# Viburnum Beetle: A Serious Threat to Viburnum Plants in Stock Blocks, Production, and the Landscape©

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## NATURE OF WORK

The genus *Viburnum* is represented regularly in landscapes from the Canadian border to the Gulf Coast in the Eastern United States. Diverse flowering, fruit, leaf, and form characteristics lead to a range of landscape uses. The diversity in this group of shrubs is botanically described by Krássman (1984). Table 1 lists his nine sections within *Viburnum*.

Viburnum leaf beetle (*Pyrrhalta viburni*) is a pest of *Viburnum* and the insect is now established in the United States. Viburnum leaf beetle, a European native which is established from Great Britain to Italy, was first detected in North America in Ontario, Canada. Since then it is believed to have migrated over land into Maine and across the Niagara Isthmus or St. Lawrence seaway into New York. In New York it was first detected in 1996 along the shores of Lake Ontario.

This work was initiated to learn more about the insect and the extent of damage it causes to viburnums.

## RESULTS AND DISCUSSION

Viburnum leaf beetle larvae hatch in the spring from eggs laid the previous year. This happens in Rochester, NY in early to mid May, or after 80 to 100 growing degree days have accumulated. Larvae feed on newly expanded leaves, completing their development by mid-June. The full-grown larvae drop to the soil where they pupate

**Table 1.** Sections of *Viburnum* as described by Gerd Krüssman in *Manual of Cultivated Broad-Leaved Trees and Shrubs*.

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|---|---|---|---|
| Section 1. | Thyrsoma | Section 6. | Tinus |
| Section 2. | Lantana | Section 7. | Megalotinus |
| Section 3. | Pseudotinus | Section 8. | Odontotinus |
| Section 4. | Pseudopulus | Section 9. | Opulus |
| Section 5. | Lentago | | |

and emerge as adults in late June or early July. The adults feed on the same shrubs on which they developed or fly to adjacent favorable plants. This insect is capable of flying some distance and the population is believed to be spreading from 15 to 20 miles per year in New York. The adults also feed gregariously and are commonly clustered on their favored host (*Viburnum*). The females lay eggs during the remainder of the summer and into the fall. Eggs are deposited on the underside of young stems. Small pits are chewed into the stem and the female will lay the eggs in small clusters (5 to 6 eggs). The eggs are capped with a mixture of chewed foliage and feces. These are visible as a row of bumps on the underside of the stem.

**Table 2.** Susceptibility of *Viburnum* species to colonization by *Pyrrhalta viburni*[a]

**Most susceptible**

*V. dentatum*, arrowwood viburnum (8)

*V. opulus*, European cranberrybush viburnum (9)

*V. rafinesquianum*, Rafinesque viburnum (or downy-leaved arrowwood) (8)

*V. sargentii*, Sargent viburnum (9)

*V. trilobum*, American cranberrybush viburnum (9)

**Moderately susceptible**

*V. acerifolium*, mapleleaf viburnum (8)

*V. dilatatum*, linden viburnum (8)

*V. lantana*, wayfaringtree viburnum (or wayfaring tree) (2)

*V. lentago*, nannyberry viburnum (or sheepberry) (5)

*V.* 'Pragense', Prague viburnum (2)

*V. prunifolium*, blackhaw viburnum (5)

**Particularly resistant**

*V.* ×*burkwoodii*, Burkwood viburnum (2)

*V.* ×*carlcephalum*, Carlcephalum (or fragrant) viburnum (2)

*V. carlesii*, Koreanspice viburnum (2)

*V.* ×*juddii*, Judd viburnum (2)

*V. plicatum*, doublefile viburnum (4)

*V.* ×*rhytidophylloides*, lantanaphyllum viburnum (2)

*V. rhytidophyllum*, leatherleaf viburnum (2)

*V. setigerum*, tea viburnum (8)

*V. sieboldii*, Siebold viburnum (1)

[a]Numbers following each accession refers to the sections of *Viburnum* in *Manual of Cultivated Broad-Leaved Trees and Shrubs* by Gerd Krüssman

*Viburnum* is the only known host for the insect. As there is a wide range of variability to the genus *Viburnum*, there is a wide range of susceptibility to viburnum leaf beetle. We have classified the susceptibility of viburnums to the beetle based on the degree to which larvae and adults are capable of defoliating the plant. This classification is based on plants grown in full sun sites. Plants grown in shade have been observed to be more heavily fed upon than their counterparts in full sun.

Susceptible species are extensively defoliated by the larvae or beetle. Plants have little or no living leaves after having been fed upon for 2 or more years in succession. Plant death usually occurs after 2 to 3 years of infestation.

Moderately susceptible species are fed on only slightly. At feeding sites beetles will perforate the leaf, but the foliage appears healthy otherwise. Only a small percentage of the foliage mass on a given plant will show signs of feeding damage. Plants viewed from a distance may appear normal, but close observation in a landscape may show unacceptable visual damage.

Resistant species may show signs of feeding attempts, but these rarely penetrate the leaf.

In New York, the most susceptible viburnums (the ones which would require an annual control program) are cranberrybush, arrowwood, Rafinesque, and Sargent (Table 2). Contributing to the spread of this pest is the fact that the susceptible group contains native understory plants, mainly arrowwood, throughout the forests of the Eastern United States. The native population of susceptible species may very well be completely eliminated.

The most resistant species include those species with thicker leaves. Exactly what makes these species resistant is not completely understood. Feeding will occur on leaves, but with no leaf blade penetration. Most of these species are in the Lantana Section (Krássman, 1984). This section is noted for very thick or very pubescent leaves and includes the leatherleaf and Koreanspice types. Additional resistant viburnums include doublefile, tea, and *V. sieboldii*.

In between is the moderately susceptible group. The Lentago Section is included here as well as species related to either susceptible or resistant species (Table 2).

**Significance to Industry.** *Pyrrhalta viburni* is now established in the United States. If it establishes on this continent like it has in Europe, it should be a pest throughout the Eastern United States of America if not even further west. Propagation/production nurseries and landscape maintenance firms should be prepared to change their plant palate or develop a pest management program for the susceptible species. Sustainable management methods such as biological control are being investigated.

## LITERATURE CITED

**Krássman, G.** 1984. Manual of cultivated broad-leaved trees and shrubs. Timber Press, Portland, Oregon.