



CONNECTION THROUGH NATURE TREE DISCOVERY GUIDE

Asheville GreenWorks is committed to providing educational opportunities for our community - the COVID-19 situation is a hurdle, but by no means an impasse to this goal!

Many of our lives have undergone sudden changes recently. Coping with these changes and the uncertainty of what the future holds all while distancing ourselves from those we would otherwise look to lean on is no simple task. Fortunately, the beauty of nature and the intrigue it inspires continues to persist around us. Drawing strength and composure from our natural surroundings is more important now than ever. Please use this guide to help you fully engage in a walk around the block, learn more about our urban ecosystem, and remind yourself that even if you're alone, there is life all around you!

How it works: This guide is intended to assist you on a self-guided tree walk. It contains identification tips for 10 common native tree species. Use the pictures and descriptions (or your own knowledge!) to see how many of these species you can spot on your walk. As you spot them, note the accompanying facts to better understand that species and what it does for the ecosystem.

You will also find activities that open your senses to the world around you. A crucial part of experiencing the world from a naturalist perspective is to engage all the senses, many of which are pushed to the wayside by the dominance of sight. Humans have five for a reason—however, please don't taste nature in an exploratory fashion!

Lastly, this guide contains other resources to enhance your walk. In some ways technology has separated us from the natural world, but in other ways it helps us connect with it! Please use these resources to learn more about your surroundings.



CONNECTION THROUGH NATURE TREE DISCOVERY GUIDE

This guide has been produced for the residents of the City of Asheville in partnership with the City of Asheville



Warning: While this guide covers certain edible parts of plants, we do not recommend eating anything you find outside based on this guide alone. Plants can be tricky to identify and there are poisonous plants in our area - please be safe!

Tulip tree - *Liriodendron tulipifera*

Tulip poplar is a common tree species in our area and throughout the Eastern US. It is the tallest eastern hardwood (go see Joyce Kilmer Memorial Forest!), is one of the primary host plants for the eastern tiger swallowtail, and provides nectar for many pollinators. Despite several of its common names (tulip poplar, yellow poplar), it is not a poplar - it's actually in the magnolia family. Use the info below to identify one!

Mature bark - brown/gray, vertically furrowed in a regular pattern

Trunk - these trees are telephone pole straight and tend to lack any lower branches because they drop them as they grow - a trait known as self-pruning



Leaves - four lobes, 5 to 6 inches long and wide. It looks like a cartoon cat's face! Meow you're ready to spot a tulip tree.



Fruit - an aggregate of samaras (winged seeds), you can spot the remnants of these dotting the bare canopy of tulip poplars in the winter.

Twig - Because tulip trees drop their lower branches, trying to ID one by the twig is tough if it's mature, but can help with younger specimens. The bud looks like a duck's bill! The leaf scars, where last season's leaves were (circled in red), are circular.



Flower - bear a resemblance to their namesake flower! They're pollinated primarily by bees and hummingbirds.



Flowering dogwood - *Cornus florida*

Many of us already know this one - it's a popular landscaping tree and it's our state flower! These small trees can be found throughout the forests of the Eastern US, and are pollinator friendly. Sadly they are in decline due to a rampant fungus known as dogwood anthracnose. You may also see an Asian *Cornus* species found in the Asheville landscape: the kousa dogwood.

Mature bark - The best way to identify a DOGwood is by its BARK. That's a joke, but it does help! Dark brown, rough, and scaly - some liken it to rattlesnake skin.

Trunk - may be multi-stemmed or have one main trunk. Reach 20 - 30 ft in maturity.



Twig - Adorned with a unique bulbous bud, the winter twig is an excellent way to spot a dogwood. Dogwoods are one of a handful of native trees that are oppositely branched (leaves and twigs extend from the same point of a branch), unlike most native trees which are alternately branched.

Leaves - oval shaped, notably distinct veins, opposite branching pattern.



Fruit - small red drupes (fleshy fruit with a stony pit like a cherry or an avocado). An high-quality food source for native wildlife.



Flowers - dogwood flowers are deceiving! The four white 'petals' are actually modified leaves called bracts. The flowers are the many greenish structures in the middle.

OPEN YOUR SENSES! - *Hearing*

For most humans, sight is our dominant sense. The visual world is home to many of nature's spectacles, but it is only one slice of the pie! When we open our ears to the world around us, a whole new realm of stimuli comes to life.



Exercise One

Find a safe place to stand or sit where you feel comfortable closing your eyes after reading through the exercise. Notice each different sound, natural or otherwise, and count them. Notice the characteristics of each sound. Is it soothing? Sharp? Repetitive? Try to observe their qualities instead of simply identifying the source. Allow the auditory world to take sensory precedence.

Exercise Two

Now, specifically hone in on the birds. How many different birds do you hear? Do you hear any other wildlife? Do you recognize all the sounds, or are some new? Close your eyes and listen.

As you open your eyes and continue your walk, try to maintain some degree of the auditory awareness you just cultivated!

Did you know?!

With the help of fungi, trees in forests can share nutrients and messages with offspring and other neighbors through their root systems! In some cases, if one tree experiences an attack by an herbivore, it may warn its neighbors of the impending threat so they can prepare accordingly! How neat is that?



Eastern redbud - *Cercis canadensis*

The eastern red bud is a prolific and beautiful small tree found throughout the eastern US. It's commonly used in landscaping and is prized for its early blooming magenta to pink flowers. The redbud is a host to a number of native lepidoptera (butterflies and moths). It shouldn't be hard to stumble upon one of these around town.



Leaves - Heart-shaped. 3 - 5 inches long.

Mature bark - Dark brown and scaly with ridges.

Trunk - may be multi-stemmed or have one main trunk. They are often twisted. Reach 20 - 30 ft in maturity.



Flowers - Redbud flowers are dark magenta to pink, roughly 1/2 in long, and you will see them emerge on bare stems before the leaves. Primarily pollinated by bees.



Twig - Distinctively zig-zagged. The winter buds are tiny and dark red.

Fun fact: Historically in our region, green redbud twigs have been used to season wild game earning it the alternate title of spicewood tree!

Fruit - The leguminous (legume-like) fruit is indicative of its pea family membership. 2 - 3 inches long. Green, sometimes with a red tint. They may hang on through winter. The seeds are dispersed by wind and birds.



Henry's Elfin - This is one of the butterfly species that uses redbuds as host plants!



Red maple - *Acer rubrum*

One of the most prolific trees in the eastern and central US. It is native, but its tenacity and generalist nature (ability to thrive in many conditions) border on invasive behavior. Because of its prodigious vigor and deep red fall leaves, it is often planted in landscapes and less than ideal habitats, such as parking lots.

Other maples you may encounter on your walk include sugar maple, silver maple, Norway maple, and Japanese maple.

Mature bark - Gray with cracks becoming increasingly more prominent with age. Younger red maples tend to be lighter in color and smooth.

Trunk - single-stemmed and can reach heights of 100 feet if left to its own devices.



Leaves - red maples leaves can have a certain degree of variability as is evident in the pictures on the left. The distinguishing features to look for are 3 to 5 pointed lobes, v-shaped sinuses (space between lobes), and opposite branching pattern.



Twig - Like other parts of the red maple, the twigs are red. They are also oppositely branched. These features are excellent identifiers of red maples in the colder months.

Fruit - The fruit are the "helicopters" many of us played with as children (or just recently!). The way they act as propellers is their evolutionary mode of wind dispersal. The fancy name for this type of fruit is *samara*.



Flowers - These red flowers form in clusters and pop out before the leaves. Most red maples have either male or female flowers—some have both, sometimes they change, and sometimes they have perfect (hermaphroditic) flowers!

Oaks - *Quercus spp* ("*spp*" means multiple species of a genus)

Oaks! Oaks are amazing trees. There are roughly 600 different oak species in the world, and 28 species native to North Carolina. They tend to be long-lived, large overstory (top of the canopy) trees. They are climax species, meaning their populations start to take hold later in the evolution of a forest, and become staple canopy species as the forest succession stabilizes.

Our native oaks are crucial parts of our ecosystem. Their acorns are a high-quality food source for native wildlife, and they act as larval hosts for hundreds of butterfly and moth species. (A larval host is a species on which butterflies and moths lay their eggs and the subsequent caterpillars live out their juvenile days feeding on the foliage).

Below are a couple of common oak species around here—see if you can spot one of these or a different oak on your walk!



White oak - *Quercus alba*



White oaks have light gray stripy bark. They can reach heights of 80 - 100 ft and, given enough space, often form huge, far-reaching crowns. The leaves have many rounded lobes. If you see what you suspect to be an oak and it has lighter-colored stripy bark, chances are you're looking at a white oak.

Southern red oak - *Quercus falcata*



Identifying a southern red by its bark is a bit more nuanced than doing so with a white oak. The bark is dark brown to gray and has shallow furrows. The best way to ID a southern red is by its leaves if they're out. The leaves have 3 - 5 pointed lobes and are shaped like a turkey foot. They can get up to 80 - 100 ft and form broad rounded canopy's like their aforementioned relatives.



I notice, I wonder, it reminds me of...

Despite vision being our predominant sensory tool, we often barely see what we're looking at. This guide is heavily focused on identification, which is a wonderful tool that can tell you a lot about the world around us - however, it is also important to remove the lens of classification and observe nature at a fundamental level. The following exercises will help you do so. Pick a natural item from the ground - whatever catches your eye. A leaf, a rock, a twig, etc. Use the item and the steps below to delve into the world of unadulterated observation.



I notice...

Look closely at your item. What do you notice about it? To say what it "is" (e.g. it's a twig) is not an observation - that's a classification. What color is it? How would you describe its shape? Its texture visually? Do you notice patterns? Follow this path of observation for the other senses as well. How does it smell? Is that smell uniform throughout the object? What does the temperature of it feel like? So on and so forth. Please don't taste!

I wonder...

The beginning of so many of the world's greatest discoveries - I wonder... It's time to ask questions (technically in the form of statements). Remember, don't ask yourself questions related to classification (e.g. I wonder what species this leaf belongs to), but rather questions about its state of being. "I wonder how the holes in this leaf came to be. I wonder if something eats this type of leaf. I wonder how long this leaf hung on its tree. I wonder how long this leaf will take to decompose."

It reminds me of...

Now that we've really gotten to know our item, let's think about what it reminds us of. It may seem a little silly, but making these connections in our brains helps us become better observers and improves our ability to break through the lens of classification. What does your item remind you of? "This rock reminds me of an everything bagel with cream cheese. The feel of it in my hand reminds me of skipping rocks. The smell reminds of the first time I went rock climbing." If you can, lose yourself in this task. You never know where your mind might take you.

Did you know?!

One study found that tree roots were able to "hear" running water in underground pipes and the roots would subsequently grow towards the pipe! What?! (Gagliano et al. 2017)

Black walnut - *Juglans nigra*

What a cool tree! The black walnut is a member of the walnut family (shocker!), and a relative of the English walnut which yields the yummy walnuts you most often find at the store. Black walnuts are also edible, but less commonly cultivated purely for food purposes. They are most often grown for their beautiful dark wood that is highly prized for its color and its ease to work with. Black walnut is also the preferred host of the luna moth!

Mature bark - Typically grayish-brown with a distinctive diamond-shaped pattern

Trunk - When competing for light these trees can get up over 100 feet, but when given space (as is more common in an urban environment, rather than a forest) they have shorter trunks and grow a broad canopy



Leaves - black walnuts have what are known as compound leaves—what you see on the left is in fact a single leaf composed of many "leaflets." That whole thing comes out of a single bud. Black walnut leaves typically have between 15 and 23 leaflets.



Twig - Compared to most others shown in this guide, black walnut twigs are pretty weird. They are thick with irregularly shaped buds, and the leaf scars (where the leaf fell off last season - circled in red) look like a monkey's face. If you can observe a twig from the ground, this is a great way to ID a black walnut without leaves.



Fruit - black walnut fruits are large and green and tend to occupy the tree in clusters. They're hefty fruits—don't park your car under one of these in the late summer, early fall when walnuts start dropping. You can use the husks to make a potent dark brown dye!

Eastern White Pine - *Pinus strobus*

The eastern white pine is an evergreen conifer found in the northeast US, into Canada, and south along the Appalachian mountains. It is the tallest tree in the eastern US! Because of their flexible, strong, and straight trunks, these trees were a go-to for creating ship masts —particularly in colonial times.



Fascicle

Leaves - white pine leaves are needles! Their needles form in bundles called fascicles (a single fascicle is shown above). Typically their fascicles have 5 needles a piece. The needles tend to be several inches long and straight.

Mature bark - Typically grayish-dark brown with furrows and flattened ridges.

Trunk - white pines tend to grow tall and straight. They can get over 100 feet, and in undisturbed northern forests they can get up to 200 feet.



Cone - eastern white pine cones are distinctively long and narrow (but not always as narrow as shown above), making them a good method of identification. These cones are longer than those of other native pine species.

Branching - the branching pattern of the white pine is called "whorled." Three or more branches will grow from the same horizontal plane, as shown to the left. They typically grow a new whorl each year meaning they can be counted to estimate their age like tree rings!



Black Cherry - *Prunus serotina*

This is our native cherry. It's medium-sized, relatively fast growing and can be found throughout the eastern US. It shouldn't be too hard to come across one of these on your walk.

Mature bark - Black cherry bark has grayish-silvery flakes like burnt potato chips. The younger growth is also silvery, but not flaky, and has raised structures called lenticels.

Trunk - These trees tend to have one main trunk often with some degree of curvature.



Twig - Black cherry twigs tend to be thin and straight. They have relatively small pointy buds. Lets bring our noses into the ID equation - if you scratch the bark on one of these twigs it should smell like bitter almonds. That smell is a result of certain cyanide-forming compounds. These cyanogenic glycosides, found throughout the plant, are the active ingredients in traditional cough syrups and sedatives made using black cherry bark.



Flowers - The flowers are small, but catch the eye as they form in long, conical clusters often plentiful throughout the tree. They're quite beautiful.



Leaves - The leaves, when fully mature, are a dark green color. They are fairly elongate and have a pointed tip. The edges are serrated (like a serrated knife!).

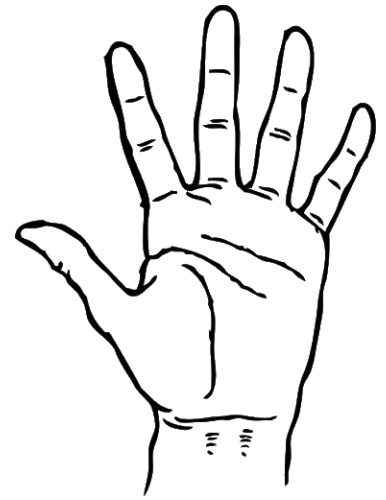
Fruit - Black cherry...cherries are much smaller than what you'd find at the store. There are still edible though! As their name suggests they are darkly colored.



OPEN YOUR SENSES! - *Touch / Feel*

An incredible naturalist once told me that "botany is a contact sport." And that it is! Using our sense of touch is an invaluable part of exploring your surroundings.

However, in the name of germ safety these days, PLEASE use discretion in what you touch.



Leaves

Leaves are an excellent way to experience the highly varied textures of the natural world. Pick a leaf from last year off the ground, give one of this year's leaves a rub between your fingers. Leaves have so many different textures! Some have a tiny bit of hair, while others are amazingly fuzzy (they don't call mullein "Charmin of the woods" for no reason!). Some are totally smooth and have a waxy cuticle on the outside. Knowing textures can help you identify species if you know your stuff. Go feel some leaves!

Temperature

Trees have a huge impact on temperature - especially within cities. We all know that the shade of a tree provides a wonderful reprieve from the heat of the day in the warmer months, but take a moment to fully immerse yourself in that experience. Find a grouping of trees or even a single large tree. If it's sunny out, step into their shade while really focusing on what your skin is experiencing. As you get closer to the trunk(s) what else do you notice? Is there less wind? How about other senses - is it quieter? (We line highways with trees partly to buffer road noise). Remind yourself that the cooling these trees provide is not just important on a hot walk. Trees decrease the ambient temperature of whole areas. They decrease our cooling costs and mitigate heat-related health issues. Thank our trees! (And consider advocating for an urban forester...)

Hug an old friend...

My favorite professor in college once said something that really stuck with me. On the first day of my first plant ID course she told us that one of her goals for the class was to help us get to know our trees - not just their names but their personalities. By the end of the course she hoped we would be able to "*go into the forest and be surrounded by old friends.*" I'll never forget that, and I'll never look at trees the same way. It may be a cliché, but go hug a tree. Or if that's too much for you, just give it a pat on the back, and think about how that being is just another form of life like you or me, that's living in its own way.

American sycamore - *Platanus occidentalis*

The American sycamore, relative of the London plane tree, is a fast-growing native species often found near water, or in areas prone to water inundation (floodplains). They are a beautiful part of the landscape, and due to their ability to cope with the lack of oxygen in water-logged soils, they can cope well with compacted urban soils which illicit the same issue. They are common throughout the eastern US.



Fruit - The composite fruits of the sycamore, which make its winter canopy quite distinctive, are composed of numerous individual wind-dispersed fruits called achenes. If you think you're looking at a sycamore look for these bobbles in the branches and on the ground!



Mature bark - At the base of a mature sycamore the bark tends to be brown and scaly (pictured left). As you move up the trunk the outer bark becomes more sparse (pictured right) because this species has "exfoliating" bark - it peels off. A younger or middle-aged sycamore may not have developed the thicker outer bark at the base. Spotting the exfoliating bark and the distinct ivory inner bark is a great way to ID a sycamore.

Trunk - Sycamores can get larger in diameter than any other native hardwood! They commonly get up to 100 feet in height.



Leaves - These leaves can get big! They typically have 3 to 5 lobes and the edges are toothed



Twig - Sycamore twigs are best characterized by their zigzag shape. If you want to get into the nitty gritty of the twiggy, look closely at the buds. Unlike the buds of other twigs shown in this guide, you'll see no recognizable leaf scar under them. This is because next year's buds form under the petiole of this year's leaves - wow!



Host plant - The American sycamore is the larval host for the white-marked tussock moth!

Black Locust - *Robinia pseudoacacia*

Black locust is a fast growing, hardy, pioneer species. Because of these qualities it is considered invasive in some states outside of its native range. It is medium sized and not terribly long-lived. Like the red bud, it is a member of the pea family. Members of this family are nitrogen fixers - meaning, with the help of symbiotes on their roots, they take unusable atmospheric nitrogen and turn it into forms that plants *can* use. Thanks peas! Black locust wood is incredibly hard and rot resistant - it has been traditionally used to make fence posts and will burn for a long time in a wood stove!



Twig - Black locust twigs have spines - which, in terms of our native trees, makes them fairly unique. This is a good way to identify younger black locusts. Older growth loses its sharp spines. Plant nerd note: spines are modified leaves whereas thorns are modified stems. Cool huh!



Mature bark - Bark is a great way to identify a black locust. It's deeply furrowed and ropey with winding ridges and diamonds meandering their way up the trunk - almost a little spooky looking.

Trunk - These trees stay relatively slim - 2 to 4 feet in diameter. They *can* get up to 100 feet tall, but tend to top out at 30 to 50.



Fruit - Like other legumes, members of the pea family, the fruit are pea-like pods.

Leaves - Black locusts have long compound leaves with 9 to 19 leaflets. They are oval-shaped which helps to distinguish them from many other native compound leaves you'll see around. They bear resemblance to the species of the *Acacia* genus which earned the black locust its species name of *pseudoacacia*, meaning false acacia.

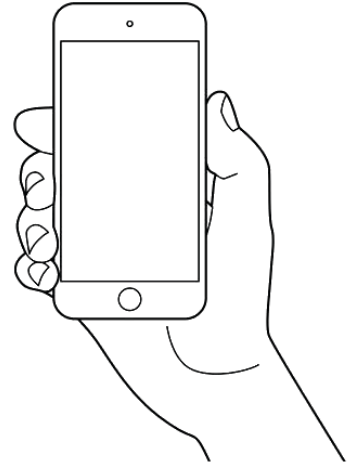


Flowers - These beautiful fragrant, white flowers are a nectar source for native pollinators and yield sought-after honey when visited by honeybees!

Resources

An important part of being a naturalist is learning to use all the tools at your disposal beyond just what you've memorized. There are A LOT of plants out there - even the best naturalists need help now and then.

A beautiful thing about this day and age is the amount of information that's at our finger tips - plants are no exception! Whether you need help identifying a plant or know what it is and want to learn more about it, there's an online resource for you. Check out the tools listed below to enhance your walk!



Apps - These applications for mobile devices can help you ID plants!

- iNaturalist - a community science app used to catalog natural observations
- Seek (by iNaturalist)
- PictureThis
- Plant Snap
- Plant Identification ++

Websites - These are extensive plant databases

- <https://www.wildflower.org/plants-main>
- <https://www.missouribotanicalgarden.org/plantfinder/plantfindersearch.aspx>
- <https://pfaf.org/user/Default.aspx>