



ScienceWatch – An Alien Invader

“The Asian Longhorned beetle is the most serious insect threat the city has ever faced – one that if left unchecked could kill half of our trees.”– A. Benepe

An alien invader arrived here over a decade ago and has already claimed thousands of victims. No space ship was needed for the invasion, just a wooden packing crate.

In 1996 the Asian longhorned beetle (ALB), (*Anoplophora glabripennis*) arrived unceremoniously as larvae residing in the wood of a packing crate bound for Brooklyn from China. Since then the beetle has spread throughout New York City and parts of Long Island, New Jersey and Chicago. More recently infestations have occurred in Boston and Worcester, MA.

Fourteen years later the continued seriousness of the invasion is underscored by the fact that a monograph on the ALB appeared in the *Annual Review of Entomology* (2010). Written by an international team led by Robert Haack, US Department of Agriculture (USDA) Forest Service, E. Lansing MI, the paper provides a worldwide perspective on ALB range, ecology, outbreaks and eradication.

The ALB is 1-1.5 inches long and glossy black with 10-20 white spots on its back. The black-and white antennae are typically 1.5-2.0 times the length of the body and together with the body provide a striking appearance for such a destructive pest. Although adults feed on host tree leaves, the real destruction occurs in the larval stage. Adults mate in the summer and the female chews a tiny hole under the bark of a tree where she lays an egg. Each female can lay up to 90 eggs. The larvae (grubs) hatch in a week or two and begin tunneling into the cambium, the living part of the tree, which they eat. This tunneling can severely damage and eventually kill the tree by disrupting the tree’s vascular system. They also tunnel into the hardwood, which causes structural damage. The larvae overwinter, pupate the following spring and then emerge as adults by boring a circular pencil-sized hole through the bark.



The beetles will attack and kill over 25 species of hardwood trees, including ash, birch, elm, horsechestnut and sycamore. But maples of any kind are their favorite hosts. According to Haack, *et al.*, that makes the Worcester infestation especially troubling because that town lies in the middle of a large forest dominated by maple trees. Many fear that if the beetles spread through New England, they could cause severe economic damage. According to NYC Department of Parks & Recreation (NYCDPR) Commissioner Adrian Benepe, “It could wipe out the maple sugar industry and related tourism.” The USDA projects that the economic impact could reach \$650 billion.

To prevent these potential losses severe measures have been instituted. For example, in 1996 NYCDPR along with the NYS Department of Conservation and the USDA immediately began an aggressive inspection program to find infested trees. Once located, they are cut down, chipped and burned. In 1998 the USDA banned all non-heat-treated (160°F, 75 min.) wood packing material from China. In addition, importation into New York State of non-heat-treated firewood has been banned since 2006 and campers cannot move firewood within the state that lacks a source label. More recently the USDA banned importation of untreated firewood from Canada.

In order to protect uninfested trees, Illinois began a vaccination program in 2000, while New York started a year later, and Massachusetts, which first detected beetles in 2008, began treatment in 2009. Healthy, uninfested trees within ¼ mile of any infested location are injected with a solution of imidacloprid, which kills both adults and larvae. The insecticide is either directly injected into the trunk or applied to the base of the tree where it is taken up. These strict measures can eradicate the beetle before it spreads. In August 2009 the beetles were declared eradicated from Illinois and Jersey City.

Everyone who uses the outdoors can help by reporting possible infestations. Signs to look for are the round pencil-sized exit holes and coarse sawdust created by beetle larvae as they bore into the main tree stem and branches. There may also be oval pits in the tree bark that are egg-laying niches. Sap may flow from these niches, especially from maple trees, as the larvae feed inside the tree. You can also assist in the eradication efforts by allowing project officials access to your property to inspect your trees. To report a sighting of this pest, call 311 in NYC or (877) STOP-ALB.

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