



Emerald Ash Borer Management Plan for M-NCPPC Parkland in Montgomery County, Maryland

May 2016



Horticulture, Forestry and Environmental Education Division
Arboriculture Section

THE MARYLAND-NATIONAL CAPITAL PARK AND PLANNING COMMISSION
DEPARTMENT OF PARKS, MONTGOMERY COUNTY



Executive Summary

Montgomery Parks in collaboration with state and local agencies is addressing the emerald ash borer infestation as an urgent and critical issue that has the potential to significantly impact safety, environmental quality, natural habitat balance and increase invasive weed populations in our Parks. The fiscal impact could easily exceed five million dollars. This invasive insect pest, crosses borders with far-reaching effects that will impact many people.

The goal of the Emerald Ash Borer (EAB) Management Plan is to maintain the quality of our parks and forests in Montgomery Parks by preserving select historic and significant ash trees through use of treatments; protecting the public by removing weakened or dying ash trees; and re-planting to minimize adverse environmental impacts. Public education and outreach are important components during implementation of this multi-faceted EAB management plan.

I. The EAB Problem and Potential Impacts

In 2003, the non-native, invasive emerald ash borer was found in Prince George's County where infested plant material was mistakenly delivered to a tree nursery. After failed attempts to contain EAB, in 2012, it was found in Montgomery County, MD by the Maryland Department of Agriculture. EAB has spread across the county and is causing the premature death of thousands of ash trees in our county. After finding two acres of dead ash trees in Rock Creek Park along the Rock Creek Trail, Montgomery Parks staff realized that this insect is a significant threat to the safety of the general public, our staff and park property. We expect Emerald Ash Borer to kill the majority of ash trees within the next 5-10 years. The death of native forest ash trees will create large areas of standing dead trees, result in an open canopy that encourages invasion of nonnative invasive plants, reduce water and air quality and quickly become a safety hazard. Ash trees near amenities and trails are a serious concern for safety because EAB infestation quickly weakens the wood leading to tree breakage and shattering branches.

A. Emerald Ash Borer

Emerald Ash Borer (*Agrilus planipennis*) is an invasive wood-boring insect from Asia. The metallic green adult beetles feed on the leaves of ash trees; the larvae live and feed on the inner bark, their tunnels cut off water and nutrients resulting in rapid tree mortality.

B. Regulatory Quarantine

Effective August 1, 2015, the Animal and Plant Health Inspection Service (APHIS) added all of Maryland to the list of regulated areas for the emerald ash borer (EAB). Interstate movement of EAB-host wood and wood products from quarantined areas

in Maryland is regulated, including firewood of all hardwood species, nursery stock, green lumber, waste, compost, and chips of ash species.

See Appendix 1: Quarantine for Emerald Ash Borer

C. Ash Trees in Montgomery Parks

Forests, stream valleys and landscaped areas throughout Montgomery Parks have ash trees. Ash comprises 2% of our total forest trees but approximately 20% of trees in our stream valleys are ash; we estimate that over 2,000 ash trees are located on Parkland. Ash trees are also a popular landscape tree and have been planted near many amenities in Parks to provide shade and beauty.

Three species of ash trees are present in Montgomery Parks: white ash, green ash and black ash. **White ash** is found mostly in the northern sections of the county, primarily located on drier sites. White ash is especially prevalent in Little Bennett Regional Park. **Green ash** can be found all over the county, they are the most common type of ash tree in Montgomery County. Green ash cultivars are also the most common type of ash planted in landscaped areas. Many parks in the Southern Region have amenities that were constructed near existing stands of green ash. Large stands of green ash trees are common in the Rock Creek and Sligo Creek Stream Valley. **Black ash** trees are rare in Montgomery County, and Maryland in general. Black ash trees prefer low, wet areas. The few black ash trees in Montgomery Parks are located in Hoyle's Mill Conservation Park and in isolated pockets along Rock Creek Trail.

D. Inventory, Mapping and Asset Management Tracking

Montgomery Parks has prioritized the inventory and evaluation of ash trees in proximity to a park amenity e.g. playground, paved trail, parking lot, parkway, bridges, shelters, buildings. The tree inventory includes data regarding location, quantity and general size category of ash trees. From this information we can both quantify the effects of EAB on our parks and strategically manage the EAB infestation.

The GIS Collector application installed on hand-held mobile devices are used for on-site digital mapping of ash trees in landscaped areas. Mapping ash tree locations is a collaborative effort between Montgomery Parks arborists and staff from the Maryland Department of Natural Resources Forest Service. Tree inventory and mapping will facilitate staff review and assist contractors in responding to Requests for Proposals (RFPs) and eventually for removal or treatment.

Ash trees removed on Parkland are tracked through the Enterprise Asset Management system. The EAM team created specialized features for the forestry work requests to track time use and fiscal impacts specific to emerald ash borer work. An accurate count of tree loss is essential for reforestation planning.

See Appendix 2: Ash Tree Inventory and Mapping Protocol

E. Environmental Impacts

Ash tree losses due to emerald ash borer are likely to result in significant ecological and environmental impacts. Montgomery County ash tree populations often follow stream valleys in our Parks, so the impact to water quality is of particular concern. Tree roots stabilize stream banks; trees slow water movement and take up nutrients and contaminants from storm water before it moves into streams and eventually to the Chesapeake Bay. S. J. Livesley, G. M. McPherson, and C. Calfapietra. The Urban Forest and Ecosystem Services: Impacts on Urban Water, Heat, and Pollution Cycles at the Tree, Street, and City Scale. *J. Environ. Qual.* 45:119–124 (2016)

As large canopy trees are removed in these areas, it is not likely that natural regeneration will be successful due to the heavy deer population and established populations of nonnative invasive plants. We anticipate invasive plants will thrive, changing the structure of our forests and ecosystems.

Tree canopy is important because it improves air quality by reducing temperatures and directly removing pollutants as leaves capture particulates--mature trees provide major public health benefits! An article in the Feb 2013 issue of *American Journal of Preventive Medicine* (Volume 44, Issue 2, February 2013, Pages 139–145) determined that the loss of millions of ash trees due to emerald ash borer was associated with an additional 6,113 deaths related to illness of the lower respiratory system, and 15,080 cardiovascular-related deaths.

II. Administration, Cooperation and Internal Communication

Emerald ash borer beetles have crossed city, state, and county lines since they were first detected in Michigan. Because of the wide reaching impacts of this pest problem, communication and collaboration with neighboring communities, public agencies, park patrons, and staff is very important. The Montgomery County Council and the Montgomery County Planning Board are notified quarterly of our progress, so the information can be disseminated to all appropriate departments.

Montgomery Parks' Horticulture, Forestry, and Environmental Education Division held an early round table discussion with various public agencies in Maryland to discuss current

and future strategies for addressing emerald ash borer around the state. The aim of the roundtable was to open channels of interagency information sharing and cooperation. Agencies represented included Anne Arundel County, City of Rockville, City of Frederick, Montgomery County Department of Environmental Protection, Howard County, Montgomery County Department of Transportation, Baltimore City, National Park Service, Prince Georges County Park and Planning, Maryland Department of Agriculture, Maryland Department of Natural Resources, and the City of Gaithersburg.

The Maryland Department of Natural Resources (DNR), Maryland Department of Agriculture (MDA), and University of Maryland (UMD) are important partners as we implement this plan. Protocols for treatments, tree removal and wood waste management detailed in this plan will only be implemented on Parkland managed by Montgomery Parks.

A. Parks EAB Working Group

The Montgomery Parks Emerald Ash Borer Working Group is charged with the development and implementation of this comprehensive EAB management plan.

See Appendix 3: Montgomery Parks EAB Working Group

B. Education and Training

Informing staff and educating the public about emerald ash borer is important because dramatic, rapid and extensive ash tree mortality will result in hazardous conditions in our Parks, particularly along stream valley paved trails and parkways. Open areas following tree removal will be readily seen by concerned park users.

Special children's educational materials focusing on the invasive emerald ash borer is available through the Sentinel Plant Network. Free printable children's materials are available from the Plant Heroes website for invasive pests. These resources are incorporated into children's programming at our Nature Centers, Brookside Gardens and at special school events.

Education of staff includes an EAB information seminar for Park Managers and Park Maintenance Leaders. The seminar consists of a brief presentation outlining the issue of EAB, explaining how EAB will affect the parks, and a site visit for ash tree identification. Annual chain saw and safety training and additional EAB training for Park Maintenance Workers will be provided by individual maintenance yards as needed.

III. Public outreach

The Public Affairs and Community Partnerships (PACP) Public Outreach Plan coordinates Montgomery Parks' efforts to inform the public about how EAB is being managed on parkland and promptly notifies stakeholders of issues created as a result of ash tree death in Montgomery Parks.

A. Goals

- Generate awareness across internal and external audiences about the Emerald Ash Borer in parks and the impact it will have on our ash trees.
- Educate and engage parks staff and park patrons about this issue by communicating Parks Plan of Action and informing people of how they can help.
- Engage audiences to identify affected trees and report them to the Montgomery Parks' Service Center via email, phone or online.
- Provide regular updates to parks staff and park patrons about progress of the plan and the issue overall.

B. Objectives

- Provide educational presentations to staff and community associations impacted by EAB on Parkland
- Inform public of issue via our website, email communications and press releases
- Inform public of EAB Management Plan

C. Tactics

- Developing custom signs featuring images and explaining the work we are doing in specific locations to be posted in stream valley parks and other parks in which a significant population of Ash trees are located.
- Incorporate information in existing trainings and programs for dissemination across many channels.
- Dedicated webpage on MontgomeryParks.org/trees highlighting the issue, our response and ways that people can help.
- Media advisory to area news outlets.
- Social media posts and e-newsletters.
- Community Organization and Homeowner Association outreach: target groups based on proximity to Parkland issue via signage, postcards, presentations, email.

IV. Management Strategies

This plan integrates multiple strategies to create a prioritized management plan that encompasses detection, protective treatments, and protocols for managing large numbers of dead trees.

A. Prioritization

Targeted removal is important because Montgomery Parks has stewardship of over 36,000 acres including 419 parks--the majority of our parks are located in stream valleys, where ash trees are prevalent. Prioritization is needed due to time, staff and fiscal limitations. Location of dying ash trees within Parks also necessitates different rates of intervention because landscaped parks, forests, stream valleys and trails have very different degrees of hazard.

B. Monitoring and Trapping

Monitoring of parks for declining and dead ash will take place in two waves, one in April through mid-May, and a second one in August. Key indicators of EAB infestation and ash population decline will be declining ash, and the presence of extensive woodpecker damage. Ash mortality inspections will target park areas with the highest volume of ash and EAB infestation first, and then radiate out. The inspection priorities will be:

1. EAB infested stream valley parks
2. Parks in close proximity to infested stream valleys
3. Fee based trails
4. Un-infested parks

C. Treatment Methods

Montgomery Parks is integrating chemical and biological control methods to protect and preserve some ash populations, in line with Parks' integrated pest management (IPM) policy. Because EAB is a relatively recent invader, there is no ability to predict the long term relationship between this insect, the environment, and ash trees. We do not know if a balance will be established between EAB and predator and parasitoid biological control agents. Biological control of invasive insects typically utilizes natural enemies imported from the pest's place of origin. This is a very expensive and time consuming method. Parks is collaborating with University of Maryland scientists to initiate limited releases of beneficial parasitoids

See Appendix 4: Biological Control

Chemical insecticides are being used to protect important ash trees on parkland including our Champion ash trees and those with significant landscape value. Protective insecticide treatment may be required for many years, or possibly, for the entire lifetime of the tree.

See Appendix 5: Chemical Control Options

D. Tree Removal

Montgomery Parks has an active policy to maintain the safety of patrons on parkland from potential damages and/or injury resulting from trees at “high risk” of failure. Ash trees, when attacked by EAB, die quickly and create acute hazards because they “shatter,” “snap,” or break easily once they are infested. This scenario creates an urgent need for removal of dying trees that are located in proximity to a park amenity e.g. playground, paved trail, parking lot, parkway, bridge, shelter, or building. When tree removal takes place near trail and recreation areas, signs posted in advance of tree work will notify user groups of potential timeframes when tree removal work will take place (see Appendix 7 for sign)

See Appendix 6: Ash Tree Removal on Parkland and Private Property

E. Wood Debris

Montgomery Parks is dealing with trees infested with EAB in a cost effective and environmentally sensitive manner. The vast majority of wood debris will be left in place after the tree is felled. In all cases, the stump will be cut flush to grade level and debris 15” in diameter and less is chipped onsite and transported to Montgomery Parks’ Pope Farm Nursery Facility for recycling into mulch. Two main approaches are being used: Fell in place or complete removal.

i. Fell in Place

All wood debris greater than 15” in diameter is left onsite. Considerations are taken to avoid piling debris in an unsightly or “unnatural” manner. Wood debris provides beneficial habitat for wildlife and will not contribute to the proliferation of EAB. The fell in place method allows for significant cost savings and results in less environmental disturbance.

ii. Complete Removal

Trees must be completely removed in lawn areas, planted landscapes, or sites that cannot contain a large volume of debris. Large wood debris is separated into two categories: high quality wood for sawing into lumber and poor quality wood for grinding into mulch.

V. Trail and Park Closure Protocol

When compromised ash trees require closure of trails or portions of parks, the following steps are taken:

- Signs posted at entry points to the impacted site and both ends of the closed trail will notify and inform park patrons of tree removal work.

- Fencing may be installed to close access to some sites. Area managers will check on the status and integrity of fencing and signage to ensure compliance.
- Trail and park closure updates and re-openings are posted on the Montgomery County Parks website, Facebook, Twitter, and other social media outlets.

VI. Signage

Emerald Ash Borer signs posted throughout our parks contain detailed information on the pest biology and provide links to our website so park patrons can find out current pest progress and tree removal locations in Parks. These signs were provided by the American Public Gardens Association Sentinel Plant Network and funded by APHIS. Similar educational posters printed through Public Affairs and Community Partnerships Division (PACP) are located in nature centers and maintenance yards to inform staff and park patrons. Different trail closure signs are posted as needed to inform the public of pending tree removal operations and trail closures.

See Appendix 7: Signs

VII. Replanting and Reforestation

Replanting of landscape trees is very important to maintain the aesthetic and functional features of our developed parks. The Montgomery Parks Internal EAB workgroup must prioritize tree locations to be established--initially this includes “high profile” or the most visible areas of each park. Replanting plans are developed by a horticulturalist in conjunction with individual park management. The objective of our replanting effort is to be proactive in replacing the urban forest canopy which will be impacted over the next several years.

It is critical to promptly reforest natural areas due to concerns for erosion, habitat loss, deer predation and invasive plants that threaten the forest function--disrupted by widespread loss of ash trees. Trails along stream valleys and areas near trails will also have replanting priority. Sites with high potential erosion control issues and better quality habitat areas will be given preference in planting schemes designed to restore high quality areas for the future. In locations where the invasive seed bank potential is high, removal of dying ash trees should be followed relatively quickly by replanting with native trees, shrubs, and sometimes also a native groundcover seed mix.

Areas that are seriously stressed by deer predation will receive targeted plantings to help “jump start” natural vegetation regrowth and improve wildlife habitat. Where deer pressure is high, the loss of any mature tree—or in fact any tree/shrub that is large enough to have made it past the “deer browse/buck rub stage”—is a loss that will not be easily mitigated by natural regeneration in our current urban forests. Deer protection devices,

and planting more mature trees and larger shrubs are strategies that will help us achieve the best and quickest results.

See Appendix 8: Reforestation Specifications

VII. Funding – Fiscal Impacts

Our budget has insufficient funds to manage the massive devastation left in the wake of Emerald Ash Borer infestation. Within FY16 alone, an additional \$800,000 is required to remove hazardous trees for park patron safety along the Beach Drive corridor of Rock Creek Stream Valley Park. Additional funds will be required starting in FY17 for continued removal, reforestation and treatment. Based on our initial assessment, costs to address this problem, countywide, could exceed five million dollars!

See Appendix 9: Funding

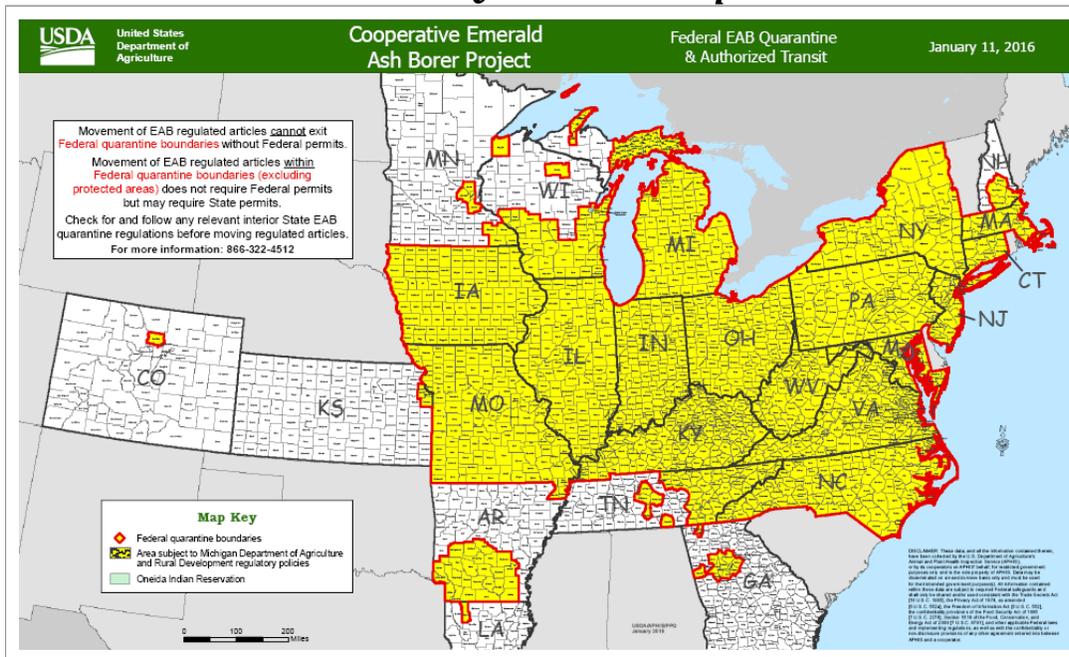
Appendix 1: Quarantine for Emerald Ash Borer

Emerald Ash Borer was initially detected in Maryland at a Prince George's County nursery in 2003. A quarantine order issued on March 16, 2004 [by the Maryland Department of Agriculture] restricted the movement of ash trees and ash material into, out of, or through an area around the initially affected nursery in southern Prince George's County. A Federal quarantine for Prince George's County was issued in June 2007.

On July 11, 2011, the Secretary of Agriculture signed a revised EAB Quarantine Order extending the quarantine to all of Maryland's Western Shore. EAB was initially detected in Montgomery County in 2012 through the use of purple prism traps.

Effective August 1, 2015, the Animal and Plant Health Inspection Service (APHIS) added all of Maryland to the list of regulated areas for the emerald ash borer (EAB)

Federal Emerald Ash Borer Quarantine Map



Maryland Department of Agriculture, 2012, "Emerald Ash Borer Survey, Quarantine, Detection and Biocontrol Updates,

Animal and Plant Health Inspection Service (APHIS), "Federal Order: Domestic Quarantine of Entire State of Maryland for Emerald Ash Borer (*Agrilus planipennis*)," July 23, 2015

https://www.aphis.usda.gov/plant_health/plant_pest_info/emerald_ash_b/downloads/DA-2015-39.pdf

Appendix 2: Ash Tree Inventory and Mapping Protocol

Ash trees are found throughout Montgomery Parks forests, stream valleys, and landscaped areas however, our tree inventory prioritizes mapping the ash tree populations near paved trails in our stream valleys and in landscaped parks.

A. Ash Tree Inventory Data Includes:

- Diameter class (6-15" and >15")
- Target (Road, Trail, Building, Utility, Parking, Other)
- Treat/Remove/Fell/Uncertain (requires further evaluation)

B. Stream Valley Paved Trails and Parkways Inventory

Paved stream valley trails are inventoried using the windshield survey method. Ash within 100ft of the trail were identified and counted. Ash trees were categorized into two groups, 6-15" and 15" and greater. Trees less than 6" DBH were not counted since they do not pose a significant safety concern for trail users. The sections were broken up by natural breaks in the trail like roads or streams. This information was all put into ESRI Collector so we could use the data later for monitoring, prioritizing removal and treatment as well as helping us estimate the fiscal impact of our EAB response.

C. Landscape tree inventory prioritizes the following locations:

- **Community Use Urban Parks** (serve residents and workers in urban neighborhoods and districts; may be programmed for more localized events, but not countywide events)
- **Countywide Urban Parks** (serve residents, visitors, and workers of an entire urban high-density transit-oriented development area, and may be programmed with numerous activities that attract residents from other parts of the county)
- **Neighborhood Parks** (small parks providing informal recreation in residential areas)
- **Local Parks** (larger parks that provide ballfields and both programmed and un-programmed recreation facilities)
- **Regional Parks** (large parks that provide a wide range of recreational opportunities but retain 2/3 of the acreage as conservation areas)
- **Recreational Parks** (parks larger than 50 acres that are more intensively developed than regional parks, but may also contain natural areas)
- **Special Parks** (these parks include areas that contain features of historic and cultural significance)

Developed Parks, such as those above will require thorough searches to locate and document all ash trees growing within 100 feet of a potential target; since public use is intensive throughout these spaces.

Appendix 3: Montgomery Parks EAB Working Group Working Group

Name	Title	Phone	Email
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Carolina Giraldo	Director of Meadowside Nature Center	301-258-4035	Carolina.Giraldo@montgomeryparks.org

Appendix 4: Biological

Montgomery Parks arborists are collaborating with University of Maryland scientists led by Paula Shrewsbury Ph.D. to produce biological control organisms for release. This is a very slow process that is still in the experimental phase. Parks arborists deliver EAB infested wood to the University laboratory; the insects inside the wood are used as hosts for developing beneficial parasitoids. Three parasitoid wasps have been imported by scientists as part of a classical biological control strategy. The species include: *Tetrastichus planipennis* from China that parasitizes EAB larva, *Spathius galinae* from Russia which parasitize EAB larvae, and tiny *Oobius agrili* that parasitize EAB eggs

Classical biological control (importation) is the best choice when an exotic (non-native) pest enters the United States because the checks and balances are missing. These checks and balances in the native region of a pest may include predators that eat the pest, parasitoids that lay eggs in or on various life stages of the pest, diseases that infect the pest and finally, host species defense mechanisms.

Native predators can also play a role in controlling invasive pests. Michigan noted a significant increase in their woodpecker population in response to invasion by emerald ash borer—this led to a reduction in EAB larval numbers and fewer adult beetles. Maryland is home to many different species of woodpeckers and we anticipate that these birds will be an important predator of large EAB larvae. Native ground nesting wasps may also help control the larvae. We hope that introduced parasitoids and native predators will help slow the spread of emerald ash borer.

Appendix 5: Insecticide Options

Limited numbers of ash trees will be treated with insecticides to protect them from emerald ash borer. Treatment is a long-term commitment but is an effective way to protect some of our important ash trees in the landscape. Montgomery Parks has already treated our Champion ash trees as well as a few ash trees with significant landscape value.

Four systemic insecticides are currently approved for use to protect trees from emerald ash borer attack. Systemic insecticide treatments for emerald ash borer must be taken up (absorbed) by the tree. The insects then feed on either the conductive tissue (larva) or the leaves (beetle) to ingest the insecticide. Products vary in method and time of application, efficacy and length of time the tree is protected.

A. Emamectin Benzoate (TREE-äge®)

- Apply with trunk injection
- Apply from bud break to mid-June or September (after heat) until leaf drop (late October)
- Works on trees of all sizes
- One treatment lasts for two (2) years. Some research finds that trees may remain protected for three (3) years
- Is the most effective compound and can work on trees with up to 30% canopy loss

B. Azadirachtin (TreeAzin®, AzaSol™)

- Apply with trunk injection
- Apply from bud break to mid-June or September (after heat) until leaf drop (late October)
- Trees can get two (2) years of protection. In heavily infested areas, treatment may be needed every year
- OMRI listed product

C. Imidacloprid (Merit™, Xytect™)

- Apply as a drench at the base of the tree – apply directly to root collar and flare, or as a soil injection
- Application is most effective in Spring (early April to mid-May). Can also be applied in fall (October to November)
- Most effective on trees less than 20" diameter
- One treatment lasts for one (1) season

D. Dinotefuran (Safari®)

- Apply as a basal bark (trunk spray) treatment or soil injection/drench
- Apply in Spring (early May to mid-June)

- Not applicable for trees larger than 12" diameter
- It is rapidly translocated up into the tree – no efficacy beyond one (1) growing season

Appendix 6: Ash Tree Removal on Parkland and Private Property FAQ

- Who is responsible for removing a tree or limbs that have fallen onto private property?

In Maryland, the general rule for fallen trees, or similar accidents that may be qualified as an “Act of God,” states that the affected owner is responsible for damages to their own property, including cleanup, removal and related expenses.

- *For requests to prune a Park tree with limbs overhanging private property, Maryland (and Montgomery Parks) follows the “Massachusetts Self-Help Rule”. This rule states that a property owner can cut off branches which are intruding over his property as long as he doesn’t kill the tree or injure the tree in the process.*
- Why doesn’t Montgomery Parks remove trees from private property?

The Arboriculture Section of the Montgomery Parks Department has a duty to inspect and mitigate risks associated with trees located on park property; especially, in and around amenities or areas where we invite the public. In compliance with existing Maryland state laws it is not our duty to provide courtesy removal of trees and debris from private property. Providing this service would tax our fiscal and human resources to a degree that would hamper our ability to inspect and maintain trees growing on Park property to levels that meet our own expectations.

- How does the Park Arborist Inspector prioritize work requests?

The Montgomery Parks Department has an active policy to maintain the safety of Parkland from potential damages and/or injury resulting from trees considered to be a “high risk” of failure. The Arboriculture Section strives to eliminate, in a timely fashion, any tree growing on Parkland that is deemed to be of high risk of failure. When available fiscal and human resources limit the ability of the Parks Department to remove high risk trees on Parkland, priority is placed on trees deemed to be of the highest risk of failure i.e., trees in need of “emergency” response. The standard for rating the risk of failure associated with any given tree is determined by Park’s Arborist Inspector with respect to their professional experience and the International Society of Arboriculture’s Tree Risk Assessment standards. The Montgomery Parks Urban Forester administers the program and has final judgment in all matters concerning mitigation measures taken for any tree deemed to be of “high risk” or “emergency.”

Appendix 7: Signs

signs and symptoms emerald ash borer

or EAB, is an invasive insect that has already killed tens of millions of native ash trees in the US and threatens millions more. Help slow the spread of EAB by checking your ash trees for these common signs and symptoms of infestation: overall foliage thinning and dead branches; on the trunk look for woodpecker damage, bark splitting and D-shaped exit holes!

EDUCATE TO DETECT! Scan the QR code to learn more about emerald ash borer and other regional threats, then spread the word to help protect our plant resources!

EARLY DETECTION IS KEY

Despite their flashy metallic color these beetles are difficult to spot and cause significant damage by the time symptoms become apparent. Emerald ash borer larvae feed beneath the bark of an ash tree, cutting off water transport to the rest of the tree and killing it.

In as little as two years from when symptoms are first observed most of the branches can die. However, when infestations are detected early damage from EAB can be slowed down **s a v i n g** more of our ash trees.

Agrilus planipennis

Signs and Symptoms:

- A. dead tree
- B. bark splitting
- C. woodpecker damage
- D. new growth

© 2014 National Plant Diagnostic Network. All rights reserved. Photo: USDA Forest Service, Bugwood.org

The Sentinel Plant Network contributes to plant conservation by engaging public garden professionals, arborists and others in the early detection of high-consequence plant pests and diseases. Learn more at www.SentinelPlantNetwork.org.

Funded through the USDA APHIS National and State Plant Health Inspection Service, SP Member of a network is a collaboration between the APG's National and State Plant Health Inspection Service and the NPDP's National Plant Diagnostic Network. This program makes it possible to extend MPD's diagnostic and "Find Detector" training expertise to more than 10,000 professionals working at APG's 100+ member gardens across the country and leverage their public programming to engage the 70 million people who visit public gardens every year.

NOTICE

Tree Work

Ash trees (*Fraxinus* spp.) in this area are infested with Emerald Ash Borer (EAB). This beetle will kill all ash trees within 1-3 years of infestation. Tree removal will begin _____ to eliminate hazardous conditions for park patrons.

For additional information go to www.MontgomeryParks.org/EAB or call 301-495-2595



The Maryland-National Capital Park and Planning Commission

Appendix 8: Reforestation Specifications

Parks will reforest with species “native to the Maryland Piedmont”, and use only the trees/shrubs appropriate to the habitat being restored.

Since the preponderance of areas to be targeted for removal/replanting in the initial stages will be in floodplains, the majority of reforestation trees will be chosen from the attached list of native trees commonly found growing in our floodplains:

Preferred Native Trees and Shrubs for EAB Reforestation/Restoration Areas

Botanical Name- Large Trees	Common name
<i>Quercus rubra</i>	Northern Red oak
<i>Quercus alba</i>	White oak
<i>Quercus bicolor</i>	Swamp white oak
<i>Quercus palustris</i>	Pin oak
<i>Platanus occidentalis</i>	American sycamore
<i>Acer rubrum</i>	Red maple
<i>Liriodendron tulipifera</i>	Tulip tree
<i>Carpinus caroliniana</i>	Musclewood
<i>Nyssa sylvatica</i>	Black gum

<i>Betula nigra</i>	River birch
<i>Asimina triloba</i>	Paw-paw
<i>Ulmus americana</i>	American elm
Botanical Name- Shrubs/small trees	Common name
<i>Amelanchier arborea</i>	Serviceberry
<i>Lindera benzoin</i>	spicebush
<i>Cornus florida</i>	Dogwood
<i>Ilex opaca</i>	American holly
<i>Viburnum prunifolium</i>	Blackhaw

Montgomery Parks reforests using parameters set out in the [Planting Requirements for Land-Disturbing Activities and Related Mitigation on M-NCPPC Montgomery County Parkland](#) document.

[http://www.montgomeryparks.org/PPSD/Natural Resources Stewardship/Veg Management/documents/planting_reqs-on-disturbed-land_rev-10-14.pdf](http://www.montgomeryparks.org/PPSD/Natural%20Resources%20Stewardship/Veg%20Management/documents/planting_reqs-on-disturbed-land_rev-10-14.pdf)

As is outlined in the Park replanting guidelines (pgs. 5-7), trees are reforested at either the 200 per acre (for .75 to 1” caliper), or 100 per acre (for 1.5- to 2-inch caliper) plants rate.

Containerized plants will be used in the majority of cases in order to create the least amount of additional disturbance to the habitat. When access is easy and planting can be done directly off the paved path, some Balled & Burlapped (B&B) trees may be used.

Appendix 9: Funding

In preparation for this additional work, a Request for Staff and Funding for FY17 to Support EAB Response has been made.

Status: Approved by Planning Board; Pending Approval with Council

Details of the FY17 request are as follows:

Request for Tree Removal and Treatment Funds – Emerald Ash Borer Program Management

An additional \$400,000 is requested for FY17 for tree removal and treatment to slow the death of thousands of trees along 34 miles of paved trails. **Increase contract tree work and treatment money to manage- Emerald Ash Borer**

An additional \$400,000 is requested for FY17 for tree removal and treatment to slow the death of thousands of trees along 34 miles of paved trails. First priority is paved trails. Trees will eventually need to be treated or removed in parks near amenities, along property lines where trees back to homeowner property, along parkways. Increasing this money will lower our risk of injury to homeowners, citizens, park staff and decrease the likelihood of damage to park property, adjacent property and vehicular traffic.

How is this efficient in the long term? The strategy is to slow the impact of the borer and death of the trees so that staff resources and funding can be phased in over 5 years instead of having to appropriate millions of dollars up front in one or two years.

Request for Staff Contract Urban Forester-EAB Program Management

The recent onset of EAB in Montgomery County leaves the Parks with an upcoming work program that will manage thousands of hazard trees on Parkland. As the owner of most of the stream valleys in Montgomery County, the Parks are the home of thousands of Ash trees that will be impacted by this pest in the next 5 years. This position will coordinate the County-wide and internal staff Workgroups for EAB, oversee contract tree companies conducting high risk tree work on Parkland, manage the treatment program, coordinate replanting in landscape areas of parks with Pope Farm Nursery, seek grant money, update the website and response to citizen inquiries. Many trails will have to be closed during tree work for EAB and this will require a person to be available to work with POEMS regularly to inform the public. Also, handling citizen and park staff calls for inspection of hazard ash trees. This is an added amount of work that our current staff complement cannot manage.

How is this efficient in the long term? Without this position, staff resources and funding will need to be assigned to this problem which will lead to a significant diminishment of other hazardous tree responses throughout the county.

Appendix 10: Timeline

April	May	June	July	August	September	October	November	December	January	February	March	April
Monitor ash trees												
	Treat selected ash trees with insecticide injections											
		Spring removal of EAB infested trees										
			Fall removal of EAB infested trees									
									Envir sensitive and preemptive removal			
									Reforestation plantings			
									Landscape tree replacement plantings			