

You Ain't From Around Here! Exotic Invasive of the Quarter: Asian Longhorned Beetle (*Anoplophora glabripennis*)

By: Jennifer Gagnon, Virginia Tech



This robust and beautiful insect has not yet been identified in Virginia, although this doesn't mean it isn't here and causing damage. With this exotic invasive, early detection and eradication are KEY!

The Asian longhorned beetle, also called the starry sky beetle or ALB, is native to eastern China and the Korean Peninsula. The first breeding populations in the United States were discovered in 1996 in New York City and Chicago. More than likely, it came over in untreated solid wood packing materials (e.g., pallets). Every infestation in the United States so far has been from a single point of introduction directly from Asia. And these have been relatively small, distinct infestations that can be eradicated. Currently, there are quarantines in place across 270 square miles in New York, Massachusetts, and Ohio. Although ALBs are good fliers, they prefer to conserve energy. If the host plant is good, the females will stay and lay their eggs. If females are present, the males will stay. Which means, like so many other exotic invasives, ALB is mainly spread by humans moving infested wood.

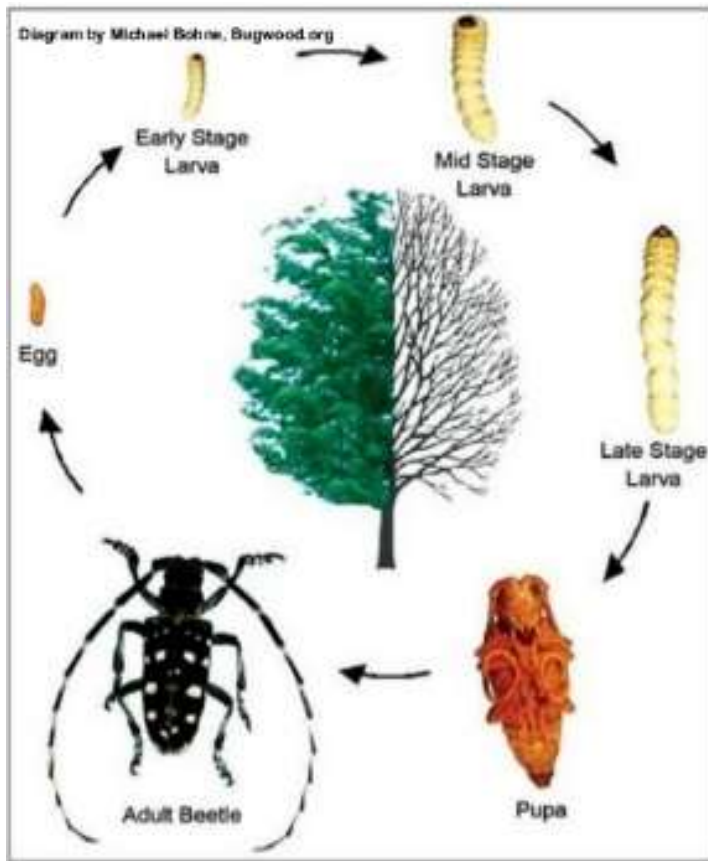
Damage

Ultimately, ALB kills the trees it infests. Mortality is a result of multiple types of damage. The first type of damage occurs when the females bore through the bark into the cambium (living tissue) of the tree to lay their eggs where the phloem and xylem meet (the phloem draws nutrients down from the canopy into the root system; the xylem pulls water and nutrients up from the soil to the rest of the tree. When the phloem and xylem are severely damaged the tree will die.) She will lay one rice-sized egg per hole, and up to 90 eggs in her lifetime. These holes leave dark wounds that may ooze sap.

The second source of damage starts when the eggs hatch (in about 2 weeks) and the large larvae begin to feed. As they grow larger (getting up to 2" long), they move from the phloem/xylem boundary layer into the xylem. This weakens the tree structurally, and further disrupts the tree's ability to move water. The larvae overwinter in the trees where they continue to feed and grow, undergoing as many as 13 growth phases.

Eventually, the larvae pupate (lasting from 13-24 days) and undergo a complete metamorphosis into adults. The adults exit the tree in the spring further damaging it by leaving very large (0.5" diameter), perfectly round exit holes in the wood and bark. These holes are visible all year and can be found on the main stem of the tree, branches, and exposed roots. These holes can produce excessive sap, attracting secondary insects and diseases to the tree. For the first 10-14 days after emerging, the adults feed on the tree's leaves and bark, before mating and laying eggs.

There are numerous native wood-boring beetles in the United States. However, the majority of these only attack dead and dying trees. Healthy trees have developed defenses to protect against them. But not ALB. ALB attacks both healthy and stressed trees. This means there are serious repercussions if this insect becomes widespread. In fact, some researchers say if ALB gets well-established in the United States, it could become one of the most destructive and costly species ever to enter the country. ALB kills shade and park trees, as well as economically important forest trees. And along with this mortality are the costs associated with removing dead or dying hazard trees, chipping the woods, injuries from falling limbs, replacement of dead trees, and loss of recreational areas.



*Annual life cycle of the Asian longhorned beetle.
Created by Michael Bohne, USDA, Bugwood).*

Identify:

ALB is a large (0.75-1.5" long), 6-legged beetle. The wings are glossy black with irregular splotches of white. The antennae are longer than the insect's body with black and white bands. The feet and legs have a slate blue fuzz.

Please be aware that there are a number of look-alike native species in the eastern United States. These include:

- Whitespotted pine sawyer
- Southern whitespotted sawyer
- Northeastern sawyer
- Cottonwood borer
- Broadnecked root borer
- Sugar maple borer

Visit <http://www.uvm.edu/albeetle/identification/index.html> to learn how to distinguish these natives from ALB.

Host Species

ALB enjoys a wide variety of Virginia's native hardwood species. In fact, it feeds on species of ash, birch, elm, sycamore, maple, buckeye, mountain ash, poplar, and willow. All these species can support the full life cycle of ALB - from egg to adult - resulting in much damage.

Signs of Infestation

Despite the ALB being such a large beetle, the adults are relatively difficult to spot. However, there are other obvious signs of infestation you can look for:

- Exit holes: round, 0.5" holes on stem, branches, or exposed roots
- Egg sites: oval depressions that look like wounds and weep sap
- Frass: sawdust-like excretions from feeding insects
- Woodpecker damage
- Tunneling under bark



Other signs of ALB will begin to show up 3-4 years after infestation:

- Unseasonable yellowing leaves
- Branches dropping or dying

If you spot any of these signs, record the location and if possible, capture an insect and place it in a jar and freeze it. Another option is to take photos of the insects and/or tree damage. Please report potential beetle sightings and damage by calling 1-866-702-9938 or your local Extension office.



Signs you may have an ALB infestation include (clockwise, from top left): Holes in the bark where the females bore in to lay their eggs; 0.5" round holes created by adult ALB exiting the tree; and tunnels in the cambium layer of the wood created by feeding ALB larvae. Photos by: Joe Boggs, The Ohio State University; Daniel Herms, The Ohio State University; and Steven Katovich, USDA Forest Service.

Control

The two most important things you can do to prevent this insect from spreading are:

1. Do not move firewood and respect current quarantines.
2. Look for signs of ALB and report them immediately.



If ALB is present, controlling it requires an extensive survey of the area to identify all infested trees. Infested trees must be removed and chipped to kill the insects. As a preventative measure, the USDA recommends removal or chemical treatment of all ALB host species within a 1.2 mile radius of the infestation. As you can imagine, the costs associated with this treatment can be quite high. But they are still less expensive than the alternative. And, unlike most other exotic invasive species, eradication is indeed possible. Successful eradication efforts entail time (can be 10+ years) and removal and chipping of many trees. Illinois and New Jersey have both been successful in the fight against ALB.

To stay current on ALB happenings, sign up for the ALB newsletter:

<https://public.govdelivery.com/accounts/USDAAPHIS/subscriber/new>

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ALB adult image by: Daniel Herms, The Ohio State University.