



Asian Long-Horned Beetle

The Asian long-horned beetle (*Anoplophora glabripennis*) is an invasive forest pest of great concern because it has such a wide host range in North America. It can feed on and reproduce in many of the hardwood species in the United States, including maple, elm, oak, sycamore, ash, birch, poplar, willow, certain fruit trees, and many more (<http://www.uvm.edu/albeetle/hosts.htm>). The first confirmed infestation of the Asian Long-Horned Beetle inside the U.S. was in Brooklyn, New York in 1996. Since discovered, the beetles have spread across the New York metro area, New Jersey, Illinois, Massachusetts, and portions of Ontario, Canada. There is a quarantine zone in and around affected states that strictly prohibits movement of firewood and other woody material. Because of a general lack of resistance to the insect from our native trees, and a lack of natural enemies, ALB is able to spread rapidly, and with devastating consequences. Although this problem is currently mainly limited to areas in the northeast, ALB has been intercepted in traps around other port cities in the U.S for decades. Because of the volume of shipping entering our ports and threat of ALB spreading to other areas of the

us through movement of firewood and other wood products, it remains a very real threat to Mississippi Forests. ALB is native to China, Japan, and elsewhere in Asia. If allowed to become widespread in North America, the ALB could cause more damage than Dutch elm disease, chestnut blight, and gypsy moth combined. These beetles have the capacity to destroy many of the premier hardwood industries such as maple syrup, lumber, and commercial fruit. These beetles are believed to have been brought to U.S in packing material such as pallets and crates from China.

Life History/ Biology

The Asian Long-Horned Beetle is large beetle around $\frac{3}{4}$ - $1\frac{1}{4}$ inches long, has a glossy black body with white spots, and very long black and white antennae (Fig. 1).



Figure 1: An Adult Asian Long-horned Beetle. Donald Duerr, USDA Forest Service, Bugwood.org

The ALB has four main life stages (egg, larva, pupa, and adult). Adult beetles emerge and mate during mid-late summer. After mating, females chew shallow pits into the outer bark of host trees. These serve as oviposition sites where the females lay eggs. The egg sites are mostly round, oval, or small slits depending on the species and thickness of bark. Eggs are laid singly, and are visible on the outside of the host tree. During their 14-66 day lifespan, female ALB can lay between 30-60 eggs. Larvae spend most of their life inside the host tree. After emergence, larvae feed on the living phloem tissue of the host tree directly beneath the bark. The mature larva then burrows deep inside the tree feeding on woody tissue, and eventually pupates there. About a year, after the egg was laid the adults emerge from the pupae and chews out of the tree creating a round exit hole around $\frac{3}{8}$ inch diameter. After the adults emerge in July and August, the adults feed on small twigs and leaves.

Signs and Symptoms

The first identifying sign that there may be an Asian Long-Horned Beetle infestation are the egg sites that are chewed into the bark. When the beetle tunnels into the woody tissue of the tree, it pushes sawdust-like

waste (frass) out of the tunnel. The other very important identifying sign of Asian Long-Horned Beetle is the perfectly round exit holes throughout the tree. Eventually the tree is further damaged by ALB, as well as other diseases and insects that take advantage of ALB galleries to gain access to the tree. These trees begin to exhibit crown dieback and epicormic branching. There are many other species of native long-horned beetles, such as the red oak borer, which have similar body shapes and can cause similar signs and symptoms to hardwood trees in Mississippi. Most of these are not very harmful, and are not a cause for major concern. The distinct markings on the backs of adult beetles are the only easily identifiable features, with larvae and pupae looking nearly identical to many other long-horned beetles.

Management / Control

There are currently no real feasible chemical or biological control strategies for ALB. Quarantines and eradication attempts have been fairly successful at slowing the spread of this pest. Quarantines restrict movement of firewood, green lumber, or any living or dead piece of a host tree from being moved outside the quarantine zone. Eradication programs utilize monitoring, cutting, chipping, and burning of infested host tree and replacing them with non-host species. Only one insecticide (Imidacloprid) has shown any result of controlling the beetle and has started being used with other control measures, but its use is not

feasible over large areas of forested land. It is likely that the quarantine and eradication efforts are responsible for the much slower spread than was originally anticipated.

What Can We Do to Minimize the Threat in Mississippi?

It seems like each month I write the following words, and perhaps they might seem repetitive...don't move firewood!!! It is imperative for so many forest pests that we continue to educate our friends, relatives, and coworkers about this simple step we can take to protect Mississippi's forest resources for the next generation.

For more information Contact your Mississippi Forestry Commission Local Office or
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Figure 2: Oviposition site



Figure 3: Sawdust like Frass. Robert A. Haack, USDA Forest Service, Bugwood.org



Figure 4: Emergence holes