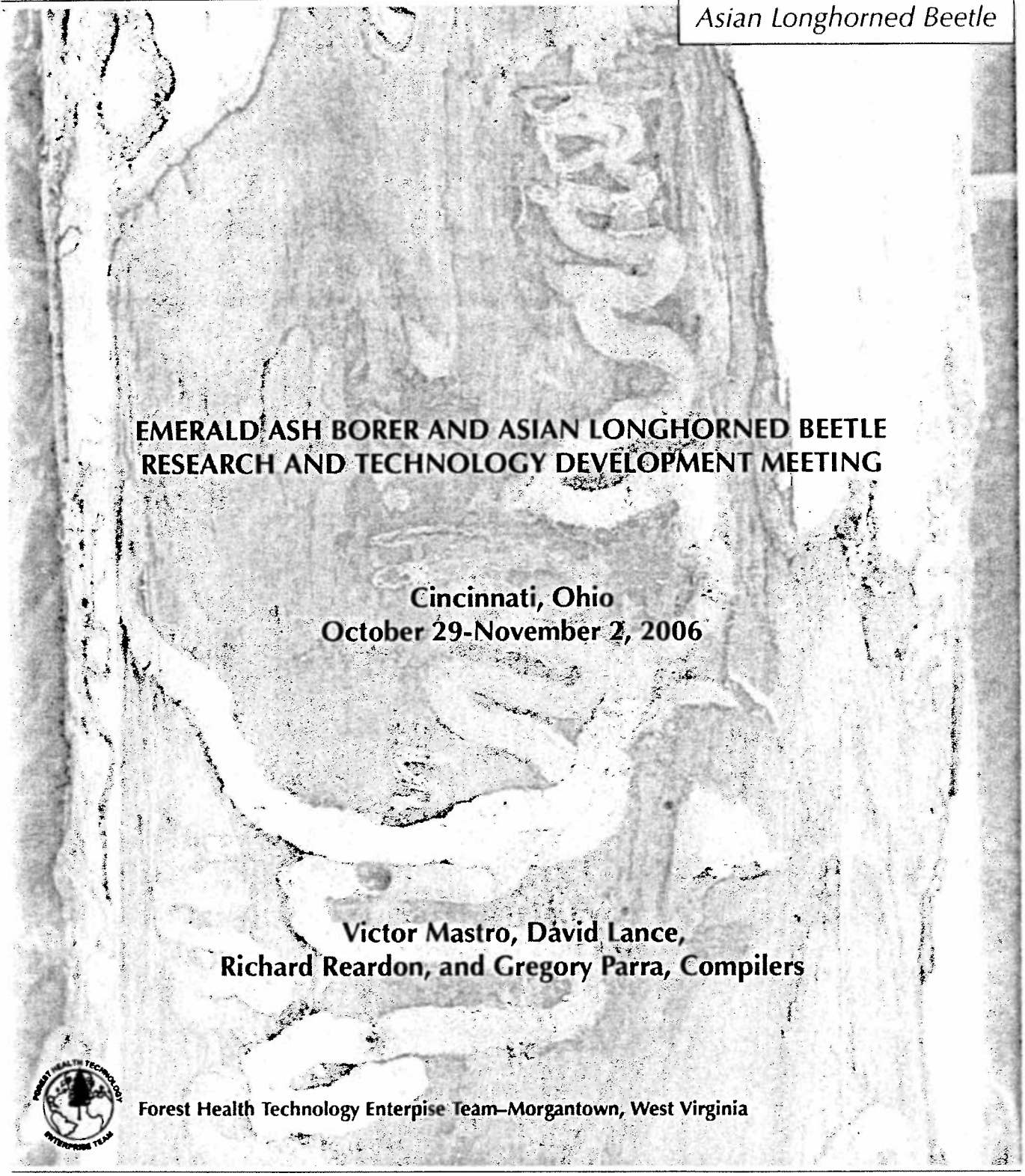
Revised: 12/05/2012

LRB

Forest Health Technology Enterprise Team

TECHNOLOGY
TRANSFER

Emerald Ash Borer and Asian Longhorned Beetle



EMERALD ASH BORER AND ASIAN LONGHORNED BEETLE RESEARCH AND TECHNOLOGY DEVELOPMENT MEETING

Cincinnati, Ohio
October 29-November 2, 2006

Victor Mastro, David Lance,
Richard Reardon, and Gregory Parra, Compilers

Forest Health Technology Enterprise Team–Morgantown, West Virginia

USDA U.S. Department of Agriculture
Forest Service
APHIS Animal and Plant Health Inspection Service

FHTET-2007-04
March 2007

Most of the abstracts were submitted in an electronic format, and were edited to achieve a uniform format and typeface. Each contributor is responsible for the accuracy and content of his or her own paper. Statements of the contributors from outside of the U.S. Department of Agriculture may not necessarily reflect the policy of the Department. Some participants did not submit abstracts, and so their presentations are not represented here.

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On the cover: year-old emerald ash borer galleries. Photo by David Cappaert, available at www.forestryimages.org as UGA1460075.

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Emerald Ash Borer: Biology, Behavior, and Ecology

Emerald Ash Borer–Host Relationships

Chemical Control of Emerald Ash Borer

Biopesticides for Emerald Ash Borer

Biological Control of Emerald Ash Borer

Emerald Ash Borer Survey

Emerald Ash Borer Regulatory and Outreach

Asian Longhorned Beetle Program Reports

Asian Longhorned Beetle Survey, Regulatory, and Control

Asian Longhorned Beetle Biology, Rearing, and Program Management