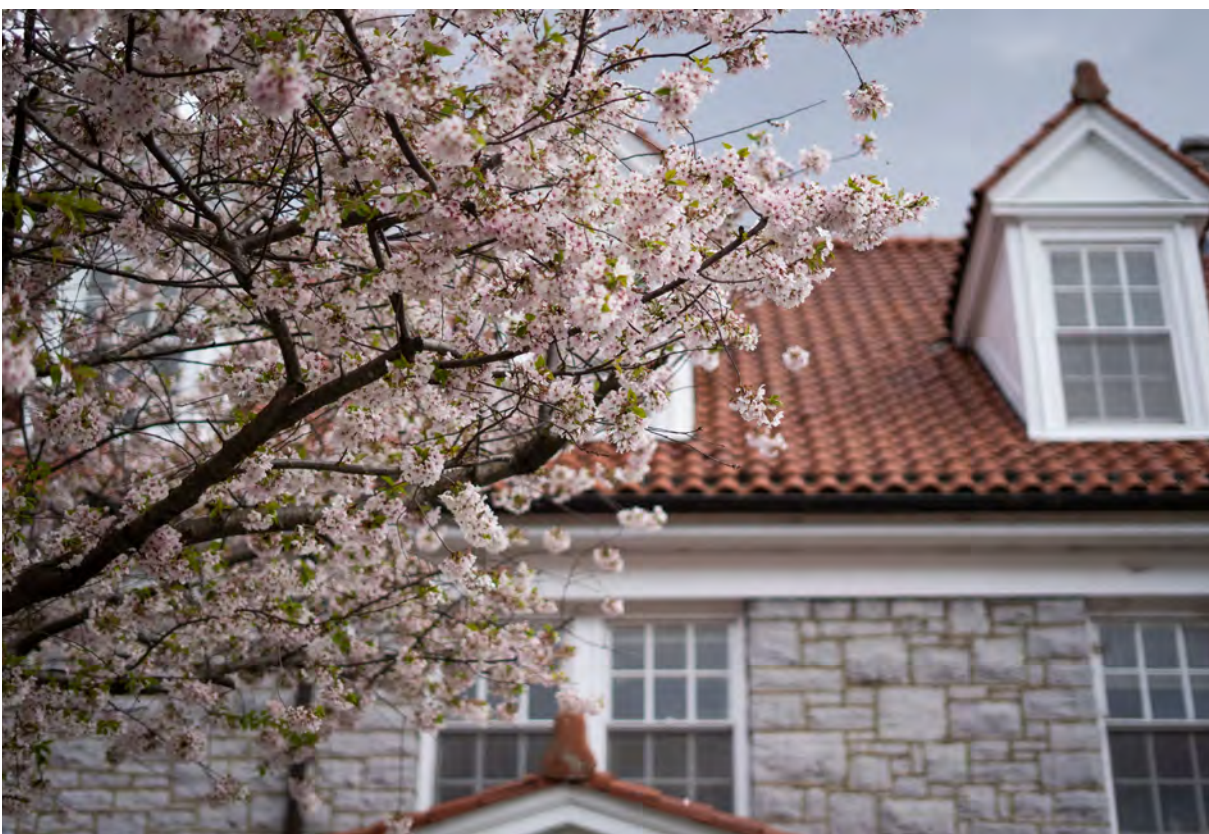


DUKES 4 TREES

	2022 / April 8 / Walk 1	
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TOP - A flowering cherry tree on the Bluestone area of campus. (JMU Office of Content Marketing)

BOTTOM RIGHT - A walking bridge on a trail at the EJC Arboretum. (JMU Office of Content Marketing)

Our Hope

Is to get to know each other, learn from each other and explore all the beautiful trees in each season spread throughout the JMU campus.

Tree walks will occur the second Friday of each month. Additional walks may occur depending on the season. Feel free to propose your own tree walk on campus for us to do!



TREES AT THE ARBORETUM

Did you know?

The Edith J. Carrier Arboretum is a woodland sanctuary that covers 125 acres, and 3.5 miles of hiking trails. The arboretum's website has an online trail and garden map, information on upcoming workshops and events and their much anticipated spring and fall plant sales and ways to get involved with their vision to inspire outdoor engagement. A great resource on their website is a page that shares what flowering plants you may find blooming each month. Scan the below QR code to visit this page.



What's in
Bloom at EJC



Bloom of a Star magnolia tree. (EJC Arboretum)

Oak-Hickory Forest

Of the 125 acres in the arboretum, 92 acres are an Oak-Hickory dominant forest. Oaks are the main over-story tree in the canopy, with hickories scattered throughout. Oak types you will see in the arboretum include: White oak, Northern red oak, Black oak, and Chestnut oak, along with some hickory trees, like Mockernut and Pignut. Some of these oaks and hickories can be identified by looking at their bark.



Bark of a Red oak and White oak tree (VDOF).

Oaks and hickories have what are called, "masting years". These are the years the tree produces an abundant nut crop. In a masting year you may walk under an oak tree and feel like your walking on a floor strewn with marbles or legos (whichever one relates to you)! A plethora of native wildlife feast on the nuts of these trees, they include White-tailed deer, many species of rodents (Gray squirrels, White-footed mouse, etc.), many bird species (Bluejays, Nuthatches, turkeys), Gray fox, and Black bears, to name a few. You may even see some of these animals within the arboretum's woodland trails!

DUKES 4 TREES

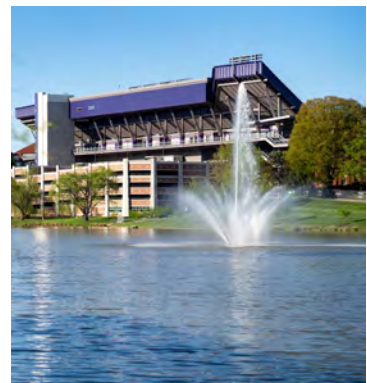
	2022 / April 22 / Walk 2	
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TOP - Flowering cherry trees on the walking trail around Newman Lake. (JMU Office of Content Marketing)
BOTTOM RIGHT - The iconic fountain at Newman Lake. (JMU Office of Content Marketing)

Newman Lake

This little over 9 acre lake went through several major environmental improvements in 2014. Those included: adding a reservoir to collect pollutants and sediment, reconstructing the shoreline to prevent erosion, and installing an aquatic bench for water quality improvement and habitat restoration. An ISAT course incorporates student learning via a long term water quality monitoring study of the lake.



TREES AROUND THE LAKE

Cherry, Willow and Zelkova

Flowering cherry trees line most of the shoreline around Newman Lake. Weeping willow trees are a common species to look for when walking the lake. A new tree species to me, found scattered around the lake along the sidewalks in front of Greek Row housing, is the Japanese Zelkova.

The zelkova tree is in the elm family. It is hardy and tolerates a wide range of soil types. It is often used in urban street tree plantings. It has a grayish bark that when peeled back reveals an orange inner bark. Fun fact: It is species that can be used in bonsai.



Bark of a zelkova tree. (JMU Campus Tree Inventory)



Leaves of the Dawn redwood. (JMU Campus Tree Inventory).

Dawn Redwood

A deciduous conifer, its needles are lost in the fall. The dawn redwood is called a 'living fossil' by horticulturalists. In one year this tree can grow 2-5 feet in height, ultimately growing to over a 100 feet tall. It is one of only three redwood species, and the only one that grows well on the east coast of the U.S. In China, its place of origin, there are only a few wild stands left. A scientist discovered it in 1944 after it was previously thought to be extinct. It is classified as "critically endangered" due to human encroachment and is now a popular landscape here in the U.S.

DUKES 4 TREES

	2022 / May 11 / Walk 3	
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TOP - Pink blooms of an azalea shrub. (JMU/A. Sloop)

BOTTOM RIGHT - Pink blooms of a rhododendron shrub. (JMU EJC Arboretum)

Arboretum in the Spring

Every day in the spring, I can guarantee that you will find a new bloom popping open at JMU's EJC Arboretum. Beginning in mid-April, the arboretum invites the first blooms of azalea and rhododendron shrubs on campus. The blooms pop along the trails against the bright green hues of new leaves budding forth. In addition, larger trees are leafing out, creating a cooler micro-climate as the weather warms up, which all combines to make a stroll on their trails as delightful as can be.



TREES/SHRUBS IN BLOOM

Rhododendrons and Azaleas

How can you tell the difference?

All azaleas are rhododendrons, but not all rhododendrons are azaleas. Confused, yet? Not to worry! Azaleas are usually smaller 1-3 ft tall shrubs and they bloom earlier than rhododendrons. Below are a few more distinguishing features to help you identify azalea or rhododendron while you are out on the trails.

<u>Azaleas</u>	<u>Rhododendron</u>
Deciduous	Evergreen
Tube/Funnel Shaped Flowers	Bell Shaped Flowers
Appressed Hairs	Scaly
5 Stamens	<10 Stamens

(PlantAddicts.com)



Typical rhododendron bloom on top of thick leathery, evergreen leaves. (JMU/A. Sloop)



Bracts and true flowers about to bloom on a flowering dogwood. (JMU/A. Sloop)

Flowering Dogwood

You might be surprised to find out that the dogwood flower in the photo above does not include the white looking petals. Flowering dogwoods true flowers are the tiny yellow blooms clustered in the center of the white "petals". The surrounding white looking petals are actually called, bracts. The bracts surrounding dogwood flowers are designed to attract pollinators to the tiny yellow blooms. Once the flowers are pollinated the tree will produce its red berries. Poinsettias, a popular plant you see around the winter holiday season, also have bracts; the big red looking petals are bracts, not the flower.

DUKES 4 TREES

	2022 / June 3 / Walk 4	
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TOP - Serviceberry fruit on campus. (JMU/A. Sloop)

BOTTOM RIGHT - Evening grosbeak eating ripe serviceberry fruit. (Fafard.com)

Fruits of the Forest

As the warmer weather of summer approaches, all over campus trees are soaking in the rays and producing not only oxygen and shade, but some begin to fruit! One of the first trees to produce fruit on campus is the serviceberry. If you can beat the birds and other animals to the sweet treats you will be met with a berry that tastes like a strawberry and blueberry mashed together. While you can eat the red berries, the sweetest taste is when the berries turn a dark plump purple.



TREES IN BLOOM

Northern catalpa

Have you ever noticed the trees on campus with the big heart shaped leaves? Right now, with their showy, white blooms, northern catalpas are easy to spot from a distance. These big blooms and their long seed pods have made them scarcer in urban settings where blooms and pods will blanket cars and sidewalks.



Northern catalpa leaf with fallen bloom on top.
(JMU/A.Sloop)

When not in bloom, the catalpa is often confused with the Princess Tree or paulownia, which is a non-native invasive tree. The catalpa tree has 3 leaves that join at the stem, while the paulownia has leaves in pairs. The seed pods of the paulownia are round, while the catalpa seeds pods are long, like a cigar aka, the Monkey Cigar Tree, its other alias.



Southern magnolia tree bloom (wildflowers.org - Alan Cressler)

Southern magnolia

Also beginning to bloom on campus is the Southern magnolia, one of the later magnolia varieties to bloom. You can't miss the smell once they start. The Southern magnolia is known for its very fragrant flowers. This magnolia species can take up to 5-10 years to bloom, but most say it is worth the wait! Blooms release a lemon-citronella smell and can get as wide as a foot. Most are unaware that the Southern magnolia's blooms are edible! Though they taste just as strong as they smell. In Europe they are most often pickled and chopped small to add to salads or placed in honey or teas to diffuse the lemony floral taste. The leaves can be used just as you would a bay leaf, to flavor soups and dishes.

(<https://eatwild.weebly.com/blog/magnolia>)
If you are thinking of planting one, make sure you leave plenty of space for its root and branch growth. Trees can get up to 30-50 feet wide. Roots can extend as far as three feet beyond the lower branches. They are an evergreen and will drop leaves throughout the year. In Virginia, we are on the northern edge of their native climate range.

DUKES 4 TREES

	2022 / July 8 / Walk 5	
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TOP - Volunteers planting the fruit trees in the fall of 2021. (JMU/A. Bodle)

BOTTOM RIGHT - QR Code linking to the project website. (Site by M.Schmitt-Harsh)

Edible Forest Garden @ JMU

"The JMU Edible Forest Garden (EFG) Project began in 2020 as an effort to beautify, diversify, and restore part of the campus landscape. The JMU EFG works to advance the mission of the university by offering unique and innovative educational and service-learning opportunities for students, alumni, staff, faculty, and community members. A central focus of the EFG is to enhance awareness of sustainable food production and whole food nutrition." - Dr. Mikaela Schmitt-Harsh. Scan the QR code to visit the EFG Project's website.



ALL ABOUT BERRIES



Summer berries in Virginia (VADCR/Bruce Ingram)

Summer fruits you can find in the forests on campus include the following five berries pictured to the left, starting with raspberries on top and ending the season with the blueberry. Mulberries and serviceberries, not pictured here, are the very first edible fruits on campus each year.

Raspberries

The sweetest of the wild berries on campus, these are identified by their blue-green vines. leaflets are in threes and fives and the undersides are silvery green.

Wineberries

These red berries ripen shortly after raspberries and can be identified easily by its smaller thorns that often give the vine stem a reddish color. While not native, this shrub does provide a tasty treat for birds and campus and forest omnivores. It can have invasive qualities in certain habitat types and is found in most of Virginia.

Dewberries and Blackberries

Next to ripen in the summer are blackberries and the Northern Dewberry. The fruits are similar in size, but some say the dewberry is sweeter. To identify, the dewberry leaves come in threes and the its vines' grow across the forest floor. Blackberry vines grow upright and have three to five leaflets.

Blueberries

The last summer berry to ripen in our campus forests is the Highbush blueberry. Critters and birds get to these before I can. The plant has elliptical leaves and often the shrubs grow in dense patches.

DUKES 4 TREES

	2022 / August 19 / Walk 6	
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TOP - Students using the labyrinth along the upper arboretum trail. (JMU/ICSP)
BOTTOM RIGHT - Woodland trees and trail at the EJC Arboretum (JMU)

Upper Arboretum Trail @ JMU

Everyone knows about the trails surrounding the pond at the arboretum, but did you know that the arboretum has a whole area up above the education center and along University Blvd that you can explore as well? Faculty and students use this area often for research and for education, like tree ID exams in a fall Forest Ecology course. There is a zen garden or labyrinth that is maintained for anyone looking to find a quiet and thoughtful space to clear their minds.



ALL ABOUT HICKORIES

Brief Recognizable Features (BRF's)	Possible Hickories (walnut omitted)
Tree with long plates of shaggy (scaly), peeling bark	Shagbark Shellbark Southern shagbark Water
Leaflets usually 5 per leaf	Pignut Shagbark Southern shagbark
Leaflets mostly 7 per leaf	Mockernut (also 9 leaflets) Red Sand Shellbark
Leaflets 9 or more per leaf	Bitternut Pecan Water Mockernut
Yellow color to terminal bud	Bitternut (mustard yellow pubescence) Sand (yellow resin dots)
Fruit husks having ridges along the sutures	Bitternut Pecan Red (sometimes) Water
Fruit very large (>2 inches in diameter)	Mockernut Pecan (occasionally) Shagbark Shellbark
Fruit with very thick husk (to 0.5 inch thick)	Shagbark Shellbark Southern shagbark
Petiole and/or underside of leaf surface pubescent (or slightly so)	Mockernut (reliable) Sand (reliable) Shagbark (variable) Shellbark (reliable) Southern shagbark (frequently glabrous)



Image: William (Ned) Friedman - Wikimedia Commons



Pignut hickory fruit, bitternut hickory bark, mockernut hickory bark (treeleafy.com)



Image: Plant Image Library - Wikimedia Commons



Image: David Stang - Wikimedia Commons

DUKES 4 TREES

	2022 / September 9 / Walk 7	
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TOP - Pecan tree leaves. (JMU Tree Inventory)

BOTTOM RIGHT - One of two pecan trees 70+ feet tall behind the Hillcrest House. (JMU Tree Inventory)

Pecan Trees @ JMU

You won't find many pecan trees this large in the Shenandoah Valley. Pecan trees grow best in the Tidewater region of Virginia. They thrive in floodplains and river bottoms. There are two mature pecan trees on campus. The Southern pecan is the one that provides the commercial crop of nuts, grown in NC down to FL - its one of the most important nut crops on the East Coast. This northern variety of pecan trees on campus will still produce the same delicious nuts in October!



Big Trees on Campus



Norway Spruce

This Norway spruce on the Quad is over 70 feet tall and almost 30 inches in diameter. This species was introduced from Europe and now grows in the wild throughout N. America and Canada. Large, mature Norway spruces are easy to identify as their branches begin to grow horizontally and droop more with age. In N. America they can grow as tall as 130 feet, so this particular one has some more growing to do! Their cones are the largest of the spruce trees and can be very abundant on the floor underneath the tree when they do fall. Their roots are shallow, with no large taproot, making them a bit more susceptible to high winds toppling them over.

Elm Species

This elm tree on the Quad is about 65 feet tall and over 40 inches in diameter. This tree is native to N. America. Elms can be tricky to identify to species. We believe the big elm trees on the Quad are either American, Field or Slippery elms. Sometimes you will see elms with a streak of grey, white or orange discoloration down their bark caused by bacterial wetwood. It is a common disease that affects a tree's bark or central core. Unless an infected tree is under stress from some other factor, wetwood will not kill it.



Willow Oak

This Willow oak across Bluestone Drive from D-Hall is about 60 feet tall and almost 30 inches in diameter. This tree is native to N. America. It is a valuable tree for birds and other wildlife. The willow oak begins to produce acorns between 15-20 years of age. It's nice, rounded shape make it a popular shade tree for landscaping. Because they tolerate drought and pollution, as well as non known pests or diseases they thrive on our urban campus and in these settings they often outgrow their placement.

DUKES 4 TREES

	2022 / September 30 / Walk 8	
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TOP - Changing leaves on campus. (JMU University Marketing)

BOTTOM RIGHT - A tulip poplar tree leaves begin to change from green to yellow. (JMU Tree Inventory)

Changing Colors on Campus

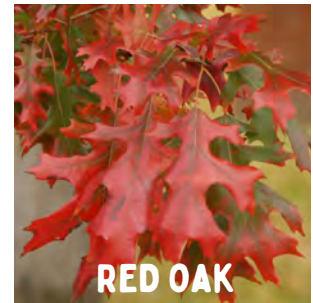
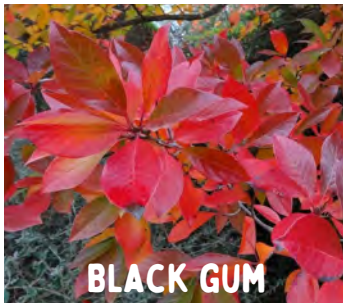
The colder mornings and shorter days have triggered the trees on campus to begin the exhilarating process of turning from hues of green to the beautiful bright colors that make autumn and campus a spectacular time of year. As we enter October, when peak fall colors occur on campus, you may notice that certain trees change color earlier than others. The next time you talk a walk on campus, observe which trees are already changing and which ones are yet to turn.



Which color, which tree?

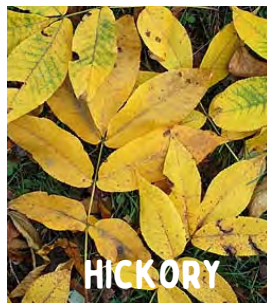
Reds

Certain tree species turn a bright red in the fall, this is due to anthocyanins, a chemical from built up sugars which leaves release as they die. The brightness of the red color depends on the tree's genetics and environment surrounding it.



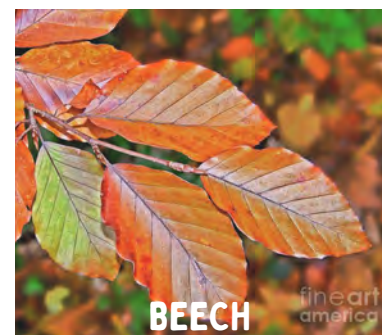
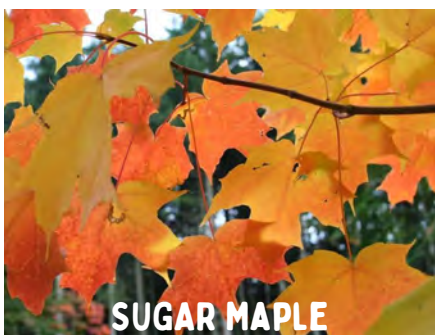
Yellows

All leaves turn a shade of yellow as the green color producing chemical, chlorophyll, breaks down - triggered by shorter days and cooler temps. As the green color leaves, the leaves reveal the yellow that was there all along from the carotenoids in the leaves.



Oranges

Some tree species will reveal shades of orange leaves in the fall. These orange hues also come from the carotenoids present in the leaves that are displayed as chlorophyll breaks down. Often the brightest orange leaves have a bit of the red anthocyanins mixed in.



DUKES 4 TREES

	2022 / November 10 / Walk 9	
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TOP - Witch-hazel yellow blooms in the EJC Arboretum woods. (EJC Arboretum - JMU)
BOTTOM RIGHT - The leaves of witch-hazel tree. (Virginia Native Plant Society - VNPS)

The Last Flowers of Fall

This understory tree is the last woody species to flower in Virginia and its brilliant yellow blooms pop in the woods of the EJC Arboretum on campus. This tree is called Witch-hazel, its name is thought to come from the early settlers who used the flexible withes of the tree as divining rods to "dowse" or witch to find sources of water underground. This tree was first discovered in Virginia, hence its scientific name, *Hamamelis virginiana*.



Fruits of Fall (for the birds!)

Holly (Ilex species)

These small understory trees and bushes have vivid red fruit that appears in the fall and persists into the winter. Birds like: Cedar waxwings, Eastern bluebirds, Northern mockingbirds and gray catbirds feast on these berries over the winter. While birds can eat these berries, they are toxic to most other animals and humans. Birds also use the holly to shelter from predators in the winter because the sharply pointed leaves provide protection.



JMU Tree Inventory

Eastern red cedar (Juniperous virginiana)

Despite the name, it is actually not a cedar, but a juniper, as seen in its scientific name. The small blue colored "berries" of this tree are actually tiny soft cones and birds enjoy these over the winter months. Birds like the Cedar waxwing, Northern mockingbird, Eastern bluebirds and the Dark-eyed junco.



VNPS - Toni Genberg

Flowering Dogwood

Over 75 species of wildlife consume the dogwood tree's bright red berries, with 60 of those being birds. The berries are perfect for migrating birds as they are high in calcium and fat to aid in their long journeys. The berries are often sought out and guarded by birds like the northern mockingbird and the cedar waxwing. Most of Virginia's resident woodpeckers enjoy these berries as well.

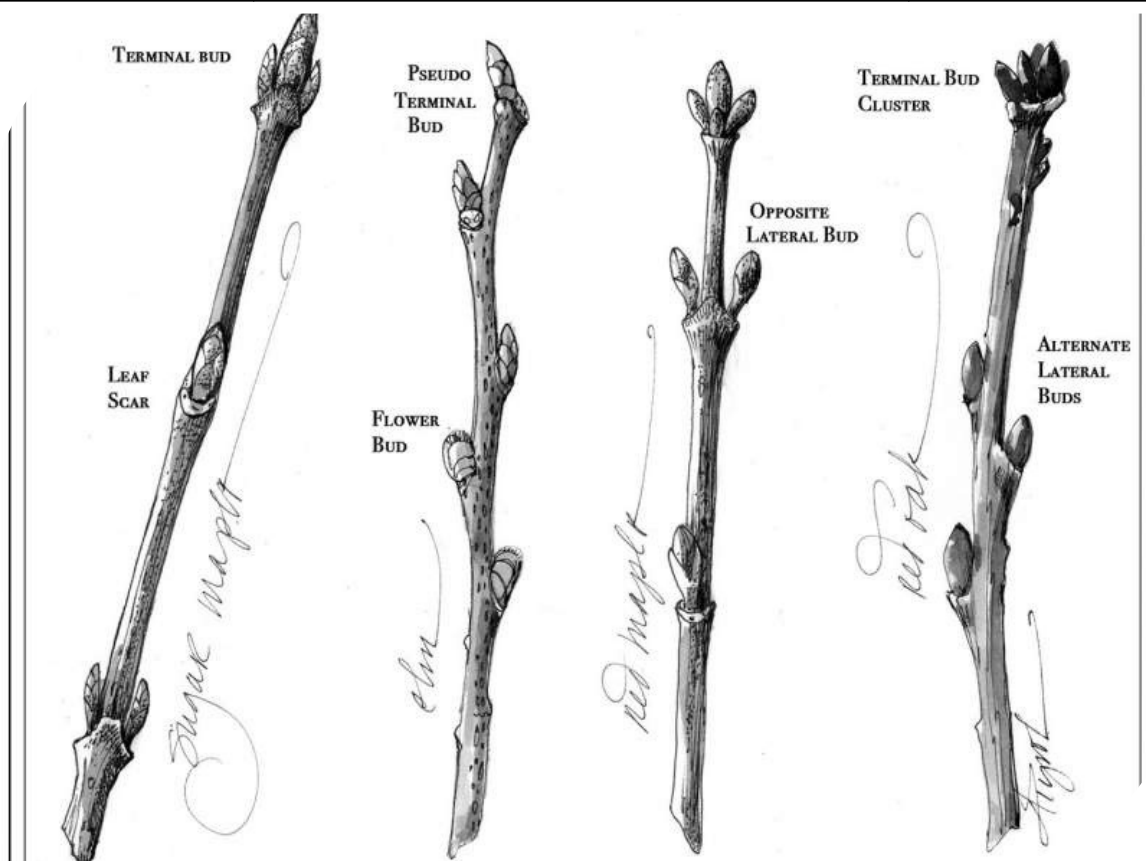


GA Dept of Natural Resources

Other fall berry producing trees and shrubs for wildlife include: American beautyberry, Persimmons, hackberries, chokeberries, crabapples, and some viburnums. Native vines that produce valuable berries for wildlife include: Pokeberry, Poison ivy, and Greenbriers.

DUKES 4 TREES

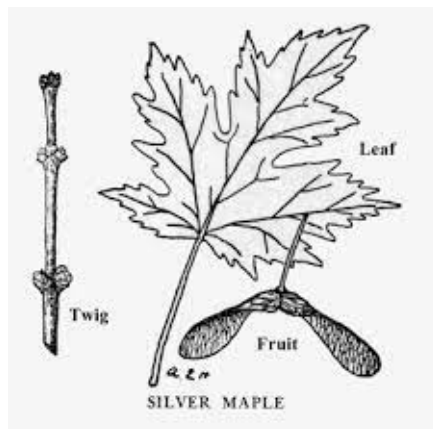
2022 / December 9 / Walk 10



TOP - Tree twigs showing opposite and alternate bud/leaf arrangement. (Illustration by: Adelaide Tyrol)
BOTTOM RIGHT - Silver maple leaf, fruit and twig showing opposite bud arrangement. (Cornell University)

MADCapHorse

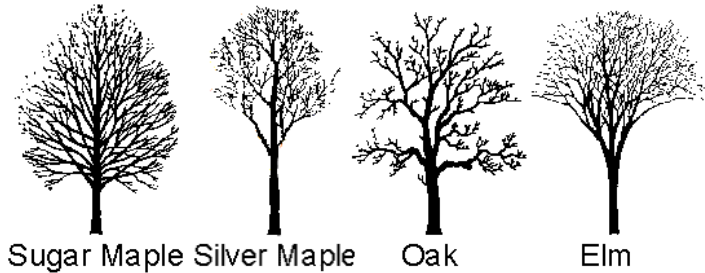
Use the pneumonic MADCapHorse to remember which species have opposite leaf arrangement. Then, if you find a species you don't know and its leaves are oppositely arranged, you can quickly narrow your choices down to: maple, ash, dogwood (except for alternate leaf dogwood), something in the honeysuckle family, or a horse chestnut or buckeye. There are exceptions to this rule, but this is a great place to start (Virginia Tech Dendrology).



Winter Tree Identification

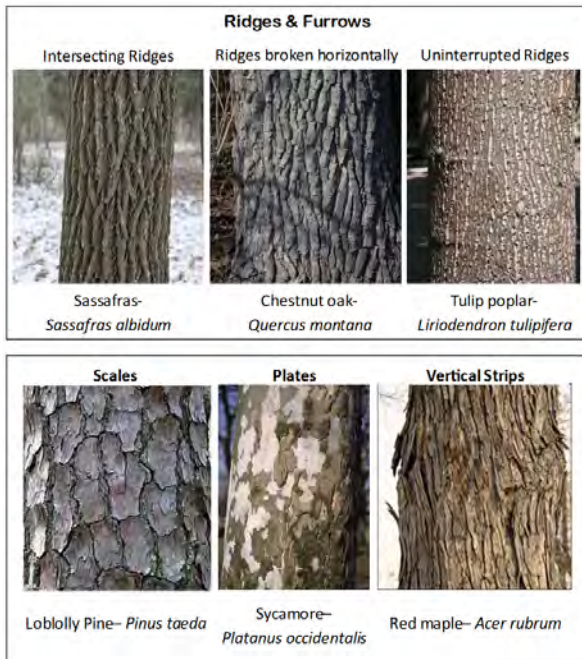
Tree Form

The form of a tree or the shape of it is easier to see in the winter, once all the leaves have been shed. You can narrow down to certain species, just by observing their form. Keep in mind that a tree's form is best observed in an open area, not in a forested environment where competition is high.



Sugar Maple Silver Maple Oak Elm

Graphic: Toronto Green Community - Lost Rivers



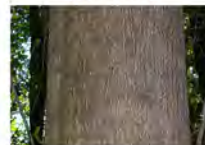
Visible Lenticels



Linear- Black Cherry
(*Prunus serotina*)



Diamond- White poplar
(*Populus alba*)



Oval/Round- Pin oak
(*Quercus palustris*)

Tree Bark

Identifying a tree by its bark can be one way to ID a tree in the winter, as long as you keep in mind that as a tree ages the tree's bark can change. Each species has young, mature and old bark. Sometimes the changes are barely noticeable, but in some species, like Black cherry, the changes can be surprisingly drastic.

UMD Extension - Master Gardeners

Twig and Bud

Twigs are the end portion of a branch, typically representing the current year's growth. Twigs have distinguishing features: buds, leaf scars, bundle scars, color and fragrance. Species like Tree-of-heaven and sumac have stout twigs. Beech and birch are slender and sycamore are zigzag. Sassafras and birch are quite fragrant and Black cherry is foul smelling. Some species have distinct features, like green twigs - such as boxelders.



Stout



Slender



Zigzag



Leaf Scar of Ash



Leaf Scar of Maple



Leaf Scar of Oak

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