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INVASIVE PLANT MANAGEMENT AND CONSERVATION AT WILDLANDS CONSERVANCY: SIEBOLD'S VIBURNUM (*VIBURNUM SIEBOLDII*)

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Siebold's viburnum (*Viburnum sieboldii*) is a bird-friendly ornamental plant that is native to Japan (Kunstler 1993). This prolific invasive was planted throughout the Wildlands Conservancy property in Lehigh County, Pennsylvania by the previous property owner in the 1930's. The land at this time was used largely as a privately owned farm, though it has since become a preserve of the Wildlands Conservancy. At the time of planting, it was unknown that this species was invasive. Over the years, these shrubs had grown large and at a rapid rate, with some reaching heights of 30 feet (9.14 meters; Fig 1). It was determined by counting the annual rings of cut stumps that the invasive had been growing on the property for several decades. The viburnum now dominates the woodland understory of Wildlands, casting a dense shade over native understory vegetation.

Viburnum sieboldii is easily identified (Fig 2). The leaves are oppositely arranged and simple with elliptic blades having sharply serrate margins. The leaves also emit a foul odor when crushed. The fruits are fleshy, red drupes. Drupes are indehiscent fruits (fruits that do not open at maturity) and the lignified pit that contains the single seed is the defining characteristic.



Fig 1. A plant of *Viburnum sieboldii* can grow to 9 m or more in height. This one was found on one of Wildlands Conservancy's easement properties.



Fig 2. Close-up of *Viburnum sieboldii*'s red drupes and opposite leaves (Source: <http://www.hort.uconn.edu/plants/v/vibsie/vibsie08.jpg>).

Managing Siebold's Viburnum

There are three effective management techniques for land managers to implement against this invasive species. The first control method is *cut-stump application* of the herbicide



Fig 3. The author performing a cut-stump application of 50% glyphosate to a *Viburnum sieboldii* specimen in 2012 (photo by Carl Martin).

glyphosate (e.g., Roundup Pro®). In this method, the specimen is cut to a short stump and a 50-50 mixture of herbicide and water is applied to the vascular cambium of the specimen (Fig. 3).

The second control method is *basal-bark application*. In this method, a mixture of 75% kerosene and 25% triclopyr 4E herbicide (e.g., Garlan® 4) is applied to the bark of the specimen. Caution should be exercised when using triclopyr 4E, as it known to be a severe eye irritant (Tu et al. 2001). Figure 4 shows the effects of basal bark application to a viburnum specimen two weeks post-treatment. This method of invasive plant management is proven effective when cut-stump application is not ideal. Cut-stump application is not effective for stems that are less than one half inch (1-2 cm) in diameter (Enloe et al. 2010).

The third method of control is *foliar application*. In this method, a mixture containing 4.5% glyphosate is applied to the foliage of the young shoots. Foliar application is best suited for large-scale coverage of many young shoots.



Fig 4. The author inspecting a *Viburnum sieboldii* specimen two weeks following basal-bark treatment (photo by Carl Martin).

Broader Issues Concerning Invasive Plants

It must be emphasized that invasive plants pose a real threat to biodiversity and overall forest health. Invasive plants such as kudzu (*Pueraria lobata*) of the southeastern United States have outcompeted and displaced native species (Everest et al. 1999). Another prolific invasive is multiflora rose (*Rosa multiflora*), found in 38 states (Yu et al. 2012). Invasive plants disrupt the food chain because often they are not palatable to insect herbivores (Tallamy 2004). This situation creates a domino effect in the food chain (Tallamy 2004). There is a negative correlation between insect biomass and the dispersal of invasive plants (Tallamy 2004). The domino effect occurs when insect populations are reduced from lacking resources and, consequently, primary and secondary consumers become vulnerable as their major food source becomes scarce (Tallamy 2004). The general public may view invasive plants as ornamentals and aesthetically pleasing, but the scientific community knows invasive plants pose a major threat to ecosystem health and species biodiversity. Educating the general public on recognizing invasive plants and reporting their sightings to land trust organizations should be a top priority. This paper has provided three effective treatment options for land managers to utilize on their preserves to manage invasive plants and regain important native flora.

Wildlands Conservancy is a non-profit land-trust organization based in Emmaus, Pennsylvania, which specializes in acquiring and managing natural areas for preservation and public recreation. The mission of Wildlands is to protect and restore these natural areas by being good stewards of the environment and, more broadly, to educate communities about the

benefits of creating a sustainable environment for future generations.



REFERENCES

- Enloe S, Loewenstein N, Dorough H. 2010. Backpack and handgun sprayer foliar herbicide treatment for invasive plants in pastures, natural areas, and forests. *Alabama Cooperative Extension System* 1-2.
- Everest JW, Miller JH, Ball DM, Patterson M. 1999. Kudzu in Alabama history, uses, and control. *Alabama Cooperative Extension System* 1-6.
- Kunstler DS. 1993. Siebold's viburnum, *Viburnum sieboldii* Miquel, new non-native species for New York. *Bulletin of the Torrey Botanical Club* 120: 188-190.
- Tallamy DW. 2004. Do Alien Plants Reduce Insect Biomass? *Conservation Biology* 18: 1689-1692.
- Tu M, Hurd C, Randall WC. 2001. Weed control methods handbook: triclopyr. *The Nature Conservancy* 1-8.
- Yu W, Fan Z, Moser WK, Hansen MH, Nelson MD. 2012. Estimation of invasive probability of multiflora rose in the upper Midwest. *USDA Forest Service Southern Research Station* 131-135.

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