

The Impact of Viburnum Leaf Beetle on Native Arrowwood

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VIBURNUM LEAF BEETLE, known scientifically as *Pyrrhalta viburni*, is a small, brown beetle native to Eurasia that was accidentally introduced into North America in the early 1900s. It was first detected in the U.S. in 1994, and has been rapidly expanding its range since. It is now found throughout New England and much of New York, and is making inroads in New Jersey, Pennsylvania, Ohio, and Michigan (a separate invasion is taking place in the Pacific Northwest).



Both the larvae and adult beetles feed on leaves of plants in the genus *Viburnum*, woody plants

that are commonly used in landscapes and occur in many natural areas. Although not all species of *Viburnum* are susceptible to the pest, a number of species are heavily damaged and die after several years of repeated defoliation. Among the most susceptible species is *Viburnum dentatum*, commonly known as arrowwood.

WHAT WE DID

We were curious to know what might happen to natural areas after arrowwood plants were killed by viburnum leaf beetle. To answer this question, we conducted a project (funded by the New York State Biodiversity Research Institute) in which we quantified the number and type of plants growing near arrowwood shrubs. We also recorded characteristics of the arrowwood plants themselves (such as the percent of leaf area removed by beetle feeding, number of flowers and fruits produced by the plants, etc.). We chose plants in old fields that had



been recently attacked by the beetle in addition to plants that had been under attack for a number of years and were nearly dead. For reference, we also took the same measurements for arrowwood (and surrounding plants) in an area that had not yet been attacked by viburnum leaf beetle.

WHAT WE FOUND

As expected, we found that feeding by viburnum leaf beetle increased stem death and decreased flower and fruit production by arrowwood plants, but, surprisingly, had no significant impact on the type or abundance of neighboring plants. We anticipated that the rapid death of arrowwood shrubs would create conditions that would favor invasion by non-native species such as bush honeysuckle and multiflora rose. However, we found no difference in the vegetation growing under arrowwood compared to vegetation away from arrowwood. One possible explanation is that the habitat chosen for our study (old fields), which are frequently dominated by goldenrod, might not exhibit much change in plant community composition when a single sub-dominant species disappears. Further study will reveal if this stability of community composition is typical in other community types.

WHAT DOES IT ALL MEAN?

Invasion of viburnum leaf beetle has direct adverse effects on arrowwood, reducing flower and fruit production and gradually leading to death of attacked shrubs. Loss of fruit production may have a serious negative impact on both migrant and resident songbirds, as well as small mammals; other researchers have shown that reduced fruit availability in stopover locations has been directly linked to reduced songbird abundance in both stopover and overwintering habitats. Thus, viburnum leaf beetle directly threatens arrowwood viburnum and may indirectly threaten migratory songbird survival.



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