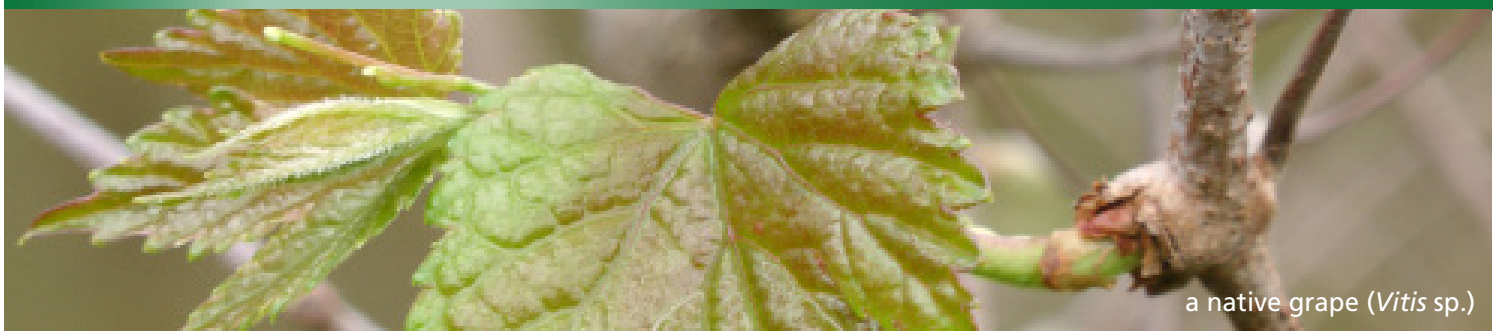
Chesapeake & Ohio Canal NHP

National Park Service
U.S. Department of the Interior

Vines

Resource Brief



a native grape (*Vitis* sp.)

Photo: NPS

The Chesapeake and Ohio Canal National Historical Park stretches 184.5 miles along the northern side of the Potomac River. It begins in the Coastal Plain, and continues up through the Piedmont Plateau, Blue Ridge, and ends in the Ridge and Valley physiographic province. It is home to rare natural communities and a wide range of plant and animal life.

To protect these special resources, National Park Service staff from the Inventory and Monitoring (I&M) program monitors forests in Chesapeake and Ohio Canal National Historical Park (Chesapeake & Ohio Canal NHP or C&O), tracking the growth of park vegetation including trees and vines.

Monitoring takes place at 74 plots in C&O where every tree is inspected for the presence of vines and the species of each vine is recorded. This brief presents the most recent data on vines found in I&M forest plots in C&O.

What is a Non-Native Invasive Vine?

A vine is a weak-stemmed plant that requires other plants or structures to support itself and grow upward.

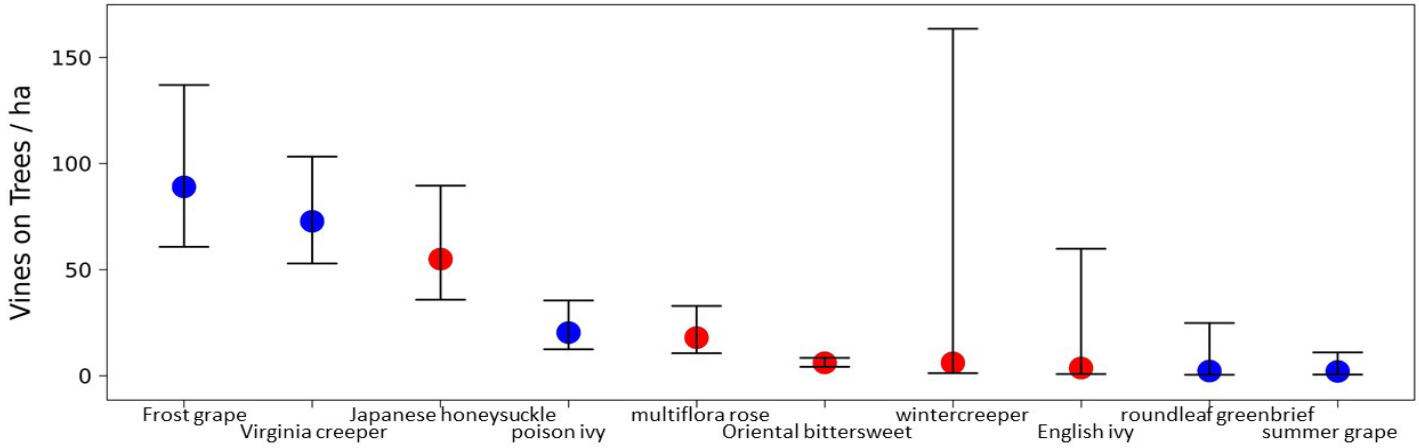
Non-native plants are plants introduced from other regions or habitats. They're sometimes called weeds, exotics, or invasives. Non-native invasives can disrupt naturally-balanced plant and animal communities by growing aggressively, adapting quickly to new habitats, and multiplying. Wildlife that is dependent on native plants is often unable to adapt and is forced to migrate to the ever shrinking suitable habitat that remains.

Vines and Wildlife

Vines provide an important food resource for birds, deer, and native moth species. Some vines, such as the native frost grape (*Vitis vulpina*), can be one of the only food sources for resident birds during the cold winter months. Vines also offer nesting material for birds from their shredded bark and they provide shelter for many mammals.

C&O Canal's Top 10 Vines: This graph shows the ten most widespread vine species at C&O. Half are natives (in blue) and half are non-native, invasive (in red). Overall, vine numbers are increasing across the National Capital Region, with non-native, invasives like Japanese honeysuckle, oriental bittersweet, and winter creeper spreading faster than native vine species. The large error bar for winter creeper indicates that the vine was unevenly spread amongst monitored plots. This image was produced using the NCRN forest vegetation visualizer.

C&O Canal: Most Common Vines on Trees (2011-2014)



Embracing Poison Ivy

Typically, poison ivy (*Toxicodendron radicans*) gets a bad reputation for being a nuisance that causes itchy rashes in humans. However, it is actually an important food source for many wildlife species. Eastern cottontail rabbits, white-tailed deer, and muskrats have been known to eat the leaves and stems. Poison ivy's fruit is an especially important food source for many animals such as crows, bluebirds, and turkeys. Birds, such as northern cardinals and American goldfinches use the vine's thread-like hairs to build their nests. Poison ivy's leaves can also provide shelter for a variety of small animals and provide food for many insect species as well. Despite all of the negative attention it receives, poison ivy is a welcome native. For these reasons, the park only manages poison ivy in areas where it is directly affecting park visitors.

Twining and Clinging

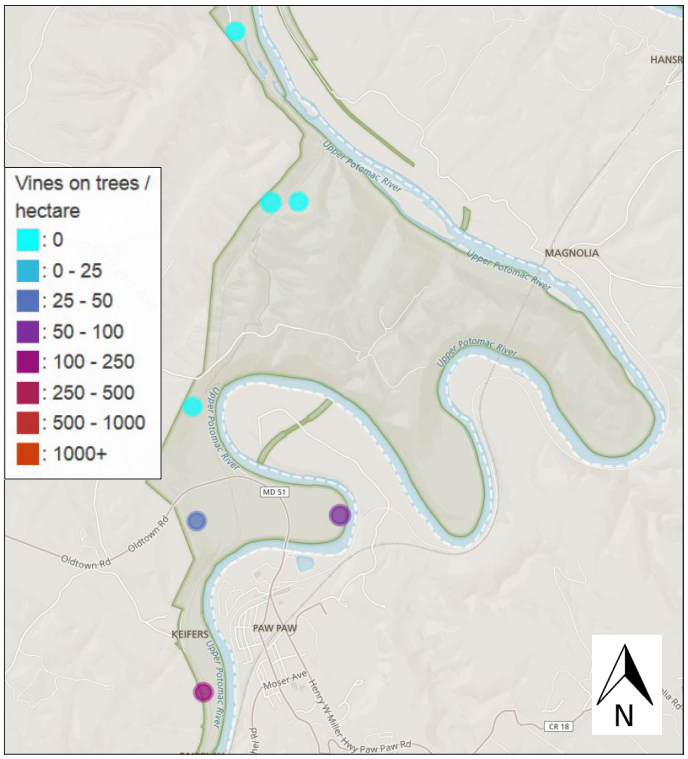
Many non-native, invasive vines such as Oriental bittersweet (*Celastrus orbiculatus*) and Japanese honeysuckle (*Lonicera japonica*) are twining vines known to strangle and kill trees. They do so by twining tightly around parts of the tree, cutting through the bark, and blocking the tree's internal flow of water and nutrients. This twining trait is generally more common for non-native, invasive species and can stunt tree growth, as well as increase tree mortality.

Other methods of climbing are less destructive. Native vines like Virginia creeper (*Parthenocissus quinquefolia*) will climb high into the tree canopy by adhesively clinging to the bark. Native grape vines will climb trees using tendrils that grasp onto branches and other supporting objects. Unlike strangling, twining vines, grapes will hang loosely from the trees and normally do not choke their host tree.

Effects of Vines

Despite their way of climbing though, all vines have the potential overwhelm their host by covering branches and blocking sunlight. This can eventually kill a tree. An infested tree can show signs of decline for several years before it dies. Although the death of a tree can allow for more sunlight to reach the forest floor—that sunlight can fuel both native vine species and harmful non-native, invasives. Non-native invasives have succesfully exploited these opportunities and are increasing at a faster rate than their native competitors.

As vines grow higher onto tree branches and stems, their sheer weight is capable of snapping large limbs. The loss of these branches means a loss of leaves and reduces the ability of the tree to gain energy from the sun. Resulting tree death can lead to a less biodiverse forest and an unhealthy mature tree canopy. Additionally, large falling branches can pose a safety and financial hazard for the park and its visitors.



Frost grape, C&O's most common type of vine on a tree, is shown here in the area of the PawPaw tunnel. Colored dots show the number of frost grape vines on trees per hectare in C&O's forest monitoring plots. (Map produced using NCRN Forest Vegetation Visualizer.)

Help Lend a Hand

C&O Canal NHP does host volunteer groups to help control these non-native, invasive species. Visit the park's volunteer page (http://www.nps.gov/choh/getinvolved) or Facebook page (www.facebook.com/chesapeakeandohiocanal/) to check for opportunities. And remember, removing vines in C&O without authorization is illegal and poor methods or mis-identification of species can cause great harm.

Forest Vegetation Visualizer

The Forest Vegetation Visualizer shares NCRN I&M forest monitoring results with NPS staff and the public. It was used to create the graph and map in this brief.

Any user can create maps, graphs, and species lists from forest data for the eleven National Parks in the greater Washington, DC area using the visualizer (http://irmadev.nps.gov/r-reports/NCRN/ForestVeg/). To learn more about NCRN forest monitoring, visit: http://science.nature.nps.gov/im/units/ncrn/monitor/forest/index.cfm.

Common Vines of Chesapeake & Ohio NHP

Non-Native, Invasive Species

Japanese Honeysuckle

(*Lonicera japonica*)

- Leaves: simple, ovate, opposite.
- leafless in winter
- white & yellow double-tongued flowers with sweet aroma
- twining, strangling vine
- Bark: khaki color and shredding.

Look-alikes: Trumpet creeper vine hangs loose from tree and has red to orange trumpet-shaped flowers.

Oriental Bittersweet

(*Celastrus orbiculatus*)

- Leaves: rounded and serrated, usually glossy, alternate.
- leafless in winter
- twining, strangling vine
- Bark: when young brown with distinct lenticels. Grayish when mature.

Look-alikes: Roundleaf green-brier has spines and green stems while bittersweet is spineless with brown to gray stems.

Chinese Wisteria

(*Wisteria sinensis*)

- Leaves: 7-13 egg-shaped leaflets with wavy-margins make up one leaf. Alternate.
- strangling vine when mature
- Flowers: lavender to purple, in clusters.
- smooth, gray-brown stems
- can spread by horizontal above-ground roots.

Look-a-likes: Trumpet creeper has opposite leaves with toothed margins and red to orange flowers.

Native Species

Frost Grape

(*Vitis vulpina*)

- Leaves: heart-shaped, smooth, alternate.
- leafless in winter
- burgundy color stringy bark with dark pith inside.
- tendril climber

Look-alikes: Porcelainberry bark has blocky texture when mature, with white pith inside vine.

Virginia Creeper

(*Parthenocissus quinquefolia*)

- Leaves: 5 leaflets attached to center point
- often grows as groundcover
- adhesive clinging vine
- Bark: blocky, brown with thick adhesive hairs.

Look-alikes: Poison ivy has 3 leaflets. Oriental bittersweet bark has distinct lenticels when young.

Poison Ivy

(*Toxicodendron radicans*)

- Leaves: compound leaves of three, ovate shiny leaflets, alternate
- Bark: burgundy colored with hairy aerial roots.
- green drooping fruit

Look-alikes: Box elder tree is not a vine. English ivy bark is pale colored when mature. Virginia creeper has 5 leaflets attached to center point.

All photos are credit NPS except: frost grape leaf- J.K. Marlow; Oriental bittersweet leaves- Bill Johnson.

National Capital Region Network
http://science.nature.nps.gov/im/units/ncrn
202-339-8314

Protocol Website:
More information and full reports may be found at http://science.nature.nps.gov/im/units/ncrn/monitor/forest/index.cfm

Common Vines of Chesapeake & Ohio NHP

Non-Native, Invasive Species

English Ivy

(*Hedera helix*)

- Leaves: dark green & waxy, palmate, alternate. Darken with age.
- very visible in winter
- common in landscapes
- hairy aerial root climber
- Bark: pale and hairy.

Look-alikes: Poison ivy bark is burgundy color.

Winter Creeper

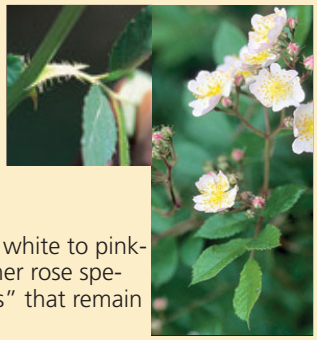
(*Euonymus fortunei*)

- Leaves: broad ovate-elliptic with serrated margins, opposite.
- leaves and red fruits visible in winter
- aerial rootlets
- hairy greenish-brown stems grow up unsupported when young and attach to tree when mature

Look-alikes: Poison ivy has compound leaves of three that drop in winter. English ivy fruits are black.

Multiflora Rose

(*Rosa multiflora*)



- Sometimes multi-stemmed shrub, sometimes climbing vine.
- Leaves: five to eleven sharply toothed leaflets; leaf stalks have paired wing-like structures.
- Arching stems and hooked thorns.
- Flowers: clusters of showy, fragrant, white to pinkish, 1 in. wide flowers. Similar to other rose species, fruits are small, bright red "hips" that remain on the plant through the winter.

Look-alikes: pasture rose (*Rosa carolina*); swamp rose (*Rosa palustris*); Allegheny blackberry (*Rubus allegheniensis*); flowering raspberry (*Rubus odoratus*). Only multiflora rose has the combination of upright arching stems and fringed growths on the base of the leaf stalk.

Native Species

Roundleaf Greenbrier

(*Smilax rotundifolia*)

- Leaves: glossy, nearly circular, alternate.
- leaves present in winter
- stems round with sharp, straight spines
- forms tangles when unsupported

Look-alikes: Multiflora rose has hooked thorns. Oriental bittersweet has serrated leaf edges.

Summer Grape

(*Vitis aestivalis*)

- Leaves: variable from unlobed to deeply 3 & 5 lobed. green above, very fuzzy and pale below
- burgundy color stringy bark with dark pith inside.
- tendril climber

Look-alikes: Porcelainberry bark has blocky texture when mature, with white pith inside vine.

All photos are credit NPS except: winter creeper fruit- D.L. Nickrent/PhytoImages; multiflora rose- Bill Johnson and James Miller; roundleaf greenbrier stem- John Hilty; and summer grape leaf- D. Profant.

Additional References:

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