Common Native Trees of Virginia

VIRGINIA DEPARTMENT OF FORESTRY

Tree Identification Guide

Virginia Department of Forestry

www.dof.virginia.gov

Suggested Retail Price $5.00

HOLIDAY LAKE
FORESTRY CAMP

APPOMATTOX - BUCKINGHAM STATE FOREST

Educating Our Youth About Virginia's Forests

Each summer, Holiday Lake Forestry Camp introduces teens to our state's forest resources and their management. The camp is sponsored by the Virginia Department of Forestry, in cooperation with other agencies, organizations and businesses. Sponsorships enable all campers to participate at a minimal personal cost.

Forestry Camp is designed for students with an interest in natural resource conservation who may want to explore forestry and other natural resource careers. Educators may also participate in camp, earning recertification points and receiving Project Learning Tree training.

Forestry Camp is a hands-on, field-oriented experience. It takes place at Holiday Lake 4-H Educational Center, located in the 20,000-acre Appomattox-Buckingham State Forest. The working forest provides a vast outdoor classroom for interactive learning, with instruction from professional foresters, biologists, and other resource specialists. Subjects include forest ecology and management; timber harvesting and reforestation; tree identification and measurement; wildlife management and habitat improvement, and environmental protection. Additional activities include field trips, demonstrations, exploratory sessions and competitions.

Nominations for Forestry Camp are accepted each year beginning in January. For more information, visit the Virginia Department of Forestry's Web site:

www.dof.virginia.gov

Foreword

Welcome to the most up-to-date and accurate edition of the Common Native Trees of Virginia (a.k.a. the Tree ID book) ever published. Through the hard work of several dedicated employees of the Virginia Department of Forestry and the important contributions of others outside the Agency, this book – first published in 1922 – has been revised to make it more useful for students and others interested in correctly identifying the most common trees growing in the Commonwealth of Virginia. Because of their efforts, you now have the best tool for proper, basic identification.

To enhance your experience with this book, we have included a key that will enable you to quickly identify the tree species and reduce the amount of time spent searching the guide. You'll also find a range map for each of the species. And we've included information on Virginia's State Forests, where you can walk or hike the trails to see many of the species highlighted in the book.

Throughout the development of this edition of the Tree ID book, our focus was always on you – the end user. We hope you will agree that the resulting Common Native Trees of Virginia book more than meets your needs, and that it serves to further inspire your interest in and love of Virginia's forests.

Carl E. Garrison III

State Forester

Red Mulberry

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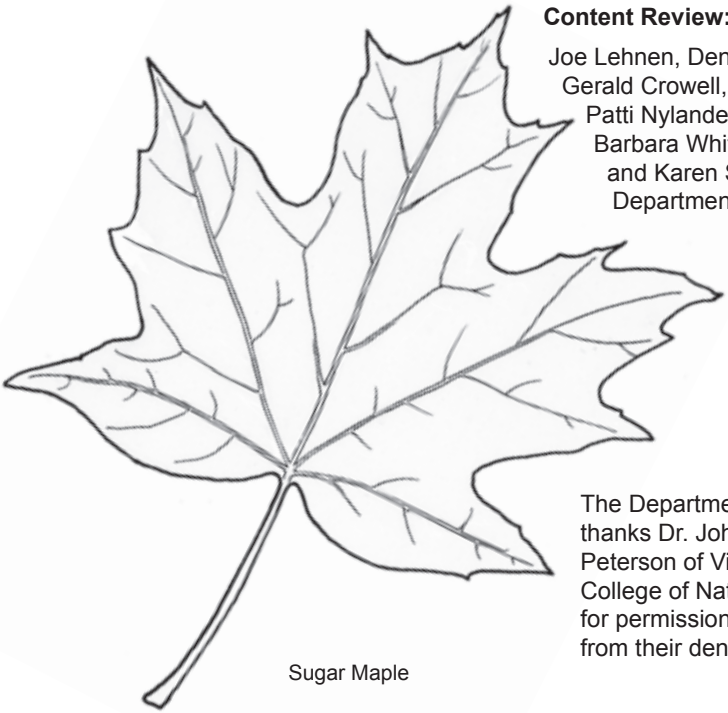

Sugar Maple

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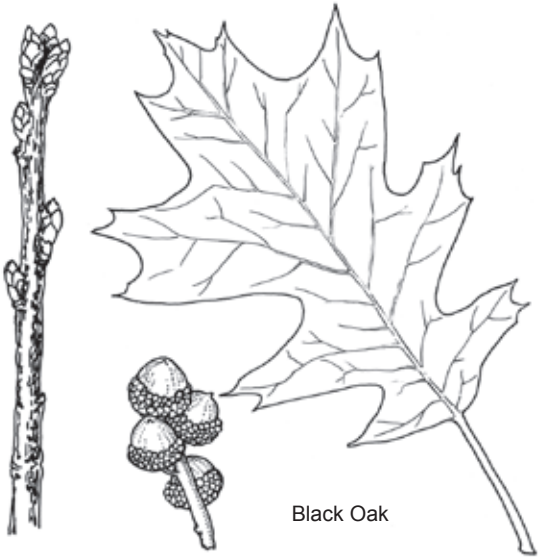


Black Oak

Chestnut Oak

Virginia's Forest Resources

Forests cover nearly two thirds of Virginia, and they are truly our "common wealth." Forests provide us with environmental, economic and cultural benefits that improve our quality of life. Forests filter our water, clean our air, moderate our climate, provide wildlife habitat, protect and enhance the soil, and offer recreational opportunities. They are scenic places for observing nature and renewing the spirit. Forests also provide thousands of products we use daily, such as lumber and paper, and thousands of jobs for our citizens.

A forest is much more than trees. It is an ecological system made up of all the organisms that inhabit it – from trees to mosses, and from birds to bacteria. All are interdependent, and the interactions among the living components of the forest and the physical environment keep a forest productive and self-sustaining for many years. Virginia has been called an "ecological crossroads," as both southern and northern ecosystems are found here. From the Cumberland Plateau to the Eastern Shore, an impressive array of plant and animal species inhabit a tremendous diversity of natural communities.

Forests are constantly changing. Sometimes the changes are swift, as a result of fire, ice, wind or timber harvest. At other times, the changes stretch across many years. Nearly all of the natural forests in Virginia have been extensively modified by human activities over hundreds of years. Most of the Piedmont and Coastal Plain forests were cleared for agricultural use in Colonial times. The mountains were cut over for charcoal, lumber and salvage of diseased trees through the early 1900s. Many sites were harvested or cleared several times for farms or pasture, then later abandoned, to be reforested over several generations. Nowadays, forests are much more likely to be managed with an eye toward the future. The Virginia Department of Forestry encourages landowners to manage their forests in a responsible and sustainable manner.

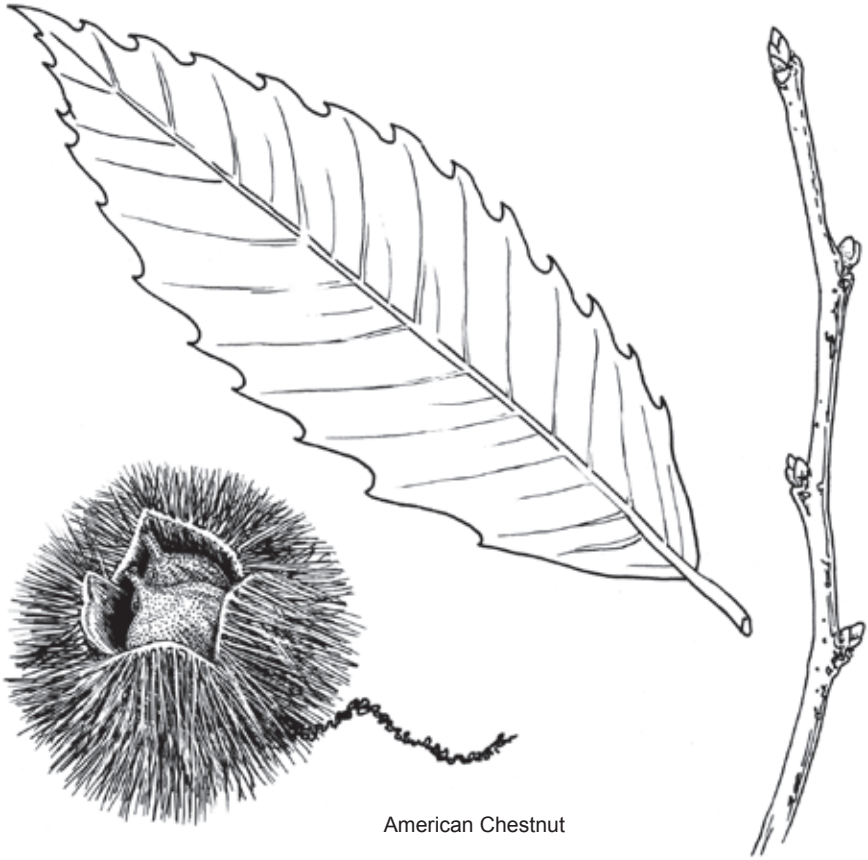
The greatest threat to our forests is the conversion of forest lands to other uses. Rapid population growth places a demand on our shrinking forest land base. Virginia loses more than 16,000 acres of forest land each year, mainly through conversion to home sites, shopping centers, roads and other developments. When forests are managed responsibly, harvesting of trees improves forest health or makes way for a new, young forest. In contrast, when land is developed, it will probably never be forested again. Land-use changes cause fragmentation of large parcels of land, as they are broken into smaller blocks for houses, roads and other non-forest uses. Fragmentation limits the options for forest management because the land units are smaller. It threatens those wildlife species that need sizable habitat free of constant disturbance and human competition. Forest land loss and fragmentation also threaten the scenic beauty of Virginia's natural landscape, which delights residents and attracts millions of tourists each year. Conserving the state's forest land base is a major focus of the Virginia Department of Forestry.

The Future Depends On You

Whether or not you own forest land, you use forest products, enjoy outdoor activities, depend on clean water and fresh air, and view wildlife. Here are some things you can do to help Virginia's forests:

- ▲ Learn as much as you can about natural resource issues.
- ▲ Shop responsibly; use resources wisely, and recycle.
- ▲ Support organizations that work to conserve and sustain forests and related resources.
- ▲ Encourage land-use planning and conservation easements.
- ▲ Promote sustainable management to maintain Virginia's working landscapes.
- ▲ Teach others about the value of our forests.

For more information about Virginia's forests, visit the Virginia Department of Forestry's Web site: www.dof.virginia.gov

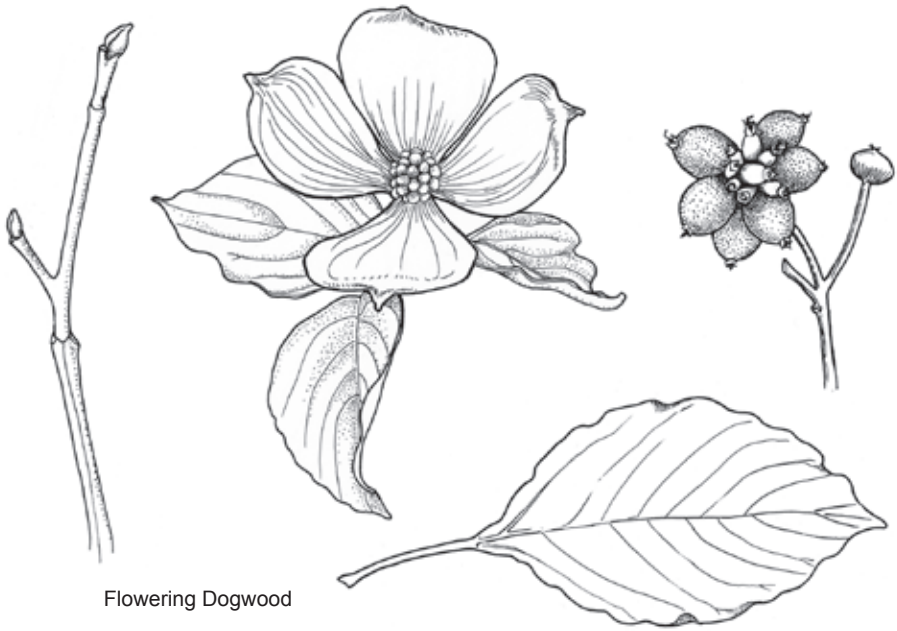


American Chestnut

How to Use This Book

This book describes the most common native tree species found in Virginia's forests. It is intended to be a beginning tool for tree identification, rather than a comprehensive listing or technical manual. Therefore, non-technical descriptions have been used whenever possible. The basic key provides a quick identification tool, minimizing the time spent searching for an unknown tree. The species descriptions are good for general reference, but individual trees may vary within a species. For example, tree height at maturity may vary a great deal because of the growing site, tree health, genetics, competition and other factors. Some more complete resources for tree identification are listed in the bibliography, and numerous other books and computer resources are available to enhance your study. At the back of this book, you can also find a list of State Forests and other places to study trees.

In this text, the most accepted common name is the primary heading for each species, with additional common names listed below it. The scientific name, which is consistent worldwide and most useful for true identification, is listed in the format of the International Code of Botanical Nomenclature: genus, species and author citation. The species' native range is indicated by the shaded section of the map; however, it is possible to find almost any tree growing outside its native range. For those desiring to learn more technical terms or clarify definitions, a glossary is included.



Flowering Dogwood

Identification of Trees

Many characteristics can be used to identify trees. These include overall size and shape of the tree; size, shape and arrangement of leaves; texture, color and shape of twigs and buds; color and texture of bark; and characteristics of fruit and flowers. Knowing the tree's natural range and typical growing sites is also helpful. Most people use a combination of several characteristics to identify trees.

When leaves are present, they are the most commonly used feature in identification. Leaves are either deciduous (shed annually) or evergreen (remaining on the tree for one or more years). Most broadleaved trees, such as oaks, maples and hickories, are deciduous. Most cone-bearing trees, such as pines, spruces, firs and hemlocks, and some broadleaf trees, such as American holly and live oak, are evergreen.

When a tree has shed its leaves, identification can be more difficult. You must then rely on the bark, twigs and buds, and any fruit or flower parts remaining on the tree to make identification. Knowing these characteristics will help you identify trees during the late fall, winter and early spring months.

A scientific key is a useful tool for identifying trees. The key in this book is dichotomous; that is, it gives the user two choices at each step. To use the key, always start with number one. Read both statements and choose the one that best fits your tree. Each choice you make will direct you to another numbered pair of statements. Continue to follow the numbers until you arrive at the name of a tree. Once you have the name, go to the page listed to see a picture and learn more information. It is most helpful to use this key in the field, where you can easily see features, such as the bark and the growing site. If you need to identify a tree and you don't have the key with you, take good notes or make sketches so that you can remember important features later. Keys are not perfect, and individual trees may vary. If you don't get a correct identification with the key, try again, as it is possible to make an incorrect choice at some stage in the process. If the tree simply will not "key out," it may be a non-native or less common species not covered in the scope of this book. You can find a more comprehensive key in most dendrology textbooks, or try the interactive online key at http://www.fw.vt.edu/dendro/forsite/key/intro.htm

The following illustrations show some of the characteristics you will need to observe as you use the key. In addition, the glossary at the back of this book should define any confusing or technical terms you find in the key.

Identification of Trees, continued

Parts, Types and Positions of Leaves

Needle-like
(White Pine)

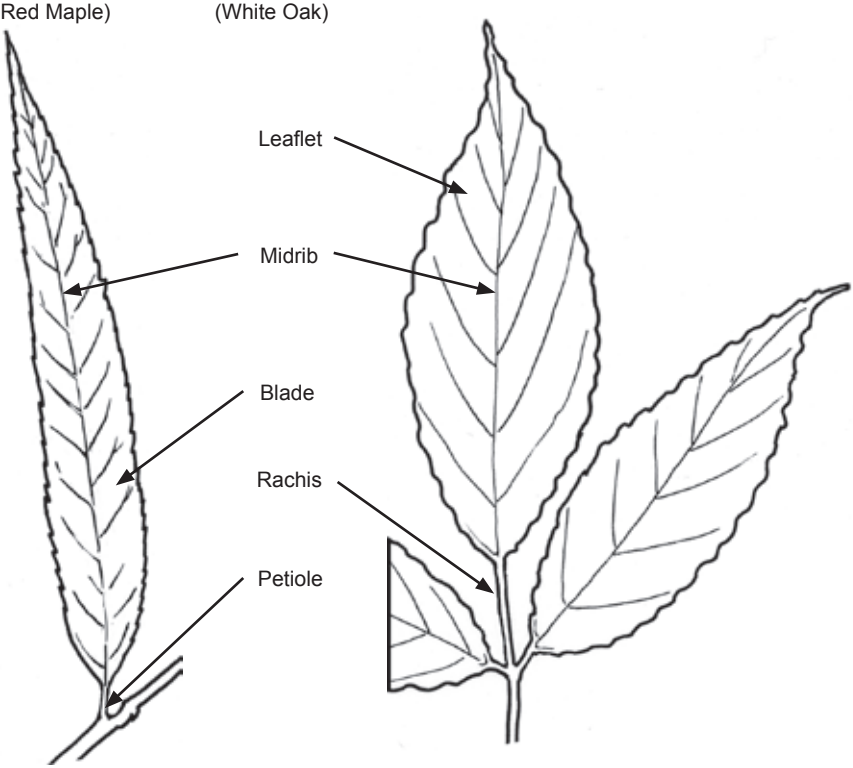
Scale-like
(Redcedar)

Palmately Lobed
and Veined
(Red Maple)

Pinnately Lobed
and Veined
(White Oak)

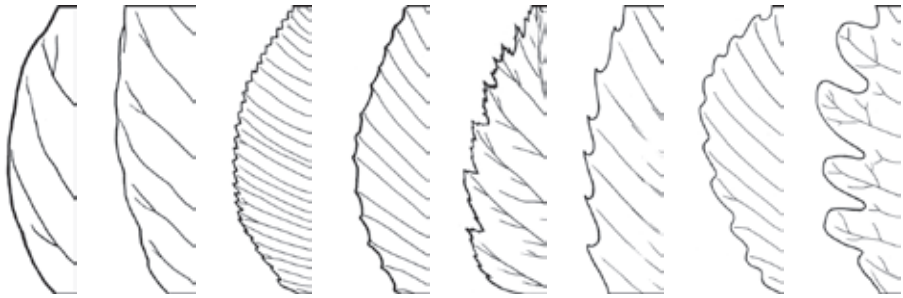
Palmately Compound
(Yellow Buckeye)

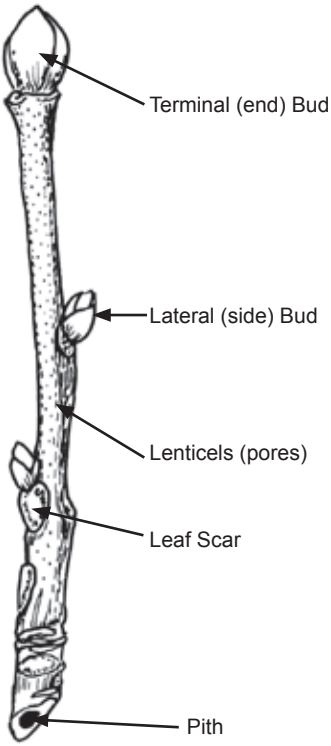
Pinnately Compound
(Green Ash)



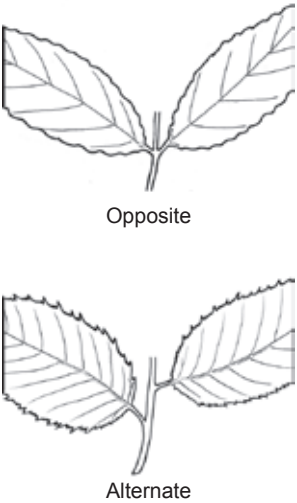
Identification of Trees, continued

Types of Leaf Margins





Leaf Placement



Landscaping With Firewise Tree Species

In Virginia, the expanding wildland-urban interface consists of many homes adjacent to fire-prone natural areas. To be “firewise” is to be adequately prepared for the possibility of wildfire. Firewise has many components including community design, escape routes and plans, construction materials and landscaping around a home.

The creation of defensible space is a landscape strategy for reducing the risk of damage from wildfires. Defensible space surrounding a home allows for easy access by firefighting equipment and personnel, but also increases the chance of a home surviving even if firefighters are unable to reach each home.

In high-risk areas, creating defensible space generally includes vertical and horizontal separation of plants surrounding a home. Branches of trees should be separated from plants beneath them by at least 10 feet. There should also be at least a 10-foot separation between branches of individual trees, and between branches and structures. Landscape plantings should be grouped into isolated landscape islands separated by less flammable materials such as maintained lawn, pathways or gravel. Any landscape beds next to a home should consist of sparse, low-growing ground cover separated from the home by gravel or stones with no flammable landscaping materials in contact with the home. Plant arrangement is one of the most important factors affecting the survivability of a home during a wildfire.

Although some plants are more fire-resistant than others, ***THERE ARE NO FIRE-PROOF PLANTS. UNDER EXTREME FIRE CONDITIONS, ALL PLANTS WILL BURN!*** A general flammability rating has been placed on the trees listed in this publication. These ratings can help you make sound landscaping choices and subsequently create a Firewise Landscape around your woodland home.

Flammability of the Species

EXTREME (not firewise): These species should be avoided in landscaping within 100 feet of your home.

HIGH (at-risk firewise): These species could be placed in the landscape beyond (greater than 50 feet) the defensible space surrounding your home.

MODERATE (moderately firewise): These species can be placed within the zone from 30 to 50 feet from your home. Routine maintenance is needed to keep the plant less flammable.

LOW (firewise): These species have no known characteristics of high flammability. These species are appropriate for placement within your defensible space.

For more information, visit www.firewisevirginia.org or contact your local VDOF office.

Key to Common Native Trees of Virginia

Always start with number one. Read both a and b, choose the one that best describes your tree, and go to the number where your choice directs you. Continue reading choices and following the numbers until you reach the name of a tree. Turn to the page indicated, and compare the picture and description to verify the tree's identity.

1 a. Leaves are needle or scale-like, go to 2.
b. Leaves are broad and flat, go to 14.

2 a. Needles at least 1 inch long, go to 3.
b. Needles less than 1 inch long or scale-like, go to 10.

3 a. Needles in groups of 5, and 3 to 5 inches long – Eastern White Pine, pg. 22.
b. Needles in groups of 2 or 3, go to 4.

4 a. Needles mostly in groups of 3, go to 5.
b. Needles mostly in groups of 2, go to 8.

5 a. Needles generally longer than 6 inches, go to 6.
b. Needles generally shorter than 6 inches, go to 7.

6 a. Needles 6 to 9 inches, cones 3 to 6 inches long – Loblolly Pine, pg. 24.
b. Needles 8 to18 inches, cones 6 to10 inches long – Longleaf Pine, pg. 25.

7 a. Needles 3 to 5 inches, yellow-green, stiff and twisted. Found in Appalachian mountain range – Pitch Pine, pg. 26.
b. Needles 4 to 8 inches, green to yellowish-green. Found in Coastal Plain – Pond Pine, pg. 28.

8 a. Needles 3 to 5 inches, dark yellow green, cones 1½ to 2½ inches long – Shortleaf Pine, pg. 23.
b. Needles less than 3 inches, go to 9.

9 a. Needles 1½ to 3 inches, yellow-green and twisted, cones 1½ to 3 inches long. Scaly bark on older trees, may be orange-brown on upper trunk and large limbs – Virginia Pine, pg. 27.
b. Needles 1½ to 2½ inches, dark green, and somewhat twisted, cones 2 to 3½ inches – Table Mountain Pine, pg. 29.

10 a. Most needles not scale-like, and at least ⅓ inch long, go to 11.
b. Most needles scale-like and less than ⅓ inch long, go to 13.

11 a. Needles 4-sided, sharp, and dark yellow-green, extending from the branch in every direction – Red Spruce, pg. 30.
b. Needles flat, extending only to the sides of the branch, go to 12.

12 a. Needles are deciduous, bark reddish brown, fibrous and shreddy. Found in Coastal Plain swamps or bottomlands – Baldcypress, pg. 32.
b. Needles not deciduous, with 2 parallel white lines on the underside of the

Key to Common Native Trees of Virginia, continued

needles. Found in western Piedmont and mountains – Eastern Hemlock, pg. 31.

13 a. Young needles prickly, up to ⅜ inch long, older needles scale-like, 1/16 inch long, bark tan to reddish brown and shreddy. Bluish fruit ⅛ inch in diameter – Eastern Redcedar pg. 35.
b. Needles scale-like, 1/16 to ¼ inch long and flattened against twig. Very fragrant – Northern White-cedar pg. 34 or Atlantic White-cedar pg. 33.

14 a. Leaves opposite, go to 15.
b. Leaves alternate, go to 25.

15 a. Leaves compound, go to 16.
b. Leaves simple, go to 19.

16 a. Leaves are pinnately compound, go to 17.
b. Leaves are palmately compound – Yellow Buckeye pg. 91.

17 a. Leaflets with large teeth, twig covered with whitish wax, bud covered with soft white hairs – Boxelder pg. 86.
b. Leaflets with small teeth, twig not covered with wax, bud not covered with hairs, go to 18.

18 a. Leaf scar crescent shaped; leaflets may or may not have tiny teeth – White Ash pg. 98.
b. Leaf scar D-shaped; leaflets have tiny teeth; often found near water – Green Ash pg. 99.

19 a. Leaves not lobed, go to 20.
b. Leaves lobed, go to 21.

20 a. Leaves less than 6 inches long, edges not lobed or toothed, bark blocky – Flowering Dogwood pg. 93.
b. Leaves more than 6 to 16 inches long, may be coarsely toothed, 3 lobed, or heart shaped – *INVASIVE* Royal Paulownia pg. 103.

21 a. Leaf edges toothed, go to 23.
b. Leaf edges not toothed but with wavy points, and leaf generally 5 lobed, go to 22.

22 a. Veins and petiole secrete milky white sap when broken, seed pod flat with a wing – *INVASIVE* Norway Maple pg. 104.
b. No milky white sap in petiole or veins, seed pod round with a wing – Sugar Maple pg. 87.

23 a. Leaves three-lobed, young stems and bark green with white stripes – Striped Maple pg. 90.
b. Young stems not green with white stripes, go to 24.

Key to Common Native Trees of Virginia, continued

24 a. Leaves three or five lobed with shallow sinuses, twigs odorless when scratched – Red Maple pg. 88.
b. Leaves five lobed with deep, rounded sinuses, green above and white or silvery below. Twig has bad odor when scratched – Silver Maple pg. 89.

25 a. Leaves compound, go to 26.
b. Leaves simple, go to 36.

26 a.Leaflets oval or oblong and less than 2 inches long, twigs have thorns, go to 27.
b. Twigs do not have thorns, go to 28.

27 a. Leaves singly compound, thorns in pairs on either side of buds, leaflet edge not toothed, deeply furrowed bark, and seed pods 2 to 5 inches long – Black Locust pg. 84.
b. Leaves singly or doubly compound, leaflet ½ to 1½ inch long and edge may be toothed, 2 to 4 inch thorns may be branched, and seed pods 8 to 15 inches long – Honeylocust pg. 83.

28 a. Leaves bipinnately compound, go to 29.
b. Leaves singly compound, go to 30.

29 a. Leaflets about ½ inch long, flowers look like pink pin cushions, bark rough but not furrowed, seed in bean-like pods 5 to 6 inches long- INVASIVE Mimosa pg. 102.
b. Leaflets 1 to 2 inches long, serrated or lobed, and with strong odor. Fruit yellow, berry-like, ¾ inch in diameter – *INVASIVE* Chinaberry pg. 106.

30 a. Most leaves with 11 or more leaflets, go to 31.
b. Most leaves with less than 11 leaflets, go to 33.

31 a. Leaves with 13 to 41 leaflets and just 2-4 teeth at base, foul smell when bruised. Terminal leaflet present, bark rough but not furrowed – *INVASIVE* Tree-of-Heaven pg. 101.
b. Leaflet margin finely toothed, tree produces large nuts, go to 32.

32 a. Leaves with 14 to 24 leaflets and no terminal leaflet. Dark brown, deeply furrowed bark. Round nut with thick green husk – Black Walnut pg. 39.
b. Leaves with 11 to 17 leaflets, bark light gray, oblong nut – Butternut pg. 40.

33 a. Most leaves with 5 (usually) or 7 leaflets, go to 34.
b. Most leaves with 7 or more leaflets, go to 35.

34 a. Bark slate gray, curled and peeling in vertical strips on trees larger than 6 inches in diameter; nut with thick husks – Shagbark Hickory pg. 42.
b. Bark with interlacing ridges, nut with thin husk – Pignut Hickory pg. 44.

35 a. Nuts with thick husks that split cleanly; large buds; tight interlacing ridged bark – Mockernut Hickory pg. 43.

Key to Common Native Trees of Virginia, continued

b. Nuts with thin husks that split partially; buds sulfur yellow – Bitternut Hickory pg. 41.

36 a. Leaves have lobes with or without teeth, or large rounded teeth appearing like a wavy margin, go to 37.
b. Leaves do not have lobes or margins as above, and may or may not be toothed or spined, go to 53.

37 a. Leaves are palmately veined, and toothed or wavy-margined, go to 38.
b. Leaves are pinnately veined, go to 41.

38 a. Leaves less than 4 inches long, coarsely toothed, lobes shallow if present, leaf white and hairy underneath – *INVASIVE* White poplar, p. 105.
b. Leaves not white underneath, lobes fairly obvious if present, go to 39.

39 a. Some leaves unlobed, others with several lobes, leaf base even, leaf rough. Fruit 1 to 1½ inch long, red or purple, bumpy. Bark brownish and scaly – Red Mulberry pg. 71.
b. Seeds contained in a bumpy or spiky ball on a long stem, go to 40.

40 a. Leaves 5 to 8 inches long and wide, with 3 to 5 large lobes, triangular and irregular teeth. Bark brown and green, but white where exterior bark flakes off. Seeds in a bumpy ball – Sycamore pg. 79.
b. Leaves star-shaped, with 5 to 7 lobes, very finely toothed. Bark on twigs has corky ridges. Seeds in a spiky ball – Sweetgum pg. 78.

41 a. Leaves with 4 to 6 lobes and a tulip-like shape. Buds “duck-bill” shaped. Bark light gray and furrowed lengthwise – Yellow-Poplar pg. 75.
b. Leaves not tulip-shaped, buds not duckbill-shaped, go to 42.

42 a. Leaf margin with very large rounded teeth, or lobes rounded and not bristle-tipped, go to 43.
b. Leaf lobe ends tipped with a tiny, soft bristle, go to 47.

43 a. Leaf margin has large, rounded teeth, appearing wavy, go to 44.
b. At least some of leaves deeply lobed, go to 45.

44 a. Leaves 4 to 8 inches long, bark with wide, coarse, deep furrows. Found mostly on ridge tops and dry slopes from Piedmont west – Chestnut Oak pg. 55.
b. Leaves 5 to 8 inches long, margin wavy or appearing widely toothed. Bark light gray and scaly. Found on flooded and moist soils from Piedmont east – Swamp Chestnut Oak pg. 56.

45 a. Leaves have two lobes (mitten-shaped), three lobes (turkey foot shaped), or no lobes, leaves have a spicy/sweet odor when crushed – Sassafras pg. 77.
b. Leaves have more than three lobes, go to 46.

Key to Common Native Trees of Virginia, continued

46 a. Leaf with 5 major lobes, middle lobes squared off, cap on acorn covers to ⅓ to ½ of nut. Bark reddish brown to gray, with scaly ridges. – Post Oak pg. 54.
b. Leaf with 7 to 9 lobes, deep sinuses, acorn cap covers ¼ of nut. Bark very light gray, in loose plates – White Oak pg. 53.

47 a. Leaf with 3 shallow lobes, or more club-shaped than lobed, go to 48.
b. Leaf with 3 to 7 well-defined lobes, go to 49.

48 a. Bark gray, not deeply fissured, leaves 2 to 4 inches long, acorn ½ inch long and less than ¼ covered by cap. Found in southeastern Virginia on moist sites – Water Oak pg. 65.
b. Bark dark brown to black and rough. Leaves 3 to 6 inches long, acorn ¾ inch long and ½ covered by cap. Occurs throughout Virginia on dry sites – Blackjack Oak pg. 63.

49 a. Sinuses between leaf lobes extend less than halfway to midrib, go to 50.
b. Sinuses between leaf lobes extend more than halfway to midrib, go to 51.

50 a. Leaves with 5 to 7 lobes, fuzzy underneath, bark black with rectangular or square ridges, inner bark orange – Black Oak pg. 61.
b. Leaves with 7 to11 lobes, bark gray with long pale ridges, inner bark reddish brown – Northern Red Oak pg. 59.

51 a. Leaves with 3 to 7 uneven lobes. Leaves hairy underneath. Leaf base rounded like the top of a bell. Bark dark brown to black and scaly – Southern Red Oak pg. 60.
b. Leaves with 5 or 7 lobes, leaf base not rounded, go to 52.

52 a. All leaves 5 lobed, sinus U-shaped, lower branches growing downward, acorn less than ½ inch long, often striped, and less than ¼ covered by cap – Pin Oak pg. 64.
b. Leaves 5 to 7 lobed, sinus C-shaped, lower dead branches often present, acorns ½ to 1 inch long, often with concentric rings at tip, and cap covers at least ½ of nut – Scarlet Oak pg. 62.

53 a. The leaf margin is toothed or spiny; teeth may be widely spaced or very tiny, go to 54.
b. The leaf margin is not toothed or spiny, go to 74.

54 a. The leaf has more teeth than veins, or has widely spaced sharp spines, go to 55.
b. The leaf has one tooth at the end of each vein, go to 63.

55 a. Leaves doubly toothed, with deeper notches regularly spaced, go to 56.
b. Leaves singly toothed or with sharp, spine-like teeth, go to 65.

56 a. Base of leaf uneven, with one side lower on the leaf stem than the other, go to 57.

Key to Common Native Trees of Virginia, continued

b. Base of leaf even on both sides of leaf stem, go to 59.

57 a. Twigs have 2 to 3 corky "wings," and bark of trunk is corky, leaf smooth above and hairy below, found in southeastern Virginia – Winged Elm pg. 69.
b. Twigs do not have corky wings, go to 58.

58 a. Leaves rough and sandpapery on underside but smooth on top, white and reddish brown layers in cross section of bark – American Elm pg. 67.
b. Leaves rough and sandpapery on top and underside, twigs and buds hairy, cross section of bark has brown layers only – Slippery Elm pg. 68.

59 a. Base of leaf wedge shaped, leaf roughly triangular, twigs and young bark reddish brown to dark brown. Bark peels into papery strips with light tan bark underneath. Found near bodies of water – River Birch pg. 45.
b. Base of leaf not wedge shaped and/or leaf not triangular, go to 60.

60 a. Crushed leaf and twig are aromatic, with smell of wintergreen, go to 61.
b. Crushed leaf and twig are not aromatic, go to 62.

61 a. Base of leaf is rounded or wedge-shaped, bark yellowish brown, papery and peeling – Yellow Birch pg. 46.
b. Base of leaf rounded, bark reddish brown to black, with distinct horizontal pores, becoming scaly when older – Sweet Birch pg. 47.

62 a. Bark gray, smooth and fluted (muscle-like). Small, multi-stemmed tree – American Hornbeam pg. 49.
b. Bark gray-brown and flaky. Small single-stemmed tree – Eastern Hophornbeam pg. 48.

63 a. Leaf less than 3 times long as wide, bark smooth and gray, brown buds up to 1 inch long, like pointed cigars – American Beech pg. 50.
b. Leaf length at least 3 times its width, teeth turned toward tip of leaf, go to 64.

64 a. Top and bottom of leaf smooth and hairless. One or two stems, generally not over 4 inches in diameter – American Chestnut pg. 51.
b. Bottom of leaf hairy, one nut per husk. Large shrub or small tree, often multi-stemmed and forming thickets – Alleghany Chinkapin pg. 52.

65 a. Leaf stem 2 to 4 inches long and flattened, go to 66.
b. Leaf stem short and round, or absent, go to 67.

66 a. Leaves roughly triangular, 3 to 6 inches long, with rounded teeth. Found in southeastern and northern Virginia – Eastern Cottonwood pg. 37.
b. Leaves more oval than triangular, 3 to 5 inches long, with large blunt teeth. Found in mountains and northern Virginia – Bigtooth Aspen pg. 38.

67 a. Leaves thick, waxy, spiny, and remaining green through winter – American Holly pg. 85.
b. Leaves not as above, tree loses its leaves in the fall, go to 68.

Key to Common Native Trees of Virginia, continued

68 a. Leaves heart-shaped or lobed, or leaf base uneven with 3 main veins starting at base, go to 69.
b. Leaves long and narrow, or oval shaped, go to 71.

69 a. Leaves rough, leaf base even, some leaves lobed. Fruit 1 to 1½ inch long, red or purple, resembling a blackberry – Red Mulberry pg. 71.
b. Leaf base uneven, go to 70.

70 a. Leaves 3 to 6 inches long, with 3 main veins, bark with small corky ridges or warts – Hackberry pg. 70.
b. Leaf heart shaped, 4 to 8 inches long. Bark gray with vertical fissures and flaky ridges. Found in mountains – American Basswood pg. 92.

71 a. Leaves 2 to 6 inches long, less than ½ inch wide, with edges very finely toothed. Found on moist sites – Black Willow pg. 36.
b. Leaves wider than ½ inch, go to 72.

72 a. Leaf base heart shaped, bark light gray and smooth when young, with narrow vertical fissures when older. Red to purple berries in summer – Downy Serviceberry pg. 80.
b. Leaf base not heart shaped, go to 73.

73 a. Young bark smooth with short horizontal white lines, older bark charcoal gray and platy, curling out at the edges – Black Cherry pg. 81.
b. Broken twig smells like potatoes. Bark brown and thick with vertical broken fissures – Sourwood pg. 94.

74 a. Tree produces acorn-type nut, go to 75.
b. Tree does not produce acorn-type nut, go to 78.

75 a. Leaves thick and leathery, not bristle-tipped. Evergreen tree found in southeastern Virginia – Live Oak pg. 57.
b. Leaves are bristle-tipped, go to 76.

76 a. Leaves widest near tip, may be 3-lobed or club-shaped. Bark gray and not deeply fissured – Water Oak pg. 65.
b. Leaves not widest near tip, go to 77.

77 a. Acorn ½ inch long or smaller, leaves up to ½ inch wide. Found in coastal plain and piedmont – Willow Oak pg. 66.
b. Acorn up to 1 inch long, leaves greater than ½ inch wide. Found in coastal plain – Laurel Oak pg. 58.

78 a. Tree found in standing water, swamp edge, or moist low woods, mainly in Coastal Plain, go to 79.
b. Tree not necessarily found near water, go to 80.

Key to Common Native Trees of Virginia, continued

79 a. Leaves thick and leathery, underside of leaf white, twigs greenish. Usually under 20 feet tall and under 4 inches in diameter. Crushed leaves have a sweet smell – Sweetbay pg. 73.
b. Leaves 4 to 8 inches long, may have 1 to 3 teeth near end. Found in standing water – Water Tupelo pg. 96.

80 a. Leaves heart shaped, pink or purple flowers in spring – Eastern Redbud pg. 82.
b. Leaves not heart shaped, go to 81.

81 a. At least some leaves longer than 7 inches, go to 82.
b. Leaves shorter than 7 inches, go to 84.

82 a. Leaves smell unpleasant (like asphalt) when crushed, fruit resembles small banana – Pawpaw pg. 76.
b. Leaves not smelly when crushed, fruit conelike. Found in mountains, go to 83.

83 a. Leaves less than 10 inches long, bark tan to dark brown with vertical fissures separating flaky ridges – Cucumbertree pg. 72.
b. Leaves 10 to 18 inches long, bark light gray to brown. Base of leaf has earlobe-like pieces near leaf stem – Fraser magnolia pg. 74.

84 a. End of leaf rounded and blunt. Some leaves with 2 or 3 lobes. Twigs green. Leaves have spicy odor when crushed – Sassafras pg. 77.
b. Leaf tips pointed, all leaves same shape, go to 85.

85 a. Leaves 4 to 7 inches long, sour taste. Leaf may be very finely toothed. Broken twig smells like potatoes. Bark has vertical broken fissures – Sourwood pg. 94.
b. Leaves, bark, and twigs not as described above, go to 86.

86 a. Leaves may be wider near tip than base, branches often at 90 degree angles to trunk, leaf scar has 3 bundle scars. Fruit small, bluish black – Blackgum pg. 95.
b. Leaf scar has crescent-shaped bundle scar, bark square blocky with dark orange fissures. Fruit about 1 inch long, pale orange – Common Persimmon pg. 97.

Eastern White Pine

(*Pinus strobus* L.)

Mature Size: Typically 80 to 100 feet in height and 2 to 3 feet in diameter, but can reach 200 feet in height

Form: Pyramid shaped, with a straight trunk; branches extend horizontally in rings circling the trunk, with one ring of branches per year of growth

Habitat: Common on dry, sandy or rocky ridges, but grows best on moist, sandy loam soils

Needles: Soft bluish-green, flexible, 3 to 5 inches long, in bundles of 5; faint white stripes on lower surface of each needle

Flowers: Males yellow, cylindrical, clustered at branch tips; females light green tinged with red

Cones: 4 to 8 inches long, curved and stalked, with non-spiny, often gummy scales

Bark: On young trunks and branches, thin, smooth, greenish and shiny; on older trunks, dark gray with shallow fissures and broad, flat-topped ridges

Twigs: Slender, grayish-green to orange-brown; buds long, egg-shaped, reddish brown

Values and Uses: The wood is light in color, straight-grained, of medium strength, and easily worked. It is used for construction lumber, cabinet making, furniture and interior finish. White pine is also grown for Christmas trees. Deer and squirrels browse the foliage and bark. The seeds are a food source for red and gray squirrels and for songbirds. White pines are often planted to stabilize the soil on strip-mined lands.

Did You Know? Eastern white pine is the largest conifer in eastern North America. Its trunks were once in demand for use as ships' masts.

Shortleaf Pine

(Old-Field Pine, Yellow Pine, Shortstraw Pine, Rosemary Pine)

Pinus echinata Mill.

Mature Size: 80 to 100 feet in height and 2 to 3 feet in diameter

Form: Comparatively slender branches and a loose pyramid-shaped to oval crown

Habitat: Pure or mixed stands on dry ridges, sandy or silty loams, old fields; grows best on deep, well-drained soils, but tolerates nutrient-deficient sites

Needles: 3 to 5 inches, slender, flexible, dark green, in clusters of 2 or 3

Flowers: Males cylindrical, red to yellow, in clumps at ends of twigs; females light green to red and prickly

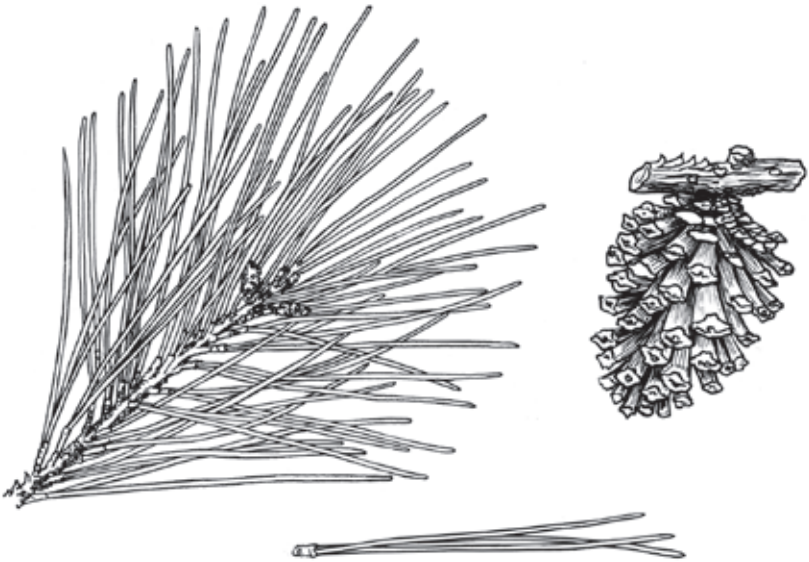
Cones: Egg-shaped, short stalked, 1½ to 2½ inches long, armed with a short spine at the tip of each scale; remain on the tree for several years after seed fall

Bark: Irregularly shaped plates covered with thin, reddish scales; scattered small holes, as if poked by a pencil point, are a unique feature

Twigs: Green and purple when young, later turning red-brown

Values and Uses: The wood of older trees is rather heavy and hard, yellow-brown or orange and fine-grained. It is less resinous than that of the other important southern pines. It is used largely for interior and exterior finishing, flooring, general construction, veneers, paper pulp and poles.

Did You Know? Young trees damaged by fire or injury can resprout from the root collar.



Loblolly Pine

(Old-Field Pine)

Pinus taeda L.

Mature Size: 90 to 110 feet in height and 2 to 3 feet in diameter

Form: Tall and straight; lower branches self prune; remaining lower branches droop, while the higher branches grow upward; crown oval and somewhat open

Habitat: Old fields, sandy soils where water table is close to surface, borders of swamps, and other imperfectly drained sites

Needles: 6 to 9 inches long, pale green, slender and stiff, in bundles of three

Flowers: Males cylindrical, red to yellow, in clusters at branch tips; females yellow to purple

Cones: Oblong, 2 to 6 inches long, light reddish to brown, with a spine at the tip of each scale; remain on tree for a year after seed-fall

Bark: On young trees, bark is red to gray-brown and scaly; later becoming thick, reddish to brown, divided by shallow fissures into broad, flat-topped plates covered with thin scales

Twigs: Orange-brown, fine to moderately thick; buds narrowly ovoid, light reddish brown

Values and Uses: The wood is coarse grained with marked contrast between early and late wood. It is used for lumber, paper pulp, plywood, poles, pilings and fuel. Loblolly pine is a common southern shade tree. Pine stands provide habitat for pine warbler, brown-headed nuthatch, deer, gray and fox squirrels, quail, turkey and other wildlife species. Large loblolly pines are a common nesting site for ospreys and bald eagles.

Did You Know?
Loblolly pine is the most important commercial timber tree in Virginia and the Southeast. The tree was named “loblolly” after a seafarer’s gruel, which resembled the dark, mucky soil where this pine often grows.

Longleaf Pine

Flammability
HIGH

Pinus palustris Mill.

Mature Size: 80 to 100 feet in height and 2 to 2½ feet in diameter

Form: Tall, straight trunk with an irregular crown made up of thick, gnarled or twisted branches

Habitat: Poorly drained flatwoods to well-drained, sandy soils; often found on acidic, relatively infertile soils

Needles: Lustrous, bright green, 8 to 15 inches long, in bundles of three; needles often clustered into dense tufts toward the ends of branches. The large, silvery white, shiny buds (called “candles”) are an identifying feature.

Flowers: Males yellowish-red, elongated, in clusters; females oval, purple

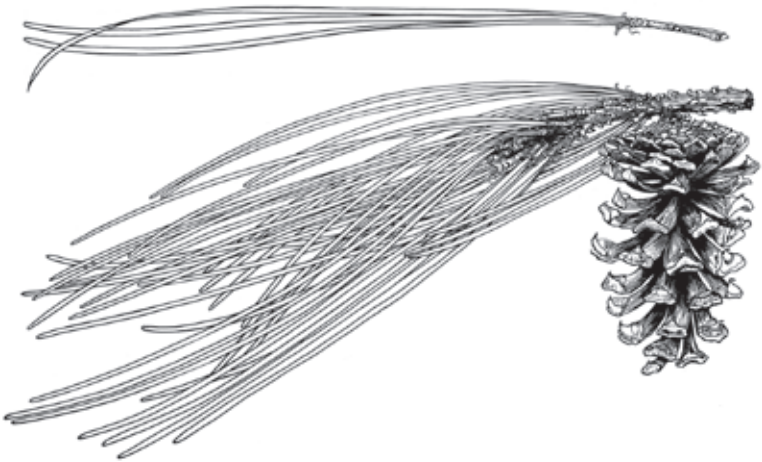
Cones: 6 to 10 inches long, with spine-tipped scales; mature the second year, dropping soon after releasing their seed in fall

Bark: Scaly, orange-brown to reddish-brown; with age, separated into large plates with thin scales

Twigs: Very thick, gray-brown; buds large, ovoid, silvery-white

Values and Uses: Longleaf pine once was used for commercial production of naval stores (pitch, tar, resin and turpentine). Today, it primarily is used for poles, pilings, lumber and plywood. The heartwood is heavy, hard, strong, tough and durable. The seeds are a favorite source of food for wild turkey, gray and fox squirrels, and many other wild animals. The endangered red-cockaded woodpecker nests in cavities in live, old-growth trees.

Did You Know? Longleaf pine is a highly fire-adapted species. A longleaf seedling resembles a clump of grass; after a few years, it shoots up into a tall stem topped by a plume of green. Prior to European settlement, longleaf pine forest dominated much of the eastern Coastal Plain. Exclusion of fire has been one factor in the species’ decline, but restoration efforts are ongoing in Virginia.



Pitch Pine

(Hard Pine, Black Pine)

Pinus rigida Mill.

Mature Size: 50 to 60 feet in height and 1 to 2 feet in diameter

Form: Irregular, ragged yet picturesque crown; branches often thick, contorted and pendulous

Habitat: Dry ridges and slopes, river valleys and mountain swamps

Needles: 3 to 6 inches long, rigid, dark yellow-green, somewhat twisted, in clusters of 3; tufts of needles often grow along the larger branches and trunk

Flowers: Males cylindrical, red to yellow, in large clusters at twig tips; females yellow to red, with small, curved scales

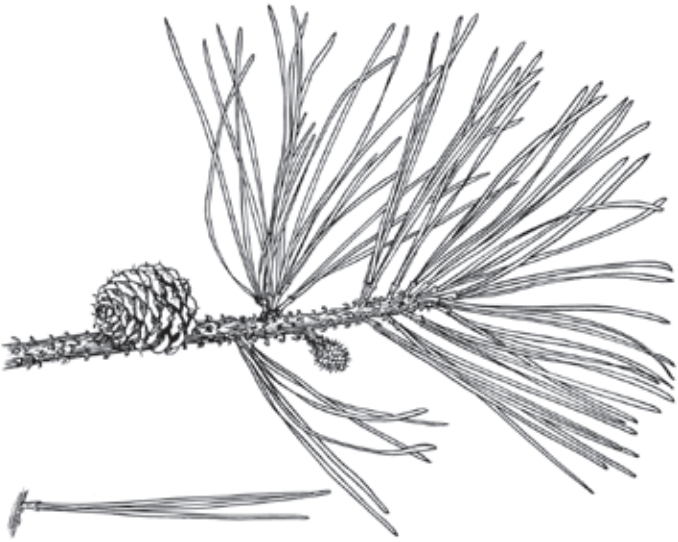
Cones: 1¼ to 2¾ inches long; scales tipped with curved, rigid spines; may remain closed on the tree for more than 10 years, or until opened by the heat of a fire

Bark: Broken into thick, plate-like scales, yellowish-brown on older trees

Twigs: Orange-brown and moderately thick; buds narrowly egg-shaped, light gray-brown

Values and Uses: Pitch pine wood is used for lumber and pulp and was once an important source of resin. As with other pines, the seeds are a source of wildlife food, and young growth is browsed by deer and rabbits.

Did You Know? The common name comes from the high resin content of the wood. Knots were once burned as torches. This tree is fire-adapted and young trees can resprout from roots or stumps if injured.



Virginia Pine

(Scrub Pine, Spruce Pine, Jersey Pine)

Pinus virginiana Mill.

Mature Size: 50 to 80 feet in height and 12 to 14 inches in diameter

Form: Long, horizontal branches, often drooping, forming an open, ragged, flat-topped crown; branch stubs often remain along the trunk for many years after the lower branches die

Habitat: Various well-drained soils; can tolerate eroded and dry soil

Needles: 1½ to 3 inches long, in bundles of two, thick, yellow-green and usually twisted

Flowers: Males cylindrical, yellow, near branch tips; females yellow to red, with a curved prickle

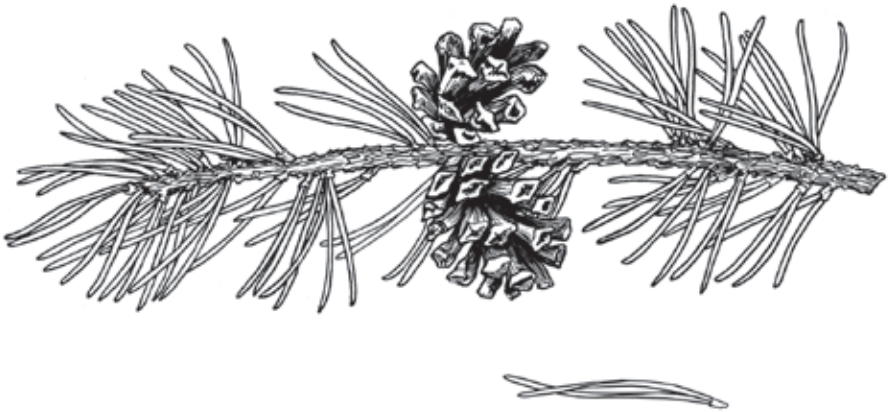
Cones: Dark reddish-brown, egg-shaped, 1½ to 2¾ inches long, with a sharp spine at the tip of each scale; mature the second year and remain on the tree for several years after seed-fall

Bark: Thin, reddish-brown, scaly, with shallow fissures

Twigs: Slender, purplish-green, with a waxy coating; buds gray-brown and narrowly egg-shaped

Values and Uses: The lumber is used for rough construction but warps easily with alternate wetting and drying. The wood has a very long fiber and makes excellent paper pulp. Small songbirds eat the seeds and may roost in thick stands of young pine. Woodpeckers nest in decayed older trees, and mice and deer browse the young foliage.

Did You Know? Virginia pine's tolerance for poor soil makes it suitable for reclaiming strip-mined lands.



Pond Pine

Flammability
HIGH

(Pocosin Pine, Bay Pine, Marsh Pine, Black Bark Pine)

Pinus serotina Michx.

Mature Size: 40 to 70 feet in height and 1 to 2 feet in diameter

Form: Trunk often twisted, with numerous sprouts and a thin crown

Habitat: Moist to wet sites, in southeastern Virginia

Needles: 6 to 8 inches long, in clusters of three (occasionally four), slender, dark yellow-green and flexible

Flowers: Males cylindrical, purple to yellow, in clumps at ends of twigs; females light green to red, at ends of new growth

Cones: 2 to 2½ inches long, light yellow-brown at maturity, globe-shaped; scales flattened and tipped with a slender prickle; remain closed for several years or until opened by fire, staying on the branches for many years after seed fall

Bark: Dark reddish-brown, divided by narrow, shallow fissures into small, scaly plates

Twigs: Slender to moderately thick, light brown; buds reddish brown

Values and Uses: The wood is resinous, heavy and often coarse grained. It is used for lumber and pulpwood. Stands of pond pine provide habitat for a variety of wetland wildlife.

Did You Know? Pond pine is very resistant to fire, even intense wildfire. It has the ability to sprout after being burned, as well as to sprout from stumps, even when old. Trees completely defoliated by fire will resprout quickly, becoming covered with needles that grow directly from the trunk. This feature often makes pond pine easy to identify.

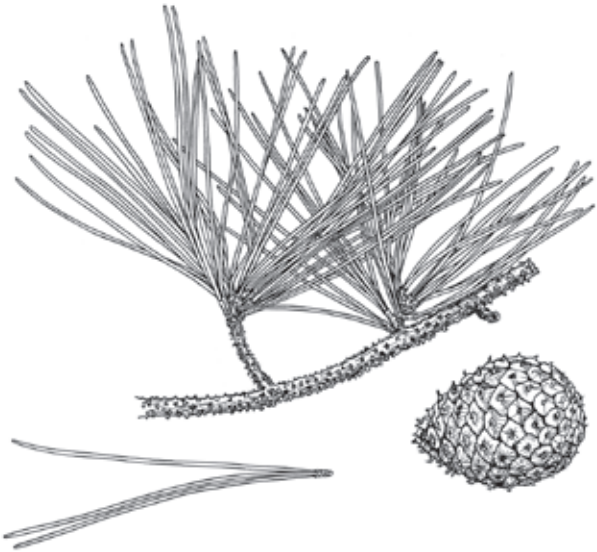


Table Mountain Pine

(Hickory Pine, Mountain Pine)

Pinus pungens Lamb.

Mature Size: 30 to 40 feet in height and 1 to 1½ feet in diameter

Form: Straight trunk and spreading, irregular crown with several large, heavy branches; on rocky ridges, often short and twisted

Habitat: Dry, rocky slopes and ridges, usually with a southwesterly aspect

Needles: Stiff, usually twisted, 1½ to 2½ inches long, dark bluish-green, in bundles of two, often crowded in bunches

Flowers: Males long, cylindrical, purple to yellow, clustered near branch tips; females green to light purple, often in clusters

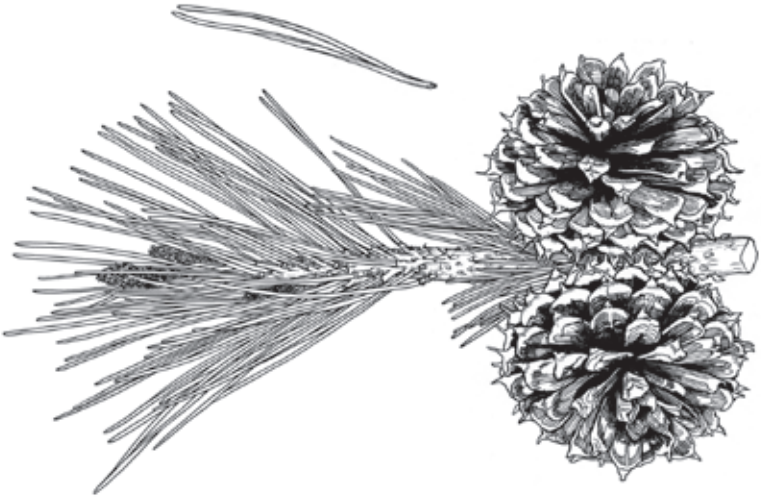
Cones: 2½ to 3 inches long, light brown, shiny when ripe, with a thick, hooked spine at the top of each scale; very knobby in appearance, growing in clusters of three or more; may open and shed seed as soon as they ripen or remain closed on the tree for several years

Bark: Irregular plates covered with thin, loose, dark brown scales, tinged with red

Twigs: Moderately thick and tough, orange-brown; buds narrowly egg-shaped, light brown and often resinous

Values and Uses: The wood is light, soft, resinous and coarse-grained. It is used for rough lumber, pulpwood and fuelwood. Wildlife, particularly squirrels, eat the seeds. Because it grows where few other trees will, table mountain pine is an important soil protector, minimizing erosion and runoff from the rugged landscapes where it thrives.

Did You Know? Trees growing on cliffs and rock outcrops may develop picturesque, gnarly shapes. The botanist Andre Michaux named it after Table Mountain in North Carolina, where he first encountered it.



Red Spruce

Picea rubens Sarg.

Mature Size: 60 to 80 feet in height and 1 to 2 feet in diameter

Form: Narrowly cone-shaped in outline

Habitat: Well-drained, but moist (and usually rocky) soil, at elevations above 4,000 feet

Needles: ½ to ⅝ inch long, pointed, shiny, yellow-green, borne on tiny, raised pegs

Flowers: Males cylindrical, reddish but turning yellow-brown; females purplish green

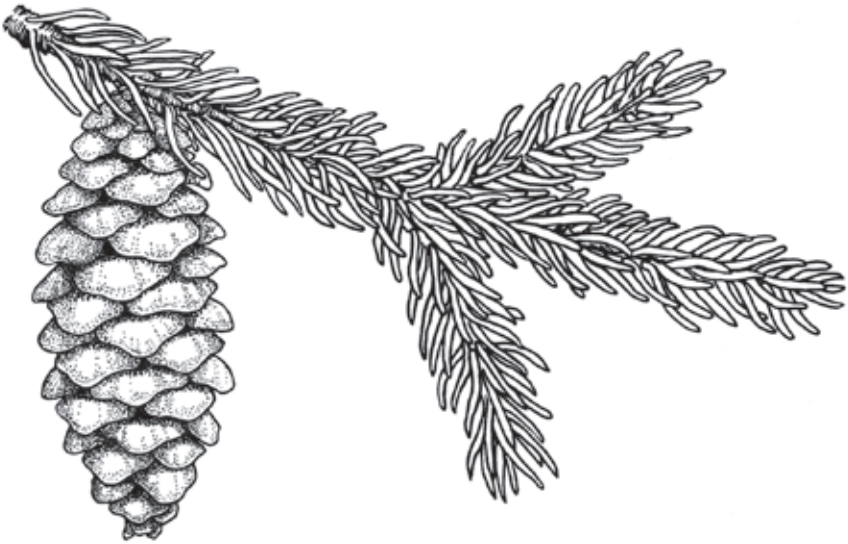
Cones: 1¼ to 2 inches long, light reddish-brown and shiny, with smooth-edged scales. Cones begin to fall as soon as they ripen, and all are off the tree before the following summer.

Bark: Dark brown to gray, broken into irregularly shaped scales, with reddish inner bark showing between scales

Twigs: Orange-brown; fine hairs can be seen with a hand lens; needleless twigs covered by short pegs; buds orange-brown, small, with loose scales

Values and Uses: The wood is light, moderately soft, strong and elastic. It is used for lumber, pulpwood, poles, pilings, boat building, barrels and fine musical instruments. Spruce stands are important cover for a variety of wildlife, especially in winter. The buds are a major food source for ruffed grouse and red squirrels.

Did You Know? In the early days of flight, spruce wood was the preferred species for airplane frame construction. Hardened spruce sap was once used as chewing gum. Red spruce may live to be 400 years old. It is one of the high-elevation trees now stressed by air pollution.



Eastern Hemlock

(Hemlock Spruce)

Tsuga canadensis (L.) Carr.

Mature Size: 60 to 100 feet in height and 2 to 4 feet in diameter

Form: Broad based, pyramid shaped, with branches often drooping and feathery

Habitat: Common along shady streams and on cool mountain slopes, on soils that are moist but well drained

Needles: Flat, round-tipped, ⅓ to ⅔ inch long, marked on the lower surface with two pale lines; needle bases form short, slender “stems,” attached to rounded, dark orange, woody pads on the twigs

Flowers: Males yellow, small, round; females light green, at branch tips

Cones: Light brown, ¾ inch long, with rounded, entire scales, growing on short, slender stalks from the tips of branchlets

Bark: Gray-brown and smooth when young; when older, scaly, red-brown, with wide ridges and furrows; when cut or broken, purple streaks are obvious

Twigs: Slender, gray-brown, with very small buds

Values and Uses: The wood is light, soft, brittle and difficult to work. Although rarely harvested, it can be used for rough or construction lumber and for pulpwood. Hemlock bark was once a source of tannin for the leather industry. Dense hemlock stands are used by deer, grouse and many other wildlife species as cover.

Did You Know? Hemlock is among the most shade tolerant of all trees, and it may live more than 800 years. Unfortunately, the hemlock woolly adelgid, an introduced insect, is taking a heavy toll on this species. A related species, Carolina hemlock (*Tsuga caroliniana*) can be clipped into hedges and is often grown as an ornamental.

Baldcypress

(Cypress)

Taxodium distichum (L.) Rich.

Mature Size: 90 to 120 feet in height and 3 to 6 feet in diameter

Form: Straight, slowly tapering trunk with a broad, fluted base; numerous uplifted branches and a narrow cone-shaped crown

Habitat: Wet stream banks, wet bottomlands, swamps and other areas that usually flood for long periods of time

Needles: ½ to ¾ inches long, arranged featherlike along two sides of small branchlets, which fall in autumn with the leaves still attached; on rapidly growing branchlets, the leaves are scale-like and much shorter

Flowers: Males in long, drooping clusters; females rounded, scaled, clustered near the end of branches

Cones: Globe-shaped, 1 inch across, with thick, irregular scales, brown at maturity, shattering into irregular seeds

Bark: Dark reddish brown to silvery brown, shredded lengthwise, with a fibrous appearance

Twigs: Non-deciduous twigs slender, alternate, brown, rough, with round buds near the ends; deciduous twigs two-sided, resembling pinnately compound leaves

Values and Uses: Baldcypress wood is light, soft and easily worked, with creamy sapwood and brown heartwood. Because it is particularly resistant to decay, baldcypress has been used for exterior trim of buildings, greenhouse planking, boat building, shingles, posts, poles and crossties. Cypress swamps provide important habitat for many wetland wildlife species. Seeds are eaten by turkeys, squirrels and waterfowl. Bald eagles and ospreys nest in the tops of large trees, and cavity-nesting birds use decaying trees. Catfish are known to spawn in the hollowed, sunken logs. Cypress stands reduce flooding along rivers by slowing and absorbing water.

Did You Know? A baldcypress may live more than 1,000 years. It is one of the few deciduous conifers. The tree's root system often produces irregular cone-shaped structures, called "knees," that rise above the ground or water's surface. A related species, pondcypress (*T. distichum* var. *nutans*), has short, scale-like needles.

Atlantic White-cedar

Flammability
HIGH

(Juniper)

Chamaecyparis thyoides (L.) B.S.P.

Mature Size: 40 to 85 feet in height and about 2 feet in diameter

Form: Narrow, pointed crown with short, horizontal branches

Habitat: Freshwater bogs, depressions, swamps and stream sides, often in pure stands called “glades”

Needles: ⅛ inch, dark blue-green, scaly, overlapping and pressed close to twig; fragrant when crushed

Flowers: Males red to yellow and very small; females small and green

Cones: ¼ inch in diameter, blue or purple, with a waxy grayish coating and a somewhat crumpled appearance; turning red-brown in fall

Bark: Light reddish-brown, peeling off in long, fibrous strips

Twigs: Covered in tight green scales, turning brown with age

Values and Uses: The wood is very durable, fine-grained and slightly fragrant, especially in contact with water. It has been used for shingles, posts, woodenware, barrels, interior finishes and boat construction. White-cedar glades provide cover for many species of wetland wildlife.

Did You Know? Heavy harvesting in the early 1900s diminished this species to a fraction of its former range. White-cedar logs are very resistant to decay; logs buried in swamps for many years are still sound enough to be used for lumber.

Northern White-cedar

(Eastern Arborvitae)

Thuja occidentalis L.

Mature Size: 40 to 70 feet in height and 1 to 3 feet in diameter

Form: In the open, develops an even, pointed crown, giving the tree an arrowhead shape; trunk often twisted and commonly divided into 2 or more stems; branches short and horizontal

Habitat: Stream sides and other cool, moist, organic soils

Needles: Scale-like, ⅛ to ¼ inch long, fragrant when crushed; branchlets flattened into fan-like sprays

Flowers: Males round, green, tipped with brown; females green with 4 to 6 scales

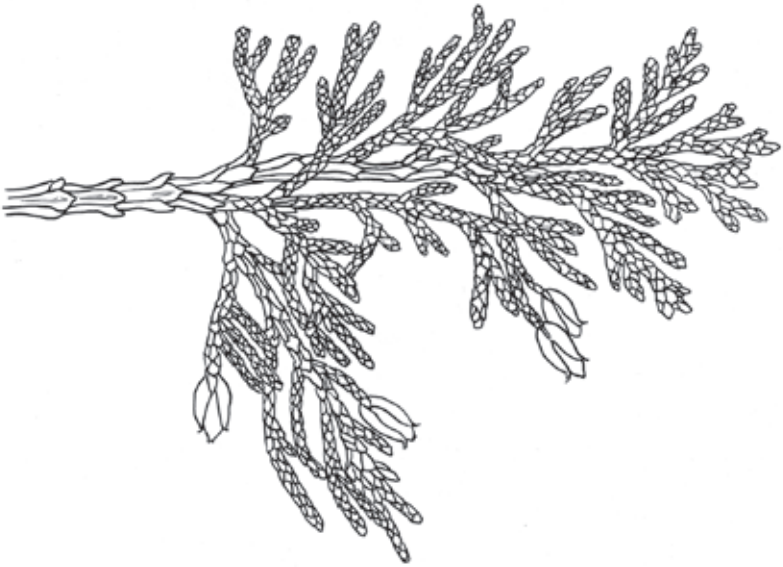
Cones: ½ inch long, oblong, sitting upright on the branches; cone scales leathery, red-brown and rounded, with a small spine on the tip

Bark: Reddish-brown, graying with age, fibrous, ridged in a diamond pattern

Twigs: Covered in green scales, turning brown with age

Values and Uses: The wood is light brown, soft, brittle, coarse-grained, durable and fragrant. It has been used for fencing, posts, lumber, poles, cabin logs and shingles. The foliage is a preferred food of deer. Stands of white-cedar provide evergreen habitat for many birds and small mammals. The tree is often grown as an ornamental and can even be pruned into hedges.

Did You Know? A common name for this species is arborvitae, or “tree of life.” Native Americans made a tonic tea from its bark and needles. This tea is high in vitamin C and is said to have saved explorer Jacques Cartier and his crew from scurvy.



Eastern Redcedar

(Juniper)

Juniperus virginiana L.

Mature Size: 40 to 60 feet in height and 1 to 2 feet in diameter

Form: Dense, compact, column-like crown with short, slender branches

Habitat: Found on a wide variety of soils, from acidic wetland edges to dry, rocky ridges; thrives on barren soils where few other trees are found

Needles: Fragrant; mature needles 1/16 inch long, shiny, dark green and scale-like, pressed close to form 4-sided twigs; young needles up to ⅜ inch long, pointed and prickly

Flowers: Males and females on separate trees; males small, yellow-brown, in large clusters; females light blue-green

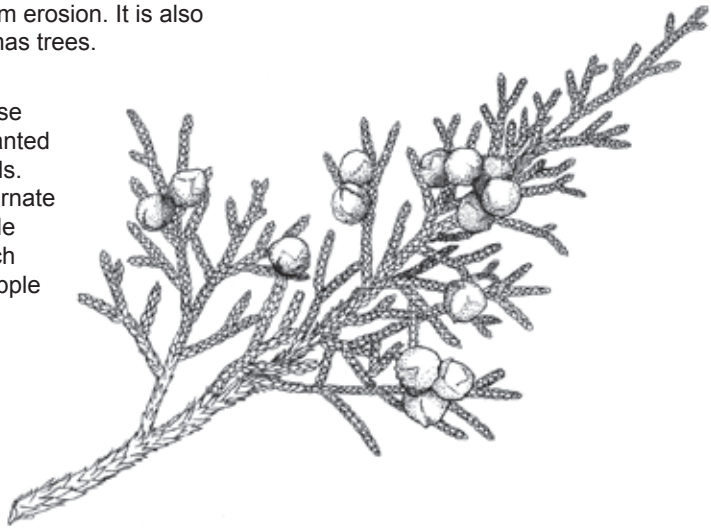
Cone: On female trees only, round, fleshy and berrylike, ¼ to ⅓ inch across; green turning blue when ripe, with a grayish-white, waxy covering

Bark: Light reddish-brown, thin, peeling and fibrous

Twigs: Scaly, green for several years, later turning brown

Values and Uses: Redcedar wood is fragrant, soft, strong and evenly textured. The red heartwood and white sapwood create striking effects when the wood is finished. The heartwood is very resistant to decay and can be used for fence posts, poles, cabinets and rustic furniture. Because its natural oils repel insects, it is also used for chests, closet linings and pet bedding. It was once used for pencils, although incense-cedar, a western species, is now used instead. The “berries” give gin its characteristic flavor. They are also a favorite food of many birds, from waxwings to bobwhite quail. Redcedar’s dense foliage provides excellent roosting and nesting cover for birds. Deer use its foliage as an emergency winter food source. Redcedar is good for protecting soils from erosion. It is also planted for Christmas trees.

Did You Know?
Redcedar can cause problems when planted near apple orchards. The tree is the alternate host for cedar-apple rust, a fungus which causes spots on apple leaves and fruit.



Black Willow

(Swamp Willow)

Salix nigra Marsh.

Mature Size: 30 to 50 feet in height and 1 to 2 feet in diameter

Form: Often multistemmed, with trunks twisted, curved or leaning, and a spreading, irregular crown

Habitat: Common along streams, in wet depressions and other areas with the water table close to the surface

Leaves: Alternate, 3 to 6 inches long and ½ to ¾ inches wide, pointed, often slightly curved, with finely toothed edges

Flowers: Tiny, green, on 1 to 3 inch fuzzy-looking catkins; males and females on separate trees

Fruit: Produced only on female trees; cone-shaped capsule splitting to release many small, cottony seeds, which can blow long distances

Bark: Light brown, tinged with orange, to dark brown or nearly black; deeply divided into broad, flat ridges that separate into thick, plate-like scales; shaggy on older trees

Twigs: Slender, orange-brown, with a bitter aspirin taste; buds small, covered by one scale; twigs brittle and easily broken at the junction with the previous year's growth

Values and Uses: Willow wood is light and soft. Although not a major timber tree, the wood has been used in boxes and crates, as core stock in furniture, for woodenware and novelties, charcoal and pulp. Black willow is a good soil stabilizer, especially along stream banks. Cuttings root easily when planted in moist soil, and the dense mat of roots holds the soil in place. Willow's naturally occurring chemical salicin was an original component of aspirin and is still used today, although it is now manufactured artificially rather than extracted from willow. Before the development of plastics, black willow was used for artificial human limbs.

Did You Know? Weeping willow (*Salix babylonica*), a related species, is not native to Virginia but to Asia. This popular ornamental tree has become naturalized along stream banks and pond edges, where its graceful, streaming branches make it easy to recognize.

Eastern Cottonwood

(Carolina Poplar)

Populus deltoides Bartr. ex Marsh

Mature Size: Typically 80 to 100 feet in height and 3 to 4 feet in diameter, but may reach a height of 200 feet on good sites

Form: Somewhat vase-shaped, with an open spreading crown

Habitat: River borders, floodplains and other moist, well-drained sites

Leaves: Alternate, 3 to 6 inches long and 3 to 5 inches wide; widest and often heart shaped at base, tapering to a pointed tip; thick, yellow midvein; leaf edges with shallow, rounded teeth; leaf stalk flattened

Flowers: On dangling catkins, appearing before the leaves; males and females on separate trees

Fruit: On female trees only, a capsule ¼ inch long, which splits to release many tiny, cottony seeds

Bark: Smooth, gray to yellow-green when young; later turning gray with thick ridges and deep furrows

Twigs: Thick, somewhat angular in cross-section, yellowish; buds ¾ inch long, covered with several brown, gummy scales

Values and Uses: The wood is soft and lightweight, often warping when dried. It can be used for baskets, crates, rough lumber, plywood, excelsior, fiberboard, paper pulp. It makes a fast-growing shade tree for landscape use, and it can be useful for soil stabilization.

Did You Know? Pioneers quickly learned that a stand of cottonwoods indicated water fairly close to the land's surface – an important consideration for settlers of the arid West.

Bigtooth Aspen

(Popple)

Populus grandidentata Michx.

Mature Size: 60 to 80 feet in height and 10 to 20 inches in diameter

Form: Straight trunk and thin, irregular crown

Habitat: Moist, fertile, sandy uplands

Leaves: Alternate, generally oval, 3 to 4 inches long, with large blunt teeth; green above and paler below; leaf stalk flattened

Flowers: On hanging, 2- to 3-inch, fuzzy catkins, appearing before the leaves; males and females on separate trees

Fruit: ¼ inch long capsules that split to release tiny cottony seeds

Bark: Thin, gray, olive-green to milky green and smooth on young stems; later gray-brown, ridged with diamond shaped pores and splits

Twigs: Medium-textured, gray-brown; buds egg-shaped, pointed, red-brown to gray and slightly fuzzy; leaf scars raised and heart shaped

Values and Uses: Although seldom harvested in Virginia, the wood can be used for paper pulp, particle board, structural panels, pallets, boxes and pelletized fuel. Aspens are a primary food source for ruffed grouse, which eat the catkins and buds. Deer and beavers also feed on aspen. Aspens are a pioneer species, stabilizing soil on disturbed sites.

Did You Know? Despite the high production of seed, seedlings do not commonly occur in nature. Instead, suckering or sprouting from the roots, is the most common mode of reproduction. Aspen quickly colonizes disturbed sites, sometimes resulting in large, pure stands. Quaking aspen (*Populus tremuloides*), a related species, is rare in Virginia, but common farther north and west. It grows in large stands and has finely toothed leaves, which turn a beautiful clear yellow in fall.

Black Walnut

Juglans nigra L.

Mature Size: 50 to 90 feet in height and 2 to 3 feet in diameter

Form: Straight, clear trunk with a narrow crown and thick twigs and branches

Habitat: Deep, well-drained soils; grows best in rich bottomlands, moist coves and stream sides; grows best on the lower north- or east-facing slopes

Leaves: Alternate, pinnately compound, 12 to 24 inches long, with 10 to 24 sharply oval, finely toothed, long-pointed leaflets 3 to 3½ inches long; bright, clear yellow in autumn

Flowers: Yellow-green; males in catkins 2½ to 5½ inches long; females on short spikes near twig ends

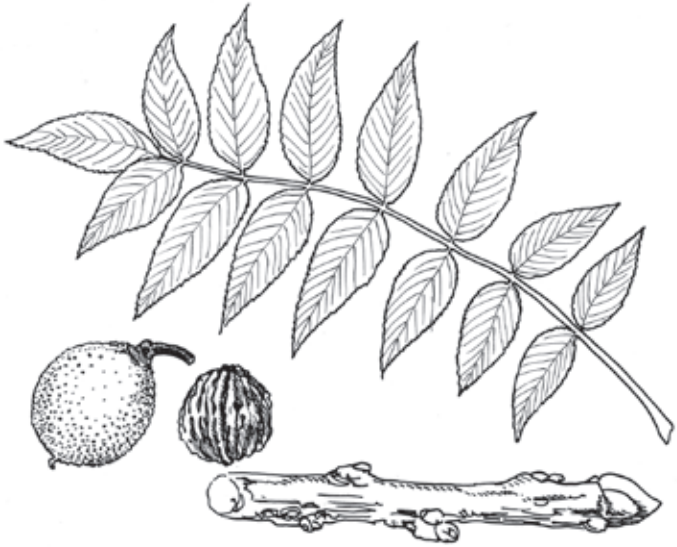
Fruit: Round, 2 to 2½ inches across, with a thick, green, non-splitting husk; nut inside is furrowed and hard; matures in late summer to fall

Bark: Thick, dark brown to black, ridged and furrowed with a deep diamond pattern

Twigs: Thick, light brown, with a buff-colored chambered pith inside; buds tan, large, with a few fuzzy scales; leaf scars 3-lobed, resembling a “monkey face”

Values and Uses: The heartwood is heavy, hard and strong, with a rich chocolate-brown color of superior quality and value. It is prized for veneer, fine furniture, paneling, cabinetwork and gun stocks. The nut shells are ground into an abrasive cleaning agent for jet engines, filler for dynamite, a filter agent in smokestacks and a flour-like carrying agent for insecticides. Squirrels, birds and people eat the sweet, oily nuts. Sapsuckers drill rows of holes to feed on the sap. Mice and rabbits eat the bark of young trees, and deer browse on the buds.

Did You Know?
Black walnut trees secrete a toxic chemical called juglone, which prevents many other species from growing near them.



Butternut

Flammability
LOW

(White Walnut)

Juglans cinerea L.

Mature Size: 60 to 70 feet in height and about 2 feet in diameter

Form: Forked or crooked trunk with wide-spreading branches

Habitat: Well-drained stream banks, coves and slopes

Leaves: Alternate, pinnately compound, 15 to 25 inches long, with 11 to 17 oblong, pointed leaflets with toothed edges; leaf stem thick and fuzzy

Flowers: Yellow-green; males single-stemmed, in 2½ to 5½ inch catkins; females on a short spike near the end of the twig

Fruit: Lemon shaped, with a yellow-green, sticky, nonsplitting husk; nut rough and grooved, with sweet, oily meat

Bark: Light, ashy gray, with flat topped, shiny ridges, later developing diamond patterns

Twigs: Thick, sometimes fuzzy, yellow-brown to gray, with dark brown divided pith inside; buds large with a few fuzzy scales; leaf scars 3-lobed, resembling a “monkey face,” with an eyebrow-shaped ridge of fuzz above the leaf scar

Values and Uses: The wood is light brown, soft, coarse-grained and takes polish well. It is not often harvested for timber, but it is used locally for cabinets, furniture, toys and novelties. A yellow or orange dye can be made from the nut husks. The sweet nuts are eaten by humans and a variety of wildlife.

Did You Know? Like black walnut, butternut produces a chemical called juglone, which prevents many other plant species from growing near it.

Bitternut Hickory

Flammability
LOW

(Swamp Hickory)

Carya cordiformis (Wangenh.) K. Koch.

Mature Size: Typically 50 to 70 feet in height and 1 to 2½ feet in diameter

Form: Slender straight trunk with a broad pyramid-shaped or rounded crown

Habitat: Grows best on moist, rich slopes and bottomlands, but will tolerate poor, dry soils

Leaves: Alternate, pinnately compound, 7 to 10 inches long with 7 to 9 long, oval, toothed leaflets, dark yellow-green above and lighter below

Flowers: Yellow-green; males on 3 to 4 inch, drooping catkins, with 3 hanging from one stalk; females short, 4-angled, at twig ends

Fruit: Mostly round but slightly flattened; 1¼ inch long, partially splitting from the middle to the sharp-pointed tip; husk thin and 4-winged above the middle, often dusty-yellow looking; 4-ribbed nut smooth, rounded, thin-shelled and bitter

Bark: Thin, tight and hard; at first smooth and silvery gray, later gray with shallow furrows and interlacing ridges

Twigs: Somewhat thick; leaf scars 3-lobed; end buds clamshell-like, oblong, 4-angled, covered with sulfur-yellow to brown fuzz

Values and Uses: The wood is hard, strong and heavy, with reddish-brown heartwood. It is used for tool handles, furniture, paneling, flooring, pallets, crates, fuelwood, pulpwood, lumber, charcoal and the smoking of meats. Although the bitter nuts are not favored by wildlife, they are eaten when other foods are not available.

Did You Know? The leaves are very high in calcium and improve the soil as they decompose. Early settlers extracted oil from the nuts to burn in oil lamps.

Shagbark Hickory

(Scalybark Hickory, Shellbark Hickory)

Carya ovata (Mill.) K. Koch.

Mature Size: Commonly 60 to 80 feet in height and 1 to 2½ feet in diameter; may exceed 120 feet in height

Form: Tall, straight trunk with an open round or oblong crown

Habitat: Thrives on rich, damp soil along streams and on moist hillsides

Leaves: Alternate, pinnately compound, 8 to 14 inches long with 5 (rarely 7) leaflets that are tapered, oval, smooth and finely-toothed; end leaflet is largest

Flowers: Males in yellow-green 2 to 3 inch catkins, hanging in 3's; females very short, in clusters at the end of branches

Fruit: Nearly round, 1½ to 2 inches, with a very thick 4-parted husk which splits to its base when ripe; nut thin-shelled, 4-ribbed and sweet

Bark: Light gray, separating into thick plates a foot or more long, which curl outward at both ends. Older trees develop a distinctive shaggy trunk

Twigs: Thick and usually smooth, but may be somewhat fuzzy near end bud; numerous light-colored pores; leaf scars raised, 3-lobed to semicircular, like a "monkey face;" end bud large, brown, covered with 3 to 4 fuzzy brown scales

Values and Uses: The wood is heavy, hard, tough and very strong; in fact, no other commercial species is equal to it in combined strength, toughness, hardness and stiffness. It is used for tool handles, furniture, flooring, sporting equipment, charcoal and fuelwood. The nuts are eaten by a wide variety of wildlife: squirrels, chipmunks, black bears, foxes, rabbits, mice, mallards, wood ducks, bobwhites and wild turkey.

Did You Know?
The nuts were a staple food of many early Native Americans.

Mockernut Hickory

(White Hickory, Whiteheart Hickory, Big-Bud Hickory)

Carya alba (L.) Nutt. ex Ell. (formerly *Carya tomentosa* Nutt.)

Mature Size: 50 to 70 feet in height and 1 to 2 feet in diameter; occasionally reaches 100 feet in height

Form: Straight trunk and rounded crown

Habitat: A variety of well-drained sites; reaches best growth on deep, fertile soils

Leaves: Alternate, pinnately compound, 8 to 12 inches long with 7 to 9 (rarely 5) thin, sharp-pointed, finely toothed leaflets that are dark green above and hairy orange-brown below; very aromatic when crushed

Flowers: Yellow-green; males in 3 to 4 inch drooping catkins, with 3 hanging from one stalk; females very small, in clusters of 2 to 5, near twig tips

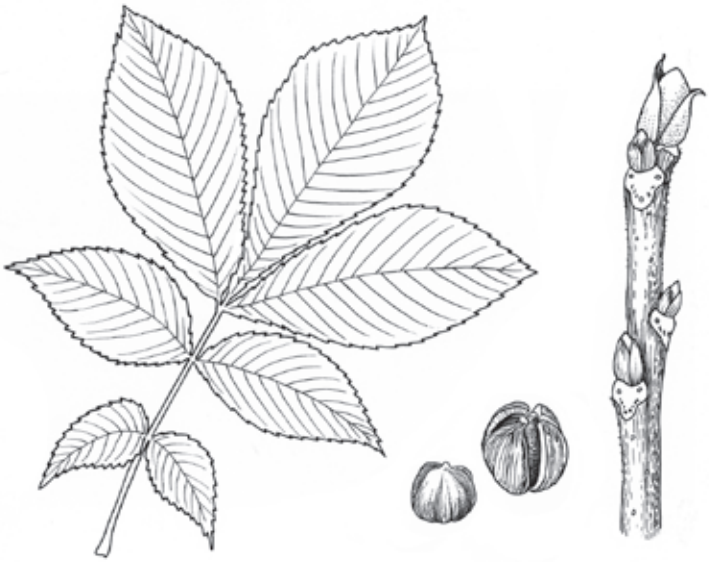
Fruit: Oval, with a thick reddish-brown husk that splits almost to the base when ripe; nut very thick-shelled, round to oval, 1½ to 2 inches long, strongly 4-sided, sweet

Bark: Dark gray to black, deeply furrowed, often appearing interlaced or netted

Twigs: Thick and hairy; 3-lobed leaf scars resemble a “monkey face;” end bud large and chocolate chip-shaped; dark outer scales fall to reveal a silky, nearly white bud

Values and Uses: The wood is heavy, hard, tough and strong; it is white except for its comparatively small, dark brown heart. The wood is used for tool handles, skis, baseball bats, furniture, fuelwood, lumber, charcoal and smoking meats. The nuts are a preferred food for wildlife, particularly squirrels, black bears, foxes, rabbits, beavers, white-footed mice and whitetail deer.

Did You Know?
Mockernut hickories may live 500 years.



Pignut Hickory

Carya glabra (Mill.) Sweet

Mature Size: 50 to 75 feet in height and 1 to 3 feet in diameter

Form: Spreading, often drooping, branches forming a tall, narrow crown

Habitat: Most common on drier soils of slopes and ridge tops, but also grows on moist upland sites

Leaves: Alternate, pinnately compound, 8 to 12 inches long with 5 (rarely 7) finely toothed, sharp-pointed, tapering leaflets

Flowers: Yellow-green; males in 2 to 3 inch drooping catkins, with three hanging from one stalk; females very short in clusters at branch tips

Fruit: Pear shaped or nearly round, 1 to 2 inches long, with a thin husk that only partially splits when ripe; nut not ribbed, fairly round but flattened, seed sweet or somewhat bitter

Bark: On young trees, smooth and light gray, soon developing scaly ridges; on older trees, darker gray with obvious interlacing, shaggy-topped ridges

Twigs: Moderately thick; smooth; leaf scars 3-lobed to heart-shaped, resembling a “monkey face;” end bud small, egg-shaped, light brown

Values and Uses: The wood is heavy, hard, strong and flexible. It is used for tool handles, skis and other equipment requiring strength and impact resistance. It is also a good fuelwood. The nuts are a favorite of squirrels, chipmunks, turkeys, black bears, foxes, rabbits and raccoons.

Did You Know?
Early settlers named the species “pignut” because their hogs loved to eat the nuts. A related species, red hickory (*Carya ovalis*) differs from pignut hickory by slight differences in the fruit and bark. Many hickories hybridize with each other, making exact identification difficult even for experts.

River Birch

(Red Birch, Water Birch)

Betula nigra L.

Mature Size: 70 to 80 feet in height and 1 to 3 feet in diameter

Form: Trunk often divided low into several trunks; crown irregular, divided where the arching limbs spread from the main trunk

Habitat: Deep, rich soils on stream banks, pond and swamp edges

Leaves: Alternate, simple, 1½ to 3 inches long; roughly oval or triangular, with a wedge-shaped base and doubly toothed edges; dark green above and pale green below

Flowers: Males in persistent 2 to 3 inch reddish-green catkins; females in upright ¼ to ½ inch light green catkins, appearing in spring

Fruit: Cone-like, 1 to 1½ inches long, with many hairy scales, reddish brown, containing many tiny, 3-winged seeds

Bark: Reddish brown to cinnamon-red, peeling back in tough papery layers to reveal multiple colors, giving the trunk a ragged and distinctive appearance; on older trees, the bark on the main trunk becomes thick, deeply furrowed and reddish-brown

Twigs: Slender, orange-brown, smooth or slightly fuzzy

Values and Uses: The wood is quite hard and close-grained. Seldom harvested, it has been used in the manufacturing of inexpensive furniture, toys, basket hoops and turned articles. River birch is commonly planted for stream bank restoration and other erosion control situations. It is also an attractive ornamental tree.

Did You Know? This is the only birch native to the Coastal Plain in the southeastern United States.

Yellow Birch

Betula alleghaniensis Britton

Mature Size: 60 to 80 feet in height and 1 to 3 feet in diameter

Form: Broad irregular crown with drooping branches

Habitat: Well-drained, fertile loams, in mountains (above 3,000 feet elevation)

Leaves: Alternate, simple, 3 to 5 inches long, roughly oblong-oval, pointed, with doubly toothed edges

Flowers: Reddish green; males in persistent 1 inch catkins near ends of twigs; females in upright ⅝ inch catkins, appearing in spring

Fruit: Cone-like, ¾ to 1¼ inches long, rather plump, upright, with many hairy scales containing 2-winged nutlets

Bark: On young trees, shiny bronze (sometimes gray), peeling horizontally in thin, curly, papery strips; on older trees, red-brown scaly plates

Twigs: Slender, green-brown and hairy when young, light-brown and smooth later; slight wintergreen smell when broken; spur shoots present on older trees; buds egg-shaped, sharply pointed, reddish brown with ruffled scale edges

Values and Uses: The light brown wood is heavy, strong, hard and close-grained. It can be used for lumber, veneer, flooring, paneling, plywood, cabinets, woodenware, interior doors, pulpwood, charcoal, tar, oils and distillation of wood alcohol. The tree furnishes browse for deer and red squirrels, and its buds and catkins are food for grouse and other wildlife.

Did You Know? Yellow birch bark burns easily even when wet, making it a good emergency campfire starter. Because its seeds do not grow well in leaf litter, successful seedlings often sprout on rotten logs and stumps.

Sweet Birch

Flammability
LOW

(Black Birch, Cherry Birch)

Betula lenta L.

Mature Size: 50 to 60 feet in height and 2 to 3 feet in diameter

Form: Straight trunk and rounded, spreading crown

Habitat: Grows best on moist, rich slopes, especially those facing north and east, but occasionally found on drier, rocky slopes

Leaves: Alternate, simple, oval to oblong, 2½ to 5 inches, with doubly toothed edges; leaf stems hairy; tufts of hair near midveins on the undersides of the leaves

Flowers: Males in persistent ¾ to 1 inch green catkins near the end of the twig; females in upright, ½ to ¾ inch catkins, green tinged in red, appearing in spring

Fruit: Cone-like, scaly, brown, 1 to 1½ inches long, containing very small 2-winged nutlets

Bark: Shiny reddish-brown, with prominent horizontal pores; on older trees, nearly black, dull, breaking into large irregular, but not papery, plates

Twigs: Slender, reddish brown, covered with pores, with a strong wintergreen smell when cut; buds two toned, green and brown; spur shoots present on older trees

Values and Uses: The wood is hard, heavy and close-grained. It has been used for lumber, veneer, furniture, cabinets, woodenware, boxes, handles and paper pulp, and at one time, it was sold as “mahogany” for furniture and interior trim. Wintergreen oil and flavoring (now artificially manufactured) were once obtained from the wood, bark and sap of this tree. The buds, young twigs and catkins provide food for deer, grouse and squirrels.

Did You Know? Birch trees can be “tapped” in spring for their sap, which is used to make birch beer.

Eastern Hophornbeam

(Leverwood, Ironwood)

Ostrya virginiana (P. Mill.) K. Koch.

Mature Size: 20 to 30 feet in height and 7 to 10 inches in diameter

Form: Small and slender with a generally rounded top and long, slender branches that may droop at the ends

Habitat: Understory in moist, well-drained floodplains and lower slopes; grows on a wide variety of soil types

Leaves: Alternate, simple, 2 to 4 inches, oblong with narrowed tips and doubly toothed edges

Flowers: Males in persistent ½ to 1 inch catkins, in clusters of 3 (resembling a bird's toes); females in slender, light green ½ inch catkins, appearing in spring

Fruit: hanging cluster of leafy, oval, papery sacs 1½ to 2½ inches long, with each sac containing a ¼ inch nutlet

Bark: Light brown to reddish-brown, finely divided into thin scales that peel away from the trunk, as if shredded by a cat's claws

Twigs: Slender, reddish brown, smooth and may be slightly fuzzy; male catkins present on twig ends; buds small, oval and covered with green and red-brown, finely grooved scales

Values and Uses: The wood is strong, hard, durable, light brown to white, with thick, pale sapwood. Although seldom harvested, it has been used for tool handles, mallets and other small articles. A row of young hophornbeams can be pruned into a hedge. The buds, catkins and nutlets provide winter food for ruffed grouse, wild turkey, quail, red and gray squirrels, cottontails, white-tailed deer, ring-necked pheasant, purple finch, rose-breasted grosbeak and downy woodpeckers.

Did You Know? The tree's common name comes from the fruits' resemblance to hops.

American Hornbeam

Flammability
LOW

(Musclewood, Blue Beech, Water Beech, Ironwood)

Carpinus caroliniana Walt.

Mature Size: 20 to 30 feet in height and 8 to 12 inches in diameter

Form: Small, bushy tree with a spreading top of slender, crooked or drooping branches

Habitat: Rich soils on low slopes and along streams, ponds and lakes

Leaves: Alternate, simple, 2 to 4 inches, oval, long-pointed, doubly toothed along the edges

Flowers: Males in slender, yellow-green 1 to 2 inch hanging catkins; females in fuzzy yellow-green ½ to ¾ inch catkins on new branch tips

Fruit: 4 to 6 inch hanging cluster of slightly folded, 1 inch, 3-lobed leafy bracts; each bract contains a ⅓ inch ribbed nutlet; nutlets fall with bracts attached, aiding their distribution by the wind

Bark: Light brownish-gray to dark bluish-gray; trunk fluted, resembling rippling muscles

Twigs: Slender, somewhat zigzag, brown to gray; buds ¼ inch, brown, angled, with a tan silky edge to each scale (making the buds appear lined)

Values and Uses: Hornbeam wood is tough, closed-grained, heavy and strong. Although seldom harvested, it has been used for levers, tool handles, wooden cogs, mallets and wedges. The seeds are a valuable food source for gray squirrels and a variety of birds. It is also used by beavers for food and building material.

Did You Know? One common name, musclewood, comes from the resemblance of its trunk to flexed, well-defined muscles.

American Beech

Fagus grandifolia Ehrh.

Mature Size: 60 to 80 feet in height and 2 to 3 feet in diameter

Form: Thick trunk and a broad, rounded crown

Habitat: Rich, well-drained bottoms and moist coves

Leaves: Alternate, simple, 2 to 6 inches, oblong to oval and pointed, with small incurving teeth on the edges; bright yellow in autumn, later turning light tan and often remaining on the tree until spring

Flowers: Males on rounded heads hanging from slender 1 inch stalks; females on shorter spikes

Fruit: Prickly burs about ¾ inch long, splitting into 4 parts; each bur contains 2 three-angled (pyramid-shaped), ½ inch, shiny brown nuts.

Bark: Light gray, thin and smooth

Twigs: Slender and zigzagged; buds shiny brown, ¾ to 1 inch long, slender, resembling pointed cigars or long thorns

Values and Uses: The wood is very hard, strong and tough, though not durable when exposed to weather. The wood can be used for furniture, flooring, veneer, rough lumber, tools, wedges, novelty items, baskets, charcoal, fuel and a type of creosote used as a medicine. Beech nuts are eaten by many birds and mammals, including mice, squirrels, chipmunks, black bear, deer, foxes, ruffed grouse, ducks and blue jays. Large, older trees often become hollow, providing den sites for wildlife.

Did You Know? People frequently scar this tree by carving in its smooth bark. Beech is highly tolerant of shade. It often forms thickets by root suckering, so that old trees may appear to be surrounded by a ring of young ones.

American Chestnut

Castanea dentata (Marsh.) Borkh.

Mature Size: Formerly, up to 100 feet in height and 4 feet in diameter; now, typically reaches 20 feet in height and 4 inches in diameter

Form: Once a well-formed, massive tree with a dense, rounded crown; now found mostly as stump sprouts, less than 20 feet tall; larger stems deformed by chestnut blight may sprout below wounds

Habitat: Moist upland forests

Leaves: Alternate, simple, 5 to 8 inches long, with coarse, sharply pointed teeth along the edges

Flowers: Males small, pale green (nearly white), in 6 to 8 inch hanging catkins; females at base of catkins (near twigs); flowers have an unpleasant odor

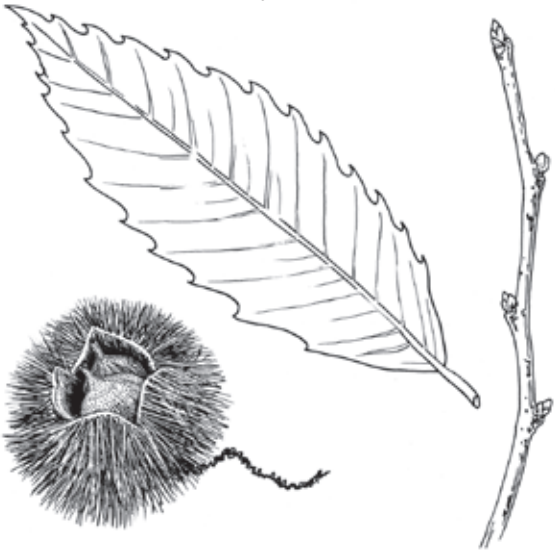
Fruit: Very sharp, prickly burr 2 to 2½ inches long, each containing 2 or 3 shiny, round, brown, sweet nuts ½ to 1 inch long

Bark: Light gray, with broad, flat ridges and fissures that often form a spiral around the trunk

Twigs: Moderately thick, hairless, chestnut- to orange-brown in color with many lighter pores; buds orange-brown, ¼ inch long, covered with 2 or 3 scales and resembling kernels of wheat; leaf scars semicircular

Values and Uses: The wood is coarse-grained, similar to oak but lacking the distinct rays in the wood. It is very resistant to decay; in fact, chestnut split-rail fences are still standing in some parts of Virginia. The tree was once valued for lumber, furniture, flooring, poles, posts, fence rails, railroad ties, tannins and fuel. The nuts were a major food source for humans, livestock and a wide variety of wildlife.

Did You Know? At one time, American chestnut was a dominant forest species in much of Virginia. The chestnut blight fungus (introduced around 1904) killed most trees within a few decades, thereby changing the composition of entire forests. Many of the old stumps continue to sprout to this day, sometimes reaching 20 feet and producing a few nuts before being killed by the blight cankers. Research and development of resistant varieties is ongoing and shows promise for reintroduction of the species.



Alleghany Chinkapin

Flammability
LOW

Castanea pumila Mill.

Mature Size: 15 to 30 feet in height and1 foot in diameter

Form: Large shrub or small tree, often forming thickets

Habitat: Understory in upland hardwood forests, most common on drier soils

Leaves: Alternate, simple, 3 to 6 inches long and 1½ to 2 inches wide, oblong to lance-shaped, with coarsely toothed edge; bright yellow-green on the upper surface, pale green and slightly fuzzy on the lower surface

Flowers: Males small and pale yellow, on semi-upright catkins 4 to 6 inches long; females ⅛ inch long, at the base of some catkins; flowers have an unpleasant odor

Fruit: Prickly burr, 1 to 1½ inches across, containing a shiny, dark brown, sweet nut

Bark: Light brown tinged with red, slightly furrowed and broken into loose, plate-like scales

Twigs: Slender to moderate, reddish brown, often with gray fuzz; buds gray-brown and fuzzy, with 2 to 3 visible bud scales

Values and Uses: The wood is light, hard, strong, coarse-grained and dark brown. It is seldom harvested, but has occasionally been used for fence posts and railway ties. The sweet nuts are eaten by humans, as well as a wide variety of wildlife, including woodpeckers, squirrels, jays and chipmunks.

Did You Know?
The Cherokee people used dried chinkapin leaves to treat headaches and fevers.

White Oak

Flammability
LOW

(Stave Oak)

Quercus alba L.

Mature Size: 80 to 100 feet in height and 3 to 4 feet in diameter

Form: Tall, clear, sometimes stocky trunk and rounded, spreading crown

Habitat: Can grow on a wide variety of upland sites, but attains best growth on deep, well-drained, loamy soils

Leaves: Alternate, simple, 4 to 7 inches long, with 7 to 10 rounded lobes; depth of the sinuses between lobes varies from shallow to almost reaching the midrib; leaf base wedge shaped where it joins the leaf stem

Flowers: Males yellow-green, in slender 2 to 4 inch hanging catkins; females reddish green, in very small single spikes; both appear along with the leaves

Fruit: Egg-shaped to oblong acorn, ¾ inch long, light chestnut brown when ripe, maturing in one season; cap warty and bowl-shaped, covering ¼ of the acorn and detaching at maturity

Bark: Light, ash gray, covered with loose scales or broad plates

Twigs: Red-brown to somewhat gray or purplish, hairless and often shiny; end buds clustered, red-brown, small, rounded and hairless

Values and Uses: The wood is light brown, heavy, strong, hard, close-grained and durable. It is used for lumber, barrels, furniture, tools, interior finish, flooring and fuel. The acorns are sweet and a preferred food of deer, bear, turkeys, squirrels and other wildlife. White oak makes an impressive ornamental tree for large landscapes.

Did You Know?
Vessels in the wood are plugged with a substance called tyloses, making it highly water-tight. This trait has made the wood valuable for whiskey and wine barrels, and in earlier days, for shipbuilding.

Post Oak

(Iron Oak)

Quercus stellata Wangenh.

Mature Size: 40 to 50 feet in height and 1 to 2 feet in diameter

Form: Dense, round-topped crown with twisted and gnarled branches

Habitat: Rocky or sandy ridges and dry woodlands

Leaves: Alternate, simple, 4 to 6 inches long, deeply divided into five rounded lobes separated by broad sinuses; the two largest lobes are straight across from each other, at 90 degree angles from the end lobe, giving the leaf a distinctive T-shape

Flowers: Males yellow-green, in 2 to 4 inch, hanging catkins; females reddish, in short spikes from leaf axils; both appear with the leaves

Fruit: Oval acorn, ½ to ⅔ inch long, one third to one half covered by a saucer-shaped scaly cup, maturing in one season

Bark: Ashy gray and initially quite scaly, later becoming more blocky and ridged, often with horizontal cross-breaks in the ridges

Twigs: Gray or tawny, slightly hairy, dotted with numerous pores; clustered end buds short, blunt, orange-brown, somewhat fuzzy

Values and Uses: The wood is heavy, hard, close-grained and resistant to decay. It is used for lumber, flooring, veneer, trim moldings, mine timbers, railroad ties, fence posts, pulpwood and fuel. The acorns are eaten by a variety of wildlife and the leaves are used for nest building by squirrel, birds and raccoons. Post oak is drought-tolerant and is often used in urban landscaping and to stabilize poor, erodible soils.

Did You Know?
The common name, post oak, refers to the wood's historic use in strong, rot-resistant fence posts.

Chestnut Oak

Flammability
LOW

(Rock Oak, Tanbark Oak)

Quercus prinus L.

Mature Size: 50 to 70 feet in height and 2 to 3 feet in diameter

Form: Crooked trunk and irregular crown on dry ridge tops; straight trunk and narrow crown on better sites

Habitat: Common on dry, rocky slopes and ridges, but attains best growth in well-drained coves and stream sides

Leaves: Alternate, simple, 4 to 8 inches long, roughly oval but often wider near the tip, edges with large rounded teeth

Flowers: Males yellow-green, in 2 to 4 inch hanging catkins; females reddish, in spikes; both appearing with the leaves

Fruit: Shiny, oval acorn, 1 to 1½ inches long, maturing in one season; cap scaly, teacup-like, with thin edges, separating from acorn when mature

Bark: Gray-brown to brown; on young trees, very smooth; on older trees, thick and deeply divided into broad, rounded or flat-topped ridges, somewhat resembling the back of an alligator

Twigs: Medium textured, hairless, orange-brown or grayish; clustered end buds chestnut brown, long, pointed and narrowly cone-shaped

Values and Uses: The wood is heavy, hard, strong and resistant to decay. It is similar to, and often marketed as, white oak, and is used for lumber, beams, railroad ties, flooring, furniture and planking. The large acorns are sweet and are eaten by a variety of wildlife, although good acorn crops are infrequent.

Did You Know? The bark of this tree was once used for tanning leather. The species takes its common name from American chestnut, which has somewhat similar leaves.

Swamp Chestnut Oak

Flammability
LOW

(Basket Oak, Cow Oak)

Quercus michauxii Nutt.

Mature Size: 60 to 80 feet in height and 2 to 3 feet in diameter

Form: Tall, clear trunk, with thick branches growing upward at sharp angles to form a round-topped crown

Habitat: Moist, well-drained, loamy bottomlands and stream sides

Leaves: Alternate, simple, roughly oval but slightly wider near the tip, 6 to 8 inches long, edges with large rounded teeth

Flowers: Males yellow-green, in 2 to 4 inch hanging catkins; females green to reddish, very small in leaf axils; both appearing with the leaves

Fruit: Egg-shaped acorn 1 to 1½ inches long, maturing in one season, one third covered by a thick bowl-like cap with rough, wedge-shaped scales

Bark: Light, ashy gray; on upper trunk of old trees, broken into broad flakes or divided into strips

Twigs: Moderately thick, smooth or quite fuzzy, orange-brown; buds reddish brown, clustered at twig ends

Values and Uses: The wood is hard, tough, very strong and heavy. It is used for barrels, baskets, lumber, flooring, tools and fuel. The acorns provide an important food source for many species of birds and mammals.

Did You Know? The name “cow oak” refers to cattle’s fondness for the large, sweet acorns. Its other name, “basket oak,” refers to the long, thin strips of wood that are split from this tree and used to make baskets.

Live Oak

Flammability
LOW

Quercus virginiana Mill.

Mature Size: 50 feet in height and 4 feet in diameter; open-grown trees may have trunk diameters over 6 feet, and a crown span of 150 feet

Form: Relatively short, broad trunk and heavy, gnarled branches forming a dense, spreading crown

Habitat: Mainly dry sandy woods, in coastal areas

Leaves: Alternate, simple, 2 to 5 inches long, evergreen, leathery, oval with rounded ends, edges mostly smooth or slightly toothed

Flowers: Males on hanging catkins, females on spikes

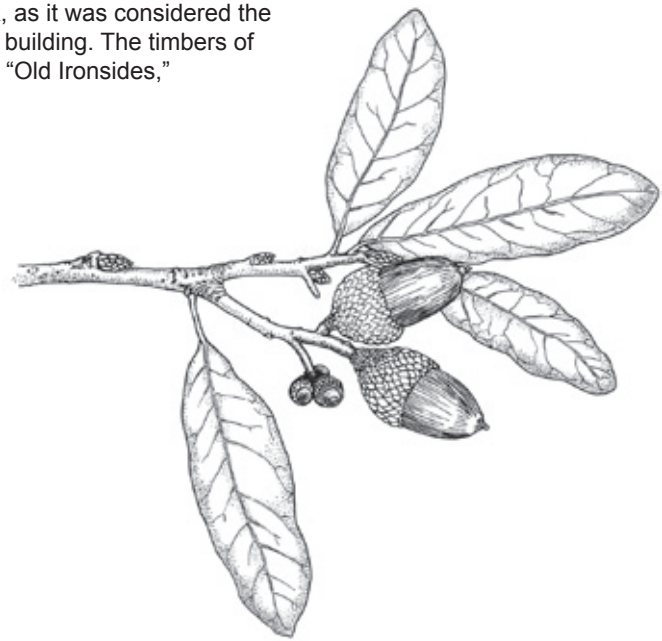
Fruit: ¾ inch dark brown acorn, ⅓ covered by a bowl-shaped, warty cap; acorns in clusters of 3 to 5, maturing in one year

Bark: Dark brown tinged with red, slightly furrowed, later becoming black and blocky

Twigs: Slender, gray and fuzzy, with small, blunt, multiple end buds

Values and Uses: The wood is heavy and strong, but extremely difficult to saw and dry. It was once prized for blocks and ribs on sailing ships. The acorns are a dependable and highly desirable food for a wide variety of wildlife. Live oak is salt-tolerant and makes a good ornamental landscape tree for southern coastal areas.

Did You Know? Live oak, as the name implies, is evergreen and also is long-lived. It sprouts readily from the roots and root collar. The United States Navy once owned many stands of live oak, as it was considered the strongest wood for ship building. The timbers of the U.S.S. Constitution, “Old Ironsides,” are made from live oak.



Laurel Oak

(Darlington Oak, Diamond-Leaf Oak)

Quercus laurifolia Michx.

Mature Size: 60 feet in height and 1 to 3 feet in diameter

Form: Straight trunk and dense, rounded crown

Habitat: Moist woodlands and sandy soil near rivers and swamp edges

Leaves: Alternate, simple, semi-evergreen, oblong, 3 to 5 inches long, widest near the middle, with smooth edges

Flowers: Males yellow-green, in 1½ to 3 inch hanging catkins; females green to reddish, in small spikes; both appearing with the new leaves in spring

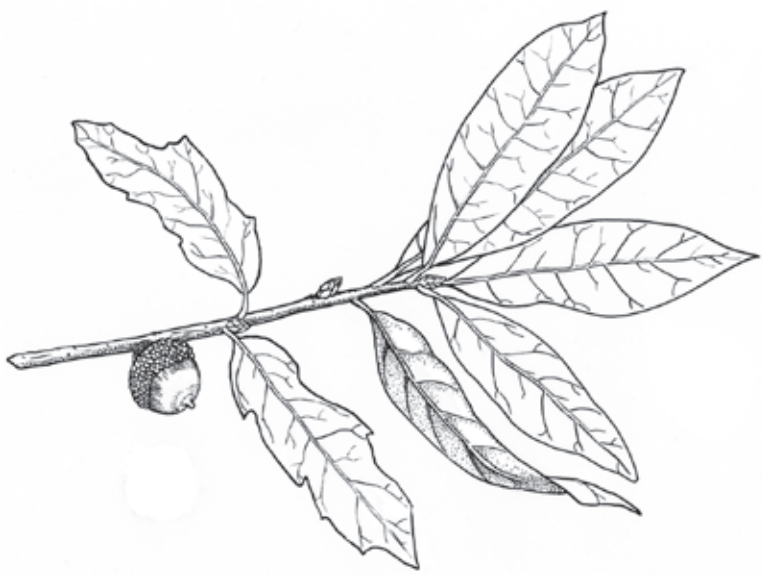
Fruit: ½ to ⅔ inch acorn, nearly round, dark brown and striped; reddish-brown cap usually shallow but may cover up to ⅓ of acorn; acorns mature in two seasons

Bark: Dark brown and smooth on young trees, later developing shallow fissures with flat, rough ridges

Twigs: Slender, light reddish brown, hairless; buds sharp-pointed, reddish brown, clustered at twig ends

Values and Uses: The wood is heavy and hard but does not make good lumber. It is used occasionally for fuel and pulpwood. Laurel oak is a heavy acorn producer, making it a reliable food source for many birds and mammals. The tree is also planted as an ornamental.

Did You Know? Laurel oak has several forms with slightly different leaves. There is debate about whether these forms are all one species, as well as whether laurel oak itself is a hybrid.



Northern Red Oak

Flammability
LOW

Quercus rubra L.

Mature Size: 70 to 90 feet in height and 2 to 3 feet in diameter

Form: Straight trunk and rounded, relatively narrow crown

Habitat: Deep, well-drained, loamy soils and fertile coves; reaches best growth on north and east slopes

Leaves: Alternate, simple, 5 to 8 inches long, with 7 to 11 sharply pointed and bristle-tipped lobes; fall color deep red

Flowers: Males in yellow-green, slender, 2 to 4 inch hanging catkins; females on short spikes; both appearing with the leaves in spring

Fruit: ¾ to 1 inch, nearly round acorn, covered ¼ or less by a shallow cap resembling a beret; acorns mature in two seasons

Bark: On young stems, smooth and gray; on older trees, thick and broken by shallow fissures into regular, flat, smooth-surfaced plates or flat ridges, resembling ski trails

Twigs: Thick, red-brown and smooth; end buds large, cone-shaped, red-brown, in clusters

Values and Uses: The wood is hard, strong, coarse-grained, with light reddish-brown heartwood and thin, light-colored sapwood. It is used for paneling, furniture, cabinets and flooring. The acorns provide food for many mammals and birds. The tree's symmetrical shape and fall color make it a desirable landscape tree.

Did You Know? Northern red oak is one of the most important timber trees in the eastern United States.

Southern Red Oak

(Spanish Oak)

Quercus falcata Michx.

Mature Size: 60 to 80 feet in height and 1 to 2½ feet in diameter; can reach 100 feet in height

Form: Large, spreading branches with a broad, round, open top

Habitat: Variable; common on uplands with dry, poor, sandy or gravelly soils; reaches largest size along streams in fertile bottoms

Leaves: Alternate, simple, 5 to 9 inches long and 4 to 5 inches wide, dark shiny green above, tan and downy beneath; lobes irregularly shaped, mostly narrow, bristle-tipped, with the central lobe usually longest; sometimes pear-shaped with three rounded, bristle-tipped lobes at the outer end

Flowers: Males yellowish-green, on long thread-like catkins; females reddish on short spikes; both appear in spring with the leaves

Fruit: Small rounded ½ inch acorn, set in a thin, saucer-shaped cup that tapers to a short stem; ripens during the second year

Bark: Rough, though not deeply furrowed; varies from light gray on younger trees to dark gray or almost black on older ones

Twigs: Reddish brown to gray-brown; young twigs often gray and fuzzy; end buds ¼ inch long, clustered, dark reddish brown, pointed, fuzzy

Values and Uses: The wood is heavy, hard, strong and coarse-grained. It is used for construction lumber, veneers and furniture. The small acorns are eaten by many species of wildlife, including songbirds. This tree is commonly planted for shade in the landscape.

Did You Know?
Cherrybark oak (*Quercus pagoda*) is sometimes treated as a variety of southern red oak. Cherrybark oak is found on bottomland soils, especially along rivers. It has pagoda-shaped leaves and rough bark similar to that of black cherry. It is considered an excellent timber species.

Black Oak

Flammability
LOW

(Yellow Oak)

Quercus velutina Lam.

Mature Size: 50 to 80 feet in height and 1 to 2½ feet in diameter

Form: Tapering, limby trunk and open, irregular crown

Habitat: Variable; common in dry woods and along ridges, but grows best on rich, well-drained soils

Leaves: Alternate, simple, 4 to 10 inches long, basically oval with 5 to 7 pointed, bristle-tipped lobes, shiny green above, paler with scruffy fuzz along leaf veins on the underside; sun leaves have deep sinuses between lobes, and shade leaves have very shallow sinuses; fall color dull red

Flowers: Males on slender, yellow-green catkins; females reddish green, on short spikes; both appearing in spring with the leaves

Fruit: ½ to ¾ inch oval or rounded acorn, half enclosed in a deep, scaly, bowl-shaped cup; maturing in two seasons

Bark: On young trees, gray and smooth; on older trees, thick, very rough, nearly black and deeply furrowed vertically with horizontal breaks; the inner bark is yellow-orange (as opposed to pinkish in other oaks) and very bitter-tasting

Twigs: Thick, red-brown to gray-green, usually smooth, but rapidly growing twigs may be hairy; buds relatively large (¼ to ½ inch), buff-colored, fuzzy, pointed and distinctly angular

Values and Uses: The wood is hard, heavy, strong, coarse-grained, red-brown with a thin outer edge of paler sapwood. It is marketed with red oak and used for flooring, furniture, interior finish, fence posts and railroad ties. The acorns are a valuable food source for wildlife.

Did You Know? The bark of black oak was once a major source of tannins for tanning leather, a bright yellow dye and for medicines.

Scarlet Oak

Quercus coccinea Muench.

Mature Size: 60 to 80 feet in height and 1 to 2 feet in diameter

Form: Relatively small branches, spreading to form a narrow, open, irregular crown; often retains many small, dead branches; base of trunk may be swollen

Habitat: Dry, rocky upland soils

Leaves: Alternate, simple, 4 to 7 inches long and 3 to 5 inches wide, with 5 to 9 pointed lobes deeply separated by wide sinuses that reach almost to the midvein; scarlet fall color

Flowers: Males on slender yellow-green catkins; females on very short spikes; both appearing with the leaves in spring

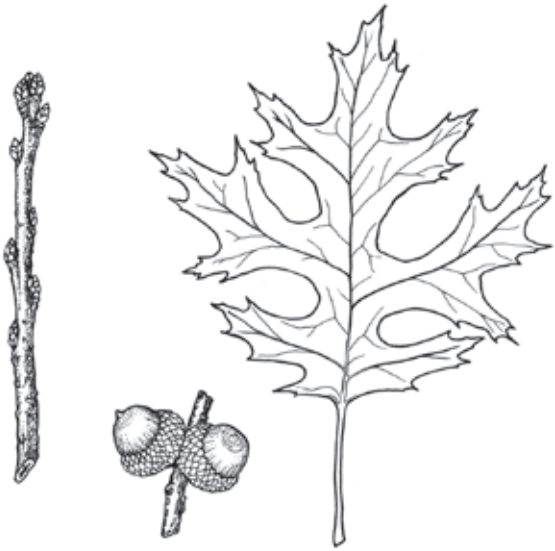
Fruit: Oval ½ to 1 inch acorn, enclosed ½ to ⅓ of its length in a deep, shiny, bowl-like cup; acorn tip often marked with ringed with circles resembling a target; matures in two seasons

Bark: On young trees, smooth and gray; on older trees, darker with irregular broad ridges and narrow furrows, especially near the base

Twigs: Moderately thick, red-brown; end buds clustered, reddish brown, plump, pointed, slightly angled and covered with a light colored fuzz on the top half

Values and Uses: The wood is heavy, hard, strong and coarse-grained. It is used for lumber, flooring, beams, railroad ties and furniture. The acorns provide food for a variety of wildlife. The tree's brilliant fall color, rapid growth and drought tolerance make it a popular choice for landscape planting.

Did You Know? Scarlet oak is comparatively short-lived, but it continues to produce stump sprouts much longer than other oaks. The swelling at the base of most scarlet oak trunks is caused by the chestnut blight fungus, which infects but does not kill the oaks.



Blackjack Oak

Quercus marilandica Muench.

Mature Size: 20 to 30 feet in height and 6 to 12 inches in diameter; rarely may reach 50 feet in height

Form: Short trunk and crooked, twisting branches forming an uneven crown; small, stiff dead branches commonly present

Habitat: Most common on heavy clay or dry gravelly or sandy upland soils

Leaves: Alternate, simple, 4 to 8 inches long, leathery, usually broader at the end than at the base, with 3 large lobes; often described as “bell-shaped;” undersides brownish or orangish and quite hairy

Flowers: Males in 2 to 4 inch long hanging catkins; females small, single or paired

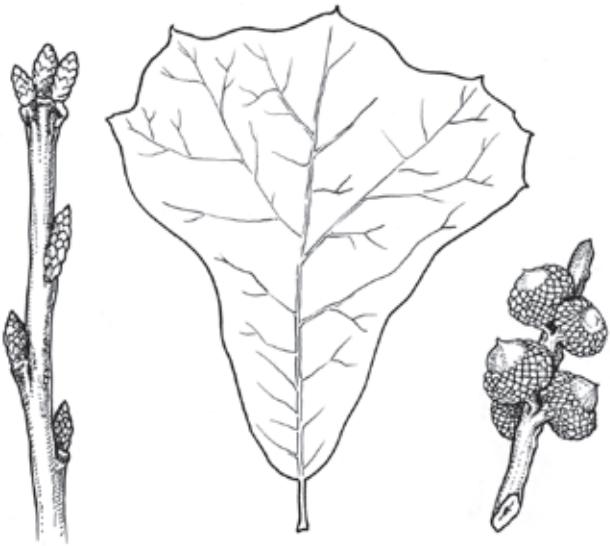
Fruit: ¾ inch oblong acorn, often striped, half covered by a thick, scaly cup

Bark: Rough, very dark (often nearly black), broken into small, hard rectangular blocks

Twigs: Thick, dark brown, with some hairy tufts; buds reddish brown, ¼ inch long, sharp, angled and fuzzy

Values and Uses: Blackjack oak is not valuable as a timber species, but it is sometimes used for charcoal, firewood and occasionally for railroad ties. The acorns are eaten by wildlife.

Did You Know? The presence of blackjack oak is said to indicate poor soil.



Pin Oak

(Swamp Oak)

Quercus palustris Muench.

Mature Size: 50 to 70 feet in height and 1 to 2 feet in diameter

Form: Straight trunk with pyramid-like crown; lower branches droop, middle branches are almost horizontal, and upper branches ascend slightly; numerous spur-like twigs give the tree a spiky appearance

Habitat: Poorly drained river edges and floodplains, typically on clay soils

Leaves: Alternate, simple, 3 to 5 inches long, 2 to 5 inches wide, with 5 to 9 pointed lobes separated by variable, but often wide, sinuses extending nearly to the midvein; scarlet fall color

Flowers: Males in slender, drooping, yellow-green catkins; females are reddish green, on short spikes; both appearing in spring with the leaves

Fruit: ½ inch, rounded, striped acorn, flattened at cap end; up to one third enclosed by a thin, saucer-like cap; matures in two seasons

Bark: On young trees, smooth and gray-brown; later developing narrow, dark gray, flat-topped ridges separated by very shallow furrows

Twigs: Slender, red-brown, shiny; end buds clustered, small, pointed and chestnut brown

Values and Uses: The wood is hard and heavy, but somewhat knotty. It is used for rough lumber and firewood. The acorns are eaten by waterfowl, turkeys, jays, woodpeckers and squirrels. Pin oak is a popular landscape tree because of its fast growth, ease of transplanting, tolerance of urban stresses and good fall color.

Did You Know? This tree's common name comes from its pin-like twigs. Pin oak can tolerate flooding during its dormant season and may form pure stands in poorly drained, low-lying areas.

Water Oak

(Possum Oak, Spotted Oak)

Quercus nigra L.

Mature Size: 50 to 80 feet in height and 2 to 3 feet in diameter

Form: Straight trunk with slender branches and rounded or pyramidal crown

Habitat: Rich bottomlands, stream and swamp edges, and moist uplands

Leaves: Alternate, simple, 2 to 4 inches long, broader at the tip than at the base; may be spoon-shaped or slightly 3-lobed; deciduous but often remain on tree into winter

Flowers: Males in hanging catkins, females on spikes; both appearing with the leaves in spring

Fruit: ½ inch rounded, very dark acorn, one third covered by a flattened, tight-scaled cap; maturing in two seasons

Bark: Initially smooth, brown and tight; later becoming gray-black with wide scaly ridges

Twigs: Slender, red-brown; end buds clustered, short, sharp-pointed, angular, red-brown

Values and Uses: The wood is used for rough construction lumber, support beams, plywood and firewood. Acorns are eaten by a variety of wildlife. Water oak is commonly planted as a shade tree in the Southeast.

Did You Know? Water oak is easily injured by fire.

Willow Oak

(Pin Oak, Peach Oak)

Quercus phellos L.

Mature Size: 50 to 80 feet and reach 1 to 2½ feet in diameter

Form: Oblong crown with many slender branches; some dead lower branch stubs may persist

Habitat: Lowlands, river and swamp borders, and rich, sandy uplands

Leaves: Alternate, simple, 2 to 5 inches long, narrow, smoothed-edged, tipped with a bristle

Flowers: Males on slender yellow-green catkins; females on very short spikes; both appearing with the leaves in spring

Fruit: ¼ to ½ inch tan acorn, one fourth covered by a thin, flat, scaly cap

Bark: On young trees, smooth and reddish brown; on older trunks, darker brown to nearly black, slightly rough, and divided by narrow ridges

Twigs: Slender, smooth, olive-brown; clustered end buds small, reddish brown and sharp-pointed

Values and Uses: The wood is heavy, strong, rather coarse-grained and light brown tinged with red. Sold as red oak, it is used for crossties, rough construction and pulpwood. The tree produces good acorn crops, making it a valuable and dependable wildlife food source. Willow oak is long lived and fast growing, and it is widely planted as a landscape tree.

Did You Know? Willow oak may be almost evergreen in the southernmost portions of its range.

American Elm

(White Elm, Soft Elm)

Ulmus americana L.

Mature Size: 75 to 100 feet in height and 2 to 4 feet in diameter

Form: Straight or forked trunk and arching vase-shaped crown; trunk may be enlarged at the base

Habitat: Most common on bottomlands and other fertile, moist soils

Leaves: Alternate, simple, smooth to slightly rough-textured, 4 to 6 inches long, oval, with double-toothed edges, a long, slightly curved point and an uneven base

Flowers: Small, in drooping clusters of 3 to 5; appearing in early spring before the leaves

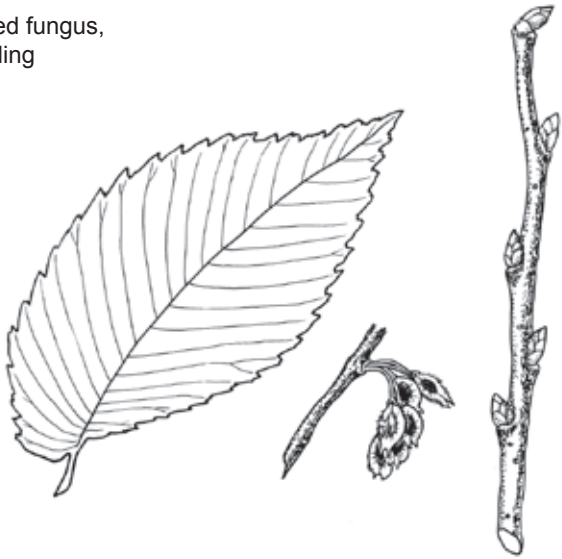
Fruit: Small seed encased in a rounded, flattened, papery, wafer-like covering with fuzzy edges, deeply notched at tip, ⅜ to ½ inch across; fruits clustered on long stems, ripening in early spring

Bark: Dark gray, divided into irregular, flat-topped, thick ridges separated by diamond-shaped fissures; inner bark shows layers of reddish brown and buff

Twigs: Slender, smooth, slightly zigzag, reddish brown; buds egg-shaped, over ¼ inch long, reddish brown with darker edged scales, often set a little to one side of the twig

Values and Uses: The wood is heavy, hard, strong, tough and difficult to split. Although seldom harvested today, it was once used for furniture, hardwood dimension, flooring, construction and mining timbers, crates, baskets and paper pulp. The seeds and flower buds are eaten by birds and small mammals. This tree was once among the most popular and beautiful of landscape and city street trees.

Did You Know? An introduced fungus, Dutch elm disease, began killing American elms in the 1930s. Selective breeding has produced some trees with resistance to the disease. Large, valuable trees are occasionally treated with costly trunk injections of fungicide, a technique which manages but does not cure the disease.



Slippery Elm

Flammability
LOW

(Red Elm, Soft Elm)

Ulmus rubra Muhl.

Mature Size: 60 to 70 feet in height and up to 2½ feet in diameter

Form: Broad, somewhat flat-topped crown and spreading branches

Habitat: Grows best on moist, rich bottomlands, but also found on drier, upland soils

Leaves: Alternate, simple, egg-shaped to oblong, 4 to 6 inches long, 2 to 3 inches wide, edge double-toothed, leaf base uneven; dark green above and very rough, paler and slightly rough or hairy beneath

Flowers: Small, light green, in tight clusters of 3 to 5, appearing in early spring before leaves open

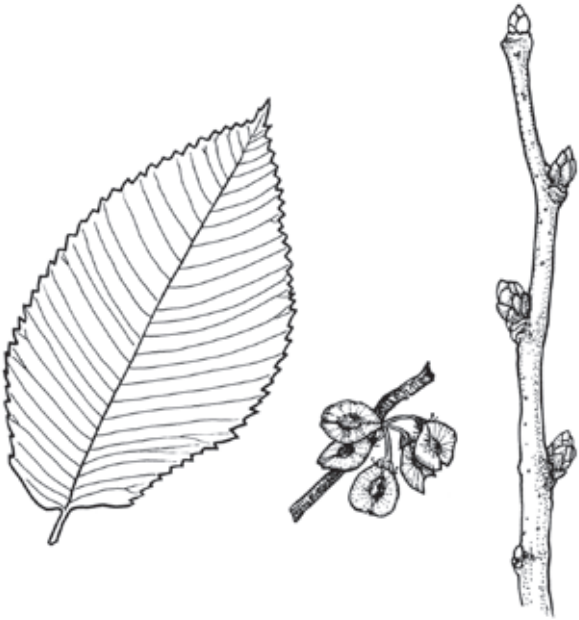
Fruit: Small seed encased in a round, papery, wafer-like covering, ¾ to 1 inch across; edges and surfaces smooth, but surface of seed cavity fuzzy; ripening in late spring

Bark: Dark reddish brown, deeply furrowed; inner bark very slippery

Twigs: Thicker than American elm, slightly zigzag, ashy gray to brownish-gray, often mottled, rough; buds chestnut brown to nearly black, sometimes rusty-hairy; twigs sticky when chewed

Values and Uses: The wood is similar to that of American elm and, although not often harvested, it has been used for furniture, paneling and containers. The seeds are eaten by birds and small mammals, and twigs are browsed by rabbits and deer. The inner bark is collected for use in folk medicines.

Did You Know? The inner bark, when steeped in water, is a long-used remedy for coughs, sore throats and fevers. Slippery elm is less susceptible to Dutch elm disease than the American elm.



Winged Elm

Flammability
LOW

(Cork Elm, Wahoo)

Ulmus alata Michx.

Mature Size: 40 to 50 feet in height and 1 to 2 feet in diameter

Form: Short trunk, with branches arching upward to form an open, rounded crown

Habitat: Common on dry, gravelly uplands, but also grows in moist river bottoms

Leaves: Alternate, simple, 1½ to 3½ inches long, oblong to oval, pointed, somewhat rough-textured and coarsely double-toothed on the edges

Flowers: Small, reddish, in clusters, appearing before leaves in spring

Fruit: Small seed encased in a ⅓ inch long, reddish, flattened, papery covering, hairy on edges, oblong, tipped with two long, curving bristles; ripening in early spring

Bark: Red-brown to ashy gray, divided into irregular flat ridges and fissures

Twigs: Slender, smooth, slightly zigzag, reddish brown, with reddish brown buds and corky wings protruding up to one-half inch from stem

Values and Uses: The heavy wood is hard and strong. It is seldom harvested but has been used for furniture, flooring, hockey sticks, crates and boxes. Birds and small mammals eat the seeds, and deer browse the new leaves in spring.

Did You Know? Winged elm takes its common name from the corky “wings” often present on its twigs.

Hackberry

(Sugarberry, Nettletree)

Celtis occidentalis L.

Mature Size: Commonly 40 to 60 feet in height and 1 to 2 feet in diameter, but may reach height of 130 feet

Form: Rounded, spreading crown; may have numerous bushy growths on branches ("witches' brooms")

Habitat: Mainly bottomlands and stream sides

Leaves: Alternate, simple, 2 to 5 inches long, oval with curved, pointed tip and uneven base; three major veins originating at leaf base; small rounded or pointed bumps (galls) caused by an insect are often present on the leaves

Flowers: ⅛ inch, light green, 4 or 5 lobed, produced on stalks from new leaf axils, appearing in spring

Fruit: Round, thin-fleshed, dry but edible fruit, ¼ to ⅜ inch across, turning orange-red to dark purple in fall when ripe, often remaining on the tree over winter

Bark: Gray and generally smooth, with characteristic corky warts and ridges

Twigs: Slender, zigzag, light red-brown with numerous lighter pores; buds small, tan, triangular, pressed close to twig; inside of cut twig (pith) often divided into chambers near points of leaf attachment

Values and Uses: The wood is heavy, rather soft and weak, decaying quickly when exposed to moisture. It is not often harvested, but it has been used for inexpensive furniture, millwork, baskets and crates and some athletic equipment. The berries are persistent and make a good fall and winter food source for birds and small mammals.

Did You Know?
A related species, sugarberry (*Celtis laevigata*), is found in extreme southeastern Virginia.

Red Mulberry

Flammability
LOW

Morus rubra L.

Mature Size: 30 to 60 feet in height and 1 to 2 feet in diameter

Form: Short trunk and dense, spreading crown

Habitat: Floodplains and low, moist slopes

Leaves: Alternate, simple, 3 to 5 inches long, rough above and downy beneath, with toothed edges; leaf shape may be oval, mitten-shaped, or with 3 or more lobes

Flowers: Males and females are usually on separate trees; tiny, pale green, clustered into 1 to 2 inch hanging catkins (males) or 1 inch catkins (females), both appearing in late spring with the leaves

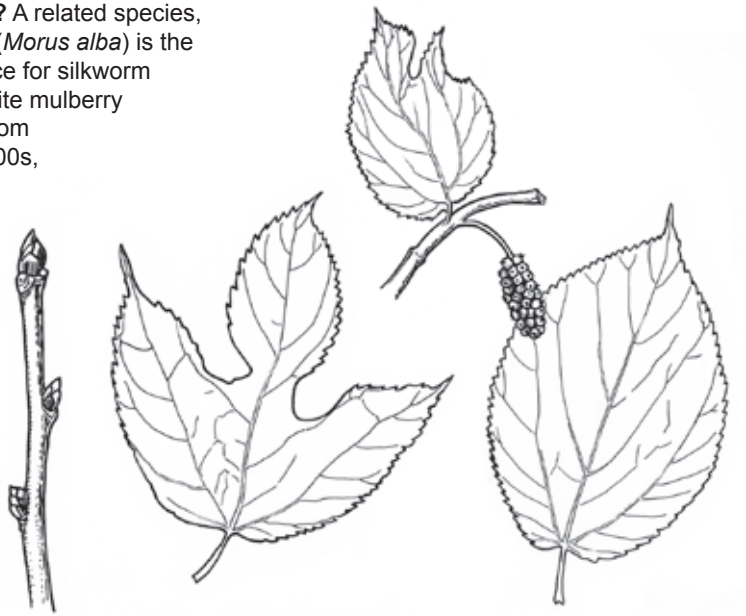
Fruit: 1 to 1¼ inch fleshy cluster resembling a blackberry, red when immature, turning deep purple when ripe in mid-summer; sweet, juicy and edible

Bark: Dark brown tinged with red, but often orange on young trees; scaly with long, irregular ridges

Twigs: Slender, zigzag, green changing to red-brown, sometimes fuzzy; buds covered with brown-edged overlapping scales; leaf scars shield-shaped and somewhat sunken; silvery-white hairs present when twig is broken

Values and Uses: The dark brown wood is light and soft, not strong, but quite durable. It was traditionally used for fencing, barrels, interior finish and agricultural tools. The berry is a favorite food for squirrels, opossums, raccoons, turkeys and many songbirds.

Did You Know? A related species, white mulberry (*Morus alba*) is the main food source for silkworm caterpillars. White mulberry was imported from China in the 1700s, in hopes of establishing a silk industry in the southern United States. Although silk production here was never successful, white mulberry is now naturalized throughout the South.



Cucumbertree

Flammability
LOW

(Cucumber Magnolia)

Magnolia acuminata L.

Mature Size: 60 to 80 feet in height and about 2 feet in diameter

Form: Straight trunk and a narrow, pyramid-shaped crown

Habitat: Mountain valleys and cool, moist slopes, especially those facing north or east

Leaves: Alternate, simple, 6 to 10 inches long, 3 to 6 inches wide, oblong-oval with pointed ends and smooth, often wavy edges

Flowers: 2 to 3 inches long, bell-shaped, green to greenish-yellow, appearing in late spring or early summer

Fruit: 2 to 3 inch long conelike cluster, maturing from green to bright red to brown; ½-inch egg-shaped red seeds dangle on slender threads when ripe

Bark: Light gray-brown and flaky, soft enough to dent with thumbnail, much darker reddish brown when flaked away

Twigs: Moderately thick, red-brown, with light pores; large, silky, white end bud, ring-like scars encircling twig at points of leaf attachment; twigs smell spicy-sweet when broken

Values and Uses: The wood is light, soft and durable, harder and heavier than that of yellow-poplar, with which it is usually marketed. It is used for pallets, crates, plywood and furniture. The seeds are not a preferred wildlife food, but they are eaten by a few birds and mammals. Cucumbertree is also planted as an ornamental shade tree.

Did You Know? The common name refers to the immature fruit's resemblance to a small cucumber.

Sweetbay

(Swamp Magnolia, White Bay)

Magnolia virginiana L.

Mature Size: Typically 20 to 30 feet in height and 1 foot in diameter, but may reach 60 feet in height

Form: Small tree with a rounded, narrow crown

Habitat: Swamp edges and other low, wet areas

Leaves: Alternate, simple, oblong, 4 to 6 inches long, blunt pointed, smooth edged, shiny bright green above and pale or whitish below, releasing a pleasant, spicy odor when crushed

Flowers: 2 to 3 inches across, fragrant, creamy white, cup-shaped, with 9 to 12 petals; appearing in late spring

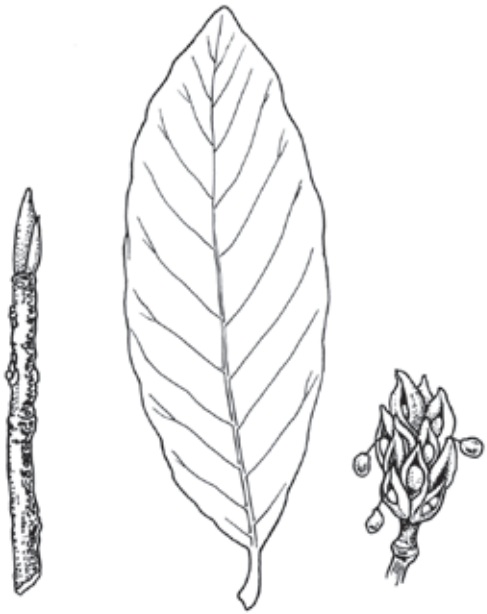
Fruit: 2-inch conelike cluster, pink ripening to dark reddish-brown, with bright red seeds

Bark: Smooth, red-brown to gray, often mottled

Twigs: Moderate in size, pale green, fuzzy, with ring-like scars encircling twigs at points of leaf attachment; buds ½ inch long, with fuzzy, silvery-gray scales curling at the ends

Values and Uses: Sweetbay wood is soft. It is not a major commercial species, but it has been used for veneer, boxes, handles, novelty woodenware, core stock for furniture, and occasionally for pulpwood. The foliage and twigs are a favorite browse for deer, and the seeds are eaten by birds and small mammals. Sweetbay is also grown as an attractive landscape tree.

Did You Know? Sweetbay is often late in shedding its leaves; farther south, it may be almost evergreen.



Fraser Magnolia

(Mountain Magnolia, Umbrella-tree)

Magnolia fraseri Walt.

Mature Size: Commonly 30 to 50 feet in height and 1 to 1½ feet in diameter

Form: Small tree often growing in clumps, with a wide-spreading, open crown

Habitat: Rich coves and cool slopes, in mountain areas

Leaves: Alternate, simple, oblong, 10 to 12 inches long, with earlobe-like projections at the base; leaves often clustered at ends of branches

Flowers: Very showy, about 10 inches across, with several creamy white petals and an unpleasant odor; appearing with the leaves in spring

Fruit: Conelike cluster, 4 to 5 inches long, red at maturity, later turning brown, containing scarlet seeds

Bark: Smooth, grayish brown, splotchy, later developing scaly plates

Twigs: Thick, purplish brown, with large leaf scars; end bud is 1 inch long, smooth and purplish brown

Values and Uses: The wood is light, weak and easily worked. It occasionally is used for lumber or pulpwood, in a mix with yellow-poplar and other magnolias. Birds and small mammals eat the seeds, and deer sometimes browse the twigs. The tree is sometimes planted for ornamental purposes.

Did You Know? Another magnolia species nicknamed umbrella-tree (*Magnolia tripetala*) is found in scattered mountain areas of the state. Its large leaves spread from the branch tips like the ribs of an umbrella.

Yellow-Poplar

Flammability
LOW

(Tuliptree, Tulip-Poplar)

Liriodendron tulipifera L.

Mature Size: Typically 90 to 110 feet in height and 2 to 3 feet in diameter, but can reach nearly 200 feet in height and 10 feet in diameter

Form: Very long, straight trunk with a compact, pyramidal crown

Habitat: Various moist, well-drained sites statewide, but attains best growth on deep moist soils along streams and in lower mountain coves

Leaves: Alternate, simple, 4 to 6 inches long and wide, smooth edged, with usually 4 pointed lobes, the outer two lobes often flattened into a squared end; yellow fall color

Flowers: 2 to 3 inches across, tulip-shaped, yellowish-green, marked with orange bands near the base

Fruit: 2½ to 3 inch cone-like cluster of woody, slender, wing-like seeds, breaking up at maturity in fall, leaving a spike with a few whorls of seeds, resembling wooden flowers

Bark: Light gray with shallow furrows on young trees, later becoming thick with flat-topped ridges and white furrows

Twigs: Red-brown, often appearing shiny or waxy; large scars encircling the twig at leaf nodes; buds elongated and “duck bill” shaped; twigs have a sweet, spicy odor when broken

Values and Uses: The wood is light, soft, easily worked, with wide cream-colored sapwood and greenish-yellow heartwood. It is used for lumber, trim, veneers, flake and chip boards, plywood, core stock of furniture, paper pulp and fuel. Sprouts and buds are a major food of deer, and birds and squirrels eat the seeds. The flowers are an important nectar source for honey production. Yellow-poplar makes an impressive shade tree for large landscapes.

Did You Know?
Yellow-poplar is one of the largest and most valuable hardwood trees in the United States. Yellow-poplar stands are popular with mushroom hunters, because the prized morel mushrooms grow best under these trees.

Pawpaw

Flammability
LOW

Asimina triloba (L.) Dunal

Mature Size: Up to 40 feet in height and 1 foot in diameter

Form: Small tree or shrub, often forming thickets

Habitat: Understory of hardwood forests, especially in moist floodplains

Leaves: Alternate, simple, 5 to 11 inches long, somewhat pear-shaped; when crushed, gives an unpleasant smell like fresh asphalt

Flowers: Purplish-brown, broadly bell shaped, 1 to 1½ inch across, with 6 petals, appearing with or slightly before the leaves

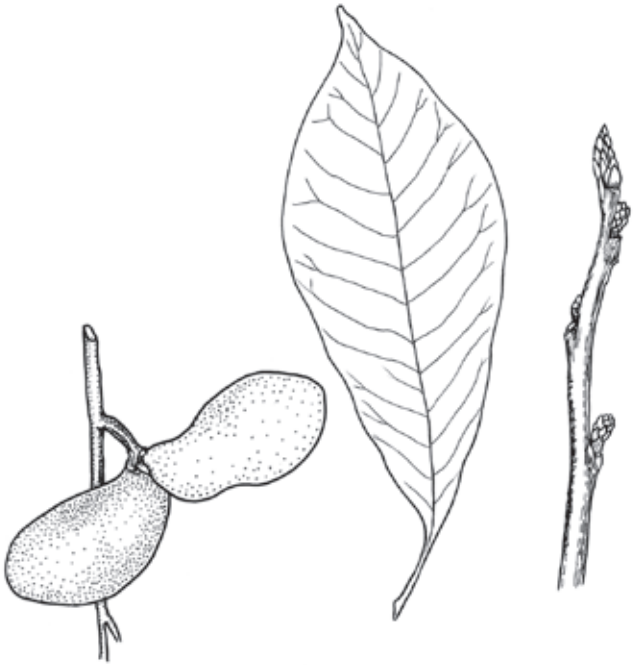
Fruit: Fleshy, edible, 2½ to 4 inches long, resembling a short, fat banana; at first green, turning yellowish then brown as they ripen in the fall

Bark: Smooth, brown, splotched with wart-like pores, often with light gray patches

Twigs: Moderately thick, red-brown; buds purplish brown, fuzzy, flattened and often curved, end bud ¼ to ½ inch long

Values and Uses: Pawpaw fruits are eaten by raccoons, opossums, squirrels and birds.

Did You Know? Pawpaw leaves are the only food source for caterpillars of the beautiful zebra swallowtail butterfly.



Sassafras

Sassafras albidum (Nutt.) Nees

Mature Size: 20 to 40 feet in height and 1 to 1½ feet in diameter

Form: Small tree with an irregular, often twisted trunk and flat-topped crown, often forming thickets

Habitat: Open woods and abandoned fields, especially on moist sandy loam soils

Leaves: Alternate, simple, 4 to 6 inches long, with smooth edges and three distinct leaf forms: oval, mitten-shaped and 3-lobed; fragrant when crushed; fall color yellow, orange or crimson

Flowers: Small but showy, bright yellow-green, clustered along 2 inch stalks, appearing in early to mid-spring; males and females on separate trees

Fruit: On female trees only; shiny, dark blue egg-shaped, berrylike, ⅓ inch long, with a thin, fleshy covering on the hard seed; each fruit is held in a red cup on an upright red stalk; maturing in late summer

Bark: Thick, red-brown and deeply furrowed; inner bark cinnamon-colored

Twigs: Slender, green, with a spicy-sweet aroma when broken; buds ¼ inch long and green; on young plants, twigs form a 60 degree angle from main stem

Values and Uses: The wood is soft, weak and brittle. It is sometimes used for fence posts, barrels, buckets, interior trim, cabinets and firewood. The roots and bark contain an oil used for perfumes and flavoring. The dried leaves are ground into filé powder, a popular ingredient in Creole cooking. The berries are a favorite of many songbirds, and the foliage is browsed by deer and small mammals. Because it readily forms thickets on disturbed sites, sassafras can be valuable as a soil stabilizer.

Did You Know?
Sassafras was used medicinally by Native Americans, and early American colonists exported it to Europe as a cure-all. At one time, sassafras was the main flavoring in root beer, and the roots were brewed into a popular tea. Sassafras tea and flavoring fell out of favor in the 1960s, when scientists found that the chemical safrole can cause cancer. Modern products flavored with sassafras have been treated to remove the safrole.

Sweetgum

(Redgum)

Liquidambar styraciflua L.

Mature Size: 60 to 90 feet in height and 2 to 3 feet in diameter

Form: Straight trunk and pyramid-shaped crown, becoming more spreading with age

Habitat: Rich river bottoms, swamp edges and drier uplands

Leaves: Alternate, simple, 4 to 6 inches long and wide, star-shaped, with 5 (occasionally 7) pointed lobes and finely saw-toothed edges; fragrant when crushed; fall color red, purple, orange and gold, often on the same tree

Flowers: Small, bright yellow-green tinged with red, in ball-like clusters; females on slender drooping stalks; males in several clusters on an upright stalk; both appearing early to mid-spring

Fruit: 1 to 1½ inch prickly ball, composed of many beak-shaped capsules, at first green but becoming brown and woody, containing small seeds; “gumballs” often hang on the tree through the winter.

Bark: Gray-brown, roughened by corky scales, later becoming deeply furrowed

Twigs: Medium textured, shiny green to yellow-brown, usually with corky, wing-like outgrowths, particularly when fast growing; end buds large, usually sticky, covered with green to orange-brown, shiny scales

Values and Uses: The wood is heavy, moderately hard, close-grained and not durable when exposed to weather. It is used for flake and strand boards, interior finish, paper pulp, veneers, plywood and baskets. The reddish heartwood present in large trees was once used in furniture as a substitute for mahogany. Small songbirds, chipmunk and squirrels eat the seeds, and the twigs are browsed by mice and rabbits. A “fruitless” variety has been developed for landscape planting.

Did You Know? The hardened sap was once used as a chewing gum.

Sycamore

(Buttonwood, American Planetree)

Platanus occidentalis L.

Mature Size: 80 to 100 feet and 3 to 4 feet in diameter; may reach 150 feet in height and 10 feet in diameter

Form: Straight, often massive trunk, with spreading, crooked branches forming an open crown

Habitat: Stream banks and rich bottomlands

Leaves: Alternate, simple, 5 to 8 inches long and wide, large-toothed edges, 3 to 5 major lobes divided by broad, shallow sinuses; several main leaf veins branching from a single point at the leaf base; leaf stem base enlarged, encircling the bud; toothed leaf-like growths encircling stem at base of each leaf

Flowers: Very small; both males and females in dense round clusters, typically a single cluster to a stalk, appearing with the leaves

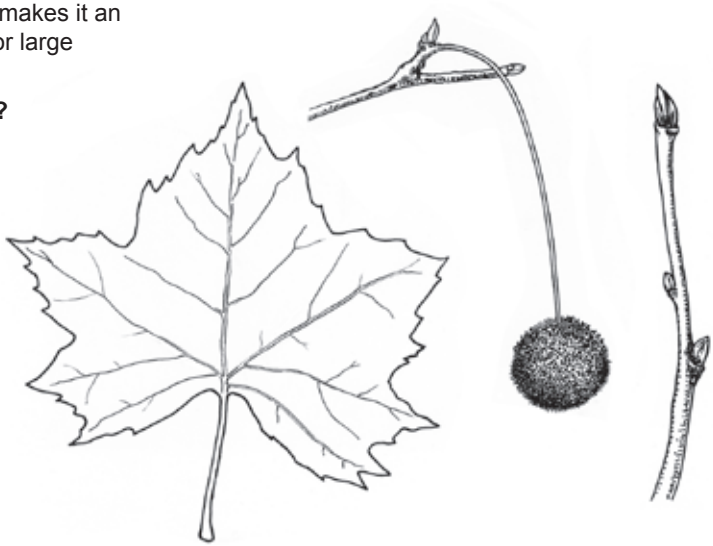
Fruit: A ball tightly packed with winged ½ inch seeds surrounded by fine hairs; maturing in late fall, dispersing in the wind in late winter

Bark: Distinctive “camouflage” mottling of brown, green, tan and white, peeling readily; older stems gray-brown and scaly

Twigs: Obviously zigzag, quite thick, orange-brown; leaf scar surrounding the bud, stipular scar surrounding the twig; buds reddish, resinous, with a single, cap-like scale

Values and Uses: The wood is hard and moderately strong but decays rapidly in the ground. It is used for chopping blocks, furniture, interior finish, particleboard, fiberboard, paper pulp and biomass for energy production. Songbirds eat the seeds. Large, old, hollow trees serve as roosting and den sites for wildlife. Sycamore’s distinctive bark makes it an attractive tree for large landscapes.

Did You Know?
Sycamore has the largest trunk diameter of any North American hardwood.



Downy Serviceberry

(Shadbush, Juneberry, Sarvis)

Amelanchier arborea (Michx. f.) Fern.

Mature Size: 40 feet in height and 1 foot in diameter

Form: Shrub or small tree with a rather narrow, rounded top

Habitat: Moist slopes and understory of hardwood forests

Leaves: Alternate, simple, oval, 1½ to 3 inches long, finely toothed along edges, green above and paler below

Flowers: Showy, each with 5 half-inch white petals, in elongated, drooping bunches, appear in spring just before or with the leaves

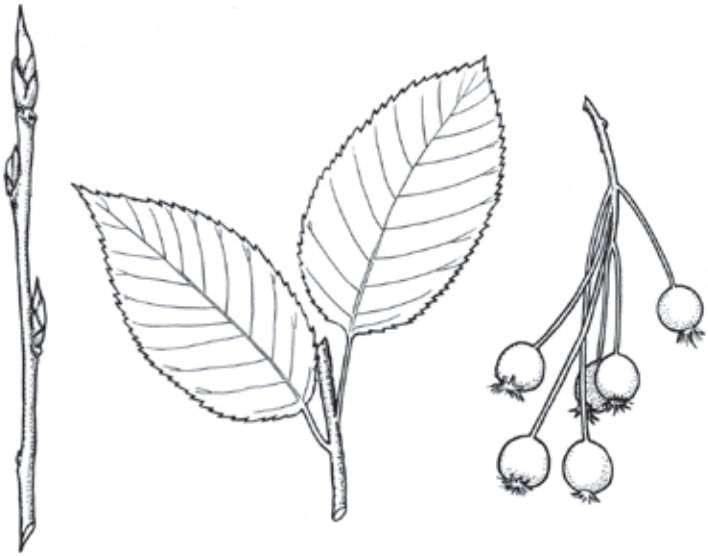
Fruit: Red to purple, round, sweet, edible berries, ¼ to ⅜ inch in diameter, in small hanging clusters, ripening in early to mid summer

Bark: Thin, smooth, ashy gray bark on young trees, later developing long vertical splits and furrows

Twigs: Slender, flexible, red-brown to gray, with a few lighter scattered pores; may be covered with fine hairs when young; light yellow-green to red buds pointed, up to ½ inch long, often slightly hooking around twigs

Values and Uses: The wood is heavy, extremely hard, strong, close-grained and dark brown. It can be used for furniture and turnery, although it is not often harvested. Many birds and mammals eat the berries. Serviceberry makes a beautiful ornamental tree for the home landscape.

Did You Know? The common name of shadbush was given to the tree by early settlers, because the tree's blooming coincided with the spring migration of shad, an important food fish. Two related species – shadblow serviceberry (*Amelanchier canadensis*) and Allegheny serviceberry (*Amelanchier laevis*) – are also found in Virginia.



Black Cherry

Flammability
LOW

(Wild Cherry, Rum Cherry)

Prunus serotina Ehrh.

Mature Size: 60 to 100 feet in height and 1 to 4 feet in diameter

Form: Long, clear trunk and oblong crown

Habitat: Grows on many sites that are not very wet or very dry; reaches best growth in mountains

Leaves: Alternate, simple, 2 to 5 inches long, oblong to lance-shaped, finely toothed, dark green and shiny above, paler below, usually with yellowish-brown fuzz along mid-rib

Flowers: Small white flowers in hanging, narrow clusters 4 to 6 inches long, appearing in late spring when leaves are about half expanded

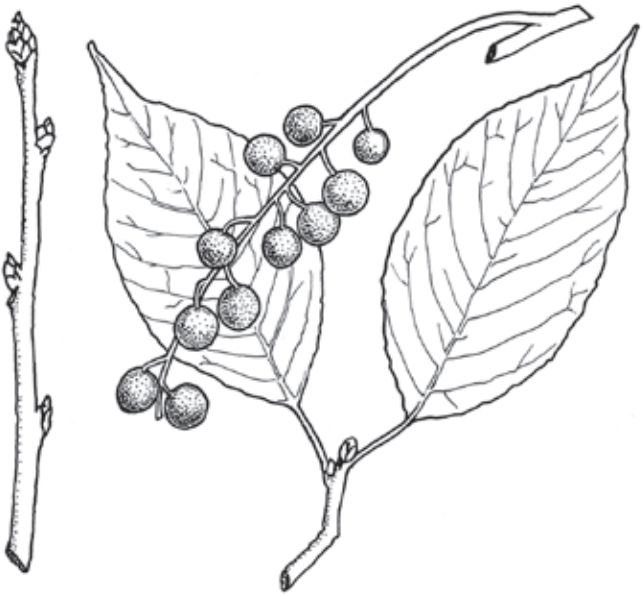
Fruit: Dark purple to almost black when ripe, round, ⅓ inch in diameter, maturing in summer

Bark: On young trees, thin, satiny, reddish brown, with horizontal markings made up of patches or rows of pores; on older trees, dark brown to black, covered with small, scaly plates with slightly upraised edges, resembling burnt potato chips

Twigs: Slender, reddish brown, with pronounced bitter almond odor when scratched; buds very small, with several glossy, reddish brown to greenish scales

Values and Uses: Black cherry is the largest of the native cherries of the United States and the only one of commercial value. The wood is reddish-brown with yellowish sapwood. It is moderately heavy, hard, strong and fine-grained. Black cherry is valuable for furniture and interior finish. The fruit is an important food source for many birds and other wildlife. In earlier days, the bark was used medicinally and to make a tonic. The fruit is also sometimes used in jelly and wine.

Did You Know? Black cherry is often found growing along fences, power lines and other spots where the seeds have been dropped (fertilizer included!) by perching birds.



Eastern Redbud

Flammability
LOW

(Judas Tree)

Cercis canadensis L.

Mature Size: 15 to 30 feet in height and 6 to 10 inches in diameter

Form: Small tree with thick, spreading branches and an often twisted trunk

Habitat: Understory of moist, well-drained woodlands

Leaves: Alternate, simple, heart shaped, smooth edged, 3 to 5 inches long and wide

Flowers: Bright pink to purple, ½ inch long, similar to pea flowers, in clusters along the twigs and small branches, appearing before the leaves in early spring

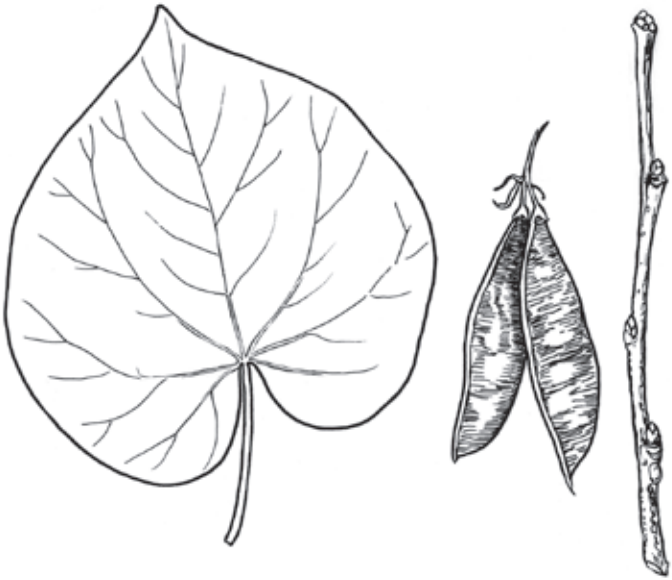
Fruit: Oblong, flattened, many-seeded pod, 2 to 4 inches long, resembling a snow pea pod

Bark: Initially smooth and brown, later ridged and furrowed to scaly and dark gray; may have some maroon patches evident and orange in the cracks

Twigs: Slender and zigzag, nearly black, spotted with lighter pores; leaf buds tiny, dark red to chestnut in color; flowers buds are round and often in large clusters on older woody stems

Values and Uses: The wood is heavy, hard, not strong, and rich, dark brown in color. It has little commercial value. Some birds and mammals eat the seeds. Redbud is planted as an ornamental tree suitable for small landscapes.

Did You Know? Redbud bark was historically used to treat dysentery.



Honeylocust

Gleditsia triacanthos L.

Mature Size: 50 to 80 feet in height and 2 to 3 feet in diameter

Form: Relatively short trunk and broad, airy crown

Habitat: Moist bottomlands and soils of limestone origin

Leaves: Alternate, 5 to 8 inches long, pinnately compound with 15 to 30 leaflets, or bipinnately compound with 4 to 7 pairs of minor leaflets; leaflets ½ to 1½ inches long, elliptical to oval

Flowers: Small, greenish yellow, on 2 to 3 inch narrow, hanging clusters, not showy, but very fragrant, appearing in late spring

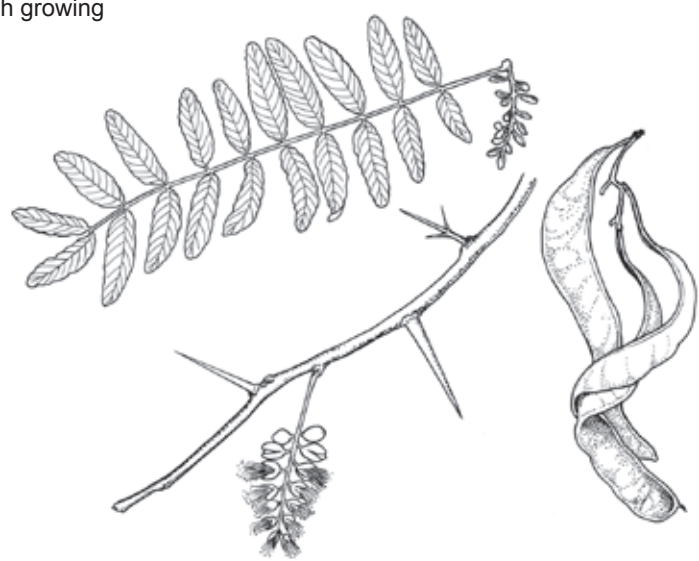
Fruit: Distinctive, 6 to 8 inch, flattened, red-brown, leathery pod that becomes dry and twisted, resembling a rotten banana peel; pod contains many oval, dark brown, shiny seeds, ⅓ inch long, maturing in late summer and early fall

Bark: Initially, gray-brown to bronze, smooth with many horizontal pores, later breaking into long, narrow, curling plates; often has clusters of large, branched thorns on trunk

Twigs: Thick or slender, zigzag, red-brown to light brown, with many pores and branched thorns; side buds very small and sunken

Values and Uses: The wood is coarse-grained, hard, strong and moderately resistant to decay. It is sometimes used for fence posts and crossties but is not as durable as that of black locust. Birds eat the seeds, and both wild mammals and livestock eat the large, sweet seed pods. Honeylocust is planted for erosion control and windbreaks. Thornless varieties are commonly planted in urban landscapes, where they tolerate pollution and harsh growing conditions.

Did You Know? The species name “triacanthos” means “three spines”; however, this tree’s branched spines often have many more than three points. The spines were sometimes used as pins by early settlers.



Black Locust

(Yellow Locust)

Robinia pseudoacacia L.

Mature Size: 30 to 70 feet tall and 1 to 2 feet in diameter

Form: Medium-sized, with crooked branches; may form thickets through root suckering

Habitat: Variety of sites, including disturbed areas; grows best on moist loams of limestone origin

Leaves: Alternate, pinnately compound, 8 to14 inches long, with 7 to 19 oval, smooth-edged leaflets

Flowers: Showy and fragrant, white, 1 inch long and pea-like, borne in 5 inch hanging clusters, appearing mid to late spring

Fruit: 2 to 4 inch, flat, brown pods containing 4 to 8 kidney-shaped, smooth, red-brown seeds, ripening in fall

Bark: Gray or light brown, thick and fibrous, heavily ridged and furrowed, resembling a woven rope

Twigs: Zigzag, somewhat thick and angular, red-brown with lighter pores; paired spines at each leaf scar (often absent on older or slow growing twigs); buds sunken beneath the leaf scars

Values and Uses: The wood is yellow, coarse-grained, very heavy, very hard, strong and very resistant to decay. In the past it was used extensively for fence posts, poles, mine timbers, split rails and decking, as well as for pulpwood and fuel. Sprouts and seedlings are important food for cottontail rabbits and deer. Birds that eat black locust seeds include bobwhite quail and other game birds. Older trees with heart rot are used by cavity nesters, such as woodpeckers. The flowers are an important nectar source for honey production. Black locust is a nitrogen fixer and is good for reclaiming mine sites and other disturbed lands.

Did You Know? Black locust is damaged by many insects and diseases, including locust borers, leafminers and heart rot fungi. Fungal growths are often present on the trunks.

American Holly

Flammability
LOW

Ilex opaca Ait.

Mature Size: 40 feet in height and 1 to 2 feet in diameter

Form: Pyramid-shaped evergreen, often retaining low branches

Habitat: Grows on a variety of sites, especially moist, well-drained, acid soils

Leaves: Alternate, simple, evergreen, leathery, glossy, 2 to 4 inches long, with widely spaced spines along the edges

Flowers: Males and females on separate trees; dull greenish-white; males in clusters of 3 to 7; females single, with a pleasant odor; both appearing in late spring

Fruit: On female trees only; bright red, round and berry-like, ¼ inch across, attached to a short stalk; ripens in fall and remains on the tree over winter

Bark: Light gray and smooth at all ages

Twigs: Slender, with rust-colored fuzz; buds small, reddish brown, pointed

Values and Uses: The wood is light, close-grained and bone-colored. It is not a major commercial species, but it is sometimes used for interior finishing, inlays, veneers and novelties. The bitter-tasting berries are food for songbirds, deer, wild turkeys and a wide variety of other animals. Holly is a popular ornamental tree, and the foliage and berries are used for holiday decorations.

Did You Know? Although holly wood is naturally very white, it can be easily dyed. When dyed black, it resembles tropical ebony wood and can be used for piano keys and other musical instrument parts.

Boxelder

Acer negundo L.

Mature Size: 30 to 60 feet in height and 1 to 2½ feet in diameter

Form: Short trunk, often multi-stemmed with sprouts along trunk

Habitat: Common in river bottoms, but tolerates a wide range of soils

Leaves: Opposite, pinnately compound with 3 to 7 leaflets, light green; leaflets are 2 to 4 inches long, coarsely toothed, and may have one or two lobes; the 3-leaflet form resembles poison ivy

Flowers: Males and females on separate trees; yellow-green, in drooping clusters, appearing in spring

Fruit: V-shaped, 2-winged, 1 to 1½ inches long, in drooping clusters, spinning like helicopter propellers as they fall

Bark: Light brown to gray, with rounded, interlacing ridges; may be warty on young trees

Twigs: Green to purplish green, moderately thick, leaf scars narrow, meeting in raised points, often covered with a waxy bloom; buds white and hairy

Values and Uses: The wood is used occasionally for paper pulp. Birds and small mammals eat the seeds, which are larger than most maple seeds and mature later, making them available into the winter. The sap is sometimes used to make syrup. Boxelder is drought tolerant and has been planted for windbreaks and erosion control.

Did You Know? The common name comes from the wood's resemblance to that of the box shrub and the resemblance of the leaves to those of elderberry.

Sugar Maple

Flammability
LOW

(Hard Maple, Rock Maple)

Acer saccharum Marsh.

Mature Size: 70 to 100 feet in height and 2 to 3 feet in diameter

Form: Fairly large tree with dense, oval crown

Habitat: Cool slopes with moist, well-drained loamy soils

Leaves: Opposite, simple, 3 to 5 inches long and wide, palmately lobed and veined, with five lobes separated by rounded, shallow sinuses; turning brilliant shades of red, yellow and orange in fall

Flowers: Light yellow-green, small, clustered, hanging from a 1 to 3 inch stem, appearing with or slightly before the leaves

Fruit: Horseshoe-shaped, 2-winged, 1 inch long, in clusters, spinning like propellers when they fall

Bark: Gray to brown, darker on older trees, developing furrows, with long, thick irregular ridges that curl outward

Twigs: Brown, slender and shiny with lighter pores; end buds brown, very sharp pointed, with tight scales

Values and Uses: The pale brown or pink wood is hard, heavy, strong and close-grained. It used for flooring, furniture, veneer and novelties. Birds and small mammals eat the seeds; rabbits, deer and squirrels browse the twigs; and sapsuckers ring the tree with holes and return to feed on the sap and insects it attracts. The trees are “tapped” for their sweet sap, which is used to make maple syrup and maple sugar.

Did You Know? Sugar maple wood sometimes has unique patterns, such as “birdseye” or “curly” figures, which make the wood highly prized. The causes of this figured wood are not well understood.

Red Maple

(Swamp Maple, Soft Maple)

Acer rubrum L.

Mature Size: Up to 90 feet in height and 2½ feet in diameter

Form: Medium sized tree with rounded crown in the open, narrow crown in the forest

Habitat: Wide variety of sites, from dry ridges to swamps

Leaves: Opposite, simple, 2 to 6 inches long, with 3 to 5 lobes and coarsely toothed edges, green above and whitish below; leaf stem often red; leaves turn brilliant scarlet, orange or yellow in fall

Flowers: Attractive but small, usually bright red but occasionally yellow, in hanging clusters, appearing before leaves in spring

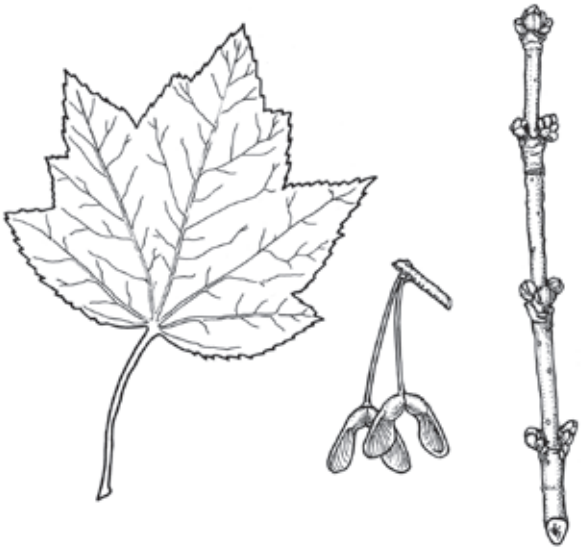
Fruit: Paired, winged, reddish and V-shaped, ½ to ¾ inch long, on long drooping stems, ripening in late spring and early summer, spinning as they fall

Bark: On young trunks, smooth and light gray; on older trunks, darker gray and separated by vertical ridges into large, plate-like scales

Twigs: Reddish and shiny with small pores; buds usually blunt, green or reddish, with several loose scales; leaf scars V-shaped, with 3 bundle scars; side buds slightly stalked

Values and Uses: The light cream colored wood, known commercially as soft maple, is heavy, close-grained and rather weak. It is used for furniture, turnery, woodenware and paper pulp. Red maple can be tapped for syrup-making, but the tapping season is shorter than for the hard maples. The fruit and buds are a primary food source for gray squirrels in late winter and early spring. Birds and mice eat the seeds, and deer browse the young sprouts. Red maple is a popular shade and ornamental tree, with brilliant fall color.

Did You Know?
Red maple tolerates the widest variety of soil conditions of any North American forest species. Red maple is not tolerant of fire; however, suppression of fire has led to a proliferation of red maple in the understory of many Virginia forests.



Silver Maple

Flammability
LOW

(White Maple, Soft Maple)

Acer saccharinum L.

Mature Size: 50 to 80 feet in height and 2 to 3 feet in diameter

Form: Fairly short trunk, often dividing into several sub-trunks, branches sweeping downward then curving gracefully upward

Habitat: Stream banks, flood plains and lake edges

Leaves: Opposite, simple, 2½ to 5 inches long, 5 main lobes with deep sinuses, lobe edges coarsely toothed, light green above and silvery white below

Flowers: Greenish to reddish flowers, in dense clusters, appearing in early spring long before leaves

Fruit: Paired, winged and shallowly V-shaped, 1½ to 2½ inches long, maturing in late spring, spinning as they fall, able to germinate immediately

Bark: Light gray and smooth when young; when older, splitting into long thin strips, loose at ends

Twigs: Shiny, reddish to chestnut-brown, unpleasant odor when crushed; buds reddish brown with large scales; flower buds often in dense clusters

Values and Uses: The wood is soft, brittle, weak and easily worked. It is used mainly for boxes, furniture and fuel, and is often cut and sold along with red maple. The tree can be tapped for syrup-making, but it yields less sap than other maples. Silver maple's seeds, the largest of any native maple, are an important food source for many birds and small mammals. Squirrels feed heavily on the buds in late winter, and beavers feed on the bark and cut stems. Silver maple is often planted as a landscape ornamental tree.

Did You Know?
Silver maple roots often clog water and sewer lines if the tree is growing near them.

Striped Maple

(Moosewood, Goosefoot Maple)

Acer pensylvanicum L.

Mature Size: 25 feet in height and 8 inches in diameter

Form: Small tree or large shrub with open crown

Habitat: Cool, shady slopes under larger hardwoods

Leaves: Opposite, simple, 5 to 8 inches long, 3-lobed (resembling a goose's foot), edges toothed

Flowers: Males and females on separate trees; yellow-green, bell shaped, ¼ inch long, appearing in long, hanging, slender clusters in late spring

Fruit: Paired, winged and shallowly V-shaped, ¾ to 1 inch long, in hanging clusters, ripening in late summer and fall, spinning as they fall

Bark: When young, smooth gray-green with prominent white lengthwise stripes, becoming reddish brown with age

Twigs: Moderately thick, green changing to red or reddish brown, smooth; reddish buds narrowly egg-shaped, stalked, duckbill-like

Values and Uses: The wood is white and fine-grained and is occasionally used for inlay, although the tree is so small it is seldom harvested. Grouse and other birds eat the seeds. Deer, rabbits and beaver browse the young growth and bark. It is sometimes planted as an ornamental for its attractive striped bark and its shade tolerance.

Did You Know?
Native Americans used this tree medicinally, and modern medical research has found that it contains a tumor-fighting substance.

Yellow Buckeye

Flammability
LOW

(Sweet Buckeye)

Aesculus flava Ait.

Mature Size: Commonly 50 to 80 feet in height and 2 to 3 feet in diameter

Form: Usually quite straight, with a rounded crown

Habitat: Moist, deep, well-drained soils of river bottoms, coves, and north-facing slopes

Leaves: Opposite, palmately compound, 10 to 15 inches long, 5 oval leaflets, each 3 to 7 inches long, edges sharply toothed

Flowers: Pale yellow-orange, tubular, in large showy upright 4 to 8 inch clusters, appearing in late spring

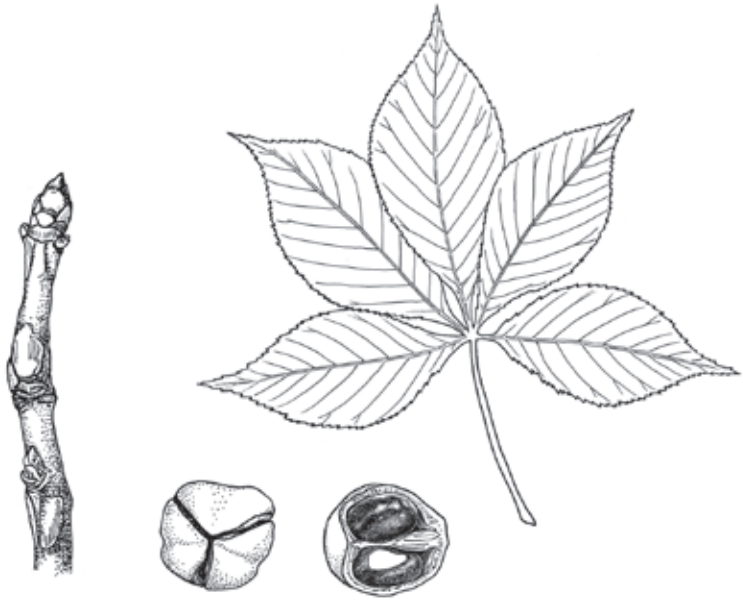
Fruit: Smooth-surfaced capsule 2 to 3 inches long, bearing 1 to 3 brown, shiny 1½ to 2 inch nuts with a lighter spot on one side. The nuts are poisonous if eaten.

Bark: Initially smooth, light grayish brown and often splotchy; later developing large scaly patches

Twigs: Thick, with large, shield-shaped leaf scars and orange pores; end buds ½ to ¾ inch long, orange-brown, sharp pointed; side buds much smaller

Values and Uses: The wood is light, soft and close-grained. It is sometimes used for pulpwood and woodenware. Yellow buckeye is also planted as an attractive ornamental tree.

Did You Know? Although the nuts are poisonous if eaten by people and animals, mountain people used to believe that a buckeye carried in a pocket would bring good luck.



American Basswood

(Linden, Linn, Beetree)

Tilia americana L.

Mature Size: 70 to 80 feet in height and 2 to 3 feet in diameter

Form: Medium tree with a dense crown; often sprouts from old stumps, resulting in a cluster of trunks

Habitat: Tolerates variety of sites, but grows best on deep, moist, fertile loams

Leaves: Alternate, simple, oval to heart shaped, 5 to 6 inches long, with toothed edges, leaf base uneven, green above and paler below

Flowers: Pale yellow, in clusters several inches long, hanging below a long, gracefully curving leafy wing, appearing in early to mid-summer

Fruit: Round, ¼ inch nutlet covered with gray-brown hair; in hanging clusters below a curving, leafy bract, which in autumn acts as a wing to carry the seeds away with the wind

Bark: At first smooth and gray-green, later turning gray-brown, fibrous, ridged with long, shallow furrows and flat topped ridges

Twigs: Moderately thick, zigzag, green (summer) or red (winter); buds plump with one side bulging out more than the other

Values and Uses: The wood is cream colored, lightweight, soft, tough but not durable. It is used for pulp, carved woodenware, excelsior, boxes and barrels. The inner bark produces a fibrous material used for weaving baskets, rope and mats. A variety of wildlife eat the seeds, twigs and buds. Bees use the fragrant flowers to make a choice honey. Basswood is often planted as a shade tree.

Did You Know? *Tilia caroliniana* and *Tilia heterophylla* are very closely related to this species. In fact, all are often simply grouped together as “Tilia species.”

Flowering Dogwood

Cornus florida L.

Mature Size: Commonly 20 to 30 feet tall and 6 to 8 inches in diameter

Form: Small tree with spreading, uplifted branches

Habitat: Hardwood forest understories, on a variety of soils

Leaves: Opposite, simple, 3 to 5 inches long, edges smooth or wavy, with veins curving to run parallel to the leaf edges

Flowers: Very small and inconspicuous, tightly clustered, surrounded by 4 very showy, large, white (occasionally pink), notched, petal-like bracts, 2 inches in diameter, appearing in mid-spring

Fruit: Shiny, bright red, oval, berry-like, in tight clusters; ripening in October

Bark: Gray-brown, dividing into small scaly blocks

Twigs: Slender, green or purple (on sunlit side), later turning gray, often with a waxy coating; flower buds are onion-shaped; leaf buds resemble dull cat claws

Values and Uses: The brown to red wood is hard, heavy, strong and very close-grained. It was once used for textile shuttles and spools and for handles and mallets, but is seldom harvested today. Although the fruits are poisonous if eaten by humans, more than 35 species of birds and many large and small mammals are known to eat them. Deer and rabbits browse the foliage and twigs. Dogwood is planted as an attractive ornamental tree.

Did You Know? Flowering dogwood is the state tree and the state flower of Virginia.

Sourwood

(Sorrel Tree, Lily-of-the-Valley Tree)

Oxydendrum arboreum (L.) DC.

Mature Size: 30 to 40 feet in height and 8 to 12 inches in diameter

Form: Poorly formed, often with leaning trunk and crooked branches

Habitat: Forest understories with acidic, well-drained soils

Leaves: Alternate, simple, elliptical, 4 to 7 inches long, shiny green above and paler below, edges very finely toothed, sour tasting when chewed; turning crimson in fall

Flowers: White, ¼ inch long, urn-shaped, hanging below long stems that droop then lift upward, resembling lily-of-the-valley flowers, appearing in mid-summer

Fruit: ⅓ to ⅜ inch capsules, borne on long stems, turning brown and woody, splitting into 5 parts in fall to release very tiny, 2-winged seeds

Bark: On very young shoots, bark may be red; on older trunks, becoming grayish brown, very thick with deep furrows and scaly ridges, often are broken into rectangles

Twigs: Olive green, changing to red; buds small, round and pressed close to stem; broken twig smells like potatoes

Values and Uses: The wood is brown, heavy, hard, very close-grained and compact. Although not considered a commercial wood, it is sometimes used for turnery, handles, pulp and fuel. Bees use the flowers' nectar to make a unique and desirable honey. It is sometimes planted as an ornamental for its attractive summer flowers and fall foliage.

Did You Know? Sourwood often sprouts abundantly on cutover lands.

Blackgum

Flammability
LOW

(Black Tupelo, Sour Gum, Pepperidge)

Nyssa sylvatica Marsh.

Mature Size: Commonly 40 to 60 feet in height and 1 to 2 feet in diameter, but can reach 100 feet in height and 4 feet in diameter

Form: Medium tree with slender limbs often growing at right angles to the trunk

Habitat: Variety of sites, from creek bottoms to upland slopes

Leaves: Alternate, simple, 2 to 5 inches long, oval with a pointed tip, smooth-edged, occasionally with several coarse teeth near tip; turning scarlet in fall

Flowers: Males and females usually on separate trees; light green, not showy, in clusters hanging from slender stalks, appearing with the leaves

Fruit: Round, dark blue, ½ inch across, berry-like, thin-fleshed, clustered on stalks up to 1½ inches long, each containing a single ridged seed

Bark: On younger trees, gray and furrowed between flat ridges; later becoming dense, hard and nearly black, developing squared blocks resembling alligator hide

Twigs: Moderately thick, red-brown to gray, pith inside divided by thin walls; 1 to 2 inch curved spur shoots often present; buds egg-shaped, pointed, green and light brown, darkening to brown in winter

Values and Uses: The wood is very tough, cross-grained, hard to work, and warps easily. It can be used for containers, crossties, rough flooring and pulpwood. Sections of trunk were used in colonial days as “bee gums,” or places for bees to make their hives. Many species of birds and wildlife eat the fruit, and bees use the nectar to make honey. Black gum heartwood often rots, creating dens for wildlife, including black bears. The fall foliage makes black gum an attractive landscape tree.

Did You Know? A variety of black gum, the swamp tupelo (*Nyssa sylvatica* var. *biflora*) often grows in year-round swamps. It has narrower leaves and its seed is more deeply ridged.

Water Tupelo

Flammability
LOW

(Tupelo Gum, Water Gum, Cotton Gum)

Nyssa aquatica L.

Size: 80 to 100 feet in height and 3 feet in diameter

Form: Long trunk with a swollen base and narrow crown

Habitat: Deep river and coastal swamps, growing in or near the water

Leaves: Alternate, simple, oblong, 4 to 8 inches long, pointed at the end, edges smooth or occasionally with a few coarse teeth near the end

Flowers: Small, greenish white, usually in hanging clusters, appearing with the leaves

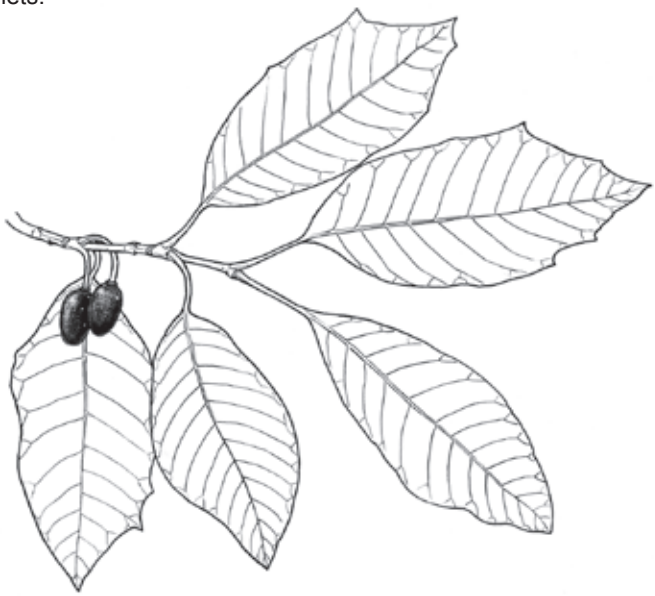
Fruit: Dark purple, oblong, about one inch long, with a tough skin and thin layer of flesh over the deeply grooved seed, borne on slender, drooping stalks 3 to 4 inches long

Bark: Brownish gray, variable, with scaly ridges or sometimes blocks

Twigs: Thick, yellow-brown to red-brown, with large heart-shaped leaf scar and small buds; pith inside divided by thin walls; spur shoots common

Values and Uses: The wood is light, soft and close-grained but is not strong. It is sometimes used for containers, pallets, furniture and pulpwood. Wood ducks, squirrels, and other birds and mammals eat the fruit. Deer browse the new shoots, and bees use the nectar to make tupelo honey. Water tupelo is often planted in wet areas of the landscape where few other species will grow.

Did You Know? The roots have a spongy wood that has sometimes been used to make floats for fishing nets.



Common Persimmon

Flammability
LOW

(Simmon, Possumwood)

Diospyros virginiana L.

Mature Size: 20 to 60 feet in height and 1 to 2 feet in diameter

Form: Small to medium tree with a round-topped crown of crooked branches

Habitat: Grows on a wide variety of sites, from sandy woods to moist river bottoms to rocky slopes

Leaves: Alternate, simple, oblong to oval, 2½ to 5 inches long, edges smooth, shiny green above and paler or whitish below

Flowers: Males and females usually on separate trees; white to greenish-white, ½ inch long; male flowers in threes; females solitary and urn-shaped; both appearing in late spring and early summer

Fruit: Plum-like berry, at first green, turning orange to deep reddish-purple when ripe, ¾ to 2 inches in diameter, leaf-like bracts on top of fruit; containing several flattened, oblong, brown seeds about ½ inch long; fruit sweet and edible when ripe (after a hard freeze in fall), but very astringent when green

Bark: When young, gray-brown with orange in fissures; later becoming much darker, breaking up into square scaly thick plates, resembling small charcoal briquettes

Twigs: Slender, light brown to gray, may be rough or fuzzy; buds dark red to black, triangular, pressed close to stem; leaf scar has one crescent-shaped bundle scar

Values and Uses: Persimmon heartwood is dark brown to black, and the sapwood is cream colored to light brown or gray. The wood is very hard and has been used for spindles, shuttles, golf club heads and other items that require shock-resistance. The fruit is eaten by humans, as well as by opossums, raccoons, skunks, foxes and many songbirds.

Did You Know? Native Americans often dried persimmons like prunes and used them to make a tasty bread.

White Ash

Flammability
LOW

Fraxinus americana L.

Mature Size: Commonly 70 to 80 feet in height and 2 feet in diameter

Form: Straight, clear trunk and oblong crown

Habitat: Grows best on rich, moist, well-drained soils

Leaves: Opposite, pinnately compound, 8 to 12 inches long, with 7 toothed or smooth-edged, 3 to 5 inch, oval to lance-shaped leaflets, green above and paler below

Flowers: Males and females usually on separate trees; light green to purplish, lacking petals, females in long, loose clusters, males in tighter clusters, both appearing after the new leaves in spring

Fruit: 1 to 2 inches long, single-winged, flattened but with a rounded seed cavity, in crowded 6 to 8 inch clusters

Bark: Ashy gray to brown, with interlacing corky ridges forming obvious diamonds; may be scaly on older trees

Twigs: Thick, gray to olive-green, hairless, leaf scars round at the bottom, notched at the top, with buds in the notch; end bud large, brown, with leathery scales, flanked by two side buds

Values and Uses: The wood is tough, elastic, and shock resistant, with a pleasing grain. It is used for tool handles, baseball bats, oars, furniture and interior finish. Birds and wildlife eat the seeds; beavers and rabbits eat the bark. White ash is planted as a shade tree and sometimes to prevent soil erosion.

Did You Know? Juice from ash leaves has been used as a folk remedy, said to reduce the itching of mosquito bites.

Green Ash

Flammability
LOW

(Red Ash, Swamp Ash)

Fraxinus pennsylvanica Marsh.

Mature Size: 60 to 70 feet in height and 1½ feet in diameter

Form: Medium-sized tree with an irregular or rounded crown

Habitat: Moist river bottoms and stream banks

Leaves: Opposite, pinnately compound, 6 to 9 inches long, with 7 to 9 toothed, elliptical to lance-shaped leaflets, green above and smooth to slightly fuzzy below

Flowers: Males and females usually on separate trees; light green to purplish, lacking petals, females in long, loose clusters, males in tighter clusters, appearing after the leaves unfold

Fruit: 1 to 2½ inches long, narrow, flat and winged, with the wing portion extending well past the middle of the seed-bearing part

Bark: Ashy gray to brown, with interlacing corky ridges forming obvious diamonds; older trees may be somewhat scaly

Twigs: Thick to medium, gray to green-brown, smooth or fuzzy; leaf scars semicircular to flat across the top, with side buds sitting on top of leaf scar; end buds large, flanked by two side buds

Values and Uses: The wood is heavy, hard, rather strong, brittle and coarse-grained, light brown, with a rather broad layer of lighter sapwood. It is marketed with white ash and used for tool handles, baseball bats, rough lumber, pulpwood, veneer, crates and boxes. Many birds and mammals eat the seeds, and deer browse the foliage. Green ash is commonly planted as a shade tree.

Did You Know? Green ash can grow on sites that are flooded for up to 40 percent of the growing season.

Non-Native Invasive Species

From mountains to sea, and from city to country, Virginia's landscape is a mosaic of native and non-native plants. Some non-native species are beneficial and cause no problems. Others, however, become invasive. An invasive species is one that is not native and causes or is likely to cause economic, health-related or environmental harm.

Native ecosystems maintain a balance of interactions among plants, animals and nonliving components, such as soil and water. Introducing a new species can upset that balance, causing effects that ripple through the entire natural community. For example, displacement of native plants can cause declines in the wildlife species that depend on them. Invasive plants can crowd out economically important species, such as native oaks. They might serve as carriers for diseases that attack native plants. They can also reduce an area's biodiversity of plants and the animals that depend on them. Invasive plants can even change the hydrology or alter soil chemistry in an area.

Some invasive plants arrived here by accident, usually by seeds "hitchhiking" in soil or on people or animals. Others have been planted for special purposes, such as attractive flowers or livestock forage. No one fully understands why some non-native plants become invasive and others do not. We do know that invasive plants tend to have the following characteristics:

- Rapid growth and maturity;
- Prolific seed production and effective dispersal, and/or the ability to spread vegetatively;
- Few or no natural predators or diseases to keep them in check in a new area, and
- Traits which limit competition from other plants, such as allelopathic chemicals, dense roots or the ability to shade out other species.

The six trees described in detail in this book are only the tip of the iceberg when it comes to Virginia's invasive plants. Several other trees are occasionally invasive, in addition to an alarming number of shrubs and herbaceous plants. In addition, non-native animals and introduced diseases can also become invasive. Unfortunately, the number of invasive species is increasing as global travel becomes easier and more common.

What can you do to stop the spread of invasive species?

- Learn to identify invasive species. The websites listed in this book's bibliography are good sources of information.
- Don't plant any species known to be invasive.
- If you have invasive plants on your property, get rid of them. Your local Extension Office or Department of Forestry Office can provide information on how to remove problem plants and suggest alternative species to plant.
- Be careful not to move pieces of plants or seeds into new areas – either purposely, by picking them, or accidentally, on your shoes or clothing.
- Spread the word about invasive species. Teach others what you have learned, and encourage them to take action as well.

Tree-of-Heaven

Flammability LOW

INVASIVE

(Paradise Tree, Chinese Sumac, Copal-tree, Stinking Ash)

Native to China

Ailanthus altissima (Mill.) Swingle

Mature Size: 70 to 80 feet in height and 1 to 2 feet in diameter

Form: Open crown with heavy branches; often grows in clumps from root sprouts

Habitat: Common in open, sunny, disturbed areas, such as roadsides, field edges and woodland openings; tolerant of pollution and well adapted to a wide variety of poor soils and urban conditions

Leaves: Alternate, pinnately compound, 1 to 3 feet long, with 11 to 41 leaflets; leaflets 2 to 6 inches long, pointed at the tip, with a few large gland-tipped teeth near the base; leaves have a strong odor, similar to burnt peanut butter, when crushed.

Flowers: Males and females on separate trees; small, yellowish-green, in 6 to 12 inch clusters, appearing late spring to early summer. Males have an unpleasant odor.

Fruit: Twisted, papery, winged, 1 to 1½ inches long, each containing one seed; in large clusters on female trees

Bark: Thin, light brown to gray, resembling cantaloupe skin when young, later turning darker and rougher

Twigs: Stout, yellow to reddish-brown, covered with downy hairs when young; easily broken, with a large reddish brown pith and strong odor; buds fairly small, half-moon shaped, above large, heart-shaped leaf scars.

Values and Uses: This tree was introduced to the U.S. as an ornamental for difficult urban settings. Research is underway to find markets for tree-of-heaven wood, to encourage people to remove it from their properties.

Problems: Tree-of-heaven sprouts from its roots and produces abundant seeds, allowing it to displace native trees, and it produces a chemical that inhibits the growth of many other species.

Did You Know? Tree-of-heaven's hardiness was made famous in Betty Smith's classic 1943 novel, A Tree Grows in Brooklyn. It has a long history of use in traditional Chinese medicine.

Mimosa

Flammability LOW

INVASIVE

(Silk-tree)

Native from Iran to China

Albizia julibrissin Durazz.

Mature Size: Up to 30 feet in height and 6 to 12 inches in diameter

Form: Small tree which branches low and quickly spreads into a wide V-shaped crown with a flat top; may grow in clumps from root sprouts

Habitat: Tolerates a variety of soils, but most common along stream banks and roadsides

Leaves: Alternate, twice-pinnately compound, feathery, 10 to 20 inches long, with leaflets ⅜ inch long; leaflets fold up in response to handling

Flowers: Showy, in fluffy pink clusters that resemble pom-poms; individual flowers are small with 1 inch long pink stamens; appearing in mid- to late summer

Fruit: Flattened pod, 5 to 6 inches long, gray-brown when mature, containing hard seeds

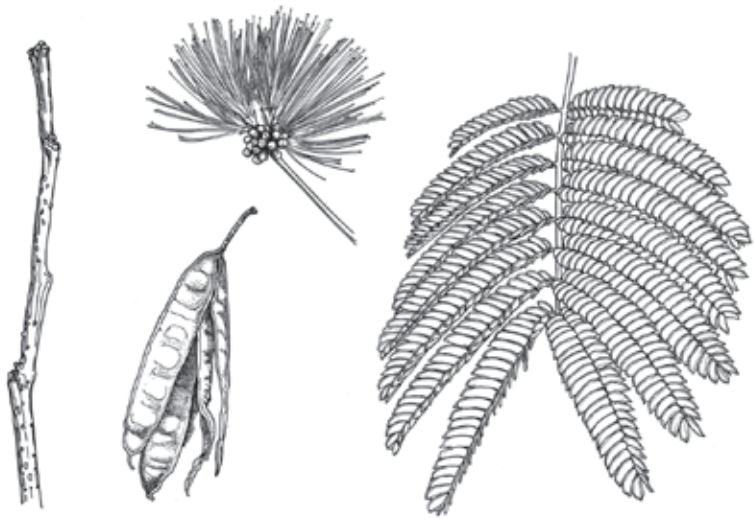
Bark: Smooth and grayish-brown, even on larger stems

Twigs: Medium, zigzag, greenish-brown to grayish-brown, with many pores; buds small, rounded, with a few scales

Values and Uses: This tree was introduced to the U.S. as an ornamental for its unusual and attractive flowers and fern-like leaves.

Problems: Mimosa spreads rapidly through root sprouts and seeds, displacing native trees.

Did You Know? Mimosa is susceptible to a wilt disease that has caused it to decline in many areas.



Royal Paulownia

Flammability LOW

INVASIVE

Native to east Asia

(Princess Tree, Empress Tree)

Paulownia tomentosa (Thunb.) Siebold & Zucc. ex Steud.

Mature Size: 50 feet in height and 1 to 2 feet in diameter

Form: Rounded crown with heavy, clumsy branches

Habitat: Tolerant of many soil conditions, including harsh dry sites; common along roads, stream banks, rocky slopes and other open disturbed areas

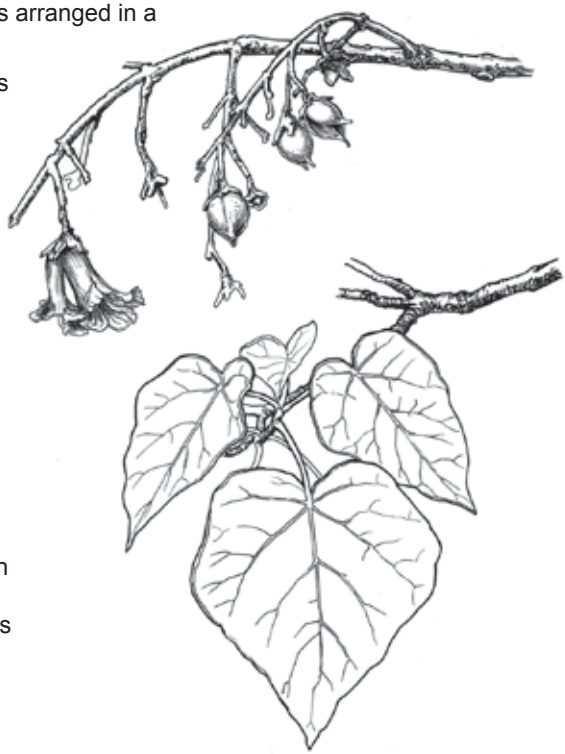
Leaves: Opposite, simple, heart-shaped, 5 to 12 inches, velvety underneath; on younger sprouts, leaves may be more than 2 feet long, with a few course serrations or lobes

Flowers: 1½ to 2 inches long, purple, tubelike, very fragrant, in large, showy, upright clusters; appearing in spring before the leaves; tan, fuzzy round flower buds are obvious throughout the winter

Fruit: Oval capsule, 1 to 1½ inches long, filled with thousands of small, winged seeds; capsules initially sticky and green, later turning brown and dry, persisting on the tree

Bark: Thin and grayish-brown with shallow fissures

Twigs: Stout, light brown, with numerous pores; buds small; leaf scars nearly round; bundle scars arranged in a circle



Values and Uses: This tree was introduced to the U.S. as an ornamental. The wood from slower-grown specimens is prized in Asia for specialty products, such as musical instruments and decorative carved objects. Paulownia has been used to reclaim strip-mined sites.

Problems: Abundant seed production and the ability to sprout from roots enable this tree to displace native trees on disturbed sites.

Did You Know? This tree's abundant fluffy seeds were often used as packing material for porcelain and other fragile goods shipped from China.

Norway Maple

Flammability LOW

INVASIVE

Native to continental Europe

Acer platanoides L.

Mature Size: 80 feet in height and 2 feet in diameter

Form: Evenly rounded crown with dense foliage

Habitat: Commonly planted in cities and suburbs, escaping to nearby forests and edges

Leaves: Opposite, simple, palmately-veined, 5 to 7 lobes with several long points; leaves exude milky white sap from the petiole when broken

Flowers: Males and females usually on separate trees; bright yellowish-green, ⅓ inch long, in clusters, appearing in early spring before the leaves

Fruit: 1½ to 2 inches long, two-winged, very widely V-shaped with a relatively flat seed cavity, in clusters; maturing in late fall

Bark: Grayish-brown, somewhat corky; on older trees, shallowly furrowed with long, narrow, somewhat interlacing ridges

Twigs: Stout, brown, with leaf scars meeting at a sharp angle; end bud large, turban-shaped, green to purple, with large bud scales

Values and Uses: Norway maple is pollution-tolerant and is often planted in city landscapes.

Problems: Norway maple produces abundant shade-tolerant seedlings which can invade forest understories, displacing native plants.

Did You Know? Norway maple's shallow root system and dense crown make it difficult to grow grass and other plants beneath it.

White Poplar

Flammability LOW

INVASIVE
Native to Europe and Asia

(Silver poplar)

Populus alba L.

Mature Size: Up to 80 feet in height and 2 feet in diameter

Form: Crown may be wide-spreading or narrow; often forms thickets

Habitat: Roadsides, fields and other open, sunny sites, especially those with moist soil

Leaves: Alternate, simple, 2 to 4 inches long, margins are coarsely toothed and sometimes lobed (maple-like), shiny green above, silvery white and velvety beneath

Flowers: Males and females on separate trees; 2 to 3 inches long, on hanging catkins; appearing before the leaves

Fruit: Small, egg-shaped capsule, splitting to release cottony seeds in late spring or early summer

Bark: Smooth, milky greenish white when young, later developing many pores which stretch into shallow dark splits and ridges

Twigs: Medium-sized, gray to reddish brown, often with whitish hairs that can be rubbed off; buds oval and pointed, reddish brown, with some fine gray hairs; side buds somewhat hooked

Values and Uses: White poplar has been planted for its attractive silver-backed leaves. It has been bred into many forms, including a tall, narrow form often planted for screens and windbreaks.

Problems: White poplar seeds spread in the wind, and established trees produce abundant new sprouts from the roots. The roots can clog water and sewer pipes. Branches tend to be weak-wooded and break easily.

Did You Know? White poplar hybrids have been grown for pulpwood and are being researched as a fast-growing source of biofuel.

Chinaberry

Flammability LOW

INVASIVE

Native to India and China

(Pride of India, Persian Lilac, Bead Tree)

Melia azedarach L.

Mature Size: Up to 40 feet in height and 1 foot in diameter

Form: Short tree with spreading crown and many branches

Habitat: Roadsides, forest edges, fence rows and old home sites

Leaves: Alternate, singly or doubly compound, 10 to 22 inches long; leaflets coarsely toothed or lobed, 1 to 2 inches long, shiny green above, smooth on both surfaces

Flowers: Purple, ½ to 1 inch across, in long loose clusters

Fruit: Round, yellowish-brown, berry-like, up to ¾ inch across, in hanging clusters, ripening in fall and persisting all winter

Bark: Brown to reddish brown, with slightly criss-crossing furrows

Twigs: Very stout, olive-brown to brown with many lighter pores; leaf scar large and three-lobed; buds very light brown, small, round and fuzzy

Values and Uses: Known for its attractive flowers and fruit, this tree has been planted as an ornamental for more than 100 years.

Problems: Chinaberry displaces native trees by forming dense colonies from its roots. Birds also disperse its seeds in their droppings, spreading the tree across the natural landscape.

Did You Know? Chinaberry fruit is poisonous if eaten by people and livestock. Extracts from the fruit and leaves have been used as natural pesticides.

Other Trees in Virginia

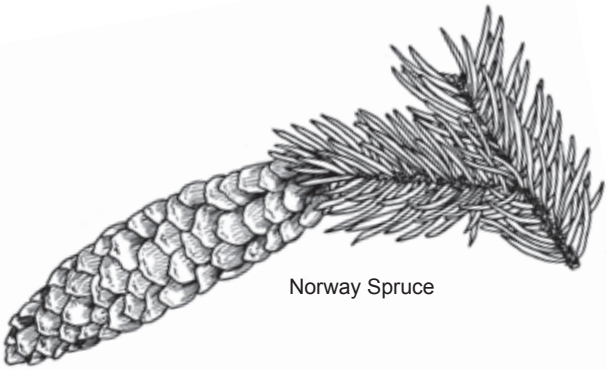
This book focuses on common native trees, but anyone who spends time outdoors will likely encounter additional species. Some trees are rare in the state, or common only in a very small area. Some are usually considered shrubs but do occasionally reach tree size and form. In addition, many non-native species have become naturalized in Virginia.

The table below lists some of the other trees you may encounter in Virginia's forests. A detailed description of these species may be found in a dendrology textbook, horticultural reference book or a comprehensive tree identification book. Commonly planted, non-native ornamental trees are listed only if they have become naturalized – that is, they were originally brought from somewhere else but have become established here.

Common Name	Scientific Name	Status	Flammability
Fraser Fir	*Abies fraseri*	Native	HIGH
Black Maple	*Acer nigrum*	Native	LOW
Mountain Maple	*Acer spicatum*	Native	LOW
Pecan	*Carya illinoensis*	Naturalized	LOW
Red Hickory	*Carya ovalis*	Native	LOW
Chinese Chestnut	*Castanea mollissima*	Naturalized	MODERATE
Catalpa (Cigar-Tree)	*Catalpa* spp.	Naturalized	LOW
Fringetree	*Chionanthus virginicus*	Native; shrubby	LOW
Yellowwood	*Cladrastis kentukea*	Native	LOW
Hawthorn	*Crataegus* spp.	Native; shrubby	LOW
Russian-olive	*Elaeagnus angustifolia*	Somewhat invasive	MODERATE
Pumpkin Ash	*Fraxinus profunda*	Native	LOW
Kentucky Coffeetree	*Gymnocladus dioicus*	Naturalized	LOW
Osage-orange	*Maclura pomifera*	Naturalized	LOW
Umbrella-tree	*Magnolia tripetala*	Native	LOW
Apple, Crabapple	*Malus* spp.	Naturalized	LOW
White Mulberry	*Morus alba*	Somewhat invasive	LOW
Norway Spruce	*Picea abies*	Naturalized	LOW
Quaking Aspen	*Populus tremuloides*	Native	LOW
American Plum	*Prunus americana*	Native; shrubby	LOW

Other Trees in Virginia, continued

Common Name	Scientific Name	Status	Flammability
Fire Cherry (Pin Cherry)	*Prunus pensylvanica*	Native; shrubby	LOW
Sweet Cherry	*Prunus avium*	Naturalized	LOW
Peach	*Prunus persica*	Naturalized	LOW
Choke Cherry	*Prunus virginiana*	Native; shrubby	LOW
Callery Pear (Bradford Pear)	*Pyrus calleriana*	Somewhat invasive	LOW
Common Pear	*Pyrus communis*	Naturalized	LOW
Sawtooth Oak	*Quercus acutissima*	Somewhat invasive	LOW
Swamp White Oak	*Quercus bicolor*	Native	LOW
Bear Oak	*Quercus ilicifolia*	Native	LOW
Shingle Oak	*Quercus imbricaria*	Native	LOW
Turkey Oak	*Quercus laevis*	Native	LOW
Overcup Oak	*Quercus lyrata*	Native	LOW
Bur Oak	*Quercus macrocarpa*	Native	LOW
Chinkapin Oak	*Quercus muehlenbergii*	Native	LOW
Cherrybark Oak	*Quercus pagoda*	Native	LOW
Weeping Willow	*Salix babylonica*	Naturalized	LOW
American Mountain-ash	*Sorbus americana*	Native	LOW
Stewartia	*Stewartia* spp.	Native	LOW
Bigleaf Snowbell	*Styrax americanus*	Native	LOW
Pondcypress	*Taxodium distichum* var. *nutans*	Native	LOW
Carolina Hemlock	*Tsuga caroliniana*	Native	LOW
Siberian Elm	*Ulmus pumila*	Somewhat invasive	LOW



Norway Spruce

Project Learning Tree (PLT)

Virginia Project Learning Tree (PLT) offers workshops regularly throughout the state, where present and future educators can receive training in PLT's award-winning curriculum. At www.plt.org, there are more details about the PLT PreK-8 Environmental Education Activity Guide, the Energy & Society Kit, and our series of secondary modules: Focus on Forests, Forest Ecology, Focus on Risk, Municipal Solid Waste, Places We Live, and Forests of the World. Our Biodiversity module can be downloaded from the PLT Web site. Workshops are posted on the Calendar of Events at www.plt.org and www.vanaturally.com. The Virginia PLT Web site is www.cnr.vt.edu/plt.

Virginia Master Naturalist Program

Virginia Master Naturalists are volunteers who provide education, outreach and service dedicated to the beneficial management of natural resources in their communities. Chapters exist in many localities, and new chapters may start at any time.

Certified Virginia Master Naturalists receive a minimum of 40 hours training in a wide variety of natural resource topics. They then devote a minimum of 40 hours per year to projects, which range from teaching others to building trails, and from improving habitats to performing research.

The Virginia Master Naturalist program is sponsored by five Virginia state agencies: Department of Forestry, Department of Game and Inland Fisheries, Department of Conservation and Recreation, Museum of Natural History and Cooperative Extension.

For more information, visit www.virginiamasternaturalist.org.

Glossary

– A –

Acorn: Fruit of an oak tree; a smooth, hard-shelled fruit with a cap at the base

Allelopathy: Production of a chemical by one plant that hinders the growth of other plant species

Alternate leaves: Leaves arranged singly in an alternating pattern along a twig

Axil: The angle between an attached leaf and the stem

– B –

Bark: The outer covering of a tree

Bipinnately compound: Multi-parted leaf with leaflets arranged on side branches off a main axis; twice-compound

Blight: A general name for a plant disease that causes wilting or death of growing shoots

Bole: The main stem or trunk of a tree

Branchlet: A small branch

Bract: A modified leaf which is part of a flower

Browse: leaves, tender shoots and other soft, growing parts of woody plants, that are eaten by animals

– C –

Capsule: A seed-bearing structure that splits open when ripe

Catkin: An elongated flower cluster

Clear trunk: Trunk that lacks branches along a significant part of its length

Compound leaf: Leaf with more than one part, made up of several leaflets attached to a slender, stem-like structure

Cone: The reproductive, seed-bearing structure of most needle-leaved evergreens, usually consisting of overlapping woody scales

Conifer: Cone-bearing tree with needle-like or scale-like leaves, usually evergreen; also known as softwood

Crown: The mass of branches at the top of a tree

– D –

Deciduous: Trees which lose their leaves seasonally

Dioecious: Tree having male and female flowers on separate trees

Doubly serrate (doubly toothed): Leaf edge having evenly spaced notches with smaller notches in between

Glossary, continued

Downy: Covered with short, soft, fuzzy hairs

– E –

Entire: Leaf margins which are smooth, without teeth or lobes

– F –

Fruit: A mature ovary, or seed-containing structure

Fibrous: Made up of fine, threadlike strands

Fissures: Linear splits or cracks, such as those in the bark of some trees

Furrowed: Deeply grooved; often used to describe tree bark

– H –

Hardwood: Tree with broad, flat leaves, which may be deciduous or evergreen

Heartwood: Interior wood of a tree trunk that provides support but no longer has living cells

– I –

Invasive: a species not native to an area, but present and spreading at such a pace as to alter the ecosystem or cause economic or environmental harm

– L –

Lateral bud: an unopened leaf or shoot along the side of a twig

Leader: The central or main stem of a branch or tree

Leaf scar: An impression left at the point of leaf attachment after the leaf falls

Leaflet: A single leaf-like blade that is part of a compound leaf

Leaf margin: The outer edge of a leaf

Lenticel: a pore in the bark of some trees, usually most noticeable on twigs or smooth areas of the bark

Loam: Soil consisting of a mix of sand, silt, and clay

Lobe: Segment of a leaf that protrudes from the main part, like fingers from a hand

– M –

Midrib: Central vein in a pinnately veined leaf

Monoecious: Tree having both male and female flowers on the same tree

– N –

Native: Original to an area (not brought to the area by humans), and able to grow there without aid from humans

Glossary, continued

Naturalized: Native to another area, but now growing and reproducing in a new place without aid from humans

Needle: A long, very slender leaf

Node: The point on a twig where a leaf is attached

Nut: One-seeded, hard fruit that does not split naturally, and is usually contained in a husk while on the tree

Nutlet: A small nut

– O –

Opposite leaves: Leaves arranged along a twig or shoot in pairs across from each other

Overstory: The uppermost canopy layer in a forest

– P –

Palmately compound: Multi-parted leaf with all leaflets arising from a common point

Palmately veined: Major leaf veins spreading out from a common point

Panicle: Multi-branched flower cluster

Perfect flower: Flower with both male and female reproductive parts

Petiole: The stalk of a leaf

Pinnately compound: Multi-parted leaf with leaflets arranged on opposite sides of the main axis

Pinnately veined: Major leaf veins branch off from a central vein

Pith: The central growth ring of a twig, branch, or trunk, best seen when the twig is split lengthwise

Pubescent: Densely fuzzy or hairy

– R –

Rachis: The central stem-like structure in a pinnately compound leaf, to which the leaflets are attached

Riparian area: The land alongside a flowing body of water

– S –

Samara: A dry, winged fruit

Sapwood: Living wood that conducts water and minerals up a tree's trunk

Serrate margin: Jagged notches or "teeth" along the edges of a leaf

Shoot: An actively growing stem

Simple leaf: Leaf consisting of a single blade or part

Sinus: The space or gap between two lobes of a leaf

Glossary, continued

Spur: A short side shoot or twig

Stipule: A leaf-like structure at the base of a leaf petiole or nearby on the twig

Suckering: Sending up shoots from roots, often at a distance from the main stem

– T –

Terminal bud: An unopened leaf or shoot at the end of a twig

Toothed margin: Leaf edge with many small pointed or rounded notches; pointed teeth may resemble the edge of a saw; rounded teeth may appear evenly wavy

Trunk: The woody stem of a tree

– U –

Understory: The area beneath and in the shade of larger trees

– W –

Whorled leaves: Leaves arranged in a circle around one point on a twig

Wing: Thin flat projection alongside a fruit, seed, or twig

Virginia's State Forests

Virginia's State Forests are working lands, managed by the Virginia Department of Forestry for multiple objectives. The forests are self-supporting, generating their own income through timber sales. They also provide wildlife habitat, watershed protection, scenic beauty, research and demonstration areas and recreational opportunities.

State Forests typically do not have the facilities many recreational users expect, such as trash cans, restrooms or improved parking areas. They do, however, offer good places for self-directed activities, such as hiking, mountain biking, horseback riding, orienteering, hunting, fishing, wildlife watching and other nature study. Visitors use the forests at their own risk. They must pack out all trash; respect research areas, and obey all State Forest regulations.

The Virginia State Forest system was established in 1919 when Emmett O. Gallion donated 588 acres in Prince Edward County to the Commonwealth, "to advance the course of forestry in the southern piedmont of Virginia." More land in Appomattox, Buckingham, Cumberland and Prince Edward counties was acquired in the mid-1930s, when the federal government began acquiring land under the Bankhead-Jones Farm Tenant Act. In 1939, the federal government leased these lands to the Commonwealth of Virginia, for the purposes of demonstrating forestry and wildlife management practices and providing for public recreation. In 1954, the federal government deeded these lands to the Commonwealth.

When these first State Forests were acquired, the land was in a depleted condition, having been used almost exclusively for agriculture in the preceding 200 years. Thanks to scientific forest management and good conservation practices, forest growth continues to exceed harvest; soil quality has improved considerably; the quality of water originating from the forest is excellent, and biodiversity has significantly improved.

In the years following acquisition of the central Virginia forests, the Department of Forestry began to acquire other tracts of land as gifts from private landowners. In 2002, the Department also purchased a tract that was to become a State Forest.

Things to Do on State Forests

Recreational uses of Virginia State Forests vary by location, size, deed restrictions and local demographics. A State Forest Use Permit is required for hunting, trapping, fishing, bike riding and horse riding on Virginia State Forests. Permits are required for individuals age 16 and older, and can be purchased online at http://secure01.virginiainteractive.org/horf/ or where hunting licenses are sold.

Camping is allowed on state forest land by permit only, and at this time is limited to group activities, such as equestrian events, Boy Scouts, Girl Scouts, adventure races and similar organized events.

Picnicking is allowed on all state forests. Appomattox-Buckingham, Cumberland

and Conway Robinson State Forests have picnic shelters that are available on a first come, first served basis.

Hunting is allowed seasonally on Appomattox-Buckingham, Channels, Cumberland, Prince Edward Gallion, Sandy Point, Browne, and Matthews State Forests. State hunting regulations apply. Hunting is not allowed on other State Forests due to deed restrictions, inadequate acreage, or devotion to other recreational uses that would create safety issues.

There are eight lakes, two rivers and numerous creeks on State Forest lands suitable for **fishing**. State fishing regulations apply.

The Willis River at Cumberland State Forest has two **canoe/kayak** launch sites. There is also a canoe launch at Zoar State Forest. Boaters on the Mattaponi River are welcome to stop at Sandy Point State Forest to picnic.

Hiking is a popular activity on many State Forests. Trails developed specifically for hiking or multiple uses include the Willis River Hiking Trail and Cumberland Multi-Use Trail on Cumberland State Forest; the Carter Taylor Hiking Trail on the Appomattox-Buckingham State Forest, and many shorter trails on the smaller State Forests. In addition, the forests have more than 200 miles of gated forest roads, which can be used by hikers, bikers and horseback riders.

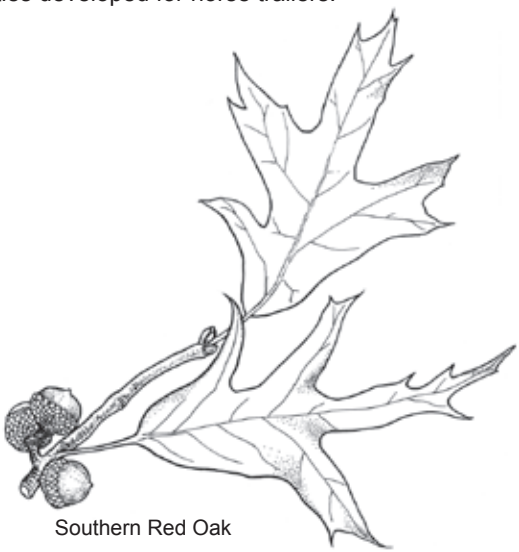
Thirteen of the state forests are suitable for **mountain biking**. Dedicated trails, gated forest trails, and open forest roads provide more than 300 miles of opportunities for mountain bike riding. Whitney and Conway Robinson State Forests have volunteer groups that have developed and maintain the bike trails.

Thirteen of the state forests provide for **horseback riding** opportunities, with more than 300 miles of trails and roads available. Parking is limited for horse trailers on all State Forests, and there are no facilities developed for horse trailers.

All 57,685 acres of State Forest land are available for **bird watching and observing nature**. Due to the tree species and age diversity, a wide variety of wildlife is present.

State Forest lands have become a popular destination for **orienteering** activities, due to the large acreages of contiguous land. A forest history geocache is located on the Appomattox-Buckingham State Forest.

Educational tours, workshops and youth programs are offered periodically on some of the State Forests.



Southern Red Oak

State Forest	County	Acres	Trails (miles)	Vehicle Roads (miles)	Gated Vehicle Roads (miles)	Ponds/ Lakes
Appomattox-Buckingham	Appomattox & Buckingham	19,808	20.4	22	92.5	2
Big Woods	Sussex	2,220	0	3.8	5.9	0
Bourassa	Bedford	288	0	0	0.6	1
Browne	Essex	128	0	0	0.5	0
Channels	Washington & Russell	4,836	0	0	38.8	0
Chilton Woods	Lancaster	397	0	0	0.5	0
Conway-Robinson	Prince William	444	4	0.2	1.4	0
Crawfords	New Kent	258	0	0	0.8	0
Cumberland	Cumberland	16,222	30.5	24.8	74.8	4
Devil's Backbone	Shenandoah	517	0	0	2	0
Dragon Run	King & Queen	9,563	0	17.8	21	2
Hawks	Carroll	121	0	0	0	0
Lesesne	Nelson	422	0	0	1.5	0
Matthews	Grayson	566	1.3	0	4.5	2
Moore's Creek	Rockbridge	2,353	5	0	5	0
Niday Place	Craig	254	0	0	0.4	0
Old Flat	Grayson	320	0	0	0	0
Paul	Rockingham	173	0	0	1.2	0
Prince Edward-Gallion	Prince Edward	6,461	8.4	11.9	28	0
Sandy Point	King William	2,043	0	0	12	1
Whitney	Fauquier	148	5.8	0	1	0
Zoar	King William	378	1.5	0.2	0.6	1
Summary		67,920	76.9	80.7	293.0	13

Hunting/ Trapping/ Fishing	Picnic Shelter	Biking	Comments
yes	2	yes	
yes	0	yes	
no	0	no	Research site
yes	0	yes	No parking lot
yes	0	yes	Hiking trails under develop.
no	0	yes	
no	1	yes	
no	0	yes	
yes	1	yes	
no	0	no	Not yet open to the public
yes	0	yes	Wetland/beaver ponds
no	0	no	No parking lot
no	0	no	Research site
yes	0	yes	
yes	0	no	Limited access
no	0	no	
no	0	no	
no	0	yes	
yes	0	yes	
yes	1	yes	
no	0	yes	
no	0	yes	
	5		

Virginia Forest Education Center at New Kent

The Department of Forestry is creating its first Forest Education Center in New Kent County, on the site of a former State Nursery. The 450-acre site includes a conference center. A two-mile nature trail is open for group hikes by appointment only. Further trails, demonstration areas, an education building, and educational program offerings are being developed.

Virginia Forest Education Center
at New Kent

(804) 966-7058

Department of Forestry Headquarters Nature Trail

A one-mile, interpreted trail surrounds the Department of Forestry's Headquarters in Charlottesville. Trail guides are available at the reception desk. This trail contains some unusual species, stemming from the days when a State Nursery occupied the site. The Forestry Nature Trail is connected to the local Rivanna Trail system.

Other Places to Study Trees

Virginia has…

- ▲ 35 State Parks
- ▲ 60 Natural Area Preserves
- ▲ George Washington and Thomas Jefferson National Forests
- ▲ Shenandoah National Park
- ▲ Many local parks and trails

Visit http://www.vanaturally.org/ for links to these and other outdoor learning areas.

Virginia's State Nurseries

Want to plant some trees?

The Virginia Department of Forestry (VDOF) operates forest tree nurseries providing tree and shrub seedlings to be used on private, industry and public lands. Regional nurseries produce seedlings to be used to establish timber stands, pulpwood crops, Christmas tree plantations, wildlife habitat, streambank stabilization, urban forests, biodiversity and improvement of watersheds as mandated by the *Code of Virginia*.

Portions of the land and the physical facilities at the nurseries are used to educate and inform the public and for research by state and private universities. The offices and quarters are used by university students and faculty for field trips. Established nature trails supplement school curriculum for students to study nature.

In addition to research and education, the New Kent Forestry Center, located near Providence Forge, conducts a series of special deer hunts each fall for disabled sportsmen. Local communities, businesses and civic groups support these activities with volunteers, equipment and supplies.

VDOF nurseries are self-supporting through their tree seedling sales. Our employees are dedicated to producing the highest quality seedlings available. Tree seedlings are planted, visually inspected, harvested, hand-graded, labeled, and packaged for delivery. Tree seedlings may be ordered online or by mail from November through April.

The VDOF has been in the seedling production business for more than 90 years. When you're putting your money in the ground in the form of seedlings, you need to start with the best stock available – stock suited for Virginia soils and climate. The cultural practices that we use in growing seedlings in our seedbeds are based on more than 40 years of research and experience in quality production.

Our seedling catalog, ***Virginia Trees for Virginia's Landowners***, includes more than 40 species of seedlings that have been grown at one of our two State Forestry Centers: the Augusta Forestry Center, near Waynesboro, and the Garland Gray Forestry Center near Littleton. Covering more than 400 acres, our nurseries produce more than 35 million seedlings annually.

In addition to the wide selection of bare-root seedlings, we also offer landowners specialty seedling packs and seed mixtures suitable for various wildlife habitats, screening, use in wetland areas and for erosion control. Our seedlings are sold directly from the seedbed without replanting, and seedling age is one to three years old.

FOR QUESTIONS
OR TO ORDER SEEDLINGS, CONTACT:
Augusta Forestry Center
(540)363-7000
P.O. Box 160, Crimora, VA 24431
www.dof.virginia.gov

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Other Resources

Forest Landowner Education Program – http://cnre.vt.edu/forestupdate/

ForSite (Forestry Outreach Site) – http://dendro.cnre.vt.edu/forsite/contents.htm

USDA Forest Service – http://www.fs.fed.us/

Virginia Big Tree Database – http://www.web2.cnre.vt.edu/4h/bigtree/

Virginia Tech Dendrology Web site – http://dendro.cnre.vt.edu/dendrology/main.htm

Project Learning Tree – http://www.plt.org/

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Virginia Department of Forestry

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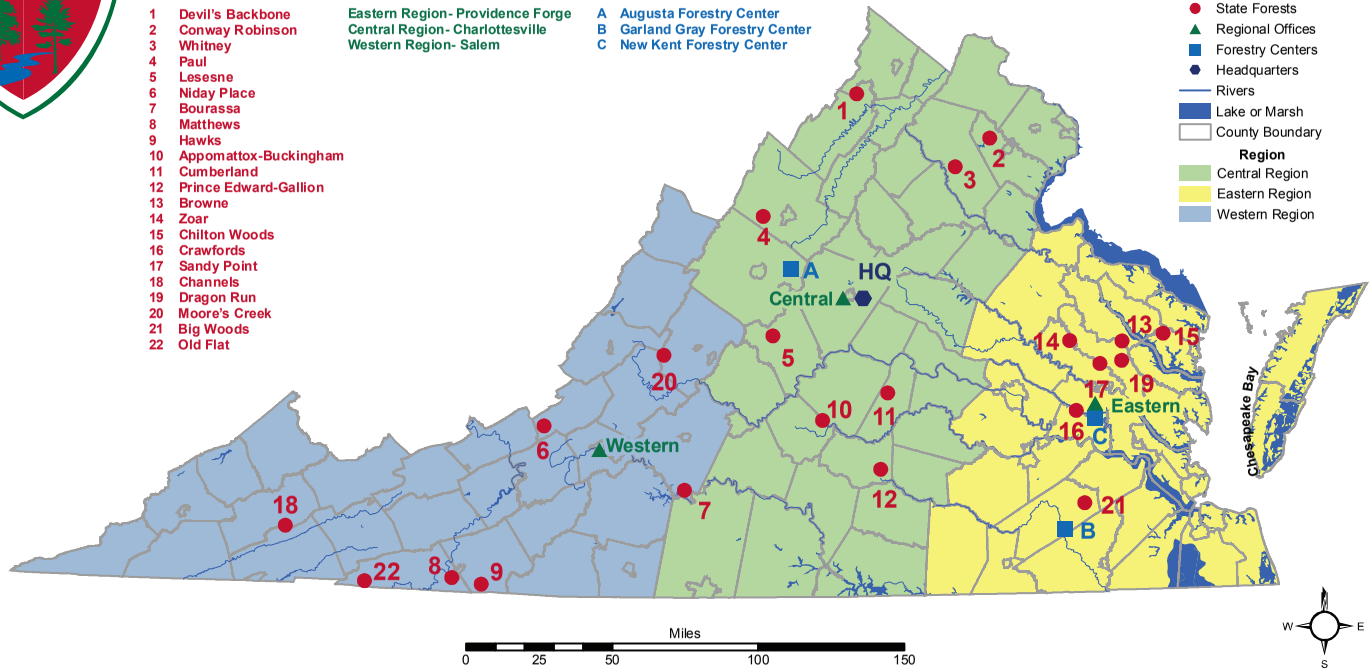
C New Kent Forestry Center



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