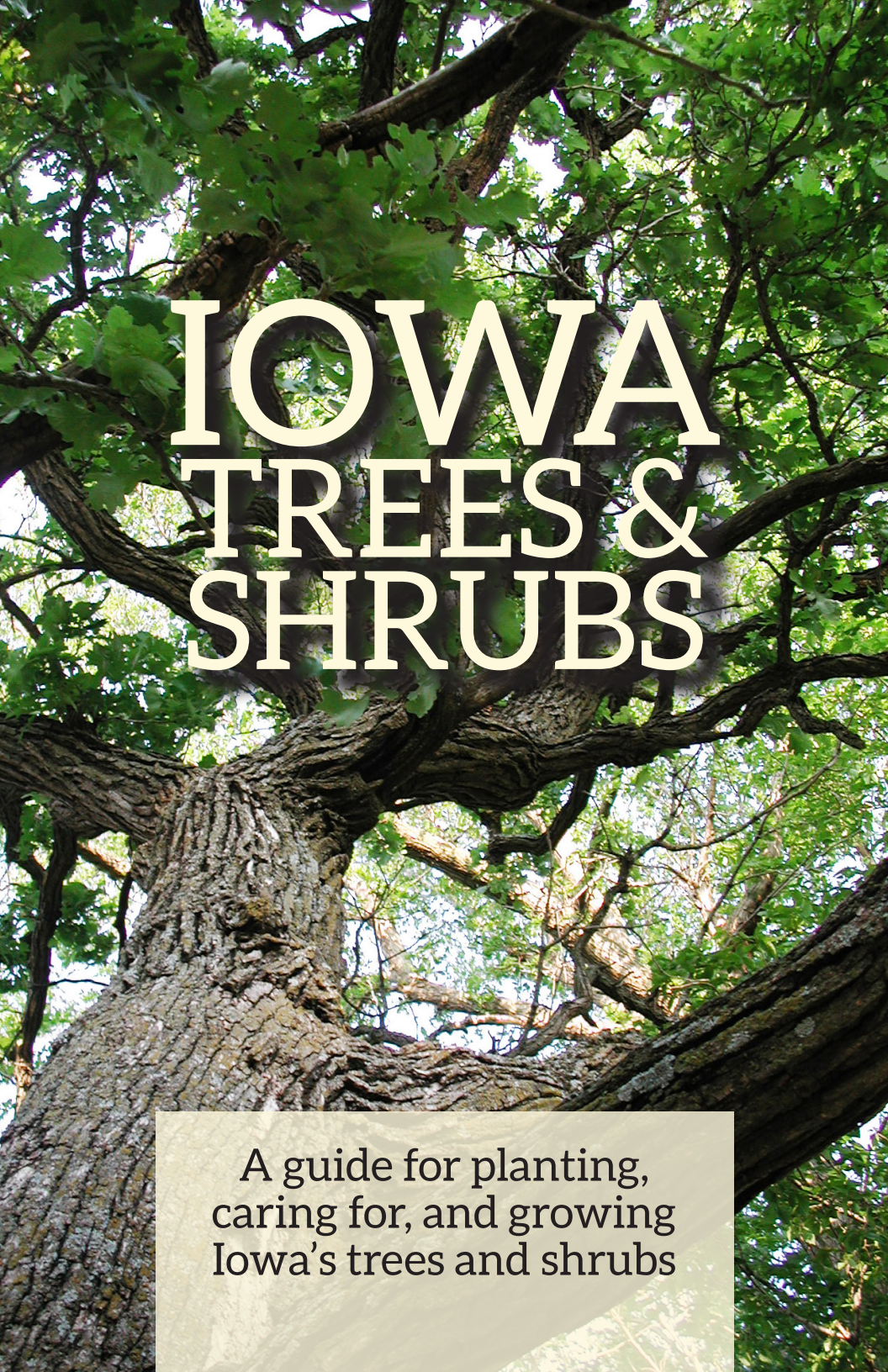




IOWA TREES & SHRUBS

A guide for planting,
caring for, and growing
Iowa's trees and shrubs

USE THIS GUIDE

The goal of this guide is to create a reference for easily accessible information that can be carried in the field for professionals, homeowners, volunteers, and enthusiasts alike. The following pages offer a brief reference to help identify the trees and shrubs in your area, determine their suitability for your site, and provides the steps to take on proper tree planting.

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INTRODUCTION

WE NEED TREES

Trees and other woody plants like shrubs are essential to our lives. Our landscape takes care of us when we accommodate it, select appropriate plants, and maintain those plantings as needed. Whether native to the landscape or naturalized (i.e. not native, but non-invasive), trees can improve our environment. By planting and caring for trees, we can achieve better water and air quality, reduce flooding, offset urban heat island effects and carbon emissions, provide habitat and food for wildlife, and offer a green oasis that provides mental and emotional health benefits.

This guide will walk you through the basics of assessing your property, planning an attractive and functional landscape, identifying and selecting trees and shrubs, and caring for your new plantings.



THE WOODEN WORKFORCE



Trees provide urban shade.

A diverse mix of trees in woodlands and towns becomes a workforce that provides numerous economic benefits to Iowa. Tree canopy-cover can offset energy demand by shading or redirecting winds around homes

and businesses. Researchers found that a minimum of 40% tree canopy cover could reduce sweltering summer heat; heat that is amplified when concrete and building materials hold and reflect heat.¹ Windbreaks – a row or rows of trees planted around a home, business, or farm field – slow wind speeds and thereby help reduce soil erosion and reduce the velocity when winds hit a built structure. Trees and shrubs take up extra rain water to help retain water on site and reduce flooding, provide a source for pollinator food and habitat, create homes for wildlife, and can produce fruit or nut crops for added income or fresh, local food. The services trees provide pay us back with interest every day. Without them, we often have to rely on expensive artificial interventions like bigger stormwater pipes. Indeed, the many and varied services trees and shrubs provide are critical to a vibrant place to live and a key consideration in building or maintaining a working landscape.

GREEN COMMUNITY Humans are not the only benefactors of our bark-bearing allies. Trees are the foundation of entire ecosystems that support the connection between wildlife and humans. A diverse landscape of trees and shrubs ensures a seasonal progression of food and habitat, on which pollinators and wildlife depend.

Spaces where we plant trees, including residential plots, municipal grounds, farmsteads, and even our one million plus acres of U.S. roadsides, contribute to the success of pollinators, migratory birds,

and small mammals. These creatures in turn provide valuable economic services for people.

Birds and bats are known for reducing populations of pest insects like mosquitoes. Beneficial insects that rely on trees provide value estimated at \$27 billion to the United States. These often overlooked insects are responsible for pollinating over 75% of crops such as apples, berries, vegetables, and nuts.² Even livestock forage depends on pollination.

According to entomologist Dr. Doug Tallamy, some native trees, especially oaks, are “keystone species” and have a disproportionately large effect on an ecosystem. About 5% of North America’s native trees and plants provide around 75% of the food for wildlife. If you want to do your share to bolster wildlife populations, consider planting native, keystone species.

We also thrive when we cultivate and live among healthy green spaces. Environments with trees can relieve mental fatigue and aid in cognitive function in an increasingly busy and social culture.^{3 4} Trees as part of our green infrastructure and landscape contribute to more fascinating environments that are higher in complexity or interest, which can aid attention and reduce mental fatigue. Moreover, there can be reduced aggressive behavior and fewer crimes in areas where foliage and a green landscape surround residences.⁵ In all the places where we live, work, commute, and play, we benefit from living among the trees.

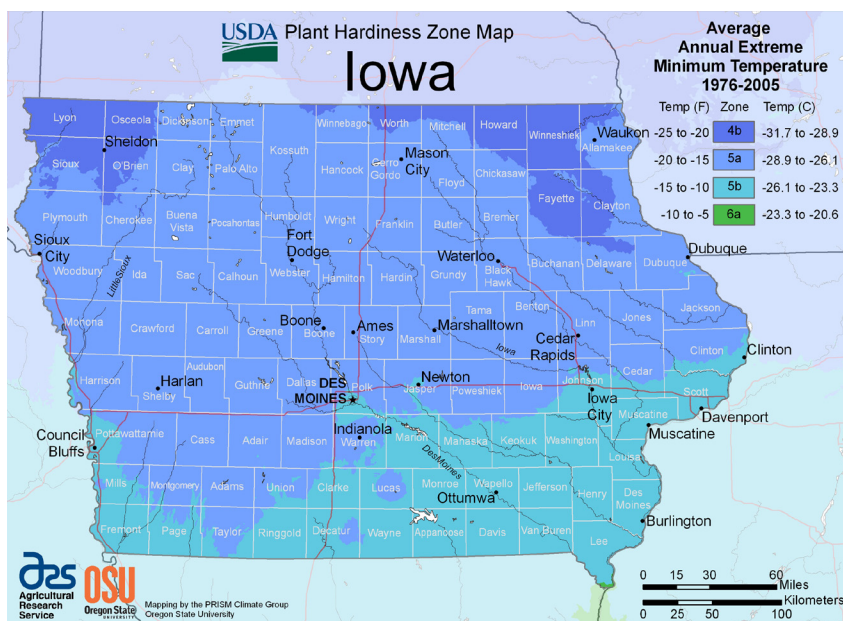
Butterflies and other pollinators are responsible for pollinating over 75% of crops such as apples, berries, vegetables, and nuts.⁶



CHOOSING THE RIGHT PLANT FOR THE RIGHT PLACE

While Iowa is often thought of as one monochromatic corn field, in reality, there are various unique regions in Iowa, and every site within hosts distinctive features. Differences in region and site characteristics help determine which individual plants can carve out a home at that location, and which can thrive. Some plants are better suited for particular situations than others. Understanding what makes a tree or plant thrive in one area over another will help you achieve success when considering a planting project.

Trees can be used to buffer pollutants, visual and audible noise, and even odor. Water quality can be improved by planting trees and shrubs that will prevent erosion and filter water as it moves through the soil. Some tree or shrub species are especially important for habitat and food for specific wildlife, such as songbirds, deer, pheasants, and pollinators. Trees along roadways can act as corridors that allow wildlife and pollinators to range further and expand populations. Trees can produce food crops for humans or provide timber. Objectives for planting can be unique and highly specific to the individual need or preference.



SITE LOCATION

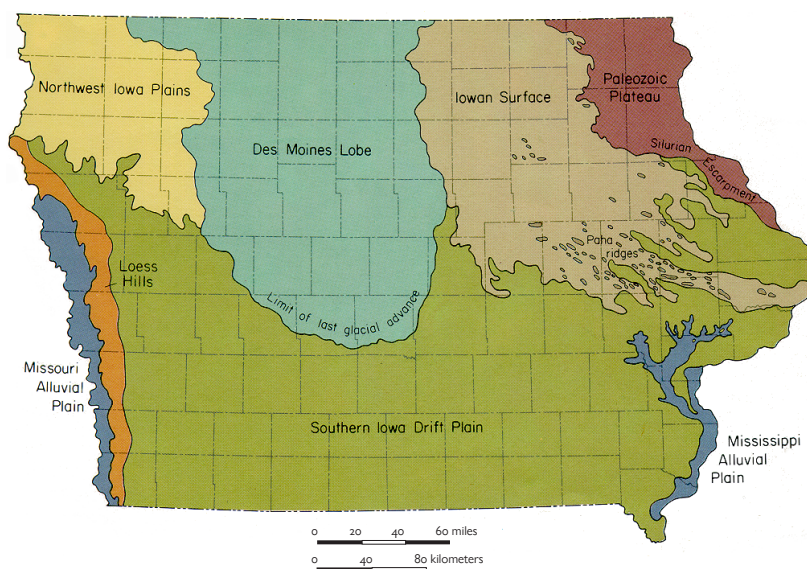
CLIMATE Seasonal temperatures are a major consideration. The USDA Plant Hardiness Zone Map displays three temperature zones throughout Iowa. For example, some trees will only thrive in warmer Zone 5b and will not grow well in the cooler Zone 4 northern regions of Iowa. Tree species adapted to cooler climate zones can usually be grown in warmer zones. However, trees adapted to warmer climates may struggle in cold northern temperatures. While the Plant Hardiness Zone Map is helpful, you might regard your own landscape and notice whether rivers cut deep valleys to dissect the land, or perhaps the horizon is obscured by a hillside. Hills and valleys can experience their own meso-climates, where cooler air drains into valleys, or warmer temperatures are maintained on the slopes and hilltops. Even urban cityscapes alter temperatures and wind patterns, such that more sensitive trees might make their home in these sheltered spaces. Take care to set up your new trees for success by planting them where they can grow.

SOILS AND LANDFORMS enhance or limit each location throughout Iowa. Soil composition can affect water retention and movement through the soil. Poorly-drained sites or heavy, organic soils, typically favor water



and flood-tolerant plants. Sandy or well-drained sites best support trees tolerant to drought or frequent drying. Natural land formations like hills, valleys, and others can hurry water along in a fast river or allow it to meander through a wide floodplain. Some urban soils are nutrient poor, lack beneficial microbes, are compacted, or may be polluted with runoff from rooftops, roadways, and winter salt spray. Such difficult ground requires tough trees with roots that can infiltrate compacted soils, develop with reduced levels of microorganisms, and don't rely on much water to percolate through the soil. However, the city structure can afford some protection from freezing temperatures and howling winds.

Landforms of Iowa



TYPES OF SITES

Most sites in Iowa will fall into one of the following categories: wetland, prairie, savanna, woodland, urban, or roadside. Each is a unique ecosystem where plants, animals, and other organisms complement one another.

WETLANDS are found throughout the state as lakes, streams, ponds, or any place that routinely hosts standing water, even if intermittently. Trees that appreciate wet locations commonly make a home along Iowa's river, stream, and creek borders. Trees and shrubs play an important role in holding soil in place in wet areas, but must be ready for "wet feet." Select water and flood tolerant trees, and consider trees and shrubs with finely-networked roots that can hold soils and help filter water.

PRAIRIES composed much of the interior of the state before development and agriculture. Wide-open grasslands stretched for miles with very few trees that could tolerate the drying winds, seasonal temperature fluctuations, and fire. Most prairie space is now occupied by cropland, but you can still visit thriving grasslands alive with a diverse mix of grasses, forbs (flowers), and wildlife on public lands, such as the Loess Hills in Western Iowa. Prairie grasslands are not typically appropriate for establishing trees as trees provide too much shade for native prairie plants. Any trees planted in a prairie setting must be able to tolerate wind, fire, and temperature extremes.



Oak trees, like this one pictured growing in a savanna, grow wide and have low branching due to the abundance of sun and open space to grow.

SAVANNAS are found where prairie transitions to woodland. Oaks and hickories usually begin this transition. Thicker bark allows these trees to withstand drying winds, sunscald, and fire that burns through prairie after lightning strikes. Savannas gradually extend the forest boundary, creating an environment of scattered or small groups of trees with a grassland understory – the vegetation that grows under trees. Savanna stands that still exist in Iowa are few and far between and are often identified by large, well-spaced trees among an overgrown understory. These unique ecosystems may need regeneration or maintenance over time.

NATURAL WOODLANDS in Iowa typically fall into several forest types. Upland species grow along bluffs and on drier hilltop areas. Species that grow in these areas include oaks and hickories as well as other upland trees and shrubs. Transitional species, those that grow along slopes leading down to river bottoms, include shade-tolerant species, such as maple and basswoods. Lowland species that thrive along rivers and in floodplains include silver maple, sycamore, cottonwood, black willow, and more. Lowland trees are tough trees that can handle a variety of conditions, especially flooding, and are often planted in urban areas because of their resilient nature. When managing or planting in woodlands, know that a succession of species is common, meaning that shade tolerant trees and shrubs will often establish themselves within upland forest types. Consider your goals for managing a woodland and remove invasive species or, if possible, burn the woodland to encourage native trees and shrubs to reestablish in the area.

URBAN areas are greatly modified to suit human society. Historic and current human use influences tree populations and selection in urban areas. Concrete buildings and pavement are abundant in urban areas, collecting heat and redirecting water. Pollutants can be more concentrated too, adding to a stressful environment. A great variety of trees can be grown in an urban area, but some particularly challenging sites, like those with compacted soils, may require especially tough, resilient trees.



ROADSIDES often afford a scenic view of Iowa farmland. Like prairies, plants along interstates and highways can experience high winds, but also endure pollutants like pesticide drift, car emissions, and salt spray. When planting trees along a roadside, select trees and shrubs that buffer and tolerate winds, pesticide drift, and salt runoff.

SELECTION OF TREES FOR PLANTING

Trees can be grown by numerous methods including bare-root, potted, root pruning bags, or balled and burlaped (B&B). Each method has advantages and limitations that will help you decide what growth method to select for long-term tree success and health.

GOING NATIVE

There are so many useful trees and plants available to buy at local stores and online that the options can feel overwhelming. Ideally, it is best to select native plants because they are well-established in the state and have the advantage of being adapted to Iowa's soils and climate. It is also okay to select plants introduced and naturalized in the area so long as the selected species are not harmful to the native ecosystem. Naturalized means the plant is not native but has established itself in the landscape without negative impacts on the local ecosystem. While many naturalized plants

are not a problem, you might come across some that are considered invasive, especially online. Invasive plants are typically aggressive or prolific species from outside of the country or native region. When introduced to developed landscapes, invasive plants can spread to natural areas and outcompete native plant species. Very few introduced species have invasive tendencies and some naturalized plants are indeed useful.



Diverse Iowa woodland invaded by burning bush.

Unlike humans, who can alter their environment to suit themselves, plants are anchored to the ground and must acclimate and adapt to their surroundings. Many introduced plants are adapted to locales that have milder climates. However, Iowa is known for a climate of extremes, with temperatures well-below freezing in winter and reaching near 100°F in the summer. Our native trees and shrubs retain the advantage because they tolerate and thrive under these conditions without crowding out neighboring species. Trees that take root in Iowa must also thrive in a range of soil types and various moisture conditions, while resisting the threat of deer or insect damage, disease, road pollution, and other threats without the option of escape. Trees proven to last under these conditions are a smart choice for a lasting, low-maintenance landscape.

OVERLY-AGGRESSIVE SPECIES

Some plants grow out of control when they have no natural competition, especially non-native plants. These plants become overly-aggressive or invasive, choking out native plants, and the diversity that provides a resilient plant community.

AUTUMN OLIVE (*Elaeagnus umbellata*) is an introduced shrub that

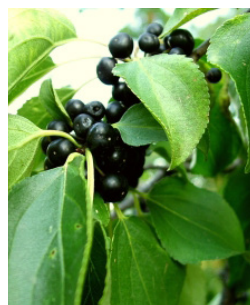


thrives in difficult, disturbed areas, which is partially why it was initially grown here. It was planted for its attractive shimmering appearance along with its ability to grow in new developments, fill out windbreaks, and hold soil. This shrub, or small tree, grows to about 20-feet

tall with small, slender, pale gray-green leaves. Pale-yellow flowers are reminiscent of trumpets, blooming early in the spring followed by red, speckled berries. Russian olive is a look-alike species that is also invasive.

COMMON BUCKTHORN (*Rhamnus cathartica*)

can grow to over 20 feet tall, developing an irregular shape. Clusters of yellow-green flowers are often overlooked, but the small, round black berries are distinct against dark-green foliage. Leaves are oval with pointed tips. Branches are typically pointed too. Twigs often end in a short, sharp thorn.

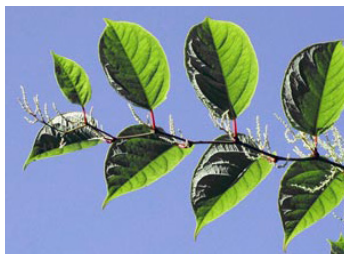


BUSH HONEYSUCKLE

(*Lonicera maackii*) stands out in the spring woodland, showing off fragrant pink and white butterfly-shaped flowers. Birds enjoy the little red berries that follow in the summer. Through droppings, birds help transport seeds to new areas causing the shrub to spread further. Look for a shrub with gray-brown striped bark, growing up to 15-feet tall. Egg-shaped leaves grow in pairs along the branch. Foliage persists into the fall and

winter, making the species easy to spot in a wooded area where all of the other species have dropped their leaves.

JAPANESE KNOTWEED (*Polygonum cuspidatum*) can appear as a shrub, but is really just a very tall perennial plant that can grow up to 10-feet high. Leaves are oval-shaped with pointed tips. Swollen joints are found where the leaves meet the stem. Small, triangular seeds are winged, allowing these plants to spread quickly. The plant spreads by rhizomes or from sprouts of root fragments. It can be spread by water, equipment, or in-fill.



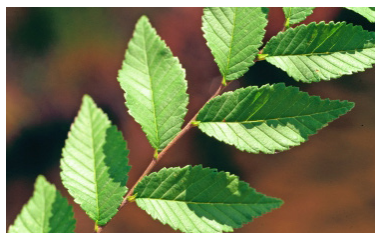
MULTIFLORA ROSE (*Rosa multiflora*) may snag your pants with its prickly canes as it grabs your attention with small, fragrant flowers in June. Prolific, attractive red rose hips, which contain thousands of seeds, allow this small shrub to spread into disturbed areas, woodland openings, edges, and savannas.



ORIENTAL BITTERSWEET (*Celastrus orbiculatus*) is a popular autumn decoration with showy orange and red berries. This vining shrub climbs over other trees and plants for support, eventually smothering them. American bittersweet is native to Iowa and can be distinguished from oriental bittersweet

by looking for the berries that grow in clusters at only the end of stems. Oriental bittersweet has berries that grow all along the stem. Avoid purchasing fall decorations that contain oriental bittersweet because even these berries can escape and lead to growth of the invasive plant.

SIBERIAN ELM (*Ulmus pumila*) is a tough tree that tolerates disturbed and urban spaces. It produces a great volume of round, winged seeds allowing this tree to reproduce rapidly. It looks similar to other elms, but has



smaller leaves, typically only 1-2.5 inches long. It has weak wood and is highly susceptible to storm damage.



BARBERRY (*Berberis thunbergii*)

is frequently found in modern urban landscaping, introduced to North America as an attractive ornamental shrub. Leaves are green or purple, oval in shape, running along red fall leaves. It spreads into woodlands and reduces the biodiversity

of native plants. Barberry escapes into woodlands and shades out native plants.

TREE OF HEAVEN (*Ailanthus altissima*) looks like it escaped from a more tropical climate with a large multitude of stems. Small yellow flowers yield bright-red autumn berries.



BURNING BUSH (*Euonymus alatus*) is planted by many wishing to behold its bright-red autumn foliage. This popular landscape shrub is easy to identify by its winged stems, or gills, bright red berries, large, long compound leaves and long slender leaflets. A unique earthy, nutty odor – sometimes



compared to rancid peanuts or popcorn - reveals its identity. This tree is often found along undisturbed fencerows, property edges, roadsides, and woodlands. Female trees can produce 300,000 seeds annually and established trees can send out root suckers from a parent tree.

TREE AND SHRUB GROWING METHODS

BARE ROOT SEEDLINGS can be obtained for large-scale reforestation and are typically just one to two feet tall. Sometimes, larger-sized bare root trees can be ordered, usually from a wholesale nursery supplier. An advantage of bare root trees is the entire root



system is visible, which allows visual inspection to ensure roots are vigorous and that they make up 25-35% of the entire plant. Bare root trees are light, easy to transplant, and typically cost less. Roots must be kept moist to avoid the risk of drying out and killing the roots. For this reason, bare-root trees must be planted soon after they are received. If timing does not allow for immediate planting, proper storage should be found, such as “healing” bare root trees into the ground or temporarily storing them in moist mulch.

POTTED OR CONTAINER-GROWN trees can come in a variety of sizes and are typically easy to transport. These trees are grown in a soil-less medium, which commonly includes pine bark and perlite, and receive constant water irrigation while at the nursery. This growing method makes the trees light, easy to transport, and easy to plant. Once planted, issues can arise with the tree not getting enough moisture due to the soil-less medium the tree originally grew in drying out more quickly than the surrounding soil. The trees must be well-watered during their initial establishment phase. Root systems should be developed enough to fill the pot, yet not be “pot bound.”



Pot bound or “encircling roots” form when the roots grow in a circle after finding the wall of a hard, plastic pot. Circling roots can continue to grow in that pattern, even after being transplanted, and can eventually strangle the tree as it grows. Any circling roots should be cut prior to planting.

ROOT PRUNING BAGS, grow bags, or pots with slats naturally air-prune roots so they don’t circle. This growing method uses bags with a felt-like interior or pots with small holes.

Instead of roots growing in a circle, the roots grow to the edge of the bag or pot and naturally stop. Trees grown in this method tend to have a more fibrous, healthy root system. These trees are easy to transport and plant and, in general, lead to a healthier tree due to better root system development.



BALLED AND BURLAPED, or B&B, trees are large and require more attention and care to transplant. One to two-inch caliper (width of the trunk), or even larger, trees are dug with a special tree-spade to sever the roots. The roots and accompanying soil are wrapped in burlap and twine or wire. Much of the roots are lost upon digging, and temporary transplant stress or “shock” is common. B&B trees are heavy and more difficult to transplant due to the size of the tree and the soil that is transported with the tree. When planting, all of the wire, burlap, and twine must be removed from around the root ball to avoid impediments to the root system as it begins to grow in its new environment.



PLANTING STEP-BY-STEP

To ensure a successful tree planting – for your safety and the long-term health of the tree – the following steps should be followed. These steps detail the planting of a tree grown in a container or root pruning bags/grow bags.

- 1 Locate utilities underground or overhead. Call Iowa One Call (811) to locate underground utilities. Look up to see if any above ground utility wires are present. If so, plant an appropriate species for planting under or near utility lines.



- 2 Look around and locate any impediments to planting such as roadway intersections, nearby pavement, buildings, or other trees. Shade trees 30 feet or taller should be planted at least 25 feet or more from overhead wires or buildings. Ensure canopy height and width will not obscure intersections.

- 3 Keep trees at least three feet from the edge of pavement so roots have space to spread. If planting evergreens, you will want to leave at least 30 feet between other evergreens to allow for enough airflow as the trees grow.



- 4 Plan ahead to have water and mulch on site. Water at time of tree planting with 10-15 gallons of water. Large-scale bareroot plantings can benefit if planted just before a good rainfall.



- 5 Dig a shallow, wide planting hole roughly twice as wide as the root ball, by hand or with equipment, such as an auger. If using an auger, rough up the sides of a smooth hole to allow better root penetration into the surrounding soil.

- 6 Remove all containers and wrappings including pots, bags, wire, burlap, twine, support stakes, and tags. Identify the trunk flare by finding the first lateral root. The trunk flare is where the trunk meets the roots and usually flares out like a bell. You will find the first lateral root, a root about the size of your finger or larger, slightly below the flare. Some soil may need to be scrapped off the top of the root ball of potted or B&B trees to find the trunk flare.





- 7 If planting a container-grown tree, make 3 to 4 perpendicular cuts around the entire root ball using a hacksaw, serrated knife, or sharp spade to encourage the tree to grow roots out laterally into its new location. Cut out roots growing back towards the trunk or roots growing above the trunk flare.

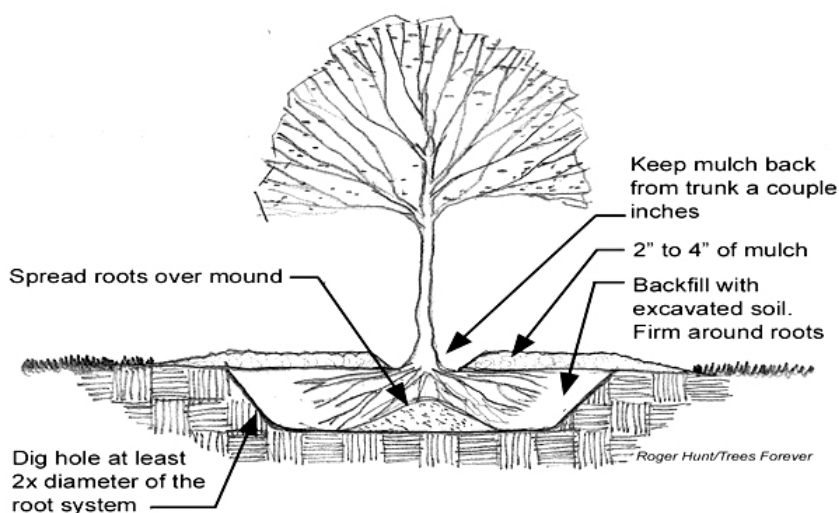
- 8 Place the tree in the hole and fill soil around the roots. Make sure that the first lateral root is level with or slightly below ground – only a half-inch to an inch below the surface. The soil will settle after planting, and the tree will not tolerate being planted too deep. Trees planted too deep can suffer an early death.



- 9 Apply wood mulch, around the base of the tree covering the entire dirt surface, and extending at least out to the dripline, with a two to four inch deep layer. This will retain soil moisture and reduce weed pressure. Take care not to build up mulch around the trunk, as this is the same as planting the tree too deeply and can cause the bark on the trunk to rot. Pull back the mulch about six inches from around the trunk of the tree.

BARE ROOT TREE PLANTING

If planting a bare root tree, you will follow many of the same steps as above with a few small changes. Start by following steps 1-6. You will not have to cut the roots as indicated in step 7, but you will create a small mound of soil at the bottom of the planting hole and spread the roots out over that mound. Take care to find the tree's root flare and plant that at ground level, as indicated in step 8. It is much easier to find the tree's root flare on a bare root tree. Complete your tree planting by following step 9 and adding mulch around your tree. Bare root trees will more than likely require staking and guying for the first year. After the first growing year, if the tree feels "rooted in", the stakes and guying material can be removed.



TREE CARE AND MAINTENANCE

Trees will grow enough new roots to “root in” during their first one to two years after planting. Smaller trees root in more quickly. Larger trees take more time to recover and take root. During this time, it may seem like your tree is not growing new leaves or getting taller. All is well, typically, as long as the canopy appears full and the tree is not easily pulled from the ground – the tree is busy growing underground! Once the roots are established, the tree will be able to tap into underground water and nutrients. The following steps should be taken to ensure your tree receives the early care it needs to thrive.

- Ensure the root zone remains moist, but not wet. Trees should receive an inch of water per week during the growing season – from ground thaw to ground freeze. If an inch of rain is not received, plan to give your trees approximately 10-15 gallons of water. Water trees slowly and thoroughly. Water moves laterally first, so pouring water on a tree could mean the surrounding area gets more water than the tree. A five-gallon bucket with a one-eighth inch hole drilled an inch from the bottom or a hose turned on a slow trickle are good methods for watering slowly. The five-gallon bucket has the advantage of measuring exactly how much water the tree has received.



- Maintain two to four inches of wood mulch around the base of the tree. Mulch is essential for reducing weeds and grasses that can steal underground resources from your tree. Additionally, mulch retains soil moisture, regulates soil temperature, and eventually breaks down and enriches the soil. Mulch also keeps mowers and weed trimmers away from the tree trunk so that the trunk is not damaged by “mower blight”.
- In its first year of growth, minimal pruning should be done, focusing on dead, diseased, or damaged branches or pruning for a single leader. The tree is working hard to establish itself in its new location and needs enough canopy and leaves to make food for itself to grow. After a year of establishment, pruning is recommended to encourage good tree form. Be sure to research good pruning methods to avoid damaging the tree’s bark.



PESTS AND DISEASES

Trees are vulnerable to many different pests and diseases. Understanding which trees are vulnerable and the signs of a pest or disease attack will help you identify an outbreak early and take necessary steps to remedy the problem if a remedy exists. Planting a diverse mix of tree species will help ensure that a pest or disease does not decimate an entire area.

EMERALD ASH BORER (EAB)



Adult Emerald Ash Borer Photo: Bugwood.org

(*Agrilus planipennis*) This dime-size insect might not seem threatening on its own, but as a group, they have decimated wild and urban populations of ash trees wherever they spread. Emerald Ash Borer insects fly, or are

transported on wood by humans, to uninfected ash trees where adult beetles lay eggs. Larvae hatch from the eggs and engage in a feeding frenzy. The larvae feast directly under the bark and disrupt the trees ability to move water and nutrients up and down.

Adult emerald-colored beetles emerge from D-shaped holes through the trunk and limbs about mid-July, then eat away at the foliage of trees. Communities impacted or expecting this insect invasion have ceased planting ash trees. While there is protective chemical treatment available for established trees, it must be provided regularly for the lifetime of the tree and is most practical for healthy, larger trees. Ask a certified arborist to examine your tree to ensure it is a good candidate for treatment.

ASH TREES

Green and white ash are common in rural and urban areas. This large shade tree grows relatively quickly with sound structure. It was a popular tree to plant after the American Elm was lost to Dutch Elm Disease so it was widely distributed in Iowa communities.

IDENTIFY GREEN AND WHITE ASH



Look for tall shade trees with oval or round canopies.

◀ Typical form of a mature ash tree.

Buds are wider at the base than at the tip and may appear hoof-shaped at the ends of grey branches.

Terminal buds found at branch tips ▶



▶ Ash samaras, or winged seeds.

Flowers are green with either stamens or pistils, but seldom both.

Seeds are reminiscent of canoe paddles as they spiral to the ground. These samaras are narrow with flat wings and contain one seed.

Leaves are deciduous, ▶ turning purple or yellow before shedding each autumn. Five to nine leaflets can be found on each pinnately-compound leaf.



SIGNS & SYMPTOMS OF EMERALD ASH BORER

Notice any increase in woodpecker visitation, holes and flecks of bark chipped off the tree. Woodpeckers look for the larvae to eat. Upon closer inspection you may also notice smaller D-shaped holes where adult beetles exit the tree. Severe larval damage may cause the bark to split open, revealing S-shaped tunnels, known as galleries, in the wood. Another sure sign is, of course, the presence of the adult borers, although the small beetle may be hard to see. Eventually, the attack will cause the tree to decline and die. Decline is marked by a dieback of leaves in the tree canopy, wilted leaves, or vigorous new shoots from the base of the tree.



D-shaped hole



Flecking



S-shaped galleries

OTHER TREE PESTS

SPONGY MOTH (*Lymantria dispar*)

defoliates alder, larch, sweetgum, apple, poplar, oak, willow, linden, elm and other species. Repeated attacks lead to decline and tree mortality. At dusk, look for the male gray-brown adult moths about 1.5-inches wide and the female moths, which have white and brown markings and are around 3.5-inches wide. Gray caterpillars grow to about 1.5 to 3.5-inches long. Caterpillars have five pairs of raised blue spots followed by six pairs of raised red spots along their backs. Professional methods, including traps and mating disruption, have controlled populations to minimize damage thus far.



ASIAN LONG-HORNED BEETLE (*Anoplophora glabripennis*) is a city dweller, most often found in urban areas. They dine on horsechestnut, buckeye, willow, elm, birch, and sycamore, but prefer maple. Feeding can cause severe yellowing and decline, and trees are unable to recover from the damage. Round, pencil-sized holes in trunks and limbs are made when adult beetles emerge from beneath the bark. Shiny, black beetles measure about 1-inch long and have black and white striped antennae. When this beetle has been identified early, eradication methods have been successful in eliminating the pest. At the time of this book's printing, this pest has not been identified in Iowa, but active monitoring is in place.



SPOTTED LANTERN FLY (*Lycorma delicatula*) feeds on a wide-variety of trees and represents a real threat to vineyard, orchard and timber industries. Plants affected by lantern flies may leak sticky sap or residue around the tree

base, which can smell fermented or start to mold. You may even catch a glimpse of this pest at dusk. Upper wings have black spots, while lower wings are red with black spots. Adults are about 1-inch long. At the time of this book's printing, this pest has not been identified in Iowa, but active monitoring is in place.

BUR OAK BLIGHT only affects bur oak trees and is a fungus (*Tubakia iowensis*) that causes tree decline and mortality. Fungal bodies remain on leaves from the previous season and when new leaves grow in the spring, the leaves become reinfected. Bur oak blight can be seen on single or multiple limbs, or throughout the tree. Symptoms appear in mid-July starting with red, purple or brown spots on leaves, and progressing into the leaf veins.



OAK WILT is caused by a fungus (*Ceratocystis fagacearum*) that causes a tree to clog its own water vessels thus preventing the flow of water. To prevent oak wilt, do not prune oaks in summer. When oak trees are pruned, sap begins to run and this sap attracts feeding insects,



Paul A. Mistretta, USDA Forest Service, Bugwood.org

most notably picnic and bark beetles. These beetles carry the fungus that causes oak wilt to uninfected trees. Oaks in the red oak family, including red, scarlet, black and pin are the most susceptible, more so than oaks in the white oak family. Signs of oak wilt appear as wilting leaves at the top of the tree, and within a few weeks or months, works its way down until the whole tree is overtaken. Gray-green leaves typically drop from the tree with brown tips and edges. In addition to beetles transporting the fungus, underground root grafts between oak trees can cause the fungus to spread.



THOUSAND CANKERS

DISEASE of walnut is caused by a fungus (*Geosmithia morbida*) with a beetle partner. Walnut twig beetles (*Pityophthorus juglandis*) carry the disease that causes “cankers” to form.

These cankers coalesce, or grow together, and collectively they girdle and kill branches. Eventually, this disease can kill the entire tree. Cankers restrict flow of water and nutrients through the branches and trunk. Beetle holes and cankers are revealed when bark is scraped away. A tree can be infected for many years before showing symptoms. At the time of this book’s printing, thousand cankers disease has not been identified in Iowa, but active monitoring is in place especially because of the high economic value of walnut wood.



IOWA TREES & SHRUBS

Aspen, Bigtooth

Populus grandidentata

One of two aspen species native to Iowa woodlands, bigtooth aspen grows rapidly to attain heights of 60 feet or more. Though they are seed-bearing, these trees typically reproduce by growing more trees up from their spreading, underground roots. Older trees may be found in groves with younger saplings growing up from underground roots.

PLACE IT

Bigtooth aspen is a willing pioneer of disturbed sites and can be considered as a first planting to reestablish a natural area. In fact, it won't tolerate overshadowing from other trees.

FIND IT

Stands of bigtooth aspen are most often found in moist, upland woods common throughout central and eastern Iowa. Areas recently disturbed by human activity, fire, or other actions that clear the overstory provide good locations for bigtooth aspen to grow.

IDENTIFY IT

BARK

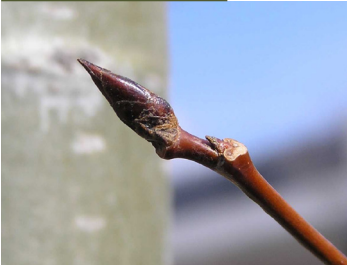


Gray-brown to greenish-gray bark is smooth and thin on the upper trunk, developing flat ridges and narrow furrows on the lower trunk.



FORM

Narrowly oval to round canopy.
Height: 60-80 feet

BUDS

Buds are red-brown, fairly pointed, and when swollen, produce white hairs that make them fuzzy.

FLOWERS

Drooping catkins appear before leaves. This species is dioecious, meaning separate trees produce male and female flowers.

LEAVES

Simple with one spade-shaped leaf per leaf stalk, or petiole. Edges are coarsely and prominently toothed. Flat leaf petiole causes the leaves to tremble and dance in the wind.

SEEDS/FRUIT

Windblown seeds are capsules covered in long white hairs that allow them to sail away from their parents.

WILDLIFE & POLLINATORS

Numerous bird species live and breed in aspen groves, including ruffed grouse.

CONCERNS

Aspen may succumb more easily than other trees to the moth *Lymantria dispar*, as it is a preferred moth food. Bigtooth aspen, and other poplar species, are fairly weak-wooded and are not well suited for small residential properties.

Aspen, Quaking

Populus tremuloides

This aspen wins the award for the most widely distributed North American tree. It readily colonizes disturbed spaces and is not easily put off by occasional fires. However, fire can damage thin-barked trees or shallow roots. It produces seeds but also forms groves through spreading underground roots that push up new trees. Leaves tremble or “quake” with the slightest breeze, leading to the tree’s name. Unlike bigtooth aspen, quaking aspen is typically easier to find through a nursery retailer.

PLACE IT

Areas needing erosion control or screening may be well-suited as long as seedlings are not at risk from dry conditions or standing water. Avoid planting too close to structures, sidewalks, or minor roadways that might be disturbed by aggressive roots.

FIND IT

Groves of quaking aspen are most often found in northern and eastern locations, though this species appears native to a few small western and central areas in Iowa.

IDENTIFY IT

BARK



Newer bark is light or white-colored and green beneath. The green color comes from pigments that allow the trunk and limbs to photosynthesize along with its leaves.



FORM

Canopy is oval to round and relatively narrow. Height: 40-50 feet

BUDS

Buds are shiny, red-brown, and pressed close to the twig.

FLOWERS

Drooping catkins appear before leaves.

LEAVES

Simple with one spade-shaped leaf per leaf stalk, or petiole. Edges feature small, fine teeth. Foliage is gray-green, typically with a lighter leaf underside and a flat petiole that causes the leaf to tremble in the wind.

SEEDS/FRUIT

Windblown seeds are capsules covered in long white hairs that allow them to sail away from their parents.

WILDLIFE & POLLINATORS

Ruffed grouse enjoy aspen groves that provide cover from predators. Migratory birds enjoy this cover too. Aspen can also provide forage and browse for livestock and deer.

CONCERNS

Aspen may succumb to stress more easily than other trees, leaving them susceptible to many pests and diseases. Signs of stress and disease might be first noticed by early leaf drop. Quaking aspen, and species in the poplar family in general, are fairly weak-wooded and are not suitable for small residential properties.

Basswood (American Linden)

Tilia americana

Basswood, more commonly called American linden, is a large, fast-growing tree. It readily resprouts from damaged or cut stumps, so trees with two or more stems (trunks) are commonly found. Its towering height makes it an excellent shade tree, along with the somewhat similar, but non-native littleleaf linden and silver linden.

PLACE IT

Seedlings establish well in shade but are considered full-sun plants once established. Avoid deficiencies in low-nutrient, mineral soils and opt for soils with more organic matter. While it can tolerate minor flooding, it prefers well-drained soils.

FIND IT

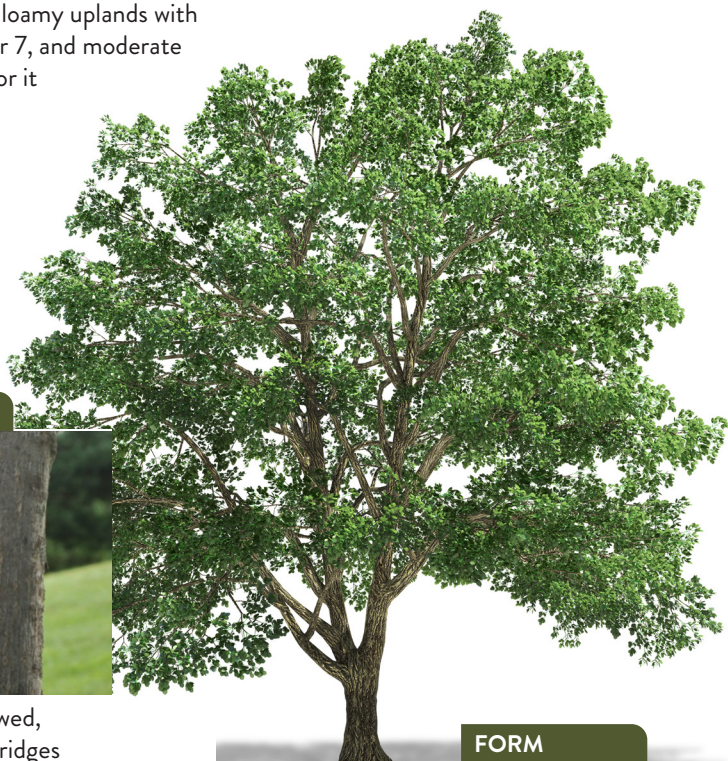
Basswood is usually found in the west to central parts of the state on loamy uplands with basic pH, around 6 or 7, and moderate soil moisture. Look for it along slopes and protected riversides

IDENTIFY IT

BARK



Mature bark is furrowed, forming flat-topped ridges and horizontal cracks.



FORM

Young trees are pyramidal in shape, maturing into rounded crowns. Height: 70-80 feet

BUDS

Prominent red buds are smooth and bluntly-pointed.

FLOWERS

Small inconspicuous, white, fragrant flowers droop in a comb-like group called a cyme. Each cyme is accompanied by a paddle-like bract, a leaflike structure at the base of the flower.

LEAVES

Simple with one unevenly heart-shaped leaf per leaf stalk (called a petiole). Edges are serrate, sometimes called toothed.

SEEDS/FRUIT

One or two seeds are contained in each hard and barely-fuzzy nutlet.

WILDLIFE & POLLINATORS

Bees enjoy flowers as a nectar source, dubbing this the “bee tree.” Butterflies are visitors too. Soft wood allows cavities to develop as wood decays, providing habitat for wood ducks, woodpeckers, and other wildlife.

**CONCERNS**

Trees are susceptible to drought stress and can be defoliated by Japanese beetles. Repeated defoliation from Japanese beetles over a few years can lead to long-term stress, fungal infection, and decline.

Black Cherry

Prunus serotina

Native black cherry is an excellent shade tree. Woodworkers prize its high quality wood. Some people use the fruit to make jams and jellies. Don't confuse this native black cherry with the commercially- or backyard-grown cherries that are eaten fresh or used in homemade desserts.

PLACE IT

Trees prefer upland forests and moist soils, though they are adaptable to many different sites. Trees will grow more slowly in the shade.

FIND IT

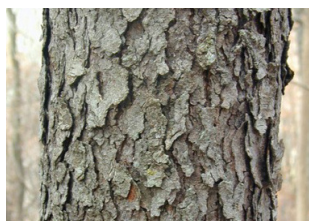
Black cherry is found throughout the state and may be more frequent along well-drained slopes and uplands with oaks, hickories, and aspen. Since trees do not tolerate shade, they can be found in forest openings or along fencerows.

IDENTIFY IT

BARK



New bark is red-brown and smooth with long horizontal marks called lenticels. Mature bark appears as thick, flakey scales.



FORM

Young trees are frequently pyramidal in shape, maturing into rounded crowns. Height: 50-70 feet

BUDS

Buds are narrow, dully-pointed, and red-brown.

FLOWERS

Small, white flowers grow in elongated clusters called racemes.

LEAVES

Simple and narrowly oval to oblong with pointed tips and fine teeth. Upper surfaces are dark green and glossy, while the undersides are pale.

SEEDS/FRUIT

Fruits form as small drupes – also called a stone fruit – that turn from dark red to blackish.

WILDLIFE & POLLINATORS

Fruits are important food for migratory songbirds, game birds such as turkey, and small mammals. Livestock owners need to be wary as the leaves and fruits are toxic to livestock if consumed in large quantities. The flowers provide nectar to bees and butterflies.

**CONCERNS**

Black knot is a fungus frequent to *Prunus* species, noticed as long black swellings along branches.



Black Walnut

Juglans nigra

Black walnut is highly valued in Iowa for its form, nuts, and rich, fine-grained wood. People worldwide prize Iowa black walnut and seek it out, making it a valuable wood crop to sell. Many people enjoy the nuts produced by this tree, though they can be laborious to harvest.

PLACE IT

Black walnut tolerates high-pH bottomland soils, unlike many species. Trees prefer moist soils and may grow slowly on dry sites. Most people prefer to plant it out of the way of residential, mowed spaces, or along streets as it drops large nuts. A chemical in the leaves and nuts called juglone can inhibit the growth of other garden and landscape plants.

FIND IT

While black walnut is found throughout the state and is adaptable, it is most frequent in bottomlands. Moist slopes with rich soils created by seasonal leaf and understory compost are also likely locations. Walnut is often found growing with oak, Kentucky coffeetree, basswood, and maple.

IDENTIFY IT

BARK



Dark gray to dark brown to near black. Forms deep furrows that create an interconnecting pattern with mature bark becoming thick and blocky.



FORM

Trees develop tall, unbranched trunks in woodland settings and wide, round canopies in urban settings. Height: 50-75 feet

BUDS

Two to four visible bud scales covered with tiny gray hairs. The terminal bud is 3/16" to 1/3" long.

FLOWERS

Fuzzy, green catkins droop from trees or may develop as short spikes near the end of the twig or new growth.

LEAVES

Compound leaves are composed of 13-23 leaflets growing pinnately, or opposite one another along a single petiole.

SEEDS/FRUIT

Nuts are encased inside a thick, spongy-green husk called an endocarp. During autumn, the husk degrades quickly to brown or black as it dries, revealing the nut and its shell inside.

**WILDLIFE & POLLINATORS**

Nuts are an important food source for small mammals and many birds. This species provides habitat for the eastern screech owl.

CONCERNS

Seedlings and even mature trees are susceptible to root-rot pathogens. Thousand cankers disease is a newer threat to walnut, although not found in Iowa at the time of this book's printing.

Box Elder

Acer negundo

Common throughout the state, yet brittle and short-lived. Many consider these trees to be messy, and it is unpopular for plantings. However, it can be useful where other trees are difficult to grow or as a transitional planting.

PLACE IT

While these trees are short-lived, they are valuable for their tolerance to disturbance, pollution, and cold. They provide rapid reforestation, reduce erosion, and compliment slower-growing, longer-lived trees. Grow in high pH soils or clay sites, places where it is hard to grow many trees.

FIND IT

Trees are typical in wet bottom cottonwood, willow, or silver. Other common companions sycamore or red maple.

IDENTIFY IT

BARK



Gray to dark brown, sometimes with a greenish tinge. Finely-ridged bark gives way to deep grooves.



BUDS

1/8" to 1/4" long, covered in white hairs.

FLOWERS

Male and female flowers occur on separate trees. Small, yellow-green flowers cluster on slender drooping stalks.

LEAVES

Compound leaves are pinnate – opposite one another – and composed of 3-5 lobed leaflets. The compound leaves bear a slight resemblance to a poison ivy leaflet.

SEEDS/FRUIT

Double-winged samaras each carry one pair of seeds.

WILDLIFE & POLLINATORS

Trees provide good shelter for wildlife and seeds are enjoyed by small mammals and birds.

CONCERNS

No major pest or disease issues, but it may attract boxelder bugs. Also, weak-wooded and short-lived.

Eastern Cottonwood

Populus deltoides

Rapid growth yields weak limbs and branches; however, it is common to find trees 80 to 100 years old that reach heights up to 100 feet tall and grow as much as four feet in diameter. Rapid growth allows it to take up excess water, making it an excellent option for flood control.

PLACE IT

Bottomlands such as those found along floodplains and other riverside areas composed of sand or heavy soils are well-suited for this tree. Clay soils make it difficult for this tree to grow. This water-loving tree is suitable for developed areas prone to flooding. Trees are also used for erosion control and windbreaks.

FIND IT

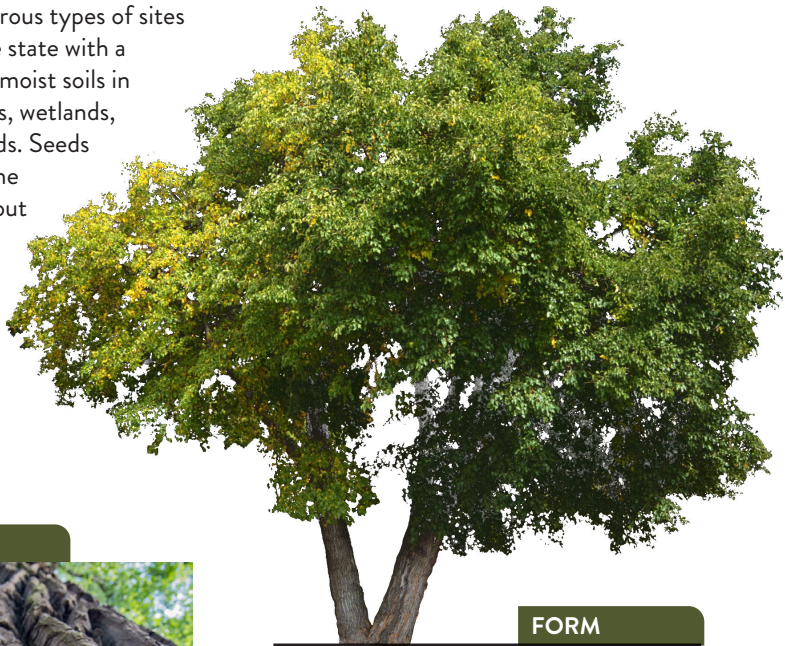
Found in numerous types of sites throughout the state with a preference for moist soils in river floodplains, wetlands, and bottomlands. Seeds are carried in the breeze and sprout easily on bare ground. Trees typically occur in areas with a history of disturbance or development.

IDENTIFY IT

BARK



Ash-gray with long, deep, interconnected furrows.



FORM

Tall with round, wide, or irregular canopies. Often forked into multiple branches or trunks.
Height: 75-100 feet

BUDS

Terminal bud is $\frac{1}{2}$ " to $\frac{3}{4}$ " long, shiny, chestnut brown, and covered with a balsam-scented, sticky resin.

FLOWERS

Long, green catkins with male and female catkins found on different trees. Female catkins are green, while male catkins are red.

LEAVES

Simple leaves are vaguely triangular, sometimes referred to as delta-shaped, with small teeth along the edges and a pointed tip.

SEEDS/FRUIT

Only female trees disperse seed. Individual seeds are covered in "cotton" hairs and are carried on the wind. Cottony masses of seeds can create a "summer snow" effect on the ground.

WILDLIFE & POLLINATORS

Foliage and young twigs provide food for small mammals, deer, and livestock. Baltimore orioles favor cottonwood for nesting as do cavity-nesting birds. Bald eagles will often nest in these trees, favoring "super canopy" cottonwoods that tower above others.



Photo Kris Rash

CONCERNS

Leaves, limbs, and trunks are vulnerable to cankers or boring insects. Foliage is consumed by numerous insects. Orange leaf rust is common in late summer.

Elm, American

Ulmus americana

These large, stately trees once dominated streets across the United States. Their distinct vase-shaped crown created a graceful, cathedral-like effect along street corridors. When Dutch elm disease, a fungus spread by elm bark beetles, was introduced in the 1930s, the native American elm was devastated. Native elms are still commonly found, but few trees reach maturity before being infected by Dutch elm disease. Today, Dutch elm disease-resistant varieties are commonly found at nurseries and make an excellent choice for the landscape.

PLACE IT

This tough tree grows in various conditions but does best in moist, well-drained soils. It can withstand intermittent flooding and drought conditions. It grows fast and is hardy to all of Iowa's climate zones.

FIND IT

Native to the entire state, it most commonly occurs on moist slopes and bottomlands, and along streams. It is common in Iowa's woodlands.

IDENTIFY IT

BARK



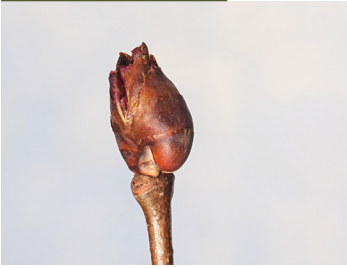
Light to dark gray, irregular ridges with deep furrows.



FORM

Upright, spreading, and vase-shaped canopy.

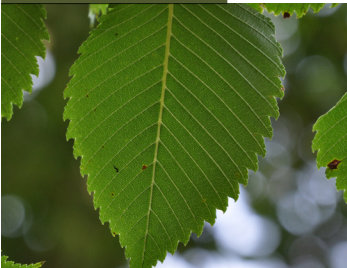
Height: 70-80 feet

BUDS

Flower and leaf buds appear different. Leaf buds are small, smooth, reddish-brown to gray with six to ten scales. Flower buds are larger and rounder than leaf buds. Terminal bud is absent.

FLOWERS

Appear in early spring in drooping, red or green clusters.

LEAVES

Elliptical with saw-toothed leaf edge. The leaf base is uneven with one side round and the other angled upwards.

SEEDS/FRUIT

Elliptical, flat, one-seeded samaras grow in clusters and have hairy edges with deeply notched points.

WILDLIFE & POLLINATORS

Birds and small mammals such as squirrels, rabbits, and rodents eat the seeds. Trees provide cover for various wildlife.

CONCERNS

Dutch elm disease remains a concern for American elm. Select Dutch elm disease-resistant varieties.



Elm, Red

Ulmus rubra

This tree is often called “slippery elm” due to a slippery-feeling inner bark. It was once widely used to soothe sore throats and as a wound dressing. This tree is not commonly planted but common throughout native areas in Iowa. It is a fast-growing tree.

PLACE IT

Urban conditions and woodland areas with rich loams are suitable for this tree, though it is somewhat adaptable. For the best outcome, plant it in moist, well-drained soil.

FIND IT

Upland woods and woodlands with rocky terrain or along streams are typical habitat for red elm. Trees may occur in oak-hickory forest, pine forest, or occasionally prairie.



IDENTIFY IT

BARK



Young bark is smooth, becoming gray and scaly as it matures.

FORM

Arching branches give an overall vase shape.

Height: 40-60 feet

BUDS

Terminal buds at branch tips are covered in red-colored hairs.

FLOWERS

Numerous small, green flowers grow on a short stalk.

LEAVES

Simple leaves are thick and stiff with toothed edges and prominent veins. Elm leaves typically have uneven bases.

SEEDS/FRUIT

Winged samaras resemble tiny flying discs.

WILDLIFE & POLLINATORS

Birds nest in the tree's dense foliage. Seeds provide food for birds and small mammals. Deer and rabbits browse on the twigs.

CONCERNS

Dutch elm disease is a major concern for these trees, although it is less susceptible than American elm. It is also susceptible to various rots and cankers, including phytoplasma. Such afflictions typically present as wilting, defoliation, and ultimately tree death. Insect attack, such as by Japanese beetles, is also common.

Hackberry

Celtis occidentalis

Tough shade trees grow up to 60 feet tall and are adaptable to various situations like windbreaks, roadsides, urban parks, and residential yards. Trees frequently host phyloxera galls, a common sight on the leaves, and witches' brooms, dense clusters of branches that grow from a single point and resemble a broom. Neither is harmful to the tree.

PLACE IT

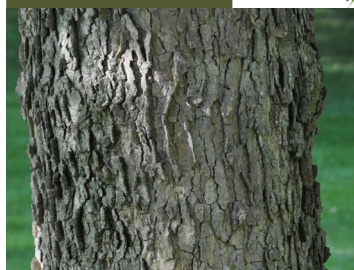
While trees will grow under less-than-ideal or adverse conditions, the most amenable sites are moist woodlands. Trees are tolerant of acidic and alkaline soils, wind, and pollution. This species can be grown in all Iowa climate zones.

FIND IT

Frequently found growing along rivers and in floodplains mixed in with other hardwood trees. It also occurs on wooded upland slopes with moist soils.

IDENTIFY IT

BARK



Gray or light brown with corky, vertical ridges. Young trees look warty.



FORM

Vaguely vase-shaped to irregular canopies with fine, arching branches. Height: 40-60 feet

BUDS

Vern Wilkins, Indiana University, Bugwood.org

Terminal bud is absent. Light brown, oval to triangular lateral buds grow appressed tightly to the twig.

FLOWERS

Very small, greenish-yellow flowers grow solitary or in small clusters on slender stalks.

LEAVES

Lance-shaped leaves have a broad, uneven base with pointed tips. Resembling elm and sometimes called “false elm.”

SEEDS/FRUIT

Small purple to red fruits called drupes are less than a half-inch in diameter and often remain on the tree through winter.

WILDLIFE & POLLINATORS

Fruits persist into the winter and are a valuable source of food for birds. Hackberry trees are the sole food and habitat source for hackberry emperor butterflies.

CONCERNS

Trees frequently host phylloxera galls, commonly seen as wart-like bumps on the leaves, and witches' brooms. Neither is harmful to the tree.



Honey Locust

Gleditsia triacanthos

Adaptable shade tree grows 70 to 80 feet tall and is favored in parking lots and along sidewalks because of its tough nature. Native trees have clusters of long thorns and long, brown seed pods. Long pods from this tree contain a sticky paste that tastes sweet, thus its common name. Thornless and fruitless varieties have been cultivated and are commonly sold.

PLACE IT

Honey locusts are suitable in climate zones throughout Iowa and enjoy moist, well-drained soils. Trees tolerate wind, drought, and saline soils. Plant in full sun as trees are intolerant of shade. Wild trees can become weedy or even invasive in fields.

FIND IT

Honey locust occurs throughout the state in pastures and fencerows as a minor companion in many hardwood forests. It is purposely planted in urban landscapes and roadsides.

IDENTIFY IT

BARK



Appears as narrow ridges and long, thin cracks. Unless the variety is thornless, long thorns are noticeable year-round.



FORM

Canopies are spreading and open.
Height: 70-80 feet

BUDS

Mostly embedded in the twig with only the tip showing. Terminal bud is absent.

FLOWERS

Greenish-yellow to white flowers grow in short, narrow clusters.

LEAVES

Small, oval-shaped leaflets grow on compound leaves, referred to as pinnately compound. All of the leaflets on a stem make up a single leaf.

SEEDS/FRUIT

Long, frequently twisted pods mature from green to brown. Small, oval-shaped seeds are brown and surrounded by a sticky pulp inside the pod. Cultivars are bred to be seedless.

WILDLIFE & POLLINATORS

Pods and pulp are valuable protein sources for wildlife and livestock. Flowers are popular among pollinators, including honeybees.

CONCERNS

Susceptible to numerous fungal pathogens and insects, including rust, canker, webworms, and borers. These concerns are usually minor. Witches' brooms are more frequently an aesthetic problem.

Kentucky Coffeetree

Gymnocladus dioica

Strong, stout trees grow relatively quickly when young, compared with other hardwoods. Settlers caravanning westward would grind these seeds as a substitute for coffee, although the resulting potion did not taste as good as real coffee. Seed pods are toxic to livestock, humans, and pets. Choose a male tree to avoid pods.

PLACE IT

Grows best in moist, well-drained sites rich in organic matter. Suitable for all Iowa climate zones. Urban conditions, including those that experience drought, air pollution, and salt are well-tolerated by this tree.

FIND IT

Western Iowa upland riversides and bottomlands are likely locations to find Kentucky coffeetree, although it is not uncommon in other well-drained areas throughout Iowa. It is a somewhat common landscape tree.

IDENTIFY IT

BARK



Gray and developing deep furrows with narrow scaly ridges.



FORM

Young trees appear as a single trunk with few to no branches. Even at maturity, the architecture of this tree includes few limbs, resulting in a stately silhouette.
Height: 60-75 feet

BUDS

Greenish to brown, sunken within small, craterlike depressions in the twigs. Terminal bud is absent.

FLOWERS

Four to five spreading petals are greenish-white. Male and female flowers are found on separate trees.

LEAVES

Elliptical leaflets with pointed tips grow on double-compound leaves. Leaves consist of smaller leaf stems arising from a central leaf stem. Leaves are commonly up to three feet long.

SEEDS/FRUIT

Stout brown seed pods are hard and brittle with a sticky pulp inside. Seeds are shiny, round, and beanlike. Trees are male or female, with only female trees producing pods.

WILDLIFE & POLLINATORS

Pods are toxic to many animals, though trees can provide nesting habitat.

CONCERNS

No serious pest or disease concerns.

Maple, Silver

Acer saccharinum

Silver maples grow at an extremely fast rate and, due to this fast growth, produce weak-wooded and brittle canopies that easily drop branches with wind, ice, or heavy snow. They are not suited to urban areas but provide value in riverside settings, quickly growing and contributing to streambank structure.

PLACE IT

Parklands, trails, or other bottomlands that benefit from buffering or flood control by these fast-growing trees are ideal. Once planted commonly in residential landscapes due to fast growth, the weak-wooded tree can drop larger branches and limbs, which may cause property damage.

FIND IT

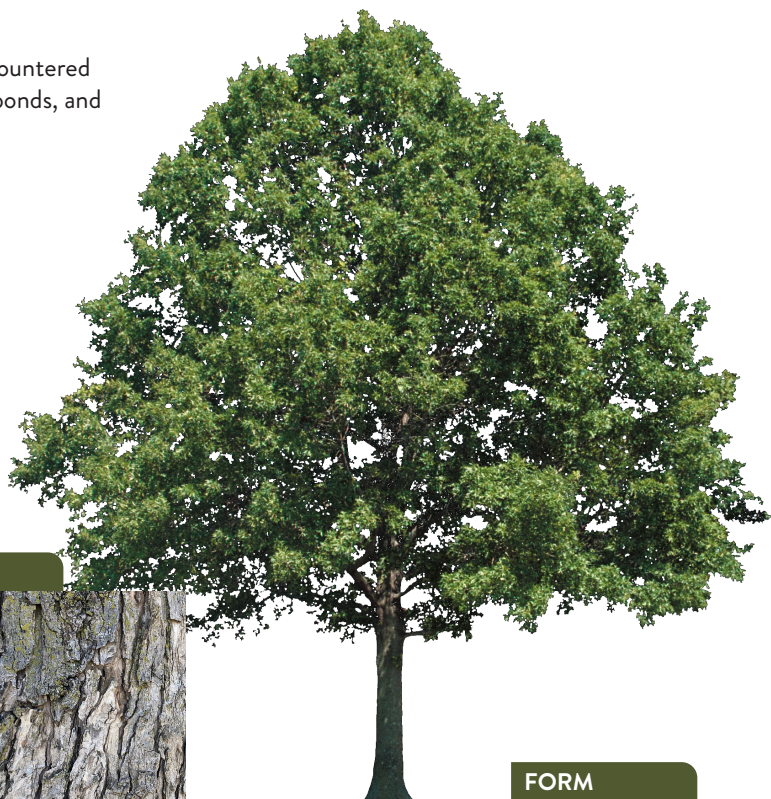
Commonly encountered along streams, ponds, and floodplains with cottonwood, sycamore, or elm.

IDENTIFY IT

BARK



Long, gray woody strips, or plates, appear to peel off mature trunks, lending the characteristic shaggy look.

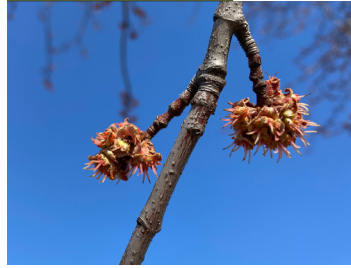


FORM

Large trunks grow round to shaggy, irregular canopies.
Height: 50-80 feet

BUDS

Bright red to reddish-purple. Leaf buds are oval and flower buds are round. Flower buds grow in noticeable clumps.

FLOWERS

Tiny, red, and often hidden by the bud scales.

LEAVES

Simple leaves grow opposite one another and have five prominently-toothed lobes. Leaf indentations called sinuses are more V-shaped than other maples. Leaves are whitish or silver beneath, lending a silvery appearance to the tree.

SEEDS/FRUIT

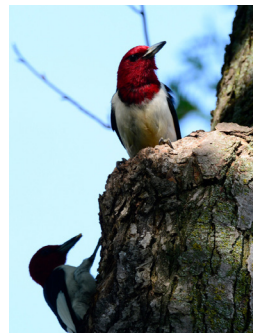
Conjoined green to yellow samaras sometimes called "helicopters" fall from the tree in the spring.

WILDLIFE & POLLINATORS

Turkeys; songbirds, including grosbeaks and finches; and small mammals enjoy seeds from this tree. Silver maple is a preferred nesting tree for Baltimore orioles. Cavity-nesting birds and mammals find this tree a good place to call home and raise their young.

CONCERNS

Asian longhorned beetle may become a major concern for this maple, but at the time of this book's printing this pest is not found in Iowa.



Maple, Sugar

Acer saccharum

This tree is well-known for its sweet sap that is boiled down to create syrup. Woodworkers value this tree for furniture making. It is also highly prized for its brilliant orange and red autumn foliage and attractive leaf shape.

PLACE IT

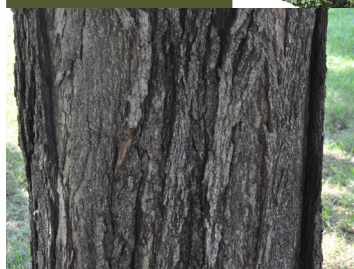
While trees are favored in urban and residential spaces, it is best to avoid compacted soils and high winds characteristic of new construction sites, streets, and roadsides. Avoid planting in poorly-drained soils or areas prone to road salt spray and poor air quality. Trees do tolerate shade.

FIND IT

Sugar maples favor moist woodlands with fertile soil, though they can grow well on well-drained upland sites too. Look for this tree along streams, in valleys, and on hillsides.

IDENTIFY IT

BARK



Gray bark is rough and furrowed.



FORM

Oval or rounded canopies often growing quite dense.
Height: 60-75 feet

BUDS

Sharply-pointed and dark brown to nearly black.

FLOWERS

Very small and greenish flowers grow on a long stalk in drooping clusters.

LEAVES

Simple leaves grow opposite one another and have five prominently-toothed lobes. Lobes may be shallow.

SEEDS/FRUIT

Conjoined green to yellow samaras sometimes called “helicopters” fall from trees in autumn, though they may be noticed as early as June.

WILDLIFE & POLLINATORS

Birds and small rodents use cavities in trees for nesting, and rodents and other larger mammals eat the seeds produced in autumn. Trees need wind to pollinate flowers; however, bees also visit flowers.

CONCERNS

Leaf scorch is common in hot, dry conditions. Asian longhorned beetle may become a major concern for this maple though at the time of this book’s printing, the beetle is not found in Iowa.

Oak, Bur

Quercus macrocarpa

Bur oak is a long-lived tree and may survive 100-300 years in the right setting. It is a tall shade tree with a unique, uneven, and gnarled-looking form. Bur oak tends to produce heavy nut crops every other year and has the remarkable ability to synchronize these mast crops across large geographic regions. It is one of the stateliest tree species, leaving no doubt as to why it is viewed by cultures worldwide as a symbol of strength, wisdom, and longevity.

PLACE IT

Plant into moist, well-drained soils, though it can tolerate drought and clay soils. Because it can tolerate many soil types, it is a good choice for urban areas. Though it is a frequent component of bottomlands, it is intolerant of flooding.

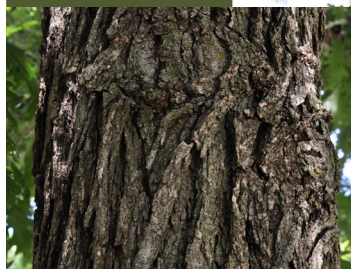
FIND IT

Look for this tree along streams and dry, rocky, or limestone upland soils. It is also typical between steep slopes in wooded areas. Scattered, tall bur oak with overgrown understory may indicate the locations of historic savannas.



IDENTIFY IT

BARK



Thick bark is deeply grooved.

FORM

Large spreading trees may have a broad, rounded crown or grow more gnarled and irregular.
Height: 70-80 feet

BUDS

Clustered at the twig tip, densely covered in fine gray hairs.

FLOWERS

Thin, green catkins.

LEAVES

Dark-green leaves are simple and leathery with five to nine rounded lobes. Lobes at the leaf tip may have shallower indentations, called sinuses, making the top of the leaf appear club-like.

SEEDS/FRUIT

Acorn caps enclose about $\frac{3}{4}$ of acorns as shown above and will turn brown as they mature.

WILDLIFE & POLLINATORS

A highly important “keystone species” for butterfly and moth caterpillars, with over 500 species supported by this tree. Oak acorns provide food for more than 100 vertebrate species. Large trees also provide good roosting habitat for many birds and mammals.

CONCERNS

Oak wilt and bur oak blight are of prominent concern. Trees may also be susceptible to anthracnose leaf spot and leaf blisters.

Oak, Red

Quercus rubra

Compared to other oak species, red oak is a fairly fast-growing shade tree. It is commonly used for lumber and furniture. It enjoys moist to dry acidic soils and tolerates air pollution and walnut trees. It has an attractive red color in the fall.

PLACE IT

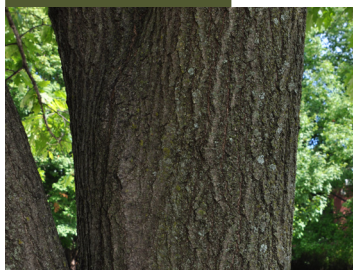
Plant into moist to dry sites with fine, well-drained soils and low pH. Leaves may begin to yellow between the veins in higher-pH soils.

FIND IT

Typical locations are well-drained, north- and east-facing moist slopes with pines, hickories, or maples and aspens.

IDENTIFY IT

BARK



Thin, dark-colored bark has shallow furrows.



FORM

Round crown with stout, spreading branches.

Height: 60-70 feet

BUDS

Clustered at the end of twig tips, oval in shape, pointed, and chestnut brown.

FLOWERS

Thin, green catkins commonly go unnoticed in spring.

LEAVES

Leaves have seven to eleven prominent lobes with pointed tips.

SEEDS/FRUIT

Round, red-tinted acorns have shallow, somewhat flat caps.

WILDLIFE & POLLINATORS

Bitter acorns are not favored by wildlife, but are a good food source nonetheless. Leafy canopies and cavities in trunks and limbs provide cover for numerous wildlife.

CONCERNS

Oak wilt is a serious concern. The moth *Lymantria dispar* is another possible problem.

Oak, Pin

Quercus palustris

A relatively quick-growing shade tree compared to other oaks. It does well in moist to wet acidic soils. It has a distinct shape where bottom branches grow downwards, middle branches grow straight out, and upper branches grow upwards in a vase-like shape. The common name refers to the “pin”-like stubs left as lower limbs fall from the trunk.

PLACE IT

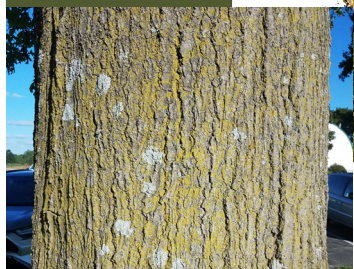
Attractive tree popular in landscaping due to its straight trunk, pyramidal shape, and red/orange fall color. Plant into moist sites with acidic soils. This species tolerates compacted soils and urban areas.

FIND IT

Look for pin oak in valleys, river margins, and even floodplains with other hardwoods. Pin oak is common in urban and commercial landscapes for its ornamental shape and orange to scarlet fall color.

IDENTIFY IT

BARK



Smooth bark develops furrows with maturity.



FORM

Medium-sized shade trees with pyramidal canopies, becoming more rounded with age. Height: 60-70 feet

BUDS

Red-brown, shiny, sharp-pointed, slightly angled, and clustered at the twig tip.

FLOWERS

Thin, green catkins emerge in spring.

LEAVES

Leaves have five to seven prominent lobes with pointed tips. Deep indentations, called sinuses, extend nearly to the leaf vein. Leaves do not fall in autumn but instead remain on the tree through the winter, only falling when new spring growth pushes them off.

SEEDS/FRUIT

Rounded acorns are smaller than those of bur, red, swamp white, or white oak. The nut meat is yellow and caps are shallow.

WILDLIFE & POLLINATORS

Birds and small rodents use cavities in trees for nesting, and rodents and other larger mammals eat the seeds produced in autumn. Trees need wind to pollinate flowers; however, bees also visit flowers.

CONCERNS

Leaf scorch is common in hot, dry conditions. Asian long-horned beetle may become a major concern for this maple though at the time of this book's printing, the beetle is not found in Iowa.

Oak, Swamp White

Quercus bicolor

Medium-sized shade tree that grows in wet to moist soils. Trees acclimate well to various conditions, making them popular landscape trees for urban, parkland, and roadside spaces. With the right conditions, this tree can live up to 300 years.

PLACE IT

Wet to moist acidic soils are suitable for swamp white oak. It may exhibit yellowing leaves, indicating a nutrient deficiency due to high pH, in more basic soils. Trees will tolerate drought and soil compaction. Highway right-of-ways, parks, urban landscapes, and natural areas are suitable sites for this species.

FIND IT

Bottomlands, floodplains, valleys, and streambanks are common habitat for swamp white oak. In the forest, it may be found growing alongside maple, basswood, hickory, or other northern hardwoods.

IDENTIFY IT

BARK



Distinct flakey, gray bark covers the trunk and larger limbs and appears to “peel” away. Limbs and branches may also have noticeable galls.



FORM

Canopies are broad and rounded.
Height: 50-70 feet

BUDS

Small buds cluster at twig tips.

FLOWERS

Thin, green catkins.

LEAVES

Simple, dark-green leaves are white or silver on the underside. The leaves contain five to ten rounded lobes and shallow indentations, called sinuses.

SEEDS/FRUIT

Oval to elliptical acorns with caps that cover about one-third of the nut's length.

WILDLIFE & POLLINATORS

Trees provide cover for many animals. The sweet acorns attract many birds and mammals and are an excellent source of food.

CONCERNS

Trees are susceptible to numerous pests and diseases of minor concern. Oak wilt is an infrequent concern.

Oak, White

Quercus alba

Shade trees are long-lived and stately with wide-spreading crowns and dense foliage. They enjoy moist soils but are tolerant of dry conditions, rocky or clay soils, and walnut trees. Trees thrive in acidic soils. White oaks produce large acorn crops every third year or so. Heavy, durable wood is an important staple for the timber industry. Fall leaf color can be red, burgundy, and even purple.

PLACE IT

Moist, acidic, well-drained soils are suitable for white oak. Trees will tolerate drought and some salt.

FIND IT

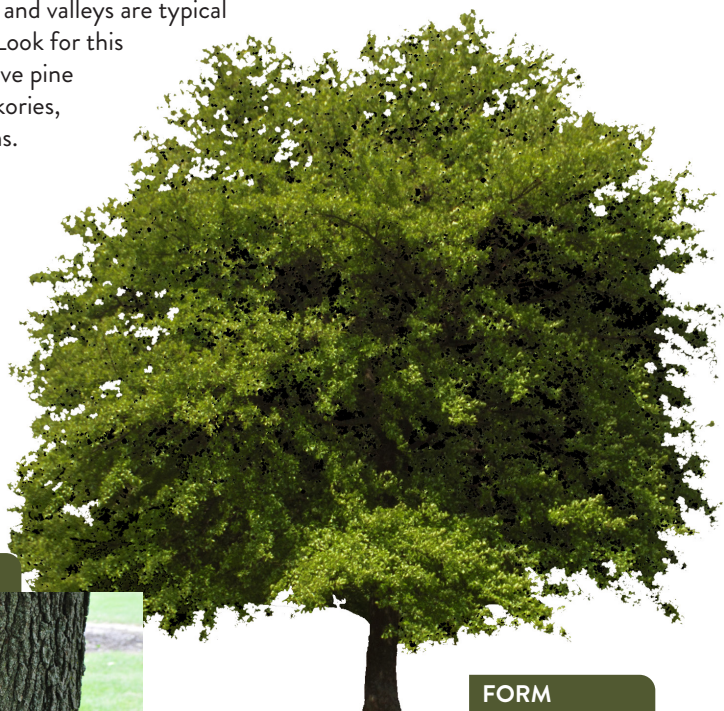
Well-drained slopes and valleys are typical sites for white oak. Look for this tree mixed with native pine forest, oaks and hickories, or maples and aspens.

IDENTIFY IT

BARK



Ashy-colored bark may be platy or crossed by ridges and furrows.



FORM

Tall, stately trunks have round to spreading canopies.
Height: 50-80 feet

BUDS

Clustered at the tips, blunt to oval in shape, reddish brown to brown.

FLOWERS

Thin, green male and female catkins with red hues adorn trees in spring.

LEAVES

Pink, fuzzy foliage emerges in the spring maturing to simple leaves with five to ten round, long lobes and deep indentations, called sinuses.

SEEDS/FRUIT

Oval and occasionally elongated. Acorns grow up to $\frac{3}{4}$ inch long and $\frac{1}{4}$ of the nut is covered with a cap that falls off easily.

WILDLIFE & POLLINATORS

Acorns are a favorite of many wildlife. The white oak produces a large acorn crop every three years as an evolutionary strategy that essentially overwhelms would-be diners and assures that some acorns stay around to produce future trees. Leaves that persist into winter offer protection for birds and also offer forage for mammals such as deer.

CONCERNS

Oak wilt and sudden oak death, a root rot disease, are of concern for this species. The moth *Lymantria dispar* is also a concerning pest to the tree.

Ohio Buckeye

Aesculus glabra

Showy tree with flowers that grow tall and candle-like. Its nut grows in a spikey capsule and is called a “buckeye” because it resembles the eye of a deer. Trees are somewhat fragrant, which is unpleasant to some people. The leaves have an attractive fall color ranging from yellow to reddish-orange. It does well in moist, well-drained soils.

PLACE IT

Shade-tolerant trees thrive in moist areas with good drainage. Foliage scorches in dry conditions and may be sensitive to air pollution. Avoid roadsides, streets, and some urban settings due to husk and seed litter.

FIND IT

Buckeyes enjoy wooded habitats, including ravines, slopes, and near the bottom of bluffs.

Sometimes this tree is found growing as a shrubby thicket.



IDENTIFY IT

BARK



FORM

Small shade trees with broad, oval canopies.

Height. 20-40 feet

Young bark is smooth, becoming gray and scaly as it matures.

BUDS

Terminal buds are large, oval, and orange.

FLOWERS

Large, yellow flowers are displayed on long, upright clusters and flower earlier than other shade trees.

LEAVES

Leaves are palmate – hand-shaped – with five leaflets like long, broad fingers. Toothed leaves grow opposite one another.

SEEDS/FRUIT

Globe-like, bumpy or spiny husks enclose one to four glossy, brown buckeyes.

**WILDLIFE & POLLINATORS**

Trees and flowers attract butterflies and native bees, but all parts of the tree are toxic to wildlife and livestock. Pollen and nectar are toxic to honeybees.

CONCERNS

Leaf spot and Japanese beetle feeding can cause mild to concerning foliage loss.

Red Mulberry

Morus rubra

Well-known for sweet, purple berries that resemble small blackberries. Humans can eat the fruit. It is a favorite of birds, and for this reason it commonly pops up along bike trails, fence rows, and other places where it might not be desired. It is commonly shorter and shrub-like, though the mature form is a medium-sized tree up to 50 feet. Will commonly hybridize with the non-native white mulberry (*Morus alba*).

PLACE IT

Areas in full sun with moist, well-drained soils are optimal for mulberry. It tolerates most soil types and pH levels. Urban and residential areas are often avoided due to messy fruits that can stain sidewalks.

FIND IT

Bottomland woods, river valleys, and woodland edges, pastures, fence rows, and roadsides are all common locations for mulberry trees.

IDENTIFY IT

BARK



Smooth, young bark matures to a scaly texture with age.

FORM



Short trunks support spreading to rounded canopies as trees. Cut trees usually re-sprout, leading to shrubby growth. Height: 30-50 feet

BUDS

1/8" - 1/4" long, greenish brown to light brown. Terminal bud is absent.

FLOWERS

Light green upright catkins are dioecious, with male and female flowers appearing on separate plants.

LEAVES

Simple, ovate leaves are toothed and occasionally lobed. White, milky fluid is noticeable when leaf stems break.

SEEDS/FRUIT

Small blackberry-like fruits are soft and dark red to purple, only found on female plants.

WILDLIFE & POLLINATORS

Fruits are favored by birds and small mammals. Its dense crown provides year-round cover for wildlife.

CONCERNS

No major pest or disease concerns.



River Birch

Betula nigra

Quick-growing landscape trees best known for thin, peeling bark, delicate branches, and fine foliage. Its peeling bark provides good visual interest, especially in the winter. It thrives in moist locations, making it a useful tree in the landscape.

PLACE IT

River birches are water-tolerant trees and perform best in moist to wet soils with low pH. Higher pH soils may result in yellowed leaves and vigor. It is tolerant of clay soils.

FIND IT

Find birch growing in floodplains and along rivers. They may be associated with hickory, cottonwood, sycamore, pin oak, or willow.

IDENTIFY IT

BARK



Young bark is brown and smooth. Mature bark forms thin, peeling flakes that may be brown on one side and lighter on the other side.



Open canopies are oval to rounded and have a feathery appearance. Often trees have multiple trunks.
Height. 40-70 feet

BUDS

Dark brown buds are long and pointed.

FLOWERS

Long, green to brown male catkins hang from trees in spring, while short, green female catkins sit upright.

LEAVES

Simple leaves are doubly-toothed with a pointed tip. The underside of the leaf is usually lighter in color and hairy.

SEEDS/FRUIT

Winged seeds are centered in small, papery discs.

WILDLIFE & POLLINATORS

Due to its spring-ripening fruit, the tree provides early food for many birds and small mammals. In riverbed areas, the tree provides habitat for waterfowl.

CONCERNS

While regarded as more disease tolerant than other birch species, it is favored by the moth *Lymantria dispar* and occasionally attacked by bronze birch borer.

Shagbark Hickory

Carya ovata

Shagbark hickory is named for and identified by its characteristic shaggy bark but is very similar to another tree in the same family – shellbark hickory. The stout root system, even of young trees, makes this a difficult tree to transplant and thus hard to find at a tree nursery. Deep tap roots should be accommodated when selecting seedlings or young trees to ensure trees will survive transplanting.

PLACE IT

Well-drained fertile soils are best for shagbark. Large nuts and thick twigs may make it undesirable in a small landscape or urban street setting, though it is somewhat tolerant of air pollution.

FIND IT

Well-drained oak-hickory forests and uplands are likely areas to find this tree, as are savannas. Common in northeast Iowa.

IDENTIFY IT

BARK

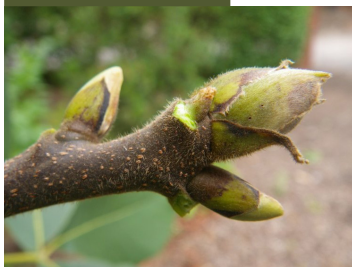


Long gray woody strips, or plates, appear to peel back from mature trunks, lending the characteristic shaggy look.

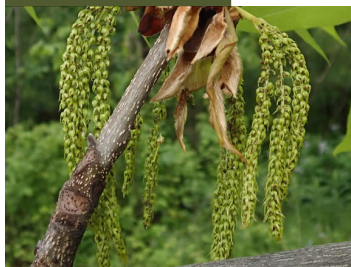


FORM

Tall trunks with narrow, irregular canopies.
Height: 60-80 feet

BUDS

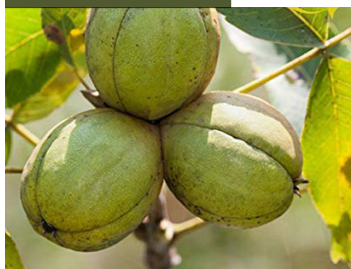
Large, stout terminal buds are dark-brown to gray. Leaves emerging from pink bud scales in spring are commonly mistaken for large green and pink flowers.

FLOWERS

Male and female flowers grow on separate trees. Male flowers are slender, green catkins in groups of three on one stalk. Female flowers are cone-shaped and grow at the twig tip.

LEAVES

Compound leaves have five, seven, or nine football-shaped leaflets with pointed tips. Five leaflets are the most common. Outer leaflets are largest, while leaflets close to the leaf stem are smaller.

SEEDS/FRUIT

Large nuts are enclosed within a green husk that hardens, darkens, and splits open upon maturity.

WILDLIFE & POLLINATORS

Songbirds, turkeys, waterfowl, and mammals alike enjoy hickory nuts as a food source.

CONCERNS

No major pest or disease concerns.

Sycamore

Plantinus occidentalis

A distinct tree that has a large trunk and limbs with leaves that can grow to massive proportions. Though commonly under 100 feet in height, the tree can grow to 150 feet, making it one of the tallest trees in North America. It is a relatively fast-growing tree and can grow a larger trunk diameter than any other native hardwood.

PLACE IT

Large, fast-growing trees are best suited to moist or wet soils in a rural setting or urban park. Trees are tolerant of air pollution. Long limbs and large leaves provide excellent shade but dropped smaller branches, leaves, and seed balls can make a mess in a manicured or high-traffic location.

FIND IT

Bottomlands, floodplains, and riverside locations with fertile soils are best suited to host sycamore. Shade-tolerant seedlings can occasionally be found in the understory, making their way toward canopy, though trees grow best in full sun.

IDENTIFY IT

BARK



The bark is mottled green, brown, and gray by different phases of bark development and commonly peels away to an all-white bark. Older bark sloughs off the tree, creating the mottled appearance.



FORM

Massive trunks support long horizontal branches and round to oval canopies. Height: 75-100 feet

BUDS

Triangular-shaped buds are brown and hidden within the base of the leaf stem (petiole).

FLOWERS

Very small flowers cluster together in a ball shape.

LEAVES

Simple leaves grow three to five prominently-toothed lobes, commonly mistaken for maple leaves.

SEEDS/FRUIT

Small, green seed balls enlarge and turn brown as they mature. At maturity in February or March, seed balls become soft and break apart to distribute seeds.”

WILDLIFE & POLLINATORS

Turkey and songbirds such as chickadees and juncos use seeds as a food source. Trees provide shelter for cavity-nesting birds and animals.

CONCERNS

Anthrachnose is a common problem for trees, ranging from minor leaf spot to stem cankers, and can cause more serious damage in wet, cool years.

Downy Serviceberry

Amelanchier arborea

Can grow as a small tree or large, multi-stem shrub. They are occasionally called “Juneberry” due to their sweet fruit that ripens in June. The tree has attractive white flowers in the spring and a lovely orange fall leaf color. Downy serviceberry is the most widely distributed of this native tree, but Allegheny serviceberry (*Amelanchier laevis*) is found growing native in northeastern Iowa. Various hybrid serviceberries are available at plant nurseries.

PLACE IT

Ornamental trees grow well in basic, well-drained soils on uplands or in urban and residential landscapes. Should be planted in full sun.

FIND IT

These small trees might occur in rocky woodlands or bluffs, and occasionally in bottomlands.

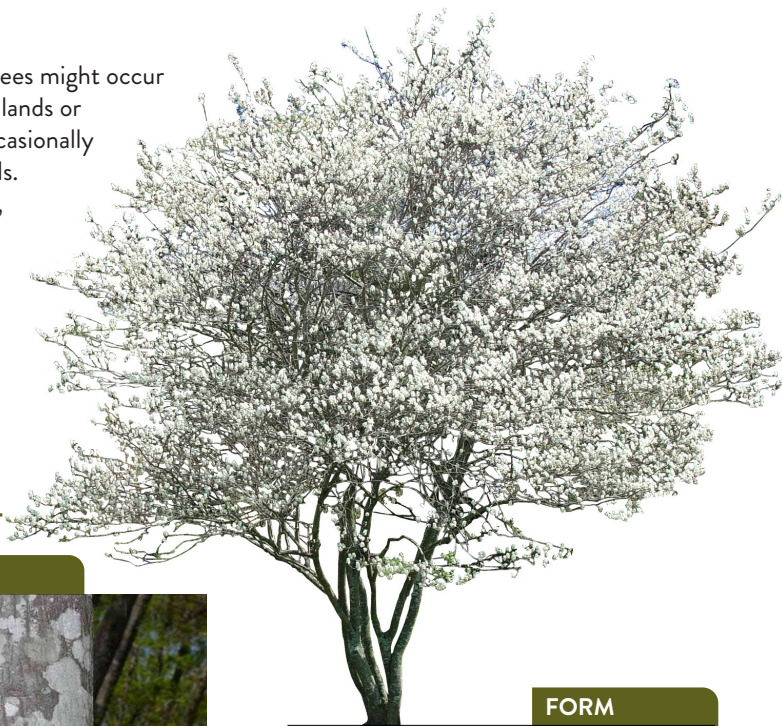
In understory, foliage may appear less dense.

IDENTIFY IT

BARK



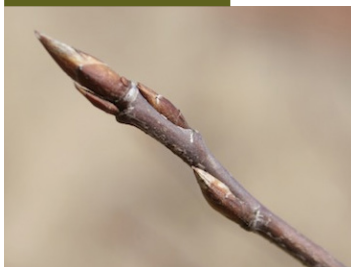
Light gray and smooth when young. Turns dark brown with shallow grooves and long ridges with age.



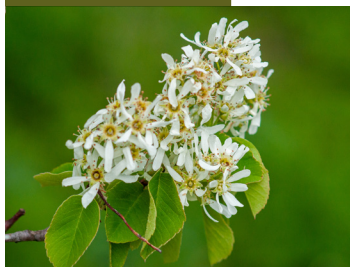
FORM

Trees may grow as small trees with rounded canopy or tall, somewhat dense shrubs.

Height: 15-25 feet

BUDS

$\frac{1}{4}$ " to $\frac{1}{2}$ " long, pointed buds are red to yellow-green.

FLOWERS

Showy, white flowers with five petals emerge in April or May.

LEAVES

Simple leaves are oval-shaped with small teeth along the leaf edge.

SEEDS/FRUIT

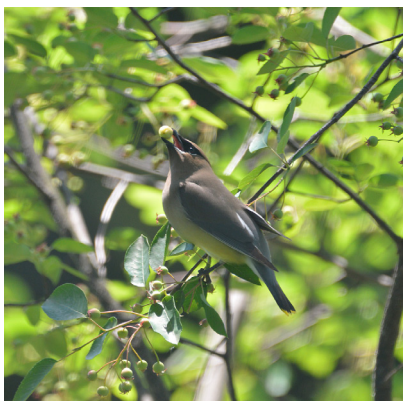
Small purple to black pome fruits, or "berries," ripen in June.

WILDLIFE & POLLINATORS

Serviceberry fruits called pomes are favored by numerous bird species and various wildlife.

CONCERNS

Feeding by larvae from the moth *Lymantria dispar* is a concern for plants. No serious disease concerns, but mildew and rust are common.



Flowering Crabapple

Malus spp.

A popular spring-flowering tree due to its showy, often sweet-smelling white and pink to magenta flowers. There are many cultivars and hybrids available providing many options to fit landscape needs. The genus *Malus* includes both edible and ornamental types of apples, with the main difference being the size of the apple. Crabapples have fruits that range from ¼” to 2”. Some people use the fruit to make jams or jellies. A few fruitless varieties are available.

PLACE IT

A highly adaptable tree that grows in various locations and soil types. They thrive in full sun with well-drained, slightly acidic soil. The tree is commonly found in urban and rural locations alike.

FIND IT

While the Prairie or Iowa crabapple (*Malus ioensis*) is native to Iowa, the vast majority of crabapples found today are cultivars purposely planted in both urban and rural landscapes.

IDENTIFY IT

BARK



Photo Jeff Iles

Reddish-brown or gray, generally rough and scaly-like.



FORM

Highly variable, from round and shrub-like, to weeping, to narrow and upright. Height and width vary with cultivar.

BUDS

Buds are typically semi-round to oval and are hairy along the edge. Buds swell to pink or red before opening.

FLOWERS

Typically, pink, white, or magenta flowers have five petals growing in clusters all along the branch.

LEAVES

Photo Jeff Iles

Simple leaves are elliptical to oval in shape with a toothed leaf edge.

SEEDS/FRUIT

Photo Jeff Iles

Called a pome ranging in size from ¼" to 2" in diameter and red, yellow, or orangish-red. Often persist into winter.

WILDLIFE & POLLINATORS

Flowering crabapples are an excellent tree for pollinators like bees and butterflies that enjoy the nectar from the abundant flowers. Birds and other small mammals feast on the pome fruit, especially in winter when other food sources are scarce.

CONCERNS

A few older species and cultivars of flowering crabapples are susceptible to diseases such as fire blight, powdery mildew, and apple scab. Each can cause serious problems to the foliage and in the case of fire blight, can lead to tree death if left untreated.

Hawthorn

Crataegus spp.

There are more than ten different hawthorn species that grow native in Iowa. The most commonly found and commercially available are downy hawthorn (*Crataegus mollis*), native everywhere but extreme northwest Iowa and cockspur hawthorn (*Crataegus crus-galli*), commonly found in the southern part of the state. Spring blooms and orange to red autumn color make it an attractive tree. Sharp thorns are a hallmark of this tree, but thornless forms are available.

PLACE IT

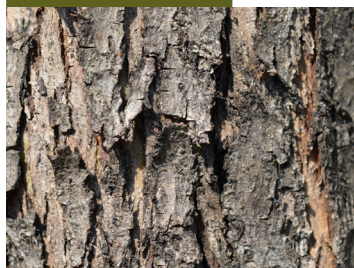
Trees are capable of growing in somewhat dry locations and prefer acidic soils. Urban conditions with moderate pollution are well-tolerated.

FIND IT

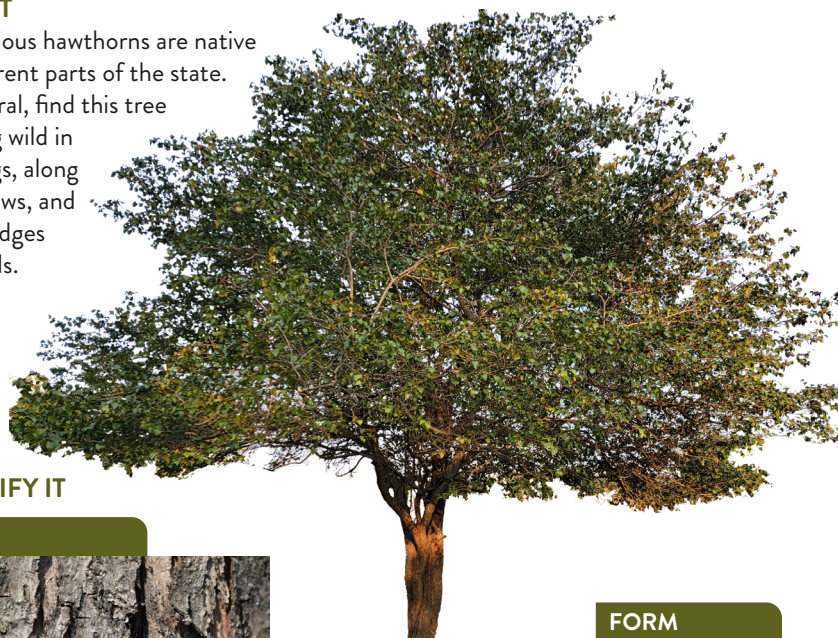
The various hawthorns are native to different parts of the state. In general, find this tree growing wild in clearings, along fencerows, and in the edges of woods.

IDENTIFY IT

BARK



Smooth, thin, and gray bark develops fissures with age. Thorns develop on branches.



FORM

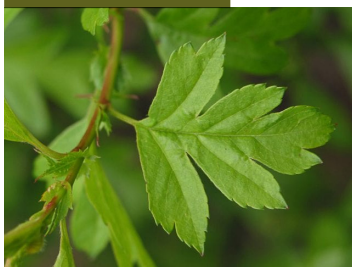
Single or multiple trunks with spreading, densely-branched canopies.
Height: 20-30 feet

BUDS

Round to semi-round buds are fleshy with reddish scales. Lateral buds are nearly equal to terminal buds in size.

FLOWERS

Clusters, called corymbs, of large white flowers produce a mildly unpleasant fragrance.

LEAVES

Leaf shape varies depending on species. All species have a simple, single leaf that alternates along the branch.

SEEDS/FRUIT

Small pomes mature in autumn and persist on the tree until spring. These are occasionally called “haws.”

WILDLIFE & POLLINATORS

Fruit is an important source of food for overwintering wildlife. Trees provide nesting habitat and cover for a variety of small birds.

CONCERNS

Cedar-hawthorn rust affects foliage and fruit. Fire blight is a minor concern.

Ironwood

Ostrya virginiana

This tough-wooded tree earns its name due to its wood structure. Its other common name, hop hornbeam, is earned from its hop-like fruit. An uncommonly planted tree, it is well-adapted to the urban landscape and can grow in areas of full sun to full shade. As a small- to medium-sized tree, it provides options for a lower growing tree where space is limited.

PLACE IT

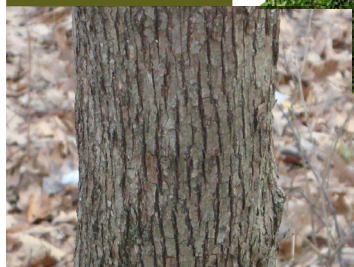
Grows in average, well-drained soil and prefers light shade, but can grow in full sun or full shade. Suitable along streets, as a landscape tree, or in reforestation projects.

FIND IT

Native to all of Iowa, it generally occurs on both dry and moist slopes, in the shade of other hardwood trees.

IDENTIFY IT

BARK



Gray or brown bark forms vertical rows of plate-like bark sometimes appressed to the trunk but can be loose and shaggy.



FORM

Young trees appear pyramidal, with mature trees taking on a very rounded shape.
Height: 25-40 feet

BUDS

Small, brown, and pointed 1/8" to 1/4" long.

FLOWERS

Grow as catkins. Male catkins are greenish, female catkins are reddish-green, and both grow in groups of three at the end of branches.

LEAVES

Simple leaves are elliptical to oval in shape and double saw-toothed with a short, hairy leaf stalk.

SEEDS/FRUIT

Pinecone-like fruit resembles the fruit from the common hop vine. Nutlet seeds are contained inside papery scales.

WILDLIFE & POLLINATORS

Various wildlife including birds, deer, and small mammals consume nutlets, especially during the winter months.

CONCERNS

No serious pest or disease concerns.

Redbud

Cercis canadensis

A forest and community landscape favorite for adding a splash of early-spring color from numerous pinkish-purple flowers. Slender twigs have a distinct zig-zag pattern from bud to bud. Small trees mature quickly with spreading canopies.

PLACE IT

Soils with a pH of 6 to 7.5 are suitable for this tree, as are clay or limestone soils. Trees are even able to thrive under black walnut trees. Wet or very dry soils are not acceptable. Trees tolerate sun and shade.

FIND IT

Shade-tolerant trees enjoy living in the understory of taller shade trees. Native stands usually occur lightly scattered throughout south-facing woodland slopes. Trees are more common in warmer Zone 5 climates.

IDENTIFY IT

BARK



Reddish brown to gray bark is thin and smooth when young. Mature bark develops long, narrow plates that separate and become scaly.



FORM

Trees are naturally vase-shaped, developing multiple trunks, but can be grown as a single stem or trunk.
Height: 20-30 feet

BUDS

Small, tight, dark purple buds swell gradually in early spring.

FLOWERS

Small clusters of flowers appear before leaves and are pink to purple.

LEAVES

Simple leaves are heart-shaped with smooth edges, alternating along the branch. Leaf veins form a fan.

SEEDS/FRUIT

Papery pods mature from green to brown with small, brown seeds inside that resemble lentils.

WILDLIFE & POLLINATORS

Flowers are an important source of nectar for butterflies, bees, and hummingbirds early in spring before other flowers are blooming.

CONCERNS

No serious pest or disease concerns.

Arborvitae

Thuja occidentalis

Also known as northern white cedar, this northeastern forest evergreen was tamed by the landscaping industry long ago and made available in various forms, such as shrubs, columnar trees, or even weeping forms with drooping branches. It is typically used for screening, hedges, or winter interest. Its common name is interpreted as “tree of life,” named by settlers who used the foliage to treat scurvy.

PLACE IT

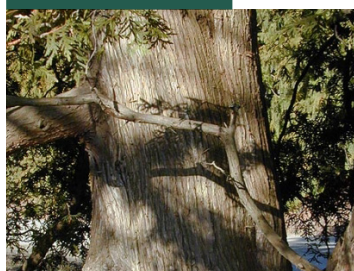
Trees enjoy moist sites with alkaline soils but will tolerate most sites that are not dry and windy. It can tolerate some salt spray from roadways but is prone to ice and snow damage.

FIND IT

Shorelines, uplands, cliffs, and loose rock are natural places for arborvitae. Moderate shade tolerance allows it to establish in forested areas with other evergreens and shade trees, though growing it in full sun is advised.

IDENTIFY IT

BARK



Gray to reddish brown. Thin bark separates into long, vertical, narrow, shred-like strips.



FORM

These shape-shifters occur as shrubs or great 50-foot high trees. Tall forest trees are broadly pyramidal with visible trunks.

CONES



Small, green female cones are borne in clusters. Cones turn brown and open in autumn and persist into winter. Smaller male cones emerge in spring, creating the appearance of browning leaf tips.

NEEDLES



Green scales overlay one another to yield soft, flat branches. These scales are, in fact, a type of needle characteristic of this plant family.



Shrub form

WILDLIFE & POLLINATORS

Arborvitae are wind-pollinated and don't provide food for pollinators. Birds and animals find shelter in arborvitae boughs and escape from predators beneath their branches. In woodland settings, lower branches offer important deer browse in the winter months.

CONCERNS

Arborvitae commonly suffer from winter burn, a condition caused by numerous factors, which ultimately leads to browning of the foliage and in extreme situations can cause death to the tree. Arborvitae are also a favorite of deer that eat the foliage over the winter.

Bald Cypress

Taxodium distichum

With needle-like foliage, this conifer appears similar to other evergreen conifers, but don't lose heart the first time you see it change color and lose its needles in autumn. This conifer is actually deciduous, or "bald" in the winter, growing new foliage each spring. Because it grows naturally in swamps and wet areas, it has a natural resistance to decay thus earning it the moniker "the eternal wood."

PLACE IT

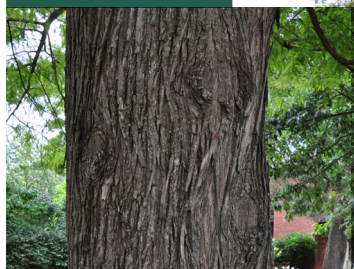
Bald cypress is water-tolerant and helps control erosion and trap sediment in wet areas. When soils get saturated, this tree can grow aboveground "knees" from its roots, which allows it to get enough oxygen. This tree is most suitable in medium to wet soils but can adapt well to various settings, even roadsides.

FIND IT

Find it growing in areas that are frequently wet. Throughout Iowa you may see it growing in yards or along roadways.

IDENTIFY IT

BARK



Gray to red-brown. Develops scaly ridges that peel away into strips.



FORM

Young and mature trees are narrowly to broadly pyramidal.
Height: 50-70 feet

CONES



Round green cones form like small ornaments adorning branches in summer and opening in November. Cones break into pieces once shed, revealing winged seeds within.

NEEDLES



Flat needles alternate along fine branches, turning orange or rusty brown in autumn.



Fall color

WILDLIFE & POLLINATORS

Birds, including waterfowl and small mammals, take refuge in these trees and eat their seeds. In wetter areas, they provide breeding sites for frogs, toads, and salamanders.

CONCERNS

No major pest or disease concerns.

Balsam Fir

Abies balsamea

Balsam fir is a commonly-recognized scent of winter greenery. It is a popular choice for decorations, Christmas trees, and landscape trees. A pyramidal silhouette lends an iconic evergreen-tree appearance.

PLACE IT

Cool, moist woodland soils and bottomlands provide suitable ground for balsam fir. Soil pH should be between 4 and 6, which is relatively acidic for Iowa. Avoid dry sites.

FIND IT

Trees do not tolerate dry sites and need moist sites with good drainage. Look to find it growing in the northeastern woods and lowlands as trees are not well suited for warmer areas south of Zone 5.

IDENTIFY IT

BARK



Brown bark is thin and smooth when young. Develops a scale-like appearance in older trees. Bark is covered with many resin blisters.



FORM

Pyramidal trees form tall spires and stay narrow compared to other evergreens. Height: 40-70 feet

CONES



Emerge purple to blue in spring and sit upright upon upper branches. Scale-like seeds drop from the cones as they ripen and turn brown, leaving just the center part of the cone remaining.

NEEDLES



Flat needles are curved, dark green, and only about one inch long.

Canaan fir

Abies balsamea var. phanerolepis

Canaan fir is a special variety or ecotype of balsam fir, popular among the Christmas tree industry. New growth emerges a little later than balsam fir, which helps Canaan fir avoid late winter or early spring freezing injury.



WILDLIFE & POLLINATORS

Provides shelter and habitat for birds and small mammals. Deer browse the foliage in the winter.

CONCERNS

No major pest or disease concerns.

Concolor Fir

Abies concolor

Long, soft needles emit an unmistakable citrus scent when crushed, making this fir relatively easy to distinguish from others. While this tree is native to the mountain states, it can grow successfully in moist, well-drained soils.

PLACE IT

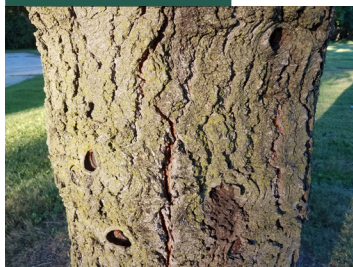
Concolor fir enjoys cooler climates and moist, well-drained acidic soils. A variety of soil types are acceptable, including clay-loam soil. Protected sites relieve stress from sunscald and drying winds. Suitable municipal and protected residential sites are appropriate.

FIND IT

Since this tree is introduced, rather than native to Iowa, it is most often found in urban settings and Christmas tree farms. Mature trees can tolerate drought conditions, but younger trees and transplants rely on consistent water.

IDENTIFY IT

BARK



Mature trees have dark gray bark with deep, irregular furrows.



FORM

Narrow and roughly cone-shape.
Height: 30-50 feet

CONES



Roughly barrel-shaped cones sit upright on branches, maturing from green to purple or brown.

NEEDLES



Flat, silvery-blue needles are about 2.5 inches long and curve upward, growing singularly along the branch.



Concolor branch featuring longer needles than other firs

WILDLIFE & POLLINATORS

Cones contain seeds beneficial to squirrels and other wildlife, and grouse especially like the buds and needles.

CONCERNS

No major pest or disease concerns.

Eastern Red Cedar

Juniperus virginiana

Red cedar is revealed by its signature juniper scent. Trees work well as windbreaks and wildlife habitat. Like arborvitae, various forms are available including columnar, topiary, shrub, or creeping. It is one of the only evergreens native to all of Iowa.

PLACE IT

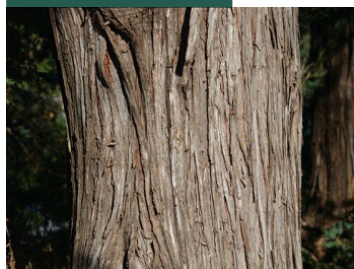
Trees will tolerate saline and alkaline soils between pH 6 to 8. Cedar trees are generally adapted to areas with cold winter temperatures or susceptible to drought. Be careful planting trees in unmanaged fields or roadways as it can spread quickly and intrude on other plants.

FIND IT

Red cedar trees are native and plentiful east of the Mississippi river. They thrive in pastures and roadway ditches throughout Iowa.

IDENTIFY IT

BARK



Reddish bark exfoliates in long ribbons from the trunk and larger limbs..



Trees growing native are pyramidal, becoming irregular with age. Varieties available for landscaping take many shapes. In any form, growth appears shaggy and irregular. Height: 40-50 feet

CONES



Fleshy, dusty-blue exteriors, often mistaken for berries, yield tiny cones within.

NEEDLES



Blue-green scale-like needles are pointed and lend a scratchy feel, unlike the scales of arborvitae. Winter color is dull, turning purplish.



Eastern red cedar is a popular windbreak tree. Its pyramidal form can be seen here.

WILDLIFE & POLLINATORS

More than 60 wildlife and bird species use red cedar for food and shelter. It is particularly important for pheasants. Berry-like cones provide food during winter months when food is scarce. Evergreen foliage also provides vital winter protection.

CONCERNS

Cedar is not bothered by cedar-apple rust fungus, but hawthorn, crabapple, and apple trees can be crippled. This fungus needs cedar trees to complete its life cycle and cedars should not be grown near desired apple trees.



Eastern White Pine

Pinus strobus

Once giants of the northeastern Iowa forest, living 100 to 300 years under ideal conditions, these pines have taken residence in many residential and commercial spaces across the state. They are useful for windbreaks, erosion control, and landscaping.

PLACE IT

Plant in an area that protects the tree from hot, dry winds. It is suited to various soil types that are well-drained and somewhat acidic with a pH of 6 or less. White pines do not tolerate “wet feet” from overly saturated soils. Since it is intolerant of air pollution and salts, it doesn’t usually make a good roadside tree.

FIND IT

White pines can easily be found in urban areas and residential yards or grown in rural windbreaks throughout the state. Native grown trees inhabit cool eastern areas of the state, especially the northeastern bluff land areas of Iowa.

IDENTIFY IT

BARK



New bark is green to brown; older bark grays and develops deep fissures.



FORM

Pyramidal young trees mature into broadly oval trees with irregular-shaped crowns.
Height: 50-80 feet

CONES



Slender cones hang from branches and are about eight inches long.

NEEDLES



Soft, blue-green needles occur in bundles of five, each about three-to five-inches long. Older needles shed in the fall and are replaced in the spring.



Like all pines, Eastern white pine needles grow in bundles. White pine needles, in particular, grow in bundles of five.

WILDLIFE & POLLINATORS

White pine provides winter cover for deer and birds including turkey, owls, raptors, and ruffed grouse. The tree provides summer butterfly habitat. Lakeside trees also provide habitat for eagles and osprey.

CONCERNS

No major pest or disease concerns. A bit weak-wooded and can potentially drop limbs in storms or winter weather.



Norway Spruce

Picea abies

Native to Europe, this tree has found a home in the cool regions of the United States as a landscape specimen and windbreak tree. While it typically reaches heights upward of 100 feet in Europe, it can reach 60 to 80 feet in the U.S. It is a relatively fast-growing tree.

PLACE IT

Plant trees in acidic, well-drained soils in full sun as trees don't like to be overshadowed by their neighbors. Trees perform better in cool regions than those with hot summers.

FIND IT

Since trees are introduced they are most common in human-modified areas, including urban and residential areas and homestead or farm windbreaks.

IDENTIFY IT

BARK



Rough, mature bark presents as brown and scaly.



FORM

Pyramidal trees with spreading, drooping branches.

Height: 60-80 feet

CONES



Nine-inch long, slender cones are pink and mature to brown.

NEEDLES



Short, green needles are square and grow singularly in a column along the branch.

WILDLIFE & POLLINATORS

Norway spruce provides habitat for small mammals, birds, and various moth species.



CONCERNS

No major pest or disease concerns.

American Hazelnut

Corylus americana

Nuts are prized for fresh consumption or in finished products, including baked goods or butter. The nuts have a higher nutritional value than acorns, so people farming the nuts or growing them in their backyards have to beat squirrels to the prize! Nuts from this shrub are much smaller than the European or Turkish hazelnuts commonly purchased at grocery stores.

PLACE IT

Soil should be well-drained and plants should receive full sun for best nut production. Plants can tolerate clay soils and close proximity to black walnut trees. The shrub is sensitive to salt, so is not ideal for roadside plantings.

FIND IT

Look in well-drained, upland woodlands, woodland edges, and valleys. Thickets may be found in clearings or even in prairies or savannas.

IDENTIFY IT



Shrubs form natural thickets with multi-stems and a round form.
Height: 6-12 feet

FLOWERS



Female flowers are bright red and emerge early in the season on buds along branches.

LEAVES



Oval-shaped leaves are slightly rough or hairy with double-toothed edges.

SEEDS/FRUIT



Nuts typically grow in clusters surrounded by a fleshy husk. As nuts mature, the husks turn brown and begin to open exposing the round nut.

CATKINS



Catkins grow in the spring and summer and hang tight over the winter starting to elongate in early spring to spread pollen in the wind.

WILDLIFE & POLLINATORS

Since nuts are a high-energy food source, they are favored by small mammals and birds such as pheasant, turkey, and grouse.

CONCERNS

Foliage is consumed by numerous insects, especially Japanese beetles.

Buttonbush

Cephalanthus occidentalis

Shrubs commonly used in rain gardens and pollinator plantings develop unique spherical, white flowers. They can become somewhat leggy or poorly branched without pruning. Can tolerate periodic trimming back to the ground. Pollinators visit often, so be sure to place it where you want bees and butterflies.

PLACE IT

Wet areas, shorelines, and riversides are excellent locations for buttonbush. Grows in full sun to partial shade.

FIND IT

Buttonbush may be found in bottomlands, streamsides, or swampy areas.

IDENTIFY IT



FORM

Shrubs grow to irregular, somewhat round plants quickly. Height: 6-12 feet. Can grow to 12-15 feet in southern areas.

Photo Jeff Iles

FLOWERS



Tiny, tubular, and fragrant white flowers grow in a one-inch spherical ball. Long thread-like “styles” extend above each flower, giving a pincushion type of appearance.

SEEDS/FRUIT



“Buttonballs” are round clusters of tiny nutlets. Small, green seed balls enlarge and turn brown as they mature in late summer.

WILDLIFE & POLLINATORS

Numerous pollinating insects including native bees and butterflies enjoy nectar and pollen from these shrubs. Hummingbirds are also frequent visitors. Waterfowl, such as wood ducks, use shrubs for cover.

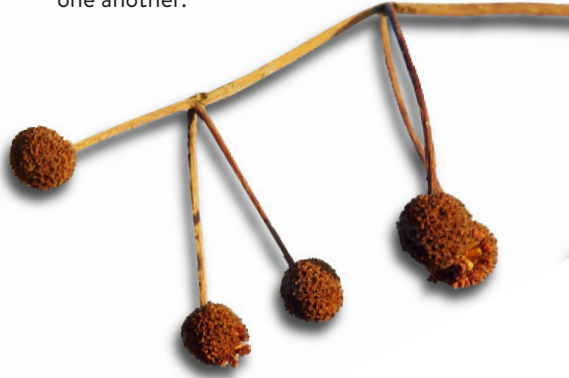
CONCERNS

While buttonbush does not have any serious disease concerns, it may become stressed and fail to flower in dry or very shady areas.

LEAVES



Simple leaves up to six inches long have no lobes and grow opposite one another.



Common Elderberry

Sambucus canadensis

A tall, multi-stemmed shrub with showy white flowers that develop into blue-black fruits. Some people are known to fry the flower heads into elderberry fritters. The juice from the berries is used to make jams, jellies, and wines.

PLACE IT

Best grown in moist to wet soils in full sun. Individual shoots can be short-lived, so this plant is best placed in an area that allows it to spread a little and re-sucker from underground parts.

FIND IT

Common along streamsides, moist woods and woodland edges, fencerows, bike paths, and roadsides.

IDENTIFY IT



FORM

Narrow, tall shrubs appear broader due to their tendency to spread by suckers. Height: 9-12 feet

FLOWERS

Small, white flowers are borne in open, flat-topped clusters called cymes. Clusters are large, up to 10 inches across.

LEAVES

Leaves grow opposite one another along branches and are compound with five to nine leaflets per leaf. Leaflets are long with tapered tips and toothed edges.

SEEDS/FRUIT

Small, juicy, dark-purple to black drupelets form in a cluster.

WILDLIFE & POLLINATORS

Berries are enjoyed by birds and small mammals, and plants provide pollen for numerous pollinating bees and other insects.

CONCERNS

Plants are susceptible to mildews and cankers. Wind or snow may physically stress plants and break limbs.

Common Witch-hazel

Hamamelis virginiana

Commonly available at drug stores in a variety of facial products, this uncommonly planted native shrub or small tree is one of Iowa's most peculiar native species. While most trees bloom with flowers in the spring, witch-hazel puts on its flowering show in the fall after most species have lost their leaves. Very distinct yellow flowers emerge and fill the air with a unique fragrance. The following year, small brown pods develop and forcibly eject shiny seeds up to 20 feet from the parent plant. Note that the non-native witch-hazel (*Hamamelis vernalis*) blooms in the spring and maintains a smaller form at 8-12 feet.

PLACE IT

Witch-hazel grows in average, medium moisture, well-drained soils. It can be planted in full sun or part shade but does better with some shade as the plant occurs naturally under tall trees within a forest.

FIND IT

Grows natively on moist wooded slopes typically in northeast Iowa and the eastern edge of central Iowa.

IDENTIFY IT



Grows as a multi-stem shrub or can be pruned to maintain a tree-like shape that will have a broad, open crown.

Height: 15-20 feet

FLOWERS



Showy, yellow flowers appear as thin, thread-like ribbons twisted together. Blooms in late fall.

LEAVES



Single leaves alternate along the branch and are broadly oval to nearly round. Wavy or large, rounded teeth appear along the leaf edge. Leaf tip is pointed to round.

SEEDS/FRUIT



A hard, elliptical capsule that starts green and matures to a light brown. The seeds mature one year after pollination. The shiny black seed is forcibly ejected 10 to 20 feet.

WILDLIFE & POLLINATORS

With fall-blooming flowers, witch-hazel provides an important source of nectar and pollen when other flowers have stopped blooming. Witch-hazel is also the larval host for the witch-hazel dagger moth. The seeds appear to be eaten by a variety of birds such as turkey. The branching structure provides nesting habitat for birds.

CONCERNS

No major pest or disease concerns.



Dogwood, Gray

Cornus racemosa

This shrub forms thickets from rhizomes, or underground stems, making it an excellent choice for creating a dense undergrowth layer. However, it may be impractical for a formal planting. The shrub adapts to different conditions. While it is native, it can become quite persistent in some areas.

PLACE IT

Gray dogwood acclimates well to moist or dry soils and is tolerant of air pollution. It is useful in windbreaks in homesteads or roadsides, or as natural screens in either rural settings or urban parks.

FIND IT

Frequent in moist woodlands or along ponds, though its tolerance for dry sites allows it to also grow along bluffs or other rocky areas.

IDENTIFY IT



Multi-stemmed shrub grows irregular branches and often grows into thickets
Height: 10-15 feet.

FLOWERS

Small, white flowers are born in open, dome-shaped clusters called cymes.

LEAVES

Lance-tipped leaves are simple and grow opposite one another. Leaf veins trace the outline or outer margin of the leaf.

SEEDS/FRUIT

Berry-like fruits called drupelets form in late spring and are white with a bluish tint.

WILDLIFE & POLLINATORS

Berries are enjoyed by birds and small mammals in the summer months. The flowers attract butterflies. The shrub provides good cover for wildlife.

CONCERNS

No serious pest or disease issues.

Dogwood, Redosier

Cornus sericea

Versatile shrubs best known for showy, bright-red twigs, earning it the alternative name of “red twig dogwood.” It is a great choice for adding visual interest in the winter months. Red color develops in late fall and winter. Spring and summer twigs are less colorful and may lose all red color entirely. Some people like to use the twigs for winter decorative displays.

PLACE IT

Redosier dogwood can be used as a hedge, in a windbreak, or as a rain garden component. Fibrous roots can help control erosion on sensitive sites.

FIND IT

Frequent in moist woodlands or along ponds.



Multi-stemmed and broadly round.

Height: 7-9 feet

FLOWERS



Small, white flowers are born in open, flat clusters called cymes.

LEAVES

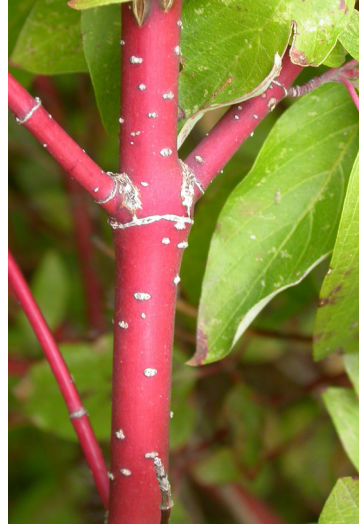


Lance-tipped, oval leaves are simple and grow opposite one another. Leaf veins trace the outline or outer margin of the leaf.

SEEDS/FRUIT



White berries, called drupelets, form in late spring. Fruit may have a bluish hue.



Attractive red twigs stand out all year long, and especially against white snow.

WILDLIFE & POLLINATORS

Berries are enjoyed by birds and small mammals. The plant attracts butterflies. The shrub provides good cover for wildlife.

CONCERNS

Plants are somewhat susceptible to bagworms and cankers.

Highbush Cranberry

Viburnum opulus var. *americanum*
(syn. *trilobum*)

Tall shrubs are showy in spring when they are covered in lacey-white flowers, lovely in the fall with purple to amber foliage, and attractive through the winter with bright red berries that persist. The shrub is not a true cranberry, but its fruits resemble its namesake. Most plants found at nurseries are a European form and grow inedible fruit. If you wish to have the native variety with edible fruit, look for the true North American species *Viburnum opulus* var. *americanum*.

PLACE IT

Moist soils make a good home for cranberry viburnums. These shrubs can be used as hedges for screening and windbreaks or as specimen plants in the landscape.

FIND IT

Moist to wet lowland woods, edges of lakes, roadsides, and pastures are typical locations for highbush cranberry.

IDENTIFY IT



FORM

Multi-stemmed shrub with dense, arching stems that create a round form.
Height: 8-15 feet

FLOWERS



Flat, white clusters of flowers are called cymes. An outer ring of larger white flowers encircles small inner flowers.

LEAVES



Simple leaves with three lobes grow opposite one another.

SEEDS/FRUIT



Bright red fruit, called drupelets, hang in clusters.

WILDLIFE & POLLINATORS

The fruit of Highbush Cranberry provides an excellent source of food in the winter for both birds and small mammals. Many birds prefer to eat the fruit after at least one freeze-thaw cycle, which makes the fruit softer and more palatable. The shrub provides excellent cover for wildlife.

CONCERNS

No serious pest or disease problems.

Nannyberry

Viburnum lentago

Nannyberry can be found as a shrub or small tree and is native throughout most of the state. Its brilliant red foliage in the fall and white flowers in the spring makes it an attractive plant across the seasons. Sometimes referred to and sold as “viburnum” from its scientific name.

PLACE IT

Well-drained areas in full sun are suitable for this viburnum. It establishes well as an ornamental or along roadsides. Shrubs will naturalize by suckering unless managed.

FIND IT

Moist, rocky, and lowland woods are typical locations for this shrub.

IDENTIFY IT



Large, upright shrubs produce multiple stems. It can also occur as a single-stemmed, small tree.

Height: 10-25 feet

FLOWERS



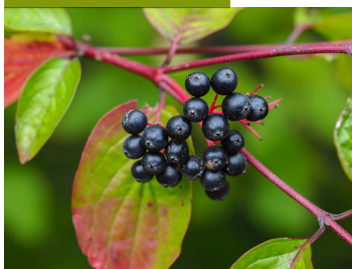
Clusters of small, flat-topped white flowers called cymes grow in clusters.

LEAVES



Smooth, somewhat glossy, narrow leaves have toothed edges and grow opposite one another. Tips of leaves come to sharp, tapered points.

SEEDS/FRUIT



Berry-like drupelets form in clusters starting out green, turning yellow-red, and transitioning to blue-black.



WILDLIFE & POLLINATORS

Fruits persist on shrubs into winter and are an important dormant season food source. Nectar and pollen from these plants are enjoyed by bees and other pollinators.

CONCERNS

No major disease or pest issues, but it can develop powdery mildew.

Wild Plum

Prunus americana

Also called American plum, this shrub or small tree is native to all of Iowa. It is one of the first to flower in the spring, making it an excellent choice for pollinators seeking food after a long winter. The fruits are sweet if picked at the peak of ripeness and make great jams or jellies.

PLACE IT

While shrubs grow best on dry to moist sites, they can tolerate brief wetness. Plant in areas that allow spreading or a site that will be maintained to manage suckering.

FIND IT

Sandy or rocky woodlands, streamsides, and fencerows are common locations for American plum. It is often associated in hardwood forests and occasionally in savannas.

IDENTIFY IT



Dense thickets of thorny, multiple stems that spread through suckers.
Height: 10-20 feet

FLOWERS



Showy, white flowers with five petals are fragrant and grow in clusters called umbels. Flowers appear before leaves.

LEAVES



Narrow, oval to oblong oval leaves are sharply toothed along the leaf edge.

SEEDS/FRUIT



Small red to purple plums form throughout the spurred canopy in late summer. A single, hard seed is contained inside.



American plum grow suckers and can form dense thickets.

WILDLIFE & POLLINATORS

Numerous wildlife consume its sweet fruits. Dense plum thickets make good shelter, cover, and nesting habitat for birds. Honeybees are this plant's primary pollinator.

CONCERNS

Black knot fungus or tent caterpillars may present occasional problems.

Smooth Sumac

Rhus glabra

This shrub spreads to form large thickets through underground root suckers. It is a common sight along roadways, in open fields, and along fencerows. The leaves and seeds turn a beautiful red color in the fall, offering a pleasing aesthetic at that time of year.

PLACE IT

Moist to dry well-drained soils are most suitable for sumac. It can tolerate some drought stress and erosion. Plant in locations where suckers can be managed, and be careful when adding to areas where it can escape cultivation, as it can be weedy in prairies or other natural spaces.

FIND IT

Open areas including roadsides, pastures, and prairies are typical places to find sumac.

IDENTIFY IT



Irregularly-shaped shrubs with an upright stature and stout branches. Forms dense thickets.

Height: 10-20 feet

FLOWERS



Male and female flowers occur on separate plants. Flowers are pyramidal in shape and yellow-green in color.

LEAVES



Large, compound leaves accommodate up to 27 leaflets and are also smooth and glossy.

SEEDS/FRUIT



Reddish, hairy, berry-like drupelets form in erect clusters on female plants and persist into winter.

WILDLIFE & POLLINATORS

Fruits persist on shrubs into winter and are an important dormant season food source. Male plants provide nectar and pollen while female plants provide nectar only for bees and other pollinators. Sumacs as a whole are an important larval host for a variety of butterflies and moths.

CONCERNS

No serious pest or disease issues. Does spread aggressively through underground roots.

LARGE TREES

COMMON NAME	SCIENTIFIC NAME	FLOWER COLOR	FALL COLOR	MOISTURE
Box Elder	<i>Acer negundo</i>	yellow/green	Yellow	wet, mesic
Silver Maple	<i>Acer saccharinum</i>	red/yellow	Yellow-green	wet, mesic
Sugar Maple	<i>Acer saccharum</i>	yellow	Yellow, orange, red	mesic
Ohio Buckeye	<i>Aesculus glabra</i>	yellow	Orange to red	mesic
River Birch	<i>Betula nigra</i>	brown/green	Dull yellow	wet, mesic
Shagbark Hickory	<i>Carya ovata</i>	yellow/green	Yellow to brown	wet, mesic, dry
Common Hackberry	<i>Celtis occidentalis</i>	brown/green	Pale yellow	wet, mesic, dry
Honey Locust	<i>Gleditsia triacanthos</i>	yellow	Yellow	mesic, dry
Kentucky Coffeetree	<i>Gymnocladus dioicus</i>	white	Yellow	wet, mesic
Black Walnut	<i>Juglans nigra</i>	yellow/green	Yellow	wet, mesic
Red Mulberry	<i>Morus rubra</i>	green	Yellow	mesic
American Sycamore	<i>Platanus occidentalis</i>	yellow/red	Tan to brown	wet, mesic
Eastern Cottonwood	<i>Populus deltoides</i>	red/green	Pale yellow	wet, mesic
Quaking Aspen	<i>Populus tremuloides</i>	green/brown	Bright yellow/gold	mesic
Bigtooth aspen	<i>Populus grandidentata</i>	brown/green	Golden yellow	mesic
Black Cherry	<i>Prunus serotina</i>	white	Yellow to orange	mesic, dry
White Oak	<i>Quercus alba</i>	yellow/green	Burgundy	mesic, dry
Swamp White Oak	<i>Quercus bicolor</i>	yellow/green	Yellow-brown	mesic, wet
Bur Oak	<i>Quercus macrocarpa</i>	yellow/green	Yellow-brown	mesic, dry
Pin Oak	<i>Quercus palustris</i>	yellow/green	Scarlet to brilliant red	wet, mesic
Red Oak	<i>Quercus rubra</i>	yellow/green	Red	mesic, dry
American Basswood (Linden)	<i>Tilia americana</i>	white/yellow	Golden yellow	mesic
American Elm (blight-resistant variety)	<i>Ulmus americana</i>	red/green	Golden yellow	wet, mesic, dry
Red Elm	<i>Ulmus rubra</i>	green	yellow-brown	wet, mesic, dry

HEIGHT	BLOOM TIME	LIGHT NEEDS	HARDINESS ZONE	NATIVE TO IOWA	SALT TOLERANCE	HIGH POLLINATOR/ INSECT VALUE
30-50'	April-May	Full Sun	3-9	X	Moderate	
50-80'	March-April	Full Sun to Part Shade	3-9	X	Tolerant	
60-75'	April-June	Full Sun to Part Shade	4-8	X	Moderate	X
20-40'	May	Partial Sun	4-7a	X	No info. available	
40-70'	April-May	Full Sun to Part Shade	4-7	X	Sensitive	X
60-80'	April-June	Full to Part Sun	4-8	X	Moderate	X
40-60'	April-May	Full Sun to Part Shade	2-9	X	High	X
70-80'	May-June	Full to Part Sun	3-8a	X	High	X
60-75'	May-June	Full Sun to Part Shade	3-8	X	High	X
50-75'	May-June	Full Sun to Part Shade	4-8	X	Sensitive-Moderate	X
30-50'	March-April	Full Sun to Part Shade	5-8	X	No info. available	X
75-100'	April	Full Sun	4-9	X	High	X
75-100'	March-May	Full Sun	2-9	X	Moderate	X
40-50'	April	Full Sun to Part Shade	1-7	X	Moderate	X
60-80'	April	Full Sun	2-5	X	Moderate	
50-70'	May-June	Full Sun to Part Shade	3b-9a	X	Sensitive	X
50-80'	May	Full Sun to Part Shade	5-8	X	Tolerant	X
50-70'	April	Full Sun	3-8	X	High	X
70-80'	April	Full Sun to Part Shade	3-8	X	High	X
60-70'	April	Full Sun	4-8	X	Sensitive	X
60-70'	May	Full Sun to Part Shade	4-8	X	Tolerant	X
70-80'	July-August	Full Sun to Part shade	3-8	X	Tolerant	X
70-80'	March-April	Full Sun to Part Shade	4-8	X	Moderate	X
40-60'	April to May	Full sun	3-9	X	No info. available	

UNDERSTORY TREES

COMMON NAME	SCIENTIFIC NAME	FLOWER COLOR	FALL COLOR	MOISTURE
Cockspur Hawthorn	<i>Crataegus crus-galli</i>	white	Orange to scarlet	mesic
Downy Hawthorn	<i>Crataegus mollis</i>	white	Orange to scarlet	wet, mesic
Eastern Redbud	<i>Cercis canadensis</i>	pink	Yellow-green	mesic
Flowering Crabapple	<i>Malus spp.</i>	white/pink/ magenta	yellow/orange/red	mesic
Ironwood	<i>Ostrya virginiana</i>	red-brown/green	Yellow	mesic
Serviceberries	<i>Amelanchier spp.</i>	white	Orange to red	wet, mesic, dry

CONIFERS

Arborvitae	<i>Thuja occidentalis</i>	N/A	N/A	mesic
Bald Cypress	<i>Taxodium distichum</i>	N/A	Brown, copper, orange	wet, mesic
Balsam Fir	<i>Abies balsamea</i>	N/A	N/A	mesic, dry
Concolor Fir	<i>Abies concolor</i>	N/A	N/A	mesic, dry
Eastern Red Cedar	<i>Juniperus virginiana</i>	N/A	Maroon purple	Dry
Eastern White Pine	<i>Pinus strobus</i>	N/A	N/A	mesic, dry
Norway Spruce	<i>Picea abies</i>	N/A	N/A	mesic, dry

SHRUBS

Buttonbush	<i>Cephalanthus occidentalis</i>	white	Yellow	wet, mesic
Gray Dogwood	<i>Cornus racemosa</i>	white	Maroon-purple	mesic, dry
Redosier Dogwood	<i>Cornus sericea</i>	white	Orange-red to purple	wet, mesic
American Hazelnut	<i>Corylus americana</i>	yellow/brown	Golden with red	mesic, dry
Witchhazel	<i>Hamamelis virginiana</i>	yellow	Yellow, orange	mesic
Smooth Sumac	<i>Rhus glabra</i>	lime/yellow	Scarlet red	mesic, dry
Elderberry	<i>Sambucus canadensis</i>	white	Golden yellow	wet, mesic
Nannyberry Viburnum	<i>Viburnum lentago</i>	white	Yellow, orange, purple	mesic, dry
Highbush Cranberry	<i>Viburnum opulus var. americanum</i>	white	Red to purple	wet, mesic, dry
American Plum	<i>Prunus americana</i>	white	Pale yellow	mesic, dry

HEIGHT	BLOOM TIME	LIGHT NEEDS	HARDINESS ZONE	NATIVE TO IOWA	SALT TOLERANCE	HIGH POLLINATOR/ INSECT VALUE
20-30	May-June	Full Sun	4-8	X	High	X
20-30'	May-June	Full Sun	4-8	X	High	X
20-30'	May-June	Full Sun to Shade	4-8	X	Sensitive	X
varied	April	Full sun	4-7	X	Tolerant	X
25-40'	April	Full Sun to Part Shade	3-9	X	Sensitive-Moderate	X
15-25'	April-June	Full Sun to Part Shade	4-8	X	Moderate	X
varied	N/A	Full Sun to Part Shde	2-7		Moderate	
50-70'	N/A	Full Sun to Part Shde	4-9		High	
40-70'	N/A	Full Sun to Part Shde	3-7		Sensitive-Moderate	
30-50'	N/A	Full Sun	3-7		Sensitive-Moderate	
40-50'	N/A	Full Sun	2-9	X	Tolerant	
50-80'	N/A	Full Sun to Part Shade	3-8	X	Sensitive	
60-80'	N/A	Full Sun to Part Shade	3-7		Moderate	
6-15'	June-August	Full Sun	5-10	X	No info. available	X
10-15'	May-June	Full Sun to Part Shade	4-8	X	High	X
7-9'	May-June	Full Sun to Part Shade	3-10	X	High	X
6-12'	March-April	Full Sun to Part Shade	4-10	X	High	X
15-20'	October-December	Full Sun to Part Shade	4-8	X	No info. available	X
10-20'	June-July	Full Sun to Part Shade	2-9	X	Tolerant	X
9-12'	June-August	Full Sun to Part Shade	3-8	X	High	X
10-25'	May-June	Full Sun to Part Shade	2-8	X	Tolerant	X
8-15'	May to June	Full Sun to Part Shade	2-7	X	High	
10-20'	May-June	Full Sun to Part Shade	3-8	X	Tolerant	X

GLOSSARY

We have made an effort to avoid using technical botanical terms in this guide or have defined them within the text. Despite our good intentions, some botanical terms were included or could use additional clarification. Other terms included below are not in this book, but are commonly referenced in the world of trees, shrubs, and plants. They are included here for your reference.

Acute: Sharp-pointed.

Allelopathy: The suppression of growth of one plant species by another through release of toxic substances.

Alternate: Leaves that are staggered, not placed directly across from each other on the twig.

Anthracnose: A group of fungi that cause dieback and sometimes death to various species, such as ash, dogwoods, sycamores, oaks, and maples.

Aromatic: With fragrant smell; sometimes only if broken or crushed.

Axil: The area or angle formed between the base of an organ and the structure from which it originated, such as between the leaf base and the stem.

Blade: The flat part of a leaf or leaflet, characteristic of broadleaf trees.

Bract: Modified leaf part that typically occurs at the base of a flower or leaf.

Broadleaf: A type of tree with leaves which are flat and thin, and generally shed annually.

Bud scar: Marks remaining after bud scales are dropped in the spring.

Bipinnate: Twice pinnately compound.

Bract: A reduced leaf or scale, typically below a flower stalk or group of flowers, but it also can refer to small leaves on a stem.

Cambium: A single layer of cells in a tree's trunk that produce new growth of wood and bark.

Catkin: Slim, cylindrical flower cluster, with inconspicuous or no petals, usually wind-pollinated but sometimes insect-pollinated.

Clingstone: Describes any of various stone fruits (e.g. plum, peach) with flesh that adheres strongly to the pit.

Compound leaf: leaves which are divided into distinct leaflets.

Conifer: A cone-bearing tree (think evergreens such as pine and spruce).

Cordate: Heart-shaped.

Cross-pollination: fertilization between genetically compatible trees for better fruit, often resulting in superior offspring.

Crown: Branches, twigs, buds, leaves, flowers and fruit: the form or shape of the tree.

Cultivar: Abbreviation of ‘cultivated variety’, produced by plant breeders and the nursery industry to perpetuate a novel trait within a particular plant species or hybrid (i.e. large flower, different color flower, variegated foliage, height, amount of foliage or others).

Cyme: a flower cluster with a central stem where the central flowers open first followed by the peripheral flowers.

Deciduous: Shedding all leaves annually.

Drip line: An area located directly under the outer circumference of the tree branches.

Drupe: A fleshy fruit that contains a single seed. Examples include cherry, peach, olive.

Elliptic: A circular shape which is widest about the middle.

Entire: A smooth leaf margin, lacking teeth on leaf edges.

Evergreen: Trees with needles or leaves that remain alive and on the tree through the winter and into the next growing season (e.g. pine, cedar, azalea).

Exfoliate: peeling in shreds or thin layers, as bark from a tree.

Fascicle: A cluster or bundle of conifer leaves (needles).

Freestone: A fruit stone to which the flesh does not cling.

Fruit: Structure which bears the seeds.

Growth habit: The general mode of plant growth used to describe the overall shape of a tree.

Glabrous: Smooth, in the sense of not possessing hairs.

Glaucous: Covered by a white or pale, often waxy, bloom.

Habitat: The place where a plant usually grows, e.g., dry, moist, well-drained, sandy, etc.

Hardiness zone: A plant can be expected to grow in the zone’s temperature extremes, as determined by the lowest annual temperature. Other conditions such as moisture, soil, and wind might affect the availability of individual plants.

Heartwood: The area next to the pith in a stem, composed of dead cells and serves as support.

Inner bark (phloem): Conducts usable food from the leaves to the cambium to nourish it or to storage areas in the wood.

Lanceolate: Lance-shaped, broadest below the middle, long-tapering above the middle, several times longer than wide.

Leaf: Stalk and blade of hardwoods: needles and scales of conifers.

Leaflet: Smaller leaf units which together form a compound leaf. Leaflets may resemble leaves, but differ principally in that buds are not found in the axils of leaflets, and that leaflets all lay in the same plane.

Leaf edge: also called the leaf margin. The side of the leaf, which can be smooth, serrated, doubly serrated, lobed, etc. and can help identify the tree.

Leaf scar: The mark left on the twig where the leaf was previously attached.

Lenticel: Openings in bark and on the outside of fruits of some trees and shrubs that allow gases to be exchanged between air and the inner tissues of a plant. Lenticel size and shape varies between species of trees and shrubs. Lenticels often appear as dots or lines on twigs and/or bark, such as those of white birch or cherry trees.

Linear: Very long and narrow, with nearly or quite parallel margins.

Lobe: Any segment or division of a leaf, particularly if blunt.

Margin: The edge of a leaf.

Medullary or wood rays: These rays radiate out from the center of the tree, and serve in lateral conduction and as food storage areas. These are most visible in a cross-sectional view of the tree trunk.

Mesic: An environment or habitat containing a moderate or well-balanced amount of moisture.

Native: Inherent and original to a geographic area. Plants are generally considered to be native to Iowa if they were found in the area prior to Euroamerican settlement.

Nerve: Same as a vein.

Node: The point along a stem which gives rise to leaves, branches, or inflorescences.

Oblong: Several times longer than wide with nearly parallel, or fully parallel sides.

Opposite: Two or three leaves that are directly across from each other on the same twig.

Outer bark: The area of the tree trunk composed of dead cells. It insulates and protects inner tissues from disease infections and drying.

Oval: Broadly elliptical.

Ovate: Egg-shaped.

Palmate: Radiately lobed or divided, with individual segments originating at a common point or nearly so. Leaves are arranged like fingers on the palm of a hand.

Perennial: A plant which lives for more than two years.

Persistent: Deciduous leaf blades that remain on the tree for more than a year.

Petiole: The leaf stalk that connects the leaf to the twig.

Phloem or inner bark: Conducts usable food from the leaves to the cambium to nourish it or to storage areas in the wood.

Photosynthesis: The process that occurs in the leaves, producing energy from sunlight combining carbon dioxide from the air and water from the soil to produce carbohydrates. Oxygen is released from plants in the process. This process creates the sources of food and energy necessary for growth and respiration of plants.

Pinnate: Leaf structure that is compound, having leaflets arranged on either side of the stem, typically in pairs opposite one another.

Pistillate: The part of the leaf that contains female portions of flowers, or the pistils.

Pith: The central, soft part of a twig.

Pollination: Transfer of pollen from the anther of a stamen to the stigma of a pistil, resulting in fertilization. This can occur either on a single plant (self-pollination) or between different plants. Insect pollination and wind pollination are two examples of mode of pollination.

Pubescent: Hairy.

Pungent: Very sharp; acrid taste or smell.

Raceme: A flower cluster with separate flowers attached by single stalks at equal distance along the central stem. Flowers at the base develop first and open in succession.

Reforestation: The planting of trees (shrubs and ground cover) following fire, logging, farming, drought, pests, or disease or some other type of significant disturbance event.

Rhizome: An underground stem, typically horizontal.

Riparian zone: An area of ecological transition between the aquatic zone and the upland zone.

Roots: Root hairs absorb water and mineral salts from the soil. Larger roots anchor the tree and store nitrogen and carbohydrates.

Samara: Winged fruit. For example, the fruit of maples (wings enable spinning of fruit like a helicopter when dropped).

Sapwood: The area on the outer side of the trunk, which contains the sap conducting tubes. Sapwood is typically lighter in color, but darkens with age as it becomes heartwood. Heartwood and sapwood together comprise the xylem.

Seed: That part of the fruit capable of germinating and producing a new plant.

Self-fertile/self-pollinating: Fertility through an individual plants own pollen; resulting in development of fertile fruit without a second tree being present.

Serrate: With sharp, typically forward-pointing, teeth.

Simple leaf: A single leaf blade with a bud at the base of the leaf stem.

Sinus: Indentation between lobes on a leaf.

Specimen tree: A tree placed so people can gain the greatest enjoyment for the color, texture, scent, or other pleasures it provides.

Spurs: Stubby, often sharp twigs.

Stipule: An appendage or bract situated at either side of a leaf axil.

Teeth: Notches on the outer edge of a leaf.

Terminal bud: Bud typically located at the end of a plant stem and is where the stem grows out from each year.

Tree: A woody plant, generally single-stemmed, that reaches a height of more than 15 feet at maturity. A tree has three major parts: roots, trunk and the crown.

Trunk: The main body of the tree.

Vegetative: Plants or plant parts that are not involved in flowering or seed/fruit production.

Vein: A wire-like bundle of tissue in a leaf or other plant part - also referred to as a "nerve".

Xylem: The area of the tree trunk that is comprised of the heartwood and sapwood and conveys water and minerals to the rest of the plant.

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americanum (syn. *trilobum*) ... 114

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Wild Plum
Prunus americana 118

Smooth Sumac
Rhus glabra 120

Endnotes

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Practices such as **Integrated Roadside Vegetation Management (IRVM)** can benefit pollinators and their habitat while meeting the functional requirements of roadside vegetation. IRVM is a management system that promotes the use of hardy and adapted native grasses and wildflowers in combination with practices such as mowing, burning and the targeted use of herbicides to control weeds. Due to their extensive root systems, native plants help improve water quality and provide excellent erosion control benefits.

The Iowa Living Roadway Trust Fund (LRTF) was established by the Iowa General Assembly in 1989 and is administered by the Iowa Department of Transportation. Through grants to county, city and state agencies, the LRTF's mission is to provide assistance to implement IRVM. The Iowa Department of Transportation, with support from the Living Roadway Trust Fund, has planted more than 100,000 acres of state and county road rights-of-ways with native plants.



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