



Boxelder Bugs

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Biology, Description, and Habits

Adult boxelder bugs are about 1/2 inch long, flattened on top, elongate-oval in shape, and predominately slate-gray to black in color. There are three red lines running the length of the prothorax (segment behind the head and in front of the wings), one on each side and one down the middle. The basal halves (from the point of attachment) of the forewings are leathery in texture and are rimmed in red on all margins. The outer halves (wing tips) of the forewings are pliable membranes and are all black, as are the hindwings. The top of the abdomen (directly under the wings) is red with two rows of black spots. The underside of the abdomen is alternately striped in red and gray. The legs are black.

Nymphs (immatures) are wingless, but otherwise generally resemble the adults in shape. When first hatched, the nymphs are completely red and sparsely covered with short, bristly hairs. Slate-colored or black markings, particularly toward the head, appear when they are about half grown. In the later stages, the antennae and legs of the nymphs become almost black.

Winter is spent as adults in dry, sheltered areas. They are found around the foundations and windows of buildings, or in leaves and other debris under hedges, in ditches, or similar places. Adults often become active on warm winter days and emerge from their hiding places, returning to shelter as temperatures drop at the end of the day. Congregation of the bugs on surfaces has to do with temperature, as the bugs prefer warm surfaces. For this reason, they are often found in large numbers on the south (sunlit) sides of houses or other buildings.

In the spring the adults emerge and fly to host plants where the females deposit small, red, oval eggs on the leaves, bark, or other surfaces. Eggs hatch in 10 to 14 days and nymphs begin feeding by sucking fluids from seeds, foliage, twigs, or fruit. Nymphs pass through a series of growth stages with a molt (they shed their skin) occurring between each stage. Eventually they molt to the adult stage, mate, and produce a second generation. The second generation adults are the ones that overwinter.

Damage

Boxelder bugs have been recorded on a number of hosts including maple, ash, strawberries, plum, cherry, peach, apple, grapes, and grasses; however, large numbers generally develop only on female boxelder trees where they feed primarily on the developing seeds.

Boxelder bugs are generally not considered injurious to ornamental plantings, but are known to damage fruit. Damage to strawberries and various tree fruits occurs primarily during the fall migration of the bugs from boxelder trees to winter quarters. Feeding by the bugs produces dimples, scars, fruit deformation, corky tissue, and even premature fruit drop. However, significant boxelder bug damage to fruit in Utah has not been reported.

The major concern associated with boxelder bugs is in regard to their role as a nuisance pest. In the fall large numbers of bugs often congregate on structures seeking an entry point. Once inside, the bugs may stain upholstery, carpets, drapes, and may feed on some house plants. They are harmless to people, pets, and structures.

Non-Chemical Control Methods

Entry of the bugs into homes can be reduced by making the structures as "bug-proof" as possible. Caulk or seal openings or cracks in the foundation, around windows, and around plumbing, gas, or electrical conduits. Weather strip around doors and windows. Screen off attic vents and repair broken windows and screens. Expanding-foam sealants may be of value in sealing hidden recesses and other areas that are not readily visible.

Complete sealing in large or older buildings may be impractical or impossible. Small numbers of bugs gaining entry to the house can be killed with a fly swatter and removed. Larger invasions can be removed with a vacuum cleaner. Discard the dust bag after collection.

Boxelder bugs, particularly the nymphs, are easily drowned. Regular use of a garden hose to water-down congregations of bugs will kill a fairly large number of them. Since many homeowners regularly water their shrubs or flowers with a hose, this is a good time to look for boxelder bugs and water them down.

Boxelder bug populations can also be reduced by removal of the female boxelder trees. As with the insecticide treatments, this is not likely to work unless only small numbers of trees are involved. This is a rather drastic measure and is not generally recommended. The overall value of the tree usually far outweighs the potential benefit of reducing boxelder bugs.

Boxelder bugs have few natural enemies. There are no major insect parasites (parasitoids) or diseases that affect their populations, and only spiders are mentioned as minor predators of boxelder bugs. Birds fail to feed upon them in any significant numbers, probably due to the ability of the bugs to emit an offensive odor (which undoubtedly makes them taste bad as well).

Control Using Insecticides

The consensus among various sources of information seems to be that effective insecticidal

control of boxelder bugs can be achieved but it is usually difficult. Therefore it should be no surprise if attempts to control boxelder bugs with insecticides are not very successful. Justification of insecticidal control depends largely upon the degree of the nuisance problem, the areas where they occur, and the numbers of bugs a given homeowner is willing to tolerate.

The potential benefit of attempting to control boxelder bugs on female boxelder trees is questionable. Control attempts are not warranted from the standpoint of maintaining the health of the tree because the damage is not considered significant. It is also unlikely that migrations into the home can be diminished in this fashion if several other untreated female boxelder trees are located nearby. The bugs will merely fly to your house from the untreated trees, although this only occurs within a limited distance. Professional pest control operators will not guarantee the control of boxelder bugs because of the above problems.

If the migrating population of bugs is known to originate from a single tree or readily-accessible adjacent trees, and no other female boxelder trees are near enough to produce migrating bugs in your area (the actual distance involved is unknown because it is not known how far boxelder bugs will readily fly), treatment of the tree(s) will reduce the number of bugs that reach maturity and migrate in the fall.

Applications should preferably be made when the majority of the bugs are young nymphs, since large nymphs and adults are more tolerant of insecticides. Diazinon 25% EC (emulsifiable concentrate) may be applied as a foliar spray at the rate of one to three fluid ounces per three gallons of water. Sevin (carbaryl) 50% WP (wettable powder) may be applied at the rate of two tablespoons per gallon of water (two pounds per 100 gallons).

Treatment of tree trunks or barrier treatments around the tree base in late summer and early fall can help reduce the numbers of overwintering adults. Treatment of other ornamental plants around the yard (where the adults and nymphs are resting) are sometimes useful during summer (June and July). For such treatments, an insecticide labeled for the specific ornamental plant(s) or for general use on ornamentals must be used.

Inspection of outdoor areas can help locate host trees and overwintering sites. Populations of congregating bugs can be reduced by spraying them directly with diazinon 25% EC at the rate of eight fluid ounces per three gallons of water. Do not treat plants with this rate as damage may occur. Periodic reapplication will be required as long as bugs continue to congregate on exterior surfaces. Read and follow all pesticide label directions and do not treat sites not listed on the label or exceed label application rates.

Congregation of the bugs on sunlit surfaces causes problems with more-rapid degradation of some insecticides. Variations in outdoor building surfaces such as brick, concrete-block, latex-painted, or bare wood will influence the amount of insecticide absorbed, and limit the amount available to kill the bugs. Sprays tend to make the bugs scatter, which allows some to escape treatment. Repeated applications may be needed to obtain effective control.

There are about 175 insecticide Utah-registered products labeled for boxelder bug control in both indoor and outdoor domestic dwelling situations. About 50 products are labeled for boxelder bug control on boxelder trees or ornamental trees in general. Common active ingredients in products for both indoor and outdoor use include chlorpyrifos, cyfluthrin, cypermethrin, diazinon, D-phenothrin plus tetrmethrin, D-trans-allevethrin, lambda-

cyhalothrin, permethrin, and pyrethrins. Active ingredients in formulations labeled for use on trees include carbaryl, chlorpyrifos, cube resins plus rotenone, diazinon, endosulfan, and naled. There are several other active ingredients labeled for boxelder bug control but these include the majority of the products.

The effectiveness of five insecticides used by PCO's were evaluated for control of boxelder bugs (Pest Control Technology, June 1991). The insecticides were cypermethrin (Demon WP), chlorpyrifos (Dursban LO and ME), bendiocarb (Ficam Plus), diazinon, and propetamphos (Safrotin). Latex-painted panels were treated to runoff, and insects placed on the panels after one day and again after seven days. Mortality one day after treatment was about 95% for cypermethrin, bendiocarb, Dursban LO, and diazinon. Dursban ME gave about 57% mortality (value for Safrotin was not mentioned for some reason). At seven days after treatment, cypermethrin provided 67% mortality and the others provided about 50% mortality. Although bendiocarb (Ficam) is apparently not specifically labeled for boxelder bugs, there are formulations available for use in both indoor and outdoor situations around domestic dwellings.

Precautionary Statement

All pesticides have both benefits and risks. Benefits can be maximized and risks minimized by reading and following the labeling. Pay close attention to the directions for use and the precautionary statements. The information on pesticide labels contains both instructions and limitations. Pesticide labels are legal documents, and it is a violation of both federal and state laws to use a pesticide inconsistent with its labeling. The pesticide applicator is legally responsible for proper use. Always read and follow the label.

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