



## Identification of Virginia's Noxious Weeds

Authored by Spencer Michael, Graduate Research Assistant, School of Plant and Environmental Sciences, Virginia Tech; Michael Flessner, Associate Professor and Extension Weed Science Specialist, School of Plant and Environmental Sciences, Virginia Tech; and Jacob Barney, Associate Professor, School of Plant and Environmental Sciences, Virginia Tech

### Introduction

In 2018, giant hogweed was found in Virginia. Giant hogweed is dangerous and harmful to humans if proper care is not taken for the removal and destruction of this weed species. Giant hogweed is one of the many examples of how potentially dangerous noxious weeds can be and why it is important to recognize and use proper care when encountering noxious weeds. The Virginia Department of Agriculture and Consumer Services (VDACS) defines a noxious weed as *any living plant, or part thereof, declared by the Board through regulations under this chapter to be detrimental to crops, surface waters, including lakes, or other desirable plants, livestock, land, or other property, or to be injurious to public health, the environment, or the economy, except when in-state production of such living plant is commercially propagated in Virginia.* Weeds deemed noxious are split into three tiers by VDACS: Tier 1 being defined as “any noxious weed that is not known to be present in the Commonwealth”, Tier 2 as “any noxious weed that is present in the Commonwealth and for which successful eradication or suppression is feasible”, and Tier 3 as “any noxious weed (i) that is present in the Commonwealth, (ii) whose spread may be slowed by restrictions on its movement, and (iii) for which successful eradication or suppression is not feasible.”

This publication provides information on identification characteristics of Virginia's noxious weeds and proper actions that should be taken if a person believes this weed is growing on their property or if they encounter one of these weeds in nature.

### Tier 1 Noxious Weeds

#### Giant hogweed

#### *Heracleum mantegazzianum*

Giant hogweed was first discovered in Virginia in 2018 in the mountain/valley region. There has been no evidence of giant hogweed spread in the state meaning that each instance where it has been located it was planted there (Flessner and Metzgar 2018).



Figure 1. Giant hogweed leaf. (Tina MacIntyre, VDACS)

Giant hogweed can be dangerous in certain situations. If sap contacts the skin in the sunlight, it can result in severe burning and blistering (Nielson et al. 2005). Giant hogweed typically grows to be 6-8 feet tall but can grow to as tall as 18 feet with leaves as wide as 8 feet, stems up to 6 inches across, and flowers clustered up to 1.5 feet across. Leaves can appear similar to cow parsnip (*Heracleum maximum*), but giant hogweed leaves have acute lobes (figures 1 and 2) (Flessner and Metzgar 2018; Weakley 2015). Giant hogweed can also appear similar to poison hemlock (*Conium maculatum*), wild carrot (*Daucus carota*), and other species (figures 3 and 4). Consult Virginia Cooperative Extension Publication [SPES-](#)

[48NP](#) for more information: Giant hogweed is also a Federal noxious weed.



Figure 2. Giant hogweed in a landscape bed. (Mark Sutphin, Virginia Cooperative Extension)



Figure 3. Look-alike species poison hemlock. (Shawn Askew, Virginia Tech, <https://weedid.cals.vt.edu/profile/334>)



Figure 4. Look-alike species wild carrot. (Shawn Askew, Virginia Tech <https://weedid.cals.vt.edu/profile/143>)

## Giant Salvinia

### *Salvinia molesta*

Giant Salvinia is an aquatic weed species that floats on the surface of ponds, lakes, and other bodies of water (figures 5 and 6). This invasive species is non-native and is not widespread. It was found and eradicated in Shenandoah County but is present in Washington D.C. (USDA Plants Database). It has horizontal stems below the water surface and a trio of leaves that form from each node. There are two green, oval-shaped leaves above the water surface with the third leaf being brown and under the surface (Thayer 2020). Giant Salvinia can form a dense blanket across the water surface, damaging aquatic ecosystems by replacing native, desirable plants that are crucial for the survival of animals and waterfowl (Anonymous a). Giant Salvinia is also a Federal noxious weed.



Figure 5. Giant Salvinia infestation. (Scott Robinson, Bugwood Images)



Figure 6. Giant Salvinia growing densely on water surface. (Troy Evans, Bugwood Images)

## Tropical soda apple

### *Solanum viarum*

Tropical soda apple is a perennial shrub that affects much of the southeastern United States. It typically impacts pastures or other areas of forage and is undesirable to animals (Mullahey 2012). Tropical soda apple can reach up to 6 feet tall. It is a broadleaf species with leaves that are 6-8 inches long and 2-6 inches wide. Leaves are similar in appearance to oak leaves and have prickles that form on most of the plant (figures 7 and 8). Flowering can occur year-round with reproduction typically occurring from September through May. Flowers are white, with five petals and a yellow center that forms a point. It produces a fruit that resembles a tiny watermelon (Anonymous 2018a).



Figure 7. Tropical soda apple. (James Rollins, Bugwood Images)

Horsenettle (*Solanum carolinense*) is a related native species similar in appearance to tropical soda apple, but horsenettle's leaves, fruits, and size are all

smaller (figure 9). Tropical soda apple is also a Federal noxious weed.



Figure 8. Tropical soda apple in a crop field. (Clyde Dowler, Bugwood Images)



Figure 9. Look-alike species horsenettle. (Shawn Askew, Virginia Tech  
<https://weedid.cals.vt.edu/profile/136>)

## Tier 2 Noxious Weeds

### Beach vitex

#### *Vitex rotundifolia*

Beach vitex is a woody shrub with circular leaves typically found on coastlines. Leaves can be 1-1.5 inches long and form in pairs along the stem. The leaves are smooth and if crushed, produce a spicy fragrance. Plants will flower in early May with most of the flowers being towards the top of the plant. The flowers will fall off and a green, circular fruit is left attached to the plant. As winter draws nearer, the fruit will dry and turn black (Gresham 2017). It is found near Virginia Beach, Tidewater, and other areas with sandy soil.



Figure 10. Beach vitex foliage. (Randy Westbrooks, Bugwood Images)



Figure 11. Beach vitex infestation. (Randy Westbrooks, Bugwood Images)

## Cogongrass *Imperata cylindrica*

Cogongrass is an invasive species found in much of the southern United States. It grows in dense patches and can become quite tall (up to 6 feet) (figure 12). Leaf blades can be up to 6 feet in length and 1 in wide. It has a highly visible line (midrib) off-set from the center of the leaf (figure 13). Typically, cogongrass is light green-yellow. After the first frost or freeze, leaves can turn reddish or brown. Seedheads are white or silver and can be from 2-8 inches in length and typically blooms from March through June (Anonymous 2018b).



Figure 12. Cogongrass infestation. (Charles T. Bryson, Bugwood Images)

It is found throughout the state of Virginia (USDA Plants Database). Eastern gammagrass (*Tripsacum dactyloides*), foxtails (*Setaria* spp.), and other grasses may appear similar to cogongrass, but do not have the off-set midrib. Cogongrass is also a Federal noxious weed.



Figure 13. Cogongrass off-center midvein. (Chris Evans, Bugwood Images)

## Incised fumewort *Corydalis incisa*

Incised fumewort has been reported in Albemarle and Fairfax counties in Virginia (EDDMapS 2020). It is a biennial that can grow up to 2 feet tall. There are large serrations on the leaves and leaves can be 1.5-5 inches in length and width (figures 14 and 15).

The flower is purple but can also be white. Flowers are approximately 0.5 inches long and petals are not fused. On each flower stalk, there is a green capsule-like fruit that contains seeds. A similar species is yellow fumewort (*Corydalis flavula*), but it is native to the United States and has yellow flowers (Ossi 2017).



Figure 14. Incised fumewort leaves and flowers. (Gary Fleming, Bugwood Images)



Figure 15. Incised fumewort infestation. (Daniel Atha, <https://www.inaturalist.org/photos/7711234>)

## Purple loosestrife *Lythrum salicaria*

Purple loosestrife is present in most regions of Virginia except Southside and the Eastern Shore (USDA Plants Database). It is typically found in high moisture areas and can be nearly five feet tall (figure 16). Leaves are usually in pairs, but sometimes in groups of three arranged opposite of each other along the stem. Leaves sometimes appear whorled. The stem is square-shaped but sometimes six-sided (figure 17). Flowers are purple and can be 0.2-0.4 inches in length and have 5-7 petals (Anonymous b) (figure 18). Fireweed (*Chamerion angustifolium*) looks similar to purple loosestrife but has a round stem.



Figure 16. Purple loosestrife growing near water. (Shawn Askew, Virginia Tech, <https://weedid.cals.vt.edu/profile/535>)



Figure 17. Purple loosestrife square-shaped stem. (Shawn Askew, Virginia Tech, <https://weedid.cals.vt.edu/profile/535>)



Figure 18. Purple loosestrife flowers. (Shawn Askew, Virginia Tech, <https://weedid.cals.vt.edu/profile/535>)

## Water spinach *Ipomoea aquatica*

Water spinach is an aquatic species typically found in the southern United States. It is a vine with a milky sap and floats on the surface of water (figure 20). Leaves are typically 1-6 inches long with the leaves

above the water often being a little longer. Flowers resemble morningglories (*Ipomoea* spp. L.) and are typically white or pink (figure 19). It produces a small fruit that resembles a sphere and is typically around 0.4 inches wide (Richard and Ramey 2007). Water spinach is also a Federal noxious weed.



Figure 19. Water spinach flower and leaf. (Florida Division of Plant Industry, Bugwood Images)



Figure 20. Water spinach infestation. (USDA APHIS PPQ, Bugwood Images)

## Wavyleaf basketgrass

### *Opismenus hirtellus*

Wavyleaf basketgrass has been found in multiple counties in Virginia including Rockingham, Page, Greene, Madison, Warren, Fauquier, Clarke, Culpeper, Fairfax, Spotsylvania, Albemarle, Nelson, Augusta, Rappahannock, Arlington, Loudon, Prince William, Stafford, Powhatan, Fredrick and Rockbridge (Anonymous 2019). Wavyleaf basketgrass leaves are dark green and are typically 1.5-4 inches long and 0.5 inches wide (figure 21). Leaf sheaths are hairy and the plant blooms from September through November (Westbrooks and Imlay, 2009). Seedheads have long, sticky awns that cling to boots, clothing, animals, and anything passing by (figure 22).



Figure 21. Wavyleaf basketgrass infestation. (Daniel Tekiela, Virginia Tech)



Figure 22. Wavyleaf basketgrass seeds clinging to skin and clothing. (Daniel Tekiela, Virginia Tech)

Wavyleaf basketgrass is similar to another invader, Japanese stiltgrass (*Microstegium vimineum*), but Japanese stiltgrass has silver hairs down the midveins of leaves and comes to a blunt end (figure 23). Whereas, wavyleaf basketgrass leaves are wavy, as the name implies, across their width and come to a sharp point. Jointhead arthraxon (*Arthraxon hispidus*) can also appear similar, but only the leaf edges are wavy (figure 24).



Figure 23. Look-alike species Japanese stiltgrass (Shawn Askew, Virginia Tech <https://weedid.cals.vt.edu/profile/649>)



Figure 24. Look-alike species Jointhead arthraxon (Shawn Askew, Virginia Tech <https://weedid.cals.vt.edu/profile/277>)

## Tier 3 Noxious Weeds

### Hydrilla

#### *Hydrilla verticillata*

Hydrilla is known to occur in Brunswick, Fairfax, Fauquier, Louisa, and Mecklenburg Counties (USDA Plants Database). Hydrilla is a submersed aquatic weed but can reach the surface of water and form a mat (figure 25). Stems are underwater and can reach up to 25 feet in length. Branching occurs near the surface of water. Leaves are small with pointed tips (figure 26). They are arranged in whorls of 4-8. Leaf margins are sharp with saw-tooth serrations. Leaves

are green, but those on the surface can be bleached by the sun or be subject to fungus and disease, making them appear yellow or brownish-green. Hydrilla is dioecious. Female flowers are white, solitary, and float on the surface. Male flowers are green and are attached to the stem tips. Male flowers eventually break loose and fertilize the female flower when they come in contact (Ramey and Peichel, 2001). Hydrilla is also a Federal noxious weed.



Figure 24. Hydrilla infestation. (Cleveland Metroparks, Bugwood Images)



Figure 25. Hydrilla growing on water surface. (Chris Evans, Bugwood Images)

### Mile-a-minute

#### *Persicaria perfoliata*

Mile-a-minute is known to be present in Fairfax, Loudoun, Prince William, Fauquier, Warren, Rappahannock, Culpepper, Madison, Louisa, Carroll,

and Grayson Counties and the cities of Richmond and Suffolk (EDDMapS). Mile-a-minute weed is common in high moisture areas and the vine can grow to 20 feet in length. Leaves are uniquely triangular and are 1-3 inches in length (figure 26). Leaves are light green in the summer months and turn reddish-brown in the winter months (figure 27). Stems have sharp spikes and unique round leaf-like structures encircle the stem at intervals. Flowers are white that are borne on short spikes. Fruits are small, berrylike fruits that are blue. Seeds can be spread easily, and it grows extremely quickly (Anonymous c).



Figure 26. Mile-a-minute with weevil damage. (Richard Gardner, Bugwood Images)



Figure 27. Mile-a-minute weed infestation. (Shawn Askew, Virginia Tech <https://weedid.cals.vt.edu/profile/454>)

VDACS is actively releasing the mile-a-minute weevil (*Rhinoncomimus latipes*) that feed on the plant to help control it (figure 26). Mile-a-minute can resemble two other *Persicaria* spp.: arrow-leaved tearthumb (*Persicaria sagittate*) and halberdleaf tearthumb (*Persicaria arifolia*) but neither has the

unique circular leaf-like structures along the stem (figures 28 and 29).



Figure 28. Look-alike species arrow-leaved tearthumb. (Peter M. Dziuk)



Figure 29. Look-alike species halberd-leaved tearthumb. (Peter M. Dziuk)

## Oriental bittersweet *Celastrus orbiculatus*

Oriental bittersweet is known to occur along the I-64 and I-81 corridors, Northern Virginia, as well as other locations (USDA Plants Database). Oriental bittersweet is a deciduous, climbing, woody vine. It can grow up to 60 feet in length and up to 4 inches in diameter. The bark is often brown to dark brown and the twigs are gray to dark brown. Leaves are alternate and circular in shape (figures 30 and 31). They are typically light green and can be from 2-5 inches in length. Flowers are small and greenish-white. They bloom from May through early June. When fruit is young, they are green and then turn yellow as they mature. When fruits reach maturity, they split and reveal scarlet berries that remain into winter. It is commonly growing on old homes, fields and road

edges (Anonymous, 2018d). Oriental bittersweet is commonly mistaken for the native American bittersweet (*Celastrus scandens*). The key identification characteristics to distinguish between the two are on oriental bittersweet, the flowers and fruits will grow throughout the length of the stem while American bittersweet flowers and fruits exclusively grow in clusters (USDA 2007). Furthermore, fruits on oriental bittersweet are yellow while fruits on American bittersweet are orange and pollen from oriental bittersweet is white while American is yellow (USDA 2007).



Figure 30. Oriental bittersweet leaves and fruits. (Shawn Askew, Virginia Tech, <https://weedid.cals.vt.edu/profile/417>)



Figure 31. Oriental bittersweet. (Max Williamson, Bugwood Images)

## Porcelain berry

### *Ampelopsis brevipedunculata*

Porcelain berry is known to occur in and around Richmond and Northern Virginia as well as Albemarle and Westmoreland Counties (USDA Plants Database). Porcelain berry is a vine that climbs trees (figure 332, similar to kudzu (*Pueraria montana* var. *lobata*)). Leaves are alternate and have heart-shaped bases (figure 33). Green/white flowers will appear from June through August and grape-like fruits will be produced. It will complete maturity from August through September. It grows quickly along forests, ponds, and streambanks and seeds are spread by water, birds, and other natural occurrences (Anonymous d). Native grapes (*Vitis* spp.) may look similar, but the stem center (pith) is brown in grapes while white in porcelain berry.



Figure 32. Porcelain berry infestation. (James H. Miller, Bugwood Images)



Figure 33. Porcelain berry vine with fruits. (Jil Swearingen, Bugwood Images)

## Tree of heaven

### *Ailanthus altissima*

Tree of heaven (figure 34) has been located in nearly every county in Virginia (USDA Plants Database). It is the preferred host for spotted lanternfly, an invasive insect. It is a rapidly growing dioecious tree, growing as tall as 100 feet and 6 feet in diameter. A young tree will have green bark but as it ages will become brown and sometimes gray. Leaves grow from a central stem and can be anywhere from 1-4 feet long and each can contain 10-40 leaflets (figure 35). At each leaflets base, there is a bump and when penetrated will release a vile odor. On female trees, there is a fruit that is 1-2 inches long. Each fruit contains one seed and fruits are in clusters and hang on the tree through winter. It is a prolific seeder and new shoots can grow from roots, giving rise to new plants. Tree of heaven can look like staghorn sumac (*Rhus typhina*), black walnut (*Juglans nigra*), or hickory (*Carya ovata*), but each of those have serrations on leaflet edges while tree of heaven does not (Jackson and Grover 2018).



Figure 34. Tree of heaven in the landscape. (Shawn Askew, Virginia Tech <https://weedid.cals.vt.edu/profile/29>)



Figure 35. Tree of heaven leaf. (Shawn Askew, Virginia Tech, <https://weedid.cals.vt.edu/profile/29>)

## Subsequent Actions

If you believe you have one of the Tier 1 or 2 noxious weeds mentioned above, it is important to contact your local county extension office (<https://ext.vt.edu/offices.html>) or VDACS at NoxiousWeed.VDACS@vdacs.virginia.gov to verify identification. Do not transport any viable plant part of the weed without first obtaining a permit from VDACS as this is required by Virginia law (<http://www.vdacs.virginia.gov/pdf/noxious-weed-permit.pdf>). After identification, your county extension agent or VDACS representative for Tier 1 and 2 weeds will work to form a control plan. Identification and control of noxious weeds is crucial for preservation of ecosystems and for the overall well-being of people that have this weed on their property.

Controlling Tier 3 noxious weeds can be challenging but worthwhile to protect the local environment. Consult the Additional Resources below to find information on controlling these weeds.

## Additional Resources

Heffernan, K.E. 1998. Managing Invasive Alien Plants in Natural Areas, Parks, and Small Woodlands. Natural Heritage Technical Report 98-25. Virginia Department of Conservation and Recreation, Division of Natural Heritage. Richmond, Virginia. <https://www.dcr.virginia.gov/natural-heritage/document/mnginv.pdf>

Virginia Cooperative Extension Local Offices: <https://ext.vt.edu/offices.html>

Virginia Cooperative Extension Pest Management Guides:  
<https://www.pubs.ext.vt.edu/pmgstore.html>

## Acknowledgements

Tina MacIntyre with Virginia Department of Agricultural and Consumer Services.

## References

- Anonymous (a). Giant Salvinia. Unites States Department of Agriculture.  
<https://www.invasivespeciesinfo.gov/profile/giant-salvinia>
- Anonymous. 2018a. Tropical soda apple. Invasive Plant Atlas of the United States.  
<https://www.invasiveplantatlas.org/subject.html?sub=2446>
- Anonymous. 2018b. Key Identification Features of Cogongrass. Center for Invasive Species and Ecosystem Health, University of Georgia.  
<https://www.cogongrass.org/identification/>
- Anonymous (b). Weed Identification. Virginia Tech College of Agriculture and Life Sciences.  
<https://weedid.cals.vt.edu/>
- Anonymous (c). Mile-a-minute. Ohio's Noxious Weeds. Pressbooks.  
<https://ohiostate.pressbooks.pub/ohionoxiousweeds/chapter/mile-a-minute/>
- Anonymous (d). Invasive, Exotic Plants of the Southeast- Porcelain berry. Going Native, North Carolina State University Extension.  
<https://plants.ces.ncsu.edu/plants/ampelopsis-brevipedunculata/>
- Anonymous. 2018d. Oriental bittersweet. Invasive Plant Atlas of the United States.  
<https://www.invasiveplantatlas.org/subject.html?sub=3012>
- Anonymous. 2019. DCR Wayleaf Grass Public Map. <https://www.dcr.virginia.gov/natural-heritage/document/fswavy.pdf>
- EDDMapS. 2020. Early Detection & Distribution Mapping System. The University of Georgia - Center for Invasive Species and Ecosystem

Health. Available online at  
<https://www.eddmaps.org/>

- Flessner, M. L., J. Metzgar. 2018. Giant Hogweed: Identification and Control. Virginia Cooperative Extension.  
[https://www.pubs.ext.vt.edu/content/dam/pubs\\_ext\\_vt\\_edu/spes/spes-48/SPEs-245.pdf](https://www.pubs.ext.vt.edu/content/dam/pubs_ext_vt_edu/spes/spes-48/SPEs-245.pdf)
- Gresham, C. A. 2017. Identifying and Managing Beach Vitex. Factsheet. Home and Garden Information Center, Clemson Cooperative Extension. Pub. No: HGIC 2315  
<https://hgic.clemson.edu/factsheet/identifying-managing-beach-vitex/>
- Jackson, D. A. Grover. 2018. Tree-of-Heaven. Penn State Extension. <https://extension.psu.edu/tree-of-heaven>
- Mullahey, J. 2012. Solanum varium. Center for Aquatic and Invasive Plants. University of Florida. <http://plants.ifas.ufl.edu/plant-directory/solanum-viarum/#III>
- Nielsen C, Ravn HP, Nentwig W, Wade M. The Giant Hogweed Best Practice Manual, Guidelines for the management and control of invasive weed in Europe. Hoersholm: Forest & Landscape Denmark; 2005.
- Ossi, D. 2017. An Incisive Invader. Maryland Invasive Species Council.  
<http://mdinvasives.org/iotm/may-2017/>
- Ramey, V. B Peichel. Hydrilla Verticillata. Center for Aquatic and Invasive Plants, University of Florida. <http://plants.ifas.ufl.edu/plant-directory/hydrilla-verticillata/>
- Richard, A., V. Ramey. 2007. Invasive and Non-Native Plants You Should Know, Recognition Cards. UF/IFAS Center for Aquatic and Invasive Plants, Pub. No. SP 431.
- Thayer, D.D., I.A. Pflingsten, C.C. Jacono, M.M. Richerson, and V. Howard, 2020, *Salvinia molesta* Mitchell: U.S. Geological Survey, Nonindigenous Aquatic Species Database, Gainesville, FL,  
<https://nas.er.usgs.gov/queries/FactSheet.aspx?speciesID=298>, Access Date: 4/15/2020

USDA. Introduced, Invasive, and Noxious Plants.

<https://plants.usda.gov/java/noxious>

USDA, NRCS. 2020. The PLANTS Database (<https://plants.usda.gov>, 21 July 2020). National Plant Data Team, Greensboro, NC 27401-4901 USA.

USDA. 2007. American and Oriental Bittersweet Identification.

[https://www.fs.usda.gov/Internet/FSE\\_DOCUMENTS/fsbdev3\\_017307.pdf](https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fsbdev3_017307.pdf)

Virginia Department of Agriculture and Consumer Services. Noxious Weeds.

<https://www.vdacs.virginia.gov/plant-industry-services-noxious-weeds.shtml>

Virginia Law. 2VAC5-317-10. Definitions. Internet. Available:

<https://law.lis.virginia.gov/admincode/title2/agency5/chapter317/section10/>

Weakley, A.S. 2015. Flora of the southern and mid-Atlantic states, working draft of May 2015.

Westbrooks, R. M Imlay. 2009. Wavyleaf Basketgrass-A New Invader of Deciduous Forests in Maryland and Virginia. <https://www.se-eppc.org/southcarolina/WLBG.pdf>

Visit Virginia Cooperative Extension: [ext.vt.edu](http://ext.vt.edu)

Tech, Virginia State University, the U.S. Department of Agriculture, and local governments. Its programs and employment are open to all, regardless of age, color, disability, gender, gender identity, gender expression, national origin, political affiliation, race, religion, sexual orientation, genetic information, military status, or any other basis protected by law.

2023

SPES-244NP (SPES-502NP)