Insect Diagnostic Laboratory
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Viburnum Leaf Beetle

Pyrrhalta viburni (Paykull); Family: Chrysomelidae

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The viburnum leaf beetle, first found in North America in 1947 in the Niagara Peninsula of Ontario, Canada, was discovered in New York State in northern Cayuga County (Fair Haven Beach State Park) in July, 1996. Native plantings of arrowwood (*Viburnum dentatum* complex) in the park were found to be heavily damaged by larval feeding. Many of these shrubs were nearly totally defoliated, and only wisps of skeletonized leaves remained on the branches. The first North American breeding populations of this European leaf beetle were discovered in 1978 in the Ottawa/Hull region of Canada, where they were causing severe defoliation of ornamental viburnums, particularly European cranberrybush viburnum (*V. opulus*).

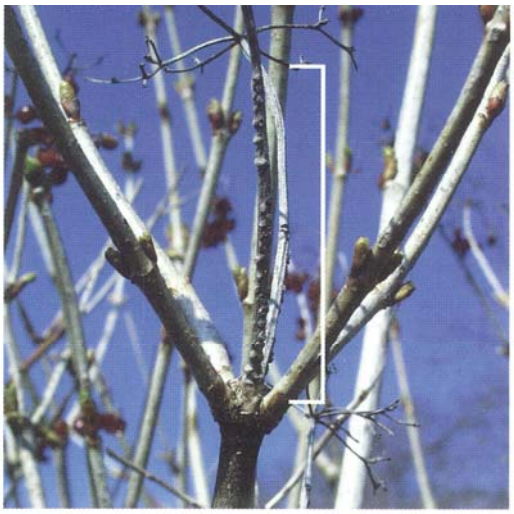
Distribution

The native range of the viburnum leaf beetle includes most of Europe. In North America this exotic leaf beetle is known to inhabit many areas of Ontario, the Canadian Maritime Provinces, and portions of Maine, New York, and, more recently, Pennsylvania, Vermont, Massachusetts, and Ohio.

Recognition Features

Viburnum leaf beetle adults are about a quarter inch long. Their dorsal surface has small, dense punctures, and the space between punctures is somewhat rugose, or wrinkled, with thick, golden-grey pubescence. The head, thorax, and elytra (or wing covers) are generally brownish, but humeral angles, or shoulders, of the elytra are darker. Larvae of the viburnum leaf beetle are less than a half inch long when mature, slightly depressed and subcylindrical. Larvae feed gregariously on viburnum foliage. Skeletonized leaves in the spring (May-June), heavily chewed leaves in the summer (July-September), and terminal twigs with characteristic egg "caps" arranged in straight rows, seen in summer through winter, are characteristic of a viburnum leaf beetle infestation.

Larvae and feeding damage.



Egg caps along a twig.

Adult feeding damage.

Life Cycle, Habit, and Host Plants

In Europe and North America, the viburnum leaf beetle overwinters in the egg stage. From late June to early July until October, females chew tiny holes in small branches or twigs of viburnum (generally the current year's growth, but occasionally in the previous year's growth) for oviposition. These egg sites -- deep, rounded cavities -- are often arranged in a straight row on the under surface of the terminal twig. Several eggs (average of five) are inserted into each cavity. In excavating each egg site, the female chews away the bark, splits the wood into small fibers that remain attached to the upper circumference of the area chewed away, and hollows out the egg cavity by excavating the pith. After filling the cavity with eggs, the female closes the opening by making a "cap" or lid composed of excrement, chewed bark, and cement from her collateral glands and pushing it up beneath the cluster of previously shredded wood fibers. For several weeks, the color contrast between the cap (brownish black) and the bark (green to brown) is sharp. This cap not only protects the eggs, but also sponges up and stores water that runs down the branch, thereby providing humidity for the eggs. A female can lay up to 500 eggs during the summer.

By early to mid-May of the following spring, the eggs hatch and the larvae feed gregariously on the underside of tender, newly expanding viburnum foliage. Larvae skeletonize viburnum foliage, usually starting with lower leaves and leaving only midribs and major veins intact. By early to mid-June, mature larvae crawl to the ground, enter the soil, and pupate. By early July, adults emerge and begin to feed on viburnum foliage. Complete development from egg hatch to adult emergence generally takes 8 to 10 weeks. Adult feeding damage consists of irregular circular holes, and severe feeding can nearly defoliate shrubs once again. From summer through fall, adults will continue to be active, mating, laying eggs on terminal twigs, and feeding upon foliage until the first killing frosts. There is one generation annually.

This beetle is restricted to feeding on species of *Viburnum*. It exhibits a strong preference for the popular arrowwood viburnums (*V. dentatum* complex), European cranberrybush viburnum (*V. opulus*), American cranberrybush viburnum (*V. trilobum*), and Rafinesque viburnum (*V. rafinesquianum*). Other viburnums also known to serve as hosts include Sargent viburnum (*V. sargentii*), wayfaring tree (*V. lantana*), nannyberry (*V. lentago*), and blackhaw viburnum (*V. prunifolium*). Particularly resistant species include Korean spice viburnum (*V. carlesii*), Burkwood viburnum (*V. burkwoodii*), doublefile viburnum (*V. plicatum* var. *tomentosum*), Judd viburnum (*V.* × *juddii*), lantanaphyllum viburnum (*V.* × *rhytidiophylloides*), and leatherleaf viburnum (*V. rhytidiophyllum*).

Economic Impact

Heavy infestations by viburnum leaf beetle can defoliate shrubs, cause dieback, and eventually kill plants. Valued plantings of the ever-popular European cranberrybush viburnum can be especially ravaged by larval and adult feeding. In addition to the heavy foliage damage caused by larvae and adults, even the inflorescences can be fed upon by larvae. Shrubs repeatedly defoliated over a period of two to three years are likely to die.

Management Recommendations

Pruning and destroying infested twigs after egg laying has ceased in the fall, anytime from October to April, is the most effective means of control for small scale plantings. When pruning is not practical, pesticides may be effective in controlling larvae or adults. Home gardeners may use cyfluthrin or pyrethrins plus PPB, if the product is labelled for leaf beetles. Spray when larvae first appear in early May for best results. If damage from adults is excessive, a second application in mid-to late summer may be helpful. Insecticidal soap is not effective against adults.

When possible, plant resistant species. For a list of viburnums that are less susceptible to damage, see: http://www.hort.cornell.edu/vlb/suscept.html For additional management options, such as encouraging beneficial insects that eat viburnum leaf beetles, using sticky barriers to restrict larval movement, or methods for reducing egg survival in the twigs, see the Citizen Science pages on viburnum leaf beetle: http://www.hort.cornell.edu/vlb and http://www.hort.cornell.edu/vlb/manage.html

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