# Welcome!

**The Buck Mountain Garden Club is pleased to open our doors to the public for this important program about Invasive Plants which are negatively impacting our local landscape.**

We are delighted to welcome two incredibly knowledgeable volunteers of the Blue Ridge PRISM, **Rod Walker** and **William Hamersky**, to speak to this issue and offer ways that we, as homeowners, can address the problems we have with our own properties.

Topics covered in program will include:

- Identifying invasive plants
- Which invasive plants you can best control now
- Which invasive plants should be controlled later
- Best seasonal practices for each invasive plant
- Using manual & mechanical control methods
- Methods for controlling invasive plants with herbicide
- Choosing the right herbicide and equipment, and using them properly and safely
- Planning a work schedule and best timings for multiple plants

In this handout:

1- Blue Ridge PRISM – Mission, Goals, and Landowner Program
2- Bios for speakers, Rod Walker and William Hamersky
3- "Treatment Pages" – which invasive species, why removal is needed, and how to achieve that
4- Detailed pages addressing 6 specific invasive plants – Asiatic Bittersweet, Japanese Honeysuckle, Kudzo, Japanese Stilt grass, Mile-a-minute, and Porcelain Berry

Please text Virginia Gardner, 434-981-0871, if you would like a PDF of this information package to share with others.

Thank you to Buck Mountain Episcopal Church for the use of Deese Hall!

**The Buck Mountain Garden Club – https://bmgcearlysville.com**

Established 1981

The Buck Mountain Garden Club (BMGC) was established to "stimulate the interest, knowledge and love of the fine art of gardening in all its aspects; to aid in the protection and conservation of our natural resources; to encourage civic beauty; and to support Charlottesville and Albemarle County by encouraging knowledge of gardening and development of home gardens." *We would love for you to join us!*

# Blue Ridge PRISM – https://blueridgeprism.org

# MISSION AND OVERVIEW

The mission of the Blue Ridge PRISM is to reduce the impact of invasive species in our targeted geography.

Our targeted geography is the 10 county area in Virginia on both sides of the Blue Ridge stretching from Nelson and Augusta counties on the south up to Clarke County at the north end. See the map below. This area is a little less than 3 million acres.

In naming this a PRISM and using the words “invasive species” in the title, the intention was to leave the door open to expanding the scope of our activities even though the intent initially is to focus on invasive terrestrial plants, as opposed to aquatic plants, insects, pathogens, animals, et al. Furthermore the focus on terrestrial plants is initially further focused on plants mostly associated with forested areas, which may include some fields and meadows.

# GOALS AND TACTICS OF THE BLUE RIDGE PRISM

The goals of the Blue Ridge PRISM are to:

- Focus on the 10-20 most damaging invasive plants. As of today our list includes:

  o Ailanthus
  o Autumn olive
  o Chinese privet
  o Garlic mustard
  o Japanese honeysuckle
  o Japanese stilt grass
  o Kudzu
  o Mile a minute vine
  o Multiflora rose
  o Oriental bittersweet
  o Porcelain berry
  o Wavy leaf basket grass

- Push these plants into the background such that they are not threats to the native plants, don't dominate the ecosystems and cause minimal damage
- Prevent the introduction of new invasives into our defined geography
- Promptly deal with newly arrived invasive plants such that they are eliminated or contained and don't spread across a wide area
- Set an example that leads to the establishment of other CWMAs in Virginia

Key tactics to be employed to achieve those goals include:

- Implementation of landowner focused programs to encourage and assist in the control of the targeted invasives
- An early detection and rapid response program to deal with new invasive plants
- Education and outreach programs for the general public and landowners to increase awareness and generate interest in participating in our programs
- Prevention programs that limit the sale and importation of invasive plants in Virginia and otherwise reduce the spread of invasive plants within the state
- Research programs that keep us abreast of the latest information on dealing with our targeted species including the potential for effective biocontrols
- Growth in our membership to include all the major conservation organizations that operate in our geography plus as many landowners as possible and other interested parties

# LANDOWNER PROGRAMS

The principle landowner programs of the Blue Ridge PRISM will be:

The availability and dissemination of **landowner kits** for each of our targeted species. These kits will be made up of existing third party materials plus supplemental materials prepared by the PRISM. Each kit will include the following information:

- Why the species is on our targeted list
- How to identify it and distinguish it from similar non-targeted species
- Recommendations for how to treat it

**Volunteer assistance** for landowners seeking to understand what is growing on their land

The **Area Stewards program** is a proactive program to recruit landowners to collaborate and work together across larger and larger contiguous areas. The idea is to have passionate landowners who are treating invasives on their own lands contact and recruit their neighbors to do similar work and thereby create islands of control that grow larger and larger every year. The Blue Ridge PRISM will recruit additional Area Stewards and support the Area Stewards in several ways:

- Required tools, sprayers, chemicals, et al, where to buy them, what they should cost, et al
  What remedial work is recommended to add or encourage native species to fill the gap, including where to obtain recommended plants and how to establish them
- Who to contact if professional assistance is desired

  Alternative sources of financial assistance and how to obtain such assistance

  How to coordinate with other landowners and right of way owners

**When a landowner contacts us and ask if someone is available to come to their property** to help them understand what they are looking at, PRISM volunteers will be available to make “house calls”, walk the land and help the landowner understand what they have on their land. These volunteers will aid with identification of plants, provide materials (e.g. the landowner kits) and refer them to various sources of assistance. These volunteers are not experts in treatments and are not there to give professional advice. Their role is limited to education (helping the landowners understand what they have) and providing information.

# OUR SPEAKERS

## William Hamersky

William has a BSc in Wildlife Biology from SUNY College of Environmental Science and Forestry in Syracuse with a minor in Forest Botany. He also has an MS in Biology (working on the Walnut Husk Fly) from Cal State University Hayward, CA.

William spent over 30 years as a licensed General Contractor in California and also worked for 13 years as a Vector Biologist for 2 different mosquito abatement districts. William always considered himself a Naturalist. He spent 23 years as a volunteer docent at Strybing Arboretum and Botanical Gardens in San Francisco, including a stint as the Docent Council Chair on their Board of Directors. He is a Master Gardener, Master Naturalist, Tree Steward and conducts many of the Blue Ridge PRISM invasive plant workshops as well as volunteering at events.

He has 10 + years of sword fighting experience (historical European martial arts: rapier, dagger, longsword, etc.) which can come in handy fighting invasive plants. He has also been a jouster (yes, with ten foot lances) for over 10 years.

## ROD WALKER

Rod has been a timberland owner for over 45 years. Having owned land in Wisconsin and West Virginia, he and Maggie purchased their land in Albemarle County, Virginia in 1998 and moved there full time in 2012. Prior to retiring, Rod spent 40+ years in IT consulting - totally unrelated to forestry.

Their timberland ownerships were originally for investment and enjoying various outdoors activities. Over time serious forestry activities crept in, starting with planting pine plantations, timber harvests and eventually moving into invasive species management.

While working on invasive plants on their Albemarle property, Jake Hughes from the Shenandoah National Park made them aware of the concept of Cooperative Weed Management Areas (CWMAs). Together with Jake, they organized the first CWMA to be formed in Virginia, now known as the Blue Ridge PRISM, to address invasive plants across 12 counties of Virginia, comprising more than 3.5 million acres. Rod is currently the President of Blue Ridge PRISM, Inc. For information on the Blue Ridge PRISM, visit blueridgeprism.org.

In 2023 Rod was recognized as the Virginia Tree Farmer of the Year by the Virginia Tree Farm Foundation. (continued on next page)

Rod is also on the:

- Board of Directors for the Virginia Chapter of the American Chestnut Foundation,
- Virginia Department of Forestry Hardwood Steering Committee,
- Virginia Department of Forestry Forest Stewardship Coordinating Committee,
- Noxious Weeds Advisory Committee for the State of Virginia, which recommends changes to the state's Noxious Weeds law and regulations, and
- Forest Land Ownership Council for the VA Forestry Association.

# Non-Native Invasive Plant Species Control Treatments

*Timing, Methods and Herbicide Rates*

Forestry Topic 31 www.dof.virginia.gov October 2018

This is a list of management tactics for major invasive plants, not a comprehensive control plan. For recommendations specific to your property, consult a professional forester or land resource manager. Follow all label prohibitions, precautions and safety requirements during herbicide transport, storage, mixing and application.

| | INVASIVE PLANT | CONTROL TIMING | CONTROL METHOD | HERBICIDE RATES * | NOTES |
|---|---|---|---|---|---|
| GRASSES | Japanese Stiltgrass | Prior to seed maturity | Manual – hand pull | | Remove all roots |
| | | Prior to seed maturity | Mechanical – mow/cut repeatedly | | To reduce seed formation |
| | | Late spring – late summer | Foliar spray | Sethoxydim 1.5% or Glyphosate 0.5%-2% | Several years needed to control seed bank |
| | Wavyleaf Grass | Prior to seed maturity | Manual – pull small areas | | Follow-up treatment required |
| | | Late May – early June, again in late June – early July | Foliar spray | Glyphosate 2%, Clethodim 1% | Several years (as needed); avoid plants that have set seed |
| HERBS/FORBS | Garlic Mustard | Late spring – early summer, prior to any seedpods maturing to brown | Manual – hand pull and remove taproot | | Do not leave flowering plants on ground, seeds will form; bag/ remove flowering plants |
| | | March – June, before seedpods | Mechanical – mow or cut | | To reduce seed formation |
| | | Late fall – winter is best, but susceptible any time | Foliar spray on evergreen leaves | Glyphosate or Triclopyr 2% | Dormant season timing protects many other species |
| VINES | Gen. Recommendations for All Vines | All year when soil is moist | Manual – hand pull small vines | | Remove as many roots as possible to prevent resprouts |
| | | Any | Manual or mechanical – cut to “treatable” height | | Follow-up with foliar herbicide applied to resprouts |
| | | June – October, through winter for evergreen species | Foliar spray | Glyphosate 2%-3% or Triclopyr 2%-5% | Several years (as needed) |
| | | June – February | Basal spray | Triclopyr ester 20%-25% | Follow-up usually required |
| | | June – August | Foliar spray | Metsulfuron 2-4 oz./acre | Several years (as needed) |
| | | June – February, late summer – fall ideal | Cut stump | Glyphosate or Triclopyr ester 20%-25% | Follow-up usually required; highly selective and uses minimal herbicide |
| | Japanese Honeysuckle | Before seed formation | Foliar spray | Glyphosate 2%-3% or Triclopyr 2%-5% | Treat evergreen leaves on warm days in winter |

* Rates are listed as common herbicide formulations. Application rates may vary with specific products so always follow label instructions.

# Non-Native Invasive Plant Species Control Treatments

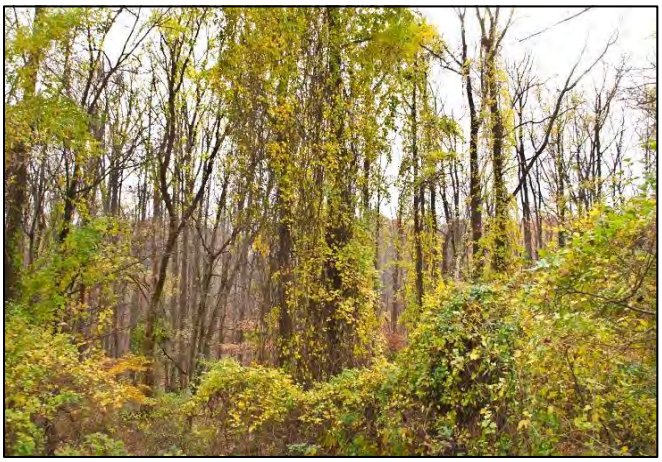
| | INVASIVE PLANT | CONTROL TIMING | CONTROL METHOD | HERBICIDE RATES * | NOTES |
|---|---|---|---|---|---|
| VINES, continued | Porcelain-berry | June to October, late summer – early fall ideal | Foliar spray | Triclopyr 2%-3% | Manual ineffective due to extensive root system |
| | Oriental Bittersweet | All year, late summer – fall ideal | Injection or hack-n-squirt | Triclopyr amine or Glyphosate undiluted | Vines more than 1 inch in diameter |
| | Mile-a-Minute | May – October | Manual/mechanical – hand pull, mow or cut repeatedly | | Protect skin from thorns |
| | | May – July | Foliar spray | Glyphosate 1% or Triclopyr 1%-2% | Likely to injure other plants |
| | Kudzu | All year | Manually remove all root crowns | | |
| | | All year | Mechanical – mow and cover with plastic sheeting | | Leave sheeting in place two years |
| | | July – September | Mechanical – cut or mow to ground | | Many, many years needed |
| | | June – October | Foliar spray | Picloram 3% | *Restricted use pesticide |
| | | July – September | Foliar spray | Metsulfuron 3-4 oz./acre, Triclopyr 4%, Clopyralid 1.3 pt./acre, Aminopyralid 7 oz./acre | Repeat in successive years |
| | | June – February | Basal spray | Triclopyr ester 20% | Woody stems |
| | | June – February | Injection or hack-n-squirt | Imazapyr, Triclopyr amine or Glyphosate undiluted | Vines more than 1 inch in diameter |
| SHRUBS | Gen. Recommendations for All Shrubs | When soil is moist | Manual – hand pull small plants | | Roots left in ground resprout |
| | | When fruit is not present | Mechanical – cut or mow | | Follow-up treatment required |
| | | June – February | Foliar spray | Imazapyr 1% or Triclopyr 2% | Several years (as needed) |
| | | June – February | Cut stump | Imazapyr 5%-10% or Glyphosate 20% | Selective, minimal herbicide |
| | | June – February | Basal spray | Triclopyr ester 20% | |
| | Multiflora Rose | See General Recommendations for all shrubs | | | |
| | | June – October | Foliar spray | Glyphosate 2%-4% or Triclopyr 1% | |
| | Autumn Olive | See General Recommendations for All Shrubs | | | |
| | Chinese Privet | See General Recommendations for All Shrubs | | | |
| TREES | Gen. Recommendations for All Trees | June-February | Injection or hack-n-squirt | Triclopyr or Imazapyr undiluted | Small to large trees |
| | | July – February | Basal spray | Triclopyr ester 20%-25% | Saplings |
| | Tree-of-Heaven | See General Recommendations for All Trees | | | Follow-up usually required |
| | | Summer – fall | Foliar spray | Triclopyr 2% | Seedlings, saplings, resprouts |

* Rates are listed as common herbicide formulations. Application rates may vary with specific products so always follow label instructions.

# ASIATIC BITTERSWEET

## Strangles Trees & Smothers Understory

*Massive Asiatic bittersweet vines, shown at left, have climbed high into the trees. The vines are more than 20 years old and their weight will soon topple the large, old trees they climb.*



*In this fall scene, the trees have dropped their leaves. All of the yellow-green foliage is from Asiatic bittersweet vines that have climbed high into the trees and smothered understory shrubs.*

### The Culprit

This beautiful vine is a real beast. First introduced to the US from Asia in the 1860s as an ornamental garden plant, it quickly escaped from gardens. Asiatic bittersweet (*Celastrus orbiculatus*) boasts golden fall color and brightly-colored berries that are showy from fall into winter. Looks can be deceiving, however, because this attractive vine has an aggressive agenda: growing as fast as it can into the tree tops, grabbing onto its neighbors, strangling and toppling anything in its path, and smothering shrubs, wildflowers and future tree generations on the ground. It scatters its seeds far and wide with the help of birds and people. This vigorous vine threatens wooded areas of the Blue Ridge, and its range expands with each passing year.

**Left:** *Asiatic bittersweet is spread by birds and by people who use the fruits for decorations.*

**Right:** *Leaves have toothed edges and are widely spaced around undulating stems. They may be pointed or not.*

### Known Hangouts

Asiatic bittersweet thrives in disturbed soil and tolerates full sun and dappled shade. It may occur abundantly around old homesites, in fields and fencerows, along road edges, and in forests throughout the Blue Ridge. This invasive vine is present in the eastern US from Maine through Georgia and west to Wisconsin and Missouri. It has been a serious pest in New England since the 1970s.

### Modus Operandi

Because bittersweet seedlings tolerate shade, the vine can get a start in a young or mature forest and rapidly ascend into the tree canopy. The branching vines encircle trees and girdle their trunks as they grow skyward. The dense shade cast by the vines kills saplings and prevents tree seedling germination. The sheer weight of the vines can topple trees, especially during storms.

If the leafy vines have no tall tree to climb, they are quite willing to blanket shrubs and low vegetation. In either case, the culprit can kill both by strangling with its twining vines or by smothering with its stems and foliage. And often both methods spell the death of the plants it attacks. The brightly colored fruits attract birds, which eat them in fall and winter, and people, who cut the berry-laden vines for decorations. This way, seeds spread from one location to another. Seeds germinate readily even in low light and usually germinate in spring within a few years of dropping. The vine also spreads underground by enthusiastic root suckers and its branches can root at their tips, forming a tangle of vegetation.

*Follow all herbicide label directions.*

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*The bark of mature bittersweet has a characteristic raised netted pattern that makes it easy to identify.*

## Positive Identification

Asiatic bittersweet grows as a twining or sprawling, many-branched, deciduous vine with woody stems. It can scale trees up to 60 feet high. Stems of old vines may resemble small trees; 4-inch diameter trunks are common and even larger ones are reported. The bark on the vine's trunk is light to medium tan or gray with a distinctive pattern of irregular netting. Small branches have tan or gray bark marked with small, whitish-gray bumps (lenticels), while the youngest branches are very slender with green or dark brown bark. Bark on the roots is bright orange. The bark and dormant leaf buds, which are oddly recessed into the stems and covered with a thorn-like bud scale, are helpful for winter identification.

*Asian bittersweet seedlings often get their start at the base of trees where birds have dropped the seeds.*

*Roots are bright orange.*

Leaves are 2 to 5 inches long, glossy green, and are widely-spaced alternately around the stems. Fine blunt teeth line the leaf edges, and leaves vary from round to elliptical with or without an elongated tip. Yellow fall color develops late.

There are usually separate female (fruiting) and male (non-fruiting) plants. Clusters of small, pale green, 5-petalled flowers bloom in early summer in the leaf axils, but only female vines produce fruits. The fruits change in appearance from summer into winter, making positive identification tricky for the uninitiated. Fruits begin as clusters and are around 1/2 inch in size. They are round, green, and berry-like. They ripen to golden-yellow. In fall, the golden outer covering splits open to reveal several red, seed-containing arils nestled inside the split covering. Eventually, the golden cover drops off the red-and-gold fruits, leaving clusters of red fruits that remain in winter.

## Mistaken Identity

Asiatic bittersweet closely resembles American bittersweet (*Celastrus scandens*), a relatively rare native. You can tell them apart by examining the location of flowers and fruits. In American bittersweet, these occur as large clusters only at the tips of the branches, not up and down the stems where the leaves attach, as with Asiatic bittersweet. Sometimes, male flowers of Asiatic bittersweet occur only at the branch tips, so be certain of your I.D. before you kill a vine. The leaves of American bittersweet are twice as long as wide, while the leaves of the invasive are as wide as long, although they vary a bit.

When combating Asiatic bittersweet in winter, you may be confused by other vines. Comparing growth habit, bark, and buds helps distinguish them. Virginia creeper and wild grapes, both native vines, have tendrils that grasp onto the plants they climb. Their bark is dark brown and shredded. Bittersweet lacks tendrils and the bark is pale and netted. Bark of invasive Japanese honeysuckle is pale tan, smooth when young, and becomes shredded with age. Bark on mature invasive porcelainberry does not peel.

## Control

Look for bittersweet vines twining around and dangling from trees, for fall fruits high up in the tree canopy, and for seedlings near tree bases and on the forest floor. Search along forest edges and roadsides, in clearings, on fences, and in fields and meadows. Bittersweet leaves stay green in fall after most native plants have changed color or dropped their leaves, then they turn yellow when most plants are leafless. If you search for bittersweet in fall, infestations are easy to spot. Treat them then or tag them so they are easy to find for later treatment.

***Manual & Mechanical:*** You can hand-pull small vines when the soil is moist, but be sure to remove the crown and all large roots, or vigorous new growth will occur. To avoid hurting tree branches and yourself, do not pull heavy vines from trees.

***Cut Stump:*** Cut small to large vines near ground level, using a hand-saw, loppers, hand clippers or chainsaw from June through February (late summer and fall is ideal). *To prevent resprouting, immediately apply a concentrated herbicide to the cut stump or apply a foliar spray to the regrowth.*

***Foliar Spray:*** Low bushy vines or resprouted vines can be killed with a foliar herbicide spray from late spring (after full leafout) through fall. (It is best not to spray large vines, but to cut stump them.) To avoid harming desirable plants, apply foliar spray when other plants have fall color or are leafless in autumn, but while bittersweet leaves are still green.

To ensure long-term control of Asiatic bittersweet, monitor treated sites for several years for seedlings and regrowth from roots; treat these as soon as possible. Look for new introductions from neighboring infested land.

For currently approved herbicide recommendations, check the Virginia Department of Forestry chart *Non-Native Invasive Plant Species Control Treatments*, which you can download from the PRISM website.

Photo credits: Susan A. Roth
Written by Susan A. Roth for Blue Ridge PRISM

*Follow all herbicide label directions.*

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# JAPANESE STILTGRASS

## Decreases Scenic, Timber, Agricultural, and Wildlife Value

### The Culprit

Because of its delicate bright green foliage and slender stems, Japanese stiltgrass (*Microstegium vimineum*) appears deceptively harmless, but it behaves very badly. Even where the grass has been established for only a few years, it forms a dense groundcover that smothers native plants and prevents regeneration of forests and fields. This trait dramatically decreases the scenic beauty, timber value, and wildlife habitat of the land stiltgrass invades. Besides out-competing native wildflowers, shrubs and saplings, it destroys biodiversity and natural habitat for animals, birds, and insects. Stiltgrass also poses a threat of intense forest fire due to the unnatural thick mats of dried leaves and stems it leaves behind on the forest floor when it dies back in autumn; this straw mat is equipped to fuel springtime fires.

*Japanese stiltgrass carried as seeds on hiker's boots blankets the sides of this trail and spreads unchecked into the forest beneath the trees.*

A vigorous annual grass, invasive stiltgrass hails from Asia. It was first sighted in North America near Knoxville, Tennessee, around 1919. Seeds from the dried grass, which was used as a packing material for imported porcelain, probably found their way out of a box into the soil. A single plant can produce up to 1,000 seeds, explaining why 100 years after its introduction, this aggressive species threatens most eastern states from New York to Florida and as far west as the Mississippi River and into Texas. In Virginia, stiltgrass occupies private and public land from coast to mountaintop.

### Known Hangouts

Japanese stiltgrass can be found forming extensive infestations in forests, fields, meadows, lawns, roadsides, hiking trails, animal trails, power and gas-line cuts, and riparian areas such as wetlands, streamsides, floodplains, and edges of ponds and lakes. Areas in woodlands where fallen or cut trees open the canopy to sunlight and areas of disturbed soil are especially vulnerable.

### Modus Operandi

Stiltgrass flourishes in full sun to deep shade in wet, moist or dry conditions. It grows tallest in sunny, moist areas and sets copious seed. In mid- to late summer, flowers form low down on the stems hidden between stem and leaf sheaths – you can see them by peeling back the base of a leaf. Although these hidden flowers are cleistogamous (do not open), they are self-pollinating and set seed. Later, visible flowers bloom at the stem tips and are wind pollinated. Flowering begins any time from July into October, and seeds ripen and drop to the ground from August to December. Seed germinates in following years from April into June. Seeds may be viable in the ground for up to seven years, but germination rates drop off dramatically after two or three years.

Surface water washes stiltgrass seed downhill to be deposited for later germination. Wild and domestic animals, humans, and vehicles spread seed-laden soil as they move along roads and trails or open land, spreading stiltgrass in all directions. Where deer are overpopulated, stiltgrass wins the competition because deer decimate native plants, making it easy for stiltgrass to spread unchecked where native plants are struggling. As if this was not enough, stiltgrass releases chemicals that change soil chemistry and effectively stop other plants from growing, which allows it to spread quickly.

*Japanese stiltgrass grows tall and thick in the sun and moisture of this powerline cut. When it turns dry and straw colored in winter, the mat of dried grass poses a fire hazard.*

*Follow all herbicide label directions.*

© 2023 Blue Ridge PRISM

## Positive Identification

Slender and wiry, Japanese stiltgrass grows 6 inches to 4 feet tall, depending upon growing conditions. Tall plants branch at the nodes and may flop and root at stem joints at the end of the growing season. Leaf blades are flat, 2 to 4 inches long, lance-shaped to slightly oblong, and alternate along the stem. Leaves usually have a faint silvery main vein; it divides the leaf into two slightly unequal parts. The base of the leaf forms a sheath that clasps the stem. If you run your fingers along a stiltgrass stem, it feels smooth. If you gently tug on the grass, it pulls easily from the ground, displaying slender, branched roots that resemble stilts. In winter, the grass turns strawlike and forms thick mats of dry stems, making it highly visible during the dormant season.

**Left:** *Stiltgrass leaves have a faint white striped midvein off center in the middle of the leaf blade.* ***Right:*** *Japanese stiltgrass is the grass with the bolder texture; Virginia white-grass, a native, is the finer-textured grass.*

## Mistaken Identity

The delicate-looking native grass called Virginia cutgrass or Virginia whitegrass (*Leersia virginica*) often grows alongside stiltgrass and it may be mistaken for it. You can tell it from the invasive by its leaves, which are longer, more slender, and pointed; they are held at sharp angles from its stems. Unlike stiltgrass, whitegrass's stems feel sand-papery if you run your fingers along them. And unlike stiltgrass, it is difficult to pull this well-rooted perennial grass from the ground.

## Control

Look for Japanese stiltgrass along streams where high running water might dump the seed as the water slows and spreads out. Look for it along driveways, logging roads, powerline cuts, and trails where human and animal feet or vehicles may deposit seed and where seed may be splashed or pushed to the side. Search for it in forest interiors. Stands of the grass begin in sunny openings, and even in deep shade, if carried by animals or water. Look for stiltgrass in fields and wetlands. It grows tallest in moist, sunny sites. And it grows in lawns where it displaces desirable lawn grasses and leaves bare patches in winter.

***Manual & Mechanical:*** Hand-pulling small infestations before plants set seed is effective but labor intensive. Plants pull easily from moist soil. Consider hand-weeding around desirable native plants before applying herbicide. Mowing and weed-whacking can greatly reduce seed formation, but only if done correctly. Mowing is feasible only in open areas, not in forest settings. *Mowing is best done just before flowering in August and September and need be done only once if you wait until then. Cut stiltgrass as low as possible, scalping the ground*, to remove all flowers. To effectively use a string-trimmer to control stiltgrass, hold the trimmer at a slight downward angle so the string digs about a quarter inch into the ground to sever roots from stems. Leave clippings behind if seeds haven't formed. Bag them and dispose if they have.

***Foliar Spray:*** Japanese stiltgrass is easily killed with low concentrations of herbicides. Researchers at Virginia Tech showed that a grass-selective herbicide is the most effective control method, and that when a grass-selective herbicide is used more native plants return than when a non-selective type is used. This proved true even at the very low concentration that kills stiltgrass and spares many desirable plants. Spraying can be done from June into early September but before a particular area of stiltgrass flowers and sets seed. A broad-spectrum herbicide works best when stiltgrass is actively growing and works less well in late summer and fall or during drought. Grass-specific herbicides work all season, but are costly, so some recommendations say to use them only when a broad-spectrum type does not work well.

If you aim to protect native plants, herbicide choice and timing is important. In that case, go with a grass-selective herbicide, especially in spring and early summer when ephemeral wildflowers are not dormant. After dormancy, or where stiltgrass is mixed with other plants you want to target, apply a broad-spectrum herbicide at the higher concentration needed to control those plants. Where stiltgrass grows in a lawn, treat the lawn in spring and summer with a pre-emergent crabgrass killer to stop stiltgrass seed germination.

No matter which method you choose, several consecutive years of treatments are needed for effective control. You must also wipe out infestations higher up in a watershed to prevent reinfestation. Monitor and treat all new occurrences.

*Apply a grass-specific herbicide on stiltgrass seedlings so you do not harm desirable native forbs in spring. The blue color is the dye added to the spray.*

For currently approved herbicide recommendations, check the Virginia Department of Forestry chart *Non-Native Invasive Plant Species Control Treatments*, which you can download from the Blue Ridge PRISM website.

Photo credits: Susan A. Roth
Written by Susan A. Roth for Blue Ridge PRISM

*Follow all herbicide label directions.*

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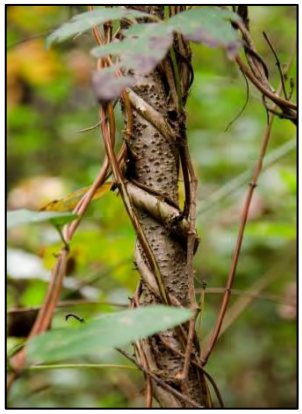
# JAPANESE HONEYSUCKLE

## Strangles, Smothers, and Kills Vegetation

### The Culprit

Japanese honeysuckle (*Lonicera japonica*) is one of the most menacing plant invaders in the Blue Ridge. Widespread in the eastern US and Midwest, as well as parts of the West, this nonnative was first planted in North America as a fragrant ornamental vine on Long Island, New York, in 1806. In the 1990's, wildlife biologists recommended it for wildlife habitat and erosion control. Soon thereafter, the harm it did to biodiversity and natural habitat was recognized as being more ominous than any shelter and forage benefits it offered wildlife. Japanese honeysuckle was soon targeted for eradication, but by then it was already a bad problem.



*Note the difference between the bark on the older honeysuckle vine twining the trunk and the bark on the slender vines draping from above.*

This rapidly spreading nonnative vine competes for both above- and below-ground resources, inhibiting the growth of desirable trees, shrubs, grasses and wildflowers. The vine changes forest structure by engulfing and killing small trees and shrubs, and by strangling or toppling large trees; thus, it can alter bird and wildlife populations. It aggressively threatens natural succession by colonizing fields, meadows and forests, sometimes forming a dense, permanent "disturbance climax." The vine hampers regeneration in both wild and timbered areas and can persist even in an old growth forest. Especially troublesome where selective tree harvesting is practiced, this pest thrives in the increased sunlight let in by logging and ash trees killed by emerald ash borers. During a forest fire, Japanese honeysuckle vines can act as "fire ladders" that send the fire high into the tree canopy.

### Known Hangouts

Japanese honeysuckle is particularly fond of climbing on and engulfing fences and hedges and grabbing onto nearby tree branches to ascend even higher. It hangs out along roadsides and forest edges, in fields and meadows, and high up in nearby trees. It often forms a groundcover on the forest floor where it creates a smothering mat of slender vines and foliage. From the forest floor, it grabs onto trees and saplings and begins scaling skyward. Dense thickets can form, especially in sunny locations. Look for it in areas where trees were cut, thinned, or died. In these locations, increased light allows the vine to rapidly grow.

*All the green foliage in this spring scene is a blanket of Japanese honeysuckle clambering over shrubs and twining into redbud trees.*

### Modus Operandi

Because Japanese honeysuckle retains its green leaves well into winter (year-round in mild climates) and forms new leaves very early in spring, it photosynthesizes and grows during much of the year in Virginia. This gives it a decided advantage over native plants. A semi-evergreen vine, it grows both by climbing and by spreading and rooting along the ground. Because it roots at the nodes on the stems, sends up shoots from its spreading root system, and branches prolifically, it can form thickets, which are densest in sunny locations. Japanese honeysuckle prefers moist, fertile soil, but tolerates drought. In shade, it grows weakly, mostly runs along the ground, and doesn't usually flower.

*Removal of a strangling Japanese honeysuckle vine saved this young maple. But the trunk's corkscrew shape indicates the struggle it made to grow and survive against the vine's chokehold.*

To begin climbing, this invasive needs a slender scaffolding less than 4 inches across. Saplings, bushes, twigs, and other vines offer a ladder. When it is high enough to receive plenty of sunlight, the vine branches and grabs onto limbs and neighboring trees. Once established, it can twist as high as 40 feet into a tree, damaging and even killing it. With age, the once-slender vines can reach 4 inches in girth. The pressure exerted by the expanding vine cuts off the flow of water and nutrients in a tree's trunk, eventually strangling it to death. The vine's dense growth can topple a tree with its weight before it smothers it, making the tree vulnerable during storms.

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Japanese honeysuckle's fragrant flowers bloom all summer, most heavily in early summer. In some areas, pollination does not occur due to the invasive vine's lack of pollinators outside its native habitat. If pollination occurs, fruit-eating birds readily consume them. They deposit the seeds beneath trees and fences when roosting, spreading and "planting" the aggressive weed where it's likely to find the best scaffolding.

## Positive Identification

Japanese honeysuckle is a perennial, woody vine. Its glossy, dark green leaves are oval or occasionally lobed like an oak leaf, and have smooth edges. They measure 1.5 to 3 inches long. The leaves are arranged in pairs directly opposite each other. Semi-evergreen to totally evergreen, the foliage remains on the plants at least well into winter. Young stems are reddish-brown to light brown and slightly hairy. Older stems have light brown to tan bark that peels in long strips.

Left: *Flowers of Japanese honeysuckle bloom in pairs on opposite sides of the stems.* Middle: *Leaves and fruits are opposite each other on the stems.* Right: *Bark of older vines is light brown and shredded.*

The tubular flowers are sweetly fragrant and bloom in pairs on opposite sides of the stems from early summer into fall, most heavily in summer. They open white or pinkish and mature to yellow. Long, curved stamens project beyond the petals. Children (and adults) like to pull the flowers off the stems and suck the sweet nectar ("honey"). Small green berries, which ripen to black, may form after the flowers fade.

*The leaf bases of the native trumpet honeysuckle (*Lonicera sempervirens*) are joined at the base.*

## Mistaken Identity

Two species of honeysuckle vines are native to Virginia. You can distinguish them by the arrangement of their leaves. The leaves of these native vines do not have stems (petioles) and the leaf pairs at the stem tips beneath the flowers are joined and enclose the stem. Invasive Japanese honeysuckle's leaves have short petioles and are not joined. Leaves of both the nonnative and the native honeysuckles are opposite each other. Other invasive and native vines have alternate leaves.

## Search and Destroy

Look for Japanese honeysuckle in sun and shade, along fences and roadsides, in fields and clearings, on the forest floor, and climbing into trees. Removing unnecessary fences and hedges limits places where the vine can climb.

*Japanese honeysuckle – all the dark green foliage here – carpets the ground in this young woodland and climbs trees as it grows toward sunlight.*

***Manual & Mechanical:*** Hand-pulling young Japanese honeysuckle in a small area can be effective, but any roots left in the soil will resprout. Where the vine climbs trees in a forest and also runs on the ground, pull up the crown (where stem joins the main roots) and sever it from the main stem and from the remaining root system. This weakens the rooted runners on the ground, but a foliar spray is still needed to entirely kill the plant. (See below.) Fields and roadsides can be mowed twice a year to slow down the vine, but mowing increases the plants' density.

***Prescribed Burn:*** Prescribed burning in areas that can be burned controls top growth for two growing seasons, then needs to be repeated to kill resprouts.

***Foliar Spray:*** A recommended herbicide applied to foliage, if timed right, effectively controls Japanese honeysuckle. The best time to spray is autumn and early winter after most native plants have lost their leaves or are dormant, but before a hard freeze (25°F). At that time, the evergreen honeysuckle leaves take up the spray and you avoid injury to spring ephemerals and adjacent deciduous plants. Foliar sprays are less effective in spring because the herbicide does not thoroughly move from the leaves into the roots during spring growth. If feasible, wait until after July 4 to treat. Add surfactant if the product does not contain it. You may need to retreat to catch any plants that were missed due to dense growth. Don't spray overhead vines. Instead, cut them near the soil any time of year to kill the top growth; apply foliar herbicide to the regrowth.

***Cut Stump:*** Sever thick vines near the ground and treat the cut ends with a recommended concentrated herbicide from early summer into winter. To avoid hurting tree branches and yourself, do not pull heavy vines from trees.

Japanese honeysuckle's seed bank is short-lived, but birds may continually introduce seeds from nearby sources and begin new infestations. Treat these new plants early, when young, before they become difficult to control.

For currently approved herbicide recommendations, check the Virginia Department of Forestry chart *Non-Native Invasive Plant Species Control Treatments*, which you can download from the Blue Ridge PRISM website.

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Written by Susan A. Roth for Blue Ridge PRISM

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# KUDZU

## Annihilates Trees, Houses, and Entire Landscapes in a Single Gulp

*The lumpy forms here are trees and shrubs engulfed and smothered by kudzu vines. These formations are nicknamed "kudzu sculptures" by people who are all-too familiar with them. Kudzu also covers the ground along the river.*

### The Culprit

The reason kudzu (*Pueraria montana* var. *lobata*) is sometimes called "the vine that ate the South" is that it can grow as much as a foot a day during summer and 60 feet during a single grow-ing season. Kudzu has engulfed at least 7 million acres of public and private land in the Southeast. Hailing from China and Ja-pan, kudzu first arrived in North America in 1876 as an orna-mental vine planted to cover the Japanese Pavilion at the Phila-delphia Centennial Exposition. The bold-textured vine with fra-grant flowers caught the public's attention and was imported to use as an ornamental cover for garden pergolas and arbors. In Japan, kudzu is used as fodder. In 1902, agricultural extension agents began recommending it to farmers in the southern US as a forage crop. The rampant vine was also planted by many states' transportation departments to control erosion along highways. Soon thereafter, kudzu began eating the South. To-day, kudzu infests public and private lands from Maine to Ne-braska, south to Texas and Florida, and populations have re-cently been found and controlled with early detection and rapid response methods in the Pacific Northwest. It has no natural predators or pests on this continent, so it grows undeterred. In 1997, the federal government listed kudzu as a noxious weed.

### Known Hangouts

Kudzu voraciously grows in pastures, agricultural and natural fields, vacant lots, power line cuts, ravines, stream sides, riverbanks, and at forest edges. Anyplace where soil is dis-turbed and sun is plentiful are its favorite hangouts. Kudzu climbs up power lines and telephone poles and from there can invade lawns and yards. It even seems to mow down buildings with its rampant growth. This invasive vine enters forests at their sunny edges or in clearings and tree-fall locations. After scaling trees, it can crawl across the treetops. Its leafy, twisting tangle of growth quickly becomes impenetrable.

### Modus Operandi

Kudzu's fast-growing vines reach out across the ground and form roots at their leaf nodes. They then spread, sprawl and climb. These rooted nodes form their own crowns, which send out more vines. This is its main method of propagating itself. The vines have strong tendrils that can grab onto shrubs, slen-der tree trunks and branches, wires, fences and buildings.

A massive, below-ground storage tuber that is stuffed with starch gives kudzu its life force. Even after vines are cut back by livestock grazing or a machete, the tuber fuels new stems. The plant suffers no setback in its unbridled growth because grazing does not destroy the growing points on the crowns. Where win-ters are cold enough to kill the tops of the vine, the stored starch in the tuber fuels new growth from the crowns the next season.

*Seen here leafless in early spring, kudzu vines have actually engulfed a house.*

If growing in full sun, kudzu flowers in August and September. The flowers have few pollinators outside of the vine's native range, so few seeds are set. However, any viable seeds that form are long-lived. Seedpods and broken stems can float downstream in creeks and rivers to begin new populations.

Kudzu is most de-structive in areas with high summer temper-atures and plentiful rainfall, but it easily survives drought and cold. Vines thicker than 1/2 inch survive freezing. Slender stems die back to the crowns from cold, but crowns sprout new growth in spring.

### Positive Identification

Kudzu is a woody perennial vine in the pea family. Its large, dark green leaves have three distinct leaflets and are arranged alternately on the stems. Leaves mature at 8 to 10 inches long. *The middle of the three leaflets has a short stalk and three rounded lobes. The top two leaflets have two lobes and no stalk*. Leaf undersides

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**Top:** *A typical kudzu leaf with three-lobed leaflets* **Bottom:** *Kudzu flowers*

are hairy. Young stems are yellow-green and covered with golden or bronze bristly hairs, which makes them glow in sunlight. Older woody stems have gray-brown bark and are hairless, to 4 inches thick. Upright flower clusters as long as 8 inches may appear in mid- to late summer. They are composed of numerous irregular-shaped, reddish-purple flowers that are typical of the pea family. The very fragrant flowers smell like ripe grapes. Seedpods, if they form, are 1 to 3 inches long, flat and hairy, and contain 3 to 10 small, kidney-bean-shaped seeds.

Kudzu's amazing growth is powered by its fleshy, tuberous taproot, which can grow up to 7 inches wide and 6 to 12 feet long, reaching deep into the soil. Mature tubers can weigh in at 200 to 300 pounds. The growing points on the crowns along the ground-hugging stems can sprout as many as 30 branching vines. Each vine forms roots and crowns of its own where it contacts soil. If a vine is severed, these additional crowns can survive on their own – a crucial trait in kudzu's amazing survival tactics.

## Control

It cannot be overemphasized that nothing short of total eradication prevents kudzu from taking over again once it has invaded a location. Achieving total eradication takes several years of consistent monitoring and repeated treatments. Cooperation among neighbors is essential where this beastly vine crosses property lines, because it grows rampantly and respects no borders. Which control methods you choose depends partly upon the age of the infestation. Infestations four or fewer years old might be controlled by repeated grazing or mechanical methods. Herbicide is needed for infestations of 10 or more years.

***Prescribed burning***: Burning is effective only for very recent infestations, because fire does not kill large crowns and they will resprout. However, burning kills overhead vines and will thin the vegetation, making it easier to treat with herbicides.

***Grazing:*** The goal is to weaken kudzu so much that it dies. Cattle, goats, sheep and pigs eat kudzu, and it is nutritious. However, grazing does not destroy the plant's crowns. Grazing works only on young infestations and when at least 80% of the foliage is continually removed from late summer through fall. Grazing needs to be carried out for at least three or four years to exhaust all tuber nutrients. After several years of grazing, spot treatments with herbicide will kill remaining live growth.

***Mechanical Removal:*** Instead of grazing, mechanical cutting with machetes or mowers is sometime feasible. Repeat weekly throughout the growing season for three to four years to exhaust the tubers. Mowing does not destroy the crowns, which will resprout. *If you can sever crowns from both the vines that sprout from the crowns and tubers beneath the crowns, then you will effectively kill kudzu.* This is much easier said than done. In older infestations, it is difficult to find all the crowns hidden in the immense tangle of vines.

To find a root crown, follow a vine to where it roots in the soil. Dig around that spot and look for a woody knob or ball near the soil surface. If it has several buds, new sprouts, and/or mature vines emerging from it, this structure is a crown. Use a saw or mattock to cut just below and above each and every crown. Remove the severed crowns from the site. Kudzu cannot regrow from roots or tubers that originate below a crown, and it does not sprout from lateral roots, but crowns left in place can re-root. Sometimes vining stems, which do form roots, may be buried under leaf litter. These stems resemble lateral roots, but are able to grow roots and crowns and that continue the infestation.

***Cut Stump:*** If it is possible to cut the tangle of vines back to its crowns, instead of severing the crown from the tuber, you can apply concentrated herbicide to the cut stumps. Use a recommended herbicide at full strength. Be sure to reveal and treat every crown. Cut stumping is best in late summer or early fall.

**Shown here:** *The root crown of a young kudzu plant (on left side of the photo) has been chopped from the underground storage tuber. All vining stems have been cut from the crown.*

***Foliar Spray*:** Foliar herbicide sprays must be applied twice a year. Apply the first spray in late spring or early summer after leaves mature. Thoroughly wet the foliage as high as possible on climbing vines. This kills the spring growth. In late summer or early fall, spray the foliage that emerged after the first treatment. Repeat this for several years until no new growth appears. A higher concentration of herbicide commonly used to control most plants is needed for kudzu. Add surfactant if one is not in the product you use.

In forests and fields away from residential areas, use a pea-family-specific herbicide. This herbicide can injure trees in the pea family, such as redbud and black locust, and also harms plants in the daisy-family, but leaves most other plants unscathed. It is the preferred treatment where non-specific herbicides could harm nearby, high-value plants. After foliar treatment, kudzu may remain dormant for several years, then regrow into a monster seemingly overnight.

Restore long-established kudzu infestations after eradication with native grasses and wildflowers.

For currently approved herbicide recommendations, check the Virginia Department of Forestry chart *Non-Native Invasive Plant Species Control Treatments*, which you can download from the Blue Ridge PRISM website.

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Written by Susan A. Roth for Blue Ridge PRISM

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# MILE-A-MINUTE VINE

## Grows Faster Than a Speeding Bullet, Smothers Trees and Shrubs

*Mile-a-minute vines (center of photo) form fine-textured blankets of foliage as they scale any and all vegetation in their paths. Vines can reach 25 feet into treetops in a single growing season.*

### The Culprit

Mile-a-minute vine (*Persicaria perfoliata* formerly *Polygonum per-foliatum*) is an annual vine that smothers just about anything in its path. Its rapid growth rate – up to 6 inches a day – explains this invasive's common name. It's also called devil's tearthumb, an allusion to its tiny, sharp barbs, which can lacerate skin.

This prickly, clambering weed, which hails from India and eastern Asia, got its start in the US in the 1930s. It hitchhiked along with rhododendrons shipped from Japan to The Gables Nursery in Stewartstown, Pennsylvania, a famous breeder of azaleas and rhododendrons. From there it spread to the USDA Glen Dale Plant Introduction Center at Beltsville, Maryland. It is now killing vegetation in Virginia, North Carolina, all the Mid-Atlantic States, New York, Connecticut, Massachusetts, Rhode Island and Oregon. This nasty invasive has the potential to spread much further. Its growth is so dense that the vine forms "mile-a-minute sculptures" similar to "kudzu sculptures" as it engulfs shrubs and trees. It can reach heights of 25 feet in a sin-gle season. The prickly, tangled thicket it forms deters workers, hikers, and hunters and overruns native vegetation, thus de-stroying habitat for native plants, birds, and mammals.

### Known Hangouts

Mile-a-minute menaces disturbed sites and open areas and can be found invading wetlands, forest edges, streambanks, road-sides, fields, pastures, orchards, Christmas tree plantations, open forests, powerline cuts, and home landscapes. It can be a serious threat in tree plantations and regenerating forests because it outcompetes tree seedlings. The vine prefers average to wet soil and grows poorly where it is dry. It can germinate in shade or sun, but grows upward toward the light. In areas that are repeatedly disturbed, such as plowed fields and powerline cuts that are sprayed with broad-spectrum herbicides, the inva-sive vine can take off each season from its seedbank and spread farther with each passing year.

### Modus Operandi

Delicate-looking, the vine is highly deceptive. Tiny, recurved, needle-sharp barbs arm its leaves and stems. These cling like Velcro® to the plants it climbs, so the vine does not need to twine. Although fine-textured, the blanket of foliage and stems becomes so dense it kills the plants it grows on by blocking out sunlight. The vine's weight also crushes herbaceous plants and breaks branches on shrubs and trees. New vines germinate each year beneath the previous year's dead vines. After a few years of repeat infestations, the woody plants it grows on may die.

A prolific seeder, mile-a-minute takes over an area within several years of its introduction. It flowers and fruits continually from early summer until frost. Fewer fruits are produced in shade than in sun, but nevertheless, seeds are numerous. Fruits can remain on frost-killed vines into winter, when they may be eaten by birds or drop to the ground. Seeds are viable in the soil for six or seven years. They germinate any time from early April into July if winter has given them an eight-week cold period be-low 40°F to trigger germination. *The single-seeded fruits ripen from green to blue, but beware: seeds within green fruits are viable*. Birds and mammals eat the fruits, which spreads the plant far and wide. Seeds of mile-a-minute can float for days, allowing the noxious weed to rapidly invade an entire watershed.

### Positive Identification

*The triangular-shaped leaves make mile-a-minute easy to identify.*

New plants of mile-a-minute germinate in early spring and grow quickly. The slender stems are green at first and as they thicken they may become reddish. Leaves, which alter-nate on the stems, are waxy green, about 3 inches long with a triangular shape. Tiny, sharp, recurved barbs line the veins on the backs of the leaves and on the stems. Clusters of tiny, white flowers begin blooming in June and continue forming on new growth until frost. Bunches of single-seeded, green fruits follow

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the flowers and ripen to bright blue. A small, saucer-shaped, leaflike structure encircles the stems beneath the flower and fruit clusters, as if sitting in a leafy bowl, a helpful identifying feature.

## Mistaken Identity

Two native, annual vining plants, called tearthumbs, might be mistaken for mile-a-minute because they, too, have prickles on leaves and stems. They are the arrow-leaf tearthumb (*Persicaria sagittata*) and the halberd-leaf tearthumb (*Persicaria arifolia*). Arrow-leaf tearthumb leaves are narrower than mile-a-minute's and its larger flowers are white in termi-nal clusters. It is common in wet areas. Halberd-leaf tearthumb leaves are shield-shaped and its flowers are purple, pink or white. Both of these native tearthumbs lack the encir-cling structure beneath the leaves that is characteristic of mile-a minute.

*A round, leaf-like structure surrounds the stems, which are studded with tiny sharp spines. beneath the leaves and fruits of mile-a-minute.*

To be sure you have mile-a-minute and not one of its cousins, look for a vine-like stem, triangular eaves, sharp downward-curving spines on leaf stems (petioles) and main veins of leaf undersides, a saucer-shaped structure en-circling stems, and round, blue fruits at stem tips.

## Control

Search for mile-a-minute near known infestations, especially in wet areas, floodplains, along water courses and in forest clearings and edges. New seedlings germinate in early spring in areas with previous infestations and at a distance from them, especially in areas with soil disturbance. Frost kills mile-a-minute, but leaves the dead vines in place, where they are noticeable for months. You may see the dense mats of dried stems and leaves during winter and can identify the vine by its barbed stems.

*Frost-killed vines of mile-a-minute create fine-textured prickly blankets on the plants it was growing on.*

Mile-a-minute is easy to kill, but is difficult to permanently eradicate. It is susceptible to hand-pulling, pre-emergent herbicides, and to foliar herbicides, but use extreme caution to avoid injuring the plants it grows on.

***Manual & Mechanical:*** Mile-a-minute can be easily hand-pulled because it has shallow, fibrous roots. When working with this invasive, wear protective clothing, especially gloves, to avoid being stabbed. Rose gloves with long cuffs make the best armor. You can remove large patches with a sturdy garden rake.

As with most annuals , mile-a-minute produces prolific seeds, making it difficult to get rid of. It begins setting seed in mid- to late June, so if you are going to pull it, do so before then. Any plants with fruits, even green ones, should be bagged and discarded in a landfill or burned. You can also repeatedly weed-whack vines as close to the ground as possible, but be careful to not injure any woody plants it is growing on.

***Foliar Spray:*** Mile-a-minute is easily killed with a foliar herbicide. However, the plants it is growing on will likely also be killed. To achieve the best long-term control, hit this invasive vine with a recommended herbicide before it begins setting seed. That is usually before the end of June. Later applications kill vines, but may not kill seeds that are already set. That seed will come back to haunt you in the way of new plants in following years. Where mile-a-minute grows in a wetland or along a watercourse, use an herbicide and surfactant approved for aquatic use. After treatment, scout for new seedlings through July and spot treat if necessary.

***Preemergent:*** In large areas infested with mile-a-minute, pre-emergent herbicide is called for. It should be applied to the soil in early to mid-March, before seeds germinate. Do not use premergent near wetlands, streams, etc. because it harms aquatic life. *Preemergent kills germinating seedlings of all plants,* but does not harm existing perennial or woody plants.

***Biological control*:** The mile-a-minute weevil (*Rhinoncomimus latipes*) is a tiny, stem-boring weevil from China that feeds only on mile-a-minute. Extensive research was done on this weevil at the University of Delaware beginning in 1996. Researchers found the insect to be host-specific and not harmful to native plants. In 2004, the USDA approved the weevil as a biological control and it has been released in many locations in several states. The weevil sets back, but does not completely kill, the invasive vine. Weevil larvae bore into the stems and the adult weevils eat the foliage. This greatly reduces the plants' biomass. The weakened vines produce fewer seeds, slowing the weed's spread. This useful insect overwinters in leaf litter. Weevils are sold by the New Jersey Department of Agriculture Phillip Alampi Beneficial Insect Rearing Laboratory, Trenton, NJ. Permit PPQ 526 is needed from the USDA to purchase and release the weevil. For permits and other information about mile-a-minute weevils, see https://www.aphis.usda.gov/aphis/ourfocus/planthealth/import-information/permits/regulated-organism-and-soil-permits/.

***Restoration*:** Because mile-a-minute smothers all vegetation, once it is eradicated, the ground where it grew may be bare. This invites other invasives to enter the scene. Restoration by planting native grasses and wildflowers is called for in such sit-uations. Before planting, you can wait to see which native plants appear on their own and then selectively kill any invasives. Monitor the site monthly for new incursions of mile-a-minute and zap them before they take off.

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Written by Susan A. Roth for Blue Ridge PRISM

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# PORCELAIN-BERRY

## Escape Artist and Opportunist

### The Culprit

Porcelain-berry (*Ampelopsis brevipedunculata*), also called amur peppervine, is an Asian species that was brought to North America in 1870 for use as an ornamental vine. It has since escaped from cultivation in numerous locations to wreak havoc on the landscape up and down the East Coast and well into the Midwest. Despite the vine's known invasiveness, unwitting gardeners continue to plant it, especially the form with showy variegated leaves.

*The variegated form of porcelain-berry is a popular garden vine that can spread to natural areas via its seeds, which produce green-leaved plants.*

This woody perennial is related to grapes, and grows so fast that it can engulf a small tree, such as a dogwood, in one growing season. Porcelain-berry has a vast, hard-to-kill root system and produces abundant colorful fruits. Birds devour the fruit and spread the plant hither and yon. When unleashed upon a natural area, this invasive vine blankets low shrubs and scales trees to heights of 25 feet or more, forming impenetrable walls of tangled stems and foliage that kills and displaces desirable native and agricultural plants. The vine's weight makes the vegetation it grows upon susceptible to wind, snow, and ice damage.

### Known Hangouts

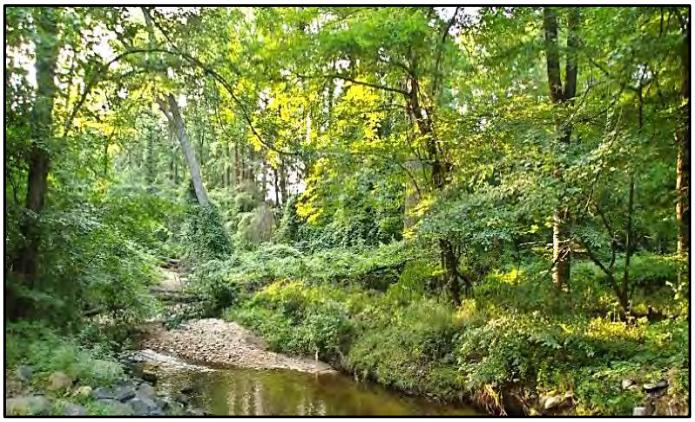
Preferring full to part sun and moist soil, this aggressive invasive hangs out primarily in edge habitats and disturbed areas. You'll find it growing along and into the edges of woodlands and forests and in gaps in the tree canopy. It can smother vegetation along roadsides, in railroad and utility rights-of-way, old and new fields, fencerows, and recently timbered or cleared land. Although porcelain-berry cannot tolerate standing water, it will grow in riparian areas, especially along watercourses where sunlight is abundant.

### Modus Operandi

Although porcelain-berry leafs out late in spring, it begins rapid growth by midsummer. This escape artist operates by growing faster than almost anything else around it, except for kudzu, and perhaps Japanese honeysuckle, with which it likes to pal around. Porcelain-berry may grow 15 to 20 feet in a single growing season. It runs right over and shades out most desirable plants while competing with them for moisture and nutrients. It has a deep taproot and also sends out shallow roots far and wide. These spreading roots sprout suckers that then create an extensive thicket.

*Almost all the green foliage here is a solid blanket of porcelain-berry. It smothers the shrubs on the forest edge and climbs high into the trees.*

Climbing with slender, two-pronged, branched tendrils, porcelain-berry can grasp onto stems, branches, and other supports up to 4 inches across. It even takes a leg up from twining vines such as Japanese honeysuckle, Asiatic bittersweet, and Virginia creeper by grabbing onto those vines' stems to climb higher into a tree than it could on its own. Porcelain-berry does not usually choke tree trunks the way other invasive vines do; nevertheless, its vigorous, smothering growth proves deadly.



*Porcelain-berry blankets the banks and covers the low shrubs and tree branches along this stream.*

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Porcelain-berry's colorful fruits seem to have been specifically designed to attract birds, who feast on them and thus spread and "plant" this invasive's seeds. The fruits are buoyant, and can float in a creek or river and plant themselves far away downstream. The seeds germinate readily after passing through a bird or animal's gut or enduring a cold winter.

## Positive Identification

Porcelain-berry is a deciduous, woody, perennial, climbing vine in the grape family. The shiny, dark green leaves are arranged alternately and measure up to 4 inches wide and 5 inches long with prominent veins, coarsely-toothed edges, and pointed tips. Their shape varies from heart-shaped to 3- to 5-lobed or deeply dissected. Leaf undersides are hairy to the touch, especially along their veins. Slender, forked tendrils without adhesive discs form directly opposite the leaves on new stems.

*Porcelain-berry leaves may be 3- to-5-lobed or deeply dissected and a two-pronged tendril grow opposite the leaves on new stems.*

Tiny, yellow-green, nectar-containing flowers are arranged in flat clusters and bloom June through August. They are followed by colorful clusters of ¼- to ¾-inch, shiny, speckled, hard berries that look like porcelain. Each cluster contains berries of different colors, including creamy-white, green, yellow, and lilac. These eventually ripen to bright turquoise blue in September and October. During late summer, flowers and fruits occur together on the vines.

New stems are squarish with swollen nodes, slightly hairy and whitish-green. As the stems age, the bark develops gray dots (lenticels), and as the vine matures, the bark acquires rough patches, but does not shred. If you cut through a stem, you will see that the center (pith) is porcelain white and solid at the swollen nodes. Large vines can attain 4 inches in girth.

*Porcelain-berry flowers form flat clusters and bloom in summer.*

## Mistaken Identity

Native vines in the grape family might be mistaken for porcelain-berry. Grapes have brown, not white pith, and the bark on their mature vines is dark and shredding, not patchy. Two grapes closely resemble porcelain berry. Frost grape (*Vitis vulpina)* has similar-sized, slightly heart-shaped leaves with toothed edges; and its leaf undersides have white hairs along the veins, as does porcelain-berry. Fox grape (*Vitis labrusca*) has heart-shaped to lobed, dull green leaves with coarse teeth and leaf undersides with thick cobwebby white or reddish hairs. The young stems of both grapes do not have lenticels like those of porcelain-berry. The flowers of both these grapes grow in elongated, not flat, clusters, and their fruits are juicy and purple, quite unlike those of porcelain-berry.

## Control

If porcelain-berry infests areas nearby, look for it on your land in its known hangouts. If you find it, act quickly. This aggressive invader is an opportunist that spreads rapidly once introduced. It has a deep taproot, as well as surface roots that can extend to 25 or more feet. The spreading roots send up suckers and the sprawling stems can root at their nodes. Any part of the root system left intact will sprout new plants, making this invasive very difficult to kill.

*Porcelain-berry fruits exhibit an array of bird-attracting colors.*

***Manual & Mechanical:*** Mechanical control methods can slow porcelain-berry down, but they almost always need to be followed up with herbicides. Hand-pulling works only for young plants. With larger plants, pulling does not remove the entire root system. It is nearly impossible to dig up the taproot of an established porcelain-berry. Because its extensive network of roots meshes with roots of neighboring plants, pulling porcelain-berry harms desirable plants. Repeated mowing may reduce porcelain-berry's vigor, but will not provide complete control and might harm desirable plants. To prevent seed dispersal, if you do pull, cut or mow, do so from winter to mid-summer, before any fruits develop for that season.

***Foliar Spray:*** Herbicidal foliar treatment is most effective when applied between mid-summer and early fall. Research indicates that some herbicides control porcelain-berry better than others and in higher concentrations than needed for most invasives. (See VDOF chart.) Add surfactant to the herbicide if it is not already in the product. To reduce the amount of herbicide needed, cut back the vines and spray the regrowth.

***Cut Stump:*** Find the largest stems and cut them near the ground; spray the cut ends immediately with a concentrated, recommended herbicide. This method succeeds any time the temperature is above 40°F and remains that warm for 24 hours.

***Basal Bark:*** If you can reach the largest stems in the tangle, you can use a basal bark application. Apply a concentrated, recommended herbicide mixed with horticultural oil to the lowest 12 inches of the stems; no cutting is needed. Be careful not to spray nearby desirable plants.

To achieve complete control of this opportunistic vine, for several years you need to check for regrowth from unkilled roots and reinfestation from outside sources. Do not plant this vine or its variegated form in a garden. It is sure to escape.

For currently approved herbicide recommendations, check the Virginia Department of Forestry chart *Non-Native Invasive Plant Species Control Treatments*, which you can download from the Blue Ridge PRISM website.

Photo credits: Susan A. Roth
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*Follow all herbicide label directions.*

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