

Missouri Emerald Ash Borer Action Plan



May 2, 2008

Prepared by:

Rob Lawrence, Brian Canaday, Justine Gartner, Matt Seek, and Tim Banek
Missouri Department of Conservation

Anastasia Becker and Collin Wamsley
Missouri Department of Agriculture

Mike Currier and Tim Vogt
Missouri Department of Natural Resources

Mike Brown, Kevin Combs and Christopher Pierce
USDA, APHIS, Plant Protection & Quarantine

Missouri Emerald Ash Borer Action Plan

I. INTRODUCTION

The emerald ash borer (EAB), *Agrilus planipennis*, is a new, significant threat to the urban and rural forests of Missouri. This exotic beetle is an invasive species that has the potential to remove ash trees (*Fraxinus* spp.) from North American forests and urban landscapes. First identified in 2002 in southeastern Michigan, EAB has destroyed millions of ash trees across its known distribution in Illinois, Indiana, Michigan, Ohio, Pennsylvania, West Virginia, Maryland and Ontario. With state and federal quarantines in place, significant survey, containment, and clean-up operations are underway in the affected areas. However, EAB populations are well established in the core infestation area.

There are concerns that quarantine and containment efforts will not be adequate to stop the spread of this new pest, and that it will come to Missouri and neighboring states not only by natural spread, but by hitchhiking in infested firewood, logs or nursery stock. Although chemical and biological controls are under investigation, aggressive containment efforts are necessary for new outbreaks outside the core infestation area. Satellite outbreaks in several states have required swift, organized responses by government agencies and cooperation of stakeholder groups.

Details of EAB identification, biology, hosts, symptoms, and distribution are provided in a Pest Alert by the USDA Forest Service (http://www.na.fs.fed.us/spfo/pubs/pest_al/eab/eab.pdf) and on the Cooperative Emerald Ash Borer Project web site (<http://www.emeraldashborer.info/>).

Missouri Perspective

Information from community tree inventories indicates that ash trees comprise about 14% of street trees in Missouri communities and over 21% of trees in urban parks (data compiled by Missouri Department of Conservation, 2005). The percentages rise to well over 30% in some parks and residential subdivisions. Costs associated with hazard tree removal and replacement tree planting will be high for such a significant component of the urban forest. In Missouri's natural forest stands, ash trees comprise about 3% of total trees (USDA Forest Service, Forest Inventory and Analysis data). Thus the impact of this destructive pest is expected to be less in rural forests in terms of percentages, although ecological impacts could be significant in some areas.

Visual surveys to detect the presence of EAB are conducted annually in Missouri. The Missouri Department of Conservation (MDC) and Missouri Department of Agriculture (MDA) began surveying selected state parks, private campgrounds, and urban sites in 2005. The USDA Forest Service (USFS) began in 2004 to survey federal campgrounds and recreation areas managed by the Mark Twain National Forest, US Army Corps of Engineers, and Department of the Interior. Additionally, MDA Plant Protection Specialists have been examining ash nursery stock since 2003 (many thousand trees per year) during routine nursery inspections at all of the state's nursery growers.

MDC, MDA, and the Missouri Department of Natural Resources (MDNR) have been working cooperatively to raise public awareness about EAB through workshop presentations (green industry professionals, Master Gardeners, State Park staff and others), an informational web site (<http://www.mdc.mo.gov/forest/features/firewood.htm>), a *Missouri Conservationist* article (March 2007), a poster on the risk of firewood movement (developed and distributed to campgrounds and recreation sites throughout Missouri), and numerous media releases and media interviews.

II. PURPOSE

The Missouri Emerald Ash Borer Action Plan¹ has been developed to provide a statewide coordinated response, and to help local communities plan to respond to the potential negative effects of the emerald ash borer. The primary goal of the Plan is to delay introduction of EAB into Missouri, and to detect and contain EAB populations and mitigate impacts if and when EAB does arrive.

III. GENERAL READINESS

Objective: To reduce risk, minimize impact, and respond more effectively to a possible infestation of the EAB, and to partner towards overall health and sustainability of Missouri's forests.

A. Establish a network of agencies and organizations that may be affected by the EAB as the Emerald Ash Borer Action Team. The Team will draft an Action Plan and be responsible for advising, advocating, and leading in the implementation of the plan. The Action Team is comprised of a Technical Team and Communications Team. The Technical Team has the leadership role and is responsible for planning, coordination, and prompt evaluation and action. The Communications Team supports the Technical Team by providing uniform and accurate information and education.

The following agencies have, by law, the responsibility and authority to manage an exotic plant pest introduction. See Appendix B for details.

- Missouri Department of Agriculture
- USDA, APHIS, Plant Protection and Quarantine
- Affected local government(s) at sites of infestation.

1. Technical Team – Serves as the lead group in planning and coordinating all EAB readiness and response activities. Committee members are listed in Appendix A. The following serve as Committee Co-chairs:

- Missouri Department of Agriculture (State Entomologist)
- Missouri Department of Conservation (Forest Entomologist)
- Missouri Department of Natural Resources (State Parks representative)

¹ The Missouri Emerald Ash Borer Action Plan should be considered a dynamic and evolving document that may change as new research and management information becomes available.

2. **Communications Team** – Supports activities of the Technical Team by communicating accurate information quickly and broadly in a manner that increases the effectiveness of efforts to prevent and control EAB infestations. Committee members are listed in Appendix A. The following persons serve as Committee Co-chairs:
 - Missouri Department of Conservation (Community Forestry Coordinator and Public Relations Specialist)

B. Agency Roles and Responsibilities for major partners in the Emerald Ash Borer Action Team include but are not limited to the following.

1. **Missouri Department of Agriculture (MDA)** is the lead State agency responsible for preventing the introduction and spread of harmful plant pests, such as insects and diseases, into and within Missouri.
 - a) Provide surveillance and detection, follow-up inspections on reported suspect invasive species, identification, assessment and monitoring.
 - b) Notify and coordinate activities with the appropriate local, state, and federal agencies and other appropriate organizations related to program responsibilities and this Plan.
 - c) Confirm identification of samples and suspect organisms.
 - d) Cooperate with other members of the EAB Communications Team to develop specific messages and coordinate communication of invasive species information to the public, media, cooperators, and affected industries.
 - e) Implement and maintain appropriate state and federal quarantines.
 - f) Review and coordinate pest control activities to ensure compliance with federal, state and local laws.
 - g) Condemn and seize materials when appropriate.
 - h) Oversee destruction of infested or potentially infested materials or vectors when appropriate.
 - i) Provide or assist with the procurement of funding for survey, outreach, monitoring, and containment when appropriate.
 - j) Provide pest management expertise and advice to all cooperators (including nursery operators) and the public.
2. **USDA, APHIS, Plant Protection and Quarantine (PPQ)** is the lead Federal agency responding to a harmful plant pest introduction.
 - a) Assist in all response activities including quarantine, evaluation, identification, disposal, disinfection, epidemiology, trace-backs and trace-forwards, permitting, inspection, transportation control systems, and survey activities.
 - b) Collect, collate, analyze, and disseminate technical and logistical information and distribute to field staff and cooperators.
 - c) Cooperate with other members of the EAB Communications Team to develop specific messages and coordinate communication of invasive species information to the public, media, cooperators, and affected industries.

- d) Define training requirements for casual employees or support agencies involved in response operations. Training may consist of survey, sampling, diagnostic, and regulatory procedures.
- e) Cooperate in the declaration of the emergency area and assist in defining the emergency area and control or quarantined zones.
- f) Allocate funding for compensation to the owner of destroyed products, if an “Extraordinary Emergency” is declared by the Secretary of Agriculture.
- g) Acquire necessary funding to support emergency program activities.
- h) Provide investigations and support in cases of federal law violations.
- i) Consult with State and local authorities regarding response operations.
- j) Issue restrictions on interstate commerce.

3. **Missouri Department of Conservation (MDC)** is the lead State agency responsible for providing forest management information and technical forestry assistance to the people of Missouri and protecting and managing Missouri’s forests for long-term resource sustainability.

- a) Provide forest management expertise and advice to private landowners, communities, forest products and tree care industries, consulting foresters, and the general public.
- b) Provide information and assistance to Missouri communities in planning community preparedness and response to EAB and other invasive forest species.
- c) Manage forests on MDC lands to mitigate the impacts of invasive forest pests.
- d) Lead the EAB Communications Team and, in partnership with other agencies, develop specific messages and coordinate communication of invasive species information to the public, media, cooperators, and affected industries.
- e) Provide liaison with the USDA Forest Service, National Association of State Foresters, and Northeastern Area Association of State Foresters through the Missouri State Forester to request further assistance and funding.
- f) Assist in surveillance, detection, follow-up inspections on reported suspect invasive species, identification, assessment and monitoring.
- g) Assist with containment, restoration, and mitigation activities.
- h) Serve as the liaison (Missouri State Forester) to the Missouri Forest Resources Advisory Council.

4. **Missouri Department of Natural Resources (MDNR)** is the State agency responsible for environmental quality, waste disposal, energy, emergency response to environmental events, operation and management of State Parks and historic sites, and protecting natural resources in Missouri.

- a) Develop programs to reduce the likelihood of introduction of EAB and other invasive forest pests to State Parks and Historic Sites.
- b) Cooperate with other members of the EAB Communications Team to develop specific messages and coordinate communication of invasive species information to the public, media, cooperators, and affected industries.

5. **USDA Forest Service, State and Private Forestry (USFS)** assists in the detection, evaluation, monitoring and management of invasive forest pests on all forest ownerships.

- a) Assist other agencies to identify and prioritize which invasive species to control and to effectively implement a management plan to minimize their impact and spread.
- b) Cooperate with other members of the EAB Communications Team to develop specific messages and coordinate communication of invasive species information to the public, media, cooperators, and affected industries.
- c) Provide education and outreach materials to increase public awareness of EAB and other invasive forest pests.

C. Administrative Readiness – to ensure that current, relevant, and achievable policies are in place that allow the actions described in this plan to occur quickly and unencumbered.

1. Develop EAB Action Plan. [Technical Team]

- a) Distribute draft plan to stakeholders for review.
- b) MDA, MDC, and MDNR agree to implementation of the Plan.
- c) Educate internal stakeholders within cooperating agencies to promote common approach to Plan implementation.

2. Identify resources and needs. [Technical Team]

- a) Evaluate human and technical resources required to effectively monitor for EAB and respond to introductions.
- b) Assess human and technical resources available among partner agencies (e.g. survey personnel, delimiting personnel, tree climbers) and acquire commitments for their participation.
- c) Identify sources of funding for readiness activities.

3. Educate the media to ensure accuracy of information. [Communications Team]

- a) Identify key contacts (core members) on Communications Team as sources of current information.
- b) Develop a system among core members of the Communications Team for coordinating messages among agencies and providing expedited communications.
- c) Develop a media strategy to publicize the final Action Plan.

4. Explore wood waste utilization opportunities with the forest products industries and other partners to reclaim ash material to its highest possible use in the event a large volume of material suddenly becomes available. [MDC (Lead) and Technical Team]

D. Technical Readiness – Ensure that policy decisions, actions, and education initiatives are guided by the best and most current science.

1. Review and distribute to stakeholders recommendations for remedial control actions developed from recent government and university research. [Technical Team]

2. When issued, operate under New Pest Response Guidelines for EAB, or other relevant USDA technical guidelines. [Technical Team]
3. Transfer technology to field foresters, consulting foresters, arborists, and nursery professionals as it becomes available. [Communications Team]

IV. REDUCTION OF INFESTATION RISK

Objective: Identify all major pathways of EAB introduction and ensure actions are taken to reduce infestation risks, as soon as possible.

A. Assess Risk of Infestation

1. Assess the magnitude of the resource at risk (quantity of ash trees). [MDC]
2. Analyze density of ash populations to identify high-risk areas. [MDC]
3. Establish an EAB Pathways Committee [PPQ].
 - a) Members include MDA, MDC, MDNR, PPQ, Missouri Forest Products Association, and representatives of the nursery industry, utility companies, and camping and recreational vehicle associations.
 - b) Assess pathways and risks of EAB introduction into Missouri.
 - c) Develop recommendations for reducing risk of EAB introduction.
4. Track the spread of EAB in infested states. [Technical Team]

B. Reduce Risk of Infestation

1. Raise public awareness about risks of firewood importation. [Communications Team]
 - a) Install educational posters at public and private campgrounds and highway rest areas.
 - b) Develop and employ a variety of educational tools (e.g., media releases, billboards, public service announcements).
 - c) Educate firewood dealers and buyers on the benefits of buying and selling locally produced firewood in Missouri.
 - d) Educate the public and implement “burn what you bring and bring only what you need” firewood policy in Missouri’s private and public campgrounds
 - e) Educate state and national camping and recreational vehicle associations and youth scouting organizations about the risks involved with transporting firewood.
2. Educate industries about risks and regulations associated with movement of ash logs and nursery stock. [Communications Team]
 - a) Reach out to primary and secondary wood processors through landowner, industry, and professional associations.
 - b) Educate municipalities, contractors, garden centers, and landscapers about importance of knowing the source of ash nursery stock.

- c) Educate utility companies and others involved in tree management along rights-of-way.
- 3. Educate law enforcement agencies (Missouri State Highway Patrol, Missouri Sheriffs' Association, and local Police Departments and Associations) regarding existing regulations. [PPQ and MDA]
- 4. Maintain an effective nursery inspection program to ensure thorough inspection of ash nursery stock. [MDA]
 - a) Advocate for strong state support of nursery inspection program.
 - b) Ensure thorough inspection of ash nursery stock by providing EAB detection training to state inspectors.
 - c) Encourage landscaping companies to obtain proper nursery license from MDA.
- 5. Promote planting selections that contribute to a diverse and sustainable urban forest.
 - a) Educate municipalities and large property managers about diversity in tree planting and risk transfer (ash removal over time to spread out financial risks). [MDC (Lead) and Communications Team]
 - b) Assist local governments in tree assessments and inventories to analyze diversity and guide planting decisions. [MDC]
- 6. Seek legislative support to reduce risk. [Technical Team]
 - a. Invite active participation by Governor's representative.
 - b. Advocate for readiness funding from stakeholders.

V. MONITORING PROGRAM

Objective: To detect EAB introductions promptly and improve the probability of containing an infestation.

A. Survey high-risk ash populations to detect the presence of EAB following USFS survey protocols.

- 1. Continue state and federal collaborative surveys of areas with high risk of EAB introduction. [Technical Team]
- 2. Annually review and plan EAB survey activities. [Technical Team]
- 3. Communicate survey results to stakeholders and the media by media releases and/or informational web site. [Communications Team]

B. Educate the public and professionals to aid in rapid identification of an infestation.

- 1. Provide EAB training and outreach to natural resource professionals including MDC Forestry, Private Lands Services and Nature Center staff, MDNR State Park naturalists,

landscapers, consulting foresters, arborists, nursery personnel, and other green industry workers. [Communications Team]

2. Educate the general public about EAB. [Communications Team]
 - a) Obtain or develop simple educational materials for the general public.
 - b) Pursue broad opportunities for speaking, publishing, and exhibiting educational material.
3. Recruit and enable volunteer scouting. [Communications Team]
 - a) Promote awareness with media releases and public appeals for help in scouting.
 - b) Prepare kits and training to support volunteer scouting by individuals and groups (e.g. Master Gardeners, Master Naturalists, Treekeepers, Missouri Community Forestry Council, Certified Arborists, Missouri Forestkeepers)

C. Coordinate state and national information to address professional and public inquiries from Missouri and foster cooperation and communication.

1. Link web sites of Action Team agencies to USFS, PPQ, and Cooperative Emerald Ash Borer Project web sites. [Communications Team]
2. Coordinate with the Cooperative Emerald Ash Borer Project to add Missouri information to their web site (<http://www.emeraldashborer.info/>). [Communications Team]

D. Facilitate Inquiries and Reporting of Suspect Infestations.

1. Educate the *general public* to submit inquiries and suspect infestation reports to a natural resource professional (See Appendix C), to allow pre-screening for appropriate tree species and insect group. [Communications Team]
2. Educate natural resource *professionals* (e.g., arborists, municipal foresters, nursery managers) to submit inquiries and suspect infestation reports to MDA, MDC, or PPQ as described below. [Communications Team]
3. Inquiries and reports of suspect EAB infestations are to be submitted to one of the following individuals. Personnel from these agencies will inspect the suspected ash tree(s) and identify the specimen(s).
 - State Entomologist, MDA
 - Forest Entomologist, MDC
 - State Plant Health Director, USDA-APHIS-PPQ
4. Collected specimens will be forwarded by the MDA State Entomologist or the PPQ State Plant Health Director to a PPQ identifier.
5. If a collected specimen is initially confirmed to be EAB by a PPQ Identifier, the specimen will then be sent to the National Systematic Entomology Laboratory for final confirmation.

6. All Technical Team members are to be notified that a suspect EAB is in the system for identification. However, at this point, all information is not for public dissemination. The public will be informed after a positive identification has been made.
7. The identification result from the Systematic Entomology Laboratory, either positive or negative for EAB, will be received by PPQ, who will notify the Technical Team and the Communications Team.

VI. RESPONSE TO DETECTION OF AN INFESTATION

Objective: To contain and manage EAB populations, when detected.

The Technical Team, with cooperation of affected local government(s), will implement coordinated efforts to contain the infestation according to current national policies and scientific information.

A. Plan and implement containment actions.

1. Coordinate response with affected local governments and other entities.
 - a) Meet to discuss and determine the preliminary plan of action. [Technical Team]
 - b) Schedule an emergency meeting with cooperators (e.g. regulated industries, city and county governments, utility companies, recreational areas, and others). [MDA (lead) and Technical Team]
 - c) Release accurate information to the media. [Communications Team]
2. Organize and conduct a delimiting survey to determine the infestation boundaries. [MDA (lead) and Technical Team]
 - a) All ash trees within 1/2 mile of a positive find will be identified and assessed for EAB activity within a reasonable time frame.
 - b) If additional EAB-infested trees are detected in any area, an expanded survey will be initiated within 1/2 mile from the new find.
3. Initiate regulatory and control activities as necessary.
 - a) Administer provisional quarantine established by MDA consistent with Missouri Revised Statutes, Chapter 263. Emergency rules will be issued describing the quarantined area and regulated articles. [MDA]
 - b) Determine if removal of potential host trees is appropriate. [MDA (lead) and Technical Team]
 - c) Develop compliance agreements with stakeholders to restrict movement from EAB-infested (regulated) areas. [MDA and PPQ]
4. Dispose of wood debris in cooperation with local governments. [Technical Team]
 - a) Establish processing facilities in the quarantine zones to efficiently handle ash debris and reclaim useable products as practical.
 - b) Market reclaimed wood products.

B. Communicate information about response.

1. Provide accurate information and updates to the media through the core members of the Communications Team. [Communications Team]
2. Provide accurate information to affected residents. [Communications Team]
 - a) Prepare information for customizing and distributing to affected area immediately after infestation is found.
 - b) Cooperate with local governments to host local resident/landowner meetings to share information as soon as possible after finding an infestation.
3. Communicate with public and industry professionals to foster cooperation and maximize effective response. [Communications Team]

VII. MITIGATION OF POTENTIAL IMPACTS

Objective: To develop processes and resources for mitigating potential impacts in the event of the establishment of EAB populations.

A. Response for urban forests

1. Assist communities in developing local response plans. [MDC (lead) and Technical Team]
2. Conduct training programs for local governmental staff. [Communications Team]
3. Develop and distribute relevant information (print media, web, public service announcements, etc.) for homeowners. [Communications Team]
4. Provide updated information on EAB management techniques to arborists, landscape professionals, utility companies, and other green industry personnel through publications and periodic workshops. [Communications Team]
5. Explore opportunities for potential reforestation programs. [MDC (lead) and Technical Team]
6. Participate in the National Ash Tree Seed Collection Initiative to secure native ash germplasm (seeds) to be preserved for possible future reforestation efforts. [USDA Natural Resources Conservation Service]

B. Response for rural forests

1. Develop [MDC] and distribute [Communications Team] silvicultural guidelines.
2. Evaluate and encourage local market utilization. [MDC (lead) and Technical Team]

C. Seek legislative support to cover costs associated with EAB management. [Technical Team]

1. Invite active participation by Governor's representative.
2. Advocate for matching funds at state and federal levels to assist local government(s) in clean-up efforts.
3. Advocate for readiness funding from stakeholders.

Appendix A. Missouri EAB Action Team and Partners

Technical Team

Missouri Department of Agriculture (Co-chair: State Entomologist)
Missouri Department of Conservation (Co-chair: Forest Entomologist)
Missouri Department of Natural Resources (Co-chair: State Parks representative)
USDA APHIS, Plant Protection & Quarantine
USDA Forest Service, State & Private Forestry, Forest Health Program
University of Missouri Extension

Communications Team

Missouri Department of Conservation (Co-Chairs: Community Forestry Coordinator
and Public Relations Specialist)
Missouri Department of Agriculture
Missouri Department of Natural Resources
USDA APHIS, Plant Protection & Quarantine
USDA Forest Service, Northeastern Area, Office of Communications
University of Missouri Extension

Collaborators

Forest ReLeaf of Missouri
Missouri Community Forestry Council
Missouri Forest Products Association
Missouri Landscape and Nursery Association
USDA Forest Service, Mark Twain National Forest
USDA Natural Resources Conservation Service

Stakeholders

Conservation Federation of Missouri	Missouri Dept. of Economic Development
Missouri Consulting Foresters Assn.	Missouri Office of Administration
Missouri Municipal League	Missouri State Emergency Management Agency
Missouri Parks & Recreation Assn.	Missouri State University, Dept. of Agriculture
Local Arborist Associations	US Army Corps of Engineers
Missouri Botanical Garden	US Dept. of Interior, National Park Service
Powell Gardens	Univ. of Missouri, Division of Plant Science
Municipalities	Univ. of Missouri, School of Natural Resources
Nurseries	Univ. of Missouri, Plant Diagnostic Clinic
Commercial campgrounds	

Appendix B. Legal Authorities

The following agencies have, by law, the responsibility and authority to manage an exotic plant pest introduction:

- Missouri Department of Agriculture
 - Missouri Revised Statutes, Chapter 263

- USDA, APHIS, Plant Protection and Quarantine.
 - Agricultural Bioterrorism Protection Act of 2002 (Public Law 107-188)
 - Plant Protection Act of 2000 (Public Law 106-224; June 20, 2000)
 - Federal Plant Protection Regulations (Title 7 Code of Federal Regulations 300-399)

- Affected local government(s) at sites of infestation.

Appendix C. Reporting Suspect Emerald Ash Borer Infestations

Reporting by the General Public:

1. If a suspect infestation is found, record date and description of location. If possible, collect suspect insects and a tree twig sample with leaves. Photos of suspect trees and insects can also be very helpful in identification.
2. Suspect insects can be placed in a plastic container such as a pill bottle and killed by placing in a freezer overnight. Soft, worm-like insect larvae can be preserved by placing them in rubbing alcohol.
3. Submit inquiries, samples, or suspect infestation reports to one of the following:
 - Missouri Dept. of Conservation
 - MU Extension offices
 - MU Plant Diagnostic Clinic
 - Missouri Dept. of Agriculture
 - City Foresters or Arborists

Reporting by Natural Resource Professionals:

Collect information and insect samples as described above and submit inquiries and reports to one of the following individuals. Personnel from these agencies will inspect the suspected ash tree(s) and identify the specimen(s).

State Entomologist
Missouri Department of Agriculture
P.O. Box 630, 1616 Missouri Blvd., Jefferson City, MO 65102
Ph. 573-751-5505

Forest Entomologist
Missouri Department of Conservation
1110 S. College Ave., Columbia, MO 65201
Ph. 573-882-9909

**Letter of Approval by the
Missouri Department of Agriculture
Missouri Department of Conservation
And the
Missouri Department of Natural Resources**

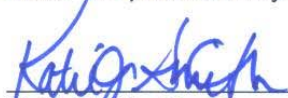
Subject: Missouri Emerald Ash Borer Action Plan

Executive Summary: The emerald ash borer (*Agrilus planipennis*) or EAB is an invasive species that has the potential to completely remove ash trees from North American forests and urban landscapes. First identified in 2002 in southeastern Michigan, EAB has destroyed many millions of ash trees and spread into Illinois, Indiana, Michigan, Ohio, Pennsylvania, West Virginia, and Maryland. There are concerns that quarantine and containment efforts by these states will not stop the spread of this pest. Should an outbreak occur in Missouri, it will require swift, organized responses by government agencies and stakeholder groups. The Missouri Emerald Ash Borer Action Plan has been developed to provide such a coordinated response. The primary goals of this plan are to delay introduction of EAB into Missouri, monitor Missouri's ash trees for the presence of EAB, and mitigate impacts of EAB if and when it arrives in the state. By following this plan, the cooperating agencies will protect Missouri's environmental, economic and social resources within the bounds of federal and state guidelines with programs that are biologically effective, environmentally responsible, economically justifiable and operationally efficient.

Approval of the Action Plan: This letter approves the Missouri Emerald Ash Borer Action Plan. Though this plan provides sound strategies for dealing with EAB, it should be considered a dynamic and evolving document that may change as new research and management information about EAB becomes available.

Successful Cooperation: EAB is a serious threat to Missouri's forests and urban landscapes. Overall, ash comprises about 3 percent of total trees in Missouri's forests. It forms an even greater percentage of the trees in Missouri's urban areas, making up 14 percent of street trees and over 21 percent of trees in urban parks. These percentages rise to well over 30 percent in some parks and subdivisions, Forest Park and the Jefferson National Expansion Memorial (Gateway Arch) in St. Louis being notable examples. The cooperating agencies have worked closely over the years to detect and eradicate gypsy moth populations in Missouri. It will take similar if not greater efforts to delay introduction of EAB into Missouri and mitigate its impacts when it arrives.

Appreciation: A special thanks is given to all the participants and contributors who have worked to make this plan a reality.



Katie Smith, Director
Missouri Department of Agriculture



John Hoskins, Director
Missouri Department of Conservation



Doyle Childers, Director
Missouri Department of Natural Resources