

Lilac/Ash Borer: A Common Wood Borer of Colorado's Street Trees

Fact Sheet No. 5.614

Insect Series | Trees and Shrubs



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Lilac/ash borer (*Podosesia syringae*¹) is common wood borer associated with ash throughout Colorado and a species that is native to North America. Damage is caused by the larvae which tunnel into the trunks and lower branches of ash trees. These feeding injuries produce irregular gouging wounds under the bark and tunneling frequently extends deeply into the heartwood (Figure 1). Almost all larval feeding activity occurs in the lower trunk, particularly around the soil line (Figure 2). Lower scaffold limbs may also be attacked and infestations may extend about 10 feet up the trunk. Feeding damage can often be found in the mid and upper crown of trees above areas that were treated with contact insecticides.

External evidence of lilac/ash borer activity in trees can include irregularly round exit holes of about 1/4-inch diameter on trunks (Figure 3). As larvae near full-development some sawdust may be expelled from these holes and, when adults emerge, the pupal skin often remains extruded from the hole (Figure 4). Ash trees heavily damaged by lilac/ash borer often show some disfiguring of the trunk, with areas of irregular, gnarled growth, and often development of excessive branching. Extensive tunneling of the lower trunk may seriously weaken plants and cause them to break. Trees may be killed by this insect, although that is rare.

Serious problems almost always involve ash grown in suboptimal locations (e.g., parking lots, street trees) or recently transplanted trees. Damage is usually insignificant to well established trees that receive adequate water and care. In Colorado, more problems have been associated with white ash (e.g. 'Autumn Purple') than green ash. Lilac (*Syringa*) and privet (*Ligustrum*) are other hosts for this insect but damage to



Figure 1. Lilac/ash borer larvae tunneling exposed from under the bark. Photograph by David Leatherman.

these plants is much less frequently observed in Colorado. On lilac and privet, damage is confined to the base of the plant. On smaller diameter branches, such as is common with lilac and privet, larval injuries may girdle and kill stems.

The larvae are creamy white grubs with a small dark head (Figure 5). Prolegs on the underside of the abdomen are highly reduced but elliptical rings of small hook-like crochets are readily visible at the tip of the prolegs. The presence of abdominal prolegs allows separation from lilac ash borer larvae from those of the various other wood borers found in ash, all of which are larvae of beetles.

Adult lilac/ash borers are mimics of *Polistes* paper wasps, quite similar in both size and coloration (Figure 6). 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.

Quick Facts

- Lilac/ash borer is an insect native to North America that is common in ash trees, particularly if trees are stressed due to drought, injury or that were recently transplanted.
- Damage is done by the larva; a type of caterpillar that tunnels into the trunk and lower branches of ash trees.
- If necessary, lilac/ash borer can be easily controlled by spraying the trunk and lower branches in spring during the time when adult females lay eggs on the trunk and the newly hatched caterpillars begin to tunnel into the wood.
- Lilac/ash borer should not be mistaken for the emerald ash borer, an introduced insect of Asian origin that was recently found in a part of NE Colorado and is far more seriously damaging to ash trees.

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Note on Emerald Ash Borer

The most serious pest of ash in North America is the **emerald ash borer**, *Agrilus planipennis*. The emerald ash borer is an Asian insect that is not native to North America, but was accidentally introduced into the US and first found in the Detroit area in 2002. Since then emerald ash borer has devastated all North American species of ash—including the green ash and white ash grown commonly in Colorado—killing tens of millions of trees. As of 2013 it had extended into 22 states and was first found in Colorado in September 2013. Presently the infestation of this insect within the state is thought to be confined to Boulder but it is expected to spread over the next decade to include much of northeast Colorado (South Platte drainage).

Emerald ash borer is a very different insect than is lilac/ash borer and is far more damaging to ash trees. The pattern of injury that it produces is different from lilac/ash borer in that the larvae make meandering tunnels that are restricted to areas immediately under the bark and attacks often concentrate originally in the upper crown of the tree (Figure 7). These injuries are quite dissimilar to the irregular tunnels confined to the lower trunk produced by lilac/ash borer, which may cause considerable internal riddling. Adults of the emerald ash borer, a type of metallic wood borer (Coleoptera: Buprestidae), emerge from D-shaped exit holes in the bark, in contrast to irregular round emergence holes of the lilac/ash borer.

Information on emerald ash borer in Colorado can be available through county offices of CSU Extension, Colorado State Forest Service offices and the Colorado Department of Agriculture web site: www.eabcOLORADO.com.

Lilac/Ash Borer Life History and Habits

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 60°F) 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 only a few kinds of moths that fly during the daytime.

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 (Figure 8). One generation is produced annually.

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) have long been standards for this application, and



Figure 2. Tunneling produced in the base of a recently transplanted “Autumn Purple” white ash by the lilac/ash borer.



Figure 3. Irregularly round exit holes produced when adult lilac/ash borer emerges from the trunk in spring.



Figure 4. Trunk of an ash tree showing irregular areas of bark produced by lilac/ash borer wounding. Two pupal skins of the insect extruding from the trunk are visible on the left.



Figure 5. Larva of the lilac/ash borer. Photograph courtesy of David Cappaert/ Michigan State University and www.bugwood.org.



Figure 6. A mating pair of lilac/ash borers.



Figure 7. Larva of the emerald ash borer. Photograph courtesy of David Cappaert/ Michigan State University and www.bugwood.org.

some permethrin formulations useful for control of this insect are commonly available through many nurseries and hardware store outlets. More recently an alternative insecticide, chlorantraniprole (Acelypryn), has become available to commercial applicators. Soil-applied systemic insecticide applications of imidacloprid *are not* recommended for control of this species of borer, largely because imidacloprid has poor activity against larvae of moths.

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, typically sometime between in 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 (Figures 9, 10). These traps also capture several other types of clearwing borer moths, notably the peach tree borer ([Fact Sheet 5.566](#)) and cottonwood crown borer/American hornet moth (*Sesia tibialis*). These moths fly a bit later in the season than does lilac/ash borer but may co-occur in traps during June and early July.



Figure 8. Pupal skin of the lilac ash borer extruding from the trunk.

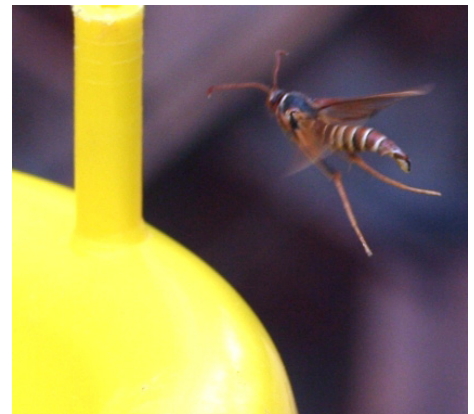


Figure 9. Adult male lilac ash borer attracted to a trap containing a sex pheromone lure.



Figure 10. Male adult lilac/ash borers trapped on the sticky bottom of a pheromone trap.

¹**Order:** Lepidoptera (Butterflies, Moths, Skippers) **Family:** Sesiidae (Clearwing Borers)