

# Worcester's Response to Asian Longhorned Beetle: Reforestation, Stewardship, and Sustainability

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In 2008, an invasive insect, the Asian longhorned beetle (ALB) was discovered in Worcester, Massachusetts, the second largest city in New England. For the previous 12 to 15 years the beetles had quietly spread in the dense maple canopy in the Greendale and Burncoat neighborhoods and likely piggy-backed on firewood and vehicles to other nearby towns. Trees were weakened and the health of the urban forest compromised. The insect, a native of China, had most probably arrived in Worcester on wooden shipping pallets at the end of the last century before regulations requiring treatment of shipping pallets were implemented.

In the 2001 book, "Trees At Risk", author Evelyn Herwitz documents a history of open space preservation and tree canopy growth in Worcester during the 19th century, only to be followed by decades of decline and neglect due to lack of funding, disease, and natural disasters. Worcester's fondness for large shade trees throughout its history included chestnuts, elms, and maples. Chestnut blight and Dutch elm disease took their toll on Worcester's urban forest in the early 1900s, before an historic hurricane swept through the city in 1938 and thousands more trees were lost. Fourteen years later the devastating tornado of 1952, one of the most powerful ever to be recorded in the United States, cut a swath through the Burncoat and Greendale neighborhoods, leaving 94 people dead in central Massachusetts. Houses and businesses were destroyed, trees uprooted, and the landscape was left in shambles. Spurred by the tree losses the city began an aggressive planting program of maple trees which lasted for over a decade. Norway maples were favored because of their fast growth, setting the stage for future disaster 50 years down the road. An inventory conducted by the Worcester Department of Public Works and Parks in 2005-2006 showed a total of 17,113 street trees. Eighty percent were maples (Freilicher et al. 2008).

## **Asian Longhorned Beetle Discovery**

In August 2008, Donna Massie, a homeowner living in Worcester's Greendale neighborhood discovered several unusual but captivating black and white large beetles in her back yard. After searching the Internet, she contacted the U.S. Department of Agriculture/Animal and Plant Health Inspectional Service (USDA/APHIS) office to report what she thought looked like an Asian longhorned beetle (ALB). The next day, representatives from both APHIS and the Massachusetts Department of Agriculture (MDAR) showed up on her doorstep to confirm the bug's identity and begin the long and painful eradication process. Thanks to this curious and engaged community member, the spread of this invasive pest was checked. It was too late for the Burncoat and Greendale



Figure 1: Greendale Street before and after tree removals.

Photo by Ken Gooch, MA Department of Conservation and Recreation, used with permission.

neighborhoods and surrounding towns, but perhaps her actions saved the expansive maple forests of northern New England (Figure 1).

## Community Response

The response by federal and state officials was quick and collaborative. The Animal and Plant Health Inspectional Service (APHIS) was the federal agency in charge of assessment and eradication. With Worcester at the epicenter, Asian longhorned beetle (ALB) was also found in the surrounding towns of Boylston, West Boylston, Shrewsbury, and parts of Holden. APHIS, with the State Department of Conservation and Recreation (DCR) and local officials, hosted public meetings to inform residents about the extent of the infestation and the protocol for tree removal. The public meetings were often contentious, as anxious residents struggled to understand the fate of their neighborhood. An APHIS policy of removing both infested and noninfested host trees (those susceptible to ALB) was controversial.

Tree removals began in the winter, early in 2009. Large cranes invaded the neighborhoods removing both public street trees and trees on private properties.

The initial reaction of the public was grief, denial, anger, sadness, and eventually resignation. Stories spread quickly among friends and colleagues about not recognizing their own street and getting lost in their neighborhood where they had lived for years (Figure 1). U.S. Representative James P. McGovern (D-MA, 2nd District) and Massachusetts Lieutenant Governor Timothy P. Murray, both residents of Worcester, had anticipated that once the neighborhood trees began to fall, the economic and emotional costs would start to take a toll. Late in 2008 they pulled together a working team to form

a private, nonprofit entity that would move quickly to engage with community residents and give them a sense of hope and inclusion in the reforestation effort. They each committed funds to initiate The Worcester Tree Initiative (WTI) with a goal of planting 30,000 trees in 5 years (Worcester Tree Initiative, n.d.). The first reforestation kickoff, a tree giveaway event led by WTI, was held at Burncoat High School in April, 2009. Hundreds of residents were trained that day and 300 trees were planted. WTI was off to a good start!

## Urban Reforestation

Three agencies were charged with reforestation: City of Worcester Forestry Division planted street trees and trees in public parks; Massachusetts DCR planted trees in private yards where trees had been removed; and WTI gave away trees for residents to plant in their yards. WTI also coordinated plantings at schools and worked with community partners to plant trees in neighborhoods. All of the trees were free to residents. A list of acceptable species (non-ALB host species) was shared by all three agencies and maintained by DCR. In the interest of diversity, no more than 10 percent of any one species was planted in the community (Figure 2).

The City of Worcester Forestry Division led the street tree planting effort assisted by Department of Conservation and Recreation staff the first year, in 2009. Plantings began on those streets hardest hit by tree removals in the Greendale and Burncoat neighborhoods. Many residents came out of their houses to thank the planting crews. Beginning in 2011, the WTI partnered with the city to conduct door-to-door outreach, answer questions, and recruit “stewards” to help care for the trees newly planted in front of houses.

DCR planted trees in private yards of those residents who lost trees to ALB. DCR staff met with residents to determine where to plant trees on their property and what species to plant. DCR provided residents with a packet of information, which included pictures of approved tree species and worked with them to choose their trees. Later that season, a crew returned to plant the trees in those yards. Residents were responsible for watering the newly planted trees. Over the period of 6 years, 3,000 trees were planted.

The WTI oversaw three tree-planting programs: tree giveaways, school plantings, and community plantings.

**The Tree Giveaway program** was designed for residents living anywhere in Worcester, or the surrounding ALB impacted towns, which included Boylston, West Boylston, Shrewsbury, and Holden (Figure 3). Residents could show up at an event, attend a 20-minute tree planting demonstration and training class and then take home a tree to plant in their yards. Training and registration was mandatory so that the condition of the tree could be

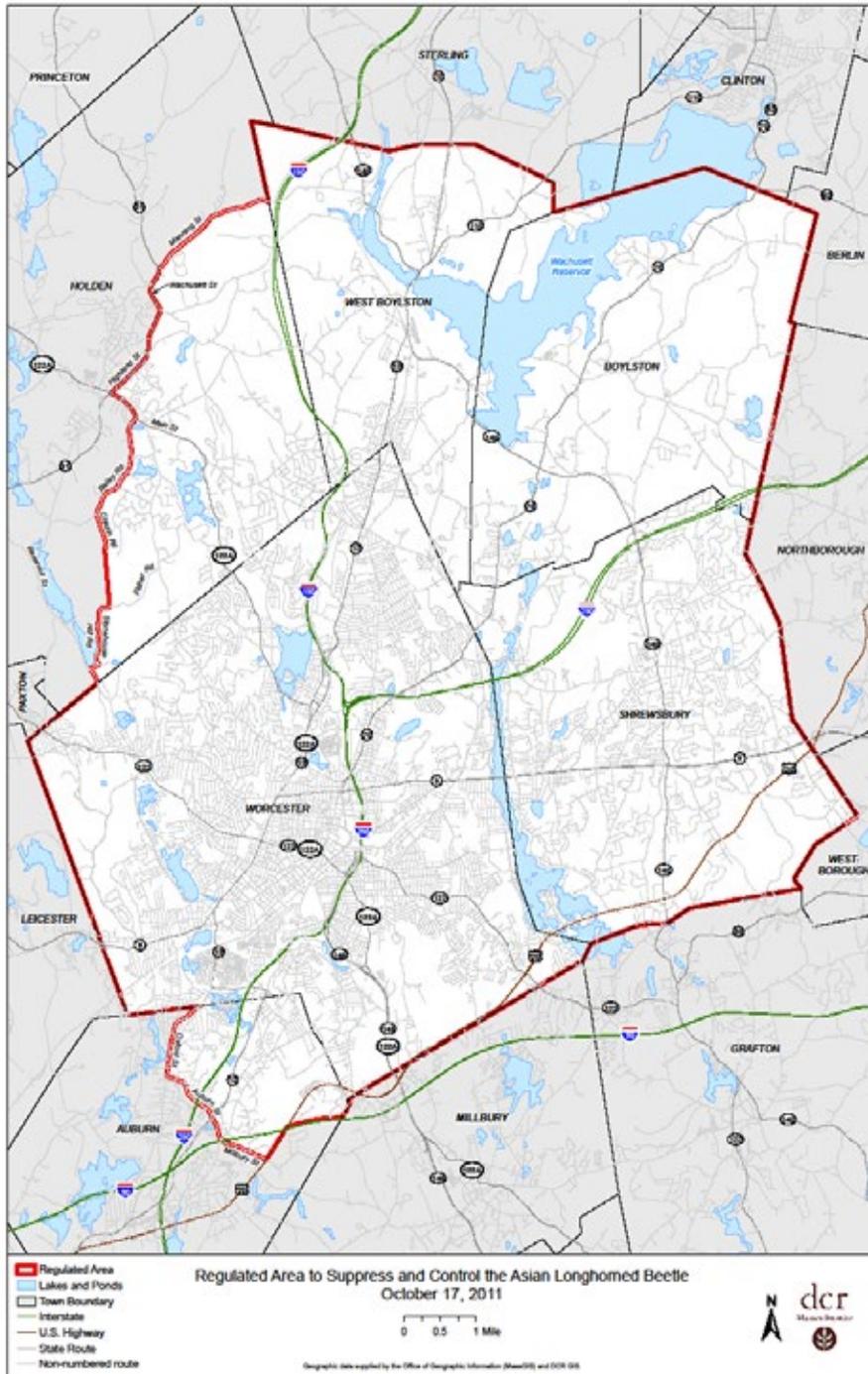


Figure 2: Regulated area to suppress and control the Asian longhorned beetle. DCR, State of Massachusetts, used with permission.



**Figure 3: Tree giveaway.**

Photo by Derek Lirange, Worcester Tree Initiative, used with permission.

checked at a later date. Participants also received educational materials. The trees were delivered in containers, and varied in size from 3 feet to 8 feet tall. Tree giveaways were held in places throughout the city and in each of the ALB impacted towns. There were five or six tree giveaway events scheduled each season, on both weeknights and weekends.

In the first year, trees were ordered from a local nursery and distributed to people at an event on a “first come, first served” basis, one tree per household. This process proved to be cumbersome as participants arrived without knowing which species would be available and had many questions before they could make a decision about which tree to take home. In subsequent years the process was changed to a preregistration method which proved to be much more efficient. This also allowed people to take multiple trees because it was known ahead of time how many were available and how many people had signed up. We initially felt that bigger trees were better but eventually realized that some people preferred smaller trees because they were easier to transport and plant. Six thousand trees were given away at tree giveaway events in the first 5 years of the program.

Many partnerships developed through the Tree Giveaway program helped with the Worcester Tree Initiative’s success. The partnership between the WTI and the DCR was particularly crucial. From the beginning in 2009, DCR staff conducted trainings and provided technical expertise and advice to WTI staff on a daily basis. USDA Forest Service provided training and educational materials and support. Partnerships with the Worcester Youth Center, Clark University, College of the Holy Cross, and Clark Street School provided host sites for tree giveaway events. These partnerships often led to future



Figure 4: Tree giveaway.

Photo by Derek Lirange, Worcester Tree Initiative, used with permission.

collaborations. The relationship with Holy Cross led to a large community planting as part of their Tree Campus U.S.A. designation. Worcester Youth Center became a core partner of our Young Adult Foresters program in 2011.

**The School Planting program** was a hands-on educational experience for students in grades kindergarten through 12 and was available to any school in Worcester and the surrounding ALB impacted towns. Initially it was difficult to connect with school principals to get permission for the program. WTI reached out to the Assistant Coordinator of Schools for the Worcester Public School system and his involvement opened up the line of communication with all of the principals. By 2015, trees had been planted at 50 schools with 4,000 students participating. In Worcester, this program was a collaboration between WTI and the City of Worcester Forestry Division. WTI coordinated the event with the school principal who was required to sign a contract holding the school responsible for watering the trees. City of Worcester Foresters planted the trees with students participating. School plantings were a great way to build awareness of the value of urban trees. Unfortunately, many of the school trees planted in the early years did not survive due to lack of watering and careless maintenance. It was after WTI recognized this problem that the mandatory signed watering contract was added to the program.

**The Community Tree Planting program** connected WTI staff with existing community groups to plant trees in their neighborhoods and develop long-term tree stewards. Examples of collaborative projects included:

- The fruit trees planted on a vacant inner-city lot for Bhutanese refugees to cultivate was a partnership of three agencies (Figure 4).

Worcester Common Ground, a housing agency, took possession and fenced the land; Ascentria Social Services connected WTI to the refugee farmers and a translator; WTI purchased the trees, provided training, watering bags known as “gators”; and access to water. A community ceremony was held and dozens of children and residents in the neighborhood learned about the value of trees.

- Blackstone Headwaters Coalition, a local watershed group, received a grant from the U.S. Environmental Protection Agency to plant trees in two urban neighborhoods to reduce stormwater runoff. Residents and small businesses planted a total of 100 trees—both street trees and private trees. WTI provided expertise on tree planting, purchased the trees, and conducted extensive community outreach. City of Worcester Forestry Division planted the street trees.
- Dodge Park, a small neighborhood public park, had most of its trees removed due to ALB. USDA, DCR, and volunteers from colleges and local businesses planted and watered trees, maintained walking trails, and beautified the park. Dodge Park Rest Home, an adjacent business, provided water for watering trees.

### **Tree Maintenance: Sustaining the Urban Forest by Engaging the Community**

With an aggressive street tree planting program underway (800–1,000 per year), the city did not have the capacity for maintaining all of the newly planted trees. A door-to-door survey conducted by WTI staff in 2011 revealed that people in the community were mostly thrilled with the plantings, but did not know how to help. WTI saw this as an opportunity to engage the community in taking care of the trees, and begin to build a constituency of long-term advocates. Residents concerned about their urban forest were trained and guided by WTI to engage in tasks such as watering, mulching, removing stakes, pruning broken branches, and eventually structural pruning to prevent future hazardous situations.

**Young Adult Foresters (YAF)** began as a partnership between WTI, the Worcester Youth Center, and the City of Worcester Forestry Division. The program addressed two pressing community needs: (1) the need for hundreds of newly planted city street trees to get watered in the spring and summer,



Figure 5: Young adult foresters water street tree.

Photo by Derek Lirange, Worcester Tree Initiative, used with permission.

and (2) the need for disconnected young Worcester adults ages 18-24 to be employed in meaningful jobs. In 2011 the WTI developed the Young Adult Forester program to meet these needs (Figure 5). The City of Worcester Forestry Division provided addresses of the trees; the Worcester Youth Center hired the youth and provided basic skills training; and WTI provided program coordination, tree skills training, hired a youth supervisor, provided a watering truck and equipment, set up a tracking system, and conducted outreach.

There were challenges as the partners all learned to work together. The Young Adult Foresters program started with 12 youths and two supervisors, but within 2 years trimmed the workforce to 4 youths and 1 supervisor working 4 hour shifts, which was a more effective model. Four hundred trees were watered twice a week with this program. Four high school youths were added to the team during the summer. All of the youths who worked in the program gained knowledge and appreciation of trees. Most claimed to love the program and applied for multiple years. One student claims that her YAF experience was the impetus for majoring in environmental science in college. Hopefully the Young Adult Forester experience will encourage the youths who participated to continue their stewardship of trees well into the future.

While the Young Adult Foresters watered 400 street trees during the summer, the other 400–600 street trees planted yearly by the City of Worcester Forestry Division also needed care. The WTI developed a “Stewards in the Streets” program which engaged resident volunteers to help care for the remaining newly planted trees. All ages were welcomed to join at three increasing levels of commitment.

**First Level of Commitment:** Hundreds of residents were recruited

through door-to-door canvassing to water and steward the street tree planted in front of their house. Door knocker cards with watering instructions were either handed to the resident or left behind if no one was home and reminded with a phone call or email. Most people contacted this way were willing to help and thankful that they had been notified.

**Second Level of Commitment:** Several volunteers signed up to be neighborhood tree stewards and watched over all of the newly planted trees in their neighborhood. They also took on more of a leadership role in their community by completing 10 hours of training provided by WTI staff, which gave them a higher level of expertise.

**Third Level of Commitment:** For those wishing to be involved in tree stewardship throughout the winter, WTI created “Tree Pruning Workdays” where teams pruned street trees up to 6 years old. Pruning tasks included trimming broken branches, removing low branches that obstructed the sidewalk or road, and correcting serious structural problems on these young trees. WTI staff work alongside volunteers, providing them with the skills and confidence to do this work.

The Stewards in the Streets volunteers learned to observe trees differently than in the past. With heightened awareness, they would notice if a tree seems stressed. With many newly trained eyes on the street invasive pests can be discovered early on and thus prevent a large infestation.

In July of 2010, six ALB infested trees were discovered by an alert grounds crew member in the parking lot of a hospital near the Arnold Arboretum in Boston. After 4 years of surveys and treatments, no other signs of ALB were found and ALB was declared eradicated in Boston. Thanks to one person with heightened awareness who took charge, Boston was able to declare ALB eradicated in 2014 while Worcester continued the struggle.

WTI programs were modified and tweaked as problems and inefficiencies were uncovered during implementation. But some of the lessons learned throughout our 7-year campaign have a broader scope and may be useful to anyone working to promote long-term stewardship of an urban forest. These lessons include the following:

1. **Most people love trees.** They would like to help protect them if they have the time. Do not be afraid to ask.
2. **Develop clear, structured programs for volunteers to join.** Be clear about time commitment and expectations.
3. **Develop local partnerships and realize it takes time.** Partnerships are based on building trust. Be patient. Go to meetings and events

to listen and learn about each community from its residents.

- 4. Involve elected leaders.** They can be powerful allies and they can help spread the word about your program. Trees are an easy topic to support! Elected leaders can also help build your network and draw media to an event.
- 5. Keep people informed** when their property is being impacted. When a tree is being planted in front of someone's house, let them know what is going on. Even if they cannot make changes, they want to feel included. Taking time to inform people up front reduces conflict later on.
- 6. Empower residents to help prevent future infestations.** Once volunteers have been trained, they observe trees differently than in the past. With many newly trained eyes on the street invasive pests can be discovered early on and thus prevent a large infestation
- 7. Have concrete goals that can be measured and shared.** WTI's goal of planting 30,000 trees in 5 years kept people engaged as they could see progress and wanted help meet the goal.
- 8. Make sure to say thank you.** Send quick notes, in person, by email, by Facebook or Twitter. Give recognition to volunteers, partners, and financial supporters. Awards are great if not overdone.
- 9. HAVE FUN!** Trees make people happy. Build friendships and teams and celebrate!

## Conclusion

Trees are an integral part of a community and serve an enormous public good. They provide health benefits, wildlife habitat, clean the environment, and add substantial economic value (Canopy.org, n.d.). Worcester residents are currently in a period of heightened awareness of the impact that trees have on their lives due to the Asian longhorned beetle infestation and the loss of 30,000 trees.

Millions of dollars have been spent on the reforestation effort in the past 8 years, and 5,500 street trees have been planted. But municipal budgets are tight; other priorities will prevail. As in the past, funding for the planting phase does not translate into funding for long-term care.

In “Trees At Risk,” Herwitz (2001) makes the claim that “any hope of saving Worcester’s urban forest rests in the hands of concerned individuals who value shared greenery as much as their own backyards—and can motivate others to do the same.” The work of the WTI is based on this premise. Over the past 7 years WTI has trained hundreds of individuals to be “tree stewards” who will continue to complement the work of Worcester’s foresters to maintain and care for street trees. With this collaborative system in place, we can be assured that Worcester’s urban tree canopy will thrive well into the future.

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