

Colorado Insect of Interest

Lilac/Ash Borer (Ash Borer)

Scientific Name: *Podosesia syringae* (Harris)

Order: Lepidoptera (Butterflies, Moths, Skippers)

Family: Sesiidae (Clearwing Borers)



Figure 1. Adult male lilac/ash borer.

Identification and Descriptive Features: Adult lilac/ash borers are mimics of paper wasps, quite similar in both size and coloration. The wings are dull black with chestnut brown tones and wingspan typically ranges from 28-35 mm (ca 1-inch). The body is generally dark brown with reddish markings and narrow yellow bands occur on the abdomen. Long hind legs also reinforce the superficial similarity with paper wasps.

The larvae are creamy white grubs with a small dark head. Prolegs on the abdomen are highly reduced but elliptical rings of small hook-like crochets are present at the tip of the prolegs. The presence of abdominal prolegs allows separation from larvae of wood boring insects that are sometimes associated with ash.

Lilac/ash borer is the most common wood borer associated with ash in Colorado. External evidence of lilac/ash borer activity in trees includes oval-round exit holes on trunks about 1/4-inch diameter, rough enlarged areas on trunks, and expulsion of sawdust. Almost all larval feeding activity occurs in the lower trunk, particularly around the soil line. Lower scaffold limbs may also be attacked and infestations may extend 3 meters up the trunk.

Distribution in Colorado: Potentially statewide, in association with plantings of ash (*Fraxinus*).

Life History and Habits: The lilac/ash borer develops by tunneling the trunks and larger branches of various ash (*Fraxinus*), lilac (*Syringa*) and privet (*Ligustrum*). In Colorado, pest problems almost



Figure 2. Lilac/ash borer larvae exposed from underneath the bark of an infested ash tree. Photograph by David Leatherman.

exclusively involve ash, particularly ash grown in suboptimal locations (e.g., parking lots, street trees). White ash is more severely damaged than is green ash.

The ash borer spends the winter as a partially grown larva within tunnels under the bark. It resumes feeding and larval development in early spring, pupating just under a thin cover of the bark. Adults emerge during the morning (8-11:30) on warm (above 60⁰F) days in spring. Depending on location in the state and seasonal temperatures first emergence of the adults begins within a range of early April to early May and typically lasts for about 4-6 weeks. During emergence the pupal skin is often partially pulled through the emergence hole and visibly extrudes from the trunks of infested trees. Lilac/ash borer is one of a few moths that fly during the daytime.



Figure 3. Pupal skin of lilac/ash borer extruding from trunk.

Shortly after mating the females begin to lay eggs. These are deposited singly or in small groups in bark crevices on the lower trunk. Adults are short-lived and typically deposit all eggs within a week after emergence. Eggs hatch about 9-13 days after they have been laid.

The larvae hatching from the eggs enter the trunk and initially feed in cambium and phloem. During this feeding phase they will excavate an irregular shallow gallery that may be 1-3 cm wide and 2-5 cm long. They then move into the trunk and tunnel upwards for an extended period, producing a tunnel that may extend 7-32 cm. When full-grown in late winter they move back to the cambium and produce a pupal chamber just under the bark, with a paper thin covering that the adult can later push through. One generation is produced annually.

Repeated injuries can seriously weaken trees making them susceptible to breakage. Recently transplanted trees or those in poor sites are most susceptible to severe damage; well-established trees rarely suffer serious injury. Also wounding induces canker-like swellings to form and interferes with normal sap flow inducing sucker growth and a gnarled growth habit. On smaller diameter branches, such as is common with lilac and privet, larval injuries may girdle and kill main stems.



Figure 4. Exit holes of lilac/ash borer. A pupal skin is in the upper left.

Related and Associated Insects: A few longhorned beetles/roundheaded borers (family Cerambycidae) also tunnel ash wood in

Colorado, notably **redheaded ash borer**, *Neoclytus acuminatus* (F.). These borers usually limit attacks to recently killed trees and recently cut wood, although they will sometimes be found in living trees. They emerge from an exit hole that is round-oval. Declining trees are also subject to attack by the **pigeon tremex**, *Tremex columba* (L.), a horntail wasp that emerges from a perfectly circular hole in the trunk.

A closely related species, the **banded ash clearwing**, *Podosesia aureocincta* Purrington and Nielsen, has not been confirmed from Colorado but may be present. This species emerges from ash and lays eggs in late summer and late summer emerging borers from ash should be suspected as this species.

The most serious pest of ash in North America is the **emerald ash borer**, *Agrilus planipennis* Fairmaire. This is a type of metallic wood borer/flatheaded borer (family Buprestidae) that develops by making meandering tunnel packed with fine sawdust frass in the cambium and phloem. The adults emerge from distinctly D-shaped exit holes. The emerald ash borer is currently devastating ash plantings over an ever-extending area in the eastern half of North America, but has not yet been introduced into Colorado.



Figure 6. Emerald ash borer adult. The emerald ash borer is a much more damaging borer of ash than is the lilac/ash borer. At present it is not known to occur in Colorado. Photograph courtesy of David Cappaert/IPM Images.

Control of Lilac/Ash Borer. High-risk ash trees may benefit from control of lilac/ash borer. These could include recently transplanted trees, trees in poor sites, trees receiving limited water, or trees that show significant effects of previous damage. Activities that can relieve tree stresses, such as provision of supplementary watering, should be considered part of any program for lilac/ash borer control.

Treatments involve use of insecticides applied to the bark in a preventive manner to kill larvae before they enter the trunk. Certain pyrethroid insecticides used to control wood boring insects (e.g., permethrin, bifenthrin) are current standards for this application. (Soil-applied systemic insecticide applications of imidacloprid *are not* recommended for control of this species of borer.)



Figure 7. Lilac/ash borer males captures on the bottom of a sticky trap. The pheromone lure is in the center of the trap.

Trunk sprays should be applied shortly before or coincide with the anticipated time of egg hatch. This occurs about 10-14 days after adults begin to emerge from trees, which usually occurs sometime between mid-April and mid-May.

Traps containing lures with the “clearwing borer” sex pheromone can be very useful for detecting the onset and length of lilac/borer flight activity in the spring. These traps also capture several other types of clearwing borer moths (e.g., peach tree borer, American hornet moth), but these species fly later in the season.