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Boxelder Bugs

William M. Ciesla[1] and Ryan P. Hanavan[2]

Boxelder bug, *Boisea trivittata* (Say), is native to much of North America and can be found wherever its principle host boxelder, *Acer negundo*, occurs. The western boxelder bug, *B. rubrolineata* (Barber), occurs from British Columbia, Canada, south to California and east to Nevada, Utah and Texas. These insects are members of the family Rhopalidae (Hemiptera), the scentless plant bugs.

Host Plants

Boxelder is the most common host plant for both boxelder bug and western boxelder bug. This small to medium sized tree is the most widely distributed of the North American maples and occurs throughout the eastern United States and adjoining portions of Canada west through the Great Plains. It also occurs in riparian areas in the central and southern Rocky Mountains, the Colorado Plateau and the Central Valley of California. Isolated populations are also found in portions of Mexico and Guatemala. This tree is widely used in windbreak plantings in the Great Plains and West because of its tolerance to drought and cold temperatures. It has a fibrous root

[1]*Forest Entomologist, Forest Health Management International, Fort Collins, CO (Retired USDA Forest Service).* [2]*Forest Entomologist, USDA Forest Service, Forest Health Protection, Southwestern Region, Flagstaff, AZ.*

Figure 1. Figure 1. Racemes or seeds of boxelder are the favorite host of boxelder bugs.

system, which makes it a popular tree to plant for erosion control. Boxelder is also used as an ornamental tree in urban settings. This maple is dioecious and individual trees produce either male or female flowers. The female flowers develop into clusters of drooping, seed bearing racemes, which are the primary food source of boxelder bugs (Figure 1). Feeding may also occur on foliage and succulent shoots.

Other host plants include other species of maples, *Acer* spp. and ash, *Fraxinus* spp. Feeding may also occur on plants of agricultural importance including fruit and nut trees, grapes and strawberries. Feeding by western boxelder bug can damage crops of fruit trees, pistachios and almonds.

Evidence of Infestation

The most conspicuous evidence of boxelder bug infestations is aggregations of brightly colored nymphs and adults on the bark of female boxelder trees, or on sides of homes and other buildings that may be in close proximity to these trees (Figure 2). These aggregations are most common in autumn. Inspection of female boxelder trees may reveal nymphs or adults feeding on seeds, either individually or in small groups, throughout the growing season (Figure 3).

Economic Importance

Boxelder bugs generally confine their feeding to seeds or fruits and, other than reducing the quantity of viable seed or damaging fruits, they do not injure their host plants. They are primarily household pests. The most significant effect of these insects occurs in autumn when thousands of boxelder bugs may congregate to overwinter in and around homes or buildings near where female boxelder trees or other host plants occur. Once they gain entrance to homes, they can stain draperies, other fabrics and walls with their feces and emit an unpleasant odor. In addition, the mere presence of large numbers of these insects in homes or other buildings is a nuisance.

Description of Life Stages

Boxelder bugs undergo partial metamorphosis and have three life stages: egg, nymph and adult. Both nymphs and adults are similar in

Figure 2 (above). Aggregations of boxelder bug nymphs and adults are a common sight on or near female boxelder trees in autumn. Figure 3 (below). Boxelder bug nymphs on racemes (seeds) of boxelder.

appearance and have sucking mouthparts specialized for piercing and sucking plant juices. The major difference is that adults have fully developed wings and are capable of flight whereas nymphs have rudimentary non-functioning wing pads.

Eggs are rusty red, about 0.06 inches (1.5 mm) long and 0.03 inches (0.76 mm) wide and ovoid in shape. They are deposited in small clusters on flat surfaces such as leaves or in rows in a crevice (Figure 4).

Nymphs are soft bodied, with a bright orange-red body color and a brown head, antennae, legs and wing pads. As nymphs increase in size, they develop more conspicuous wing pads (Figure 5).

Figure 4. Egg mass and first instar nymph of boxelder bug.

Figure 5. Boxelder bug nymphs .

Adults are about 0.5 inches (12.7 mm) long. Color of the body, head, antennae and legs is dark brown to black. The eyes are red and the prothorax and wings are edged with narrow orange-red bands. Abdomens are orange-red (Figure 6). Adults of the boxelder and western boxelder bugs are similar in appearance. The orange-red bands of the western boxelder bug are slightly narrower and paler in color.

Life History and Habits

In most areas, boxelder bugs have two generations per year. However, in areas of cooler climates and shorter growing seasons, there may be only one generation per year. In autumn, with the onset of cool weather,

Figure 6. Boxelder bug Boisea trivittata, *adult.*

feeding stops and large numbers of adults and nymphs congregate in large groups in a warm location, usually the southern or western exposures of tree trunks before they seek locations in which to spend the winter. They move to sheltered places under rocks, steps, decking, sidewalks or the insides of buildings. Only adults survive the winter and nymphs that fail to complete their development are killed by early frosts. Overwintering adults are inactive during most of the winter but will become active and feed on warm, sunny days. Feeding is typically limited to dry plant material and house plants, depending on the overwintering site.

In spring, as the buds of boxelder trees open, adults emerge from their overwintering sites and feed on the previous year's crop of boxelder seeds. Females deposit eggs on leaves, grasses or cracks and bark crevices of female boxelder trees. Eggs hatch in 10 -14 days and nymphs feed on leaves, succulent branches or on developing seeds. They may also feed on developing fruits of apple, apricot, pear, plum and other stone fruit trees. By mid-summer the first generation nymphs have matured to adults and eggs of the second generation are deposited. Individuals of the second generation are typically more numerous than those of the first generation.

Related Species

Red-shouldered or golden raintree bug, *Jadera haematoloma* (Herrich-Schaefer), has a similar life history and has a slight resemblance to boxelder bugs. Nymphs and adults feed on seeds of golden raintree, *Koelreteria paniculata,* which is native to Asia and widely planted in North America as an ornamental tree,

and several other plants. This insect can also be a home invader.

Management

Management of boxelder bug is directed toward preventing the adults from entering buildings to overwinter.

Risk of entry into homes can be reduced by repairing windows or door screens that are torn; screening of crawl space openings, vents, and louvers; caulking of cracks around windows, doors, vents, light fixtures, pipes, conduits, and air conditioners; and attaching weather-stripping to door bottoms. Clearing and disposal of fallen seeds from beneath or near host trees eliminates a food source for adults as they emerge in spring.

Aggregations of boxelder bugs near or on the outside of homes can be treated by application of soap or laundry detergents dissolved in water or simply an application of hot water. Add five tablespoons of liquid detergent or ½ cup of dry laundry detergent to a gallon of water and spray the mixture directly on the insects. Avoid spraying this mixture on foliage because it can damage leaves. This kills only those insects that are in direct contact with the spray. Repeated applications may be necessary if new aggregations appear. Infestations inside homes and building are best treated by collecting the insects with a vacuum cleaner and destroying them.

Chemical control is rarely needed and should be a measure of last resort. Moreover, boxelder bugs have developed resistance to many commercially available insecticides.

Removal of female boxelder trees located near buildings, where populations may occur year after year, eliminates the source of boxelder bugs that enter homes. A number of municipalities have enacted ordinances that prohibit planting of female boxelder trees to prevent buildup of boxelder bug populations in urban forests. If homeowners wish to plant boxelder trees, they should select seedless cultivars, such as “Baron,” which are not attractive to boxelder bugs.

Additional Information

Forest landowners and homeowners can obtain more information, including currently registered and effective insecticides from County Extension Agents, State Forestry Departments, or State Agriculture Departments. Federal resource managers should contact USDA, Forest Service, Forest Health Protection (www.fs.fed.us/foresthealth/). This publication and other Forest Insect and Disease Leaflets can be found at www.fs.usda.gov/goto/fhp/fidls.

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