



Wood Boring Beetles

O & T Guide [O-#10]

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Besides bark beetles (separate fact sheet), two other common families of beetles use woody plants to rear their offspring. The Buprestidae have one common name for the adult---metallic wood borer---and a second for the larvae---flat-headed wood borers. Similarly, adult Cerambycidae are generally known as long-horned beetles, while larvae are called round-headed wood borers. Some species in both families prefer conifers as hosts while others use only broadleaf trees. Many species attack live but usually stressed trees, while others prefer recently dead hosts.

Metamorphosis: Complete, both families

Mouth Parts: Chewing (larvae, adults)

Pest Stage: Larvae

Life Cycles and Descriptions of Hosts:

Adult metallic wood boring beetles are bullet-shaped, flat at the front of the head and sharply tapered at the ends of the wings and abdomen; most are slightly flattened, hard bodied beetles ranging in lengths from about ½ to 1 ¼ inch. At least part of the body, sometimes just the underside, is a metallic color; blue, green, black or coppery brown are common depending upon species. Adults are powerful flowers and many species are active by day. Adults sometimes frequent flowers where they feed on pollen. After mating, females find preferred hosts that may be stressed due to prior disease, insect

infestation, lightning strikes, fire or physical damage. They lay their eggs singly in rough bark or after chewing a shallow hole into bark.



Adult *Chrysobothris femorata*, a metallic wood boring beetle (Buprestidae). Photo: James Solomon, USDA Forest Service, www.forestryimages.org



Larva of a buprestid beetle, a flat-headed wood borer, *Buprestis novemmaculata*. Photo: Pest and Diseases Image Library, , www.forestryimages.org

Larvae of many species mine the live bark of their hosts initially, especially where the bark is thin. Although called “flat-headed,” it is the thoracic segments of the larva that are significantly broader and flatter than the insect’s head. The abdominal segments are considerably narrower. The well-developed, sharp jaws of many species are black while the legless larval body is off-white. As the larvae molt into larger instars, they often bore deeper into sap and heart wood, creating oval burrows packed with excess sawdust and waste (frass). Mature larvae chew a slightly larger chamber near the bark when they are ready to pupate. The life cycle of smaller beetles may take only one year; multiple year life cycles are common, particularly when an infested tree is felled and used in construction. Affected trees may have loose bark where it has been mined by flat-headed wood borers. These insects and their oval tunnels are common in firewood. Adults emerging from firewood inside the home do not reinfest firewood, nor do they infest wooden furniture or construction wood. Most adults fly to windows where they soon die of desiccation.

Long-horned beetle adults vary in length from less than ½ inch to nearly 2 ½ inches. Most are elongate oval and slightly flattened with antennae ranging from roughly half the length of the body to greatly exceeding the length of the body. The smaller, brightly colored species are usually active by day and often can be found on flowers feeding on pollen. The duller or darker colored (i.e. brown, black or mottled gray) species are often nocturnal. Most species are strong fliers. Many adult beetles make a squeaking or hissing sound when picked up due to the forcible release of air from the abdominal spiracles (breathing ports). Long-horned

beetles are attracted to distressed, dying or recently dead host shrubs or trees like adult metallic wood borers and may infest the same hosts simultaneously.



Adult spotted pine sawyer, *Monochamus clamator*, Family Cerambycidae. Photo: Whitney Cranshaw, Colorado State University, www.forestryimages.org



Mating pair of locust borers, *Megacyllene robiniae*, family Cerambycidae. Photo: Whitney Cranshaw, Colorado State University, www.forestryimages.org



Adult cottonwood borer, *Plectrodera scalator*, family Cerambycidae. Photo: Ronald F. Billings, Texas Forest Service, www.forestryimages.org



Exceptionally large example of a long-horned beetle larva or “round headed wood borer,” likely a prionid. Note the cylindrical shape, row of spiracles and stout black mandibles on the head. Photo: Herbert A. "Joe" Pase III, Texas Forest Service, www.forestryimages.org

Eggs are laid singly in natural cracks in the host or in shallow pits chewed by the female. Larvae are cylindrical, white, segmented and legless or nearly so. While most mature at about one inch in length, some of the largest are nearly 3 inches

long and at least ½ inch in diameter. Their head capsules are well defined but relatively small compared to the diameter of the larval body. The mandibles are stout and sharp and forward directed. These larvae create tunnels that are round in cross section; the tunnels are usually tightly packed with excess sawdust and wastes (frass) as long as the tree is intact. Mature larvae bore toward the bark of the host where they chew larger cells prior to pupation. While the smallest of these insects may mature in one year, many species have multiple year life cycles. Larvae of these beetles are also likely to occur in forest trees harvested for poles and vigas in home construction and in firewood. When installed in a home, their life cycles may be extended to 5-10 years due to cooler indoor temperatures. As with buprestids, adult long-horned beetles will emerge from firewood inside a home; they usually fly to a window where they soon die. Without meeting their biological needs to disperse and find fertile mates, these beetles are doomed.

Habitat and Hosts: Metallic wood-boring beetles and long-horned beetles vary in their host preferences. Some species target certain conifers while others prefer various deciduous trees or larger diameter shrubs. Damage is cumulative with trees in distress usually sustaining the most damage. Finding evidence of bark beetles, metallic wood-boring beetles and long-horned beetles in the same tree or piece of firewood is not unusual. When active in construction timbers, larvae in both buprestid and cerambycid beetles sometimes can be heard chewing at night; homeowners often find accumulations of dry “sawdust” wastes on floors or furniture underneath infested timbers. While some sawdust comes from activities of live beetle larvae, the rest may fall

simply because the timbers twist slightly as they air-dry, releasing sawdust from old or vacated larval tunnels.

Damage: Recently transplanted, stressed, dying or recently dead host trees are eagerly sought out by female metallic wood borers or long-horned beetles searching for mates and/or places to oviposit. Adults also will attack recently cut logs, slash or wind-damaged trees while a few may attack intact apparently healthy trees. Larvae feed in woody tissues with enough moisture and food value to sustain them. Exit holes made by the new adults are often diagnostic clues of a borer infestation. Depending on the specific site of attack, internal feeding in woody tissues can stunt a plant's growth, cause twig or limb die-back, kill the plant by interfering with water and nutrient transport, kill the plant by disrupting the production of new growth, or allow entrance of rot-causing organisms. Borers can also weaken the structure of a tree and increase its susceptibility to storm damage and disease. While common in firewood, none of these beetles infest or reinfest dry wood or firewood, regardless of whether it is unfinished or finished; this information is comforting to homeowners experiencing a flight of beetles coming out of their fireplace logs.

IPM Notes: Logically, maintenance of healthy trees is the best defense against wood boring beetles; however, this condition is difficult to achieve and maintain under New Mexico growing conditions, particularly in urban planting sites throughout the lifetime of the tree. Pruning out the dead wood may not result in an aesthetically pleasing tree. Merely correcting horticultural care problems may come too late to rescue the damaged tree. Also, realize that new growth on a

damaged tree probably will come from adventitious buds, producing odd-looking clusters of branches that are oddly shaped and weakly attached to the tree limbs. These can make the tree more susceptible to storm damage and additional pest infestations. While some insecticides are labeled to control wood borers as adults land to lay eggs or as larvae hatch, none of these products, including systemics, can reach larger, older larvae deeper in the wood. Insecticides will not reverse the cumulative damage already done to the tree by these insects. Consider protecting recently transplanted trees from adult wood borers by making topical applications of registered insecticides to the bark at intervals and concentrations specified on the labels. Transplanted trees exposed to bright, hot sun may be protected from bark sunburn by applications of white latex paint diluted with water or a similar sort of "whitewash" product. While the whitewash treatment has no direct effect on wood boring pests, it may alleviate some environmental damage to trees that would make them more susceptible to wood borers. Paper or plastic wraps applied to trunk bark may prevent irrigation or rain water from evaporating adequately, favoring the growth of microorganisms, providing harborage to potential pests and perhaps weakening the tree such that it becomes more attractive to wood borers. Avoid long-term use of guy wires, even those padded with sections of hose or soft tubing since they can girdle a tree, again making it susceptible to wood borers.



Pupa of a cottonwood borer, *Plectrodera scalator*, in its burrow inside a cottonwood root. Photo: James Solomon, USDA Forest Service, www.forestryimages.org



Neoclytus caprea, the banded ash borer, has naturally shorter antennae, although it also is a member of the family Cerambycidae. Larval tunnels in this picture are mostly packed with sawdust and frass. Photo: James Solomon, USDA Forest Service, www.forestryimages.org



Adult female twig girdler, *Oncideres cingulata*, family Cerambycidae. Note that the beetle's jaws are oriented at a 90 degree angle to the twig. In this position, the female can girdle a host twig by taking a bite and side-stepping her way repeatedly around and around the twig. Expect twig die-back from the terminal to this girdling damage. Photo: James Solomon, USDA Forest Service, www.forestryimages.org



(Left) *Moneilema armatum*, a long-horned beetle (Cerambycidae) that uses various cacti as hosts for food and larval development. (Right) Example of damage caused by a *Moneilema armatum* larva in a section of cholla cactus (*Opuntia* sp.). Both Photos: Whitney Cranshaw, Colorado State University, www.forestryimages.org

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