

## Viburnums That Have Prospered at and Around the Arnold Arboretum and the Threat of the Viburnum Leaf Beetle

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### INTRODUCTION

With over 150 different species and countless cultivars of *Viburnum* presently known and new species being found in China, Nepal, and Bhutan on a consistent basis, we are very fortunate to have such a large and diverse group of plants to enjoy in our gardens.

Viburnums, as with all plants, need proper cultural conditions to prosper. One of the main ingredients to good health is an adequate moisture supply to maintain these densely leafed and full-sized shrubs and small trees. Over the past decade it has been the exception and not the rule to have consistent moisture by way of precipitation through the growing season. The majority of the past decade has been spent dealing with either a 2- to 3-month dry period through the heat of the summer or a full growing season drought. The Arnold Arboretum has limited irrigation options across its 265-acre sight. The main *Viburnum* collection receives supplemental water but not enough to alleviate the drought effects. There are a few individual species that have done better than others in their ability to maintain their ornamental characteristics with our drought conditions. These include: *V. lantanoides* (syn. *alnifolium*), *V. bitchiuense*, *V. farreri* 'Candidissimum', *V. xlobophyllum* 'Oneida', *V.* 'Pragense', *V. sargentii*, and *V. sieboldii*.

This is not intended to be a complete listing nor are those plants listed unaffected by the dry conditions, but a list of plants that still maintain their ornamental quality and have produced well for us.

### VIBURNUM LEAF BEETLE (*Pyrrhalta Viburni*)

This beetle is closely related to the elm leaf beetle, *Pyrrhalta luteola*. It is limiting its feeding to viburnums, with a preference for; *V. opulus*, *V. trilobum*, *V. sargentii*, *V. lantana*, *V. dentatum* complex, *V. acerifolium*, *V. lentago*, and *V. prunifolium*. It's showing less interest in those viburnums that have a felty and or heavy pubescence to the leaf: *V. carlesii*, *V. xburkwoodii*, *V. xcarlecephalum*, *V. xjuddii*, *V. sieboldii*, *V. rhytidophyllum*, *V. xrhytidophylloides*, *V. setigerum*, and *V. plicatum* have been damaged but to a much less severe degree than the others. The signs of infestation are often first noticed by the skeletonizing of the leaves. Both the adult and the larvae are heavy feeders, stripping all the leaf material and leaving only the major veins and midrib. Along Lake Ontario the beetle has decimated the native populations of *V. dentatum* in many areas. Those viburnum planted in the shade have been noticed to be more susceptible to the beetle than those found in a higher light area, possibly due to a thinner cuticle layer.

The viburnum leaf beetle is native to central Europe and was first reported in North America in 1947 along the Niagara peninsula in Ontario. It is thought to have come into the country on nursery stock. It seemed to disappear for awhile and then reappeared in 1955 in Font Hill, Ontario, and then again in 1978 in Montreal and

Quebec City, Quebec, and Ottawa, Ontario. First breeding populations were recorded in 1978 in the Ottawa – Hull area, where it caused severe damage to viburnums there. It wasn't seen in the U.S.A. until 1996 when E. Richard Hoebeke, associate curator of the Cornell entomology collection, first discovered the beetle in Monroe, Orleans, Niagara, Cayuga, and Jefferson counties. The five counties are all found along Lake Ontario from Niagara to Cayuga New York. In 1998 the beetle was also seen in St. Lawrence, Oswego, Ontario, Wayne, and Genesee counties. In 1999 it has been sighted in Tompkins and Chautauqua as well as several other counties of New York bringing the total to 25 counties with the beetle present. Hoebeke put out an alert to all Cornell Cooperative Extension offices in 1998 for any and all sightings to date. The Master Gardener's Hotline at Cornell is averaging 30 calls a day concerning the beetle.

The beetle is presently in the Canadian Maritime Provinces of Nova Scotia, New Brunswick, and Prince Edward Island. It is also spreading quickly along the St. Lawrence Seaway to the shores of Lake Ontario and Lake Erie. During the I.P.P.S. Annual Meeting tours to the Niagara Parks' Botanical Garden the beetle damage was present on *V. opulus* and *V. lentago*. The Niagara Parks' Botanical Garden tried to control the beetle by pruning the egg masses off in late winter but have such a high population of the insect that they feel they are not able to control the beetle damage. The viburnum leaf beetle is also at Royal Botanical Garden, Hamilton, where it has yet to be a major problem.

In Maine it has been seen around the Portland area for the past 8 to 9 years. Initially it is thought to have appeared near Old Orchard Beach and has moved 15 to 20 miles inland from the coast but is still centered on Portland in southern Maine. It has also been seen north of a line connecting Rumford, to Farmington, east to Bangor and then to Mt. Desert Island on the coast. The beetle has spread quickly down the State Highway system consuming the *V. trilobum* used as bank plantings. It is seen in large numbers in remote woodland and in cultivated areas.

The beetle overwinters as egg masses found on the upper portion of the stems. In early May the egg masses begin to swell as the temperatures rise. The caps over the egg masses will slough off and the larvae then begin to hatch and feed on the newly emerged viburnum leaves. The larvae are quite mobile, dark brown to a pale green in color and very small in size, yet may group in large numbers. The larvae begin to feed right away and will make small pinholes in the leaves. Eventually the damage looks like the leaves have been riddled with buckshot. The larvae will mature at a ¼ inches in length and appear green and brown in color. In June the damage to the leaves has progressed to the point at which the leaves are mostly skeletonized. In a heavy infestation season the larvae can strip a mature plant in a matter of 3 to 4 days. The larval stage will last 8 to 10 weeks long.

Later in June the larvae drop to the ground and begin to pupate in the soil. The process of pupation will take about 10 days. In late June to early July the beetle will emerge and begin to feed. They can fly well and will readily seek out the preferred viburnums to infest. They are very specific in their feeding habits avoiding leaves of other genera within the *Caprifoliaceae* even if they are mixed in with the viburnum. The adults are about the size of a large kitchen match head (4.5 to 6.5 mm) in length and a coffee brown in color. The adults will stay active feeding until frost. The adults feed as strongly as the larvae and will often remove the whole second flush of growth within days of emerging. The ability of both the larval and

adult stages to feed heavily on the host plants and severely reduce its ability to put on growth and store nutrients can cause the viburnum to lose vigor and perish in a year or two.

The female can lay her eggs from late summer until the first frost. The female will chew a squarish-shaped hole or slit into the upper portion of the stem and deposit several eggs into it. The egg masses are arranged in a straight line and are covered over with a mixture of chewed wood and excrement forming a black cap for protection. She may lay as many as 500 eggs a season. The adults begin to breed as soon as they emerge in July and this activity continues through to frost.

The beetle is very active and at times hard to see. It will roll off the leaf and drop to the ground or fly away when disturbed.

There are a few ways to control the beetle. Through the winter and into early in spring look for the overwintering egg masses. These can be pruned or scrapped off before the larvae hatch. If you can remove the eggs before hatching that is best. If you are too late to remove the egg masses it is best to treat the larvae while it is still very small.

According to Cornell Cooperative Extension the larvae and beetle can be controlled with a number of pesticides, however, an additional difficulty comes in the form of incomplete labeling on these products and the need to add the viburnum beetle to the list of targeted insects to be controlled.

Paul Weston and Brian Eshenaur have been conducting studies of possible control mechanisms for the larvae and beetle, including several pesticide trials within the viburnum collection at Highland Park in Rochester, New York. They hope to be able to advise people on the best controls in a year or so.

A key source of current information is the integrated pest management newsletter for trees and shrubs produced by Cornell's Cooperative Extension, called *Branching Out*. It is published every 2 weeks from April through June and then every 3 weeks July through September. Subscription is \$35 a year. The address to subscribe is: Branching Out, Department of Plant Pathology, Cornell University, 334 Plant Science Building, Ithaca, N.Y. 14853-4203 U.S.A.

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### Canada

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### Massachusetts

- Bob Childs, Ma. Coop Extension, State Entomologist, Urban Forestry Diagnostic Lab. Tel: (413) 545-1053.

### ADDITIONAL READING

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