COLORADO EXOTIC INSECT DETECTION AND IDENTIFICATION FACT SHEET SERIES

Asian Longhorned Beetle in Colorado - Identification of Insects and Damage of Similar Appearance

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Figure 1. Asian longhorned beetle larvae. *Photo courtesy of Michael Bohne*

Figure 2. Female Asian longhorned beetle. *Photo courtesy of Michael Bohne*

The Asian longhorned beetle (ALB), *Anoplophora glabripennis*, is a wood boring beetle of Asian origin that was first detected in Brooklyn in 1996. Two years later a separate infestation was found in the Chicago suburbs. The Asian longhorned beetle has the potential to be very damaging to certain types of hardwood trees, causing tree decline and even death. Many native trees are susceptible to this insect and there are concerns that it could seriously affect natural forest systems as well as shade trees.

Intensive efforts to eradicate this insect have been instituted where it was detected. This effort appears to have been very successful in the Chicago infestation and Asian longhorned beetle was officially declared eradicated in 2007. However, infestations in the New York City area have spread more widely so that detections of the insect have occurred in all city boroughs, parts of Long Island, and three New Jersey counties. Areas known to be infested remain fairly small and sustained eradication efforts continue to attempt elimination of the insect in New York and New Jersey. In addition, quarantine efforts prevent movement of wood materials that could be potentially infested from outside the area of known infestation.

Figure 3. Asian longhorned beetle damage to boards and pallets. *Photo courtesy of Larry R. Barber USDA-FS*

Introduction of Asian longhorned beetle into Colorado most likely would occur via hardwood packing materials (Figure 3) originating from China-shipped goods. In recent years use of these materials has been much more strictly regulated so current shipments are less likely to harbor beetles. However, new introductions remain possible and infestations earlier established may take several years before detection. In Colorado, early identification may likely allow successful efforts to eradicate introductions that do occur, as was earlier demonstrated by the recent elimination of the Chicago-area infestation.

Methods to Monitor Asian Longhorned Beetle in Colorado

Figure 4. Asian longhorned beetle frass in tree crotch. *Photo courtesy of PA-DCNR*

Figure 5. Asian longhorned beetle boring dust. *Photo courtesy of Robert A. Haack USDA-FS*

Despite major effort that continues, to date there are no highly effective traps or lures for this insect. Its detection is largely dependent on interested individuals being able to identify adult insects, which fortunately is relatively easy because of the Asian longhorned beetle is conspicuous with readily identifiable features. Suspect insects or suspicious infestations should then be immediately brought to the attention of the Colorado State extension office or Colorado State Forest Service office near the county which the suspect insect(s) were found.

In areas where the insect is known to occur, inspectors search for beetle exit holes and piles of sawdust frass (insect waste) at the base of infested trees and in branch crotches (Figure 4 and 5). Sap flows may also indicate Asian longhorned beetle wounds in infested trees. Often initial infestations can occur in the upper parts of the tree and these are scanned by use of binoculars or inspected with bucket trucks. Such symptoms may be useful in Colorado if the insect is discovered, but such symptoms are also made by several insects that already occur in the state such as lilac ash borer, poplar borer, and carpenterworm. Initial detection efforts should focus on identification of the adult beetle.

Identification of the Asian Longhorned Beetle

The adult Asian longhorned beetle (Figure 2 and 6) is a large and brightly patterned beetle that ranges from ¾ to 1 ¼ inches in length. Its body is glossy black with irregular white spots, an appearance that has sometimes led to the name "starry sky beetle". The Asian longhorned beetle also has very conspicuous black and white banded antennae that range from 1 to 2 ½ times the length of the body.

The larvae of the Asian longhorned beetle (Figure 1 and 7) are soft-bodied, creamy white in color, and have a hard brown head capsule. Mature larvae may reach 2 inches in length. The larvae would be found deeply tunneling the heartwood of hardwood trees. Larvae of the Asian longhorned beetle are not readily distinguishable from other longhorned beetle larvae (roundheaded borers) that occur in Colorado.

Figure 6. Asian longhorned beetle adult. *Photo courtesy of Kenneth Law USDA-FS*

Figure 7. Asian longhorned beetle larvae. *Photo courtesy of Steven Katovich USDA-FS*

Figure 8. Asian longhorned beetle life stages. *Photo courtesy of Kenneth Law USDA-FS*

Diagnosis of Asian Longhorned Beetle Injury

External evidence of Asian longhorned beetle infestation is a large (approximately 3/8ths of an inch or slightly larger than the diameter of a pencil) oval exit hole made through the trunk or larger branches of host trees (Figure 9). Based on infestations in Chicago and New York locally grown trees most likely to be infested would be various maples (silver maple, Norway maple, and boxelder), American elm, horsechestnut or willows. However, some other hardwoods are potential hosts including birch and poplars. Internal injuries, produced by the roundheaded borer larval stage would involve meandering tunnels largely through the heartwood (Figure 10).

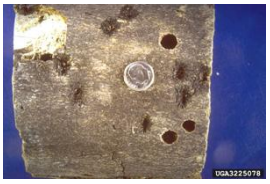

Figure 10. Asian longhorned beetle exit hole with a dime for size reference. *Photo courtesy of E. Richard Hoebeke*

These kinds of injuries are not unique to this insect. Several other longhorned beetles may occur in hardwood trees grown in Colorado and result in similar injuries. However, with the exception of the cottonwood borer, other longhorned beetles found in trunks of hardwood trees are smaller and would make proportionately smaller exit wounds.

Figure 9. Asian longhorned beetle larva tunneling damage through heartwood. *Photo courtesy of Steven Katovich USDA-FS*

Regional Insects Similar in Appearance to Asian Longhorned Beetle

Cottonwood Borer (*Plectrodera scalator*). *Plectrodera scalator* is a large (1 to 1 ½ inch) beetle commonly found in Colorado. Adults of this beetle have a black and cream-colored irregular checkered pattern on their wing covers (elytra) (Figure 11). Another distinctive characteristic is the solidly colored black antennae that may be as long as or longer than the body. Common hosts of both adults and larvae of *P. scalator* include poplar and willow. *P. scalator* can be distinguished from the Asian longhorned beetle by looking at the antennae. Antennae of *P. scalator* have entirely black antennae in contrast to the Asian longhorned beetle antennae that are banded black and white.

Figure 11. Adult cottonwood borer

Spotted Pine Sawyer (*Monochamus clamator)*. *Monochamus clamator* is the most common pine sawyer found in Colorado and superficially resembles the Asian longhorned beetle in both size and color. The adult beetle is between ¾ and 1 ¼ inches long and brown in color with irregular bluish-gray spots on the wing covers (elytra) (Figure 12). A prominent toothed area occurs on the sides of the prothorax. The male antennae may be up to 2 ½ times the length of the body while those of the female are only slightly longer then the body. The spotted pine sawyer is a very common insect that develops in pines that have recently been killed or are under severe stress. One site where it may be seen particularly frequently is in forest areas where mountain pine beetle has caused recent tree mortality.

Figure 12. Adult spotted pine sawyer.

Whitespotted Pine Sawyer (*Monochamus scutellatus)*.

Figure 13. whitespotted pine sawyer adult.

Monochamus scutellatus is a wood boring beetle closely related to the spotted pine sawyer and another common native insect associated with weakened and recently killed conifers. The adult beetle is of similar size, between ¾ and 1 inch long. They are perhaps best distinguished by a single small white mark at the base of the wing covers on both males and females. With the exception of the single spot, males are solidly colored shiny-black while female coloration varies.

***Prionus* beetles.** There are seven species of large root boring beetles in the genus *Prionus* that are known to occur in Colorado (*Prionus californicus, P. heroicus, P. fissicornus, P. emarginatus, P. integer, P. palparis, P. rhodocerus, and P. imbricornis*).

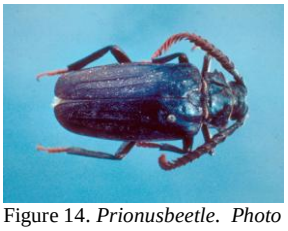

Figure 14. *Prionusbeetle. Photo courtesy of James Solomon*

These are very large reddish-brown beetles (1 ¾ - 2 ¼ inches) that bore into roots in the larval stage. These beetles have a host range that includes a variety of coniferous and deciduous trees and shrubs. The *Prionus* beetles can be distinguished from the Asian longhorned beetle by both size and color. These beetles are generally larger than Asian longhorned beetle and are always solidly colored a dull brown or red-brown, lacking the conspicuous white spots (Figure 14).

Ponderous borer (*Ergates spiculatus neomexicanus)*. Adults of *Ergates spiculatus neomexicanus* can range from 1 ¾ to 2 ½ inches in length and are generally considered to be the largest beetle found in Colorado. Adult beetles are reddish brown in color (head and thorax darker than the elytra) and lack irregular spotting. It occurs in recently killed or felled trees. The solid reddish brown color and very large size of *E. spiculatus neomexicanus* easily distinguish it from the smaller and irregularly spotted Asian longhorn beetle.

Figure 15. *Ergates spiculatus female. Photo courtesy of the Ken Gray Collection.*