

Urban Forest Edge Management Through Public Engagement

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Introduction

Numerous pathways connect Columbia's community-centered suburban villages. These well-traveled paths are perfect for dog walkers, runners, and any citizen desiring a connection to nature that is close to home. Columbia's paths follow stream corridors, guarded by vegetation, which tends to struggle against the influence of invasive plant species. Creating a means to manage the presence of such invasive species will promote Columbia's beautiful and welcoming environment, thus working toward the Columbia Association's goal of "making Columbia the community of choice," and sustaining its coveted more than 3,500 acres of open space (Columbia Association).

This paper analyzed various invasive species removal programs conducted throughout the local area to provide the Columbia Association with feedback to help determine what form of invasive species management program, if any, they may be interested in developing. It looked at the effectiveness of each program's management, and if they have been effective or ineffective by addressing the following questions: How have local organizations fostered public engagement in urban forest edge management? What experiences can these organizations share to help form the most efficient forest edge management program for Columbia, Maryland?

Invasive plant species pose a threat to native vegetation because of their ability to take over new environments rapidly. Human actions can influence the spread of invasive species into new areas, but changing environmental conditions also contributes to the spread of invasives. Particularly successful invasive plants can ultimately alter the natural biodiversity of a region by contributing to the extinction of native vegetation and altering the ecosystem webs of interaction between native flora and fauna (MD DNR). To preserve native species and maintain the complexity of regional biodiversity, actions must be taken to control the spread of invasive plants.

This is a tedious task, and it is an ongoing one, as invasive plants are capable of being reintroduced to landscapes they were previously removed from. Because of the ongoing efforts necessary to control invasive plants, the efforts of local volunteers are being enlisted throughout the country. Maryland and Virginia have a number of programs that encourage volunteer participation in removing invasive species, including programs in Montgomery County, Baltimore County, and Carroll County in Maryland, and Arlington and Richmond in Virginia.

Weed Warriors, Montgomery County

The Weed Warriors program of Montgomery County is the basis for many similar programs in the surrounding area. Its main objective is to respond to the invasive plant problem through volunteer-based action. A secondary goal is to educate local residents in identifying and managing invasive species (Montgomery Parks, 2016). By educating citizens, Weed Warriors is creating a generation of environmental stewards with the knowledge and experience to care for, manage, and share their interest in preserving natural green spaces.

There are two options to get involved with Weed Warriors: volunteering for a single, supervised workday, or becoming a certified Weed Warrior volunteer, capable of performing independent invasive plant management. In the last decade of its existence, over 1,200 volunteers have been trained through the program, and have collectively logged over 57,000 hours of vegetation management (Gillespie, 2016).



Before and after cleanup of garlic mustard in Little Paint Branch Park, Spring 2007
(Maryland Native Plant Society, 2007)

To become a certified Weed Warrior volunteer, one must be aged 16 or older, take an online education course, complete a 2-hour long field training session under the supervision of a forest ecologist, and work with park staff during a designated work day. The field training classes cover a variety of topics, including the identification of invasive plants, methods of removal and control of invasive species suitable for parklands, Weed Warrior responsibilities and stewardship actions, and how to stay safe when working in the woods. This extensive certification process works to prepare volunteers, and helps avoid the potential problem of incorrect identification of non-native species, which can lead to more habitat harm than benefit. The certification process equips Weed Warriors with necessary knowledge to remove invasive species on Maryland-National Capital Park and Planning Commission (M-NCPPC) property on their own time. The certification process also provides Weed Warriors with a certification badge, which is to be worn when volunteering, as the removal of plants from state and national property is otherwise illegal (Interview: Lynn Vismara). Volunteers can log and report their hours, which can contribute to the Montgomery County Public School's required community service hours for students.

According to Lynn Vismara, the Volunteer Services & Partnership Coordinator for Montgomery County Parks, most volunteers use manual methods to remove weeds. But volunteers must be aged 16 or older to allow them access to additional removal tools. Volunteers certified to handle chemical weed killers are permitted to do so, but this is only done for particularly unruly invasives.

Despite the tremendous efforts of volunteers, some plants are simply too wild to be controlled either through manual, mechanical, or chemical methods. A report published by the Smithsonian in March 2016 describes the invasive-management work of Meghan Fellows, the previous coordinator for the Montgomery County Weed Warriors Program. Fellows uses fire to wilt the vegetation, a management practice that has had little previous attention, but is now the subject of further studies. So far, her work appears to be making a significant impact on lowering the density of tricky invasives, though further studies are necessary to deem it as a successful tool for invasive management.

Fellows uses Weed Warriors volunteers to help educate intrigued park visitors on her practices, engaging the public in the activities of the Weed Warriors, and demonstrating the goals of the program in the field. As Fellows continues to study the impact of fire management practices, it will be interesting to see how this form of management might be incorporated into the Weed



Fellows, using her flame thrower to remove lesser celandine. (Gillespie, 2016)

Warriors program, and what the costs and benefits of this technique may be.

The Montgomery County Weed Warriors Program has shown to be successful, based on the program's involvement of 500 active volunteers, and its influence on the creation of a number of similar programs that have sprouted in the surrounding communities.

Weed Warriors, Baltimore County

TreeBaltimore is an umbrella organization for Baltimore agencies and private programs working to increase tree canopy cover across Baltimore County. TreeBaltimore has set a goal of increasing the county's canopy cover by 40 percent by the year 2037 (TreeBaltimore, 2014). To reach this goal, they have partnered with local homeowners, communities, schools, and businesses to achieve a more canopy-dense area. Under the umbrella organization, the Baltimore Weed Warriors Program was created in September 2014 to engage the public. Baltimore's Weed Warriors are trained in a three-course series to become authorized removers of invasive species and participate in one group removal event. Once certified, Baltimore Weed Warriors may remove plants independently, without supervision by park staff. The training course teaches volunteers invasive species identification, the impact of invasives on the environment, and the most effective and safest methods of invasives removal, including manual versus chemical removal.

Weed Warriors, Carroll County

Carroll County's Weed Warriors program is directed by Carolyn Puckett, who started it in 2010 (Carroll County Forest Conservancy Board). Its design is based on Montgomery County's program, striving to educate the community and promote forest conservation. The program is hosted by the Carroll County Forestry Board and is volunteer-based. Volunteers are trained using an online curriculum, as well as in field sessions where they learn to identify invasive species in a hands-on environment.

Volunteers include interested community members as well as students, who are able to earn service-learning hours through volunteer work, a requirement for public school students. Volunteers can be trained to be a Volunteer Weed Warrior, Volunteer Weed Monitor, or Volunteer Weed Warrior Leader. Volunteer Weed Warriors identify and remove invasives, discarding the removed plants in a safe manner. They are also involved in replanting cleared areas with native plants. Volunteer Weed Monitors identify areas that have been cleared of invasive through GPS mapping, transfer their GPS findings to reader-friendly GIS maps, and make the gathered information accessible to the program supervisors. Volunteer Weed Warrior Leaders plan, organize, and schedule weeding events, and act as volunteer supervisors.

By dividing up tasks among different roles, Carroll County's Weed Warrior Program is unique in its organized, successful volunteer system. This program also advocates the use of GIS mapping technology, which may help create useful resources for future invasive removal efforts. While certain GIS platforms are expensive to use, there are free web-based programs available that may also be used.

Invasive Management Area, Fairfax County

Fairfax County's Invasive Management Area (IMA) began in 2006 as a volunteer-led habitat restoration program for Fairfax parklands (Fairfax Virginia, 2016). IMA goals include bringing the community together to manage invasive species—educating the public on the effects of invasive species, as well as developing meadows and forests free of invasive plants.

The IMA is run through the volunteer efforts of many community members. Volunteers must be at least 11 years old to participate, and is a means to earn community service hours for student participants. An adult must accompany volunteers between the ages of 11–13 at invasive removal events. A current volunteer calendar is available on the IMA website, providing seasonal events offered for interested volunteers. There are at least three events each week, making volunteering easy to sign up for. No training experience is required, as each of these outings is supervised in a group setting.

In comparison to other programs, the IMA provides a user-friendly webpage that makes getting involved simple and inviting. The IMA project has grown significantly since its creation, increasing the sites under its management from 20 in 2006 to 40 active sites today.

Remove Invasive Plants, Arlington County

Arlington, Virginia's Remove Invasive Plants Program (RIP) was started in 2005 as a way to engage neighbors in the removal of invasive plants, maintain restored areas, and provide preventative monitoring for threatened areas (Arlington Virginia, 2016). In addition to striving to maintain areas clear of invasive species, RIP also aims to educate neighbors on invasive plants through hands-on involvement.

To engage the public, seven regularly scheduled events take place each month at local parks, and interested citizens are encouraged to join local volunteer groups for the various Arlington parks. These volunteer groups include the Arlington Regional Master Naturalists (ARMN), which is a volunteer-led program of trained individuals serving at the local level, TreeStewards another volunteer-led group and the Master Gardeners of Northern Virginia (MGNV), which requires its volunteers to complete over 60 hours of combined classroom and field training.

In addition to dividing the program into smaller volunteer groups, RIP has been successful because of its community outreach through social media. RIP uses an active Facebook page to keep volunteers engaged and informed of volunteer opportunities. The page has a significant and active following. Though this may not appeal to all interested community members, having a presence on social media is one method to encourage the participation and interest of volunteers.

Conclusion

These are only a handful of the invasive plant management groups present in the Washington metropolitan region. Others include the Reston Association, the DC Cooperative Weed Management Area, the Middle Patuxent Environmental Area Foundation, the Anacostia Watershed Society, and even the University of Maryland's Terrapin Trail Club.

Each of these local invasive plant management organizations shares certain characteristics: they are all volunteer-based with an interest in engaging and educating the public. While they may differ in their age and experience requirements, each has experienced success in achieving their educational and invasive species management goals. The ease of website use, availability of invasive species cleanup events, and the incorporation of social media differentiated each organization from the other, and those that made their webpages simplest to navigate appear to have the greatest involvement. The Columbia Association may take these shared and unique characteristics into consideration in developing their own invasive species management program.

Bibliography

1. Maryland Department of Natural Resources. “Invasive and Exotic Species in Maryland” last modified 2016, <http://dnr2.maryland.gov/Invasives/Pages/Invasive-Description.aspx>.

This webpage is a useful resource for evaluating the impact of invasive species on the Maryland landscape, and provides information that is applicable to most other regions in regards to invasive species.

2. Columbia Association. “About Us” last modified 2016, <https://www.columbiaassociation.org/about-us/>.

An understanding of the Columbia Association is helpful to organize this paper around the objectives of the organization.

3. Montgomery Parks. “Weed Warriors” last modified March 7, 2016, http://www.montgomeryparks.org/PPSD/Natural_Resources_Stewardship/Veg_Management/weed_warriors/.

Montgomery County’s Weed Warriors program was the first one we had referenced in our meeting with the Columbia Association, and other similar programs reference back

to it. This program is volunteer-based, and provides training for their volunteers on-site.

The field training classes cover the following topics:

- Identification and removal of invasive plants
- How to stay safe in the woods
- Procedures for becoming a Weed Warrior and responsibilities

4. Interview with Lynn Vismara, Volunteer Services & Partnership Coordinator for Montgomery County Weed Warriors.

Lynn provided ample information in a phone interview about the Montgomery County Weed Warrior program.

5. Gillespie, A. “A New Weapon in the War on Weeds: Flamethrowers”, March 16, 2016, <http://www.smithsonianmag.com/science-nature/new-weapon-war-weeds-flamethrowers-180958450/?no-ist>.

This article discusses the study of the use of flamethrower as a means for invasive species management. It depicts Meghan Fellows, a trainer of volunteers for Montgomery County’s Weed Warriors program, and the program’s development over the years.

6. Maryland Native Plant Society. “Little Paint Branch, Garlic Mustard Cleanup, Spring 2007”, April 1, 2007, <http://www.mdflora.org/gallery/beforeafter.html/329539>.

This webpage is an excellent resource for various invasive plant removal organizations throughout the state of Maryland. It supplied before and after pictures of areas where groups have performed cleanup work.

7. TreeBaltimore. “Weed Warriors”, last modified 2014, <http://www.treebaltimore.org/programs/weedwarriors/>.

TreeBaltimore is an umbrella organization for agencies and private organizations in Baltimore. As part of their mission to reach 40 percent tree cover by 2037, they have partnered with local homeowners, communities, schools, and businesses to work toward a canopy-dense city. TreeBaltimore has a Weed Warriors program, which is conducted by volunteers during scheduled invasive plant removal events. Volunteers obtain certification to remove invasives without the supervision of park employees by

completing courses about invasive species, as well as one group weed removal event. Their training curriculum includes invasive identification, the effects of invasives on the environment, and approved removal methods.

8. Department of Energy & Environment. “DC Cooperative Weed Management Area: Weed Warrior Program”, <http://doee.dc.gov/page/dc-cwma-weed-warrior-program>.

DC’s version of the Weed Warrior program is similarly based on the work of volunteers. Training is conducted by the program, and involves a two-hour field training class as well as a two-part online course. Topics covered in the training include invasive plant identification, removal, and how to work safely in the woods. The DC Weed Warrior volunteers conduct invasive plant removal on their own schedules and at their own pace.

9. The Carroll County Forest Conservancy Board. “Join the volunteer Weed Warriors”, <http://www.carrollcountyforestryboard.org/index.cfm?objectid=981351B0-8A05-11E4-AACF0050560F037A>.

The main objective of the Carroll County Forest Conservancy Board is to connect Carroll County residents to their environment, and provides ways in which landowners/farmers, builders, teachers, and students can become more involved and connected to their natural environment. Their Weed Warrior program was created in 2010, and was based on Montgomery County’s program. This program not only removes invasive species, but also restores cleared areas with native plants.

10. Middle Patuxent Environmental Area Foundation. “Weed Warrior Volunteers” <http://www.middlepatuxent.org/weed-warrior-volunteer-days/>.

The MPEA conducts regular invasive plant pulls on every Tuesday and Friday in the spring and fall throughout the 1.6 square mile of forest west of Columbia and east of Clarksville, MD. During these times, they will also replant the cleared areas with native species. The MPEA provides compensation for volunteer activities based on the number of hours devoted to volunteer work, demonstrating their involvement with local businesses. The MPEA also permits individual removal of invasive species, referring those interested in doing so to their Invasive Plants Project Manager. They require

interested persons to test on their knowledge of invasive species identification and are willing to supply a cheat sheet for studying purposes prior to the test.

11. Anacostia Watershed Society. “Invasive Plant Management”, last modified 2015, <http://www.anacostiaws.org/programs/stewardship/invasive-plant/>.

The Anacostia Watershed Society consists of stewards for the Anacostia and Chesapeake Bay Watershed. The AWS holds year-round volunteer events, removing invasive plant species through both volunteer and employed assistance. AWS uses strategic land surveys to determine areas most intruded by invasive species, to best focus their restoration efforts. Volunteers are encouraged to lend a hand during specific maintenance events, which are listed on the AWS website’s calendar.

12. Reston Association. “Weed Warriors Project – Protect the Trees”, last modified 2011, <https://www.reston.org/Calendar/tabid/150/ModuleID/611/ItemID/3013/mctl/EventDetails/Default.aspx>.

Reston’s Weed Warriors program meets on the fourth Saturday of every month to help remove invasive species from their parklands.

13. Fairfax Virginia. “Invasive Management Area (IMA) – Volunteer Program”, 2016, <http://www.fairfaxcounty.gov/parks/resource-management/ima/>.

IMA is Fairfax County’s version of Weed Warriors. It is a volunteer-led program dedicated to habitat restoration for Fairfax’s parklands. Dedicated sites and dates are available on the webpage’s calendar, providing structured times and locations for

volunteers. The IMA webpage does not list any training requirements, and provides contact information for those interested in becoming volunteers.

14. Arlington Virginia “Invasive Plant Program”, last modified 2016,

<https://environment.arlingtonva.us/trees/invasive-plants/invasive-plant-program/>”.

Arlington’s invasive species removal program is also volunteer-based, welcomes all volunteers without any restrictions, and does not appear to require any prior training.

15. University of Maryland Terrapin Trail Club

The UMD TTC partners with the Potomac Appalachian Trail Club to organize volunteer groups that remove invasive species along local trails. This is a less widespread form of invasive management, conducted by college-aged students. I have participated with this group, and would be able to get in contact with the club officers as well as the PATC to gather more information on volunteer-conducted invasive species removal.