



College of Food, Agricultural, and Environmental Sciences

Viburnum Leaf Beetle Surveys and Management

Ohio State University-Mansfield Ecolab and Ohio Woodlands Stewards Report



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Viburnum (genus *Viburnum*) have well over 150 species in family *Adoxaceae*, some of which are native to Ohio – Arrowwood *Viburnum* (*V. dentatum*), American Cranberrybush (*V. trilobum*), Blackhaw (*V. prunifolium*), and Mapleleaf *Viburnum* (*V. acerifolium*) to name a few. In addition to native *Viburnum* species, the genus has been the focus of nursery cultivars for many decades as traits are selected for, species are crossed and backcrossed. In the First Energy pollinator planting at OSU-Mansfield, a number of *Viburnum* shrubs are planted as “antennae” for the butterfly plots (Figure 1). At last count, there are 51 total living individuals across 11 species (Table 1). *Viburnum* shrubs are well known to be favored by both bees, butterflies, and moths. Within the order *Lepidoptera*, at least 97 species are dependent upon *Viburnum* species as host plants.



Figure 1. Aerial image of the 4 different pollinator seed mix plots and strips of *Viburnum* shrubs designed to mimic a butterfly’s 4 wing lobes and antennae.

The pollinator plots were established in 2015-16, and some *Viburnum* shrubs were replaced in 2023 due to mortality or overbrowsing by deer. Deer exclusion cages were erected around the 17 new plantings as well as all original shrubs unless shrub height was sufficiently tall to ensure deer herbivory was a non-issue. Though no data has been formally collected, wire exclusion cages have made a significant difference for many of the shrubs as both plant height and leaf volume have improved markedly. Unfortunately, deer are not the only pests targeting the *Viburnum* shrubs. The *Viburnum* leaf beetle (VLB) is an invasive pest first detected in Maine in 1994 after entering the continent from Europe

through Canada several decades prior. In Ohio, Ashtabula County recorded the first observation in 2002. VLB adults and larvae both feed on the foliage of Viburnum host plants with larvae feeding in the mid-spring to early summer and adults feeding from mid-summer to fall. Highly susceptible Viburnums with moderate to high densities of VLB are often completely defoliated; several years of intense consecutive feeding will often kill the host plant.

Table 1. Viburnum shrub species and cultivars included in the First Energy pollinator planting at OSU-Mansfield.

Common Name	Latin Name	Status	Quantity
'Mohawk' Viburnum	<i>V. burkwoodii</i> x <i>V. carlesii</i>	Cultivar, backcross	6
'Red Balloon' Viburnum	<i>V. lantana</i> x <i>V. rhytidophyllum</i>	Cultivar, cross	5
Possumhaw Viburnum	<i>V. nudum</i>	Native	2
Koreanspice Viburnum	<i>V. carlesii</i>	Cultivar	3
Blackhaw	<i>V. prunifolium</i>	Native	3
Judd's Viburnum	<i>V. carlesii</i> x <i>V. bitchiuense</i>	Cultivar, cross	2
Nannyberry	<i>V. lentago</i>	Native	12
Arrowwood Viburnum	<i>V. dentatum</i>	Native	11
American Cranberrybush Viburnum	<i>V. trilobum</i>	Native	5
Wayfaringtree Viburnum	<i>V. lantana</i>	Naturalized	1
European Cranberry Bush	<i>V. opulus</i>	Non-native	1

Published charts show that VLB preference for Viburnum shrub species and cultivars varies (Figure 2). Various sources are in general agreement despite slight inconsistencies here and there; for instance, in an Ohio State Fact Sheet (2016) entitled "Viburnum Leaf Beetle", Sargent Viburnum is noted as moderately susceptible but includes a couple additional species on the Most Susceptible list. While control methods vary from mechanical (pruning), cultural (choosing least susceptible varieties), and chemical (insecticides, horticultural oils), we tediously pruned each Viburnum shrub in autumn 2024 in hopes of curbing VLB egg densities entering the dormant season. During pruning, each individual shrub was assigned a ranking: absent, low, medium, and high egg pit densities (Figure 3). All pruned twigs were bagged and disposed. As follow-up, Viburnum shrubs were surveyed

in spring 2025 approximately 3 weeks after full leaf-out to quantify VLB larvae feeding on leaves. Feeding surveys were conducted in a single 2-day period to ensure results were comparable. Similar to the egg densities, each individual shrub was assigned a ranking: absent, low, medium, and high feeding activity (Figure 4).

Most susceptible to VLB:
<i>Viburnum opulus/trilobum</i> - European cranberry bush viburnum
<i>Viburnum dentatum</i> - arrowwood viburnum
<i>Viburnum sargentii</i> - Sargent viburnum
Moderately susceptible to VLB:
<i>Viburnum acerifolium</i>
<i>Viburnum carlcephalum</i>
<i>Viburnum lantana</i> - wayfaring tree viburnum
<i>Viburnum lentago</i> - nannyberry viburnum
<i>Viburnum macrocephalum</i>
<i>Viburnum pragensense</i>
<i>Viburnum prunifolium</i> - blackthorn viburnum
Resistant to VLB:
<i>Viburnum burkwoodii</i>
<i>Viburnum carlesii</i>
<i>Viburnum lantanoides/alnifolium</i>
<i>Viburnum plicatum f. tomentosum</i>
<i>Viburnum rhytidophyloides</i>
<i>Viburnum rhytidophyllum</i>
<i>Viburnum sieboldi</i>

Figure 2. List of common *Viburnum* species and varieties and corresponding susceptibility to VLB feeding. Source: Weston, 2003.



Figure 3. Viburnum leaf beetle egg pits near the terminal end of branches of a Viburnum shrub (*V. dentatum*). Source: Young (2016).



Figure 4. Representative photos of low, medium, and high feeding rates on Viburnum foliage (*V. trilobum* left; *V. dentatum* center and right). Source: OSU-Mansfield, May 2025.

From the autumn 2024 egg pit density surveys conducted during pruning (mechanical method for VLB control), *V. trilobum* and *V. dentatum* possessed highest infestation levels, *V. prunifolium*, *V. nudum*, and Koreanspice or ‘Spicebaby’ Viburnum had medium susceptibility based on egg densities (Figure 5). *V. lentago* possessed low susceptibility for most shrub individuals with a couple of outliers; all ‘Red Balloon’, ‘Mohawk’, Judd’s, and

Wayfaringtree Viburnum shrub individual had low egg densities. Though Koreanspice Viburnum is listed as Least Susceptible on both lists (Weston, 2003; Young, 2016), we found that a better ranking may be Moderately Susceptible based on our surveys. Results for Blackhaw, Red Balloon, Mohawk, Nannyberry, and Judd's Viburnum were consistent with published information. Possumhaw Viburnum or *V. nudum* expressed the highest VLB susceptibility levels based on egg pit densities in our study; this is consistent with other publications from Ohio and beyond (UMD 2008; Chatfield and Young, 2016). Arrowwood Viburnum and American cranberrybush Viburnum received the highest egg density ratings consistent with the literature (Figure 5). Anecdotally, spring larval feeding activity on Arrowwood Viburnum shrubs is specifically what propelled us to investigate these patterns on the OSU-Mansfield campus.

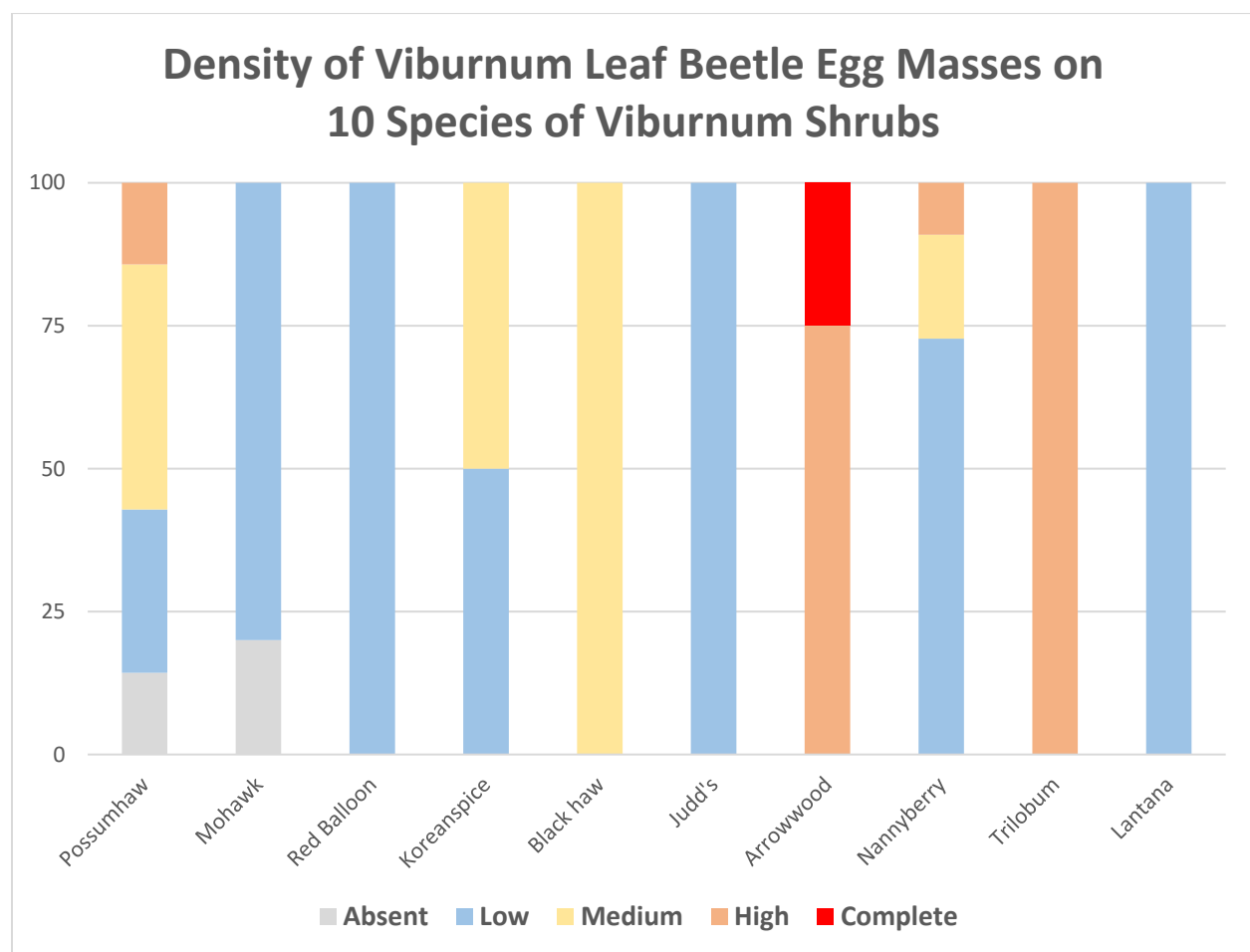


Figure 5. Viburnum leaf beetle egg pit densities as surveyed during autumn 2024, OSU-Mansfield. Absent indicated zero egg pits were detected on a single shrub; complete was assigned if every shoot of new growth from the most recent year possessed egg pits. Data not collected on the single specimen of *V. opulus*.

Surveyed spring 2025 larval feeding intensities on Viburnum shrubs was a function of A) VLB feeding preference and B) effectiveness of pruning control in autumn 2024. It is possible that a shrub of medium susceptibility may exhibit higher feeding activity than a shrub with high susceptibility if the success of the pruning in the preceding fall was not equal between the 2 shrubs. That disclaimer admitted, surveys of larval feeding were remarkably consistent with shrubs possessing high autumn egg pit densities showing greater signs of feeding in the spring despite aggressive pruning in the preceding autumn. Though we do not have year-over-year data on spring larval feeding, shrubs that were completely defoliated in spring of 2023 and 2024 were relatively unimpacted spring 2025; pruning appears to have reduced VLB densities even in the most highly susceptible shrubs.



Figure 6. Deer exclusion cages are an essential part of plant establishment. Image also shows complete defoliation of a Viburnum shrub; photo May 9th, 2024, OSU-Mansfield.

Interestingly, numerous sources make similar statements regarding white-tailed deer damage on Viburnums – “Deer usually steer clear from munching on viburnum”, “Most

viburnum experience little damage from deer”, “Viburnum is one of the shrubs that deer won’t eat due to its scent and taste.” Our experience has not been consistent with these broad and general statements. Rather, with the exception of Koreanspice, Wayfaringtree, and Possumhaw Viburnums, white-tailed deer herbivory was a significant impact to our shrubs until we added exclusion cages (Figure 6). Anecdotally, deer preference appeared highest for Arrowwood, Nannyberry, and American Cranberrybush Viburnums. Not all sources are as dismissive of white-tailed deer; Weeks et al. (2024) lists “Viburnum spp” as preferred deer browse but is not specific beyond genus.

In order to further reduce VLB densities on our Viburnum shrub planting, we plan to repeat VLB egg pruning surveys in autumn 2025 and will report back our updated findings in 2026.

Acknowledgements

Thank you to the ROWs committee for having the foresight a decade ago to collaboratively create the First Energy Pollinator Plots. The site has been a focus of many energizing campus events through the years and continues to be a site where monitoring and case study investigations help shed light on pollinator habitat management opportunities and concerns. This work would not have been possible without the painstaking work of several Ecolab fellows – notably Rachel Coy, Miranda Wacker, Kira Metzger, and Maskin Sidhu.

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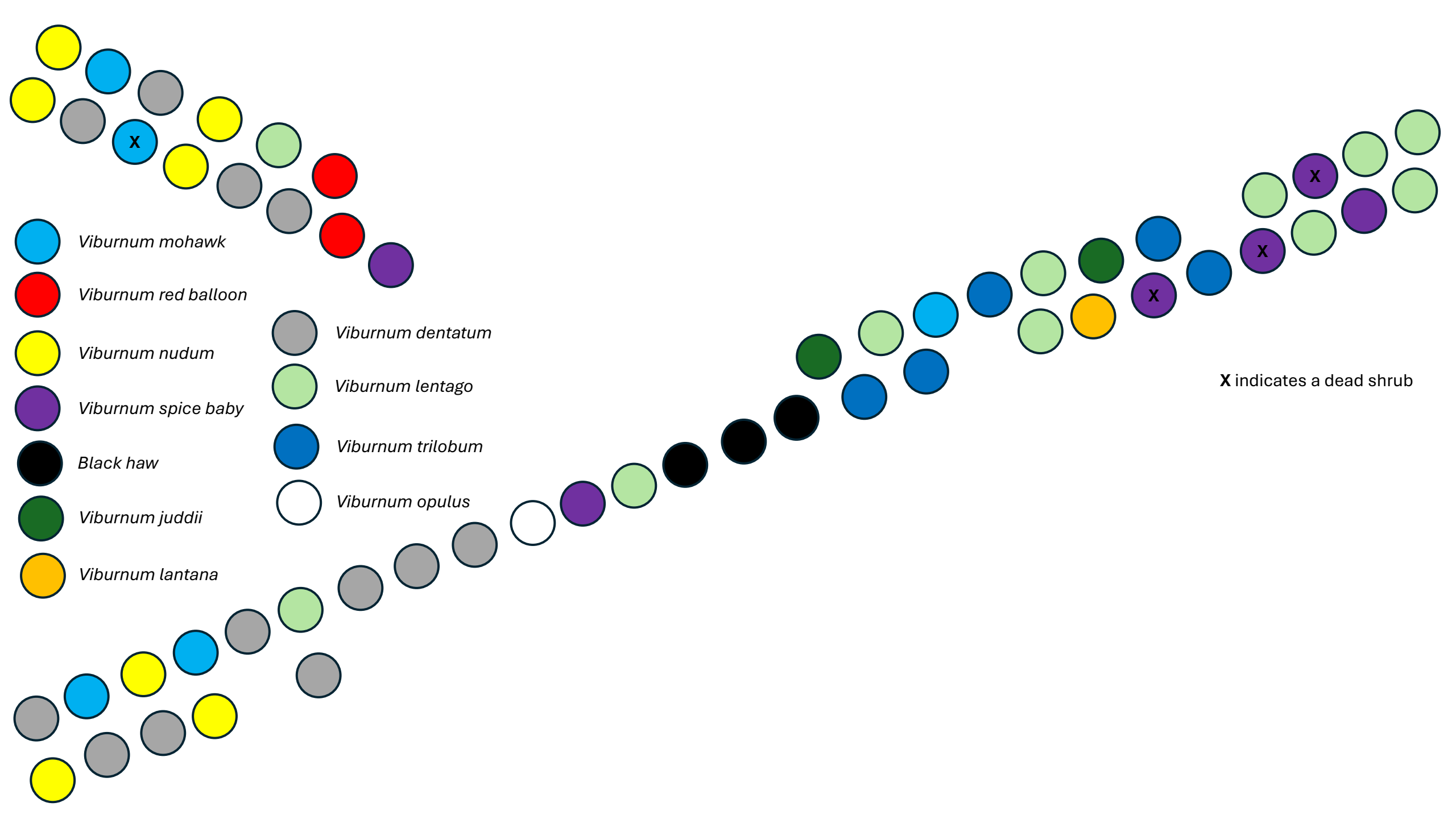
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Viburnum x burkwoodii 'Mohawk'

Status in Ohio: Cultivar, backcross between *V. burkwoodii* & *V. carlesii*

Bloom time: April

Bloom color: White

Distinguishing features: Shiny, dark red flower buds that open to white flowers with red spotting on the underside, strong clove-like smell

Height at maturity: 7-8ft

Optimal site conditions: Well-drained medium soil in full sun

Sources:

- Dirr, M. A. (1998). *Manual of woody landscape plants: Their identification, ornamental characteristics, culture, propagation, and uses* (5th ed.). Stipes Publishing.
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Viburnum x rhytidophylloides 'Red Balloon'

Status in Ohio: Cultivar, cross between *V. lantana* & *V. rhytidophyllum*

Bloom time: April

Bloom color: White

Distinguishing features: Deciduous shrub with fuzzy, dark green leaves that are gray on the underside, has wider leaves than leatherleaf viburnum (*Viburnum rhytidophyllum*)

Height at maturity: 8-10ft

Optimal site conditions: Moist, well-drained slightly acidic soil in full to part sun

Sources:

- Dirr, M. A. (1998). *Manual of woody landscape plants: Their identification, ornamental characteristics, culture, propagation, and uses* (5th ed.). Stipes Publishing.
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Possumhaw *Viburnum* (*Viburnum nudum*)

Status in Ohio: Straight, native species

Bloom time: May-July

Bloom color: White

Distinguishing features: Leaves of *Viburnum cassinoides* are dull compared to *Viburnum nudum* which have smooth, shiny, waxy leaves

Height at maturity: 12-20ft

Optimal site conditions: Wet, acidic soil in part shade

Sources:

- *BONAP's North American Plant Atlas*. (2014, December 15). BONAP. Retrieved July 18, 2025, from <https://bonap.net/Napa/TaxonMaps/Genus/County/Viburnum>
- Dirr, M. A. (1998). *Manual of woody landscape plants: Their identification, ornamental characteristics, culture, propagation, and uses* (5th ed.). Stipes Publishing.
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Koreanspice Viburnum (*Viburnum carlesii*) 'Spice Baby'

Status in Ohio: Cultivar

Bloom time: March-April

Bloom color: White

Distinguishing features: Dark green leaves with a sheen, flowers very fragrant, old stems show fissuring

Height at maturity: 4-5ft

Optimal site conditions: Medium, well-drained soil in full to part shade

Sources:

- Dirr, M. A. (1998). *Manual of woody landscape plants: Their identification, ornamental characteristics, culture, propagation, and uses* (5th ed.). Stipes Publishing.
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Blackhaw Viburnum

(*Viburnum prunifolium*)

Status in Ohio: Straight, native species

Bloom time: April-June

Bloom color: White

Distinguishing features: *Viburnum prunifolium* has unwinged petioles whereas *Viburnum lentago* features winged petioles

Height at maturity: 12-15ft

Optimal site conditions: Medium soil in full to part sun

Sources:

- *BONAP's North American Plant Atlas*. (2014, December 15). BONAP. Retrieved July 18, 2025, from <https://bonap.net/Napa/TaxonMaps/Genus/County/Viburnum>
- Dirr, M. A. (1998). *Manual of woody landscape plants: Their identification, ornamental characteristics, culture, propagation, and uses* (5th ed.). Stipes Publishing.
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Judd Viburnum (*Viburnum x juddii*)

Status in Ohio: Cultivar, cross between *V. carlesii* & *V. bithchiuense*

Bloom time: March-April

Bloom color: White

Distinguishing features: Snow-ball like flower clusters that are very fragrant, flower buds are dark pink in color

Height at maturity: 6-8ft

Optimal site conditions: Moist, well-drained soil in full to part sun

Sources:

- Dirr, M. A. (1998). *Manual of woody landscape plants: Their identification, ornamental characteristics, culture, propagation, and uses* (5th ed.). Stipes Publishing.
- Dirr, M. A. (2007). *Viburnums: Flowering shrubs for every season*. Timber Press.
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Arrowwood Viburnum (*Viburnum dentatum*)

Status in Ohio: Straight, native species

Bloom time: May-June

Bloom color: White

Distinguishing features: Leaves shiny, dark green on surface and light on underside with coarsely toothed margin, flowers feature unpleasant fragrance

Height at maturity: 6-15ft

Optimal site conditions: Moist, loamy soil with neutral pH in part sun

Sources:

- *BONAP's North American Plant Atlas*. (2014, December 15). BONAP. Retrieved July 18, 2025, from <https://bonap.net/Napa/TaxonMaps/Genus/County/Viburnum>
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Nannyberry (*Viburnum lentago*)

Status in Ohio: Straight, native species

Bloom time: April-June

Bloom color: White

Distinguishing features: Shiny, dark green leaves feature a finely serrated margin, petiole is partially winged

Height at maturity: 15-30ft

Optimal site conditions: Moist, well-drained soil in full to part sun

Sources:

- *BONAP's North American Plant Atlas*. (2014, December 15). BONAP. Retrieved July 18, 2025, from <https://bonap.net/Napa/TaxonMaps/Genus/County/Viburnum>
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- *Viburnum lentago*. (2022, October 11). Lady Bird Johnson Wildflower Center. Retrieved July 18, 2025, from https://www.wildflower.org/plants/result.php?id_plant=vile



American Cranberrybush (*Viburnum opulus* var. *americanum* or *Viburnum* *trilobum*)

Status in Ohio: Native, straight species

Bloom time: May

Bloom color: White

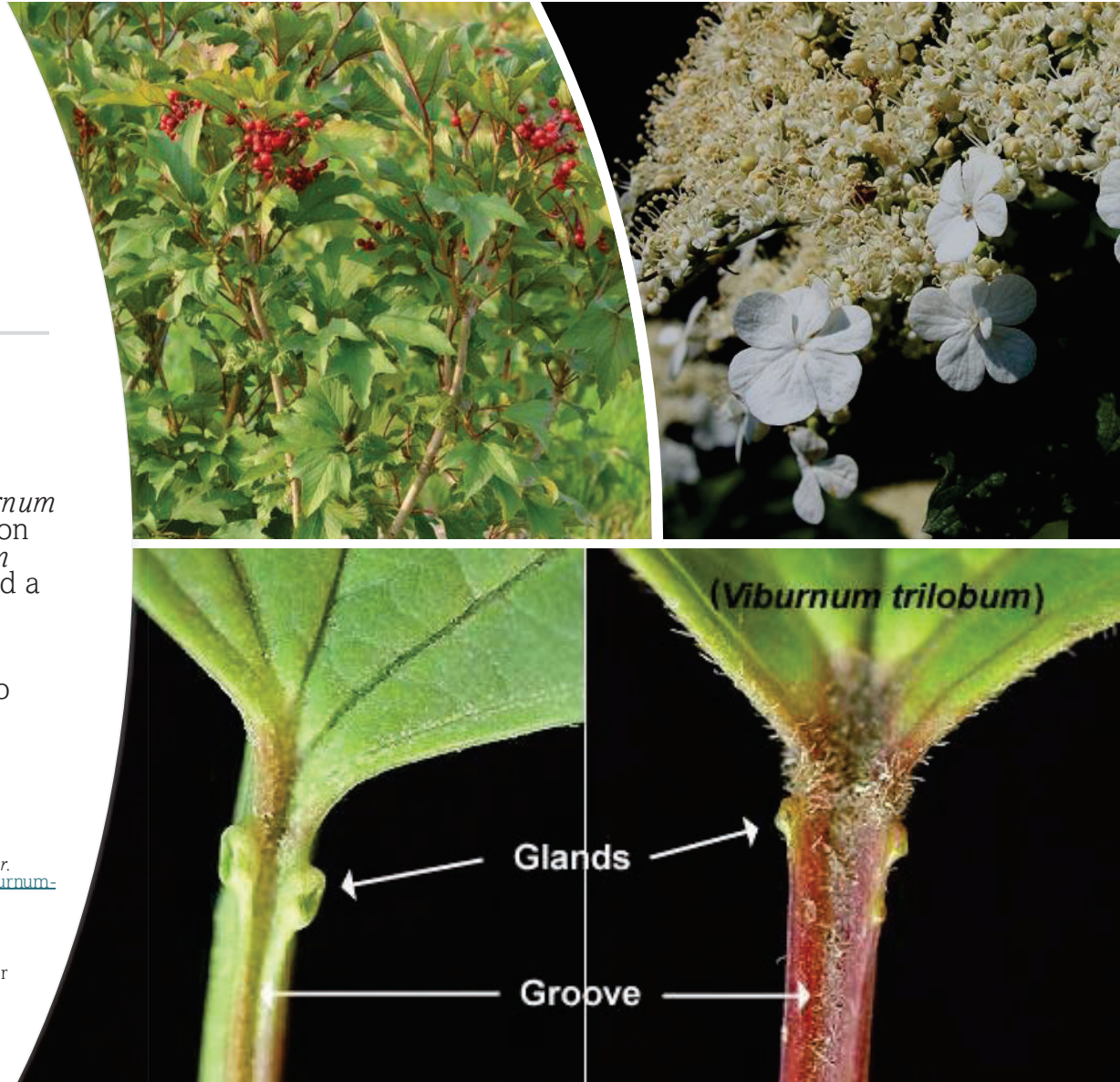
Distinguishing features: European Cranberrybush (*Viburnum opulus*) has large bowl-like glands and a narrow groove on the petiole whereas American Cranberrybush (*Viburnum opulus* var. *americanum*) has smaller bump-like glands and a wide groove on the petiole

Height at maturity: 8-12ft

Optimal site conditions: Moist, well-drained soil in full to part sun

Sources:

- Dirr, M. A. (1998). *Manual of woody landscape plants: Their identification, ornamental characteristics, culture, propagation, and uses* (5th ed.). Stipes Publishing.
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Wayfaringtree Viburnum (*Viburnum lantana*)

Status in Ohio: Exotic

Bloom time: April-May

Bloom color: White

Distinguishing features: Leaves are uniformly serrated and densely woolly on the underside

Height at maturity: 10-20ft

Optimal site conditions: Well-drained, loamy soil in full to part sun

Sources:

- *BONAP's North American Plant Atlas*. (2014, December 15). BONAP. Retrieved July 18, 2025, from <https://bonap.net/Napa/TaxonMaps/Genus/County/Viburnum>
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