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### Quarterly Theme - Roger Monthley, Theme Editor

### Forest Pests

#### Observations of Asian Longhorned Beetle in New England Forests

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Asian longhorned beetle (ALB) (*Anoplophora glabripennis*) is an exotic insect from China that has generated special concern since it was first seen in North America in the mid-1990s. This pest, with its appetite for more than two dozen different hardwood tree species, has since been found in New York, Chicago, New Jersey, Toronto, and most recently in Massachusetts. Previous ALB infestations have been found in urban environments, in backyards, and along streets, areas relatively isolated from natural or managed forests.

Unfortunately, the same cannot be said for the large ALB infestation that is currently the focus of eradication efforts in Worcester, MA. This infestation is the largest found in North America to date—over 18,000 infested trees have been discovered, over 30,000 trees have been removed, and approximately 100,000 trees will soon be chemically treated during the eradication effort. This is the first time that ALB successfully migrated into and infested closed-canopied forests. If ALB is not eradicated in the Worcester area, it has numerous pathways into natural forests of the region and poses a threat to the long-term health of hardwood forests in the Northeast. Over the past 3 years, we have collected data from forest stands that have been infested by ALB to better understand how this insect behaves in forested environments as compared to urban settings.

We intensively sampled three ALB-infested forest stands that were detected during the delimitation efforts in Worcester. It has been estimated that ALB was present in these forests for at least 5 to 10 years prior to our studies. These stands had differ-

ent species compositions, but all stands had significant amounts of maple present. Stands ranged in size from approximately 10 acres to over 100 acres and represented forested environments common within the urban-rural boundary. We used vegetation plots to describe the overstory forest composition in each stand, determine which trees ALB was attacking, assess the impact of the insect on tree growth, and investigate reproductive success in three maple species (red, sugar, and Norway). Through these surveys, we have begun to shed some light on what to expect if ALB becomes naturalized in North America—in Worcester or elsewhere.

In the forest stands we sampled, ALB was only found in maple, even though other host species (for example, elm and birch) were present and have been attacked in Worcester's urban forests and street trees. Of the maple trees surveyed in these forests, 32 to 63 percent had some indication of ALB presence (oviposition site, exit holes, or erupted bark). Larger trees were attacked more often than smaller, overtopped trees. While larger trees were selected as host trees more often by ALB, overstory maples of all sizes were attacked by the beetle. We also found that ALB readily dispersed throughout forests and attacked trees in the interior of stands. This is counter to what is commonly observed in urban areas where ALB typically does not move far from brood trees.

When red, sugar, and Norway maple were present in stands, red maple was selected more often by ALB than the other maple species. Comparisons of reproductive success among the three maples also suggest that red maple is a better host species than Norway or sugar maple. Both Norway and sugar maple produced ALB broods, but at lower rates than red maple. In the period that ALB has been infesting these stands, we found no evidence of trees killed outright by the beetle. Instead, many trees had serious damage along their boles and in their crowns, and they will likely have structural failure in the coming years.

Gathering data on ALB impacts is important for understanding how this insect may behave if it becomes naturalized. An aggressive eradication program is currently underway in Worcester, and these efforts stand a good chance of eliminating this ALB infestation. However, knowledge about how ALB behaves in forest stands provides important insights into potential impacts and management tactics if this beetle becomes naturalized. Our work has begun to address ALB behavior in forests, and we will continue to gather data as infested forests are detected.

Full newsletter at:

[http://www.nesaf.org/userfiles/Quarterlies/2011/June%20issue%202011\\_color.pdf](http://www.nesaf.org/userfiles/Quarterlies/2011/June%20issue%202011_color.pdf)

