

Introduction

My grandfather, Joshua A. Cope, in his capacity as Extension Forester at Cornell University, published "Know Your Trees" as a small guide to the identification of common trees in the northeastern United States. This was first published in December 1927 as a 4-H Handbook and since has gone through 3 revisions and 6 printings. The most recent revision was in 1998 and was published by Media Services of Cornell University as a bulletin.

December	1927	first printing
January	1929	revised
April	1940	revised
March	1948	revised
November	1951	reprinted
July	1955	reprinted
July	1960	reprinted
February	1964	reprinted
July	1979	reprinted
October	1998	reprinted (with minor revisions by Peter Smallidge, Dept. of Natural Resources, Cornell University)

We are placing here on the Web our most recent version of "Know Your Trees" with the same 50 species and the accompanying keys. We have brought the nomenclature up to date, and revised and improved the keys. From this point forward we will continue to modify this work. We will attempt to keep the work small and simple as that is part of its great popularity and usefulness. We will try to keep the number of species treated about the same as we add and delete species. The keys will necessarily have to be changed to meet these needs but brevity and simplicity, without fancy botanical terms, will be the objective. The descriptions will also be modified, although minimally, as these descriptions as originally written carry very well into the new millenium.

Edward A. Cope
28 November 2000

Acknowledgements

Original Authors' Acknowledgements

The descriptive text ([List of 50 Trees](#)) covering the tree characters is largely a compilation rather than the result of original investigations. *Trees in Winter*, by Albert Francis Blakeslee and Chester Deacon Jarvis, was freely consulted in the matter of bark characters; *Trees of New York State*, by H. P. Brown, furnished valuable suggestions in the way of uses; and *Common Trees of New York*, by J. S. Illick, was followed closely in many particulars.

The cuts for the bulletin were furnished through the courtesy of W. R. Mattoon of the Forest Service.

Common and scientific names follow the *Check List of Forest Trees of the United States*, by E. L. Little, Jr., Agricultural Handbook No. 541 of the United States Department of Agriculture (1979).

Current Author's Acknowledgements

Special thanks go to Robert Dirig for his suggestions and comments about this revision and to Jennifer Svitko for image work and suggestions about web site design.

Forest Appreciation

The greater portion of the land area of New York State is better adapted to growing trees than to any other use, making forestry a vital part of the State's agricultural programs. Work in forestry appeals to old and young alike because of its outdoor nature and the possibility of combining activities in nature study, conservation, camping, and woodcraft.

To develop an appreciation of the forest is to know the importance of it to agriculture and industry, to acquire a thorough knowledge of the trees in the forest, and to know the relative values of these trees in producing crops of timber. The first step is to become familiar with the various kinds of trees, the dominant members of the forest community. Ideally the trees should be studied in the forest, in conditions most natural to their growth, but they can also be learned in the yard or parks. Each tree species has certain characteristics that distinguish it from other kinds of trees. In addition to the external characteristics, the wood of each tree species also varies. In growing timber for a specific use or in choosing trees to be cut for a certain purpose, one must know what kinds of wood are required to best serve that purpose.

This bulletin has been prepared to assist in acquainting the reader with the forest trees in the neighborhood. Perhaps a hundred species of trees are native to the State, but some of them such as alder, pussy willow, and witch hazel, are so small that they are scarcely more than shrubs in New York. Other species such as the willow oak and the sweet gum on Long Island, while of real forest-tree size, are confined to very limited localities. No attempt has been made, therefore, to provide an all-inclusive list of trees in this publication. Instead, fifty common tree species have been selected. These species are generally distributed throughout the State and are likely to be found in the average woodlot.

With this bulletin as a guide, it should be possible for current and future landowners to become familiar with most forest trees in their neighborhood. As future woodland owners, this basic knowledge of the trees of the forest will contribute to better management of our State's private forests.

Using the Bulletin

The best place to study the trees, of course, is in the woods where the characters (bark, twigs, buds, leaves, and fruit) are most easily observed.

Pay considerable attention to the bark. It is always present, summer and winter, and even in the log you can tell the tree if you know the bark. Try to remember the points mentioned in the text, such as color and texture, whether smooth or furrowed, scaly or firm.

Twigs are interesting to study in the wintertime. They vary in color; some are brittle, while others are tough and pliable; some are slender, while others are coarse. A taste of the twig often helps to identify the tree, as for example, the **cherries** or the **black birch**.

The buds go along with the twigs as part of the winter study of the trees. Frequently it may be important to recognize a forest seedling in the early spring before the leaves are out, especially if you want to transplant the seedling. This also would be true if it were a valuable forest tree, such as a **sugar maple**, and it was desirable to clear around it to allow it more light. In such instances the buds are a helpful means of identification.

Study the winter twigs carefully. It is obvious that **hickories** have a terminal bud, as do the **maples** and the **ashes**. But be ready for **basswood**, **elms**, and **birches**. They may appear, at first glance, as if a terminal bud is present, but on closer examination it is evident that there is a leaf scar on the end of the twig and the bud is a little below and to one side. The color of buds is also helpful. For example, by a glance at the color of the bud you can tell at once whether the tree is a **soft (red)** or a **hard (sugar) maple**. The opposite or alternate arrangement of the leaves can also be applied to buds and helps you to distinguish some trees ([plate 1](#)).

Leaves are the easiest to observe. Compare the leaves and look for the following points: Are they simple (one leaf to a stem) or compound? Are they arranged opposite on the twig or alternate? How is the margin of the leaf shaped? In some leaves the margin is entire (no breaks at all). In some, the margin is like the fine teeth of a carpenter's saw (*serrate* or saw-like); or it is doubly serrate. In others, the margin is more deeply notched, as in the **chestnut**, the **beech**, and the **bigtooth aspen**. In some **oaks** and others where the margin is very deeply cut, the leaves are described as *lobed*, and the hollows between are called *clefts* ([plate 2](#)).

Trees have flowers as do most green plants, but the blooms are not usually noticeable high up in treetops where you cannot easily see them to aid in identification. In addition, they are present only for a very brief season. In the interest of using available space for easily observed, more available characteristics, the description of flowers has not been included.

The fruit of the forest trees is an important item in the appreciation of the forest, not so much as a means of identifying the tree, but for finding and recognizing the seeds from which the different forest trees develop. Fruit, it should be remembered, does not necessarily mean fleshy, edible products, such as apples or cherries, but includes any seed and the covering in which it develops, whether cone, pod, samara (winged-seed), burr, or husk. Note in the species descriptions the time of year the seed matures.

The uses of each tree and where it occurs naturally are also briefly mentioned in the descriptions. This should round out the knowledge and appreciation of the trees of the forest.

Learning to know the names of the trees is like playing a detective game. With certain "clues," such as color of the bark, size and branching of the twig, shape of the bud, and form of the leaf, the names of the trees can be "tracked down."

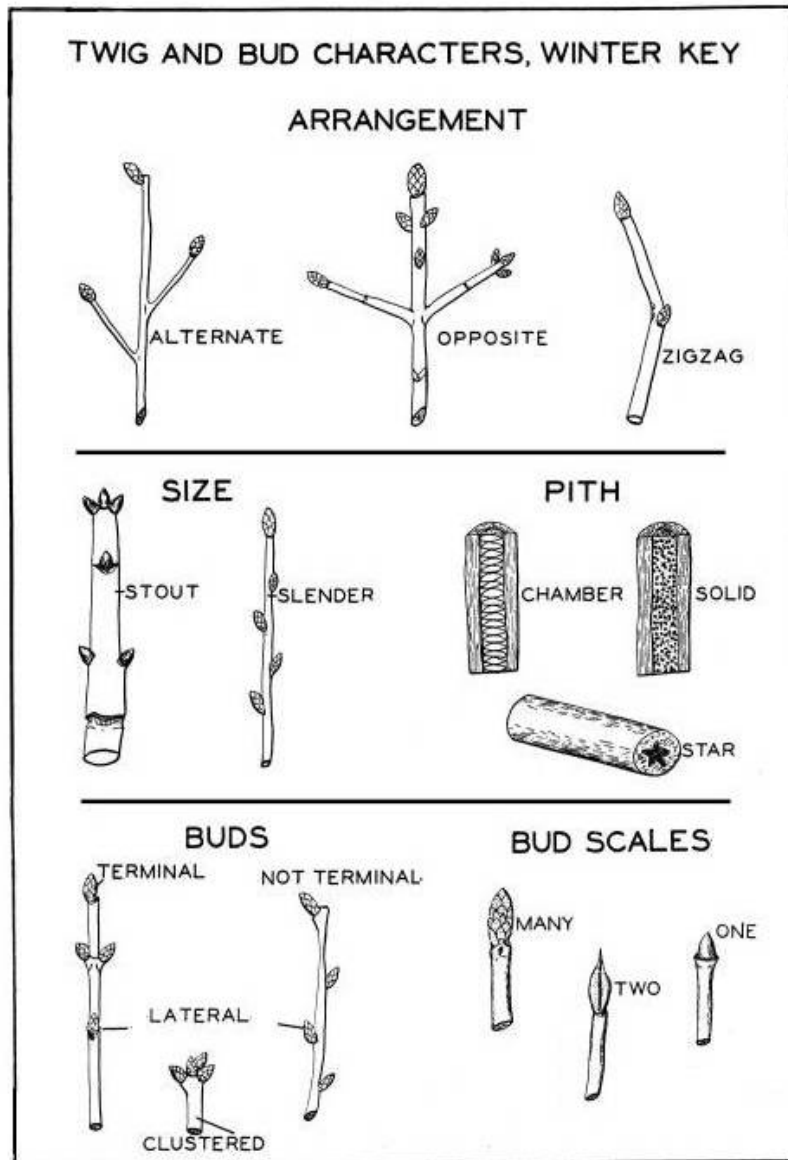


Plate 1

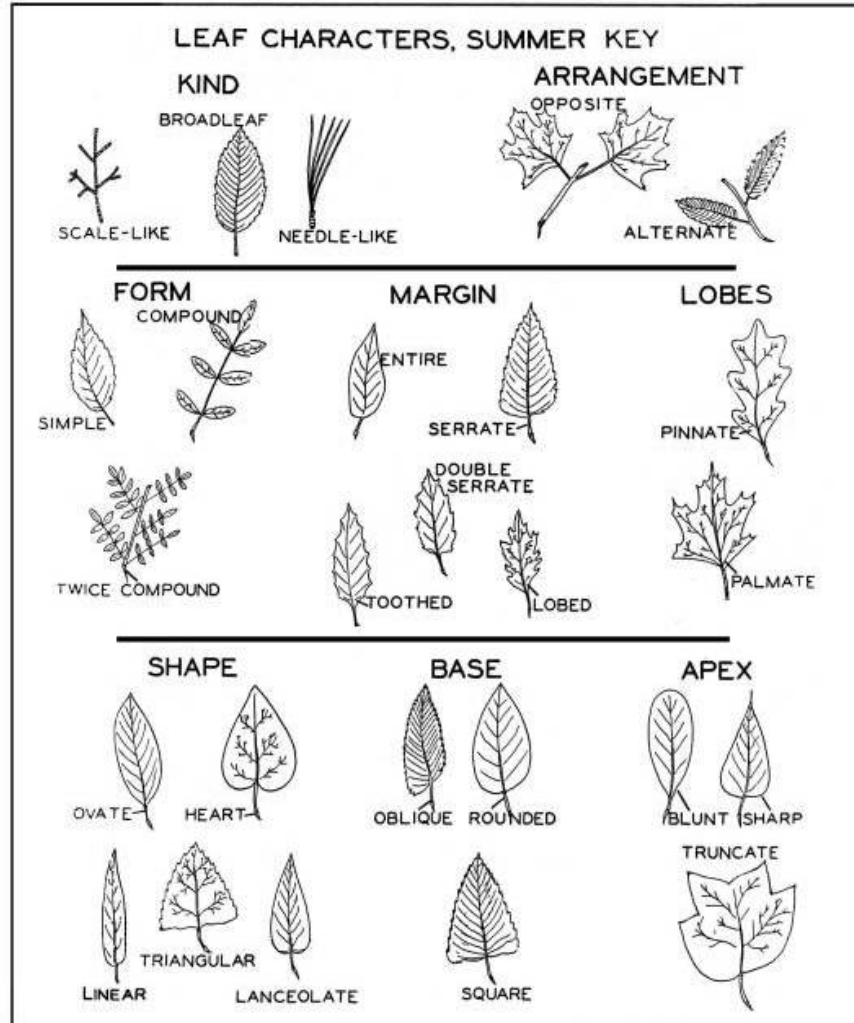


Plate 2

LIST OF 50 TREES

Each individual tree is linked to its own description page. On each tree page, the small image is linked to a larger image. These pages are also accessible directly from the summer and winter keys.

- | | | |
|---|--|--|
| 1. Arborvitae
(<i>Thuja occidentalis</i>) | 11. Yellow Birch
(<i>Betula alleghaniensis</i>) | 21. Hawthorn
(<i>Crataegus</i>) |
| 2. Black Ash
(<i>Fraxinus nigra</i>) | 12. Butternut
(<i>Juglans cinerea</i>) | 22. Eastern Hemlock
(<i>Tsuga canadensis</i>) |
| 3. White Ash
(<i>Fraxinus americana</i>) | 13. Black Cherry
(<i>Prunus serotina</i>) | 23. Bitternut Hickory
(<i>Carya cordiformis</i>) |
| 4. Bigtooth Aspen
(<i>Populus grandidentata</i>) | 14. Pin Cherry
(<i>Prunus pensylvanica</i>) | 24. Pignut Hickory
(<i>Carya glabra</i>) |
| 5. Quaking Aspen
(<i>Populus tremuloides</i>) | 15. American Chestnut
(<i>Castanea dentata</i>) | 25. Shagbark Hickory
(<i>Carya ovata</i>) |
| 6. Basswood
(<i>Tilia americana</i>) | 16. Eastern Cottonwood
(<i>Populus deltoides</i>) | 26. American Hornbeam
(<i>Ostrya virginiana</i>) |
| 7. American Beech
(<i>Fagus grandifolia</i>) | 17. Cucumber Tree
(<i>Magnolia acuminata</i>) | 27. American Hornbeam
(<i>Carpinus caroliniana</i>) |
| 8. Black Birch
(<i>Betula lenta</i>) | 18. American Elm
(<i>Ulmus americana</i>) | 28. American Larch
(<i>Larix laricina</i>) |
| 9. Gray Birch
(<i>Betula populifolia</i>) | 19. Slippery Elm
(<i>Ulmus rubra</i>) | 29. Black Locust
(<i>Robinia pseudoacacia</i>) |
| 10. Paper Birch
(<i>Betula papyrifera</i>) | 20. Balsam Fir
(<i>Abies balsamea</i>) | 30. Honey-Locust
(<i>Gleditsia triacanthos</i>) |

[The Maples](#)
(about all species)

- 31. [Red Maple](#)
(*Acer rubrum*)
- 32. [Silver Maple](#)
(*Acer*
saccharinum)
- 33. [Sugar Maple](#)
(*Acer saccharum*)
- [The Oaks](#)
(about all species)
- 34. [Black Oak](#)
(*Quercus velutina*)
- 35. [Chestnut Oak](#)
(*Quercus montana*)
- 36. [Northern Red Oak](#)
(*Quercus rubra*)
- 37. [Scarlet Oak](#)
(*Quercus coccinea*)
- 38. [White Oak](#)
(*Quercus alba*)
- 39. [Eastern White Pine](#)
(*Pinus strobus*)

- 40. [Pitch Pine](#)
(*Pinus rigida*)
- 41. [Red Pine](#)
(*Pinus resinosa*)
- 42. [Eastern](#)
[Redcedar](#)
(*Juniperus*
virginiana)
- 43. [Sassafras](#)
(*Sassafras*
albidum)
- 44. [Shadbush](#)
(*Amelanchier*
canadensis)
- 45. [Red Spruce](#)
(*Picea rubens*)
- 46. [White Spruce](#)
(*Picea glauca*)
- 47. [Sycamore](#)
(*Platanus*
occidentalis)
- 48. [Tulip Tree](#)
(*Liriodendron*
tulipifera)
- 49. [Black Walnut](#)
(*Juglans nigra*)
- 50. [Black Willow](#)
(*Salix nigra*)

1. ARBORVITAE

northern white-cedar

Thuja occidentalis Linnaeus

Arborvitae (meaning "tree of life") is a medium-sized, slow-growing forest tree rather common in the northeastern part of the state, less frequent in the central and western parts. Dense arborvitae swamps are common in Madison County and northward and eastward. In the Adirondack region it also occurs frequently outside the swamps. The wood is light, soft, brittle, coarse-grained, light yellowish brown in color, and durable in contact with the soil. It is used extensively for fence posts and small poles.



Bark - ashy gray to light reddish brown, separating in long, narrow, flat, shreddy strips, often more or less spirally twisted.

Twigs - decidedly flattened, arranged in fan-shaped clusters, and not to be confused with the leaves which cover the last season's growth; with the death of the leaves in the second season, the twigs become reddish brown in color and shiny.

Winter buds - extremely minute, almost covered by the scale-like leaves.

Leaves - scale-like, yellowish green in color, aromatic when crushed, borne in pairs closely overlapping; on leaves of leading shoots, glandular dot conspicuous in center of leaf.

Fruit - An oblong, erect cone, 1/2 inch long, reddish brown in color, persists through the winter. Cone scales - 6 to 12, open to the base at maturity in autumn of the first season. Seeds - 1/8 inch long, in pairs, nearly surrounded by broad wings.

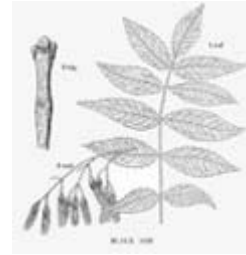
Distinguishing features - cones with few scales; dot in center of flat, scale-like leaf.

1a. White-cedar (*Chamaecyparis thyoides* (L.) BSP), a coastal plain tree, closely resembles the arborvitae.

2. BLACK ASH

Fraxinus nigra Marshall

Black ash is a tree most commonly found in deep swamps. Occasionally, though, it's found mixed with other hardwoods in moist, cold forests. Its wood is heavy, rather soft, tough, coarse-grained, and is used for hoops, chair bottoms, and baskets.



Bark - ashy gray in color, somewhat furrowed, forming thin, smoothish scales which are easily rubbed off.

Twigs - very stout, similar to those of white ash but not shiny and usually a lighter gray in color; leaf scar typically oval.

Winter buds - buds resembling those of white ash though usually decidedly black; terminal bud as long or longer than broad, sharp-pointed; lateral buds much smaller, blunt-pointed; last pair of lateral buds at some distance from the terminal bud instead of nearly on a level, as in the white ash.

Leaves - opposite, compound, 10 to 14 inches long, with 7 to 11 leaflets similar to those of white ash but much longer in proportion to their width, without stems.

Fruit - a winged seed, with the wing broader and distinctly notched at the tip; in clusters, ripening in the early autumn.

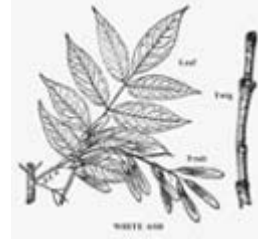
Distinguishing features - found in moist locations; leaflets without stems; black buds; notched tip in seed.

2a. Red ash (*Fraxinus pennsylvanica* Marshall) grows in wet spots but has the same uses as white ash. Red ash may be identified by slightly serrate leaflets, silky below, on a woolly leaf-stem, and by the woolly twigs marked by semicircular leaf scars.

3. WHITE ASH

Fraxinus americana Linnaeus

White ash is a valuable and rapid-growing tree in the woodlots of New York State. It is common throughout New York and is found up to an altitude of 2000 feet in the Adirondacks. It prefers to grow in rich moist woods, and is common on abandoned agricultural lands. The wood is heavy, hard, strong, close-grained, and tough. Large quantities of it are used for agricultural implements, tool handles, oars, furniture, and sporting goods. In some locations, especially open edges and roadsides, branch dieback and tree mortality are common.



Bark - dark grayish brown in color, deeply furrowed with narrow flat-topped firm ridges which on older trunks are somewhat scaly; ridges in some instances tend to run together, enclosing diamond-shaped fissures.

Twigs - very stout, smooth, shining, grayish brown in color, brittle, flattened at leaf bases (nodes); leaf scar is notched.

Winter buds - plump, blunt-pointed, dark brown or nearly black in color; terminal bud 1/5 inch long, larger than lateral buds; last pair of lateral buds almost on level with terminal bud.

Leaves - opposite, compound, 8 to 15 inches long, with 5 to 9 leaflets; leaflets sharp-pointed, 3 to 5 inches long, with slightly and sparsely serrate margins; borne on short stems, by this characteristic may be distinguished from black ash leaflets, which are stemless.

Fruit - a winged seed, 1 to 2 inches long, broadly paddle-shaped with the wing occupying the position of the blade; borne in long, open, drooping clusters, ripening in September, often not dropping off until early winter.

Distinguishing features - thick twigs; compound leaves with stemmed leaflets; brown buds; ashy-gray, older bark.

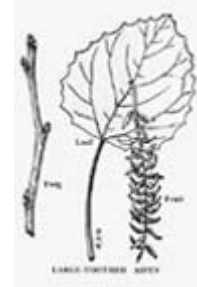
3a. Green ash (*Fraxinus pennsylvanica* Marshall var. *lanceolata* (Burkhausen) Sargent) is frequently confused with white ash. The former has narrower leaflets with more noticeable serrations which extend farther toward the base; the leaflets are greener beneath; the terminal bud is more pointed; and the leaf scar is not notched. It has the same uses as white ash.

4. BIGTOOTH ASPEN

large-toothed aspen

Populus grandidentata Michaux

Bigtooth aspen is a medium-sized, rapid-growing, short-lived tree that develops best on deep moist soils, but is more common on dry, upland, sandy or stony sites, where it rapidly covers slashes and burns. Here it provides habitat for wildlife that use early successional cover. The wood is similar to that of quaking aspen and is used for excelsior, pulp, woodenware, crates, and boxes.



Bark - resembles that of quaking aspen, though small branches are of a more pronounced yellow color. The lower trunk is generally more deeply furrowed than is that of quaking aspen.

Twigs - stout, round, reddish or yellowish brown in color in early winter, often pale and downy as contrasted with those of quaking aspen which are shiny.

Winter buds - usually larger than those of quaking aspen, terminal bud present; lateral buds generally bending away from twig, dull, dusty-looking, light chestnut brown in color.

Leaves - alternate, simple, 3 to 6 inches long, roughly triangular with square base, blunt apex, coarsely toothed margin in direct contrast to the finely serrate margin of quaking aspen.

Fruit - very similar to that of quaking aspen. Seeds - spread by wind.

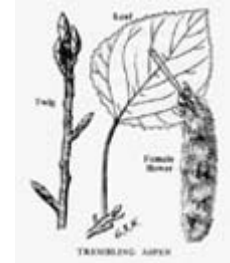
Distinguishing features - coarse teeth on leaf with square base; twigs downy.

5. QUAKING ASPEN

trembling aspen, popple, small-toothed aspen

Populus tremuloides Michaux

Quaking aspen is the most widely distributed tree in North America. It is common in most sections of New York State but is infrequent on the pine barrens of Long Island. It is a short-lived tree, but has value as a cover tree in slashes, burns, and in old fields where it quickly establishes itself. The wood is soft, weak, not durable, light brown to white in color, and is used primarily in the manufacture of mechanical pulp, excelsior, crates, and boxes.



Bark - on young trunks and branches yellowish green to whitish in color, on old trunks roughened with broad, flat, blackish ridges.

Twigs - smooth, shiny, reddish, brown in color.

Winter buds - terminal bud 1/4 inch long, narrow, conical, often incurved, sharp-pointed, shiny, reddish brown in color; lateral buds smaller.

Leaves - alternate, simple, 1 1/2 to 3 inches in width, somewhat triangular in shape with rounded base, serrate margin, with flattened stem which allows the slightest breeze to flutter the leaves, from which the name, "quaking aspen," is derived.

Fruit - a scattered cluster of small, curved capsules, maturing in early spring. Seeds - within capsule, each with a tuft of hairs, carried long distances by the wind when capsule breaks open. This explains why the aspens spring up so quickly after fires on burned-over areas and in abandoned fields.

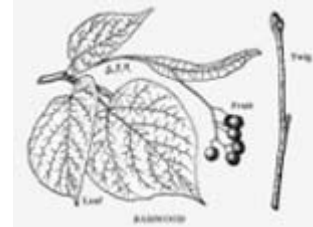
Distinguishing features - tiny teeth on margin of leaves; shiny twigs.

6. BASSWOOD

linden, whitewood

Tilia americana (Ventenat) Linnaeus

Basswood is a moderately common forest tree in New York State. It has rapidity of growth and a wide range of uses for its lumber. It does best in the deep, moist soils of the woodlot sections but is generally distributed except in the high Adirondacks and Catskills. The wood is soft, even-grained, light, and fairly strong, and used for boxes, crates, cheap furniture, woodenware, and paper pulp; often used as a substitute for white pine.



Bark - on young stems smooth, dark gray in color; on older trunks firm but easily cut, becoming furrowed into rather narrow flat-topped ridges; on still older trunks furrows deeper, ridges more rounding and broader, surface scaly.

Twigs - rather slender, smooth, bright red or greenish in color or covered by a gray skin, zigzag, slightly mucilaginous when chewed; fibers of bark on twigs very tough, may be used as rope.

Winter buds - terminal bud absent; lateral buds large, smooth, sometimes lopsided or humped, bending away from the twigs, dark red or sometimes green in color.

Leaves - simple, alternate, heart-shaped, 5 to 10 inches long, sharp-pointed, coarsely serrate along margin; leaf base is asymmetrical.

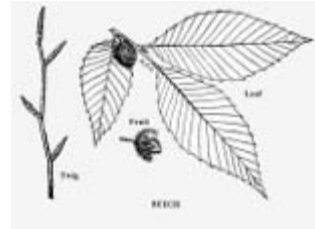
Fruit - a nut, round, woody, about the size of a pea, borne singly or in clusters, with a common stalk, attached midway to a leafy bract, ripening in late fall but sometimes remaining on the tree into the winter. The bract acts as a sail to scatter the seed.

Distinguishing features - often found in clumps; usually large, heart-shaped leaf; hump-backed bud on zigzag twig; fruit a pea-like nut attached to a slender "parachute."

7. AMERICAN BEECH

Fagus grandifolia Ehrhart

American beech has perhaps the widest distribution of any forest tree in the state and for that reason, no doubt, is one of the best known. In the Adirondacks and Catskills, it forms an important part of the hardwood forest, but is almost equally common throughout the rest of the state. Though the tree is of large and stately size, the wood is less valuable than that of many of its associates in the woodlot section of the state, with the result that it has been left standing. Because of its heavy shade, it has also excluded more valuable trees. Beech bark disease, which is a fungus that grows on injuries caused by a scale insect, infects and kills large numbers of beech trees in the northeast. The wood is heavy, hard, strong, tough, and close-grained, and is excellent as fuelwood. It also is used largely in the acid-wood industry, for baskets and crates, and to some extent for furniture.



Bark - smooth, close, steel gray in color, easily recognized by this character.

Twigs - slender, zigzag, smooth, shining reddish brown in color becoming gray on older twigs.

Winter buds - terminal bud present, slender, 3/4 inch long, sharp-pointed, covered with light brown scales; lateral buds not much smaller than terminal bud.

Leaves - simple, alternate, 3 to 4 inches long, ovate, coarsely toothed on margin, bristle tipped; at maturity very thin, dull green in color above, pale green beneath.

Fruit - a stalked burr, covered with soft, curving prickles, containing a nut. Burrs - usually in pairs, open up to let the nuts fall in the early autumn, remaining on the tree into the winter. Nut - triangular, pale brown in color, shining, with sweet edible kernel.

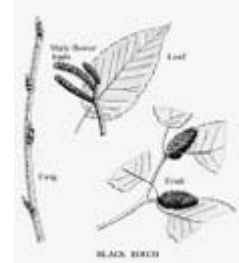
Distinguishing features - smooth gray bark; coarse, sharp teeth on leaf margin; "cigar-shaped" buds.

8. BLACK BIRCH

cherry birch, sweet birch

Betula lenta Linnaeus

Black birch yields a variety of useful products. From the Hudson River Valley to Lake Erie, except along the higher mountains, in moist or dry, gravelly soils, this tree is well known to boys and girls for the wintergreen flavor of its twigs. The wood is heavy, strong, hard, close-grained, and dark brown in color with yellowish sapwood, and is used for fuel and furniture, especially as a substitute for cherry or mahogany. Oil of wintergreen, used medicinally and for flavoring, is distilled from the twigs. Birch tea is made from scrapings of inner bark of twigs steeped in hot water.



Bark - on branches smooth, close, not peeling, dark reddish brown in color with conspicuous, light colored, elongated breathing pores; on older trunks breaking into long, thick irregular plates almost black in color.

Twigs - slender, smooth, light reddish brown in color, with numerous, short, spur-like lateral twigs; strong wintergreen flavor when chewed.

Winter buds - terminal bud present on spur-like lateral branches only, about 1/4 inch long, conical, sharp-pointed, reddish brown in color, buds on season's growth usually bending away from twigs.

Leaves - alternate, simple, ovate, 2 to 5 inches long, sharp-pointed, with fine doubly serrate margin, found usually in pairs, not opposite on lateral spurs.

Fruit - an erect, cylindrical, cone-like structure as in other birches, 1 1/2 to 2 inches long, without stalk; the winged nutlets falling in autumn and winter.

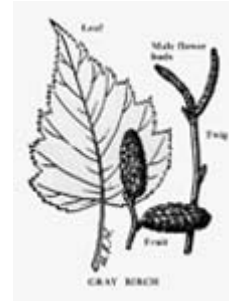
Distinguishing features - strong wintergreen flavor in twigs and bark; leaves usually in pairs on spurs.

9. GRAY BIRCH

old-field birch, poplar birch

Betula populifolia Marshall

Gray birch colonizes disturbed and harsh sites and is particularly abundant in the lower Hudson Valley where it grows chiefly on dry, gravelly soils of burned-over areas and abandoned farms. Though often confused with the true paper birch, it is far inferior to that species in size and value of the wood. Its white bark renders it more attractive than the aspens, and the characteristic clump effect of its growth is striking, particularly along streams. The tree is short-lived and is rarely as much as 8 inches in diameter. The wood is light and soft, decaying quickly. In New York, it is used for fuelwood and pulpwood only.



Bark - on small stems, reddish brown in color, becoming with age dull, chalky white, not peeling off in papery layers as in paper birch; with distinct black triangular patch below each branch where it joins the stem.

Twigs - slender, reddish brown in color, becoming dull chalky white with age.

Winter buds - small, smooth, pointed, brownish in color, in many instances bending away from the twigs; end bud on the season's growth not terminal.

Leaves - alternate, simple, 3 to 4 inches long, triangular in shape, very long-pointed, shiny on upper surface, margin doubly serrate.

Fruit - a slender, erect, cone-like structure, 3/4 inch long, 1/3 inch thick, on a short stalk; consisting of winged nutlets and 3-lobed scales in alternate layers; both become detached from the central stem in late autumn and winter. Seeds - minute, broad wings, spread by the wind.

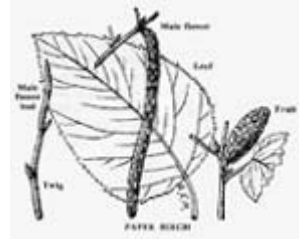
Distinguishing features - long-pointed, triangular leaf; dull, chalky-white bark, not peeling in thin layers.

10. PAPER BIRCH

canoe birch, white birch

Betula papyrifera Marshall

Paper birch is well known throughout the Adirondacks and the Catskills and along the highlands of the Susquehanna and Delaware drainage on account of its white, papery bark. This shade-intolerant tree grows on a wide range of soils; it thrives along lakes, streams, and swamps, and maintains itself on the higher slopes of our mountains. Spools, woodenware, shoe lasts, wood pulp, and fuelwood are made from its light, strong, tough, hard, light brown wood.



Bark - on young stems, golden to reddish brown in color, early becoming chalky white and peeling off in thin, papery layers, which once separated from the tree are never renewed. Because it is tough, resinous, durable, and impervious to water, it was the choice of all northern Indians for their canoes. Now it is the choice of the souvenir hunter.

Twigs - stouter than those in gray birch, dull reddish brown in color.

Winter buds - terminal bud absent as in gray birch; lateral buds small, sharp-pointed, bending away from twig.

Leaves - simple, alternate, ovate, blunt-pointed rather than slender at apex, 2 to 3 inches long, coarsely serrate on margin; at maturity dull dark green in color above, paler below.

Fruit - a cone-like structure as in the gray birch, 1 inch long, 1/3 inch thick, usually pendant rather than erect; nutlets and bracts falling in late autumn and winter as with other birches.

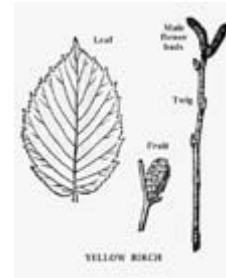
Distinguishing features - white bark peeling in papery layers in older trees, in saplings reddish-brown; ovate leaves.

11. YELLOW BIRCH

silver birch

Betula alleghaniensis Britton

Yellow birch is an important and prominent timber tree of New York State. It is common throughout the state, except on Long Island, on rich, moist uplands in company with beech and sugar maple, but is found also with red spruce in the swamps and along waterways. The heavy, very strong, hard, close-grained, light brown wood is largely used for furniture, woodenware, flooring, interior finish, airplanes, and agricultural implements. Its value for fuelwood entitles it to a place in farmers' woodlots. Its seeds often sprout and grow from the tops of rotten stumps and logs.



Bark - on young branches close, bright, silvery, yellowish gray in color; with age peeling into thin papery layers that roll back and extend up the trunk in long lines of ragged fringe, making excellent tinder for starting a fire in the rain; on very old trunks becoming rough and furrowed, reddish brown in color.

Twigs - similar to those of black birch though more yellowish brown in color and often hairy, slightly wintergreen-flavored; abundant, spur-like laterals as in black birch.

Winter buds - similar to those of black birch.

Leaves - similar to those of black birch; undersurface somewhat hairy, particularly along veins.

Fruit - similar to that of black birch though usually wider in proportion to its length, falling in late autumn and throughout the winter. Bracts - 3-lobed, distinctly hairy, while in the black birch they are smooth.

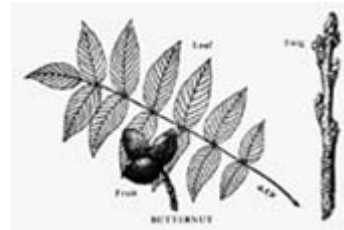
Distinguishing features - silvery gray to yellowish bark, peeling in thin sheets; slight wintergreen flavor in bark and twigs; undersurface of leaves hairy along veins.

12. BUTTERNUT

white walnut

Juglans cinerea Linnaeus

Butternut is a close kin to the black walnut though not so valuable a timber tree. It produces attractive wood and edible nuts, but branches freely and seldom reaches a large size. It is common in moist soils, especially along fences and roads throughout the state, but is infrequent in the higher Adirondacks. The wood is light, soft not strong, coarse-grained, light brown in color, fairly durable, and easily worked and polished. It is used for interior trim, furniture, and fence posts. Many butternut trees are infected with a canker disease.



Bark - smooth on young trunks and branches, light gray in color; on older trunks deeply divided into long, broad, flat-topped, whitish ridges.

Twigs - stout, brittle, greenish-gray in color, often hairy, easily identified by a dark-brown furry growth, or "mustache," found just above most leaf scars; chambered pith dark brown as contrasted with the light brown chambered pith of the black walnut.

Winter buds - terminal bud pale, downy, blunt-pointed 1/2 to 3/4 inch long, flattened, longer than wide; lateral buds smaller and shorter.

Leaves - alternate, compound, with 11 to 17 practically stemless long-pointed leaflets, margins serrate as in black walnut; leaves up to 2 1/2 feet in length; leaf stalk, hairy where it joins stem.

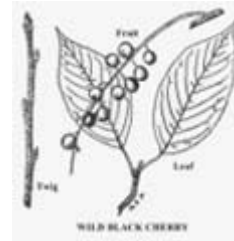
Fruit - a rather large nut, 1 1/2 inches long, tapering at the end, black with fine cut ridges, enclosed in a sticky, green husk usually in clusters of 3 to 5, ripening in October of the first season. Kernel - sweet, oily, but somewhat difficult to extract. The butternut has the advantage of curing without removing the outer husk.

Distinguishing features - "mustache" above "monkey-faced" leaf scars; dark brown, chambered pith.

13. BLACK CHERRY

Prunus serotina Ehrhart

Black cherry is the largest and most valuable of the cherry trees in New York State. It prefers rich bottomlands and moist hillsides, but is found also in drier situations. It is common in most sections of the state, though seldom found above an altitude of 3000 feet in the Adirondacks. Its wood is light, strong, hard, close-grained with pale reddish brown heartwood and is much in demand for cabinetmaking, interior finishing, tools, ties and fence posts. It is a valuable fast-growing timber and wildlife food tree and should be encouraged in woodlots.



Bark - at first smooth, reddish brown in color, marked with easily seen, long, white breathing pores; with age becoming much roughened by irregular, close, dark scaly circular plates with upturned edges.

Twigs - slender, smooth, reddish brown in color, having bitter almond taste which is characteristic of all cherries.

Winter buds - smooth, ovate, 1/8 to 1/6 inch long, sharp-pointed, chestnut brown in color; terminal bud present.

Leaves - alternate, simple, 2 to 5 inches long, lanceolate, broader than are those of pin cherry, fairly long-pointed, margin finely serrate, tufts of hair along midrib on undersurface of leaf.

Fruit - a single-seeded juicy fruit, about 1/2 inch in diameter, grouped on very short stems, in long scattered, drooping clusters, purplish black when ripe in late summer. Birds and animals eat the fruit, though its flavor is decidedly bitter.

Distinguishing features - long white pores on young bark; dark scaly, circular, saucer-like plates in older bark; hairy midrib below on leaf; fruit in short-stemmed clusters.

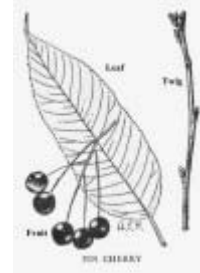
13a. Sweet cherry or bird cherry (*Prunus avium* Linnaeus) is an escaped cultivated cherry found in abandoned fields and hedgerows. Its shiny red bark and thick twigs are its outstanding features.

14. PIN CHERRY

wild red cherry, fire cherry

Prunus pensylvanica Linnaeus filis

Pin cherry thrives early on burned, cutover, and abandoned land throughout the state, except in the higher Adirondacks. It is not a timber-producing species and its main value lies in its ability to cover wasteland and to protect the soil until larger trees can establish themselves and crowd it out. The wood is light, soft, close-grained, with light brown heartwood, and is seldom used.



Bark - bright, reddish brown in color, for the most part smooth, often slightly peeling around the trunk, marked with numerous long, pale breathing pores; in old trees somewhat roughened near the base.

Twigs - slender, smooth, shiny, bright red in color, a characteristic bitter almond taste, peculiar odor.

Winter buds - very small, reddish brown in color, characteristically clustered at the twig tip and sometimes along the sides; terminal bud present, usually smaller than the lateral buds around it.

Leaves - alternate, simple, 3 to 5 inches long, narrowly lanceolate as contrasted with the broader leaves of wild black cherry, sharp-pointed, with finely serrate margin.

Fruit - a round, juicy, one-seeded fruit, light red in color, about 1/4 inch in diameter, arrayed on long stems, 3 to 5 in a cluster, ripening in July. Birds often pick the ripe fruit.

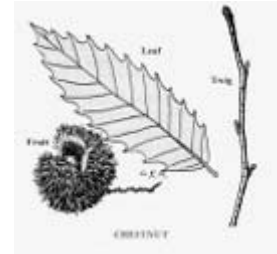
Distinguishing features - smooth, reddish brown bark, with long horizontal pores; branches at almost right angles to trunk; fruit in long-stemmed clusters.

14a. Chokecherry (*Prunus virginiana* Linnaeus) is a bushy shrub, although sometimes a small tree, furnishing food for game in hedgerows. Its dark brown bark shows lighter streaks of gray.

15. AMERICAN CHESTNUT

Castanea dentata (Marshall) Borkhausen

American chestnut, once common across the state south of the Adirondacks, has succumbed to the deadly chestnut blight, so that there are practically no live trees over 4 inches in diameter. Perhaps almost any other species could have been better spared in the farmer's woodlot because of its rapid growth, the many uses of wood, and the fine crop of nuts it furnished. The wood is light, soft, coarse-grained, reddish brown in color, and durable in contact with the soil. It is now used largely for posts.



Bark - on young trunks smooth, reddish brown in color, with age broken by shallow fissures into long, broad flat, more or less slanting ridges.

Twigs - stout, greenish yellow or reddish brown in color, somewhat swollen at base of buds; pith star-shaped in cross section.

Winter buds - small ovate, light chestnut brown in color, set at an angle to the leaf scar; terminal bud absent.

Leaves - simple, lanceolate, alternate, 6 to 8 inches long, sharp-pointed, widely toothed.

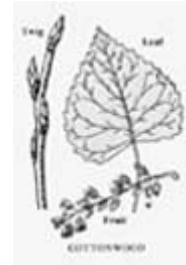
Fruit - a light brown burr, sharp, spiny without and hairy within; opening at the first frost and letting fall generally 3 nuts. Nuts - shiny, woolly at the top; shell very thin; kernel solid, white, sweet, and makes excellent eating.

Distinguishing features - stout twigs, with star-shaped pith; long leaves with widely-spaced, sharp teeth.

16. EASTERN COTTONWOOD

Populus deltoides Bartram ex Marshall

Eastern cottonwood is an exceedingly rapid-growing, moisture-loving species that is found locally in moist places and along streams and lakes throughout the state except at the higher elevations. The wood is light, soft, and weak, and is dark brown in color with thick nearly white sapwood, warping badly in drying. It is used for pulp and for boxes. The cottonwood has been extensively planted as an ornamental tree along the streets, but as such it has few merits as it is short-lived and the roots often penetrate and clog drains and sewers. It is not easy to destroy, for, once cut down, the stump continues to sprout vigorously.



Bark - smooth on young trunks and branches; light yellowish green in color, becoming thick, ashy gray in color, and deeply furrowed with age.

Twigs - stout, round or ridged below the bud, bright yellow or greenish yellow in color; rank odor when broken.

Winter buds - terminal bud present, large, resinous, glossy, smooth, chestnut brown in color; lateral buds smaller, in many instances bending away from the twig.

Leaves - alternate, simple, broadly triangular, 3 to 5 inches long, coarsely serrate margin, square base, long and laterally flattened leaf stalk.

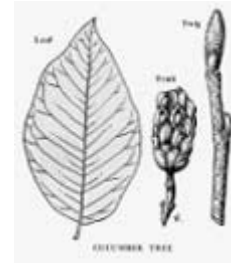
Fruit - a scattered cluster of capsules as in the aspens, though somewhat larger (3 to 6 inches long), arranged in long, drooping tassels. Seeds - within capsule, numerous, small, surrounded by a mat of fine hairs, ripening in the spring, conveyed long distances by the wind. The cotton-like mat of fine hairs is the reason for the name "cottonwood".

Distinguishing features - rank odor when twig is broken; incurved teeth on leaf margin of triangular leaf.

17. CUCUMBER TREE

Magnolia acuminata Linnaeus

Cucumber tree, so called because of its cucumber-like fruit, is the only magnolia that is at all common in this state outside of Long Island. In rich woods, on moist slopes, and along stream courses, from the central part of the state westward and southward, it is found locally. The wood is light, soft, close-grained, brittle, and light yellowish brown in color. It resembles that of yellow poplar and besides wood-carving, has much the same uses. Because of its yellowish green flowers, its large leaves, its rapid growth, and its red seeds, it is often grown in lawns and parks.



Bark - grayish brown in color, with long narrow furrows separating into rather loose, scaly, flat-topped ridges.

Twigs - brittle, brown in color, smooth or shiny, aromatic odor.

Winter buds - terminal bud oblong, somewhat curved, thickly covered with pale, silky hairs, pointed, about 1/2 inch long; lateral buds smaller, blunt, also hairy.

Leaves - alternate, simple, ovate, pointed at the tip, 4 to 10 inches long, entire margin. One of the few species of the state that has an entire-margined leaf.

Fruit - a cone-like or cucumber-like, cylindrical mass, often curved, about 2 1/2 inches long, containing a large number of scarlet, pea-like seeds which dangle from the ends of short, white threads when ripe in the early autumn.

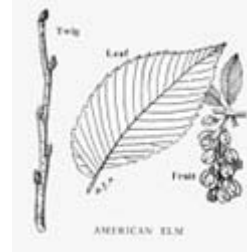
Distinguishing features - smooth margin of large leaf; aromatic odor of twigs; oblong terminal bud; branching like that of pear tree, fruit like cucumber.

18. AMERICAN ELM

white elm

Ulmus americana Linnaeus

American elm is one of the most beautiful, graceful, and best known forest trees in New York. It occupies a wide range of sites, though typically a tree of the bottomlands, and grows to be one of the largest trees in the state. (The Gowanda elm had a basal circumference of 39 feet.) The wood is heavy, hard, strong, tough, coarse-grained, difficult to split, and light brown in color; largely used for veneer, barrel staves and hoops, crates and wheel hubs. The graceful symmetry of the crown makes the elm highly prized for ornamental planting. However, this species has nearly disappeared from our parks and streets because of the lethal Dutch Elm disease. Improved resistant strains have been developed and planted ornamentally and in the wild in hopes that this majestic species can regain its former widespread occurrence.



Bark - dark gray in color, divided by irregular up-and-down furrows into broad flat-topped ridges, rather firm or occasionally in old trees flaking off; inner bark in alternate layers of brown and white.

Twigs - slender, smooth, reddish brown in color, not mucilaginous (like glue) when chewed.

Winter buds - winter twig obviously ends in leaf scar, hence larger bud near end of twig not truly terminal; lateral buds somewhat smaller, ovate, pointed, light reddish brown in color, smooth, 1/8 inch long.

Leaves - simple, alternate, 4 to 6 inches long, oblique at the base, margin doubly serrate, at maturity dark green in color above, lighter beneath, midrib and parallel veins prominent; upper surface of leaf somewhat rough to the touch, although not so pronounced as in slippery elm.

Fruit - flat, winged, deeply notched at the end, 1/2 inch long, containing one small seed; in clusters, ripens in early May as the leaf buds unfold, falling soon thereafter.

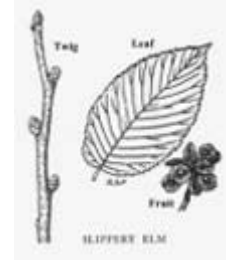
Distinguishing features - zigzag twigs; inner bark not mucilaginous, having alternate layers of brown and white; leaf slightly rough on upper side only; with oblique base.

19. SLIPPERY ELM

red elm

Ulmus rubra Muhlenberg

Slippery elm is a medium-sized forest tree of stream banks and low fertile slopes and is common south of the Adirondacks. The wood is hard, heavy, strong, coarse-grained, and fairly durable in contact with the soil. This tree is not an important commercial species but is used for fence posts, ties, barrel staves and hoops.



Bark - grayish brown in color, more or less deeply furrowed, the ridges tending to lift more along one edge than in the American elm; layers of outer bark reddish brown in color, shows no alternate layers of brown and white as in the American elm; inner bark, next to the wood, whitish, strongly mucilaginous (like glue), giving the name "slippery elm."

Twigs - light gray in color, hairy, somewhat rough, characteristically mucilaginous when chewed.

Winter buds - terminal bud absent as in American elm; lateral buds 1/4 inch long, dark chestnut brown in color, covered at tip with long, rusty hairs.

Leaves - alternate, simple, oval, 5 to 7 inches long, oblique at the base, margin doubly serrate; at maturity thick, dark green in color above, decidedly rough to the touch, paler and white-hairy below; midrib and parallel veins prominent.

Fruit - flat-winged, but not notched at the end, 1/2 to 3/4 inch long, containing one seed; in clusters, maturing in late May or early June when the leaves are about half grown, falling soon thereafter.

Distinguishing features - inner bark chewy, without alternate layers of brown and white; leaf base oblique, rough above and below; twigs chewy; buds tipped with rusty hairs.

20. BALSAM FIR

Abies balsamea (Linnaeus) Miller

Balsam fir is a medium-sized forest tree generally distributed in deep, cold swamps throughout the state. The wood is light, soft, coarse-grained, not durable, pale brown in color, and is of little value as a source of lumber. It is cut along with spruce for pulpwood, and is desirable as a Christmas tree. Balsam pillows are made from the needles.



Bark - smooth, grayish brown in color, dotted with balsam blisters containing fragrant oily resin; in old trees becoming somewhat roughened with small scales.

Twigs - smooth with age, grayish in color.

Winter buds - small, almost spherical, glossy, clustered at end of twigs.

Leaves - borne singly and twisting so as to appear 2-ranked as in the hemlock, flattened rather than 4-sided as in the spruces, dark green in color above, pale below with 2 broad white lines, 3/4 inch long, blunt, not stalked, aromatic when crushed, persistent from 2 to 3 years.

Fruit - an erect cone, 2 1/2 to 4 inches long, rounded at the top, ripening the autumn of the first year, purplish green in color. Cone scales - longer than broad, somewhat fan-shaped, falling the winter following maturity of cone and leaving only the erect central stalk to which they were attached. Seeds - in pairs, winged, dark brown in color, 1/4 inch long, ripening in September.

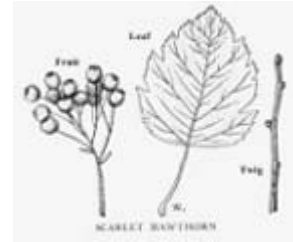
Distinguishing features - needles without stalks; blisters in bark; cone erect and falling apart when ripe.

21. THE HAWTHORNS

thornapple

Crataegus Linnaeus

Hawthorns comprise a large group of small-sized trees. More than a score of varieties are common in New York State. The differences are chiefly in flower and fruit and it seems advisable in this publication to call attention to the general characteristics of the group without going into the minute differences that separate the many species. The very small size of the trees, generally less than 20 feet, makes them of no commercial value. In fact, some members of the group may be regarded as a serious pest, because of the rapidity with which they seed up old pastures, shading out available pasturage or making costly the preparation of the land for forest planting.



Bark - generally dark brown to gray in color, scaly.

Twigs - stiff, zigzag, armed with large, generally unbranched thorns 1 1/2 to 2 inches long.

Winter buds - round, chestnut brown in color; terminal bud usually present but no larger than lateral buds.

Leaves - simple, alternate, 3 to 4 inches long, 2 to 3 inches wide, serrate on the margin; in some species leaves more or less ovate, others from 5- to 9-lobed.

Fruit - berry-like, in a cluster, each fruit the size of a small cherry; when mature in early autumn, usually red, with from 1 to 5 nutlets in center of fleshy covering; highly prized by birds in winter.

Distinguishing features - stiff thorns, 1 1/2 to 2 inches long; berry-like fruit, usually red.

22. EASTERN HEMLOCK

hemlock-spruce

Tsuga canadensis (Linnaeus) Carriere

Eastern hemlock is a valuable forest tree very widely distributed throughout the state, particularly common on northern exposures, shaded gorges, steep mountain slopes, and borders of deep swamps. The wood is light, not strong, coarse-grained, brittle, not durable, splinters easily, and is light brown in color. It is largely manufactured into construction lumber and is also in demand for mechanical pulp.



Bark - reddish to grayish brown in color, with shallow, broad connecting ridges; inner bark bright cinnamon red in color. The high tannin content of the bark is of commercial value in tanning leather.

Twigs - slender, yellowish to grayish brown in color, rough when needles are shed.

Winter buds - very small, reddish brown in color, not resinous-coated.

Leaves - borne singly, twisting to appear 2-ranked with a third row pointing forward on top of the twig; with distinct short stalk, flat, 1/2 inch long, rounded or notched at the apex, dark green in color above, paler below with 2 white lines, persistent from 2 to 3 years.

Fruit - a cone, stalked, pendant, 3/4 inch long, ripening in a year, grayish brown in color when mature, falling during the winter following maturity. Cone scales - with rounded entire margins. Seeds - in pairs, winged, light brown in color, 1/16 inch long, ripening in September.

Distinguishing features - needles with tiny stalks; small cones.

23. BITTERNUT HICKORY

swamp hickory, water hickory, tightbark hickory

Carya cordiformis (Wangenheim) K. Koch

Bitternut hickory is occasional in most sections of the state except in the higher Adirondacks or Catskills. It is by preference a bottomland tree growing on wet sites in pastures, fields, and along streams, though it is occasionally found on hillsides and ridgetops in small moist depressions. It grows well on moist, rich soil such as is found in many farm woodlots. The wood is heavy, very hard, strong, tough, and dark brown in color with paler sapwood. It is inferior to that of the other hickories but is used for practically the same purposes.



Bark - thin, close, with shallow furrows and narrow regular ridges, usually does not scale or shag off, light gray in color.

Twigs - slender, often yellowish in color, hairy toward the end; grayish or orange-brown in color during the first winter; pith brown and unlike any other hickory in this respect.

Winter buds - long, flattened, blunt-pointed, covered by 4 sulfur-colored scales; terminal bud 1/3 to 3/4 inch long.

Leaves - alternate, compound, 6 to 10 inches long, with 7 to 11 long, narrow, sharp-pointed leaflets which are smaller and more slender than are those of other hickories.

Fruit - a nearly round nut, thin-husked, brown in color, 3/4 to 1 inch long, without ridges. Kernel - bitter, not edible. Husk - clings to the nut after falling. Shell is so thin that it can easily be crushed between the fingers.

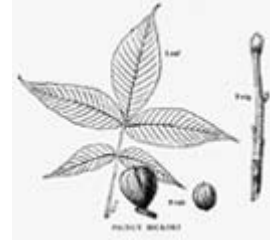
Distinguishing features - smooth bark and usually straight stem; sulfur-colored bud; 7 to 11 small leaflets.

24. PIGNUT HICKORY

pinut, brown hickory

Carya glabra (Miller) Sweet

Pignut hickory is a fair-sized, upland species preferring dry ridges and hillsides throughout the state, except in the Adirondack region where it is found only at the lower elevations. The wood is strong and very tough. Its uses are similar to those of shagbark hickory.



Bark - typically close-fitting, dark gray in color, marked with shallow furrows and narrow ridges which are seldom shaggy, though sometimes becoming detached at end. The variation in bark characteristics of the pignut hickory is very pronounced.

Twigs - comparatively slender, smooth, tough, and pliable, reddish brown to gray in color.

Winter buds - small, oval, blunt-pointed, covered with reddish brown scales, the outer pair of which often drop off in winter; terminal bud less than 1/2 inch long, much smaller than the terminal bud of the shagbark hickory.

Leaves - alternate, compound, 8 to 12 inches long, with 5 to 7 leaflets all of which are alike or nearly alike in size.

Fruit - a pear-shaped to nearly round, thin-husked, buff-colored nut without ridges, 1 inch long, thick shelled. Kernel - at first sweet, later somewhat bitter. Husk - contrasted with shagbark hickory, all or part usually clings to the nut after it has fallen to the ground.

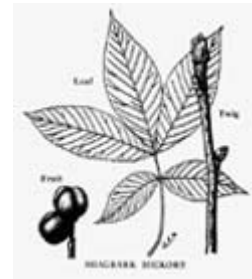
Distinguishing features - 3 to 5 leaflets, all nearly same size; lacey design in bark; small terminal bud like that of rose.

25. SHAGBARK HICKORY

scalybark hickory

Carya ovata (Miller) Koch

Shagbark hickory is the best known and most valuable of the hickories in this state. It is common in deep, moist soils throughout New York though rare in the higher Catskills and Adirondacks, and is not reported from the pine barrens of Long Island. In the forest it is a tall straight-branched tree but in open fields and along hedgerows where it often grows it usually forks near the ground into stout ascending limbs. The wood is very heavy, tough, elastic, close-grained, and is used chiefly for handles, vehicles, agricultural implements, and fuel. The fruit is important for wildlife.



Bark - light gray in color, smooth and seamy, becoming shaggy with age and peeling off into long strips which are loose at both ends and attached in the middle, thus giving rise to the name "shagbark hickory."

Twigs - covered with numerous light dots, extremely tough and pliable, reddish brown to gray in color.

Winter buds - large, ovate, blunt-pointed, with papery, dark brown, loose bud scales, the outer scales much darker, persistent through the winter; terminal bud usually more than 1/2 inch long.

Leaves - alternate compound, 8 to 14 inches long, with 5 to 7 leaflets, the 3 upper ones being by far the largest.

Fruit - a smooth, white, 4-angled nut, enclosed in a thick, round husk that splits into 4 sections as the nut falls after heavy autumn frosts.
Kernel - large, sweet.

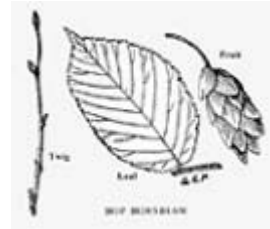
Distinguishing features - large terminal bud; 5 to 7 leaflets, outer 3 much larger; bark peeling in long plates.

26. AMERICAN HOPHORNBEAM

ironwood

Ostrya virginiana (Miller) Koch

American hophornbeam is closely related to the American hornbeam and is rather generally distributed throughout New York State on dry, gravelly, and stony soils of slopes and ridges, sometimes taking possession of woodlots in central New York to the exclusion of other species. The tree is slow-growing and is rarely found larger than 10 inches in diameter. The wood is very heavy, hard, and strong, hence the name "ironwood." It is used for tool and implement handles and for levers, and makes excellent fuelwood when seasoned.



Bark - thin, very markedly flaky; light grayish brown in color, broken into narrow, flattish pieces, loose at the ends.

Twigs - fine, reddish brown in color, smooth, and shiny; a very easy winter character for identification of the tree, particularly of young saplings.

Winter buds - terminal bud absent as in birches and elms; lateral buds small, light reddish brown in color, bending away from the twig.

Leaves - alternate, simple ovate, 3 to 5 inches long, doubly and finely serrate on margin.

Fruit - a small, seed-like nutlet, enclosed in an inflated, sac-like bract. Bracts - in clusters 1 to 2 inches long, resembling hops, hence the name "hophornbeam." Fruit usually falls before winter.

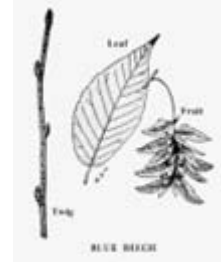
Distinguishing features - shreddy bark; shiny, reddish-brown twigs; papery fruit like a hop.

27. AMERICAN HORNBEAM

blue-beech, ironwood, water beech

Carpinus caroliniana Walter

American hornbeam is a small-sized, bushy tree, found frequently along watercourses and the edges of swamps generally throughout the state. It is rarely more than 6 inches in diameter. The wood is very heavy, hard, strong, close-grained, and is occasionally used for mallets on account of its hardness.



Bark - smooth, thin, dark bluish gray in color, close-fitting, with smooth, rounded lengthwise ridges that resemble tensed muscles.

Twigs - very slender, dark red in color, and shining.

Winter buds - terminal bud absent; lateral buds small, often angled in cross-section, narrowly ovate, pointed, covered with many reddish brown scales.

Leaves - simple, alternate, ovate, 2 to 4 inches long, finely and doubly serrate on margin.

Fruit - a small prominently ribbed nutlet, 1/3 inch long, enclosed in a 3-lobed leaf-like bract. Bracts with their enclosed nutlets are in long, drooping clusters which ripen and fall before winter.

Distinguishing features - "muscles" in bark; fruit a nutlet enclosed in 3-part "dress."

28. AMERICAN LARCH

tamarack, hackmatack

Larix laricina (Du Roi) Koch

American larch is a forest tree of the swamps. In the mountainous sections of the state, it is frequently found well up the slopes, but is confined to cold swamps in eastern, central, and western New York. The wood is very heavy, hard, and strong, light brown in color, and durable in contact with the soil. It is used for fence posts, telegraph poles, and railroad ties.



Bark - smooth, light gray in color on young trunks; with age becoming roughened with thin reddish brown scales.

Twigs - slender, smooth, glossy brown in color, with short lateral wart-like branches.

Winter buds - scattered along last season's twigs and at the ends of short lateral branches, small, rounded, reddish brown in color, shining.

Leaves - borne singly on twigs of last season's growth; on spurs of older twigs in clusters of 10 or more, flat, slender, pale green in color, about 1 inch long, falling off in the autumn of the first year.

Fruit - a cone, 1/2 inch long, borne on short curving stalks, maturing in autumn of the first year, chestnut brown in color, standing upright from the twigs, staying on the tree for several years. Cone scales - concave in shape. Seeds - in pairs, winged, light brown in color, 1/8 inch long, ripening in early autumn.

Distinguishing features - many needles in cluster, dropping in autumn; small stiff cone on incurved stalk.

28a. European larch (*Larix decidua* Miller), which is one of several species that are difficult to distinguish, has been planted for many years on lawns and more recently in forest plantations. It has infrequently naturalized. Its cones are 1 to 1 1/2 inches long, standing out from the twig. It grows on well-drained soils much more rapidly than the American larch.

29. BLACK LOCUST

yellow locust, white locust

Robinia pseudoacacia Linnaeus

Black locust is not a native of the state, but was a great favorite with early settlers as a dooryard tree from where it has escaped to form dense thickets along the roadside in many sections of the state. In favorable locations, its spread by means of root suckers is very rapid. It grows with exceptional rapidity on well-drained fertile soils, and in such locations seems better able to survive attacks of the locust borer which in some sections has rendered the tree worthless. The wood is very strong, heavy, hard, and extremely durable in contact with the soil. As a post wood it has no equals and is also used for ties and fuelwood, and was used for insulator pins on pole lines.



Bark - rough even on young trunks, yellowish brown in color, becoming deeply furrowed into distinct, thick, rounded ridges, which are not scaly.

Twigs - slender, brittle, reddish to greenish brown in color; generally bearing short stiff spines 1/4 to 1/2 inch long, in pairs at base (node) of leaves.

Winter buds - terminal bud absent; lateral buds very small, in a cavity below leaf scars, rusty brown in color, covered with down.

Leaves - alternate, compound, 8 to 14 inches long, with 7 to 19 entire leaflets arranged along a central stem; leaflets usually odd in number, short-stalked, oval in shape, 1 1/2 to 2 inches long.

Fruit - a pod, flat, smooth, brown in color, 2 to 4 inches long, containing 4 to 8 small brown or black seeds, ripening in September. Pods hang on into the winter and are finally torn off by the wind in halves with seeds attached, the dried pod acting as a sail to carry the seed considerable distances.

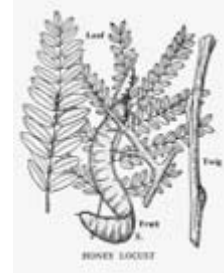
Distinguishing features - compound leaves with oval leaflets; small, downy buds depressed in bark; short stiff spines; papery pods.

30. HONEY-LOCUST

sweet-locust

Gleditsia triacanthos Linnaeus

Honey-locust, while native in western New York only, has been widely introduced as a hedge and ornamental tree, and is hardy and scattered through the state except in the mountains. The wood is hard, strong, coarse-grained, but not so durable in contact with the soil as is the black locust. Its habit of growing in open rather than forest situations gives its wood a knotty character.



Bark - on young branches smooth, grayish brown in color, with age becoming roughened into firm, broad, blackish ridges with edges that curve outwards.

Twigs - rather stout, smooth, glossy, zigzag; usually bearing stiff, sharp-branched thorns 3 to 4 inches long (lacking in most horticultural varieties), above leaf base (node).

Winter buds - terminal bud absent; lateral buds very small, not easily seen.

Leaves - alternate, simply or, more usually, doubly compound, 6 to 8 inches long; if singly compound, with 18 to 28 leaflets; leaflets usually even in number, elliptical, 1 1/2 to 2 inches long; if doubly compound, with 4 to 7 pairs of secondary leaf stems.

Fruit - a flat pod, usually twisted, reddish brown in color, 10 to 18 inches long, 1 1/2 inches wide, 2 to 3 in a cluster, ripening in late autumn but staying on the tree well into winter; each pod containing 10 to 20 brown oval seeds, 1/3 inch long. The fleshy part of the pod is sweet, hence the name "honey-locust."

Distinguishing features - branched, stout thorns; usually doubly compound leaves, with elliptical leaflets; large, reddish brown pod.

THE MAPLES

Maples (*Acer* spp.) are an important group of forest trees in New York State. Sugar maple is the state tree, and maples provide maple syrup, valuable hardwood timber, wildlife foods, beautiful fall colors, lawn trees, and watershed protection.

Of the sixteen or more maples east of the Rocky Mountains, eight are found with moderate to high frequency in some parts of the state. These include: sugar maple (*Acer saccharum*), red maple (*Acer rubrum*), silver maple (*Acer saccharinum*), striped maple (*Acer pensylvanicum*), Norway maple (*Acer platanoides*), box-elder (*Acer negundo*), mountain maple (*Acer spicatum*), and black maple (*Acer nigrum*). Only the first three are described in this list. Other maples in the state that are less common and typically escaped from horticultural plantings include: hedge maple (*Acer campestre*), Amur maple (*Acer ginnala*), Japanese maple (*Acer palmatum*), and sycamore maple (*Acer pseudoplatanus*).

Maples as a group are readily distinguishable from other trees by the opposite arrangement of buds, leaves, and twigs, together with the characteristically shaped simple maple leaf (box-elder is the only exception, having compound leaves). The fruit of the maple group is also distinctive. They are without exception winged seeds, borne in pairs and clusters of pairs, and commonly called *maple samaras*.

Striped maple is an increasingly abundant species in the maturing and shady forests of the state. It thrives in shade and is restricted to the subcanopy. Striped maple reproduces easily and sometimes forms a dense understory inhibiting the reproduction of other species. This species is distinguished by bright green bark with white stripes, large goose foot-shaped leaves, and its samaras with wide-reaching wings.

Norway maple has been widely planted in residential areas, now overplanted, and considered an invasive weed in some of the many areas of the state where it has naturalized. There are many other more appropriate species that should be considered for ornamental planting. Norway maple is recognized by large blunt terminal buds, interlacing and often spiraling black bark ridges, and a broad leaf on a long stalk. The leaf stalk has a milky sap when broken. The species was removed from some sections of New York City and Long Island during an infestation of the Asian Longhorned beetle (*Anoplophora glabripennis* Motschulsky), an exotic insect that feeds on and reproduces in Norway maple, other maples, and a variety of other hardwoods.

Box-elder is a medium-sized tree found in moist locations at lower elevations, occasionally common, and its greatest value is stream bank stabilization and shading of streams. It is one of a few maple species with a compound leaf. It has no commercial value, and its weak wood makes it unsuitable for residential areas.

Mountain maple is recognized by the downy hairs on current-year twigs and buds and by its small size. Common only to moist ravines, steep slopes, and

higher elevations, it has no commercial value but is a pleasant tree to encounter when hiking.

Black maple is similar to sugar maple and often considered as only a variety of sugar maple. Black maple is distinguished with difficulty from sugar maple by its drooping leaf edges and tips, hairy lower surface of the leaves and orange-brown dull twigs. Black maple's fall color is typically yellow compared to the brilliant orange to amber of sugar maple.

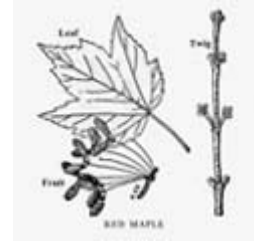
The other maples that occur in New York State are seldom encountered in the woods, but may be found near residential areas where seeds from planted specimens have become established.

31. RED MAPLE

swamp maple, soft maple

Acer rubrum Linnaeus

Red maple derives its name from its brilliant autumn foliage. While common in swamps all over the state, it is also abundant on moist slopes and increasingly common in partially cut woodlots. It is an extremely rapid-growing tree, furnishing a fairly strong, close-grained wood, extensively used for cheap furniture, in the manufacture of baskets and crates, for mine props, railroad ties, and fuelwood.



Bark - on young trunks smooth, light gray in color, often resembling beech; with age becoming darker and roughened into long ridges, often shaggy or scaly on surface; bark character extremely variable on different trees in the same stand.

Twigs - rather slender, bright or dark red in color, without odor when cut or broken.

Winter buds - broad, blunt-pointed, clustered, short stalk, red in color; terminal bud slightly larger than lateral buds; numerous large, plump flower buds along the twig.

Leaves - simple, opposite, 3 to 4 inches long, fully as wide, usually 3-lobed; the clefts between lobes shallow and sharp angled as contrasted with deep clefts of silver maple; margins of leaf lobes coarsely serrate; at maturity leaves light green in color above, pale greenish white below.

Fruit - maple samaras, in clusters on long stalks, ripening in May or early June. Seeds - joined more or less end on end. Wings - diverge at wide angles.

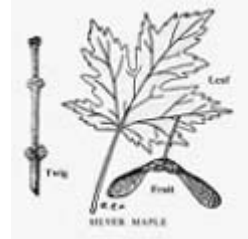
Distinguishing features - red buds and twigs; sharp angle between leaf lobes; leaf margin with teeth.

32. SILVER MAPLE

white maple

Acer saccharinum Linnaeus

Silver maple is generally distributed throughout the state, but is not nearly so common as red maple. It prefers the same general moist soil conditions, and the wood is used for the same purposes as the red maple with which it is included under the term "soft maple" by lumbermen. Frequently planted as a shade tree on account of its rapid growth, but with its weak wood it shouldn't be planted near homes or cars.



Bark - on young trunks smooth, gray in color with reddish tinge; with age becoming reddish brown in color, more or less furrowed, the surface separating in long thin flakes which become free at the ends and flake off.

Twigs - similar to red maple but having a distinctly rank odor when broken or crushed.

Winter buds - similar to red maple but larger, usually very dense clusters of lateral buds.

Leaves - simple, opposite, 3 to 5 inches long, fully as wide, 5-lobed; margins of lobes coarsely serrate; clefts between lobes, particularly the middle two, very deep; at maturity leaves pale green in color above and silvery white below, hence the name "silver maple."

Fruit - maple samaras, much larger than in the red maple though maturing at about the same time in the spring. Wings - more widely divergent than those of the red maple. Sometimes only one side of the samara develops.

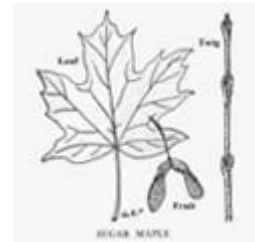
Distinguishing features - silvery bark on upper limbs; deeply cut clefts between coarse-toothed lobes; rank odor from crushed twig; large-winged samaras.

33. SUGAR MAPLE

hard maple, rock maple

Acer saccharum Marshall

Sugar maple is a magnificent forest tree abundant everywhere in the state outside of Long Island. It is the official state tree of New York. Besides providing beautiful borders to many miles of highway, and hundreds of thousands of gallons of maple syrup from the many thousands of sugar bushes in all parts of the state, it yields a wood of high grade. It is hard, strong, close-grained, and tough, with a fine, satiny surface, and is in great demand for flooring, veneer, interior finish, furniture, shoe lasts, rollers, and as a fuelwood of the best quality.



Bark - on young trees dark gray in color, close, smooth, and firm, becoming furrowed into long irregular plates lifting along one edge.

Twigs - slender, shining, the color of maple sugar.

Winter buds - very narrow, sharp-pointed, brown in color, the terminal buds much larger than the laterals.

Leaves - simple, opposite, 3 to 5 inches long and fully as wide, 3 to 5 shallow lobes with wide-spaced coarse teeth, dark green in color above, paler below; the clefts are rounded at the base.

Fruit - maple samaras, in short clusters, ripening in September. Seeds - join each other in a straight line. Wings - turn down almost at right angles.

Distinguishing features - rounded cleft between lobes of leaves; leaf lobes lacking small teeth; sharp-pointed, brown buds; brown twig.

THE OAKS

Of the 300 oaks known in the world, 55 are native to North America, and most of these are in the eastern United States. The oaks make up the largest group of forest trees native to New York. In all there are 16 species of oaks native to this state. They grow under a wide range of conditions and show wide variations in form and other distinguishing characteristics. The oaks of New York do not thrive in the high forests of the mountains; therefore, representatives of the family found in the Adirondack section are in the sheltered valleys of the foothills. South and westward in the drainages of the Susquehanna, Genesee, and Alleghany Rivers, they become very plentiful in variety and number.

The best way to get acquainted with New York oaks is to divide them into two major groups, the one group to comprise the white oaks and the other the black oaks. It is easy to place the oaks of New York in these two groups by remembering the following characteristics of each:

The white oaks - The leaves of the members of the white-oak group have rounded lobes (not bristle-tipped), and the kernels of the acorns are usually sweet. All the oaks of this group mature their acorns in a single season; for this reason they are sometimes called "annual oaks." The most important members of the group in New York are **white oak, swamp white oak, bur oak, post oak, and chestnut oak.**

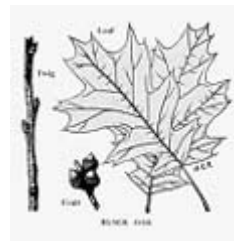
The black oaks - The leaves of the members of the black-oak group have bristle-tipped (not round-lobed) leaves, and the kernels of their acorns are usually bitter. All the oaks of this group require two seasons to mature their acorns; for this reason the representatives of this group are sometimes called "biennial oaks," which means two-year oaks in contrast with the one-year white oaks. The immature acorns are very helpful in recognizing the members of the black-oak group, especially during the winter months when the trees are without leaves. The most important members of this group in New York State are **black oak, red oak, scarlet oak, and pin oak.**

34. BLACK OAK

yellow oak

Quercus velutina Lambert

Black oak is another dominant forest tree of the southern part of the state, though not so valuable or so fast growing as northern red oak. It is usually found in gravelly soils, and on drier sites than red oak. The wood is hard, heavy, strong, but is not considered so valuable as red oak. It finds its chief use for ties, construction, and fuelwood.



Bark - on young stems smooth, dark brown in color, soon becoming dark gray to black, very rough, broken by deep furrows into thick ridges which are further divided by cross furrows; roughened especially at the base of trunk even in quite young trees; inner bark orange yellow in color, rich in tannin, yields a yellow dye.

Twigs - stout, reddish brown in color mottled with gray.

Winter buds - cone-shaped, sharp-pointed, 1/4 to 1/2 inch long, covered with yellowish gray wool, clustered at end of twig.

Leaves - simple, alternate, 4 to 10 inches long and 3 to 6 inches wide, with 5 to 7 lobes, toothed, bristle tipped, separated by wide rounded clefts, extending over halfway to midrib; at maturity leaves thick, dark green in color and shining above, paler and woolly beneath (particularly along midrib).

Fruit - an acorn, borne singly or in pairs, with or without stalks, maturing in autumn of second year. Nut - reddish brown in color, 1/2 to 3/4 inch long, enclosed about 1/2 its length in light brown cup. Meat - yellow, very bitter.

Distinguishing features - orange-yellow inner bark; leaf unbalanced, heavier on outer end, woolly along midrib beneath; acorn small, half enclosed in cup. Lower branches usually remain below half the height of tree.

35. CHESTNUT OAK

rock oak

Quercus montana Willdenow

Chestnut oak gets its name from its chestnut-like leaves. It is found principally on dry, rocky ridges and hillsides, and is very common on such soils in the lower Hudson Valley. The wood is similar though somewhat inferior to white oak and is used generally for ties, posts, and rough construction. The lumber is too hard for interior finish.



Bark - on young branches smooth, thin, yellowish brown in color; with age becoming dark brown to black in color, deeply furrowed into long, more or less continuous thick, rough ridges which are sharp and angular. At the bottom of the furrow, the bark may be reddish brown in color. The thick bark of mature trees is an important source of tannin.

Twigs - stout, light orange or reddish brown in color.

Winter buds - clustered at ends of twigs, sharp-pointed, light yellowish brown in color, 1/4 inch long.

Leaves - simple, alternate, thick, yellowish green in color above, somewhat paler beneath, 5 to 9 inches long, coarsely toothed as in chestnut, but teeth rounded and without bristle tips.

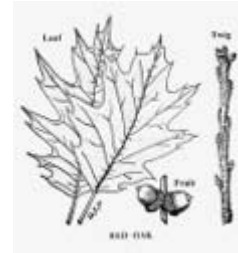
Fruit - an acorn, borne singly or in pairs on short stalks, maturing in September of the first season, starts sprouting soon after falling; one of the larger of our native acorns. Nut - shiny, light chestnut brown in color, 1 to 1 1/2 inches long, 1/3 enclosed in the cup. Meat - white, somewhat bitter.

Distinguishing features - orange streak between ridges of bark; round teeth or scallops on leaf margin; long slim acorn.

36. NORTHERN RED OAK

Quercus rubra Linnaeus

Northern red oak is the fastest growing and largest of all the oaks native to New York State. It shows adaptability to a wide variety of soil conditions and ranges farther north than any other oak common to the state. The wood is heavy, hard, strong, light reddish brown in color, and is used for furniture, interior finish, ties, piling, ships, and general construction, though less durable than white oak.



Bark - on young trees smooth, gray green in color; with age tardily breaking into rather regular, firm, elongated, flat-topped ridges with shallow furrows between. The smooth ridge tops are markedly lighter in color than are the furrows. On very large trees, this characteristic is lost at the base but is evident higher up the trunk. Inner bark is red in color.

Twigs - stout or slender, reddish to greenish brown in color.

Winter buds - clustered at ends of twigs, oval, sharp-pointed, 1/4 inch long, generally smooth (particularly on the lower half).

Leaves - alternate; simple, 5 to 9 inches long, 4 to 6 inches wide, with 7 to 9 lobes; lobes sparsely toothed, bristle-tipped; wide rounding clefts extending halfway to midrib. At maturity thin, dark, shiny green in color above, paler and smooth below.

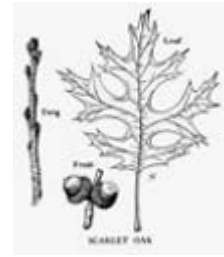
Fruit - an acorn, borne solitary or in pairs, either with or without stalk, maturing in the autumn of the second year; one of our largest acorns. Nut - chestnut brown in color, 3/4 inch long, only 1/5 enclosed in a wide, shallow cup. Meat - pale yellow in color, bitter.

Distinguishing features - reddish inner bark; leaf balanced (no heavier at outer than inner end); large fat acorn with flat cup. In thick woods, lower branches usually are self-pruned to more than half the height of tree.

37. SCARLET OAK

Quercus coccinea Muenchhausen

Scarlet oak, so called from the brilliant coloring of its autumn foliage, is most commonly found on poor soils. The wood is hard, heavy, strong, and coarse in texture. It is of inferior commercial value except for props, ties, and fuel. Because of the characteristic habit and brilliant coloring of the leaves in autumn is often used for ornamental purposes.



Bark - on young trunks, smooth, light brown in color; with age dividing into irregular ridges with shallow furrows between; in general, ridges not so regularly flat-topped as in northern red oak or so roughly broken up as in black oak; inner bark reddish in color.

Twigs - medium stout to slender, light red in color.

Winter buds - broadly oval, blunt at the top, clustered at end of twig, dark reddish brown in color, somewhat woolly.

Leaves - simple, alternate, 3 to 6 inches long and 3 to 5 inches wide, with 5 to 9 lobes; lobes toothed, separated by wide, rounding clefts, extending well over halfway to the midrib; at maturity leaves thin, firm, shiny, dark green in color above, paler below.

Fruit - an acorn, borne singly or in pairs with or without stalks, maturing in autumn of second year. Nut - oval, reddish brown in color, 1/2 to 1 inch long, 1/2 to 1/3 enclosed in reddish brown cup. Meat - pale yellow, bitter.

Distinguishing features - clefts between lobes of leaves extending nearly to the midrib; lower branches persistent for many years, down curving.

38. WHITE OAK

Quercus alba Linnaeus

White oak is an important forest tree in the southern two-thirds of the state, growing to large size and producing lumber of high grade and value. It is found in moist as well as in dry locations, and was once particularly abundant on what are now the best farmlands of the Genesee Valley. The wood is hard, heavy, strong, and durable. It is highly prized for furniture, flooring, implements, ties, and in general construction where strength is required, especially in piling and ships. White oak acorns are an important food for wildlife.



Bark - ashy gray in color, broken by shallow furrows into long, irregular, thin scales which readily flake off; on old trunks furrows frequently become deep.

Twigs - medium in thickness, greenish red to gray in color, smooth, sometimes covered with a bloom.

Winter buds - clustered at end of twigs, blunt, reddish brown in color, 1/8 inch long.

Leaves - alternate, simple, 5 to 9 inches long, with 5 to 9 rounded lobes, generally deeply cleft toward midrib, dark green in color above, paler below, frequently staying on tree over winter.

Fruit - an acorn, either with short stalk or stalkless, maturing in one year. Nut - light brown in color, 3/4 inch long, 1/4 enclosed in the cup, falling in September, frequently starts sprouting in late autumn. Meat - white, slightly bitter.

Distinguishing features - ashy gray, flaky bark; deeply cleft lobes in leaves; acorn 1/4 enclosed in cup.

38a. Swamp white oak (*Quercus bicolor* Willdenow) is a tree of the moist bottomlands with leaves wider at outer ends and rounded teeth. The bark on young branches and twigs separates into curling scales. The acorn cups are long-stalked and deeply saucer-shaped. The wood has the same uses as that of white oak and its acorns are also important for wildlife

39. EASTERN WHITE PINE

Pinus strobus Linnaeus

Eastern white pine is one of the most widely distributed, beautiful, and useful forest trees native to New York. It grows naturally in a wide range of sites, from the steep mountainsides in the Adirondacks to the hillsides and valley swamps of central and western New York. The miles of stump fences still standing in the southwestern section of the state are evidence of the abundance of the tree at one time in this region. The wood is soft, even-textured, very light brown in color, and easily worked. The lumber has a wide range of uses for interior trim, sash and doors, boxes, and buckets. In fact, no other wood in the United States has such a wide range of uses.



Bark - thin, smooth, and greenish in color on young trees, becoming deeply furrowed and grayish brown in color on older trees.

Twigs - rather slender, brittle, light brown in color.

Winter buds - sharp-pointed, yellowish brown in color.

Leaves - needle-like, in clusters of 5, 3 to 5 inches long, bluish green in color, soft, flexible, staying on the twigs for 2 years.

Fruit - a cone, 5 to 10 inches long, with short stalks, drooping, cylindrical, 1/2 inch in diameter, tending to curve from stem to apex, requiring 2 years to mature. Seeds - 2 under each scale, winged, ripening in September.

Distinguishing features - needles in clusters of 5; long, limber cone.

40. PITCH PINE

hard pine, yellow pine

Pinus rigida Miller

Pitch pine is found on dry ridges and slopes, in the northeastern section of the state and on Long Island, and infrequently elsewhere. The wood is coarse-grained and brownish red in color. The tree seldom reaches a large size and the lumber is generally knotty. Its chief uses are for rough framing lumber, ties, mine props, and crates.



Bark - early becomes very rough and is of a reddish brown to a very dark brown color, with age becoming deeply furrowed into broad, flat-topped ridges separating on the surface into loose, dark reddish brown scales. The unusual thickness of the bark makes it the most fire-resistant tree in the state. Clusters of needles are very commonly found on the main trunk.

Twigs - coarse, brittle, golden-brown in color.

Winter buds - conspicuous, pointed, reddish brown in color, resin coated.

Leaves - needle-like, in clusters of 3, 3 to 5 inches long, yellowish green in color, very stiff, staying on twigs 2 to 3 years.

Fruit - a cone, 2 to 3 inches long, somewhat egg-shaped, without stem, requiring 2 years to mature; persists on tree for many years. Cone scales - each carries a stiff recurved prickle. Seeds - 2 under each scale, dark brown in color, ripening in September.

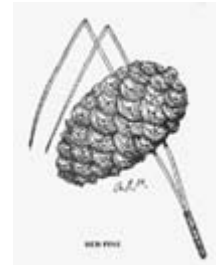
Distinguishing features - needles in 3's; sharp prickles on tip of cone scale.

41. RED PINE

Norway pine

Pinus resinosa Aiton

Red pine is a valuable, fast-growing timber tree less generally distributed than eastern white pine. It is found commonly on the sandy soils adjacent to the Adirondacks and frequently on dry benches in west-central New York. The wood is light, medium in texture, close-grained, pale red in color, and is often sold as white-pine lumber. Because of its rapid growth and relative freedom from insects and diseases, it has been commonly planted on many of the thousands of acres of idle land in the state. This species does not grow well on poorly drained soils.



Bark - reddish brown in color, with shallow, flat ridges separating into thin, flaky scales.

Twigs - coarse, reddish brown in color, roughened at base of year's growth.

Winter buds - rather inconspicuous, with pointed reddish brown scales.

Leaves - needle-like, in clusters of 2, 3 to 6 inches long, dark green in color, slender, remaining on twigs 3 to 4 years.

Fruit - a cone, 2 inches long, without stem, requiring 2 years to mature, light brown in color when ripe, staying on the tree into the next season. Cone scales - without spines or prickles. Seeds - 2 under each scale, winged, light chestnut brown in color, 1/8 inch long, ripening in September.

Distinguishing features - needles in 2's, breaking cleanly when bent; nearly round cone without prickles.

41a. Scotch pine (*Pinus sylvestris* Linnaeus) from Europe has been planted extensively throughout the state. It has naturalized from many of these plantings and is found in a variety of habitats. Its blue-green, twisted flat needles in clusters of 2, tapering cone 2 to 3 inches long with greenish scales, and the orange-brown bark on upper stem and branches, are its main characters. It is used for pulpwood, framing lumber, ties, and Christmas trees.

42. EASTERN REDCEDAR

Juniperus virginiana Linnaeus

Eastern redcedar, a small-sized, slow-growing forest tree, is common to the poor, dry soils of the lower Hudson and Mohawk Valleys, is not common in the higher Adirondack region, and is infrequent in central and western New York, except on barren soils adjoining the Finger Lakes. It is found growing only in open woods and pastures where plenty of sunlight is obtained. The wood is soft, light, fragrant, brittle, dull red in color with contrasting white sapwood, extremely durable in contact with the soil, and is easily worked. It is largely used in the manufacture of pencils, cedar chests, cabinet work, and interior finish. As a post wood, it has few superiors.



Bark - light reddish brown in color, separating in long, narrow shreddy strips fringed along the edges.

Twigs - generally 4-sided on mature trees, green in color from the covering of minute leaves, not flattened or arranged in fan-shaped clusters, becoming reddish brown in color after the fall of the leaves.

Winter buds - minute, covered by the overlapping scale-like leaves.

Leaves - various shades of green to reddish brown in color, persistent 3 to 4 years, of 2 kinds: (1) scale-like, closely overlapping, opposite in pairs, giving the twig a 4-sided appearance; (2) awl-shaped, 1/2 to 3/4 inch long, usually on young trees or more vigorous shoots and yellowish green to light bluish green in color, sharp-pointed.

Fruit - a berry-like cone, 1/4 inch in diameter, light blue in color, with bloom at maturity in the autumn of the first year. Fruit remains on the tree during the winter, highly prized by birds. Seeds - 1 to 2, wingless, brown in color, covered with a thin, sweet flesh with resinous flavor.

Distinguishing features - berry-like fruit; 2 kinds of leaves, sharp and awl-like and flat and scale-like.

43. SASSAFRAS

Sassafras albidum (Nuttall) Nees

Sassafras is a small to medium-sized, shade-intolerant tree, best known, perhaps, for its bark and root which have long been used for making sassafras tea. It is rare or absent in the higher Adirondacks and Catskills but is locally common on the sandy soil between these mountain ranges, and is abundant on the hills along the lower Hudson River Valley and on Long Island. Its wood is soft, weak, brittle, coarse-grained, aromatic, and very durable in contact with the soil. It is used locally for fence posts.



Bark - reddish brown in color, deeply furrowed even in young trees, with flat-topped ridges crossed by horizontal cracks; inner layers bright cinnamon red in color.

Twigs - slender, brittle, spicy to smell, at first light yellowish green in color, later becoming reddish brown.

Winter buds - terminal bud present, 1/3 to 3/5 inch long, pointed, greenish in color; lateral buds much smaller.

Leaves - alternate, simple, 4 to 6 inches long, entire margined. The leaves present a great variation in shape on the same tree, some are ovate, others mitten-shaped (both left and right handed), still others are 3-lobed, more rarely 5-lobed.

Fruit - berry-like, small, dark blue in color, containing a stony seed 1/4 inch long, on a stout red stem, usually in clusters; ripens early in autumn.

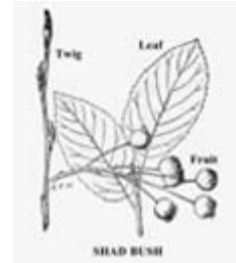
Distinguishing features - leaves with 3 different shapes; inner bark cinnamon red; spicy smell of twigs.

44. SHADBUSH

juneberry, serviceberry

Amelanchier canadensis (Linnaeus) Medikus

Shadbush is an attractive tree though not of value for timber because of its small size. In the spring when the shad are ascending the rivers, its small white flowers are commonly noticed along the drier banks of the streams, along fence rows, and on hillsides in open woods. It is common throughout most parts of the state, particularly in the central and southern highlands. Its wood is heavy, harder than white oak, strong, close-grained, and dark brown in color often tinged with red. It is occasionally used for tool handles and is highest of all native woods in heat value.



Bark - very smooth, grayish brown in color, with age often marked with dark lengthwise streaks.

Twigs - slender, somewhat zigzag, olive green to purplish brown in color, smooth, but usually covered by a thin grayish outer layer.

Winter buds - terminal bud 1/4 to 1/2 inch long, slender, sharp-pointed, greenish or purplish brown in color; lateral buds somewhat smaller than terminal bud or undeveloped.

Leaves - alternate, simple, ovate, 2 to 4 inches long, sharp-pointed, finely serrate on margin.

Fruit - a berry, sweet, reddish purple in color, about 1/3 inch in diameter, contains many seeds; borne in clusters; ripening in June or July; a favorite food for birds.

Distinguishing features - gray bark marked with streaks; finely serrate leaves; cluster of edible red berries.

45. RED SPRUCE

Picea rubens Sargent

Red spruce is a common and valuable forest tree of the Adirondacks and Catskills, and occasionally is found at high elevation (2000 feet) in eastern New York (Schoharie, Delaware, and Otsego Counties). The wood is light, close-grained, soft, and is in great demand for chemical wood pulp. It has a peculiar resonant quality that makes it exceedingly valuable for the sounding boards of musical instruments. It is used also for framing.



Bark - very thin, peeling off in small reddish brown scales.

Twigs - slender, reddish brown in color, coated usually with fine pale hairs.

Winter buds - small, pointed, reddish brown in color.

Leaves - needle-like, borne singly rather than in clusters as with the pines, but coming out all around the stem, 1/2 inch long, without stalk, yellowish green in color, blunt-pointed, 4-sided in cross-section, remaining on twigs 5 to 6 years.

Fruit - a cone, 1 1/2 to 2 inches long, dark brown when ripe, borne on a short stalk, pendant, maturing in a year, mostly falling off before the next season. Cone scales - thin, entire-margined. Seeds - dark brown in color, winged, 1/8 inch long, ripening in September.

Distinguishing features - lack of rank odor from crushed needles; cone dark brown and falling early from tree.

45a. Black spruce (*Picea mariana* (Miller) BSP) closely resembles red spruce and covers the same general range, but is largely confined to swamps. It is used for pulpwood. The cones, unlike red spruce, remain on the tree for 2 or 3 years.

46. WHITE SPRUCE

cat spruce

Picea glauca (Moench) Voss

White spruce is confined in its natural distribution to the Adirondacks, reaching its best development in the so-called "spruce flats," but extending also far up the mountain slopes. The wood is in great demand for chemical pulp. Its attractive foliage makes it prized as an ornamental tree, for which purpose it is planted far south of its natural range. It is also planted for Christmas trees.



Bark - grayish to pale reddish brown, separating in thin scales.

Twigs - smooth, slender, yellowish brown in color.

Winter buds - small, blunt pointed, light brown in color.

Leaves - needle-like, borne singly and densely crowded on twigs, light shiny green in color when young, becoming blue-green, 1/2 inch long, 4-sided in cross-section, without stalk, remaining on the twig 8 to 10 years. Odor - strong and rank when crushed.

Fruit - a cone with a very small stalk, pendant, 1 1/2 to 2 1/2 inches long, pale brown in color when ripe, maturing in a year. Cone scales - thin, rounded, papery, entire margined. Seeds - 2 under each scale, brown in color, winged, 1/8 inch long, ripening in September.

Distinguishing features - papery cone scales; rank odor from crushed needles.

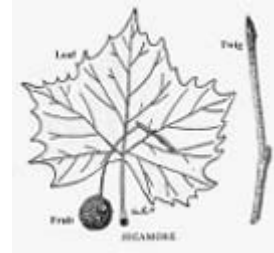
46a. The Norway spruce (*Picea abies* (Linnaeus) Karsten) from Europe, the common ornamental spruce of our lawns and cemeteries throughout the state, also is used extensively in forest plantations. It has naturalized and is sometimes considered a troublesome weedy species. The cones, more than 6 inches in length, easily distinguish it from our native spruces.

47. SYCAMORE

buttonball, buttonwood, plane tree

Platanus occidentalis Linnaeus

Sycamore is a large-sized forest tree common throughout the state except in the Adirondacks and the higher Catskills and on Long Island. This species is most often found wherever the soil is moist and fertile, along streams, in river bottoms, in low, damp woods, and occasionally in dryer places. Its wood is heavy, tough, hard, not strong, coarse-grained, reddish brown in color, and is difficult to split or work. It is used for crates, tobacco boxes, butchers' blocks, novelties, and occasionally for furniture and for interior woodwork.



Bark - dark brown in color at base of older trunks, shallowly furrowed into broad ridges which are broken up into small plate-like scales; higher up on trunk and branches, peeling off in large, thin plates exposing areas of whitish, yellowish, or greenish inner bark which are very striking in winter.

Twigs - rather stout, somewhat shiny, zigzag, at first green in color and fuzzy, later grayish or brownish and smooth.

Winter buds - terminal bud absent; lateral buds conical, dull-pointed, smooth, reddish brown in color, 1/4 inch long, only a single scale visible forming a cap over the bud.

Leaves - alternate, simple, broad, 4 to 10 inches across, with 3 to 5 shallow lobes, thin, firm, smooth, bright green in color above, pale green and white woolly below, the base of the stalk surrounding the bud.

Fruit - a ball, brown in color, about 1 inch in diameter, borne on a long stem, made up of tiny seeds. Seeds - each furnished with a long tuft of hairs; seed balls seldom break up before spring.

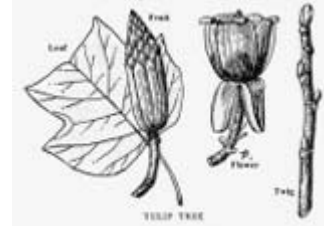
Distinguishing features - whitish to greenish under-bark on upper trunk and limbs; bud with 1 scale forming cap; broad leaves, woolly below; fruit a brown, pebbly-grained ball.

48. TULIP TREE

yellow-poplar, tulip-poplar, whitewood

Liriodendron tulipifera Linnaeus

Tulip tree is one of our most distinctive and attractive trees. It is native from Saratoga and Rensselaer Counties westward along Lake Ontario to Lake Erie, and becomes more abundant southward in deep, rich, moist soils. Its large tulip-like, greenish yellow flowers have given rise to the name "tulip tree." The wood is light, soft, brittle, not strong, straight-grained, light yellow or brown in color, and is largely made into lumber and interior finish and used where a soft, easily worked wood is required. Veneer of yellow-poplar is highly prized in airplane construction.



Bark - on young trees, smooth, ashy gray or brown in color; on older trunks, light gray to brown, thick, distinctly and regularly furrowed and ridged.

Twigs - smooth, shiny, rather stout, reddish brown in color, often branching the first year, aromatic odor, very bitter taste.

Winter buds - terminal bud smooth, flattened, about 1/4 inch long, simple, blunt, covered by 2 reddish brown bud scales giving the appearance of a mitten; lateral buds similar but much smaller.

Leaves - alternate, simple, 4 to 6 inches long, almost square in outline, usually 3- or 4-lobed with truncate tip; the most distinctive and unusual leaf of any of our native forest trees.

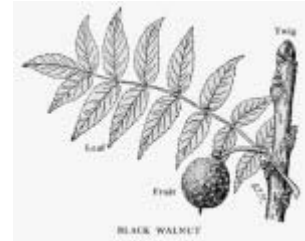
Fruit - a cone, light brown in color, upright, pointed, 2 to 3 inches long. Seeds - long winged, ripening in September, and for the most part falling soon after; outer ring of winged seeds may stay on the tree into the next season.

Distinguishing features - unusual leaf, with "cut-off " tip; bitter taste, aromatic odor of twigs; mitten-like terminal bud.

49. BLACK WALNUT

Juglans nigra Linnaeus

Black walnut is a valuable timber tree native to some areas of New York State. It can reach a large size and produces highly prized wood and large edible nuts. It is common at low elevations in rich, well-drained bottomlands northward to Saratoga and Jefferson Counties and west to Lake Erie. The wood is heavy, hard, strong, durable, rich dark brown in color, easily worked, and takes a fine polish. It is largely used in cabinetmaking, interior trim, and for gunstocks. It deserves protection and planting in suitable locations.



Bark - thick, dark, deeply furrowed with rounded ridges between; grayish brown in color; inner bark dark chocolate brown in color.

Twigs - at first hairy, later smooth, stout, brittle, orange brown in color, cream-colored chambered pith.

Winter buds - terminal bud pale, downy, scarcely longer than broad, blunt-pointed, less than 1/3 inch long; lateral buds less than 1/6 inch long.

Leaves - alternate, compound, with 13 to 23 leaflets; leaflets 3 to 4 inches long, sharp-pointed, serrate along margin, usually stalkless; leaves up to 2 feet in length.

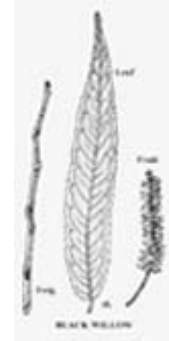
Fruit - a round nut, 1 1/2 inches in diameter, black, the surface roughened by rather coarse ridges, enclosed in a yellowish green, fleshy husk, usually solitary or in clusters of 2, ripening in October. Kernel - sweet, edible, and when properly cured somewhat easier to extract than the butternut. It is necessary to remove the outer husk if nuts are to be stored.

Distinguishing features - large round nut; cream-colored, chambered pith.

50. BLACK WILLOW

Salix nigra Marshall

Black willow is the largest and most widely distributed of the native willows, although it is rare above an altitude of 2000 feet in the Adirondacks and in the pine barrens of Long Island. It prefers moist or wet soils along streams or lakes but is sometimes found on fresh, gravelly or sandy soils where it can get plenty of light. It is of little importance as a timber tree as it often divides into several crooked, medium-sized trunks close to the ground and the wood is soft and weak. It is used chiefly for boxes, excelsior, pulp, and also for artificial limbs because of its lightness.



Bark - thick, rough with wide ridges covered by thick scales, varies in color from light to dark brown.

Twigs - slender, smooth, somewhat drooping, very brittle at the base, reddish brown in color; falling to the ground they may take root and grow.

Winter buds - terminal bud absent, lateral buds small, sharp-pointed, reddish brown in color; only a single bud scale.

Leaves - alternate, simple, linear, sharp-pointed, finely serrate margin, dark green in color above, pale green below.

Fruit - a smooth capsule, about 1/8 inch long, occurring in large numbers on drooping tassels, ripening in the spring, reddish brown in color. Seeds - within capsule, covered with a dense tuft of long, silky hairs.

Distinguishing features - narrow leaves; small buds with 1 bud scale.

50a. The shining willow (*Salix lucida* Muhlenberg) is an attractive small tree of moist soils, used extensively for holding soil in place where erosion is to be feared and also for ornamental plantings. Its shiny, broad leaves and yellowish brown twigs will help to distinguish it from the black willow.

A nontechnical summer key to the fifty trees

1. Leaves needle-like, awl-shaped or scale-like; usually evergreen (conifers).
2. Leaves awl-shaped or scale-like.
3. Foliage both scale-like and awl-shaped; awl-shaped foliage particularly on young growth. [\(42\) Eastern Redcedar](#)
3. Foliage scale-like, spray distinctly flattened and fan-like. [\(1\) Arborvitae](#)
2. Leaves needle-like.
4. Needles borne in clusters.
5. Needles in clusters of 2-5 (pines).
6. Needles in clusters of 5. [\(39\) Eastern White Pine](#)
6. Needles in clusters of 2 or 3.
7. Needles in clusters of 3. [\(40\) Pitch Pine](#)
7. Needles in clusters of 2. [\(41\) Red Pine](#)
5. Needles many (more than 5) in clusters on short spur-like lateral branches; not persistent through winter; on vigorous shoots needles borne singly. [\(28\) American Larch](#)
4. Needles borne singly.
8. Needles with short stems (petioles), flat, and blunt-pointed. [\(22\) Eastern Hemlock](#)
8. Needles without stems (petioles).
9. Needles flat, blunt-pointed. [\(20\) Balsam Fir](#)
9. Needles 4-sided in cross section, sharp-pointed (spruces).
10. Needles dark, yellowish green. [\(45\) Red Spruce](#)
10. Needles bluish green or silvery white. [\(46\) White Spruce](#)
1. Leaves broad, not needle-like or scale-like; not persistent through winter.

- 11. Arrangement of leaves opposite.
- 12. Leaves compound (ashes).
- 13. Leaflet with stems. [\(3\) White Ash](#)
- 13. Leaflet without stems. [\(2\) Black Ash](#)
- 12. Leaves simple (maples).
- 14. Leaves pale green on lower surface, clefts rounded, lobes entire or with less prominent teeth. [\(33\) Sugar Maple](#)
- 14. Leaves white, silver or pale on lower surface, clefts sharp-angled, margins with many small teeth.
- 15. Leaves white or pale on lower surface, usually 3-lobed, clefts shallow and sharp-angled. [\(31\) Red Maple](#)
- 15. Leaves silvery white on lower surface, usually 5-lobed, clefts deep (particularly the middle two). [\(32\) Silver Maple](#)
- 11. Arrangement of leaves alternate.
- 16. Leaves compound.
- 17. Leaves doubly compound, leaflets usually even in number. [\(30\) Honey-Locust](#)
- 17. Leaves only once compound.
- 18. Margins of leaflets entire; leaflets almost oval in shape. [\(29\) Black Locust](#)
- 18. Margins of leaflets toothed.
- 19. Leaflets 11-23 (walnuts).
- 20. Base of leaf stem with a "mustache" of hairs where it joins the twig. [\(12\) Butternut](#)
- 20. Base of leaf stem lacking a "mustache" of hairs where it joins the twig. [\(49\) Black Walnut](#)
- 19. Leaflets 5-11 (hickories).
- 21. Leaflets 7-11, long narrow, sharp-pointed. [\(23\) Bitternut Hickory](#)
- 21. Leaflets 5-7.
- 22. Upper 3 leaflets larger. [\(25\) Shagbark Hickory](#)
- 22. Leaflets of nearly the same size. [\(24\) Pignut Hickory](#)
- 16. Leaves simple.

23. Leaves lobed.
24. Leaves palmately lobed.
25. Margins of the 3-5 shallow lobes sparsely toothed. [\(47\) Sycamore](#)
25. Margins of lobes entire.
26. Leaves 2-3 lobed or entire, with aromatic odor when crushed; leaf or lobe apex pointed. [\(43\) Sassafras](#)
26. Leaves 3-4 lobed, the apex truncate. [\(48\) Tulip Tree](#)
24. Leaves pinnately lobed.
27. Twigs with thorns. [\(21\) Hawthorn](#)
27. Twigs lacking thorns.
28. Lobes rounded, not bristle-tipped.
29. Clefts halfway to midrib; leaves dark green above, paler below. [\(38\) White Oak](#)
29. Clefts very shallow, the leaf appearing coarsely toothed. [\(35\) Chestnut Oak](#)
28. Lobes with bristle tips.
30. Leaves dull green on upper side, hairy along midrib below. [\(34\) Black Oak](#)
30. Leaves shiny, smooth on upper surface.
31. Clefts extending halfway to midrib. [\(36\) Northern Red Oak](#)
31. Clefts extending over halfway to midrib. [\(37\) Scarlet Oak](#)
23. Leaves not lobed or deeply cut.
32. Leaves entire.
33. Leaves ovate or egg-shaped (when not lobed), with aromatic odor when crushed. [\(43\) Sassafras](#)
33. Leaves ovate (egg-shaped), lacking aromatic odor. [\(17\) Cucumber Tree](#)
32. Leaves toothed.
34. Leaves doubly serrate.
35. Leaves triangular, with long tip. [\(9\) Gray Birch](#)
35. Leaves ovate (egg-shaped).
36. Base of leaves oblique (elms).
37. Leaf surface very rough above [\(19\) Slipperv](#)

and below.	<u>Elm</u>
37. Leaf surface less rough, particularly above.	<u>(18) American Elm</u>
36. Base of leaves even, regular, not oblique.	
38. Twigs with wintergreen flavor.	
39. Bark on trunk black, not peeling off in papery layers.	<u>(8) Black Birch</u>
39. Bark on trunk yellowish, peeling off in papery layers.	<u>(11) Yellow Birch</u>
38. Twigs lacking wintergreen flavor.	
40. Bark scaly, scales easily rubbed off.	<u>(26) American Hophornbeam</u>
40. Bark smooth.	
41. Bark light gray, firm.	<u>(27) American Hornbeam</u>
41. Bark white, in papery layers.	<u>(10) Paper Birch</u>
34. Leaves coarsely toothed or serrate, not doubly serrate.	
42. Leaves linear or lanceolate.	
43. Leaves linear.	<u>(50) Black Willow</u>
43. Leaves lanceolate.	
44. Leaves coarsely toothed.	<u>(15) American Chestnut</u>
44. Leaves finely toothed, serrate.	
45. Leaves broadly lanceolate, with tufts of reddish hairs along midrib on lower surface.	<u>(13) Black Cherry</u>
45. Leaves narrowly lanceolate, lacking hairs along midrib.	<u>(14) Pin Cherry</u>
42. Leaves triangular, heart-shaped or ovate.	
46. Leaves heart-shaped or triangular.	
47. Leaves heart-shaped, nearly orbicular, the teeth many and small.	<u>(6) Basswood</u>
47. Leaves triangular, the teeth few and large.	

48. Leaves large, blunt-tipped.	(4) Bigtooth Aspen
48. Leaves small.	
49. Leaf base rounded.	(5) Quaking Aspen
49. Leaf base square.	(16) Eastern Cottonwood
46. Leaves ovate.	
50. Leaves coarsely toothed, nearly lobed.	
51. Leaves with teeth rounded, not bristle-tipped.	(35) Chestnut Oak
51. Leaves with teeth sharp, bristle-tipped.	(7) American Beech
50. Leaves serrate.	
52. Leaves finely-serrate; twigs lacking thorns.	(44) Shadbush
52. Leaves coarsely serrate; twigs with thorns.	(21) Hawthorn

A nontechnical winter key to the fifty trees

1. Leaves persistent and green throughout the winter, needle-shaped, awl-shaped, or scaly (see [summer key](#)).

1. Leaves deciduous, not remaining on trees throughout winter.

2. Twigs with lateral wart-like branches, slender, glossy brown, resinous.

(28) American Larch

2. Twigs lacking lateral wart-like branches.

3. Arrangement of branches, leaf scars, and buds opposite.

4. Twig stout, gray to brown in color; buds brown or black (ashes).

5. Buds rusty brown; bark dark brown, corky in texture with diamond-shaped fissures.

(3) White Ash

5. Buds usually black; bark ashy gray without ridges, scaling off easily.

(2) Black Ash

4. Twigs slender, red to brown; buds red or brown (maples).

6. Buds narrow, sharp-pointed, brown.

(33) Sugar Maple

6. Buds broad, blunt-pointed, reddish color, often clustered.

7. Twigs lacking odor when broken.

(31) Red Maple

7. Fresh twigs with rank odor when broken.

(32) Silver Maple

3. Arrangement of branches, leaf scars, and buds alternate.

8. Terminal bud absent (first lateral bud may seem terminal but is not).

9. Bud with only one scale, forming cap over bud.

10. Twigs stout, zigzagging, brown.

(47) Sycamore

10. Twigs slender, not zigzagging, green to brown.

(50) Black Willow

9. Bud with many scales.

11. Buds very small, inconspicuous; twigs with spines or thorns.

12. Twigs usually bearing spines in pairs at nodes; twigs slender, reddish to greenish brown, brittle.

(29) Black Locust

12. Twigs usually bearing branched thorns; twigs stout, zigzagging, smooth, glossy.

(30) Honey-Locust

11. Buds medium to large, conspicuous; twigs lacking spines or thorns.
13. Buds lopsided or bulging on one side at the base, green to red; twigs zigzagging. [\(6\) Basswood](#)
13. Buds symmetrical, lacking bulge at base, brown; twigs not zigzagging.
14. Twigs stout, pith star-shaped. [\(15\) American Chestnut](#)
14. Twigs slender, pith circular.
15. Bark of trunk scaly.
16. Scales easily removed when rubbed. [\(26\) American Hophornbeam](#)
16. Scales difficult to remove when rubbed (elms).
17. Buds dark, chestnut-brown, with long rusty hairs at tip; twigs light gray, hairy, mucilaginous when chewed; inner bark of trunk with alternating white and dark layers. [\(19\) Slippery Elm](#)
17. Buds light red-brown, mostly lacking hairs; twigs red-brown, smooth; inner bark uniform. [\(18\) American Elm](#)
15. Bark of trunk smooth.
18. Bark dark bluish gray. [\(27\) American Hornbeam](#)
18. Bark chalky white.
19. Bark peeling off in thin papery layers, lacking triangular patches. [\(10\) Paper Birch](#)
19. Bark not peeling off in papery layers, with distinct triangular patch below each branch where it joins the stem. [\(9\) Gray Birch](#)
-
8. Terminal bud present either surrounded by a cluster of buds or borne singly.
20. Terminal bud surrounded by a cluster of buds at end of twig; fruit an acorn (oaks).
21. Buds oval or rounded.
22. Buds oval, rather blunt at top, somewhat woolly, especially upper half, red-brown; twigs light red. [\(37\) Scarlet Oak](#)
22. Buds rounded, blunt-pointed, red-brown. [\(38\) White Oak](#)
21. Buds sharp-pointed.
23. Buds covered with dense yellow-gray wool. [\(34\) Black Oak](#)

23. Buds smooth.
24. Buds light yellow-brown; twigs light orange. [**\(35\) Chestnut Oak**](#)
24. Buds red-brown; twigs red-brown to green-brown. [**\(36\) Northern Red Oak**](#)
20. Terminal bud borne singly. (In the birches only the short spur-like lateral twigs have terminal buds, not the long shoots.)
25. Buds with 3-4 dark brown smooth outer scales spreading away from bud; bark peeling in long strips. [**\(25\) Shagbark Hickory**](#)
25. Buds variously colored with various number of scales; flattened against twig or spreading; bark usually tight, not peeling.
26. Buds covered with close-fitting woolly scales.
27. Twigs with chambered pith (walnuts).
28. Pith cream colored; twigs lacking "mustache" of hair beneath bud. [**\(49\) Black Walnut**](#)
28. Pith chocolate-colored; twigs with "mustache" of hair beneath bud. [**\(12\) Butternut**](#)
27. Twigs solid, lacking chambered pith.
29. Twigs brittle, brown, smooth; buds dark brown. [**\(17\) Cucumber Tree**](#)
29. Twigs tough, yellow to red-brown color, hairy toward end; buds yellow. [**\(23\) Bitternut Hickory**](#)
26. Bud scales smooth, not woolly.
30. Bud with 2 scales united into a cap; twigs brittle with aromatic odor. [**\(48\) Tulip Tree**](#)
30. Bud with more than two scales.
31. Twigs with wintergreen flavor or aroma; terminal bud on spur-like lateral branches only.
32. Twigs with strong wintergreen flavor, red-brown; bark black, smooth, lacking papery fringes. [**\(8\) Black Birch**](#)
32. Twigs with slight wintergreen flavor, yellow-brown; bark yellow-gray with papery fringes. [**\(11\) Yellow Birch**](#)
31. Twigs lacking wintergreen flavor and aroma; terminal bud on lateral branches.
33. Lateral buds usually same size as terminal bud.
34. Buds usually round, red to chestnut-brown; thorns on twigs. [**\(21\) Hawthorn**](#)
34. Buds long, sharp-pointed.

35. Buds tinged with purple; the lateral buds flattened against twig.	(44) Shadbush
35. Buds red-brown, the lateral buds bending away from twig.	(7) American Beech
33. Lateral buds smaller than terminal bud.	
36. Bark and twigs spicy aromatic.	(43) Sassafras
36. Bark and twigs odorless or with bitter almond odor, not spicy aromatic.	
37. Twigs and bark with bitter almond odor and taste, slender (cherries).	
38. Twigs red-brown; bark on trunks becoming scaly.	(13) Black Cherry
38. Twigs bright red; bark remaining smooth; buds very small.	(14) Pin Cherry
37. Twigs lacking bitter almond odor or taste.	
39. Twigs very tough; lacking rank odor.	(24) Pignut Hickory
39. Twigs brittle, with rather rank odor when broken (poplars).	
40. Lateral buds flattened against twig; twigs slender, red-brown.	(5) Quaking Aspen
40. Lateral buds spreading away from twig; twigs red-brown or yellow.	
41. Buds large, shiny, often slightly resinous; twigs bright yellow.	(16) Eastern Cottonwood
41. Buds medium, dull, dusty looking; twigs red-brown.	(4) Bigtooth Aspen

Glossary

Alternate	One (leaf or bud) at a node; placed singly at different heights on the stem.
Blade	The expanded part of a leaf; the leaf excluding the petiole.
Chambered pith	Pith in transverse plates with air cavities between them.
Compound leaves	Those in which the blade consists of two or more separate parts (leaflets).
Deciduous	Falling off in autumn or before.
Entire	Having a continuous unbroken margin, not toothed, notched, or divided.
Lanceolate	Several times longer than wide, broadest near the base and narrowed to the apex.
Leaflet	One part of a compound leaf.
Leaf scar	A scar left on the twig when a leaf falls.
Linear	Long and narrow with parallel margins; line-shaped.
Lobed	Divided into segments about halfway to the middle; segments are larger than teeth.
Margin	The edge of a leaf.
Midrib	The main or central vein of a leaf or leaflet or leaf-like part, a continuation of the petiole.
Node	A joint or place where leaves are attached to a stem.
Oblique (leaves)	Having unequal sides or a base with sides of unequal lengths.
Opposite	Two (leaves or buds) at a node, on opposite sides of an axis.
Ovate	Of the shape of a longitudinal section through a chicken egg, with the broad end toward the base.
Palmate	Radiating fan-like from approximately one point.
Persistent	Remaining attached; leaves not all falling off at the same time.
Pinnate	Arranged feather-like on each side of a common axis.

Serrate	Having sharp teeth pointing forward, saw-toothed.
Simple leaves	Those in which the blade is all in one piece; may be lobed or cleft but not divided all the way to the midrib.
Spur	A short, slowly grown branchlet.
Terminal bud	The bud formed at the tip of a twig.
Thorn	A modified stem or branch with a sharp point.
Truncate	Ending abruptly as if cut off transversely.

The website for this information is: <http://bhort.bh.cornell.edu/tree/trees.htm>