The Socrates Project

Poisonous Plants in Virginia

The Socrates Project - Poisonous Plants in Virginia.

2nd Edition, Revised and Expanded.

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Table of Contents

Introduction and Acknowledgements

The Socrates Project – Poisonous Plants in Virginia

This project was initiated in 2013 when members of the Old Rag Chapter of the Virginia Master Naturalist program discovered that tens of thousands of human exposures to poisonous plants are reported annually to poison control centers throughout the United States, and hundreds of such incidents are reported annually to the University of Virginia Health's Blue Ridge Poison Center in Charlottesville, Virginia. These numbers may be shocking, yet the number of actual cases of exposure to poisonous plants are much higher due to the fact that many cases are never reported to poison centers. Further, since the COVID-19 pandemic hit Virginia, people are spending more time at home and out in nature. There has also been an increased interest in foraging for wild foods. Consequently, there has been an increase in accidental poisonings.

Moreover, asking even well-informed gardeners and hikers about wild poisonous plants here in Virginia demonstrated how little gardeners, and the general public as a whole, know about poisonous plants in the environment. These concerns, coupled with the large number of human exposures to poisonous plants, led to the creation of this publication. Our research revealed a huge gap in basic plant knowledge relative to poisonous plants and made it clear that there was a need for educational outreach on this issue, especially to children and foragers who could easily encounter these plants in nature.

This publication deals with poisonous plants and the dangers involved with them. However, the fact that a plant is poisonous does not mean that it should be destroyed. Many of these plants have a strong ecological value. These plants are often used by wildlife such as birds, mammals, and insects.

The 1st Edition of this project was published in 2018 with support from the Virginia Master Naturalist program and the Virginia Cooperative Extension. The publication covered 11 common poisonous plants growing in the wild in the Piedmont region of Virginia. Because it was very well received by the press and public, we were encouraged to immediately start working on an expanded edition. At the same time, the cooperation that had developed with the University of Virginia grew into a valued partnership during the development and publication of the 2nd Edition. This edition includes the 11 original plants plus 14 additional poisonous plants that grow in the wild and even in some gardens, in Virginia.

We would like to acknowledge the support by the Division of Medical Toxicology - Department of Emergency Medicine, University of Virginia School of Medicine and the University of Virginia Health's Blue Ridge Poison Center. Particularly we would like to acknowledge Dr. Chris Holstege, Dr. Heather Borek, Dr. Marissa Kopatic, and Dr. Jennifer Ross for their guidance and assistance with the review of this publication, and Heather Collier for her valuable administrative support.

The team of Virginia Master Naturalist volunteers who have contributed as authors of this edition are: William Birkhofer, Margaret Clifton, Kathy Fell, Charles Fortuna, Victoria Fortuna, Alfred Goossens, Don Hearl, Roberta Jalbert and Lizz Stanley. The editor was Margaret Clifton, and the IT manager Bonnie Beers.

We owe an enormous debt of gratitude to Trish Crowe of the Firnew Farm Artists' Circle in Madison County, for designing the cover for the 2nd Edition of The Socrates Project. This beautiful original artwork is a watercolor rendition of the parts of several poisonous plants that grow in the wild in Virginia and which are included in the publication.

We would also like to thank the many photographers who have given us permission to use their photos in this publication. Their names and affiliations are given with each photo credit.

Peer review of this publication was conducted by:

* Christopher P. Holstege, MD, Chief, Division of Medical Toxicology, Professor, Emergency Medicine and Pediatrics, University of Virginia School of Medicine

* Ronald S. Hughes, Lands and Access Manager, Virginia Department of Wildlife Resources

* Michelle D. Prysby, Virginia Master Naturalist Program Director and Extension Associate, Virginia Tech Department of Forest Resources and Environmental Conservation

* John F. Townsend, Staff Botanist, Virginia Department of Conservation and Recreation, Division of Natural Heritage

We are extremely grateful for their time, expertise, and input to this publication.

This publication is available on the following website:
The University of Virginia Health's Blue Ridge Poison Center:
https://med.virginia.edu/brpc/socrates

Find information about the Virginia Master Naturalist program at the following:
www.virginiamasternaturalists.org

For any suggestions and comments please contact socratesplants@gmail.com

Alfred E. Goossens
Project Leader
The Socrates Project - Poisonous Plants in Virginia

The Socrates Project

Poisonous Plants in Virginia

2nd edition

American False-hellebore

Veratrum viride

Plant Description

American False-hellebore (also called White Hellebore, Green Hellebore, and Indian Poke) is native to Virginia, grows 2 to 7 feet tall, with a solid green stem with ribbed leaves that clasp the stem. Leaves are alternate, 4 to 14 inches long, 2 to 8 inches wide, elliptical and pointed, and heavily ribbed with hairy undersides. The plant produces numerous flowers in July-August, on a large branch, 1 to 2 feet tall. The flowers of the American False-hellebore are yellowish green with six petals. Each flower consists of six yellow-green balls, which actually are called anthers, the pollen-producing structures of the flower.

Photo credit:
Richard Stromberg
VMN Shenandoah Chapter

Where it may be Found

American False-hellebore is a plant native to Virginia and grows in wet soils in low-lying meadows, stream banks, open forests, swamps, seeps, and bogs. It is frequent in the mountains, but rare in the central and northern Piedmont, Coastal Plain, and the Northern Neck.

What Part(s) of the Plant are Toxic

All parts of the plant are poisonous and contain toxic steroidal alkaloid compounds. The entire plant is highly toxic and potentially fatal when ingested by humans or by livestock. The plant should not be touched or handled as the toxic compounds can be absorbed through the skin.

Photo credit:
Gary Fleming, DCR, VA

Contact with poisonous plants can be dangerous. For appropriate medical advice call your local poison center at ***1-800-222-1222.***

Common Symptoms
When American False-hellebore is ingested, it can cause nausea, vomiting, abdominal pain, dizziness, seizures, decreased blood pressure, slowed heart rate, heart arrhythmia, coma, and potentially death.

Look-alikes
These plants are commonly mistaken for some wild edibles, including Pokeweed (also described in this publication), and edible Leeks (also known as Ramps). All these plants grow in similar or adjacent environments as American False-hellebore. Since more people have more time at home recently due to the COVID-19 pandemic, there has been an increased interest in foraging wild foods, and as a result of that, an increase in accidental poisonings.

Notes
The plant was considered to have magical properties by many Native American tribes. Historically, this plant was used in medicine into the 1960s. Its value was as a pain reliever and a heart sedative. It was even used in pharmaceutical drugs to slow heart rate and lower blood pressure. The dried and crushed plant has also been used as a sneezing powder or snuff. American false-hellebore is not, and should not, be used medicinally.

Additional information may be found in the bibliography at the end of this publication; refer to the following numbered sources: 48, 51.

Photo credit:
Richard Stromberg
VMN Shenandoah Chapter

Photo credit:
Gary Fleming DCR, VA

Climbing Nightshade

Solanum dulcamara

Plant Description.

Climbing Nightshade, also called Bittersweet, is a perennial woody vine growing up to 10 feet in length. This non-native Eurasian plant has become naturalized in the U.S. The spearhead-like leaves are alternate with deep lobes twice as long as wide. Purple to blue star-shaped flowers grow on an open-branched cluster. The five petals of the flower curve back to reveal a yellow anther, resembling a shooting star. The small, egg-shaped green berries turn yellow, then orange, and finally ripen to a bright red and have a pungent odor. The berries are produced in constant succession through summer and early autumn and many remain on the plant long after the leaves have fallen. It has a rhizomatous root system.

Photo credit: Gary Fleming, DCR, VA

Where it may be Found

Climbing Nightshade can be found frequently in the understory of disturbed forests, forest edges and wet, rich soils of Virginia's mountains. It is infrequent in the Piedmont and is considered rare in the coastal areas.

Photo credit: Ana Ka'ahanui
VMN Fairfax Chapter

What Part(s) of the Plant are Toxic

All parts of the plant are toxic to mammals, including humans, yet white-tailed deer have been known to eat the ripe fruit without harm. If handled, the plant may cause skin irritation, particularly if it contacts broken skin. The most toxic part of the plant is the unripe fruit (berries), which become less toxic as they ripen. Foliage is bitter and unpalatable.

Contact with poisonous plants can be dangerous. For appropriate medical advice call your local poison center at ***1-800-222-1222.***

Common Symptoms
Nausea, vomiting, and diarrhea are the most common symptoms reported following accidental ingestion. The plant is also known to cause excessive perspiration and increased urination. Other symptoms can include enlarged pupils, slowed heart rate, difficulty breathing, reduced body temperature, loss of sensation, vertigo, delirium, convulsions, paralysis, shock, and possibly death. Children may be more likely to develop symptoms after exposure.

Look-alikes
This plant is often confused with Eastern Black Nightshade (also described in this publication), a native annual and similar species, with very similar toxicity. Eastern Black Nightshade, however, is not a vine. Both of these plants can be problematic for horses, cattle, goats, and sheep because of their toxicity to livestock.

Notes
Climbing Nightshade is in the same family that includes tomatoes, potatoes, and eggplant. Extract from the bark, stems, and roots has been used medicinally for pain relief of many ailments.

Additional information may be found in the bibliography at the end of this publication; refer to the following numbered sources: 16, 48, 51, 53.

Photo credit: Brenda Clements Jones
VMN Old Rag Chapter

Photo credit: Brent Furbee, MD
Indiana University

Virginia Master Naturalist

Common Pokeweed

Phytolacca americana

Plant Description

Pokeweed is a large perennial plant, 3 to 10 feet tall, rising from a large rootstock. The root-crown is where the annual growth begins. Stems are thick, hollow, erect, and branched, often reddish or purplish in color. Leaves are simple, oval in shape, with smooth edges and are alternate in arrangement on the stem. Flowers are greenish white, with petal-like sepals, and grow in loose clusters. Bloom period is from June through September. Berries that appear in drooping clusters are green when immature and turn a deep purple to black at maturity. Approximately nine seeds are contained in each berry.

Photo credit: Don Hearl
VMN Old Rag Chapter

Where it may be Found

Pokeweed is found throughout Virginia growing in open fields, along fencerows, roadsides, crop fields, and sunny forest edges.

What Part(s) of the Plant are Toxic

All parts of the plant are poisonous and contain saponin glycosides that can cause serious poisoning. Contact with plant parts and bare skin should be avoided since the juice of pokeweed can be absorbed through the skin.

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Photo credit:
Brenda Clements Jones
VMN Old Rag Chapter

Contact with poisonous plants can be dangerous. For appropriate medical advice call your local poison center at ***1-800-222-1222.***

Common Symptoms
Symptoms of ingestion include nausea, severe vomiting, abdominal cramps, diarrhea, and a burning sensation in the mouth. There can be visual impairment and weakened respiration and pulse. More serious illness can develop from subsequent dehydration. Convulsions and death may follow. Plant juice may cause irritation of the skin that can cause an itchy or painful rash.

Look-alikes
Pokeweed root is similar in appearance to some edible tubers and may be mistaken as edible by foragers. To a child, Pokeweed berries look like grapes; clusters of purple berries hang from stems, usually at a child's level. Adults can easily tell pokeberries from grapes by their red stems, which don't look like woody grapevines at all.

Notes
The name Pokeweed is derived from "puccoon," an Algonquin name meaning mourning doves, and many mammals consume the berries and spread the seeds. Early spring shoots are eaten in the south, e.g., "poke salad." The spring greens are cooked in two changes of water to reduce the toxin concentration. The berries were used for a natural dye, ink and food color. The practice of using parts of the Pokeweed plant as a food ingredient is seriously questioned because of the severe poisoning that has often resulted. This plant should not be eaten and care should be used when handling it to avoid direct skin contact.

Additional information may be found in the bibliography at the end of this publication; refer to the following numbered sources: 38, 41, 48, 51.

Photo credit: Don Hearl
VMN Old Rag Chapter

Photo credit: Alfred Goossens
VMN Old Rag Chapter

Cow Parsnip

Heracleum maximum

Plant Description

Cow-parsnip or Common Cow-parsnip is a tall, foul-smelling, non-woody native perennial reaching 7 feet in height. It can be a biennial or perennial, meaning that the plant generally lives for two years and then dies after flowering and setting seed in the second year. The stems are hollow, ridged or grooved, and covered with small hairs. The leaves are deeply divided, the leaf margins (edges) are serrated, or "toothed," and they are arranged alternately on the stem. Leaves resemble those of Giant Hogweed (which is in the same family and genus) but are not as lobed and serrated. The small, white flowers are grouped in a cluster in an umbrella-like flower head, called an umbel; similar to the umbels of the carrot, which is also in the same family. The umbels may be up to 8 inches across. The outer flowers of the umbel may be much larger than the inner flowers. The plant flowers from May to August.

Photo credit: Richard Stromberg
VMN Shenandoah Chapter

Photo credit: Gary Fleming, DCR, VA

Where it may be found

Along roadsides, clearings and forest openings, mostly at middle to higher elevations in the mountains. Frequent on the Northern Blue Ridge and infrequent elsewhere through western mountains.

What part(s) of the plant are toxic

All parts of the plant are toxic to the skin. Like Giant Hogweed, the sap of this plant contains furocoumarins, chemical compounds which in humans are strongly phototoxic. This means that when the sap is exposed to sunlight it undergoes chemical changes that produce toxins that injure the skin. DO NOT TOUCH this plant!

Contact with poisonous plants can be dangerous. For appropriate medical advice call your local poison center at ***1-800-222-1222.***

Common Symptoms

A painful, blistering rash occurs on the skin when exposed to sunlight. In some cases, blistering may be severe (resembling a burn) and require advanced medical care. The rash and blisters may appear on the day of contact with this plant, or several days after contact, and may last for up to 2 weeks. Scars formed may persist indefinitely. Ingestion may cause irritation of the gastrointestinal tract leading to nausea and vomiting.

Photo credit: Richard Stromberg
VMN Shenandoah Chapter

Look-alikes

Cow-parsnip has various look-alikes.
The most obvious is Giant Hogweed, which is much larger in size and has purple spots on the stem. Giant Hogweed phototoxicity is worse and more dangerous than Cow-parsnip. Other look-alikes include Poison Hemlock, Water-hemlock and Wild Parsnip, each of which are toxic (and are also described in this publication). Queen Anne's Lace is also a look-alike but it can be differentiated from the others by the dark purple spot in the middle of its flower head.

Photo credit:
Gary Fleming, DCR, VA

Notes

Native Americans had a variety of uses for Cow-parsnip, from medicine to food, and even as drinking straws and flutes, however, using the green stems for straws or flutes has led to serious injury and is strongly discouraged.

Additional information may be obtained from these references, listed in the bibliography at the end of the publication: numbers 25, 32, 48, 51

Eastern Black Nightshade

Solanum ptychanthum

Plant Description

A native annual growing 1 to 3 feet tall, with egg-shaped to triangular medium-green leaves with blunt teeth on the edges. The undersides of the leaves can sometimes be purplish. White to purple-tinged, star-shaped flowers grow in panicles, a loose branching cluster of flowers, of 5 to 7 per group. Each flower has five petals which curve backwards to reveal a yellow anther (the flower part that contains the pollen), similar to Climbing Nightshade (*Solanum dulcamara*), also discussed in this publication. Flowers appear in late summer and bloom through early autumn. Berries are small, starting out green, then ripening to a glossy black. The plant has a fibrous taproot.

Photo credit: Lynn Sosnoskie
University of GA, Bugwood

Where it may be Found

A variety of dry open areas, or in over-grazed fields or weedy waste places. Commonly grows in gardens among crops of related species such as potatoes and tomatoes. It is abundant and commonly found throughout Virginia.

Photo credit: Gary Fleming , DCR VA

What Part(s) of the Plant are Toxic

Like some other plants of this genus (*Solanum*), all parts of the plant are toxic to mammals, including humans, but the berries become less toxic as they mature. The leaves, stems, and seeds are particularly toxic. The foliage is bitter and so avoided by deer and other herbivores. The berries are not toxic to birds -- wild turkeys, eastern meadowlarks, gray catbirds, and swamp sparrows all find them tasty and are important in dispersing seeds.

Contact with poisonous plants can be dangerous. For appropriate medical advice call your local poison center at ***1-800-222-1222.***

Common Symptoms
Eating the berries or other plant parts may cause gastrointestinal distress including nausea, vomiting, diarrhea, abdominal cramping, and excess salivation. Less common symptoms that have been reported with larger ingestions include hallucinations, paralysis, and rarely, death.

Look-alikes
This plant is often confused with Climbing Nightshade, a perennial woody vine (also described in this publication).

Notes
Like some other plants in this genus (*Solanum*), Eastern Black Nightshade can be a problem plant for people keeping horses, cattle, sheep, and goats. Farmers are discouraged from haying fields that are overgrown with Eastern Black Nightshade because it is toxic to livestock.

Additional information may be found in the bibliography at the end of this publication; refer to the following numbered sources: 15, 48, 51.

Photo credit: Rebekah D. Wallace
University of GA, Bugwood

Photo credit: Bruce Ackley
Ohio State University, Bugwood

Common Elderberry

Sambucus canadensis

Red Elderberry

Sambucus racemosa var. *pubens*

Plant Description

Both the Common Elderberry and the Red Elderberry are native shrubs ranging in height from 2 to 20 feet tall. Flowers of both plants are very small and grow in umbels. Flowers of the Common Elderberry are typically white, creamy, or yellow when open; the fruits (small berries) are black or purple when ripe. Flowers of the Red Elderberry are typically white but the fruits, also small berries, are red. Both species flower between May and September and fruit between July and October. The leaves of both Elderberry species are compound and have a skunk-like odor. The bark of both species is gray/brown, but the Common Elderberry bark is dotted with small brown bumps.

Photo credit: Don Hearl
VMN Old Rag Chapter

Where it may be Found

Common Elderberry is common throughout all parts of Virginia except at the highest elevations in the mountains. It prefers moist sunny locations. Red Elderberry is common in mid- to high-elevations in the mountains and prefers rocky and well-drained, sunny to partly-shaded areas.

Photo credit: Brent Furbee, MD
Indiana University

What Part(s) of the Plant are Toxic

All parts of both species, including the roots, are poisonous and contain cyanide-producing toxins. Ripe berries (deep purple-maroon to almost black) of the Common Elderberry are edible when cooked. Even the edible Elderberry should be used with caution in people on certain medications or with other health conditions. The ripe Red Elderberry fruits are mildly toxic when ingested and therefore should not be eaten unless first cooked.

Contact with poisonous plants can be dangerous. For appropriate medical advice call your local poison center at ***1-800-222-1222.***

Look-alikes

Due to the compound leaf structure of both species, they can be mistaken for many other young trees and shrubs with similar compound leaves, including Poison Sumac (described elsewhere in this publication). Common Elderberry is distinguished from Pokeweed (also described in this publication), by the berries, which in Pokeweed grow in loose, drooping, clusters and are smaller. Further, Elderberry fruits ripen in early to mid-summer whereas Pokeweed berries ripen in late summer and early fall. Pokeweed berries are larger, dented, and grow in longer, thinner clusters. Elderberry has compound leaves with numerous leaflets, Pokeweed does not. Pokeweed stems are fleshy and non-woody and sometimes reddish in color, whereas Common Elderberry stems are woody with bumpy flecks.

Photo credit: Don Hearl
VMN Old Rag Chapter

Photo credit: Don Hearl
VMN Old Rag Chapter

Common Symptoms

Ingestion of significant amounts of elderberry will cause nausea, vomiting, diarrhea, weakness, numbness, headaches, and dizziness. Contact with the skin may cause a rash. There are reported cases of mental impairment requiring hospitalization, but most people fully recover quickly.

Notes

Common Elderberry's woody stems and twigs have been used for arrow shafts, flutes, whistles, and spiles for collecting maple sap. The berries of both species can be used as dyes and those of Red Elderberry are used for some medicinal purposes, though this is highly discouraged, as accidental poisonings can occur. Readers are reminded that all plant parts, with the exception of ripe berries of the Common Elderberry, and cooked or processed berries of the Red Elderberry, are toxic.

Additional information may be found in the bibliography at the end of this publication; refer to the following numbered sources: 10, 14, 51.

Foxglove

Digitalis purpurea

Plant Description

Foxglove (Foxglove, Common Foxglove, Purple Foxglove or Lady's Glove) is a non-native biennial plant with soft, hairy, toothed, egg- and lance-shaped leaves. Leaves are gray-green in color, 4 to 12 inches wide, with a distinctive vein structure. The plant's first year growth consists of just a basal rosette of leaves, and in its second year it produces flowering stems, 3 to 6 feet tall. The flowers are purple to white, spotted, thimble-like, last about six days, and droop from spikes near the top of the flowering stem.

Where it may be Found

Foxglove was originally imported from Europe as an ornamental plant and has escaped cultivation in places. In Virginia, it grows in average, well-drained soil in part shade. It prefers moist, organically rich, acidic soils but will also grow in sparse soil such as rock crevasses, dry hilly pastures, roadsides, logged-off areas, and rocky places. Foxglove may be found in the Piedmont and the Coastal Plain.

What Part(s) of the Plant are Toxic

All parts of the plant, including the leaves, flowers, stems and seeds, are highly toxic, with upper leaves of the stem being more toxic than the lower leaves. The primary toxins are the plant steroids digitoxin and digoxin, both of which affect the human heart. Eating this plant can be fatal at any time, however, it is most toxic just before the seeds ripen. Although two to three dried leaves may be fatal if ingested, death is rare due to the bitter taste of the leaves, which usually deters people from consuming it. However, some people have mistaken it for other plants (see Look-alikes), and inadvertently used it to make

Photo credit: Alfred Goossens
VMN Old Rag Chapter

Photo credit: Gary Fleming
DCR, VA

Contact with poisonous plants can be dangerous. For appropriate medical advice call your local poison center at ***1-800-222-1222***

tea or salads. Any ingested amount should be considered dangerous.

Common Symptoms

Ingestion of this plant has significant effects on the heart and can cause pulse changes and irregular heart rhythms, potentially leading to death. Other symptoms include nausea, vomiting, diarrhea, headache, weakness, drowsiness, hallucinations, and confusion. Repeated ingestion is reported to cause loss of appetite and changes in sight, including visions of flashing lights, halos, and unusual colors.

Look-alikes

In the first year of growth, during the basal stage, Foxglove may be confused with the Borage (*Borago officinalis*) plant, also known as Starflower, an annual herb typically used in salads. Foxglove may also be confused with Comfrey (*Symphytum officinale*), a common herb used in medicinal teas.

Notes

This plant is termed a waif, or a non-native plant that has difficulty surviving on its own outside of cultivation, and which occurs infrequently in the state. Many spread from cultivation but there is insufficient evidence that they are clearly naturalized and persistent. The earliest known form of the word Foxglove is the Anglo-Saxon "foxes glofa" (the glove of the fox). The name derives from the flowers, which resemble the fingers of a glove, and possibly from an Old World legend which says that bad fairies gave the blossoms to the fox to put on his toes so that he might soften his step while he hunted for prey. A Foxglove extract is used to make the medicine Digoxin, still used today as a treatment for some cardiac disorders.

Photo credit: Richard Stromberg
VMN, Shenandoah Chapter

Photo credit: JoAnn Dalley
VMN, Rivanna Chapter

Additional information may be found in the bibliography at the end of this publication; refer to the following numbered sources: 4, 7, 51.

Giant Hogweed

Heracleum mantegazzianum

Plant Description

This plant is not native to the United States. It originated in Southwest Asia, from where it was imported as an ornamental garden plant to Europe in the 19th century. It was first recorded in the United States in 1917 in an ornamental garden in New York. It is a biennial plant but is known to remain for multiple years in the rosette stage. When the plant develops sufficient root reserves the plant initiates flower formation. In the first year the plant will grow a low rosette of leaves, at about 1 to 2 feet. In the second, or sometimes the third year, it will develop fully with large, thick stems and flower heads reaching a total of 15 to 18 feet in height. The plant flowers June to August. The flowers are small and white, growing in an umbrella-shaped umbel, and resembling the flowers of Carrot or Parsley, but are much larger, from 1 to 2½ feet wide. The leaves have an alternate arrangement on the stem, are deeply lobed, and can be up to 5 feet in diameter with a prominent sheath at the base of the stalk. The stems are hollow, 2 to 4 inches in diameter, with distinctive purple-red blotches and prominent white hair. The stems have a thick circle of hair at the base of the leaf stalk around the sheath.

Photo credit: New York State Department of Environmental Conservation

Photo credit: New York State Department of Environmental Conservation

Where it may be Found

The plant grows in rich, moist soils along roadsides, stream banks, vacant farmland, and in areas that are not disturbed, such as fence and tree lines. After a recently confirmed identification by the Massey Herbarium at Virginia Tech, Giant Hogweed was documented growing at several locations in Virginia although it doesn't seem to be widely distributed. Also we may come across this plant in certain gardens where it was planted because it

Contact with poisonous plants can be dangerous. For appropriate medical advice call your local poison center at ***1-800-222-1222.***

looks so "giant" not realizing the dangerous aspects of this plant. It is also officially reported to grow in neighboring states, including Maryland, North Carolina, and Washington, D.C.

Which Part(s) of the Plant are Toxic

This plant, although VERY DANGEROUS to humans, is not poisonous the way we commonly think. The sap of this plant contains furocoumarin, which in humans is strongly phototoxic. **Therefore this plant should not be touched!** Giant Hogweed is on the Federal Noxious Weeds list of the U.S. Dept. of Agriculture.

Common Symptoms

The juice or sap of this plant is strongly phototoxic, resulting in serious skin reactions after exposure to sunlight. First, a skin rash may occur that may worsen to blisters, which can look like severe burn wounds. Red-purple scarring may develop that can last for years. Exposure of the eyes to the plant's juice may lead to blindness.

Look-alikes

There are various look-alike plants of Giant Hogweed in Virginia, such as Cow-Parsnip, Poison Hemlock and Wild Parsnip (all described in this publication). They may look like Giant Hogweed, particularly Cow-parsnip; however, none reach the size of Giant Hogweed, and all of them lack the red-purple blotches with the white hair on the stem.

Additional information may be found in the bibliography at the end of this publication; refer to the following numbered sources: 20, 21, 22, 24.

Photo credit: New York State Department of Environmental Conservation

Day 3

Day 5

Photo credit: Zamarra Kok, The Netherlands

Horse-nettle
Carolina Horse-nettle

Solanum carolinense

Photo Credit: Richard Stromberg
VMN Shenandoah Chapter

Plant Description

The Horse-nettle is not a true nettle but a member of the Nightshade (*Solanaceae)* family. Horse-nettle leaves are 2½ inches to 4½ inches long, lobed, and covered with fine hairs and spines. The plant stems are angled at the nodes (the part of the stem from which leaves emerge), become woody with age, and have prickles and star-shaped hairs. The leaves, when crushed, smell like potatoes. Horse-nettle can grow to 3 feet in height but is usually shorter. Flowers have five petals and are usually white or purple with yellow centers, although there is a blue variant that resembles the tomato flower. Horse-nettle blooms throughout the summer from April to October. Fruits are approximately ½ inch in diameter and resemble small tomatoes. The immature fruit is dark green with light green stripes, turning yellow and wrinkled, as it matures. Each fruit contains approximately 60 seeds.

Photo Credit: Don Hearl
VMN Old Rag Chapter

Where it may be Found

It is a perennial herbaceous plant native to the southeastern United States that has spread widely throughout much of temperate North America. Horse-nettle can be found throughout Virginia, growing in pastures, roadsides, and in disturbed areas and waste ground. It prefers sun but can tolerate both wet and dry conditions.

Contact with poisonous plants can be dangerous. For appropriate medical advice call your local poison center at ***1-800-222-1222.***

Which Part(s) of the Plant are Toxic

All parts of the plant are poisonous and contain the toxic chemical solanine. The majority of reports of human toxicity is from the ingestion of the fruits. Unripe berries are more toxic than ripe berries. Berries are more toxic than leaves which, in turn, are more toxic than stems or roots. Plant toxicity is often stronger in autumn as the poisons are more concentrated.

Photo Credit: Don Hearl
VMN Old Rag Chapter

Common Symptoms

Ingesting the fruit will irritate the stomach and intestines, causing nausea, stomach cramps, and diarrhea. Other symptoms include excessive salivation, vomiting, drowsiness, weakness, and respiratory distress. Horse-nettle poisoning is rarely fatal; the fatalities that do occur are more often found in children, and then, only when larger quantities are eaten.

Look-alikes

Buffalo-bur (*Solanum rostratum*) is also hairy and has prickles, but it is an annual that has leaves with much deeper lobes than Horse-nettle, bright yellow flowers, and brown spiny berries. Perennial Groundcherries (*Physalis* species) are similar to Horse-nettle in appearance, except they lack prickles, have yellow flowers, and form berries enclosed in papery pods.

Photo Credit: Don Hearl
VMN Old Rag Chapter

Notes

There is documented use by the Cherokee people as a sedative and aid in teething pain in infants; there is also evidence that African-Americans in the southern U.S. used it to treat seizures. Horse-nettle is not commonly used medicinally today.

Additional information may be found in the bibliography at the end of this publication; refer to the following numbered sources: 39, 43, 51.

Jack-in-the-pulpit

Arisaema triphyllum

Plant Description

Jack-in-the-pulpit is a native perennial that grows from a short, solid, vertical underground stem called a corm. Jack-in-the-pulpit grows from 12 to 26 inches tall. It has one or two large, three-parted leaves, each on a separate stalk. Each leaf part, or leaflet, is elliptical to broadly oval. The unique flower emerges in spring and early summer on a separate stalk emerging between or near the leaf stalks. The flower, which consists of a brown spadix or spike, referred to as the 'Jack,' measures 2 to 3 inches long, and is covered with tiny male and female flowers. The spadix is enveloped by, or sits within, a green and brown or purple-streaked (or speckled) fleshy spathe, referred to as the 'pulpit,' with an elevated lip or hood that arches over the spadix. Bright red berries appear along the spadix in late summer and early fall.

Photo credit: Brenda Clements Jones
VMN Old Rag Chapter

Where it may be Found

Jack-in-the-pulpit is common throughout Virginia and can be found on swamp hummocks, floodplain forests and moist upland wooded areas.

Photo credit: Kathy Fell
VMN Southern Piedmont Chapter

What Part(s) of the Plant are Toxic?

All parts of the plant are toxic. Jack-in-the-Pulpit contains insoluble calcium oxalate in the form of crystals. These microscopic, sharp crystals, known as raphides, create small lesions or cuts in skin and mucous membranes resulting in pain, inflammation, and swelling on contact.

Contact with poisonous plants can be dangerous. For appropriate medical advice call your local poison center at ***1-800-222-1222.***

Common Symptoms
Symptoms of insoluble calcium oxalate poisoning include irritation, drooling, swelling, and blistering of the mouth, lips, tongue, and throat. In severe exposures, this may progress to difficulty breathing and/or speaking due to excessive swelling of the throat and airways.

Notes
At least one Native American tribe would put finely chopped Jack-in-the-Pulpit root into meat and leave it for their enemies to find. A few hours after eating the poisoned meat, their enemies would be in terrible pain and possibly die. The starchy corm of this plant was known to be eaten by native peoples. After thorough drying of the corm, it was pounded into flour and used. It is highly recommended that no part of Jack-in-the-Pulpit be ingested in any way.

Additional information may be found in the bibliography at the end of this publication; refer to the following numbered sources: 30, 31, 49, 51, 56.

Photo credit: Brenda Clements Jones
VMN Old Rag Chapter

Photo credit: Richard Stromberg
VMN Shenandoah Chapter

Jimson-weed

Datura stramonium

Plant Description

An upright, branching annual plant in the nightshade family (Solanaceae) reaching 5 to 6 feet tall, with coarse textured and foul-smelling foliage. Leaves are alternate, ovate, and irregularly toothed, 3 to 8 inches long and green, but sometimes purple-tinged and the stems are green to purple in color. The flowers are large and trumpet-shaped ranging from white to lavender/light purple in color. Flowers appear July through October and are generally night-blooming. Each flower lasts only one day. Fruits are hard, spiny capsules with four chambers that contain an abundance of flat dark-brown to black seeds, which disperse when the mature seed capsules split.

Photo credit: Don Hearl
VMN Old Rag Chapter

Where it may be Found

Jimson-weed is considered a non-native plant, presumably introduced to North American from Mexico or Central America. It is common throughout Virginia in pastures, fields, waste areas, and in sand and gravel bars in and around streams. It prefers rich soils, but can be found in widely varied conditions.

Photo Credit: Brent Furbee, MD
Indiana University

Which Part(s) of the Plant are Toxic

All parts of the Jimson-weed are poisonous. Jimson-weed is at times used deliberately through the direct ingestion of seeds, the brewing of tea from plant parts, or by ingestion of the leaves, often with markedly adverse neurologic effects that require hospitalization. Jimson-weed has a history of use by shamans and other folk medicine practitioners because it is hallucinogenic in small doses. The toxicity is caused by tropane alkaloids found throughout the plant. Jimson-weed is extremely toxic and should always be avoided.

Contact with poisonous plants can be dangerous. For appropriate medical advice call your local poison center at ***1-800-222-1222.***

Common Symptoms

Effects of ingestion include headaches, hallucinations, delirium, agitation, enlarged pupils, constipation, urinary retention, elevated pulse, hypertension, and fever.

Notes

The common name of Jimson-weed was originally "Jamestown Weed," the result of a documented occurrence of mass poisoning of British soldiers in Jamestown in 1676. The plant was boiled for use in a salad that the soldiers ate. Over the course of the next ten days (according to reports), the soldiers exhibited the hallucinogenic effects of the plant and had to be confined to prevent them from hurting themselves.

Additional information may be found in the bibliography at the end of this publication; refer to the following numbered sources: 51.

Photo credit: Pat Temples
VMN Old Rag Chapter

Photo credit: Richard Stromberg
VMN Shenandoah Chapter

Lily-of-the-valley

European Lily-of-the-valley
Convallaria majalis
American Lily-of-the-valley
Convallaria pseudomajalis

Plant Description
Lily-of-the-valley species are perennial plants with two species found in Virginia. The European Lily-of-the-valley is an escaped cultivar originating in Europe that grows in dense colonies. Its stems grow from 6 to 10 inches tall, with one or two oval to elliptic-shaped leaves, 4 to 10 inches long. Flowering plants typically have two basal, oblong, smooth leaves. Flower stalks are single and have between 5 to 15 flowers growing in a row near the top of the stalk. American Lily-of-the-valley is native, similar in appearance to the European cultivar, but with larger and longer leaves. It does not grow in dense colonies. Flower stalks are similar to European Lily-of-the-valley. Both species bloom in spring to early summer and have small, bell-shaped, white flowers that have a very sweet fragrance. The fruit of both species are small orange-red berries approximately ¼ to ⅓ inch in diameter which contain a few large whitish to brownish colored seeds. When dried, these seeds become translucent ⅛ inch round beads.

Where it may be Found
European Lily-of-the-valley prefers partial shade and warm summers. It grows well in silty or sandy soils, acidic to moderately alkaline, which contain a high amount of organic material. It is infrequent throughout the state and typically found in thickets, roadsides, woods, and around abandoned homesites. American Lily-of-the-valley is common in the mountains of southern and central Virginia, and rare in the southwestern Piedmont. It prefers

Photo credit: Brenda Clements Jones
VMN Old Rag Chapter

Photo credit: Brenda Clements Jones
VMN Old Rag Chapter

Contact with poisonous plants can be dangerous. For appropriate medical advice call your local poison center at ***1-800-222-1222.***

moderately moist mountain forests with acidic, nutrient-poor soils.

What Part(s) of the Plant are Toxic
All parts of the plant are potentially toxic, however, unless mistaken for another plant (see Look-alikes), it is rarely associated with morbidity or mortality. Children may be especially susceptible to its dangerous effects.

Common Symptoms
If ingested, these plants can cause significant heart problems including pulse rate changes and irregular heart rhythms that can result in death. Other symptoms include burning of the mouth and throat, nausea, vomiting, abdominal pain, dilated pupils, headache, and confusion.

Look-alikes
Lily-of-the-valley is similar in appearance to a species of Wild Onion (*Allium tricoccum*) also known as Wild Leeks or Ramps. Both are found in the western mountains of Virginia. Wild Leeks have a strong onion odor while Lily-of-the-valley does not.

Notes
In folk medicine, European Lily-of-the-valley has been used since ancient Greece for treating heart disease, edema (swelling in hands and ankles), and as a laxative. Herbalists in Europe still advocate its use. Children are attracted to the red berries and have died drinking water from a vase containing the flowers. The cardioactive constituents (heart toxins) in Lily-of-the-valley are similar to digitalis (found in Foxglove, also described in this publication), which is used medicinally to treat congestive heart failure. The use of either species for such medicinal purposes is highly discouraged.

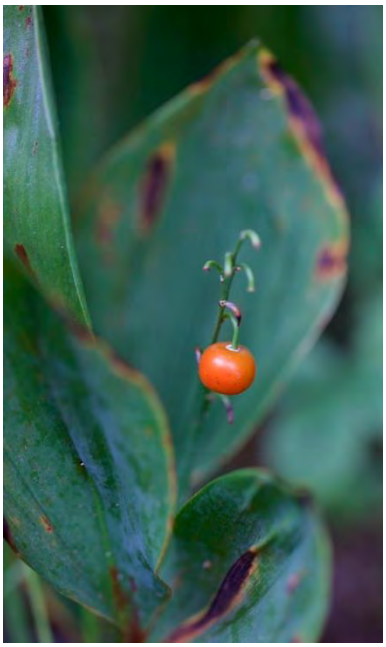

Photo credit: Brenda Clements Jones
VMN Old Rag Chapter

Photo credit: Ansel Oommen, Bugwood.Org

Additional information may be found in the bibliography at the end of this publication; refer to the following numbered sources: 7, 51.

Mayapple

Podophyllum peltatum

Plant Description

Mayapple is an unusual and showy plant in the Barberry (Berberidaceae) family. One of the earliest plants to emerge in spring, it dies back by summer. It has one to two large umbrella-like leaves which open before the flower appears.The leaves are deeply divided and 6 to 8 inches across. The Mayapple will grow 12 to 18 inches in height. The flowers can be up to 2 inches in diameter and droop in a bell-like fashion. They are primarily white, but can be pinkish, rose, or pale purple. Flowers are produced on the plants with two leaves; they are located under the large leaves, emerging in the fork of the leaf stems, and may not be immediately apparent to the viewer. They have prominent yellow stamens and 6 to 9 waxy petals. The fruit is approximately 2 inches in diameter and roundish, resembling a small apple. The green fruit turns creamy yellow in color when mature.

Photo credit: Richard Stromberg
VMN Shenandoah Chapter

Where it may be Found

Mayapple is native to Virginia, and commonly found throughout forests in humus-rich, slightly acidic to neutral soils. Mayapple is generally found in moist areas but can tolerate drier, sunny areas as well. This plant can form dense colonies.

Photo credit: Don Hearl
VMN Old Rag Chapter

What Part(s) of the Plant are Toxic

Leaves, roots, stems, seeds, and unripe fruit are all toxic when ingested and contain the toxin podophyllin, a class of
agents that are used to treat corns, warts, and certain other skin diseases.

Contact with poisonous plants can be dangerous. For appropriate medical advice call your local poison center at ***1-800-222-1222.***

Common Symptoms
Effects when ingested include nausea, vomiting, severe diarrhea, and abdominal pain, followed by multi-system organ failure, coma, and potentially death, days later.

Look-alikes
Mayapple is quite distinctive in appearance and most people would easily identify it and not mistake it for another species; however, in the southern Blue Ridge there is a plant that is similar in appearance and habitat called the Umbrella-leaf (*Diphylleia cymosa*). The leaves of Umbrella-leaf are not as deeply lobed/divided like Mayapple and the leaf margins on Umbrella-leaf have teeth that are sharper. The leaves of the Umbrella-leaf are typically larger than the largest Mayapple leaf. The single Mayapple flower grows under the leaves, attached to the main stem whereas the flower cluster of the Umbrella-leaf rises above the leaves and originates on the rootstock at ground level. The fruit of a Mayapple is single whereas Umbrella-leaf produces a cluster of small dark blue berries on red stems.

Notes
Native Americans ate the ripe fruit of Mayapple and it is today still advocated by foragers and herbalists. However, errors have been made when the fruit is not quite ripe, with resultant toxicity. The plant is known to be used for its potential medicinal value, such as the topical treatment of certain cancers and warts, and historically for the treatment of a variety of other ailments. It is sometimes referred to as Mandrake or American Mandrake; an alternate common name, Wild Mandrake (*Mandragora officinarum*), actually belongs to an unrelated plant with a similar root.

Photo credit: Richard Stromberg
VMN Shenandoah Chapter

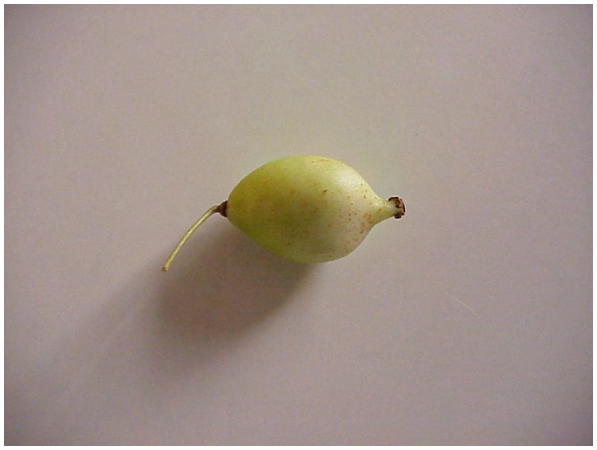

Photo credit: Chris Holstege, MD UVA

Additional information may be found in the bibliography at the end of this publication; refer to the following numbered sources: 31, 33, 51, 59.

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Monkshood

Blue Monkshood
Aconitum uncinatum
White Monkshood
Aconitum reclinatum

Plant Description
These native perennial plants grow from 2 to 5 feet in height, often supported by other plants, or sprawling across the ground. The leaves are alternate, palmately-lobed or divided, and can be up to 6 inches long. The flowers, which appear at the upper part of the vine, are showy and hood-shaped, with the tip of the upper flower part extending forward and down into a short beak. The plant flowers from June through September. The seeds are wrinkly and are the most poisonous part of the plant. The tuberous roots renew each year with the new root separated from the old by a slender stalk.

Where it may be Found
The Blue Monkshood may be found in well-drained floodplain forests, along stream banks and in swamps. It is frequently found at middle to lower elevations in the southern and central mountains (rarely higher and/or on mountaintops) and in the central and southern Piedmont but is rare in the Coastal Plain and northern Virginia. White Monkshood is less common, only known from 50 populations in Virginia, and is normally found in the middle to higher elevations of the mountains.

What Part(s) of the Plant are Toxic
All parts of these plants are extremely toxic when ingested, particularly the seeds and the roots. Some cases reported that touching the plants can cause mild poisoning effects. The toxins responsible

Photo credit: Clai Lange
VMN Rivanna Chapter

Photo credit: Bill Cour
VMN Banshee Reeks Chapter

Contact with poisonous plants can be dangerous. For appropriate medical advice call your local poison center at ***1-800-222-1222.***

are alkaloids including aconitine, mesaconitine, and hypaconitine.

Common Symptoms

Both Blue and White Monkshood are extremely toxic, causing effects on the gastrointestinal, nervous, and cardiac systems. The poison is fast-acting and can cause nausea, vomiting, weakness or inability to move, numbness, sweating, breathing problems, heart arrhythmias, convulsions, and death within hours. Poisoning can occur with ingestion of even small amounts of any part of the plant. Poisoning and death can occur from rubbing tinctures of Monkshood on the skin, especially if the skin is not intact (such as with burns or rashes), and therefore Monkshood should not be used as a medicinal remedy. Avoid touching these plants if possible, wear gloves when gardening, and always wash your hands after handling them. Although other Monkshood species have been cultivated as garden plants, it is inadvisable to grow this plant when children or curious pets can come in contact with it. However, Monkshood has been safely cultivated by gardeners for hundreds of years.

Notes

Also known as Wolfsbane because its poison is so toxic that it was reputedly once used to kill werewolves, and even real wolves, Monkshood has an extensive folklore of uses as a deadly plant. Other stories cite use by ancient warriors to poison the water of their enemies. A number of cultures around the globe used species of Monkshood to poison the tips of darts, arrows, and spears for hunting purposes and for warfare. The root continues to be used as an herbal remedy in Asia and Eastern Europe and is likely responsible for many fatal "accidents." Documented cases of murder using the plant may be found in the literature.

Photo credit: Bill Cour
VMN Banshee Reeks Chapter

Photo credit:
Barbara Southworth © 2020

Additional information may be found in the bibliography at the end of this publication; refer to the following numbered sources: 2, 13, 17, 40, 48, 51.

Mountain Laurel

Kalmia latifolia

Photo credit: JoAnn Dalley
VMN Rivanna Chapter

Plant Description

Mountain Laurel is a member of the Heath family (Ericaceae), and is native to Virginia. The species grows in the form of a shrub or small tree, frequently found in dense stands and thickets, and ranges in height from 7 to nearly 30 feet tall. Flowers have five petals that are fused together and saucer-shaped, and are typically in white or pink clusters or heads and have a pleasant scent. Flowering and fruiting occurs between March and July.

Where It may Be Found

Mountain Laurel is common throughout Virginia (Note: Sheep Laurel and Carolina Laurel are rarely found in Virginia, and thus are not covered here).

What Part(s) of the Plant Are Toxic

All plant parts, including leaves, stems, flowers, fruits, roots, and nectar are toxic to humans. Incidents of poisoning can include ingestion of honey made from Mountain Laurel flower nectar. It is also possible that poisoning from consumption of meat from game animals ingesting plant parts could occur.

Photo credit: JoAnn Dalley
VMN Rivanna Chapter

Contact with poisonous plants can be dangerous. For appropriate medical advice call your local poison center at ***1-800-222-1222.***

Common Symptoms
Following ingestion, watery eyes, runny nose, salivation, nausea and vomiting have been reported. In severe cases, slow pulse, heart arrhythmias, seizures, coma and death have occurred.

Look-alikes
Mountain Laurel can be mistaken for *Rhododendron* species, as both are members of the Heath family, and their habitats in the eastern United States, including Virginia, may overlap. Flowers of the Mountain Laurel, however, are smaller and cupped (½ to 1-inch in size), typically blooming in May and June, whereas *Rhododendron* species bloom in June and July, typically in clusters of multiple flowers about 1½ inches wide. Leaves of Mountain Laurel are elliptical, with pointed tips, yellow-green to dark green in color, while leaves of *Rhododendron* species are dark green, leathery, oblong-shaped and from 4 to 14 inches long. Mountain Laurel seedlings can look very similar to Teaberry/ American Wintergreen (*Gaultheria procombens*) which can grow in and around Laurel thickets. .

Notes
While plant parts were used for medicinal purposes and utensils by Native Americans(hence the alternate name 'spoon wood'), and by others for wreaths, furniture, pipe bowls, and other items, these practices are strongly discouraged to prevent accidental poisonings. Care should also be taken when foraging for and identifying other edible native plants, such as American Wintergreen, which may grow in proximity to the Laurels.

Photo credit: Michelle Prysby
Virginia Master Naturalist

Photo credit: JoAnn Dalley
Rivanna Chapter

Additional information may be found in the bibliography at the end of this publication; refer to the following numbered sources: 6, 37, 51.

Poison Hemlock

Conium maculatum

Plant Description

Poison Hemlock is a biennial plant in the Carrot family (Umbelliferae). It grows 6 to 10 feet in height, with a smooth green stem often spotted or streaked with red or purple. The leaves are compound, finely divided (3- to 4-pinnately) and lacy, up to 20 inches long by 16 inches wide. It has white flowers that grow in small erect clusters, or umbels, and bloom in late spring. Each flower develops into a green, deeply ridged fruit that contains several seeds which resemble Anise, Fennel, or Caraway seeds. All parts of this plant have an unpleasant odor. Though usually biennial, in favorable locations, it may persist as a perennial. The most important identification features are the stems and stalks; they are hairless, hollow, and almost always have purplish-red splotching or streaking, especially towards the base of the plant.

Where it may be Found

Poison Hemlock is an invasive non-native that is very common in Virginia and across the United States. It grows along fences, ditches, wet roadsides, and meadows.

What Part(s) of the Plant are Toxic

All parts are extremely poisonous and contain a neurotoxin. Poisoning often occurs when the victim confuses its root with Wild Parsnip (also described in this publication), its leaves with Parsley, or its seeds with Anise. Whistles made from hollow stems have been reported to be toxic and cause death in children. Even small internal doses can cause respiratory collapse and death. It can also cause a severe skin reaction similar to a burn when touched.

Photo credit: Chris Holstege, MD
University of Virginia

Photo credit: Brent Furbee MD
Indiana University

Contact with poisonous plants can be dangerous. For appropriate medical advice call your local poison center at ***1-800-222-1222.***

Common Symptoms
Symptoms following ingestion include nausea, vomiting, diarrhea, abdominal pain, coughing, wheezing, tearing, salivation, sweating, difficulty seeing, weakness, dizziness, trembling, seizures, paralysis, pulse change (rapid and slow), coma, and potentially death.

Look-alikes
Additional look-alikes include Queen-Anne's Lace (*Daucus carota*), Yarrow (*Achillea millefolium*), Wild Fennel (*Foeniculum vulgare*), and Elderflower (the flower of Elderberry (*Sambucus nigra*--also described in this publication), some of which are edible and useful to foragers as food and medicine. If foraging, Poison Hemlock is an important plant to know to stay away from, and when in doubt, do not pick it. Its roots smell disgusting, while Queen-Anne's Lace smells just like a Carrot. The flowers on both are in white clusters and grouped in umbels, but on Poison Hemlock the flowers are completely white and the flower head itself is rounded. Queen-Anne's Lace flower heads are flat with a dark blackish spot in the center of each flower head. Roots of Poison Hemlock may easily be mistaken for Wild Parsnips, but do not smell like parsnips. Again, when in doubt, leave it alone.

Notes
This plant is on the Federal Noxious Weeds list of the USDA and has been identified all over Virginia. This is the plant that was reportedly used to kill Socrates, the great philosopher of Ancient Greece, in 399 BC.

Additional information may be found in the bibliography at the end of this publication; refer to the following numbered sources: 35, 44, 48, 51.

Photo credit: Brent Furbee, MD
Indiana University

Photo credit: Brent Furbee, MD
Indiana University

Poison Ivy

Toxicodendron radicans

Poison ivy can grow as a single small plant, a mass of ground cover, a small bush, or a climbing vine reaching many feet up a tree or building. Leaves are alternate and compound, with three egg-shaped leaflets (leaves of three), with leaf edges that vary from smooth to sparsely toothed. In mature specimens, Poison Ivy vines are covered with many aerial roots, appearing as 'hairy ropes," up to 4 inches in diameter, attached to and climbing up trees and other vines. Poison Ivy produces clusters of small white flowers in the spring that in late summer yield small white berries loved by birds.

Photo Credit: Don Hearl
VMN Old Rag Chapter

Where it may be Found

Poison Ivy is native to Virginia and is a common plant that grows on a wide variety of sites. It can be found along forest edges in partial shade and adequate soil moisture but also grows in full shade, full sun, and on dry sites. In other words, it's not very picky!

Photo credit: Richard Stromberg
VMN Shenandoah Chapter

What Part(s) of the Plant are Toxic

Every part of the plant contains urushiol, a toxic, oily compound with allergenic properties. Contact with leaves or leaflets, roots, stems or vines, berries – any and all parts of the plant at any time of the year--can cause an allergic reaction. Burning this plant can also be dangerous as the smoke may cause eye and lung irritation.

Contact with poisonous plants can be dangerous. For appropriate medical advice call your local poison center at ***1-800-222-1222.***

Common Symptoms
Within a few hours of contact, those who are sensitive to urushiol may notice parts of their skin itching and burning. A rash is likely to follow with redness, swelling, and small blisters. Some reactions can be quite severe and require medical treatment.

Look-alikes
Other plants that have leaves that look like Poison Ivy include Boxelder (*Acer negundo)* and Virginia-creeper *(Parthenocissus quinquefolia*) (also described in this publication). Boxelder is a species of Maple tree, and is not a vine. Virginia-creeper is a vine in the Grape family (*Vitaceae*), and typically has five leaflets, compared to the three leaflets found on Poison Ivy. In Virginia's Piedmont, Poison Ivy is sometimes mistakenly called Poison Oak (*Toxicodendron pubescens*). Poison Oak has three to seven leaflets, often lobed like an oak leaf. Poison Oak's range is limited mostly to eastern Virginia, on dry, sandy sites.

Notes
Poison Ivy is a native plant and very valuable to wildlife. It even has a history of ornamental use for its showy white flowers and bright red fall color. "Leaves of three, let it be" is the helpful way to remember Poison Ivy and prevent touching it. In actuality the three "leaves" are leaflets of the compound leaf, but that doesn't rhyme quite as well!

Additional information may be found in the bibliography at the end of this publication; refer to the following numbered sources: 29, 46, 48, 51.

Photo credit: Richard Stromberg
VMN Shenandoah Chapter

Photo credit:
Richard Stromberg
VMN Shenandoah Chapter

Poison Oak

Toxicodendron pubescens

Plant Description

Poison Oak is a native perennial shrub that generally grows to less than 3 feet in height. It is a relative of Poison Ivy but usually differs in growth form, and the stems, leaf stems, and flower petals of Poison Oak have a velvety covering. It may also be seen as single stalks close to the ground. Poison Oak leaves are compound with three leaflets that are deeply toothed or lobed with wavy or serrated edges. By contrast, Poison Ivy leaves have smooth or slightly toothed edges and the plant usually grows as a vine. Poison Oak produces small white flowers in loose clusters in early summer and later produces gray or tan berries which grow along the stems and have a velvety covering. Like Poison Ivy, autumn color is brilliant orange-red.

Photo credit: Gary Fleming, DCR, VA

Photo credit: Gary Fleming, DCR, VA

Where it may be Found

Poison Oak prefers dry habitats, particularly in rocky and sandy forests. It is infrequent throughout Virginia, but common locally in the Coastal Plain of Virginia.

What Part(s) of the Plant are Toxic

Every part of the plant is toxic. Like Poison Ivy, Poison Oak contains urushiol, an oily sap/resin that can cause a painful, itchy rash on the skin. Burning the plant can be dangerous, as the smoke containing urushiol may cause eye and/or serious lung injury. Sensitivity to urushiol can vary

Contact with poisonous plants can be dangerous. For appropriate medical advice call your local poison center at ***1-800-222-1222***

among people; ranging from little or no symptoms for some, to very severe reactions for others. Do not touch or handle any part of this plant as the sap may be transmitted on various items, such as clothing, tools, or pets, and persist on those items for days to weeks.

Common Symptoms

Within a few hours of contact with any part of this plant, those sensitive to urushiol will notice itching and burning of their skin at the site of contact. A rash is likely to follow with redness, swelling and blisters. The rash may not appear for 1-2 days after exposure, and often lasts for 2-3 weeks. The rash is very itchy and scarring can occur, especially in lesions that are scratched resulting in further skin damage.

Look-alikes

Poison Oak may be confused with Poison Ivy because of its "leaves of three" Also,. because of its three-leaflet configuration it may also be confused with Blackberry (*Rubus* species), the important difference being that Blackberry has thorns.

Notes

Poison Oak is a valuable plant for wildlife: White-tailed deer, raccoons, and black bears are all able to browse on this plant, eating the leaves, fruit, and even the stems. As a ground cover or shrub it can provide cover for small animals, and it can act as a path to climb up and down trees for small mammals and lizards.

Additional information may be found in the bibliography at the end of this publication; refer to the following numbered sources: 5, 18, 19, 48, 51.

Photo credit: Richard Stromberg
VMN Shenandoah Chapter

Photo credit: Karan A. Rawlins
University of Georgia, Bugwood

Poison Sumac

Toxicodendron vernix

Plant Description

Poison Sumac is a native plant, and is related to Poison Ivy and Poison Oak, but not to other Sumacs. It grows as a deciduous shrub or small tree, commonly 5 to 20 feet tall, but may grow taller. Poison Sumac has a leaf structure resembling a feather, with a main leaf shaft, or petiole, and leaflets arranged on either side of an extension of the petiole called a rachis. Each rachis has between 6 and 12 parallel rows of oval leaflets, plus an additional single leaf at the end; all leaflets are generally 2 to 4 inches long with smooth edges. The petioles are usually strikingly red or pink at any time of the growing season. Young stems are typically red or red-brown, but may fade to brown or grey as the plant ages. Leaves on young plants point upwards and as they open in the spring they can be bright orange, changing to green, and then to red in the fall. In early summer it produces clusters of small white flowers which then become green berries that fade to white during the winter. The berries make this plant an important food source for wildlife.

Photo credit: Alison Sowar
VMN Northern Neck Chapter

Photo credit: Alison Sowar
VMN Northern Neck Chapter

Where it may be Found

Infrequent in the Coastal Plain areas of southeast Virginia, and rare in the Piedmont and mountains. It grows in acidic swamps, bogs, and moist clearings.

Contact with poisonous plants can be dangerous. For appropriate medical advice call your local poison center at ***1-800-222-1222.***

What Part(s) of the Plant are Toxic

All parts of this plant are toxic. Like Poison Ivy and Poison Oak (also described in this publication), Poison Sumac contains the toxic oily resin urushiol that can cause a painful skin rash. Even dry, fallen leaves as well as stems, branches, and twigs, can cause an irritating rash if touched. And like Poison Ivy and Oak, burning of any part of this plant is dangerous, as the smoke can cause severe symptoms and damage to eyes and lungs.

Photo credit: Gary Fleming DCR, VA

Common Symptoms

A painful, itchy rash may appear on the skin at the site of contact a few hours after touching the plant (see Poison Oak or Poison Ivy for more details on symptoms). Washing the exposed skin with soap and water as soon as possible may help remove the toxic resin.

Photo credit: Gary Fleming
DCR, VA

Look-alikes

Superficially, Poison Sumac resembles Tree-of-Heaven (*Ailanthus altissima*) or even Black Walnut (*Juglans nigra*), which grow in drier upland sites, and are much more common in areas where Poison Sumac does not grow. True Sumacs (shrubs of the genus *Rhus*), such as Staghorn Sumac, Smooth Sumac, Aromatic Sumac, and Winged Sumac resemble Poison Sumac, however, the true Sumacs are mostly upland shrubs, and are not toxic to humans when handled or ingested.

Notes

Poison Ivy, Poison Oak, and Poison Sumac are all members of the same plant family (the Cashew family: Anacardiaceae) and genus; however, Poison Sumac looks very different. Look for a small, open shrub, in wet areas of low land. Though the other Sumacs do not contain urushiol, when in doubt, don't touch, pick, or attempt to eat the fruit, until you are sure which is nontoxic.

Additional information may be found in the bibliography at the end of this publication; refer to the following numbered sources: 5, 48, 51.

Rhododendron and Azalea

Rhododendron species

Plant Descriptions

The *Flora of Virginia* lists nine different species of Rhododendrons and Azaleas, found in Virginia, all of which are poisonous. Both Rhododendrons and Azaleas are members of the heath family (Ericaceae). There are two basic categories of plants in this group, the large-leaf evergreen Rhododendrons and the deciduous native Azaleas. Rhododendrons have large, leathery dark green leaves and when in bloom are covered with ball trusses of flowers, that is, balls of tubular flowers with petals that flare out, and long showy stamens. The native Azaleas are deciduous and produce their showy flowers before leafing out in the spring, and so have a very different look from the evergreen Rhododendrons. The nonnative evergreen Azaleas found in cultivation throughout the eastern U.S. are not covered here. All the native Rhododendrons and Azaleas are shrubs, with some growing to height of small trees, and are very shade- tolerant.

Rhododendrum catawbiense
Photo credit: Dr. Eric Jones
VMN Headwaters Chapter

Sweet Azalea, Smooth Azalea

Rhododendron arborescens

A large, rounded, loosely-branched shrub 5 to 10 feet tall, and 4 to 8 feet wide. This deciduous native Azalea has glossy oval leaves 2 to 4 inches long. It flowers May to July and has fragrant (vanilla and jasmine) white- to rose-colored flowers made up of 1½ inch-long tubes with showy red styles and filaments. This species is very rare.

Rhododendron arborescens
Photo credit:
Fritz-Flor-Reynolds-CC-NC

Contact with poisonous plants can be dangerous. For appropriate medical advice call your local poison center at ***1-800-222-1222***

Dwarf Azalea, Coast Azalea
Rhododendron atlanticum
A small compact shrub 1 to 4 feet tall. A deciduous native Azalea with elliptical, smooth, light blue-green leaves, ¾ to 2½ inches long. This plant flowers from April to May and has white to pink flowers with a light spicy fragrance.

Rhododendron atlanticum
Photo credit:
James Gaither
CC-BY-NC-ND

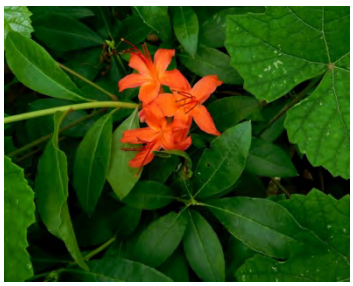
Flame Azalea
Rhododendron calendulaceum
A tall, arching shrub 8 to 15 feet tall and 5 to 8 feet wide. This deciduous native Azalea has 2- to 5-inch long, oval, light-green leaves. Flowering from May to June, the flowers are trumpet-like, 2 inches long and 2½ inches wide, yellow to apricot to orange-red, with no fragrance. It has a spectacular presence in the forest when in bloom.

Rhododendron calendulaceum
Photo credit: Don Hearl
VMN Old Rag Chapter

Catawba Rhododendron, Pink Laurel
Rhododendron catawbiense
This shrub or small tree grows 4 to 10 feet tall and 5 to 12 feet wide. It has evergreen, lustrous, leathery dark green leaves 2 to 6 inches long, oval to oblong in shape. Its leaves can be distinguished from the other evergreen Rhododendron in this group by its rolled-under leaf margins. It flowers April through June and is covered with rose-pink to lilac-colored flower balls.

Rhododendron catawbiense
Photo credit: Dr. Eric Jones
VMN Headwaters District

Cumberland Azalea
Rhododendron cumberlandense
A similar plant to the Flame Azalea, this shrub grows 3 to 5 feet tall, in general, up to 9 feet tall, and 3 to 4 feet wide. This deciduous plant's leaves are 1 to 2 inches long, egg-shaped and glossy dark green. It flowers June through July, and has crimson-red to orange-red flowers, similar to those of the Flame Azalea.



Rhododendron cumberlandense
Photo credit:
Holly Taylor
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Great Rhododendron, Great Laurel
Rhododendron maximum
This shrub or small tree grows 6 to 10 feet commonly, but can be up to 30 feet tall, and 4 to 15 feet wide. It can easily form the "Rhododendron Hells" found in the Appalachian mountains -- dense and extensive thickets that provide great habitat for many animals. The evergreen leaves are up to 8 inches long, oblong to egg-shaped to elliptical, and flatter than the Catawba Rhododendron discussed above. This magnificent plant blooms June to August with rose-pink to white flower balls made up of tubular flowers with flared petals and showy stamens.

Rhododendron maximum
Photo credit: Dr. Eric Jones
VMN Headwaters District

Wild Azalea, Pinxter Azalea
Rhododendron periclymenoides
A small shrub that grows to 6 feet tall and 3 to 5 feet wide. This plant's deciduous leaves are 1 to 3 inches long, elliptical to oblong-ovate. It flowers from March to May and has light to dark-pink to white flowers. Some plants have slightly fragrant flowers, others have no discernible fragrance.

Rhododendron periclymenoides
Photo credit: Pat Temples
VMN Old Rag Chapter

Early Azalea, Rose Azalea
Rhododendron prinophyllum
A small shrub, usually 7 to 8 feet tall with an equal spread, but may be up to 15 feet tall in shadier conditions. These deciduous Azaleas have 1 to 3 inch medium green leaves that are elliptic to oblong to egg-shaped. Flowering from May to June, the flowers are bright pink to white and have a faint honeysuckle or clove fragrance.

Rhododendron prinophyllum
Photo credit: Will Pollard
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Swamp Azalea
Rhododendron viscosum
A shrubby plant ranging from 1 to 15 feet tall, but generally from 4 to10 feet, and 3 to 5 feet wide. This plant's deciduous leaves are 1 to 3 inches long, glossy green,

and elliptic to oblong in shape. Flowering from May to June the white (or rarely, pink) blossoms have an intense honeysuckle-clove fragrance.

Where They may be Found

The Sweet or Smooth Azalea is found throughout the mountains and Piedmont of Virginia, in rocky forest areas and along stream banks. The Dwarf or Coast Azalea is found in dry to damp acidic forests, piney woodlands and clearings, especially the Pine Barrens of coastal Virginia. The Flame Azalea is found in a variety of habitats, most often in acidic, oak forests and is limited to the southern and central mountains of Virginia. The Pink Laurel or Catawba Rhododendron is found in dry, acidic forests on sheltered slopes, rocky ridges, cliffs and balds, and acidic cove forests in the central and southern Blue Ridge mountains of Virginia. The Cumberland Azalea grows in mountain forests and woodlands in the Blue Ridge and Piedmont. It is restricted to the 5 counties at Virginia's southwest tip only. The Great Laurel or Great Rhododendron is found in acidic dry forests, swamps, rocky stream bottoms throughout the mountains of Virginia, but more commonly in the southern Blue Ridge and southern Piedmont. The Wild Azalea or Pinxter Azalea is found in moist to dry acidic forests and streambanks throughout Virginia. The Early Azalea or Rose Azalea grows in dry mountain forests and woodlands, especially oak forests in the central Blue Ridge and Piedmont, most often at middle to higher elevations. The Swamp Azalea is found in swamps and bogs and wet flatland forests, mostly in the Coastal Plains of Virginia.

Rhododendron viscosum
Photo credit: Fritz-Flohr-Reynolds
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What Part(s) of the Plant(s) are Toxic

Eating any part of the plant, the leaves, flowers, stems, or even honey made from the nectar, is toxic. People may mistake the native deciduous Azalea for the common nonnative Honeysuckle (*Lonicera caprifolium*) and eat the nectar, inadvertently poisoning themselves due to misidentification. Grayanotoxin is the active component and grayanotoxin-containing honey, called “mad honey,” can cause negative effects when eaten.

Common Symptoms

Grayanotoxin’s most severe effects result in heart and nervous system complications. If small amounts of any of these plants are ingested, mouth irritation, salivation, nausea, vomiting, and diarrhea can result. Ingestion of greater amounts, especially of honey made from the nectar, can cause confusion, muscle weakness, low blood pressure, lowered heart rate, seizures, and an irregular heartbeat, which can be life-threatening.

Look-alikes

Some of the deciduous azaleas might be mistaken for the common Honeysuckle during the bloom period.

Additional information may be found in the bibliography at the end of this publication; refer to the following numbered sources: 3, 8, 23, 28, 51.

Virginia-creeper

Parthenocissus quinquefolia

Plant Description

A vigorous perennial, woody, deciduous vine with palmately-compound leaves made up of five elliptical, toothed leaflets. Leaves are found alternately on the vine and generally are 4 to 8 inches across. The mature leaves are dark green in color with a glaucous underside, that is, covered with a bluish-green waxy or powdery bloom. The vine may grow prostrate on the ground, or vertically on trees or other plants and structures using tendrils with sticky tips. The vines may grow quite long, from 50 to 100 feet. Stems are round and light brown with a white pith. Flowers appear in the late spring to early summer, but are small, green, and inconspicuous. Berries, maturing in the late summer and fall, are dark purple to black and are generally noticeable only after the leaves drop.

Photo credit: Brenda Clements Jones
VMN Old Rag Chapter

Where it may be Found

Virginia-creeper is a common native plant which grows abundantly throughout Virginia in forests, forest edges and open land, in both wet and dry soils, and in rock crevices. It is very tolerant of a variety of environmental conditions; although it is less common at higher elevations.

Photo credit: Richard Stromberg
VMN Shenandoah Chapter

Which Part(s) of the Plant are Toxic

All parts of the plant are toxic to humans and other mammals. Both the berries and leaves contain a significant concentration of calcium oxalate crystals (raphides) which damage soft tissue and in some people the crystals may irritate skin.

Contact with poisonous plants can be dangerous. For appropriate medical advice call your local poison center at ***1-800-222-1222.***

Common Symptoms

Clinical effects of ingestion include intense mouth pain, nausea, diarrhea, vomiting, and abdominal pain. Swelling of the mouth and throat may cause airway closure and asphyxiation. Dermatitis may form on a person's skin similar to a mild case of Poison Ivy,

Photo credit: Richard Stromberg
VMN Shenandoah Chapter

Look-alikes

Other plants that have leaves that look like Virginia-creeper include Poison Ivy (*Toxicodendron radicans*) and Boxelder (*Acer negundo*). Poison Ivy, which is also a vine and which is discussed separately in this publication, typically has 3 leaflets ("Leaves of three, let it be!"), whereas Virginia-creeper has 5 leaflets. Young seedlings of the Boxelder tree superficially resemble Virginia-creeper (and Poison Ivy). Boxelder seedlings grow to become large trees with green twigs and opposite compound leaves with three to seven leaflets.

Notes

Virginia-creeper is a hardy, attractive, native plant providing landscape interest in three seasons: in spring, when leaves emerge red; in summer when leaves turn a lustrous dark green; and especially in the fall when foliage turns a brilliant red. Virginia-creeper may be a preferred plant for climbing architectural surfaces because it climbs using adhesive tips, rather than by rootlets like other vines that can damage building surfaces. The berries are a highly prized food for birds, especially species resident in winter. It is also the host plant to a number of important sphinx moths, including the beautiful Virginia-creeper sphinx moth.

Photo credit: Brenda Clements Jones
VMN Old Rag Chapter

Additional information may be found in the bibliography at the end of this publication; refer to the following numbered sources: 31, 51, 55.

Water-hemlock

Cicuta maculata

Plant Description

Water-hemlock, also known as Spotted Water-hemlock or Spotted Cowbane, is an attractive perennial herbaceous plant. It is said to be among the most toxic plants growing in Virginia. Leaves are two- or three-pinnately compound. The stem is tinged, mottled, or streaked with purple, and is stout and smooth. This plant can grow from 2 to 9 feet in height. Flowers are umbrella-like clusters (umbels) that grow 2 to 6 inches wide. Individual flowers are tiny and white. Water-hemlock blooms in summer and fall, June through September. At higher elevations flowers appear earlier, in June, or July.

Photo credit: Gary Fleming, DCR VA

Where it may be Found

Water-hemlock is a native plant common throughout Virginia. It can be found near water; stream banks, ponds, swamps and wet seepage areas of meadows and pastures.

What Part(s) of the Plant are Toxic

Water-hemlock is considered one of North America's most toxic plants, being highly poisonous to humans. All parts of the plant are poisonous, though the roots are particularly poisonous. Cicutoxin, a clear brownish resin, is the lethal toxin found in this plant. Do not handle this plant.

Photo credit: Dee Dee Lyon
VMN Old Rag Chapter

Contact with poisonous plants can be dangerous. For appropriate medical advice call your local poison center at ***1-800-222-1222.***

Common Symptoms
Reported symptoms include severe stomach pain, pupil dilation, nausea, vomiting, diarrhea, difficulty breathing, violent convulsions, and frothing of the mouth. Seizures not responsive to medication can begin soon after ingestion. Death can occur within 15 minutes to 8 hours after ingestion. Poisoned persons can asphyxiate on their own vomit and shred their tongue with their teeth since they cannot open their jaws.

Look-alikes
Water-hemlock is even more dangerous because of the fact that there are several poisonous "look alike" species, such as Poison Hemlock and Wild Parsnip (both of which are described elsewhere in this publication), as well as non-poisonous plants including Carrot, Parsley and Parsnips.

Notes
Some Native American tribes are said to have used Water-hemlock to poison tips of arrows for hunting purposes.

Additional information may be found in the bibliography at the end of this publication; refer to the following numbered sources: 26, 48, 51. 51.

Photo credit: John Hilti
Illinois Wildflowers.org

Photo credit: John Hilti
Illinois Wildflowers.org

White Baneberry

Actaea pachypoda

Plant Description

This native, perennial, herbaceous plant has erect stems growing from 1 to 3 feet tall, with 2 to 3 compound leaves that have deeply lobed and sharply-toothed edged leaflets. The flower stalk extends above the foliage and is tipped with a dense cluster of small white flowers that bloom from April to June. The flowers produce a cluster of small, white, or rarely red, berries in the late summer and fall. When fruits are mature, a prominent, dark spot (the stigma scar) is very noticeable on the berry. The stems of the fruit become thick and turn bright red. This plant is sometimes called "Dolls'-Eyes" because the shiny white berries with the dark stigma scar resemble the eyes once used in China dolls.

Photo credit: Gary Fleming, DCR, VA

Where it may be Found

White Baneberry commonly grows in shady oak or oak/hickory forests and low-lying wet, shady areas. It is a common plant of the mountains, but rare in the Piedmont and the Coastal Plain.

Photo credit: Richard Stromberg
VMN Shenandoah Chapter

What Part(s) of the Plant are Toxic

All parts of the plants are toxic if ingested, but most human toxicity has been associated with ingestion of the berries, which are the most poisonous part of the plant. The berries contain cardiogenic toxins that can have an immediate sedative effect on the human heart.

Contact with poisonous plants can be dangerous. For appropriate medical advice call your local poison center at ***1-800-222-1222.***

Common Symptoms

Symptoms include burning of the mouth and throat, salivation, severe stomach cramps, headache, diarrhea, dizziness and hallucinations. Contact with the plant can cause a rash, pain, and blistering of the skin and mucous membranes when ingested. When the berries have an almost immediate sedative effect on the human heart and can lead to cardiac arrest if enough are consumed. The bitter taste and irritating properties of the plant often limit how much is ingested. There have been no reported deaths from White Baneberry ingestion.

Notes:

Children should be closely monitored around White Baneberry as they may be attracted to the pretty berries. White baneberry is often grown as an ornamental because of its bushy habit and attractive fruit. Birds are immune to the toxin so they are able to eat the berries. Small mammals will eat the seeds, but not the pulp. Native Americans used it medicinally for numerous ailments and were reported to have used the juice of the berries on arrow tips as a way of incapacitating their enemies.

Additional information may be found in the bibliography at the end of this publication; refer to the following numbered sources: 31, 34, 51.

Photo credit: Pat Temples
VMN Old Rag Chapter

Photo credit: Nicky Stanton
Native Plant Naturalist

White Snakeroot

Ageratina altissima

Plant Description

White Snakeroot is a herbaceous perennial that is native to Virginia. White Snakeroot grows to a height of 18 to 48 inches. The leaves are opposite and pointed-oval to triangular-oval in shape, with toothed leaf edges (margins). Leaves can be up to 5 inches long and 3½ inches across, becoming smaller near the top of the stem. The leaves are darker green on the tops and lighter green on the undersides. Many tiny white flowers, in rounded, compound clusters, bloom near the top of the stalk from August through October. The flower clusters can be up to 6 inches across.

Photo credit: Richard Stromberg
VMN Shenandoah Chapter

Where it may be Found

White Snakeroot can be found in upland forests, forest edges, thickets, and open, disturbed areas. White Snakeroot prefers moist soils in partial sun to light shade. It is common in the mountains, frequent in the Piedmont, infrequent in the inner Coastal Plain, and rare in the outer Coastal Plain.

Photo credit: Richard Stromberg
VMN Shenandoah Chapter

What Part(s) of the Plant are Toxic?

All parts of the plant are toxic. White Snakeroot contains a toxin called tremetol, which causes "trembles" in livestock and "milk sickness" in humans. There are cases of toxicity in humans who drank the milk from cows that had consumed large quantities of White Snakeroot.

Contact with poisonous plants can be dangerous. For appropriate medical advice call your local poison center at ***1-800-222-1222.***

Common Symptoms
Symptoms of tremetol poisoning begin with loss of appetite, nausea, vomiting and/or diarrhea. It causes a build-up of acids in the blood, which can result in lethargy, coma, dysfunction of multiple organs, and death. Muscle weakness, incoordination, and tremors can also occur.

Notes
There was an epidemic of "milk sickness" in the 1800s which occurred in settlers who ate meat or dairy products from livestock that had eaten the plant. Abraham Lincoln's mother reputedly died of "milk sickness," in October 1818, at the age of 34, two weeks after becoming sick. Frontier doctor Anna Pierce Hobbs Bixby consulted with a Shawnee woman in the mid-1830s to learn the cause of the disease. She confirmed the transmission of the toxin from plant to livestock to humans.

Additional information may be found in the bibliography at the end of this publication; refer to the following numbered sources: 9, 27, 31, 45, 50, 51.

Photo credit: Richard Stromberg
VMN Shenandoah Chapter

Photo credit: Gary Fleming, DCR, VA

Wild Parsnip

Pastinaca sativa

Plant Description

Wild Parsnip is a nonnative biennial plant: In its first year this plant has a rosette of leaves that are alternate, compound, and branched, with jagged teeth. Leaflets are yellowish-green, shiny, oblong, coarsely-toothed, and diamond-shaped. In its second season the plant produces a stem that can reach a height of 4 feet. Stems are erect, thick, hollow, and ribbed, and topped by an umbel, a flat or curved cluster of small yellow flowers which consist of several short flower stalks spreading out from a common point, somewhat like umbrella ribs. It flowers from May to June but only in the second season. Seeds are pale brown, flat, and winged. The taproot is fleshy or fibrous. Plants die after producing seeds in their second year.

Photo credit: Gary Fleming
DCR, VA

Where it may be Found

This plant grows mainly in sunny areas and has a preference for dry soils. It is commonly found along roadsides, pastures, and in abandoned fields. Wild Parsnip is common in the mountains, infrequent in the Piedmont, and rare in the Coastal Plain.

Photo credit: Brent Furbee,MD
Indiana University

What Part(s) of the Plant are Toxic

Though the root of Wild Parsnip is edible in its first year, the leaves and the stems are not. The sap of the leaves and the stems of this plant contain chemicals that in humans can be phototoxic, meaning that handling the stems and the foliage can cause a skin rash after exposure to sunlight. The skin rash is similar to that caused by Poison Ivy. Wear gloves, long sleeves, and long pants when handling this plant. People should be very careful while handling this plant -- or avoid it altogether.

Contact with poisonous plants can be dangerous. For appropriate medical advice call your local poison center at ***1-800-222-1222.***

Common Symptoms
Symptoms of phytophotodermatitis on skin that has been in contact with the plant include redness, burning, and blisters. The symptoms reported have mostly been mild to moderate, compared for example to Giant Hogweed (also discussed in this publication) and other phototoxic plants. However, afflicted skin areas can remain discolored for up to two years. The symptoms can be more severe when exposed to the plant's sap on a sunny day.

Look-alikes
Poison Hemlock and Water-hemlock are close in appearance and are often confused with Wild Parsnip. Both Hemlock plants are highly toxic (and both are also discussed in this publication). The foliage of Poison Hemlock has a mouse-like odor while the foliage of Wild Parsnip has a Parsnip-like odor. Water-hemlock prefers wet habitats whereas Wild Parsnip prefers drier soils.

Notes
Wild Parsnip is the wild state of the cultivated Parsnip, and in its first year the taproot can be eaten. However, because of possible confusion with highly toxic Poison Hemlock and Water-hemlock, one should be **extremely cautious** handling or eating any part of this plant.

Additional information may be found in the bibliography at the end of this publication; refer to the following numbered sources: 36, 51, 57.

Photo credit: Patrick J. Alexander
Hosted by USDA-NRCS
Plants Database

Photo credit: New York State
Department of Environmental
Conservation (NYSDEC)

Glossary

Alkaloids

A class of naturally occurring organic compounds that are especially common in certain families of plants. They have pronounced physiological actions on humans and include many drugs (morphine, quinine) and poisons (atropine, strychnine).

Allergenic

Causing allergic sensitization; causing an allergic reaction.

Alternate Leaf

In an alternate leaf arrangement, there is one leaf per plant node and they alternate sides. The opposite *leaflets* form the entire true leaf, which alternates on the stem.

Anther

The part of the *stamen* where pollen is produced.

Arrhythmia

A condition in which the heart beats with an irregular or abnormal rhythm.

Basal

An arrangement of leaves radiating from a short stem at the ground surface. Most *biennial* plants have a *rosette* form during their first growing season.

Biennial

A flowering plant that takes two years to complete its biological lifecycle. In the first year, the plant grows leaves, stems, and roots (vegetative structures), then it enters a period of dormancy over the colder months. It emerges in the second year and produces a flower stalk, where the plant undergoes the reproductive process and produces seeds.

Calcium oxalate

A common biomineral (mineral produced by living things) in some plants which occurs as crystals of various shapes that cause irritation of soft tissues in humans. It can be found in any tissue or organ in some plants. Kidney stones in humans are made of calcium oxalate crystals.

Cardioactive

Of, or relating to, a drug or other substance affecting the function of the heart.

Cicutoxin

A naturally-occurring poisonous chemical compound produced by several plants from the family Apiaceae including water hemlock (*Cicuta* species)

Compound leaf

A leaf divided into two or more distinct *leaflets*. A compound leaf may be either *pinnately* compound or *palmately* compound.

Coniine

A neurotoxin that causes death by muscular paralysis and asphyxiation; found in Poison Hemlock.

Corm

A short, vertical, swollen underground plant stem that serves as a storage organ that some plants use to survive winter or other adverse conditions such as summer drought and heat.

Corolla

Collectively, all of the petals of a flower.

Cultivar

A plant produced by selective breeding.

Deciduous

The word means "falling off at maturity" and "tending to fall off," in reference to trees and shrubs that seasonally shed leaves, usually in the autumn.

Diaphoretic

A medicine or other agent that produces perspiration.

Digitalis

The genus of about 20 species of herbaceous perennials, biennials, and shrubs commonly called Foxgloves. A marketed drug prepared from the dried leaves of Foxglove and containing cardiac glycosides that stimulate the heart muscle. Similar to Digoxin, but differs in treatment and effects.

Digitoxin

A type of cardiac glycoside found in the Foxglove. Similar to the effects of digoxin (see below), digitoxin was not as effective in treating heart ailments and is rarely used in Western medicine.

Digoxin

A type of cardiac glycoside found in some plants, particularly Foxglove. It was used as a drug to treat irregular heartbeat and some types of heart failure. It is also being studied in the treatment of some types of cancer. Digoxin helps the heart work normally by controlling the amount of calcium that goes into the heart muscle. It also may kill cancer cells and make them more sensitive to anticancer drugs. Digoxin is also the proper name of the marketed drug that contains the glycoside digoxin.

Diuretic

A medicine or other agent that increases the flow of urine.

Elliptic leaf

A simple leaf shaped like an ellipse. A simple leaf is a leaf that is not divided into parts.

Ephemeral

Transitory or quickly fading. An ephemeral plant is one marked by short life cycles.

Filaments

The *stamen* of a flower — the part that produces pollen — consists of a slender stalk, called a filament, and an *anther*. The filament supports the anther, which is where pollen develops.

Furocoumarins

Furocoumarins in the sap of a plant can cause a skin reaction called *phytophotodermatitis*, which causes the skin to be very sensitive to ultraviolet light (sunlight).

Glaucous

Covered with a bluish-green waxy or powdery bloom on the surfaces of some plants that can be rubbed off.

Glycosides

A compound formed from a simple sugar and another compound by replacement of a hydroxyl group (which is a hydrogen atom bonded to an oxygen atom) in the sugar molecule. Many drugs and poisons derived from plants are glycosides.

Grand Mal Seizure

A grand mal seizure causes a loss of consciousness and violent muscle contractions: A medical emergency!

Grayanotoxin

A toxin found in the nectar of some species of *Rhododendron* and other plants of the family Ericaceae and in food made from their nectar, such as unpasteurized honey; it is poisonous to humans and animals.

Herbaceous

Plants that have non-woody stems. Their above-ground growth largely or totally dies back in winter in the temperate zone, but they may have underground plant parts (roots, bulbs, etc.) that survive.

Leaflet

Each of the leaflike structures that together make up a *compound leaf*.

Lobed leaf

A leaf having deeply indented margins.

Neurotoxin

A poison that acts on the nervous system by disrupting the normal function of nerve cells

Node

The place on a stem where a leaf or branch is (or was) attached.

Ovate leaf

An egg-shaped leaf with the broader end at the base; a simple leaf or a leaf that is not divided into parts.

Oxalic acid

A toxin that causes irritation, swelling and blistering of the mouth, lips, tongue and throat, diarrhea, nausea and vomiting, and slurred speech. It occurs naturally in many foods, but excessive ingestion of oxalic acid or prolonged skin contact can be dangerous. Large doses can cause kidney damage.

Palmate leaf

Having three or more veins, leaflets, or lobes radiating from one point; a leaf resembling an open hand.

Panicle

A loose branching cluster of flowers.

Perennial

A plant that lives more than two years.

Petal

Each of the segments of the *corolla*, or flower, which are modified leaves or *sepals* and are colored or white. Together, all of the petals of a flower are called a corolla.

Petiole

The stalk that joins a leaf to a stem; leafstalk.

Phototoxic

The light-sensitizing characteristic of some botanical substances such as *furocoumarins* that cause *phytophotodermatitis*.

Phytophotodermatitis

An inflammatory eruption (blisters) of the skin resulting from contact with phototoxic substances, that react with long-wave ultraviolet light, e.g. sunlight. The resulting condition is similar to a severe, painful sunburn. The effects may be intensified by wet skin, sweating, and heat.

Pinnate

The arrangement of leaflets growing on opposite sides of the leaf stem, or rachis, of a compound leaf.

Podophyllin

One of a number of compounds found in the resin extracted from the roots of Mayapple (*Podophyllum peltatum*) and from which is derived the drug podophyllotoxin. Podophyllin is in a class of agents that are used to treat corns, warts, and certain other skin diseases.

Rachis

A stem of a plant bearing flower stalks at short intervals.

Raphides

A needle-shaped crystal of calcium oxalate occurring in clusters within the tissues of certain plants.

Rhizome

A modified stem of a plant that is usually found underground, often sending out roots and shoots from its nodes.

Rhizomatous

Having, resembling, or being a *rhizome*: A plant with rhizomes.

Root Crown

The place where the plant stem meets the roots. The root crown is mostly located just below the soil level but is sometimes also found above soil level. The root crown needs sufficient access to air to breathe.

Rosette

A circular arrangement of leaves or other plant parts, usually near the soil.

Sap

The fluid, chiefly water with dissolved sugars and mineral salts, that circulates through a plant.

Saponin glycosides

Plant *glycosides* that possess the distinct property of forming soapy lather in water.

Sepals

Each of the parts of the calyx, a cup-like structure, of a flower, enclosing the petals and typically green and leaflike.

Simple leaf

A single leaf that is never divided into smaller leaflet units.

Solanine

A poison found in species of the Nightshade family within the genus *Solanum*. It occurs naturally in any part of the plant, including the leaves, fruit, and tubers. Large amounts are toxic, but the amounts usually found in foods, such as potatoes, tomatoes, and eggplant, are innocuous. It is poorly absorbed by the body, and rapidly excreted.

Spadix

A spike of minute flowers closely arranged around a fleshy axis and typically enclosed in a *spathe*, as in the flower of the Jack-in-the-pulpit. Commonly seen in the Arum family, Araceae.

Spathe

A large leaf-like part that surrounds a *spadix*.

Stamen

The pollen producing part of a flower, usually with a slender filament supporting the *anther*.

Steroids

A biologically active organic compound. Plant steroids constitute a diverse group of natural products; plants containing toxic alkaloids include American False Hellebore.

Styles

A structure found within the flower. It is a long, slender stalk that connects the stigma and the ovary. The stigma is at the top of the style and is a sticky platform where pollen is deposited.

Taproot

A straight tapering root growing vertically downward and forming the center from which subsidiary rootlets spring.

Tendril

A slender threadlike appendage of a climbing plant, often growing in a spiral form, that stretches out and twines around any suitable support.

Toothed leaf

A leaf that has an irregularly notched, fringed, scalloped, or toothed edge, as though gnawed.

Toxin

A chemical substance which damages an organism.

Tremetone

The main constituent in tremetol, a toxin found in a number of different species of the family Asteraceae, including Snakeroot (*Ageratina altissima*) that causes milk sickness in humans and trembles in livestock.

Tropane Alkaloids

A class of *alkaloids* that consist of a particular structure called tropane. These tropane alkaloids occur naturally in many members of the Nightshade family, such as Climbing Nightshade and Eastern Black Nightshade, and the *Datura* species such as Jimson-weed.

Tuber

A swollen, fleshy, usually underground outgrowth of the stem or rhizome of a plant, such as the potato, bearing buds from which new plant shoots arise.

Umbel

A flat-topped or convex cluster of flowers that consists of short flower stalks that spread from a common point. This cluster resembles the ribs or spokes of an umbrella. Umbels can be made up of compound or simple clusters.

Urushiol

A toxic, oily substance found in Poison Ivy, Poison Oak, and Poison Sumac, which is the active allergen in these plants. Derives from the Japanese word for lacquer, *urushi.*

Waif

An unusual species found in the wild that is nonnative and is either unsuccessful at reproduction without human intervention, or only persists a few generations and then disappears.

Bibliographic References

Includes citations for each plant, as well as general references for additional information.

Print References

1. Burrows GE, Tyrl RJ. Toxic plants of North America. 2nd ed. Hoboken: Wiley-Blackwell. 2013.
2. Chan TYK. Aconite poisoning following the percutaneous absorption of Aconitum alkaloids. Forensic Science International 2012;223:25-7.
3. Cullina W. Native trees, shrubs, & vines. Boston: Houghton Mifflin. 2002.
4. Frohne D, Pfänder HJ. Poisonous plants: a handbook for doctors, pharmacists, toxicologists, biologists, and veterinarians. Alford, I, transl. London: Manson Pub., Ltd. 2005. Transl. from German. Includes glossary. Foxglove, p. 350-2.
5. Kim Y, Flamm A, ElSohly M, et.al. Poison Ivy, Oak, and Sumac Dermatitis: What is Known and What is New? In: Dermatitis, 2019; 30(3): 183-190.
6. Murray V. Toxic plants. In: Descotes J, ed., Human Toxicology. 1st ed. Amsterdam: Elsevier; 1996.
7. Nelson LS, Shih RD, Balick MJ. Handbook of poisonous and injurious plants. 2nd ed. New York: New York Botanical Garden & Springer. 2007. Foxglove, p. 161, Lily-of-the-valley, p. 133-4.
8. Ottesen C. The native plant primer. New York: Harmony Books. 1995.
9. Snively W, Furbee L. Discoverer of the Cause of Milk Sickness. In: JAMA,1966;196(12): 1055-1060.
10. Ulbricht C, Basch E, Cheung L, Goldberg H, Hammerness P, Isaac R, Khalsa KP, Romm A, Rychlik I, Varghese M, et al. An Evidence-Based Systematic Review of Elderberry and Elderflower (Sambucus nigra) by the Natural Standard Research Collaboration. J Dietary. Suppl. 2014;11(1):80-120.
11. Weakley AS, Christopher LJ, Townsend JF. Crowder, B, ed. Flora of Virginia. Fort Worth: Botanical Institute of Research Press. 2012.
12. Westbrooks RG, Preacher JW. Poisonous plants of eastern North America. Columbia: Univ. of South Carolina Press.1986.

Electronic References

13. American Association for Clinical Chemistry. Monkshood. © 2019 American Association for Clinical Chemistry. https://www.aacc.org/community/divisions/tdm-and-toxicology/toxin-library/monkshood. [accessed 2019 June 21].
14. Angiosperm Phylogeny Group. An Update of the Angiosperm Phylogeny Group classification for orders and families of flowering plants: APGIII. Botanical J of the Linnean Society. 2009,161(2):105-121. https://academic.oup.com/botlinnean/article/161/2/105/2418337 [accessed 2020 May 2].
15. Bebeau GD. Friends of the Wild Flower Garden, Inc. Black Nightshade, Solanum nigrum L. (Solanum ptycanthum Dunal).

https://www.friendsofeloisebutler.org/pages/plants/blacknightshade.html. [accessed 2019 June 23].
16. Bebeau GD. Friends of the Wild Flower Garden, Inc. Climbing Nightshade (Bittersweet Nightshade, Wood Nightshade, Dulcamara, Felonwood). © 2013. https://www.friendsofeloisebutler.org/pages/plants/bittersweetnightshade.html [accessed 2019 August 19].
17. Botanical.com. A Modern Herbal by Mrs. M. Grieve. Aconite. https://botanical.com/botanical/mgmh/a/aconi007.html. [accessed 2019 June 21].
18. Boyd JE, Rucker J. No Ill Nature: The Surprising History and Science of Poison Ivy and Its Relatives. Science History Institute. 2013. https://www.sciencehistory.org/distillations/no-ill-nature-the-surprising-history-and-science-of-poison-ivy-and-its-relatives [accessed 2020 Feb 3].
19. Dunphy J. Poison Ivy, Oak, and Sumac Information Center - (www.poisonivy.us). ©1999 - 2019. https://poisonivy.aesir.com/view [accessed 2019 June 25].
20. Giant Hogweed. National Invasive Species Information Center. USDA. [accessed 2019 Sept 16]. http://www.invasivespeciesinfo.gov/plants/hogweed.shtml
21. Giant Hogweed - NY State Dept. of Environmental Conservation. [accessed 2019 Sept 16]. http://www.dec.ny.gov/animals/39809.html
22. Giant hogweed identification and control -- Heracleum mantegazzianum. [updated 2018 Sept 18; accessed 2019 September 16]. www.kingcounty.gov/environment/animalsandplants/noxious-weeds/weed-identification/giant-hogweed.aspx
23. Henning's Rhododendron & Azalea Pages. Toxicity of Rhododendrons to People and Animals. http://www.rhodyman.net/rhodyntox.php. [accessed 2019 June 24].
24. Heracleum mantegazzianum Sommier & Levier -- giant hogweed. [accessed 2019 Sept 16]. https://plants.usda.gov/core/profile?symbol=HEMA17
25. Hilty J. Cow parsnip (Heracleum maximum). c2004-2017. Wildflowers of Illinois in Woodlands. https://www.illinoiswildflowers.info/woodland//plants/cow_parsnip.html. [updated 2017 Dec 29; accessed 2019 Mar 25].
26. Hilty J. Water Hemlock (Cicuta maculata). © 2002-2017. Wetland Wildflowers of Illinois. https://www.illinoiswildflowers.info/wetland/plants/water_hemlock.htm [accessed 2019 Nov 2].
27. Hilty J. White snakeroot (Ageratina altissima). Illinois Wildflowers. http://www.illinoiswildflowers.info/woodland/plants/wh_snakeroot.htm. [accessed 2019 June 25.]
28. Jansen SA, Kleerekooper I, Hofman ZLM, Kappen IFPM, Stary-Weinzinger A, van der Heyden MAG. Grayanotoxin Poisoning: 'Mad Honey Disease' and Beyond. Cardiovasc Toxic. 2012; (12):208–215. https://doi.org/10.1007/s12012-012-9162-2 [accessed 2020 May 2].

29. Jelesko J. The ITCHY Project by Dr. JJ. © Facebook 2019. https://www.facebook.com/theitchyproject [accessed 2019 Aug 16].
30. Kramer R, Kimonis, K. Field Biology Electronic Field Guides, Fall Wildflowers of New England. © 2004. Waltham, MA: Brandeis Univ. http://www.bio.brandeis.edu/fieldbio/Wildflowers_Kimonis_Kramer/PAGES/JACKINTHEPULPIT_PAGE_FINAL.html [accessed 2019 August 19].
31. Lady Bird Johnson Wildlife Center. © 2019. Austin: Univ. of Texas at Austin. http://www.wildflower.org.
32. LaFrance P. Hikers beware: Cow parsnip can inflict pain on those who don't take precautions. Anchorage Daily News. https://www.adn.com/adventure/outdoors/2016/06/16/hikers-beware-cow-parsnip-can-inflict-pain-on-those-who-dont-take-precautions/. [updated 2016 June 30; accessed 2019 Feb 28].
33. Lobstein MB. Prince William Wildflower Society. Mayapple Plant Profile. Virginia Native Plant Society. http://vnps.org/princewilliamwildflowersociety/botanizing-with-marion/ mayapple-plant-profile/ [accessed 2019 June 17].
34. Mahr S. Master Gardener Program, Univ. of Wisconsin-Madison, Division of Extension. Baneberry, Actaea spp. 16 October 2017. https://wimastergardener.org/article/baneberry-actaea-spp/ [accessed 7 February 2020].
35. National Capital Poison Center. Can Poison Hemlock Be Deadly? https://www.poison.org/articles/can-poison-hemlock-be-deadly-184 [accessed 2019 Sept 16].
36. New York Invasive Species Information. Wild parsnip. © New York Invasive Species Information 2019. http://nyis.info/invasive_species/wild-parsnip/ [accessed 2019 Aug 15].
37. njHiking. Mountain Laurel vs Rhododendron. https://www.njhiking.com/mountain-laurel-or-rhododendron/ [accessed 2019 June 25].
38. North Carolina Cooperative Extension. Phytolacca americana, P. rigida. Common Name(s): Inkberry Pigeonberry Poke Pokeberry Pokeweed. North Carolina Extension Gardener Plant Toolbox. https://plants.ces.ncsu.edu/plants/phytolacca-americana-p-rigida/ [accessed 2019 Aug 16].
39. North Carolina Cooperative Extension. Solanum carolinense, Common Name(s): Horse Nettle Wild Tomato. North Carolina Extension Gardener Plant Toolbox. https://plants.ces.ncsu.edu/plants/all/solanum-carolinense/ [accessed 2019 August 17].
40. North Carolina Native Plant Society. Plant Details, Aconitum uncinatum, Southern Blue Monkshood, Eastern Blue Monkshood, Appalachian Blue Monkshood. © 2017 North Carolina Native Plant Society.

https://www.ncwildflower.org/plant_galleries/details/aconitum-uncinatum [accessed 2019 Aug 16].
41. Ohio Agricultural Research and Development Center. Ohio Perennial and Biennial Weed Guide. Common Pokeweed (Phytolacca americana). © 2019, The Ohio State University. https://www.oardc.ohio-state.edu/weedguide/single_weed.php?id=112 [accessed 2019 Aug 16].
42. The Plant List (2013). Version 1.1. Published on the Internet; http://www.theplantlist.org/ [accessed 2020 June 8].
43. The PLANTS Database. 2019. Greensboro (NC): USDA, NRCS National Plant Data Team; http://plants.usda.gov [updated 2019 March 25].
44. Poison Hemlock: How to Identify, and Potential Look-alikes. © 2019 GROW FORAGE COOK FERMENT (Colleen Codekas). Originally published on June 1, 2018. https://www.growforagecookferment.com/poison-hemlock/ [updated 2019 June 27; accessed 2020 June 12].
45. ScienceDirect Topics. Tremetone--an overview. Copyright © 2019. Elsevier B.V. https://www.sciencedirect.com/topics/pharmacology-toxicology-and-pharmaceutical-science/tremetone [accessed 2019 Aug 18].
46. Seiler J, Jensen E, Niemiera A, Peterson J. Virginia Tech Dendrology Fact Sheet. Poison-ivy Anacardiaceae Toxicodendron radicans (L.) Kuntze. © 2019 Virginia Tech Dept. of Forest Resources and Environmental Conservation. http://dendro.cnre.vt.edu/dendrology/syllabus/factsheet.cfm?ID=128 [accessed 2019 August 16].
47. Smith JP Jr. Poisonous vascular plants: A bibliography of general references. 2017. Humboldt (CA): Humboldt State Univ., Digital Commons, Open Educational Resources and Data, Botanical Studies. digitalcommons.humboldt.edu/botany_jps/11 [accessed 2020 June 8].
48. USDA. Natural Resources Conservation Service. Plants Database. https://plants.sc.egov.usda.gov/java/ [accessed 2019 June 12].
49. US National Library of Medicine. Jack-in-the-pulpit poisoning. MedlinePlus https://medlineplus.gov/ency/article/002870.htm [accessed 2019 June 24].
50. US National Park Service. Abraham Lincoln Birthplace National Park. Milk Sickness. https://www.nps.gov/abli/planyourvisit/milksickness.htm [updated 2015 April 14; accessed 2019 June 25].
51. Virginia Botanical Associates. Digital Atlas of the Virginia Flora. © 2020. Blacksburg, Virginia www.vaplantatlas.org [accessed 2020 June 8].
52. Virginia Native Plant Society. Boyce, VA. https://vnps.org/ [accessed 2020 June 8].
53. Virginia Tech. College of Agriculture and Life Sciences. Solanum dulcamara, Common Name: Bittersweet Nightshade, Other Common Names: Climbing Nightshade. Weed Identification,

https://weedid.cals.vt.edu/weedimg/208;jsessionid=CBA6D11D14FB6855A4F1F64687FD195F [accessed 2019 August 19].
54. Virginia Tech. College of Agriculture and Life Sciences. Eastern black nightshade. Weed Identification, https://weedid.cals.vt.edu/ [accessed 2019 June 23].
55. Virginia Tech. Dendrology. Virginia creeper Vitaceae Parthenocissus quinquefolia (L.) Planch. © 2019 Virginia Tech Dept. of Forest Resources and Environmental Conservation. http://dendro.cnre.vt.edu/dendrology/syllabus/factsheet.cfm?ID=126 [accessed 2019 Nov 1].
56. The Virtual Blue Ridge Network. Jack-in-the-pulpit. Virtual Blue Ridge. © 2019 https://www.virtualblueridge.com/nature/jack-in-the-pulpit/ [accessed 2019 June 24].
57. Walling AL, Walling HW. Phytophotodermatitis induced by wild parsnip. 2018. Dermatology Online Journal, 24(2), https://escholarship.org/uc/item/0rc4v2qz [accessed 2019 Aug 15].
58. Weakley AS. Flora of the Southern and Mid-Atlantic States. University of North Carolina at Chapel Hill Herbarium (NCU), North Carolina Botanical Garden, University of North Carolina at Chapel Hill. http://www.herbarium.unc.edu/flora.htm [updated 2019 June 27; accessed 2019 August 17].
59. World Flora Online Consortium. World Flora Online. http://www.worldfloraonline.org/ [accessed 2020 June 8].