

Ten Years with the Asian Longhorned Beetle Program in Massachusetts

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It's infested," exclaims my colleague. We have been called out into the field to look at suspicious damage in a maple tree. As I walk up to the tree, I immediately see the exit hole and gallery. Looking around at the other maples, I quickly find a second tree with similar damage. "Looks like we have another one here," I reply. After additional survey, four trees in total were found with the classic signs of Asian Longhorned Beetle (ALB) in that small woodlot in Worcester. This occurred in November 2017 and is the last time we have found ALB-infested trees.

The Asian Longhorned Beetle is a one to one-and-a-half-inch-long, shiny,

black insect with white spots, powder blue feet, and very long antennae. The adults emerge from inside the woody tissue of host trees starting around the beginning of July and will continue to emerge throughout the summer. Once out of the tree, the adults will do a little feeding in the canopy before mating. The females then seek out a host tree, usually a maple, and she begins chewing a small pit to lay a single egg under the bark. She will repeat this process many times, laying up to 90 eggs in her lifetime—a relatively low number in the insect world. The larvae hatch a couple of weeks later and begin feeding on the nutrient-rich cambium layer.

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After several weeks, the larvae start their journey, tunneling deeper into the woody tissue where they will feed until pupation. During pupation, the larvae transforms into the adult beetle. The pupal stage lasts approximately 13 to 24 days to adulthood, at which time the adult beetle chews straight out of the tree at a 90 degree angle, leaving a perfectly round 3/8 -inch hole.

The beetle is an exotic invasive insect, native to China and the Korean Peninsula and is capable of killing trees. It has a wide host range and can complete its lifecycle in 12 different genera, though it favors maples – particularly tricky for us here in the Northeast. For this reason, among others, wherever ALB is detected in the United States, the United State Department of Agriculture, Animal and Plant Health Inspection Service establishes an eradication program, like the cooperative eradication program in Massachusetts. Here, the Asian Longhorned Beetle Cooperative Eradication Program is a partnership between the USDA, the Department of Conservation and Recreation (DCR), and the affected municipalities. Part of the process is establishing a regulated area, in effect a quarantine area, in an effort to contain the spread of the insect. Currently, the regulated area in Worcester County is 110 square miles and has not expanded since 2011.

It's been 10 years since the ALB was first reported in Worcester, Massachusetts, and since then 24,179 ALB-infested trees have been found and removed, including the four trees mentioned. This has dramatically changed the character of the heaviest hit Worcester neighborhoods, Greendale and Burncoat, and resulted in a massive reforestation effort. Those neighborhoods were the center of the infestation and

nearly every single host tree, including street trees, were removed in the effort to eradicate this pest. The DCR ALB Reforestation program, Worcester Tree Initiative, the city of Worcester, and the other five municipalities in the regulated area have replanted thousands of trees. Today, those young trees have become established and have started to provide much needed shade and wind breaks.

The discovery of ALB and the dramatic efforts needed for eradication drew attention to how much our trees mean to us and to how trees benefit us in so many ways. Imagine for a second what your neighborhood would look like if every maple tree had to be removed. It is a heart-breaking thing to see and it is this thought that motivates and keeps the program going, so that no other neighborhoods will have to suffer.

How is the Asian Longhorned Beetle Cooperative Eradication Program going about eradicating this pest? To start with, the program does a lot of 'looking' for the beetle. Every workday, several four-person ground teams head out to their assigned units and locate, measure, and view, through binoculars, all ALB host trees from top to bottom. There are also several climbing teams that climb trees with suspicious-looking damage and also climb host trees in a buffer around infested trees. Not much has changed with this system since those early days in 2008. One thing that has changed is how the program progresses with survey and prioritizes survey units within the affected communities.

The ALB program has surveyed every host tree in the regulated area and

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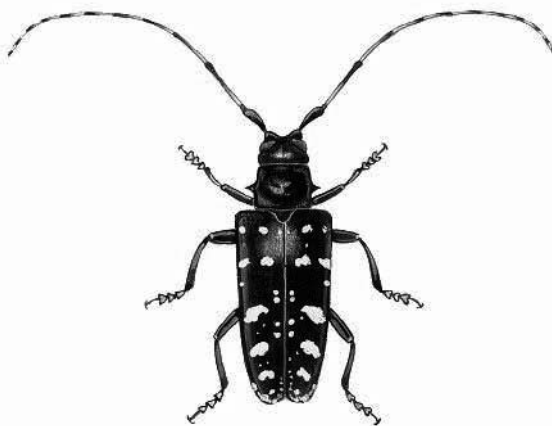
has maintained a database of information from previous surveys. The program uses current as well as previously collected data to create risk modeling maps. Factors in the risk model include the distances from infested tree(s), firewood operations, wood storage or disposal sites, and the distance from major highways. Other factors include the level of infestation within the infested trees, wind direction, density of infested trees, host density, and the time since the last survey. The goal of the risk modeling is not to guess where the beetle could go next, but to tell us the likelihood of where we might find ALB. This allows us to utilize limited resources more efficiently, to be more proactive versus reactive, and to reduce the amount of time in an area from one survey to the next.

The less time an infestation has to grow, the fewer trees that are ultimately infested and removed. A great example of this is the Boston infestation. On July 3, 2010, ALB was reported at Faulkner Hospital in Boston, across from the Arnold Arboretum. The initial surveys found just six infested trees next to a parking lot and after four years of survey, no additional signs of ALB were found. The infestation was caught early, before it could grow and spread. Boston was declared eradicated in May 2014 with just the original six trees removed. Whereas, in Worcester,

the infestation was established for at least 10 years prior to its detection, allowing the beetle population to grow before it was reported.

Another aspect of our program is regulatory. Companies that work with or around host material within the regulated area have to hold a compliance agreement with the ALB program. These companies include firewood processors; arborist, landscaping, and waste companies; and businesses that run disposal sites, among others. The companies allow program staff to survey trees on their properties, whether inside or outside of the regulated area.

The regulatory staff surveys these locations to determine whether beetles and/or infested wood might have been moved outside of the quarantine. The regulatory staff answers and replies to all calls about possible ALB



sightings or detections from the general public. Every effort is made to visit each location and offer additional outreach information. From July 2017 to the beginning of July 2018, almost 600 service calls were answered and recorded. Regulatory staff also do a lot of public outreach, stopping and talking to folks working around host material while out on patrol on a daily basis.

Finally, an important portion of the program is outreach. The ALB program staffs informational tables at many popular events like the Big E, camp-

ing and fishing shows, Massachusetts Envirothon, and the MA Tree Warden Conference, just to name a few. Other times, staff give presentations on ALB at different events and at schools. Oftentimes, people will ask staff questions on the street or while they are surveying a property. Staff are always happy to talk about ALB. The entire program believes it is extremely important to get Asian Longhorned Beetle information to as many people as possible and spreading the most important message: Find it. Report it! There can never be too many eyes looking for the beetle, and many of the ALB infestations have been found thanks in part to reports by non-professionals.

So how are we doing in the battle? The answer is not a simple one. Currently the program has consistently found fewer and fewer infestations

through the years. A live beetle has not been seen or turned in via ALB traps, regulatory service calls, ALB survey personnel, or private citizens since 2015. We are still finding small pockets of infested trees and while all the data looks promising, we will not stop or even slow down our efforts. The goal is eradication and that's what we aim to do. As the summer progresses, please take some time to look around you, whether at a friend's cookout, working in the sugarbush, taking a hike, or just hanging out in the backyard.

Find out more about ALB: <https://www.mass.gov/guides/asian-longhorned-beetle-in-massachusetts>

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