



Common Trees of Pennsylvania

Department of Conservation and Natural Resources
Bureau of Forestry
Harrisburg, Pennsylvania



Introduction

Forests have always been important to the inhabitants of the area we now call "Pennsylvania" (Latin for "Penn's Woods"). Pennsylvania's location spanning 40 degrees - 42 degrees north latitude and its varied terrain support 108 species of native trees and many other introduced from Europe and Asia. Trees provide a renewable source of lumber, paper, nuts and chemicals. But they are also essential as living filters, removing pollution from the air we breath and the water we drink. Trees provide homes and food for wildlife, and beautify our homes with comforting shade in summer and shelter from winter winds. With wise management, forests can produce these benefits for future generations as they have in the past.

The first human beings to hunt and gather plant foods in these forests left stone tools and spearpoints at scattered campsites about 10,000 years ago. Clearing of areas for farming and villages began almost 3,000 years ago. After Europeans settlements were established along the Delaware River 400 years ago, the pace of clearing land for agriculture and the use of forest products for housing, food, fuel and the manufacture of tools, furniture and other goods, increased dramatically and expanded westward across the state. By the early 1900's, all but a few small isolated areas of virgin forest had been cut, leaving landscape of stumps and scrub growth over much of the Commonwealth. Wildfires were a common occurrence in this brushland and would rage uncontrolled for days, over thousands of acres. Today's forests have grown out of the seemingly barren conditions left after mass cutting and severe fires. Pennsylvania is now nearly 60% forested, having 18 million acres of woodlands. And today, we still derive much of our economy and many comforts from the flora and fauna of Penn's Woods. Medicines, foods, and wood fiber, a cleaner environment, tourism, and recreation are all provided by our forests.

This selection of 57 native, and 5 introduced trees is organized according to leaf shape and arrangement. Each tree is identified by popular name familiar to Pennsylvanians and its complete scientific name. To use this book, first study the drawings on the parts pages, and the glossary until you understand "needle-like", "simple" and "compound" leaf shapes and "alternate" and "opposite" leaf arrangements. Then compare the tree you wish to identify with the following table and study the pictures on the appropriate pages.

- 1. Leaves needle-shaped or lineartrees #1-11
- 1. Leaves wide and flat
 - 2. Leaves in opposite arrangement
 - 3. Leaf shape simpletrees #12-18
 - 3. Leaf shape compoundtrees #19-22
 - 2. Leaves in alternate arrangement
 - 4. Leaf shape simple trees # 23-52
 - 4. Leaf shape compoundtrees #53-62t

Other sources of information can be found in your local library or bookstore. Popular and scientific names used in this document are from *The Vascular Flora of Pennsylvania: Annotated Checklist and Atlas* by Ann Fowler Rhoads and William McKinley Klien, Jr., American Philosophical Society, 1993.

Glossary

Axil - The upper angle where a leaf stalks joins the stem or a smaller stem joins a larger one.

Alternate - One leaf attached at each node. See opposite and whorled.

Capsule - A dry fruit which contains more than one seed and splits open when ripe.

Catkin - A compound bloom consisting of scaly bracts and flowers usually of one sex.

Deciduous - Refers to trees which drop their leaves in autumn. Compare to evergreen.

Downy - With very short and weak soft hairs.

Drupe - A type of fruit having a single seed enclosed in a hard layer and that is covered with soft, often juicy flesh, as in cherries and peaches.

Evergreen - A plant that retains green leaves throughout the year. Life span of an individual leaf can be 2-15 years.

Leaflet - A leaf-like portions of the blade of a compound leaf. There is no bud in the axil of its petiole.

Leaf Scar - The impression in a twig at the point where a leaf was attached.

Lenticel - A pore in the bark of young trunks and branches through which air passes to interior cells.

Lobe - A division or projecting part of the blade of a leaf.

Opposite - Two leaves attached at each node. See alternate and whorled.

Pedicel - The stalk of a flower or inflorescence.

Petiole - The stalk attaching a leaf blade to the stem.

Pith - The spongy material in the center of twigs and young trunks.

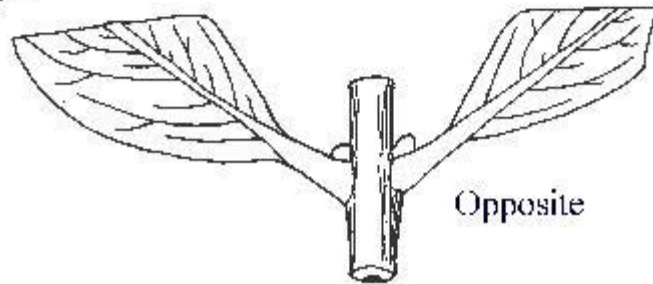
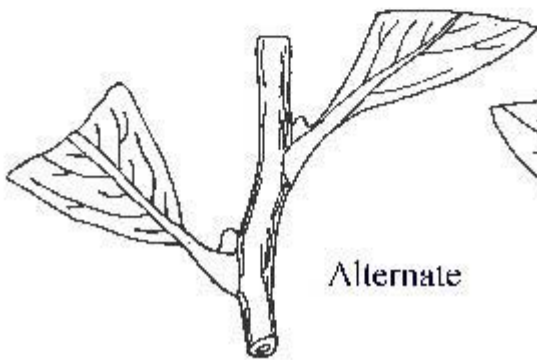
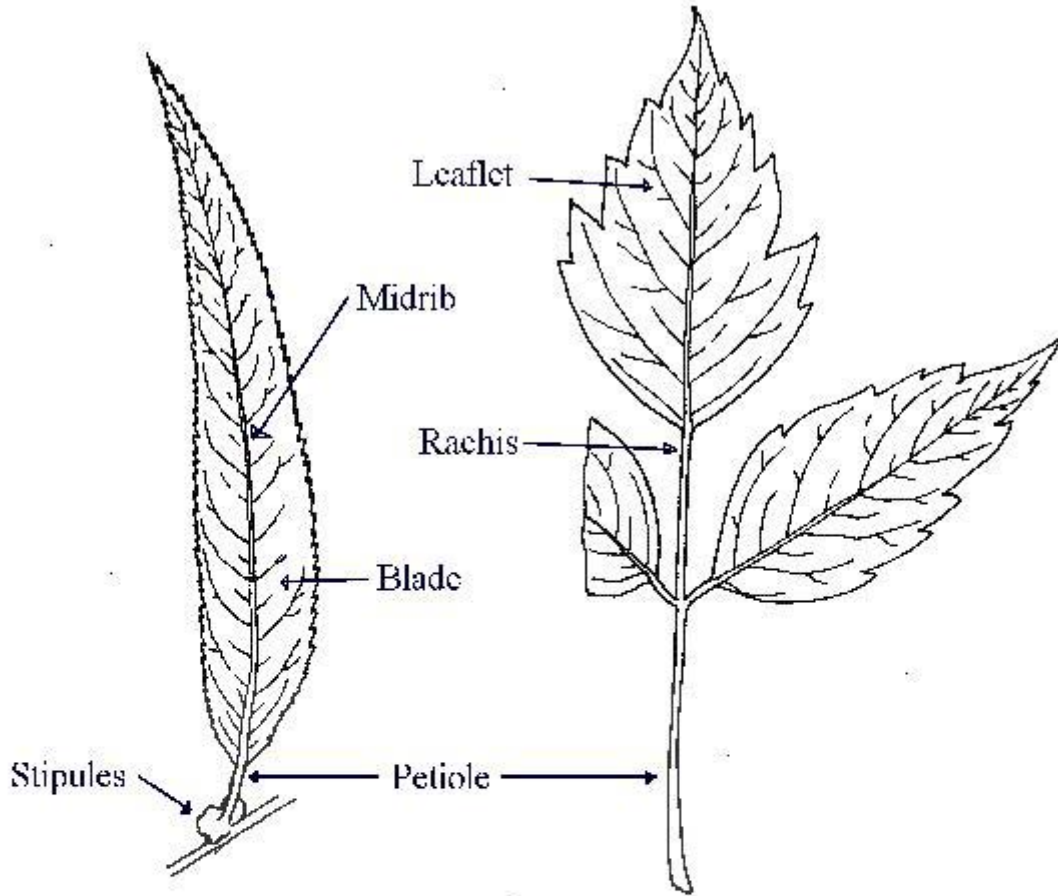
Sessile - Refers to a plant part having its base attached directly to the stem without an intervening stalk.

Stalked - Refers to a leaf or flower having a length of petiole or pedicel between its base and the stem. See sessile.

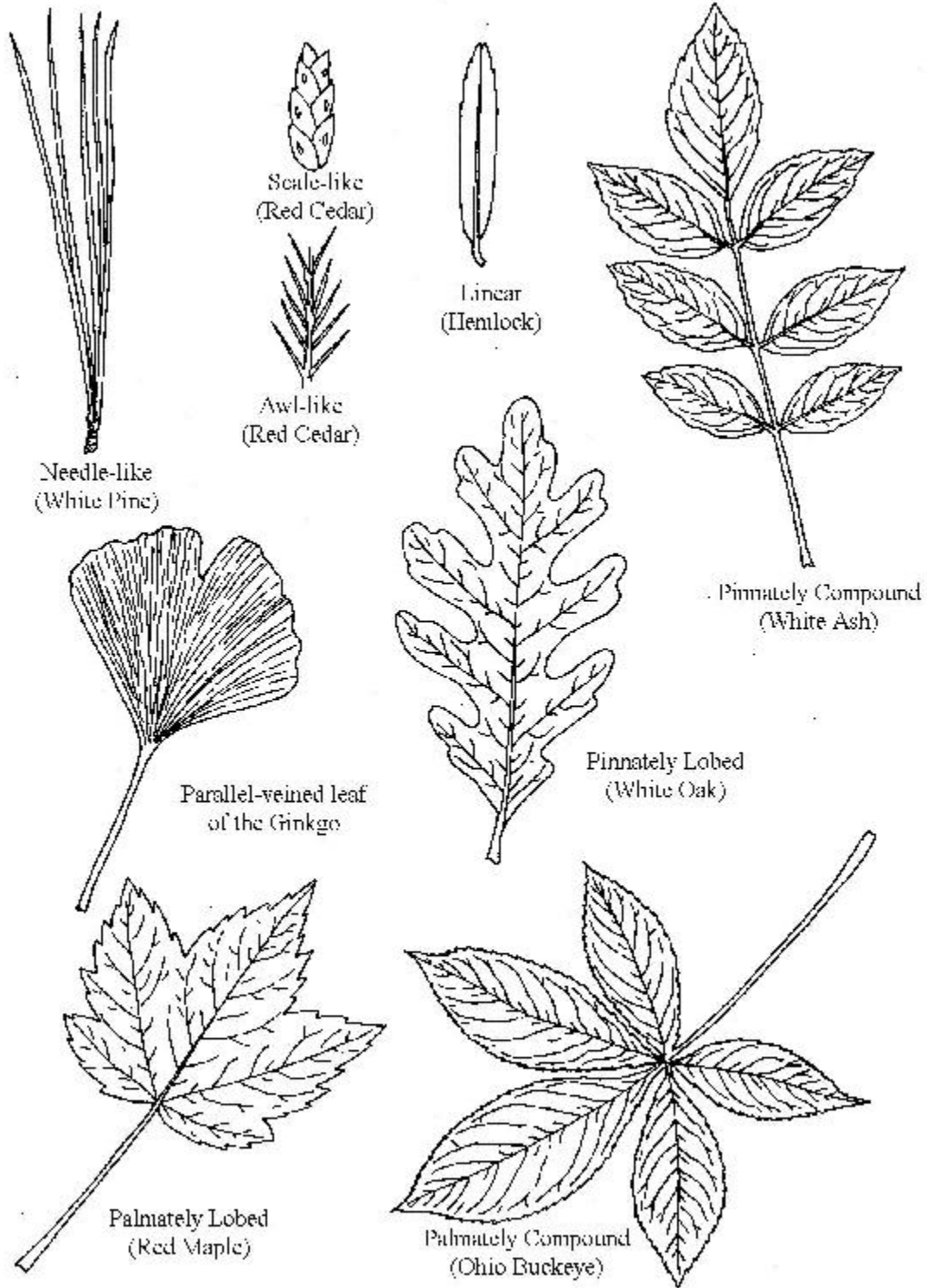
Witches'-broom - Abnormal brushy growth of small branches caused by an infection.

Whorled - Three or more leaves or other parts attached to a stem at the same point.

Parts, Types, and Postions of Leaves



Parts, Types, And Positions of Leaves, Page 2



Parts, Types, And Positions of Leaves Page 3

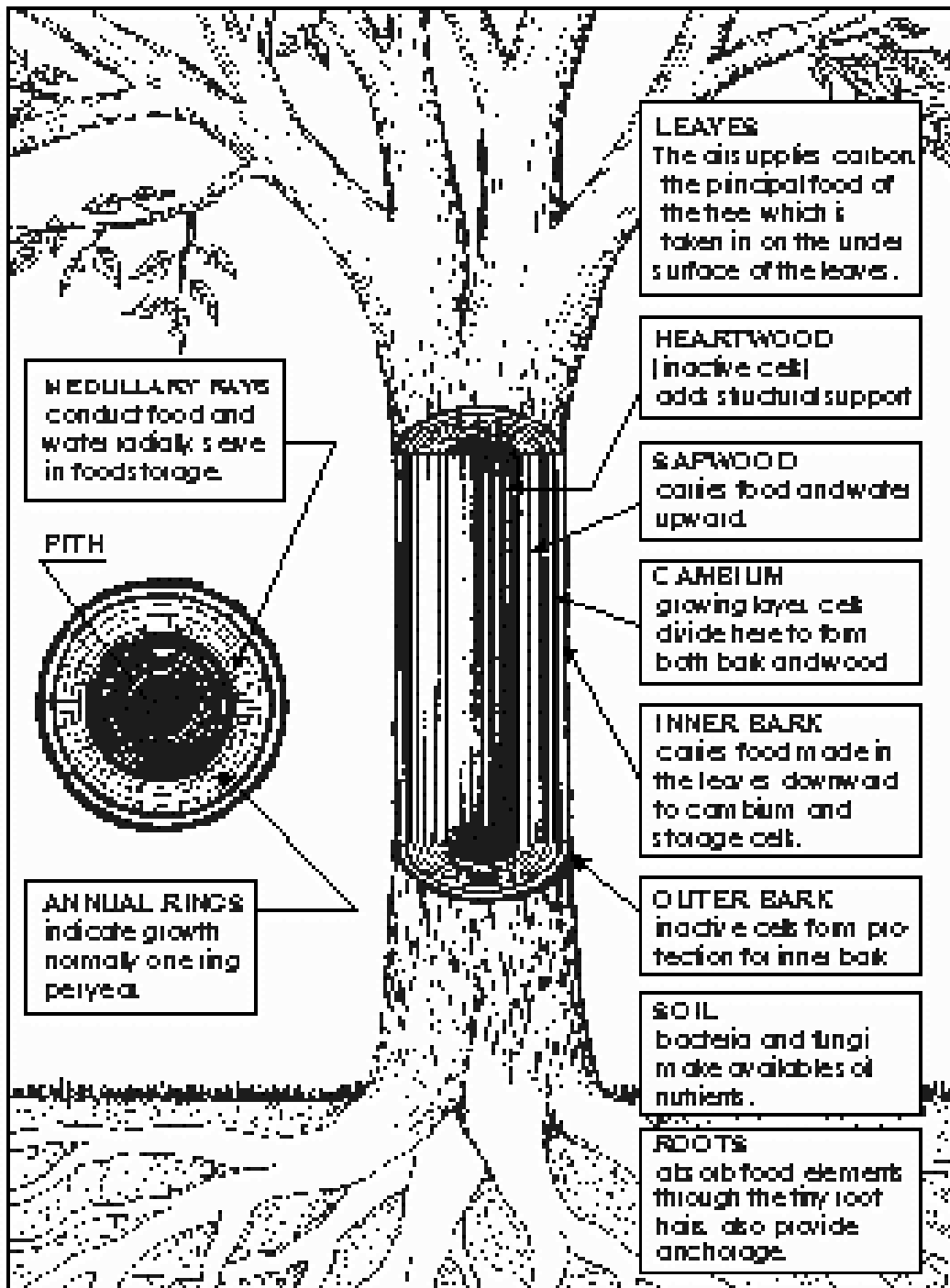
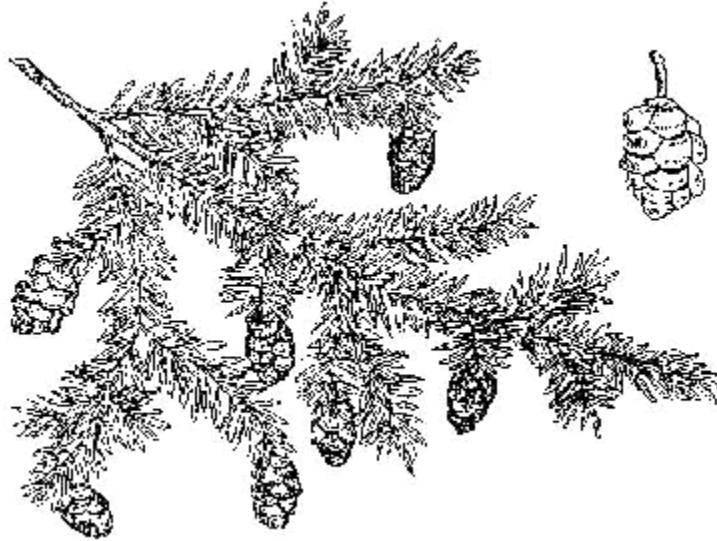


DIAGRAM SHOWING FUNCTIONS OF DIFFERENT PARTS OF A TREE

Courtesy of *The New Tree Experts Manual* by Edward R. Fenske

1
Eastern Hemlock
(*Tsuga canadensis* (L.) Carr.)



LEAVES: Evergreen needles occur singly, appearing 2-ranked on twigs, flattened, about 1/2" long, dark green and glossy, light green with 2 white lines below.

TWIGS: Slender, tough, yellowish brown to grayish brown. Buds eggshaped, 1/16" long, reddish brown.

FRUIT: Cones 3/4" long, egg-shaped, hanging singly from the tips of twigs. Under each scale are 2 small, winged seeds.

BARK: Flaky on young trees, gray brown to red brown, thick and roughly grooved when older.

GENERAL: A large, long-lived tree, important for construction timber and as a source of tannic acid for tanning leather. Found in cool, moist woods throughout the Commonwealth, Eastern hemlock is the official state tree of Pennsylvania. Ruffed grouse, wild turkey and songbirds find food (seeds) and shelter in this tree. Deer browse it heavily when deep snow makes other food scarce.

Eastern Redcedar
(*Juniperus virginiana* L.)



LEAVES: Evergreen, opposite, two types (often on the same tree) the older more common kinds are scale-like and only 1/16"-3/32" long, while the young sharp-pointed ones may be up to 3/4" in length; whitish lines on the upper surface.

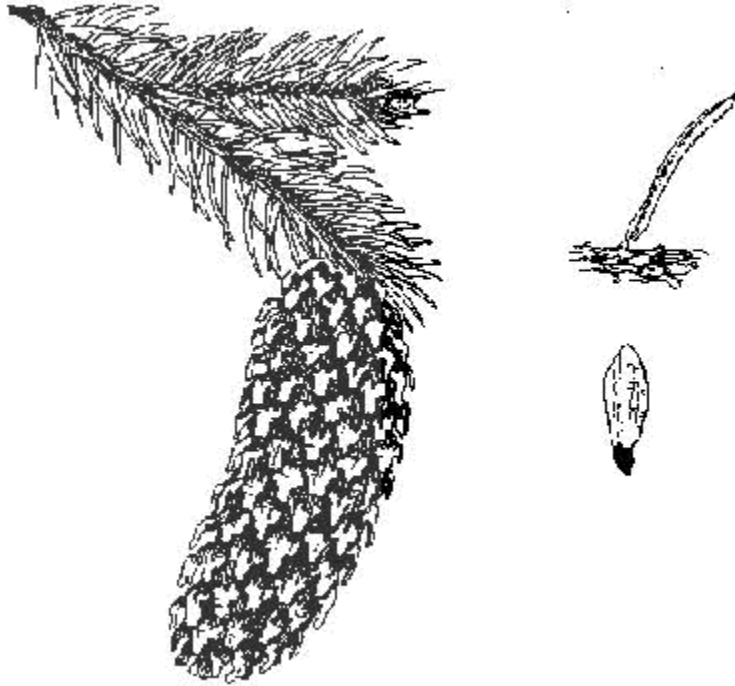
TWIGS: Slender, usually 4-sided, becoming reddish brown. Buds small and not readily noticeable.

FRUIT: Bluish berry-like, covered with a whitish powder, about 1/4" in diameter; flesh sweet and resinous; contains 1-2 seeds. Ripens the first year.

BARK: Reddish brown, peeling off in stringy and flaky strips.

GENERAL: A slow growing and long-lived tree, to 40' high. Red cedar is adaptable to a variety of wet or dry conditions. It is common in abandoned farm fields in the southern tier counties and on rocky bluffs. The wood is used chiefly for fence posts and moth-proof chests. Cedar wax-wings and other song birds and game birds eat the fruits.

3
Colorado Blue Spruce
(*Picea pungens* Engelm.)



Leaves: Needles 4-sided, stiff, in-curved and spiny pointed to 1/4", usually bluish-green, persist for 7-10 years.

Twigs: Orange-brown turning gray-brown with age, without hairs. Buds dark orange-brown.

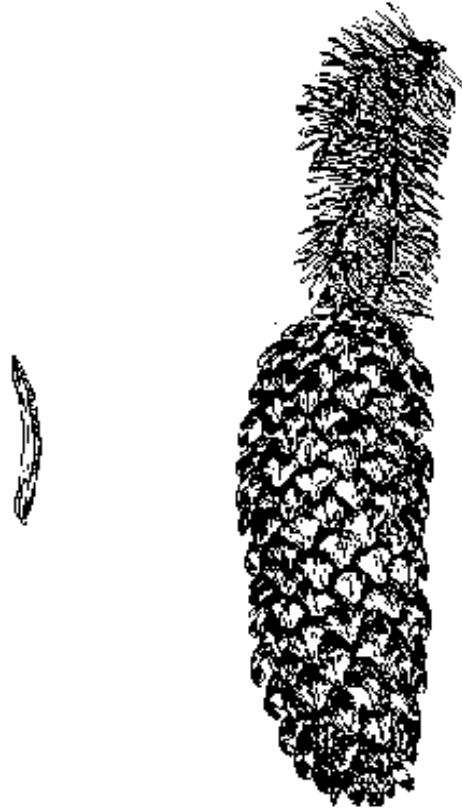
Fruit: Cones to 4" long, cylindrical, tapering slightly at the tips, shiny chestnut brown; scales with irregularly toothed margins.

Bark: Relatively thin, scaly and pale gray when young becoming furrowed and reddish-brown with age.

General: A widely planted ornamental in Pennsylvania, Blue spruce is native to the Rocky Mountains at elevations of 5,900'-10,000'. Slow growing and long lived, specimens can reach 150' high. Cultivated varieties can have silvery-white or golden-yellow needles.

4

Norway Spruce
(*Picea abies* (L.) Karst)



LEAVES: Evergreen needles occur singly, spirally arranged on twigs, sharp-pointed, four-sided, usually 3/4" long, dark green.

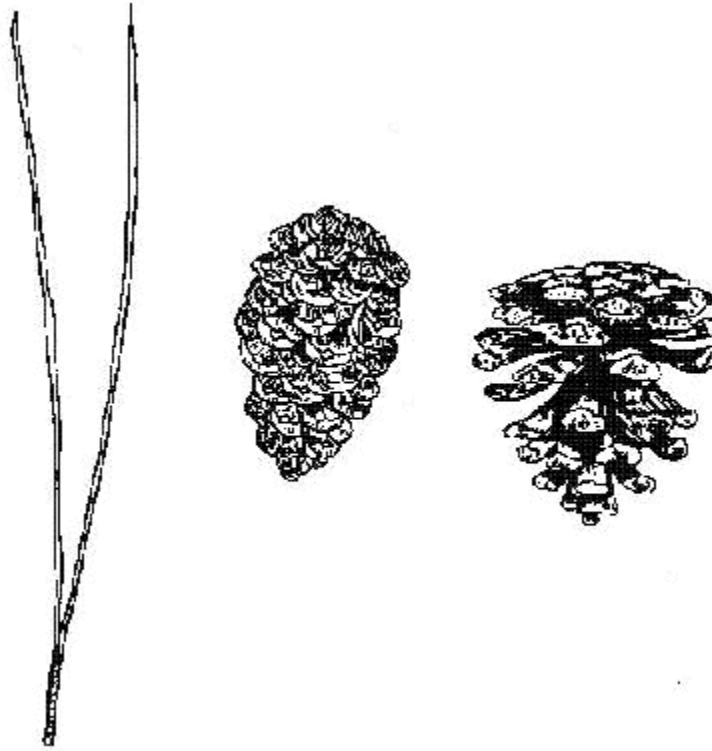
TWIGS: Bright, golden-brown. Buds egg-shaped, darker than twigs.

FRUIT: A cylindrical cone, 4"-7" long, light brown; scales with finely toothed margin, broader than long.

BARK: Relatively thin, reddish brown, scaly, becoming gray-brown but seldom furrowed on old trees.

GENERAL: A European species that has become a valuable naturalized member of our forests, and extensively planted as an ornamental. A large tree with a dense conical crown. Branchlets on older trees droop. Wood used chiefly for paper pulp, boxes, crates and lumber.

5
Red Pine
(*Pinus resinosa* Ait.)



Leaves: Evergreen needles in clusters of 2, slender, 4"-6" long, dark green, borne in dense tufts at the ends of the branchlets: snap easily when bent double.

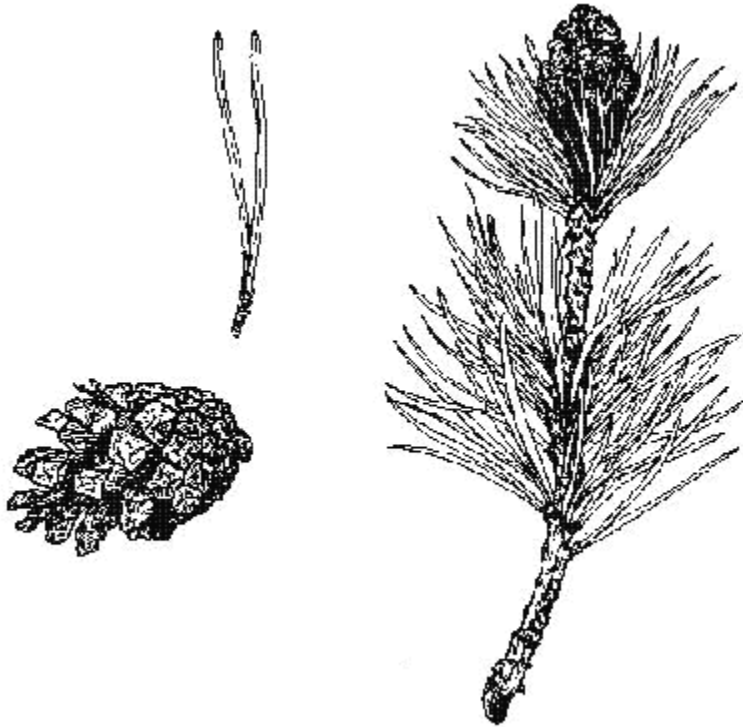
Twigs: Stout, ridged, yellow-brown to red-brown, buds egg-shaped, about 1/2" long, brown at first and later silvery.

Fruit: A cone, about 2" long, without prickles, nearly stalkless, remains attached until the following year.

Bark: Comparatively smooth, reddish brown.

General: Like white pine, this medium to large-size tree develops one horizontal whorl of side branches each year. A valuable timber tree in the northern part of the state, its wood is used chiefly for construction lumber. Native on dry slopes in Luzerne, Wyoming, Tioga, and Centre counties and planted extensively by the Bureau of Forestry and the Pennsylvania Game Commission. Songbirds, mice and chipmunks feed on the seeds.

6
Scots Pine
(*Pinus sylvestris* L.)



LEAVES: Needles 2 per cluster, 1½" - 3½" long, bluish-green or dark green stout, twisted, circular in cross-section.

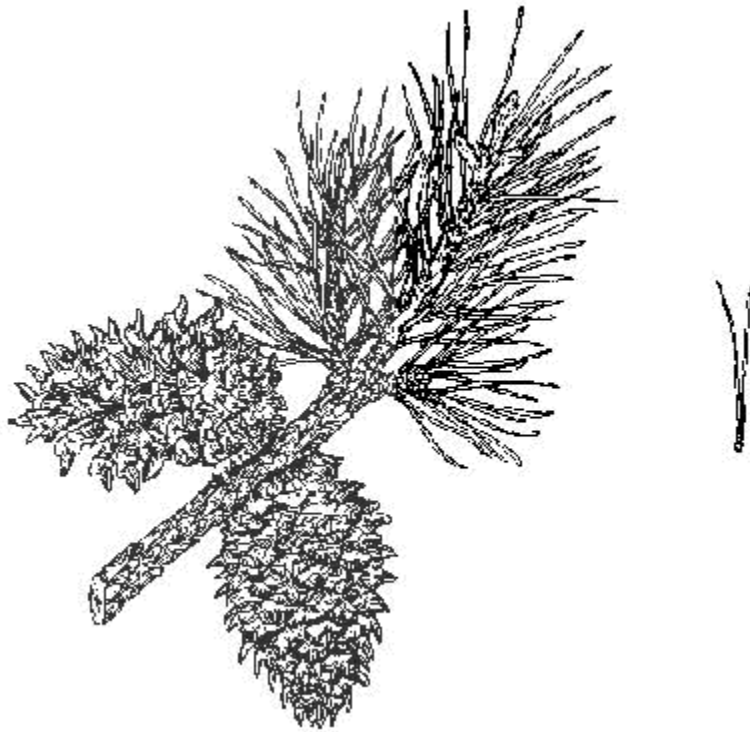
TWIGS: Fairly stout, brittle, dark yellowish-gray, smooth.

FRUIT: Cones 1½" - 2½" long, short-stalked, solitary or in pairs, usually pointing backward, grayish or reddish color.

BARK: Scaly, peeling off in flakes from ridges separated by long shallow fissures. Lower trunk rough and grayish, upper trunk rather smooth and distinctly reddish.

GENERAL: Native to Europe, tolerant of various soil and moisture conditions but intolerant of shade. Typically reaching 70' in height it can attain 120' with a diameter of 3'-5'. Widely planted for reforestation and horticulture, with occasional escapes from cultivation. Older books sometimes call it Scotch pine.

Table Mountain Pine
(*Pinus pungens* Lamb.)



LEAVES: Needles in clusters of 2, 2"-4" long, light bluish-green, stout and very stiff, twisted and sharp-pointed, tufted at the ends of branches, persisting 2-3 years.

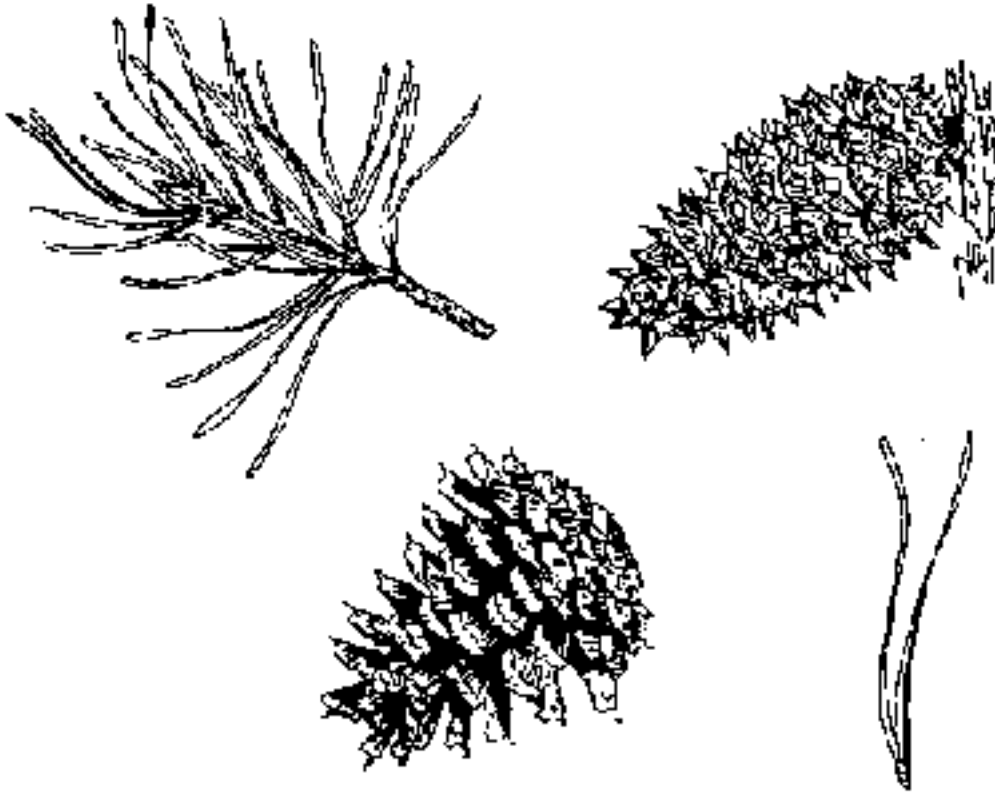
TWIGS: Stout, rather brittle, at first smooth and light orange to purplish, later rather rough and dark brown.

FRUIT: Cones 3"-4" long, sessile, in whorls of 2-7, oblique at the base, light brown, egg-shaped. Cone scales much thickened and tipped with a strong, curved spine.

BARK: Dark reddish-brown, roughened by shallow fissures into irregular plates which peel off in thin films.

GENERAL: Attains a height of 30'-40' on dry, rocky and gravelly slopes and ridge tops in the southcentral and southeastern counties. Not usually used for lumber due to its small size, it can display aggressive growth suited to protecting rocky slopes from erosion.

8
Virginia Pine
(*Pinus virginiana* Mill.)



LEAVES: Evergreen needles in clusters of 2, twisted, stout, relatively short 1½"-3" long.

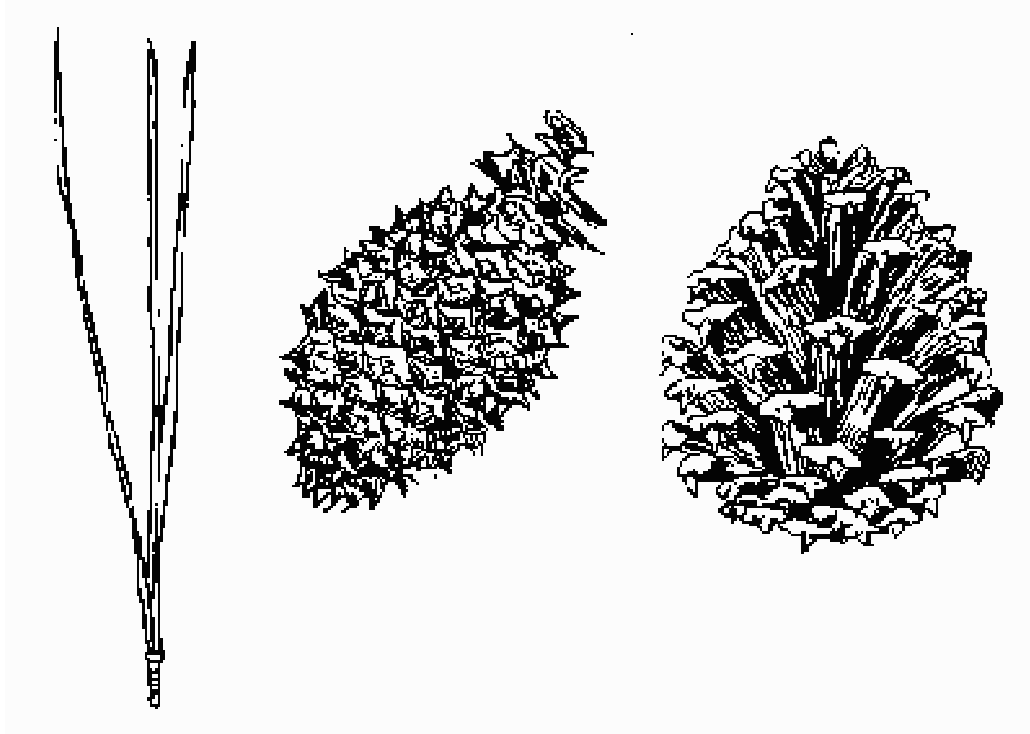
TWIGS: Slender, curved, flexible, brown to purple with bluish white coating. Buds egg-shaped, usually less than ½" long, brown and resinous.

FRUIT: Cone 2"-3" long, prickles small but sharp, edge of scales with darker bands, usually without a stalk, remains attached for 3 or 4 years.

BARK: Smooth, thin, reddish brown and scaly, shallowly fissured into small flat plates.

GENERAL: Also called Scrub pine, this small tree attains a height of 30'-40' on sandy or poor rocky soils of barrens and ridgetops. Virginia pine is a southern species that reaches its northern limit in Pennsylvania. It is valuable as cover for worn-out farmlands and is harvested for pulpwood. The seeds are eaten by squirrels, songbirds and game birds.

9
Pitch Pine
(*Pinus rigida* Mill.)



LEAVES: Evergreen needles in clusters of 3, stiff, 2½"-5" long, yellowish green.

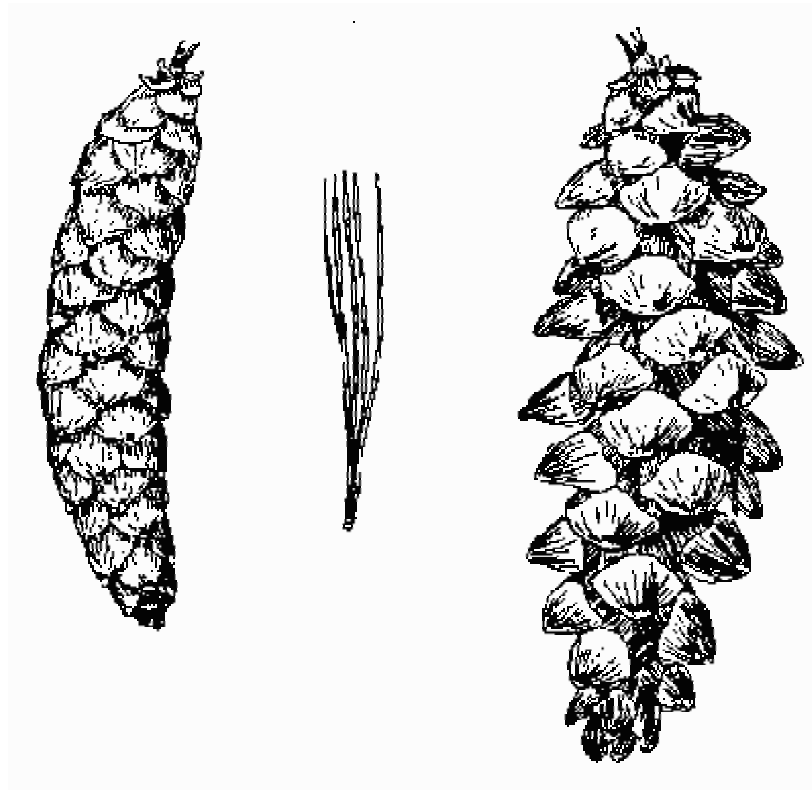
TWIGS: Stout, brittle, rough, angled in cross-section, golden-brown. Buds egg-shaped, about ½" long, resinous, red-brown.

FRUIT: Cones 1½"-3½" long with short, stiff prickles, nearly stalkless, often remains attached for 5 years or more after ripening. Many remain unopened until being heated by passing forest fire.

BARK: Green and smooth on young branches, thick, rough, grayish brown on older trunks.

GENERAL: Pitch pine is a medium sized tree, 40'-50' high. Widespread in Pennsylvania except the Northwestern counties it is more common on poor, sandy soils and areas where forest fires have killed most other trees. Its wood has a high resin content, and is used for railroad ties, construction lumber, pulpwood and fuel. Pitch pine seeds are important to nuthatches, Pine grosbeak and Black-capped chickadee. Deer and rabbits browse the seedlings.

10
Eastern White Pine
(*Pinus strobus* L.)



LEAVES: Evergreen needles in clusters of 5, soft flexible, 3-sided, 2½"-5" long, and bluish green. This is the only pine native to Pennsylvania with 5 needles per cluster.

TWIGS: Slender, flexible, with rusty hairs when young, later smooth. Buds egg-shaped, usually less than ½" long, gray-brown.

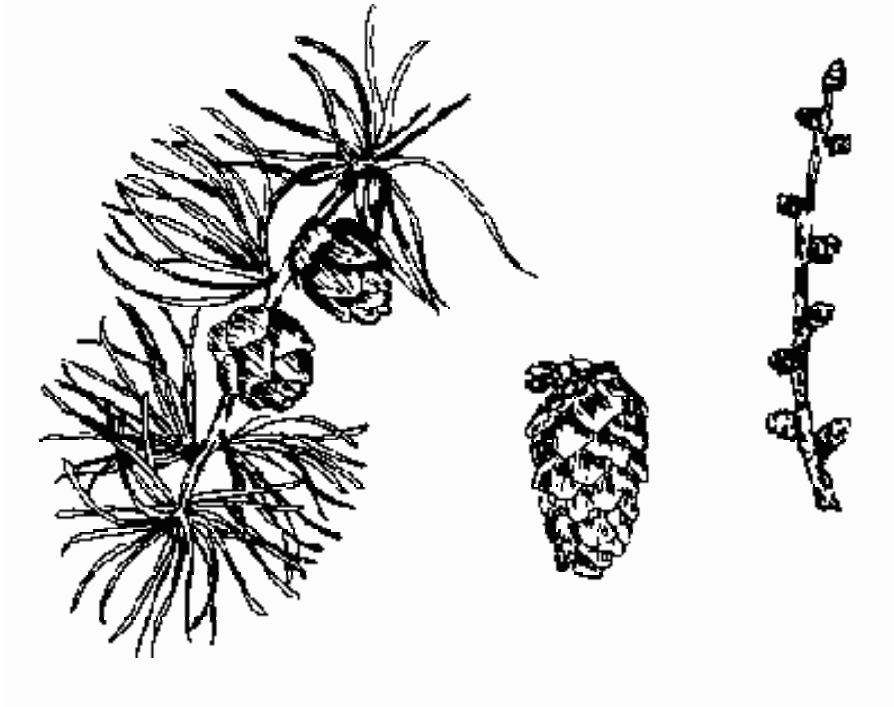
FRUIT: Cones 5"-8" long, without prickles, slightly curved, resinous; each scale usually bears 2 winged seeds as do all our native pines.

BARK: Young trunks and branches greenish brown, later darker grooved and scaly.

GENERAL: Eastern white pines are large trees. At present they usually reach 50'-90' high but the original "Penn's Woods" saw white pines reaching 150' and more. It is one of the most valuable timber trees, found in moist or dry woodlands throughout the state and often planted as an ornamental in large open areas. Many birds, squirrels, chipmunks and mice feed on the seeds and soft needles. Inner bark of white pine is a preferred winter food of porcupine and deer browse the twigs.

11

American Larch
(*Larix laricina* (Duroi) K.Koch)



LEAVES: Needles not evergreen; occur singly near the ends of the twigs, elsewhere in clusters of 10 or more; about 1" long, pale green, turning yellow and falling from the tree during the autumn.

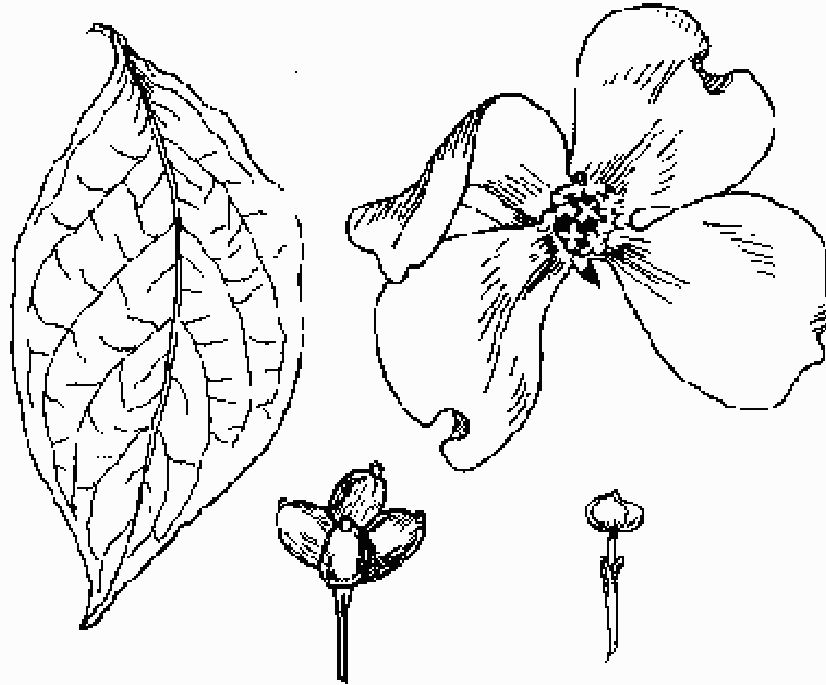
TWIGS: At first covered with a bluish white coating, becoming dull brown and with numerous short spurs. Buds round, small, 1/16" long, dark red.

FRUIT: A cone, about 3/4" long, egg-shaped, upright, often remains attached for several years after ripening in the fall.

BARK: Smooth at first, later becoming scaly, dark brown.

GENERAL: A medium-sized tree also known as Eastern larch and Tamarack. Only cone-bearing tree native to Pennsylvania that loses its needles annually. Found locally in moist situations. Wood used chiefly for paper pulp, lumber, posts and railroad ties. European larch (*L. decidua*) and Japanese larch (*L. leptolepis*) are more commonly planted in the state.

12
Flowering Dogwood
(*Cornus florida* L.)



LEAVES: Opposite, simple, 3"-5" long; clustered toward tips of twigs; margins smooth or wavy; veins prominent and curved like a bow. Foliage bright red in autumn.

TWIGS: Red tinged with green, often with a bluish white powdery coating; marked with rings; tips curve upward. End leaf bud covered by 2 reddish scales; side leaf buds very small; flower buds conspicuous, silvery, button-shaped, at ends of twigs.

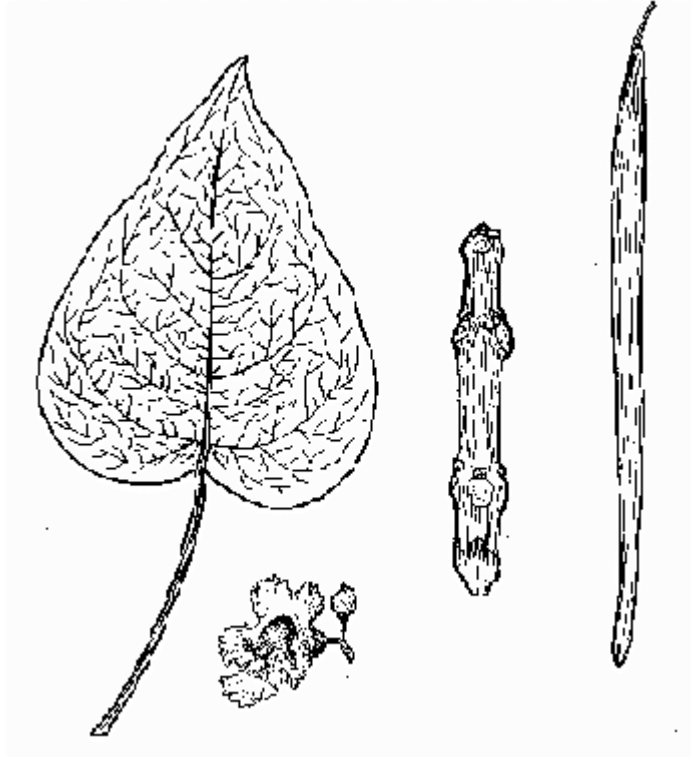
FRUIT: An egg-shaped drupe, 1/2"-3/5" long; coat red; flesh yellowish; stone grooved, 2-celled; usually in clusters of 2-5; persist after the leaves fall. Flowers greenish white or yellowish, small, in flat-topped clusters; four showy white bracts underneath; open before the leaves.

GENERAL: Bark red-brown to reddish gray, broken by fissures into small blocks, like alligator hide. A small native tree with low spreading crown, especially valued for ornamental planting. Wood used primarily for textile weaving shuttles. Horticultural varieties with red or pink bracts have been developed.

13

Catalpa

(*Catalpa bignonioides* Walt.)



LEAVES: Opposite or whorled, simple, heart-shaped, 6"-10" long and 6" wide; margin entire or wavy; smooth above, hairy beneath.

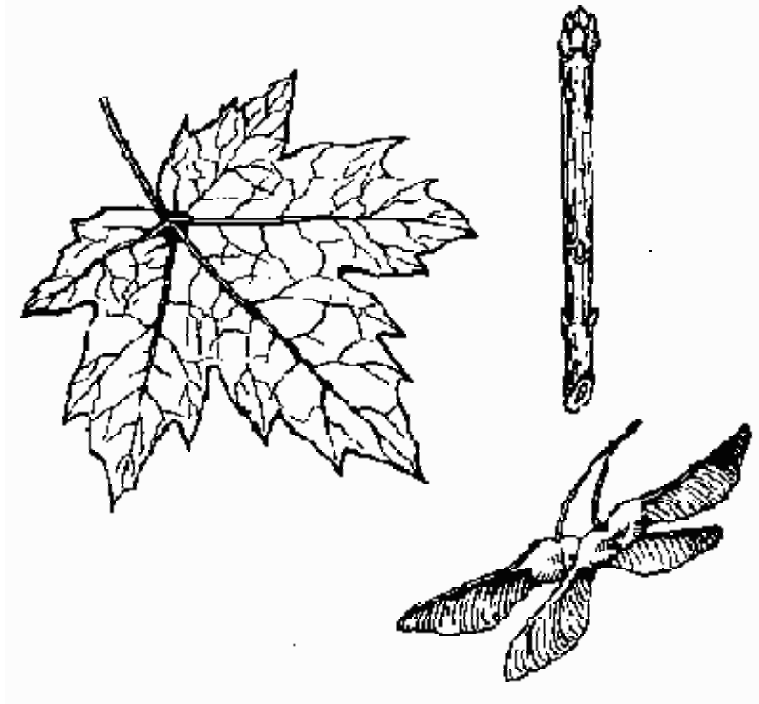
TWIGS: Stout, yellow-brown; no buds at the ends. Side buds small, appear to be hidden in bark. Large, nearly round, depressed leaf scars are characteristic.

FRUIT: Bean-like, to 15" long, ½" wide, halves separating when ripe, may persist on tips of branches all winter, many seeds, each with long white hairs on both ends. Flowers in July, arranged in terminal clusters about 10" long; each showy flower white with yellow and purple spots, 2" in diameter.

BARK: Light brown, shallowly ridged and scaly.

GENERAL: A short-trunked, broad-crowned tree, to 49', native to southern states, but now widely planted and frequently escaped in the eastern U.S. Usually planted for its shade and flowers, the wood is durable and useful for posts. The Northern catalpa, *C. speciosa* Warder, with larger flowers and wider pods, has also been planted in the Commonwealth.

14
Norway Maple
(*Acer platanoides* L.)



LEAVES: Opposite, simple, coarsely 5-lobed, 4"-7" wide, milky sap exudes from the broken leaf-stalk.

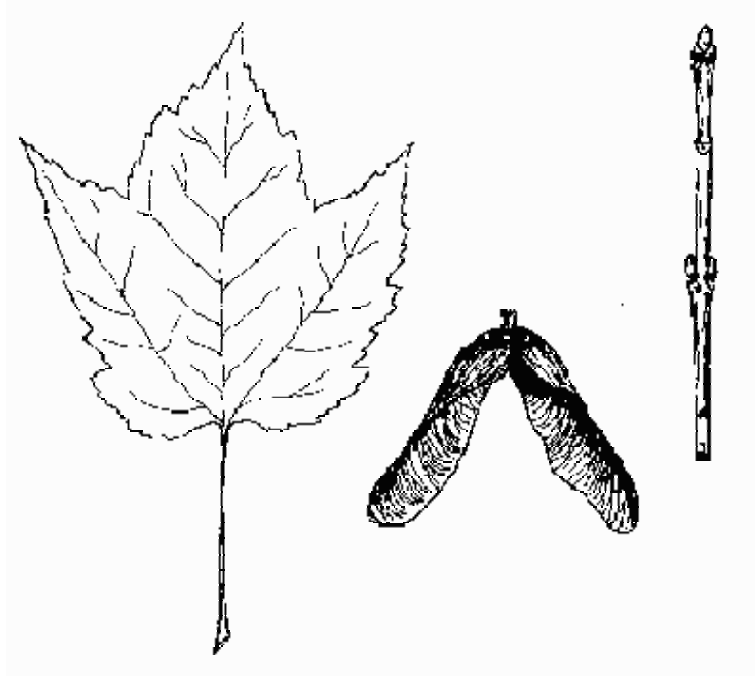
TWIGS: Stout, reddish-brown. Buds glossy red with green at the base, bud scales with keel-like ridges. Leaf scars meet to form a sharp angle, encircling the twig.

FRUIT: Wings wide spreading to nearly horizontal, maturing in autumn.

BARK: Smooth and light brown on young trees, dark and fissured but not scaly when older.

GENERAL: Imported from northern Europe and extensively planted along city streets and in parks. Norway maple typically reaches 50' high. It frequently escapes from cultivation to grow in disturbed woods and roadways. Norway maple can be distinguished from other maples by the larger leaves, milky sap of the petiole, and the horizontal wings of the fruits.

15
Red Maple
(*Acer rubrum* L.)



LEAVES: Opposite, simple, with 3-5 shallow lobes, coarsely toothed, light green above, pale green to whitish beneath, turning brilliant red or orange in autumn.

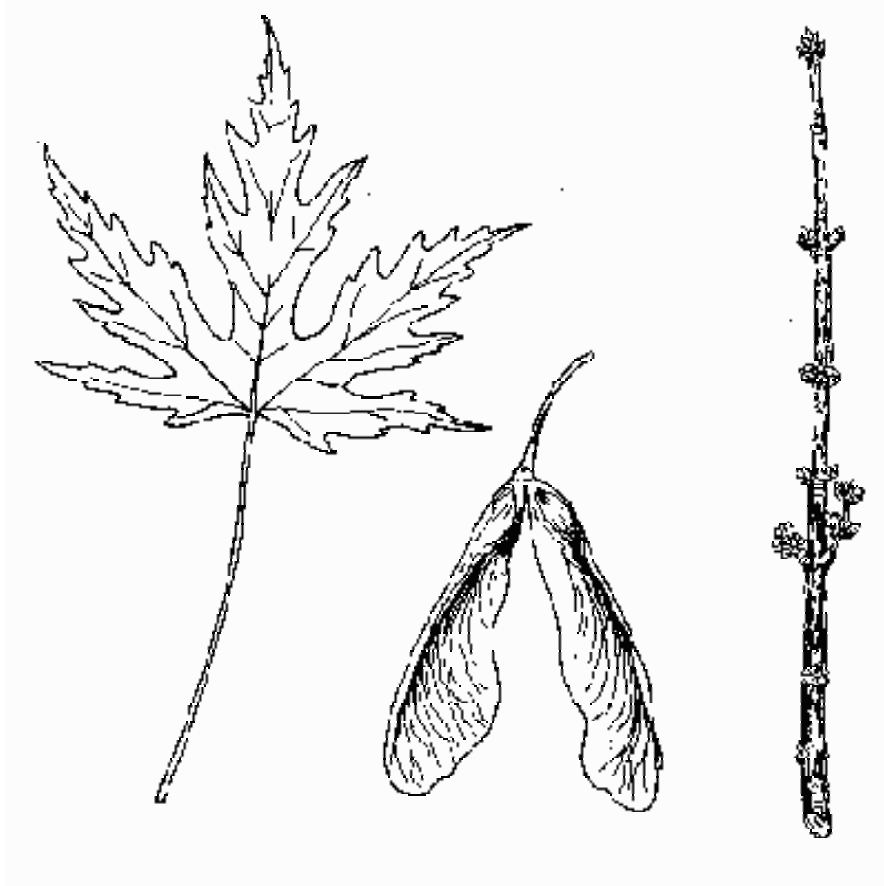
TWIGS: Slender, glossy, at first green, later red.

FRUIT: Wings usually less than 1" long, spreading at a narrow angle, red to brown, maturing in May or June.

BARK: Smooth and light gray on young trunks and branches, older trunks darker, shaggy and roughened with long, irregular peeling flakes.

GENERAL: Found throughout Pennsylvania in a wide variety of habitats, typically reaching 50' high, it grows best in wet soils, sometimes over 100'. Also known as Soft maple because its wood is not as hard as Sugar maple, this is an excellent ornamental tree. Young trees are heavily browsed by deer and rabbits; rodents consume the seeds.

16
Silver Maple
(*Acer saccharinum* L.)



LEAVES: Opposite, simple, deeply 5-lobed and coarsely toothed, about 5" wide, bright green above, silvery-white beneath. Fall color is a greenish-yellow.

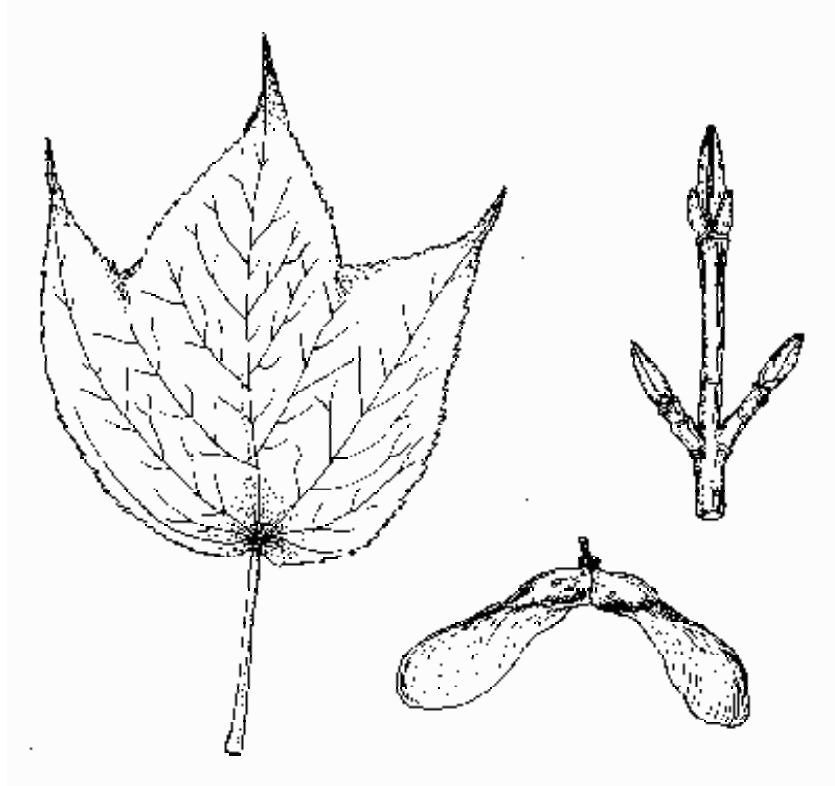
TWIGS: Slender, glossy, in spring green, turning chestnut brown. Lower branches have a distinctive upward curve at the end.

FRUIT: Largest of the native maples, wings 2" long widely spreading, maturing in spring.

BARK: Smooth and gray on young trunks, older trunks brown and furrowed with plates that curl out on the ends.

GENERAL: Found in moist woods and on stream banks throughout Pennsylvania, usually reaching 50'-60' high. Many mammals and birds eat the seeds. Planted as a shade tree but it has a tendency to split.

17
Striped Maple
(*Acer pensylvanicum* L.)



LEAVES: Opposite, simple, 3-lobed, rounded at the base, with finely toothed margins and rusty pubescence on the lower surface.

TWIGS: Smooth stout at first greenish, later red; pith brown; each seasons growth marked by 2 or 3 dark lines encircling the twig.

FRUIT: Wings very divergent, about $\frac{3}{4}$ " long, maturing in September in drooping clusters. Marked on one side of the seed with a depression.

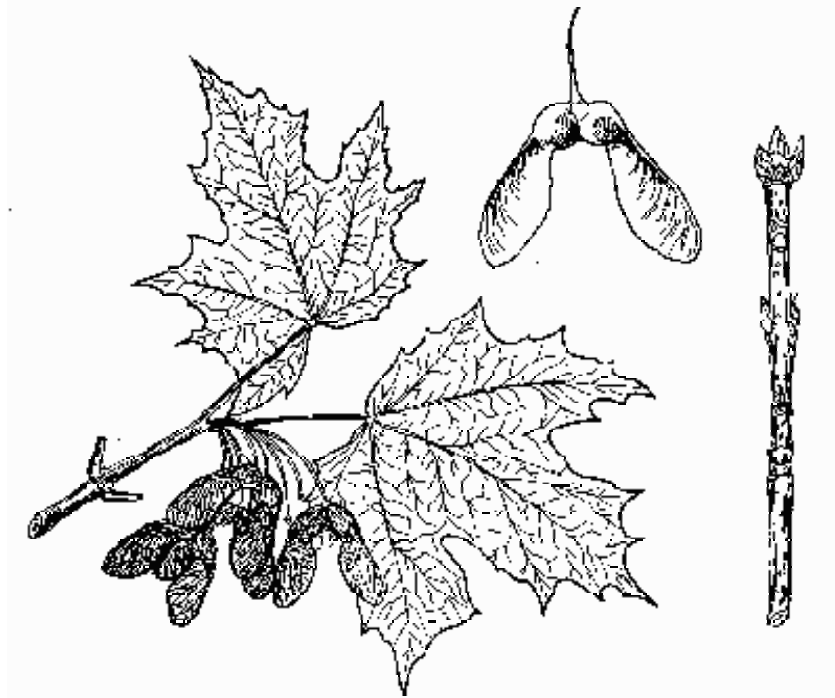
BARK: Smooth greenish or reddish brown, conspicuously marked with longitudinal white streaks; older trunks rougher, darker and less streaked.

GENERAL: Usually from 10'-25' high; common in the mountainous parts of the state on moist, cool, shaded slopes and in deep ravines. Its distinctive white stripes make it an attractive ornamental species.

18

Sugar Maple

(*Acer saccharum* Marshall.)



LEAVES: Opposite, simple, 5-lobed with few large teeth, about 4" wide, bright green above, pale green below. Leaves turn bright yellow, orange or red in autumn.

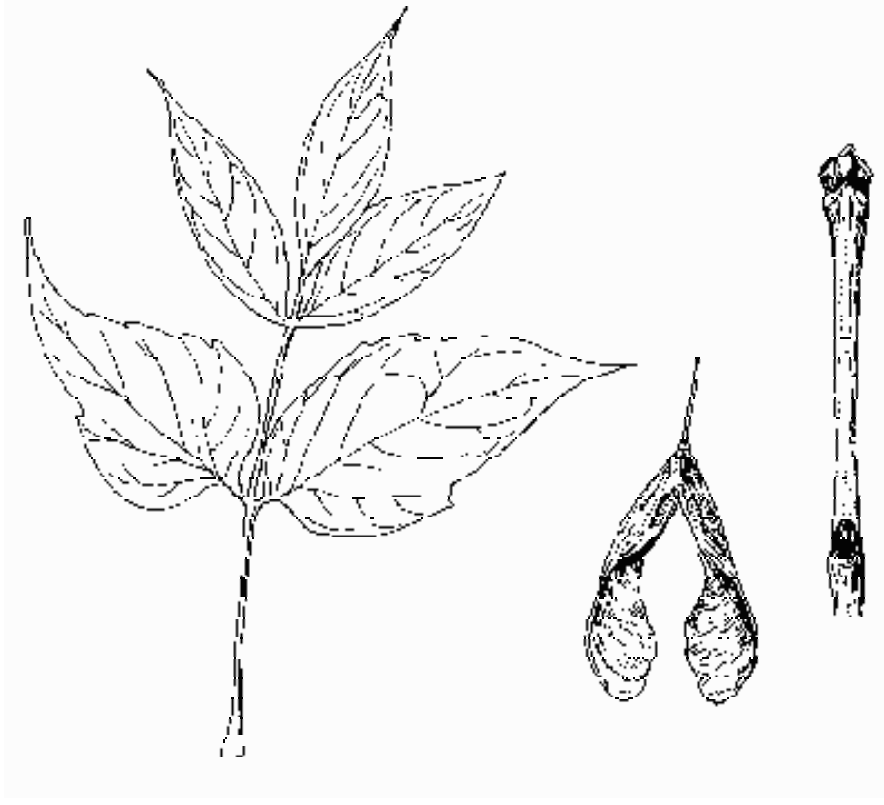
TWIGS: Reddish-brown to light brown. Buds brown and sharp pointed.

FRUIT: Horseshoe-shaped with wings almost parallel, maturing in autumn sometimes persisting into winter.

BARK: Gray brown, smooth on young trunks, older trunks fissured with long, irregular flakes.

GENERAL: Also called Rock maple for its hard wood, this important timber tree is found on moist wooded slopes throughout Pennsylvania, typically reaching 60'-80' high. Sugar maple wood is used for furniture, musical instruments and flooring and the sap is tapped for maple syrup production. Sugar maple is an excellent ornamental tree for large open areas. Birds and rodents eat the seeds. Deer, squirrels, porcupine and other mammals browse the twigs, buds and bark.

19
Box Elder
(*Acer negundo* L.)



LEAVES: Opposite, compound, with 3-5 coarsely and irregularly toothed leaflets, each 2"-4" long and 2"-3" wide.

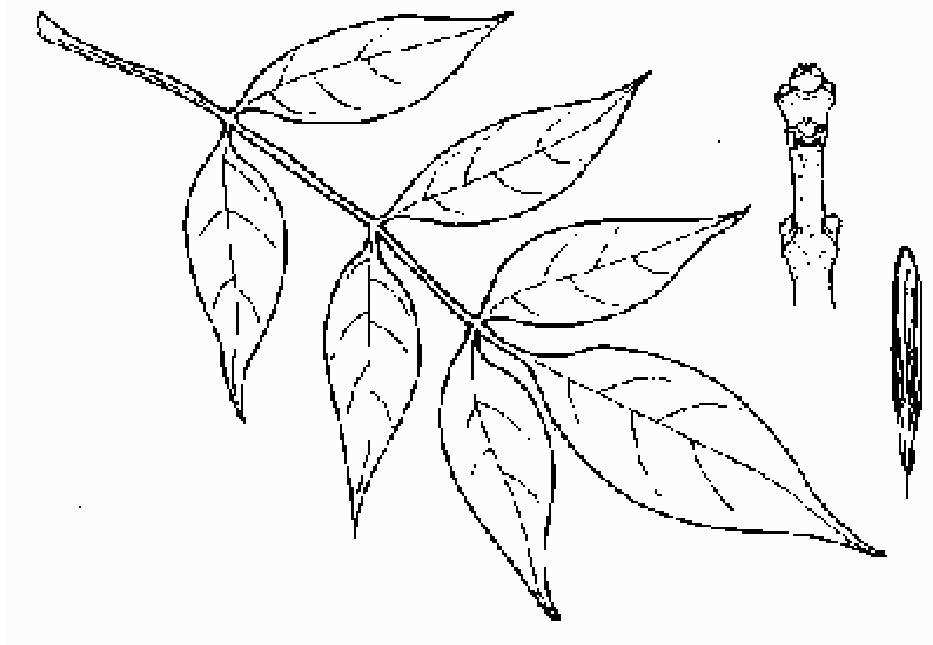
TWIGS: Stout, purplish-green or green, sometimes smooth but often with a whitish coating and scattered raised lenticels.

FRUIT: Wings about 1½"-2" long, parallel or in-curved, borne in drooping clusters. Fruits mature in September but fruit-stalks persist far into winter.

BARK: Branches and young trunks smooth and grayish-brown, older trunks distinctly narrow ridged and seldom scaly.

GENERAL: A medium sized tree, occasionally to 70' high. Trunk usually short, dividing into stout branches forming a deep broad crown. Typically found in low moist areas, floodplains and stream banks. Most abundant in eastern and southern Pennsylvania, common along streams in the southwestern part and scattered elsewhere. Used in ornamental plantings.

20
White Ash
(*Fraxinus americana* L.)



LEAVES: Opposite, compound, about 10" long, with 5-9 leaflets each 3"-5" long, short-stalked, silvery beneath, margins entire or with a few rounded teeth toward the tip.

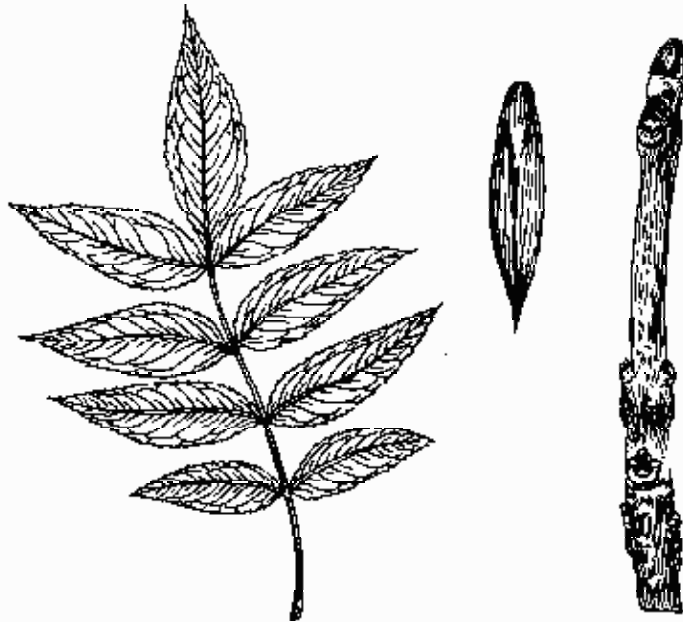
TWIGS: Stout, usually smooth, gray-brown with a few pale lenticels and a white, waxy coating which is easily rubbed off called a bloom. Buds rusty to dark brown, blunt with adjoining leaf scars half-circular and notched at the top. The first pair of lateral buds usually at the base of the end bud causing a terminal enlargement of the twig (compare with Black ash).

FRUIT: A winged seed, called a samara, usually 1 to 2 inches long and 1/4 inch wide, shaped like a canoe paddle with a rounded tip and hanging in clusters which remain attached for several months after ripening in autumn.

BARK: Gray-brown, evenly furrowed into diamond shaped areas separated by narrow interlacing ridges, slightly scaly on very old trees.

GENERAL: A large tree, often up to 80 ft. or more usually with a long straight trunk commonly found on rich soils. The wood is used for sporting goods (especially baseball bats), handles, agricultural tools, and furniture. The juice from the leaf has been reported to relieve mosquito bite itching. Fall foliage colors range from brilliant yellow to dark maroon.

21
Black Ash
(*Fraxinus nigra* Marshall.)



LEAVES: Opposite, compound with 7 to 11 leaflets each 3"-5" long, only the end leaflet stalked, margins toothed, dark green above, lighter green beneath with some rusty hairs.

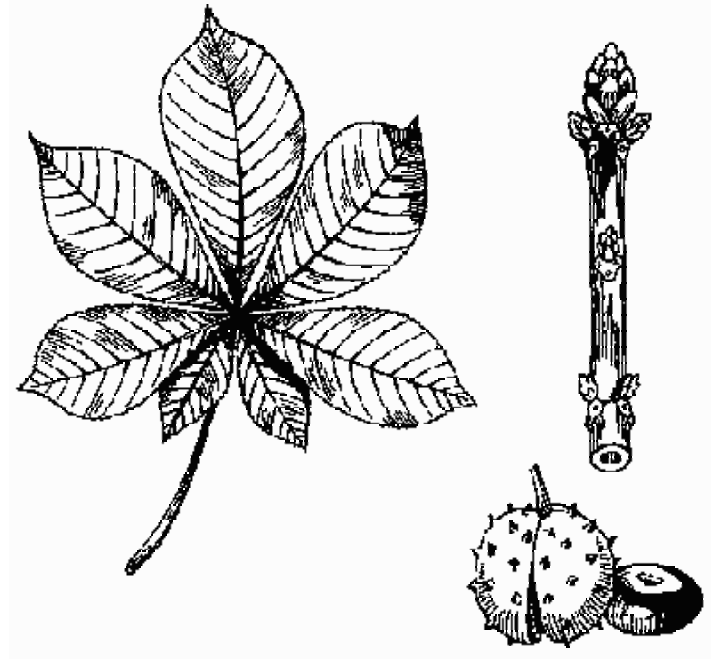
TWIGS: Stout, gray or red-brown with many pale lenticels, somewhat hairy at first, becoming smooth, end buds dark brown to black and pointed, adjoining leaf scars are not notched at the top, nearly circular, with raised margins. The first pair of lateral buds are some distance below the end bud.

FRUIT: Resembling White ash but is usually shorter and slightly wider, 1"-1 $\frac{3}{4}$ " long and $\frac{3}{8}$ " wide.

BARK: Gray, relatively smooth, later becoming corky-ridged and shallowly furrowed or scaly with frequent knobs on the trunk.

GENERAL: Sometimes called Swamp ash, this medium-sized tree reaches 40'-50' in cool swamps, wet woods and bottomlands throughout Pennsylvania. The wood is generally lighter in weight and weaker than White ash, but is used for the same purposes. Baskets can be woven from slats produced by pounding a wet block of wood until it separates along the annual growth rings. Wood ducks, gamebirds and songbirds and many mammals eat the seeds. Whitetail deer browse the twigs and young foliage.

22
Buckeyes
(*Aesculus* species)



LEAVES: Opposite, palmately compound (the leaflets arranged like spreading fingers), native buckeyes have 5 leaflets, Horsechestnut has 7, leaves to 15" long, margins toothed.

TWIGS: Stout, orange-brown, buds large, sticky in Horsechestnut but not in buckeyes. Twigs of Ohio buckeye emit a foul odor when broken.

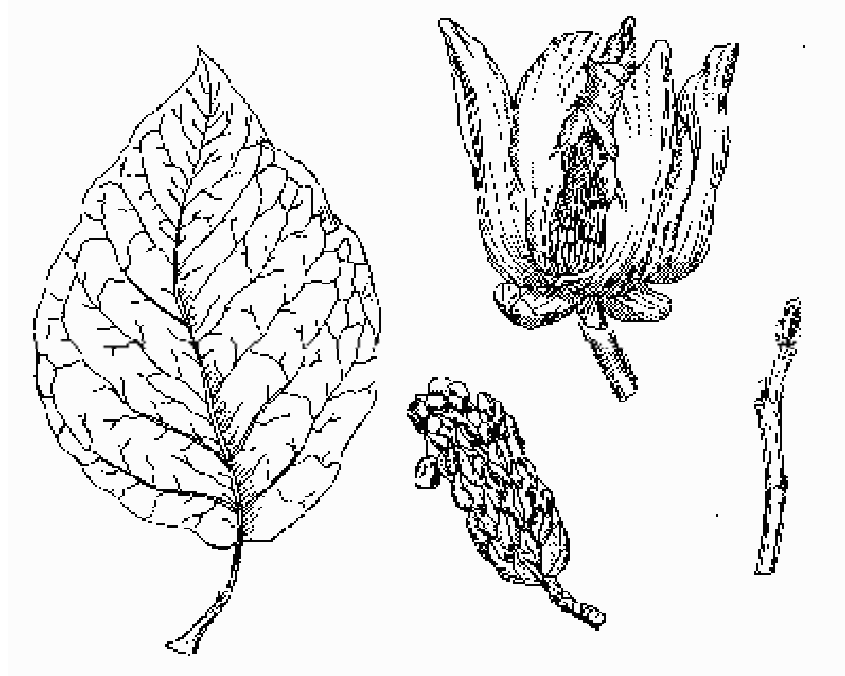
FRUIT: A rounded capsule 1"-2" in diameter holding 1 or 2 shiny brown non-edible seeds. The capsule of Horsechestnut is strongly spiny, capsules of Ohio buckeye are weakly spined or warty, capsules of Yellow buckeye are smooth.

BARK: Gray, broken into thin plates.

GENERAL: Three species of the genus *Aesculus* are found in Penn's Woods: *A. hippocastanum* L., called Horseshestnut or European buckeye, illustrated above, is a native of Greece planted as a shade tree in towns and occasionally escaping to grow wild. *A. octandrea* Marshall, called Yellow buckeye or Sweet buckeye, and *A. glabra* Willd., Ohio Buckeye, are native to moist woods along streams in southwestern Pennsylvania. Wood of Ohio buckeye is light but resists splitting and has been used to make artificial limbs.

23

Cucumbertree Magnolia
(*Magnolia acuminata* L.)



LEAVES: Alternate, simple, 4"-12" long, smooth above, downy beneath; margins smooth or sometimes wavy.

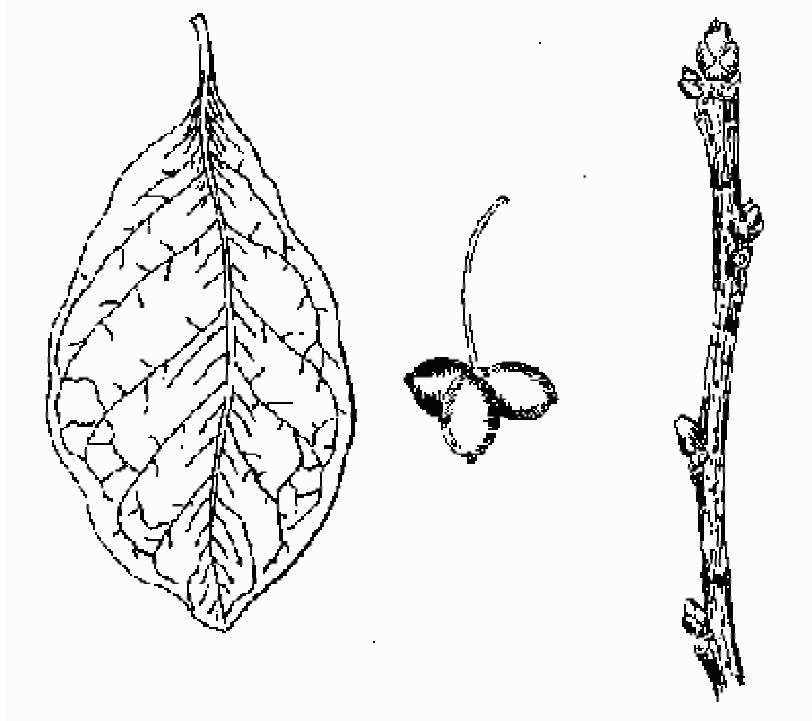
TWIGS: Reddish brown, shiny, with peppery smell and taste. Buds covered with greenish white silky hairs; end buds 1/2"- 3/4" long. Leaf scars horseshoe shaped.

FRUIT: When young, like a small green cucumber. When mature in autumn, 3"-4" long, a cluster of small red pods, each containing two scarlet seeds; often remains attached all winter. Flowers large (3" long), greenish yellow, single, upright; appear from April to June.

BARK: Gray-brown to brown, developing long, narrow furrows and loose scaly ridges.

GENERAL: A medium-sized tree, native to rich upland woods and slopes in the western half of the Commonwealth. Magnolia wood is used mainly for interior finish, furniture and containers. Songbirds, squirrels and mice eat the seeds.

24
Black Gum
(*Nyssa sylvatica* Marshall)



LEAVES: Alternate, simple, 2"-5" long, oval with entire and slightly thickened margins, dark green and shiny above, often downy beneath, turning vivid red in early autumn.

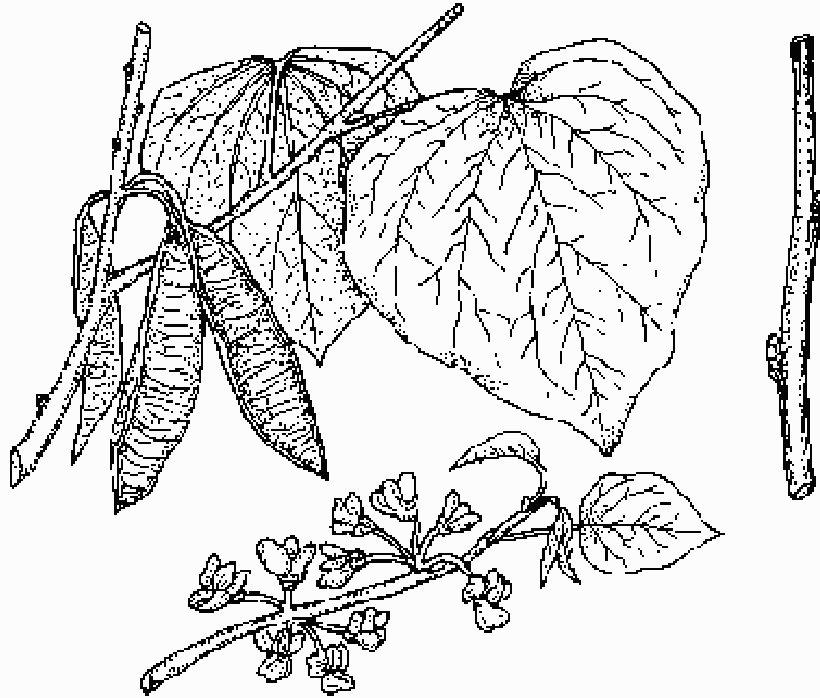
TWIGS: Smooth grayish to reddish brown, pith white and chambered, buds round, pointed and reddish brown, ¼" long.

FRUIT: A dark blue berry, 1/3"-2/3" long, 1-seeded with thin flesh, borne singly or 2-3 in a cluster, ripening in autumn.

BARK: Grayish, smooth to scaly, darker gray, thick and fissured into quadrangular blocks forming what is called "alligator bark" on very old trunks.

GENERAL: Also called Black tupelo, this is usually a medium sized tree, to 40' in height on dry slopes and ridge tops, but it can reach 100' and 5' in diameter in moist areas along streams. Most common in the southeast and southcentral portions of the state it is rarer in the northern tier counties. The wood is difficult to split and is used for boxes, fuel and railroad ties. The fruits, twigs and foliage provide food for many birds and animals. The brilliant red autumn color and abundant blue fruit make this species an interesting ornamental planting.

25
Redbud
(*Cercis canadensis* L.)



LEAVES: Alternate, simple, heart-shaped, 3"-5" long, margins entire.

TWIGS: Slender, smooth light brown to gray-brown, with numerous small lenticels.

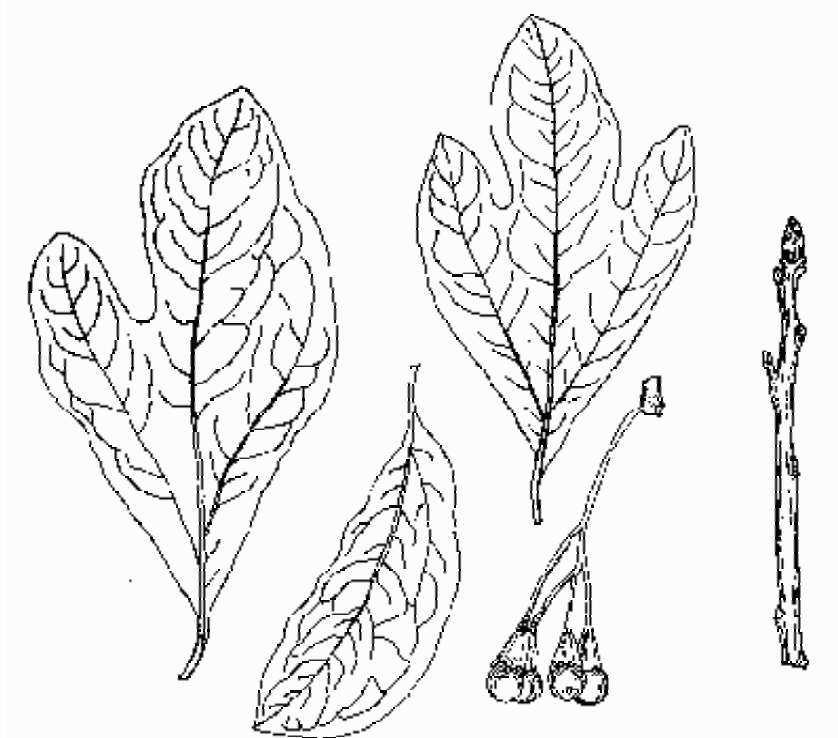
FRUIT: A pod, rose-colored to light brown, 2½"-3" long by ½" wide, containing 6 egg-shaped, flattened, light brown seeds.

BARK: Thin, shallowly fissured, peeling into numerous scales, reddish-brown to very dark brown.

GENERAL: Usually a small tree, with a short trunk and branches forming a shallow, broad crown, 15'-20' high with a trunk diameter of 6", it has been known to reach 30' in Pennsylvania. Prized for its bright rose-colored flowers in early spring. Wild populations are limited to the southern half of the Commonwealth, but Redbud is successfully cultivated further north.

26

Common Sassafras
(*Sassafras albidum* (Nutt.) Nees)



LEAVES: Alternate, simple 4"-6" long, smooth, dark green above, much lighter beneath, characteristically aromatic when crushed. Usually three types can be found on a tree: entire, 2-lobed and 3-lobed (rarely 5-lobed).

TWIGS: Bright green, sometimes reddish, smooth and shiny; large white pith. End bud much larger than side ones, with many loose scales.

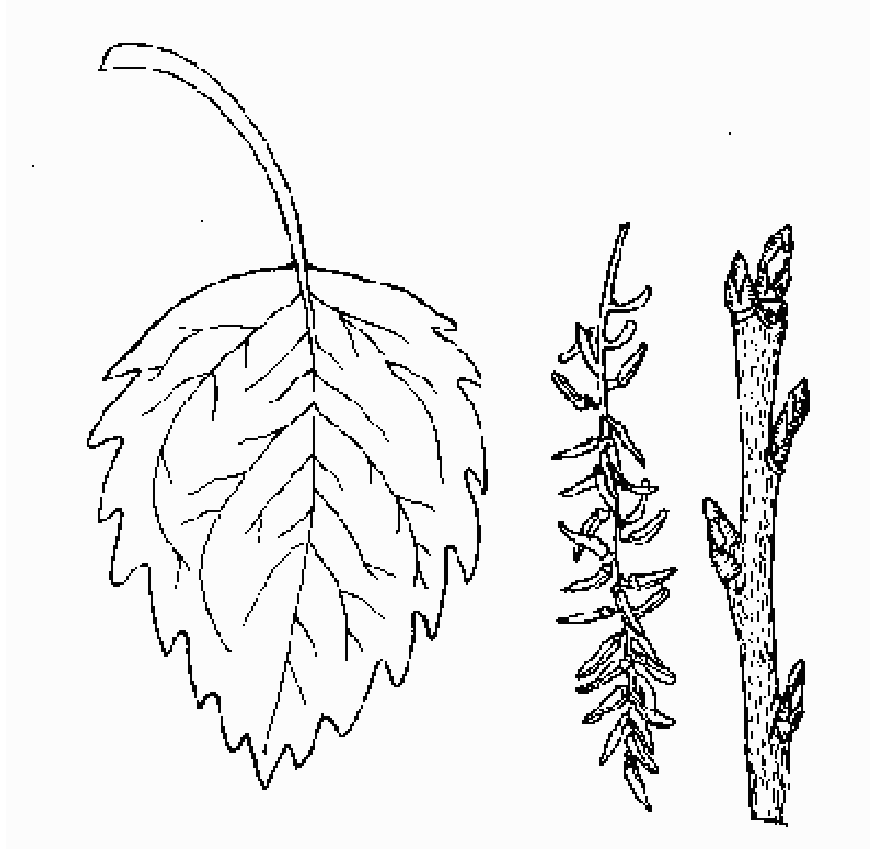
FRUIT: A berry, dark blue, shiny, about 1/2" in diameter, on a red stem enlarged at the point of attachment; borne in clusters. Yellow flowers appear before the leaves unfold.

BARK: Young trees furrowed, greenish, changing to brown; inner bark salmon colored; older trees show deep fissures extending long distances up the trunk.

GENERAL: A small to medium-sized tree, to 50' high, with crooked branches; often spreading by root suckers. Its roots, leaves, twigs and fruit have a spicy odor; the oil contained in these parts is used for a "tea," in medicines, perfumes, etc. Wood used chiefly for fuel and fence posts.

27

Bigtooth Aspen
(*Populus grandidentata* Michx.)



LEAVES: Alternate, simple, 3"-4" long, margins with coarse teeth, dull green above, lighter below, petiole flattened.

TWIGS: Stout, brown with a pale, wooly coating. Buds blunt-pointed, dull, often wooly.

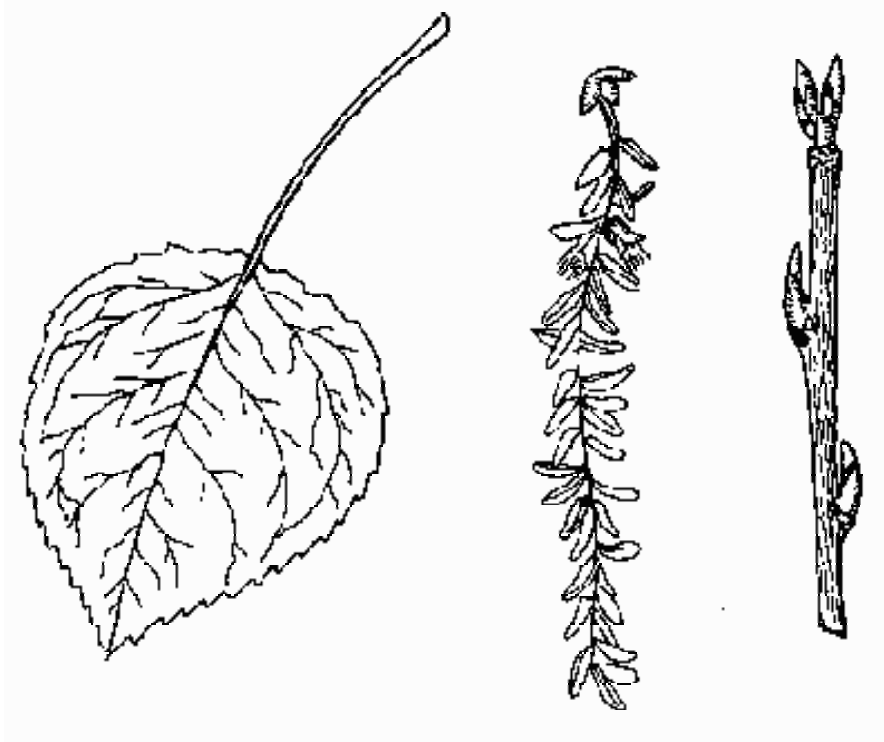
FRUIT: Cone-shaped capsules on a drooping stalk similar to Quaking aspen. Fruits mature before the leaves are full grown, seeds covered with long silky hairs.

BARK: Light gray to green when young, dark brown and rough with age.

GENERAL: A small to medium sized tree, 30'-60' high, common throughout the State. The seeds sprout best in open areas after cutting or fire and spread rapidly by sending up suckers from the roots. Bigtooth aspen is important for regenerating forest cover, protecting soil and slower growing species. Many animals browse the twigs and buds in winter and spring. The wood is used chiefly for making paper.

28

Quaking Aspen
(*Populus tremuloides* Michx.)



LEAVES: Alternate, simple, almost round 1"-3" in diameter, margins finely toothed, shiny dark green above, lighter below; petiole slender, flattened.

TWIGS: Slender, reddish brown, smooth, shiny, pith white and 5-angled. Buds sharp-pointed, smooth, shiny, often curved inward.

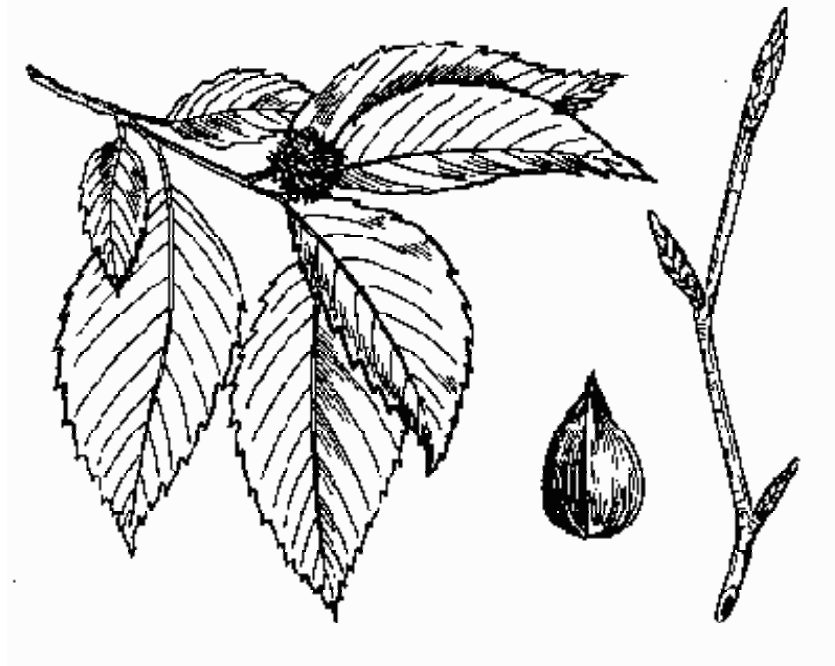
FRUIT: Cone-shaped capsules on a drooping stalk, each ¼" long, and containing 10-12 seeds. Fruits mature in early summer releasing seeds covered with long silky hairs.

BARK: Pale yellow green to silvery gray when young, whiter at higher altitudes, becoming dark gray and rough with age.

GENERAL: A medium sized tree, typically reaching 60' high, of rapid growth but short-lived. Most common on sandy or gravelly soils of old fields and open woods in northern Pennsylvania, but it can be found throughout the state. Important for revegetating recently cut or burned areas by sprouting from widespread roots. Its wood is used chiefly for pulp in manufacturing paper and cardboard. Many animals browse the twigs and it is a favorite food of beaver.

29

American Beech
(*Fagus grandifolia* Ehrh.)



LEAVES: Alternate, simple, 3"-4" long, stiff leathery texture, with a tapered tip and sharply toothed margins, light green and glossy above, yellow green below.

TWIGS: Slender, dark yellow to gray, at first hairy, later smooth, zigzag. Buds very long slender sharp-pointed, covered by 10-20 reddish-brown scales.

FRUIT: A stalked, prickly 4-valved bur containing triangular, pale brown, shining nuts.

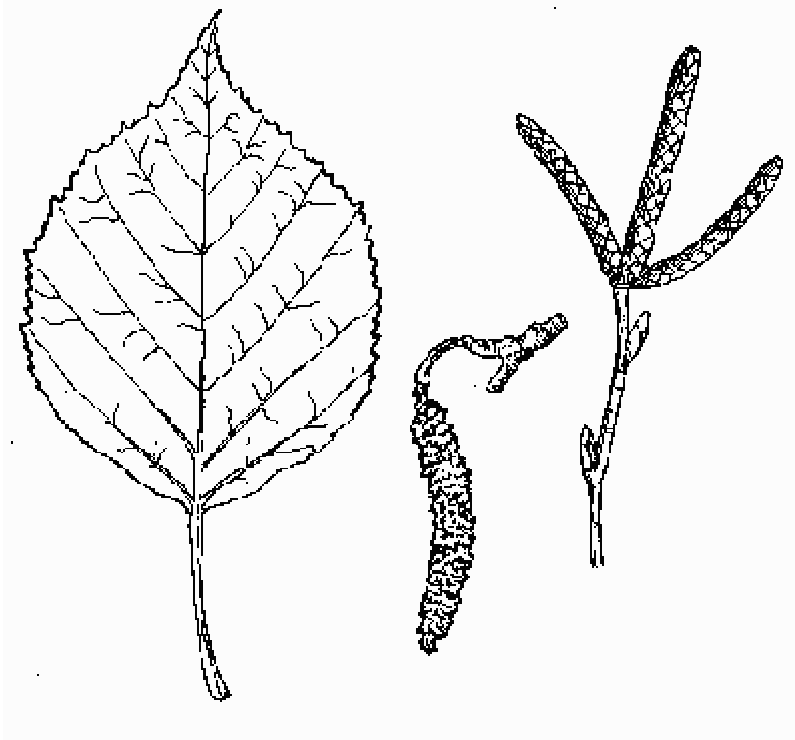
BARK: Smooth, light gray mottled with dark spots.

GENERAL: Found on moist rich soils throughout the Commonwealth but more abundant in the north. An important timber species typically reaching 50'-60' high but can be higher. The beechnuts are very important food for wildlife including bears, squirrels, turkeys, and grouse. Beech is a handsome shade tree for large open areas in parks and golf courses.

30

Paper Birch

(*Betula papyrifera* Marshall)



LEAVES: Alternate, simple 2"-3" long, 1½"-2" wide, upper surface dark green, lower surface light green, narrowed or rounded at the base, sharply toothed margins and sharp-pointed tip.

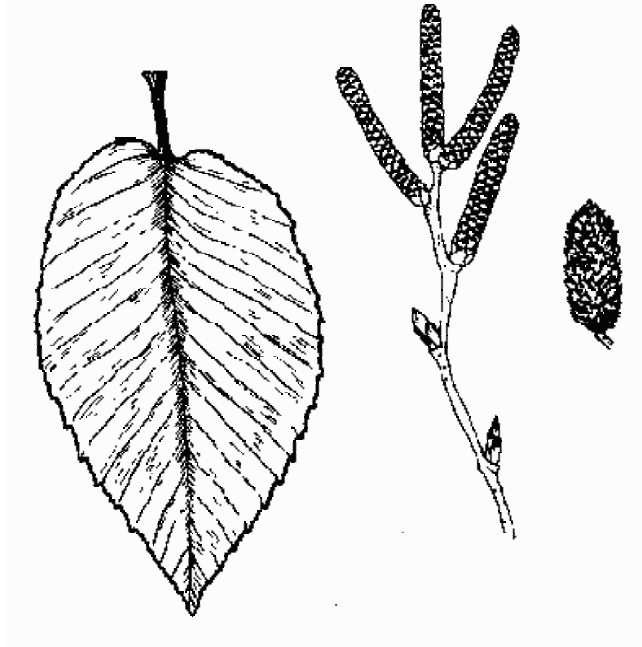
TWIGS: At first greenish and hairy, later becoming smooth reddish-brown.

FRUIT: A cylindrical, short-stalked strobile about 1½" long. The seeds are small and winged.

BARK: Trunk and older branches chalky to creamy white, marked with horizontal stripes and peeling off in thin layers. Older trunks rough and often fissured into irregular thick scales.

GENERAL: A large tree to 50'-75' high on upland woods and slopes in northcentral and northeastern Pennsylvania. Seeds and buds are eaten by the Pennsylvania state bird, the Ruffed grouse. Twigs are browsed by deer. Native Americans used the bark for constructing canoes, shelters and containers.

31
Sweet Birch
(*Betula lenta* L.)



LEAVES: Alternate, simple, about 3½" long, unevenly sawtoothed, dull green above, yellow-green beneath with some white hairs where the veins join the midrib. The leaf base is usually heart-shaped.

TWIGS: Green and somewhat downy when young, becoming reddish-brown, smooth and shiny. They have a strong wintergreen flavor and smell. Buds reddish brown, conical, sharp-pointed and shiny.

FRUIT: A very small, winged nut. As in the other birches, nuts together with small scales, form a cone-like structure, (the strobile), about 1½" long.

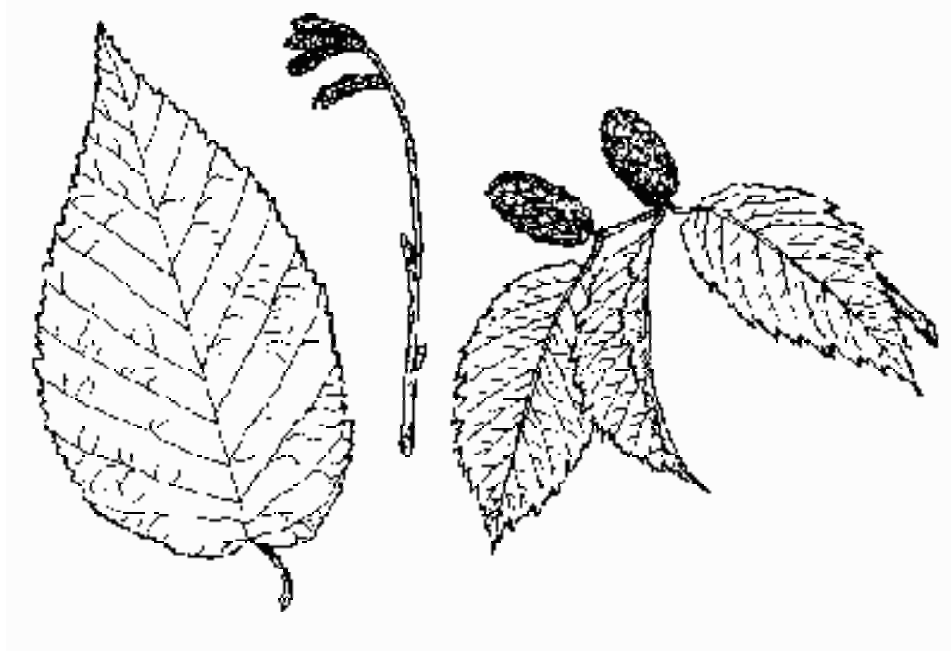
BARK: Tight, dark reddish brown on younger trees, marked with horizontal lines of pale lenticels and often resembles the bark of young Black cherry. On older trees the bark breaks into large black plates.

GENERAL: Also known as Black birch or Cherry birch, this tree normally attains heights of 50 to 60 feet and is found on a variety of sites from rich fertile lowlands to rocky ridges throughout the state. The heavy, hard, strong wood is used for furniture, boxes, and fuelwood. Distillation of the bark and twigs produces an oil sold as a substitute for wintergreen. Fermented sap can be used to make birch beer. Ruffed grouse feed on buds and seeds, deer and rabbits browse the twigs.

32

Yellow Birch

(*Betula alleghaniensis* Britt.)



LEAVES: Alternate, simple, 3"-4" long, doubly-toothed margins, dull green above, yellow-green beneath.

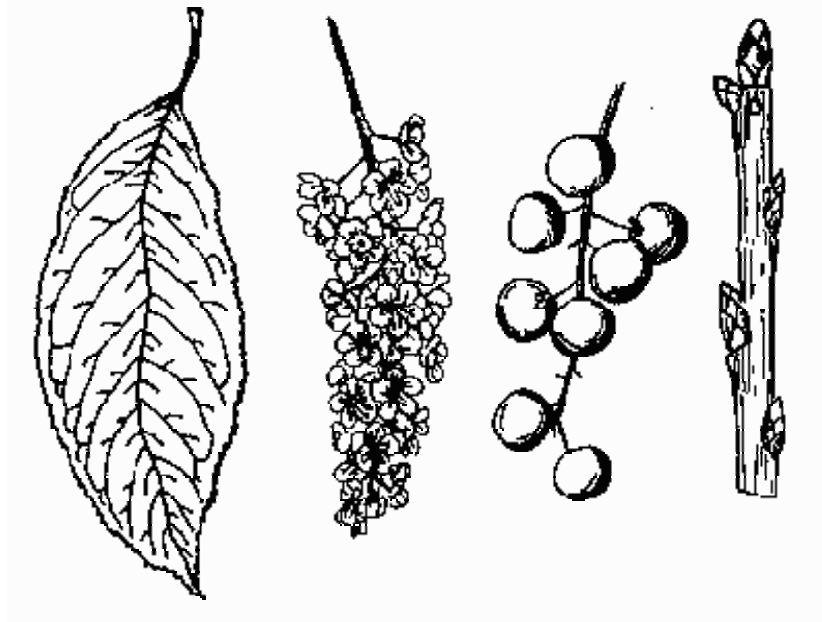
TWIGS: Green and hairy when young later brown and smooth, with only a faint wintergreen flavor and smell. Buds dull yellowish green, slightly downy.

FRUIT: An erect, very short-stalked cone, 1½" long, made up of small, winged nuts and scales.

BARK: Young stems and branches yellowish or bronze and shiny, peeling off in thin papery strips, Older trunks becoming to reddish brown and breaking into large, ragged edged plates.

GENERAL: A medium to large tree, commonly 60'-75', occasionally to 100' tall. Prefers moist, cool soils and cool summer temperatures, often found on north facing slopes and swamps. The wood is used for cabinets, furniture, flooring, and doors. It was a principal wood used for distilling wood alcohol, acetate of lime, tar, and oils. The papery shreds of bark can be stripped off in emergencies and used as a fire starter even in wet conditions. Ruffed grouse feed on buds and seeds, deer and rabbits browse the twigs.

33
Black Cherry
(*Prunus serotina* Ehrh.)



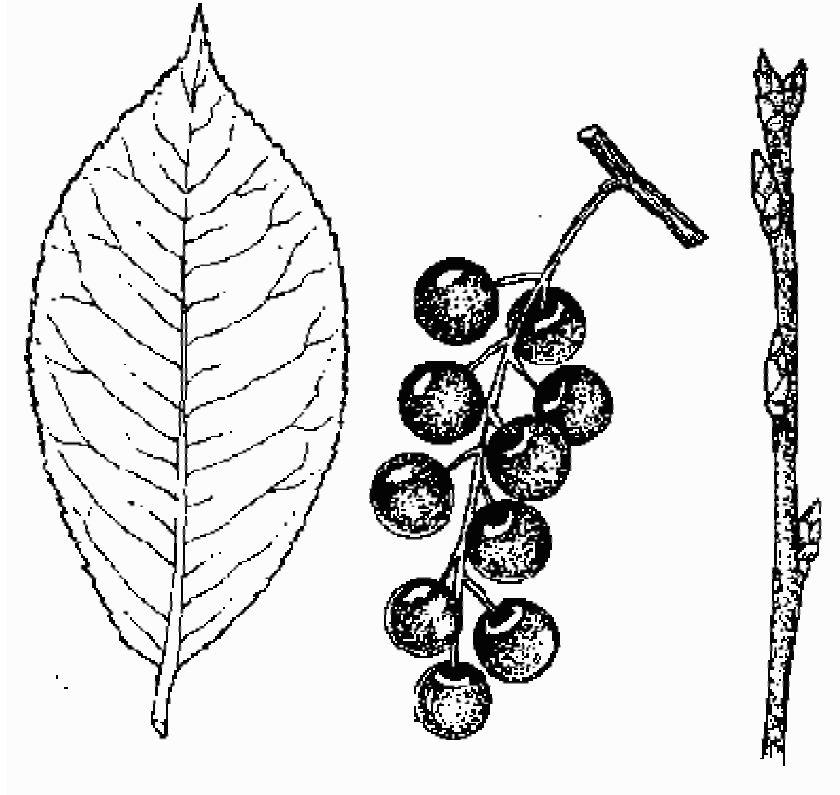
LEAVES: Alternate, simple, 2"-5" long, narrow with tapering tip, shiny above, paler below and usually with one or more small glands at the base; margins with short in-curved teeth which distinguish it from other cherries.

TWIGS: Smooth, reddish brown, marked with numerous pale, round lenticels; often covered with a thin gray coating which rubs off easily. Buds smooth, shiny, sharp-pointed, reddish brown tinged with green.

FRUIT: Round, black with a purplish tint, 1/3" -1/2" in diameter, containing a single round, stony seed. Arranged in hanging clusters. Flowers white, in June.

GENERAL: Commonly 50'-75' high, Black cherry grows throughout the State. It thrives best in fertile alluvial soil but also grows on dry slopes. The hard reddish-brown wood is highly prized for quality furniture and interior trim. Many game birds, song birds, and mammals, including black bear, eat the fruits and seeds.

34
Choke Cherry
(*Prunus virginiana* L.)



LEAVES: Alternate, simple, 2"-4" long, tapering or rounded at the base, abruptly pointed tips and sharply serrate margins, bright green above, paler beneath.

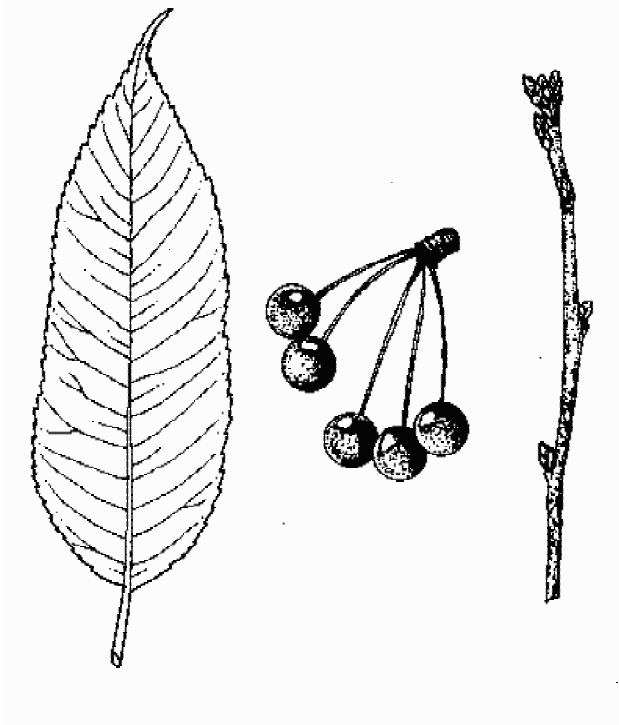
TWIGS: Stout, smooth, light brown to reddish brown, with numerous yellowish lenticels. Unlike Fire cherry, the lenticels are not evidently horizontally elongated. Bruised twigs have a disagreeable odor.

FRUIT: A juicy, dark red to black drupe, about $\frac{1}{2}$ " in diameter, in open, elongated, drooping clusters. The flavor is harsh and astringent.

BARK: Young trunks shiny, smooth, brownish, peeling off in thin film-like layers exposing the green inner bark. Older trunks dark gray, roughened by shallow fissures.

GENERAL: A fast-growing but short-lived shrub or small tree, rarely exceeding 25'. Found in a variety of open habitats, thickets, roadsides and upland woods throughout the Commonwealth, but more abundant in the western counties. One of the first species to revegetate cleared areas, it is attractive in spring flower and provides food to several dozen species of birds and mammals.

35
Fire Cherry
(*Prunus pensylvanica* L.f.)



LEAVES: Alternate, simple, 3" - 5" long, with tapering or rounded base and sharp-pointed tips, sharply toothed margins, shining green and smooth on both sides.

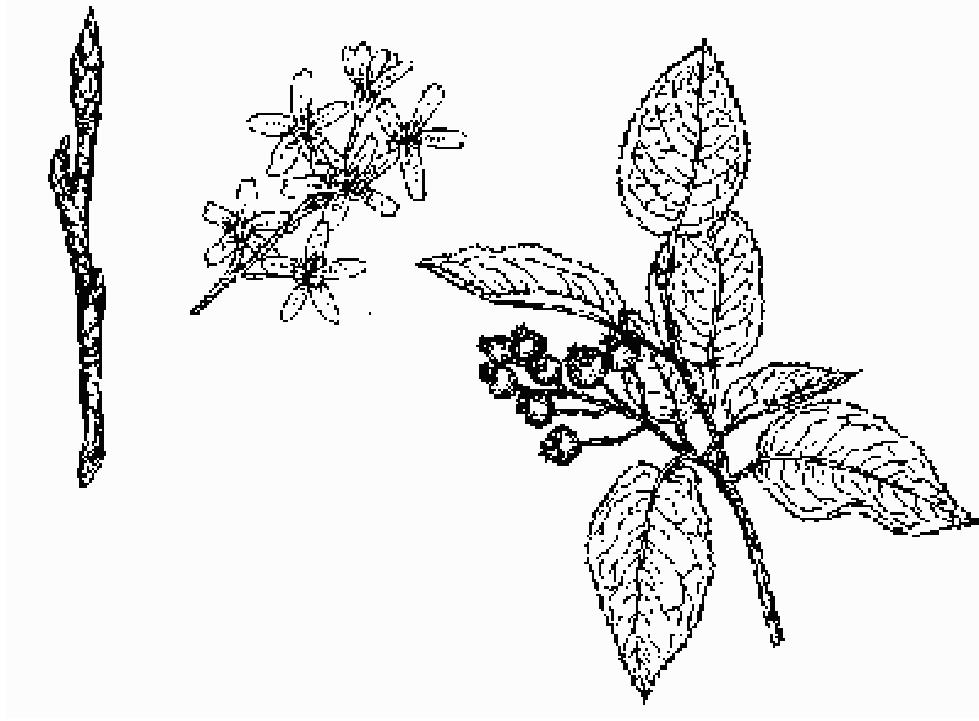
TWIGS: Slender, smooth, glossy bright red, sometimes with a thin grayish coating, marked with numerous pale conspicuous lenticels which become horizontally elongated.

FRUIT: Juicy, light red drupes $\frac{1}{4}$ " in diameter, tipped with parts of the persistent style, thin-skinned with sour flesh, maturing in early fall. Flowers in May, white, about $\frac{1}{2}$ " across, in clusters of 4 or 5.

BARK: Young trunks reddish brown, rather smooth with large horizontally elongated lenticels, older trunks roughened but not fissured. The outer bark peels off in thin film-like layers revealing green inner bark.

GENERAL: Also called pin cherry, this shrub or small tree reaches 40', the trunk usually short and branches forming a narrow flat-topped crown. Common in the mountainous sections of the state, rare in the southeast and southwest corners. A valuable reforestation species after fire or limbering clears the land. It provides shade for seedlings of other tree species which follow it in succession and the fruits are food for many birds and small mammals. Deer browse the twigs and young leaves.

36
Serviceberries
(*Amelanchier* species)



LEAVES: Alternate, simple, oval shaped, the largest 3"-4" long by 1"-2" wide, sharp-pointed tip, finely toothed margin, round or heart-shaped base.

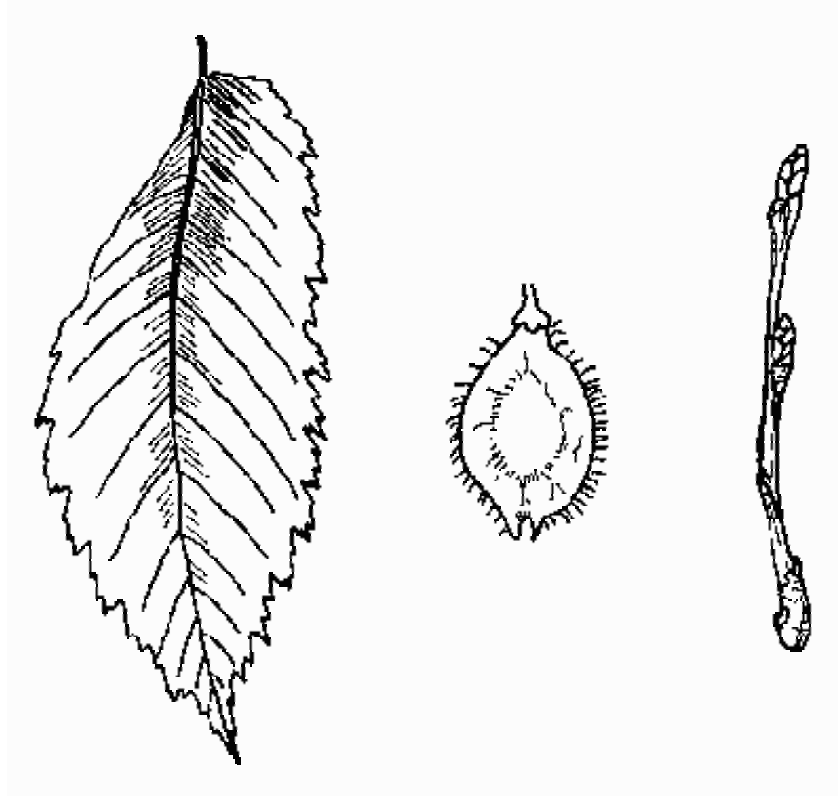
TWIGS: Red-brown to gray-brown and slender. The buds 1/4"-1/2" long, slender, sharp-pointed, greenish to reddish-brown.

FRUIT: Fleshy, sweet, dry or juicy, about 1/3" in diameter with 10 small seeds. Ripening to red-purple in June-July. The flowers 1 1/4" wide, with five white petals, in terminal clusters, about April before the leaves.

BARK: Smooth, light gray, developing shallow longitudinal fissures with age.

GENERAL: *Amelanchier arborea* and *A. laevis* are small trees, typically under 40' high. Also called Shadbush and Shadblow, names referring to their blooming as the shad ascend rivers to spawn. Showy white flowers of Serviceberry, seen through the still naked oaks, provide one of the first floral displays of spring on Pennsylvania ridges. The fruits are excellent food for birds, bears and other wildlife. Humans eat the berries fresh, or in pies, muffins or jam. Seven shrub species of Serviceberry are also found in Pennsylvania.

37
American Elm
(*Ulmus americana* L.)



LEAVES: Alternate, simple, 4"-6" long, unequal at the base, rather rough on the upper surface; usually soft-hairy below; veins prominent; margin coarsely toothed. Petiole short.

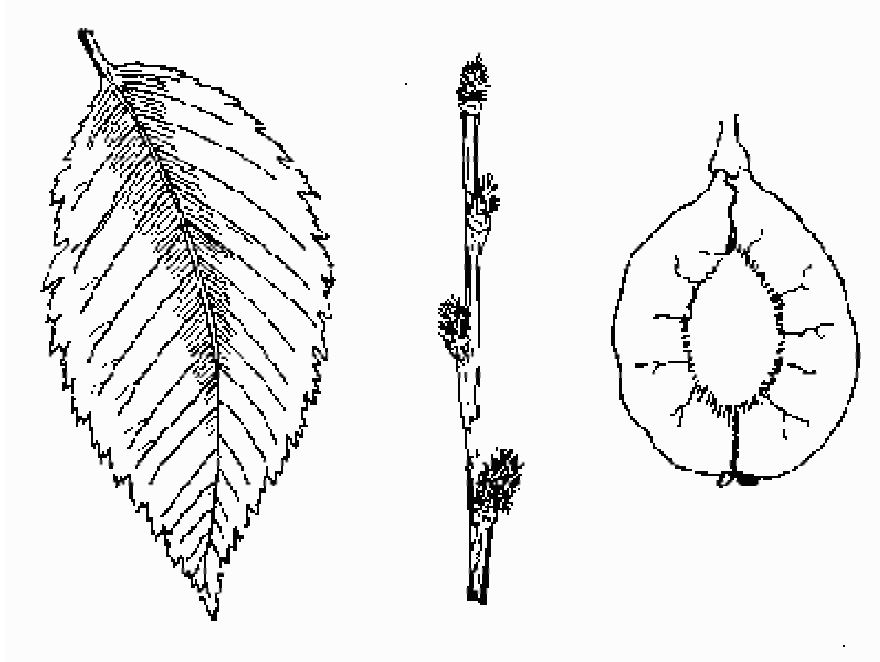
TWIGS: Slender, zigzag, brown, or slightly hairy. Leaf buds 1/8"- 1/4" long, flattened. Flower buds larger, below leaf buds. Bud scales red-brown, smooth or downy; margins dark.

FRUIT: A seed surrounded by an oval, thin papery wing, 1/2" long, deeply notched at the tip; ripening in spring and borne in clusters; wing with scattered hairs along margin. Flowers and fruit appear before the leaves, as is true of Slippery elm.

BARK: Dark gray to gray-brown with long corky ridges; separated by diamond-shaped fissures on older trees.

GENERAL: A large and highly prized shade tree. The drooping crown often gives it a vase-shaped appearance. Found locally throughout Pennsylvania, mainly on moist areas. The hard, tough wood has many uses, including the manufacture of boxes, barrels and furniture.

38
Slippery Elm
(*Ulmus rubra* Muhl.)



LEAVES: Alternate, simple, 5"-7" long; usually larger than those of American elm, rough on both sides or soft-hairy below; margin coarsely toothed. Petiole short.

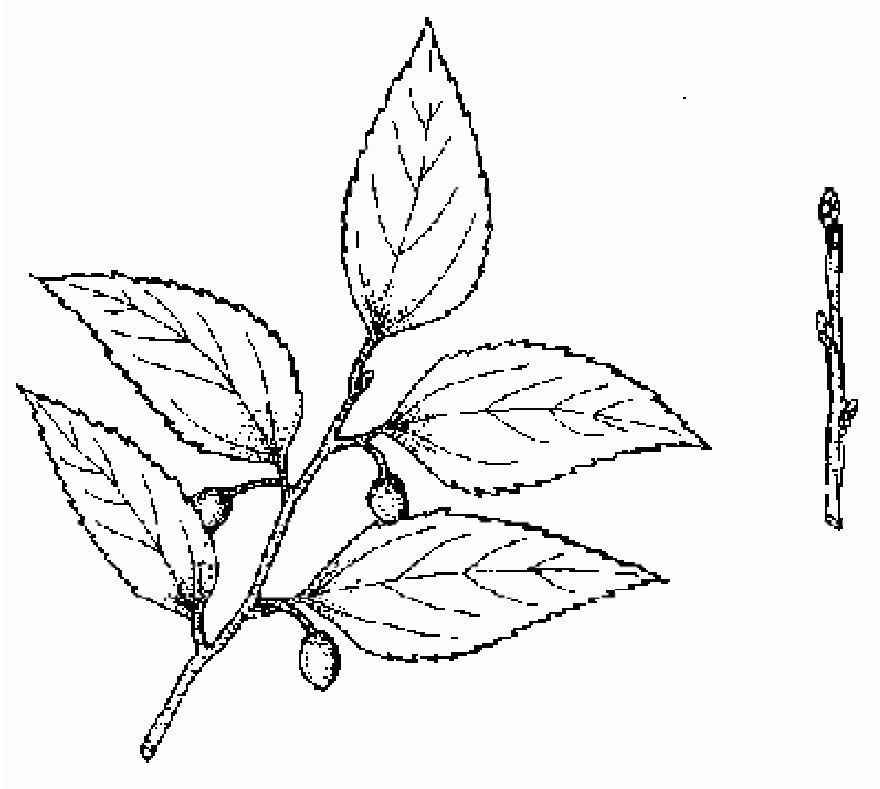
TWIGS: Stouter than on American elm, grayish and rather rough, Buds slightly larger than those of American elm, and more round (seldom flattened). Bud scales brown to almost black, rusty-haired.

FRUIT: Like that of American elm but somewhat larger, 3/4" long; wing margin not hairy and slightly notched at the tip.

BARK: Similar to American elm, but of lighter color, softer, and fissures not diamond-shaped in outline. Inner bark is sticky and fragrant.

GENERAL: A medium-sized tree usually found near streams, the crown does not droop like that of American elm. The wood is commonly marketed with American elm.

39
Common Hackberry
(*Celtis occidentalis* L.)



LEAVES: Alternate, simple, 2"-4" long, tip slender-pointed, margins toothed except near the rounded unequal base, rough upper surface, prominent veins beneath, leaf stem slightly hairy and grooved.

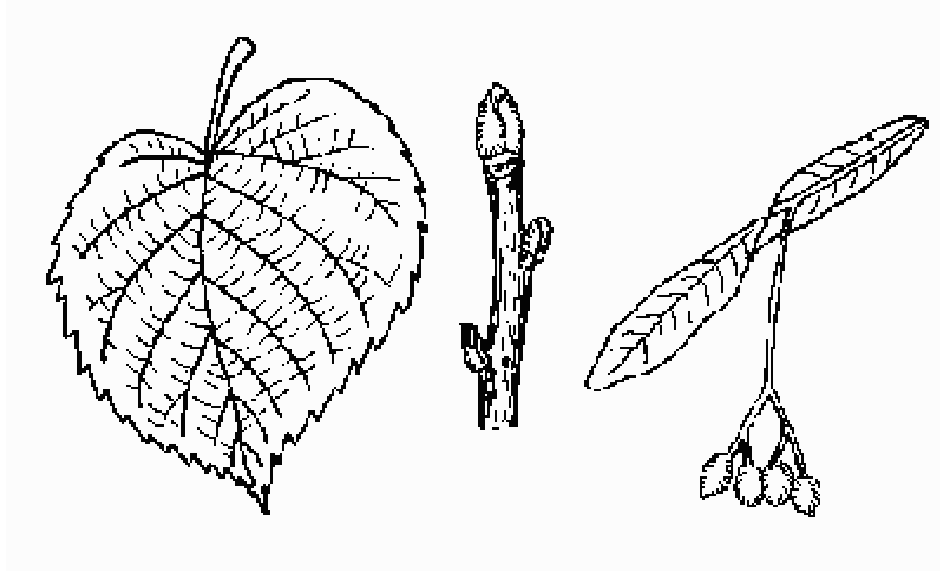
TWIGS: Slender, somewhat shiny, brownish with raised lenticels, pith white, chambered. Buds small, sharp-pointed, closely pressed to the twig.

FRUIT: Resembles a dark purple cherry, $\frac{1}{4}$ "- $\frac{1}{2}$ " in diameter on a long slender stem, sweet but thin flesh covering the pit, matures in autumn.

BARK: Grayish brown typically rough with warty projections or irregular ridges.

GENERAL: A small tree 20'-35' high, larger in southern Pennsylvania on moist limestone soils. Hackberry often displays a disease that causes clusters of short, dense branches called "witches brooms". A second, smaller species, *Celtis tenuifolia* Nutt., Dwarf Hackberry, is found on dry slopes in southeastern Pennsylvania. Fruits of both species are an important wildlife food. The wood is used for furniture, boxes and containers but not in large quantity.

40
American Linden
(*Tilia americana* L.)



LEAVES: Alternate, simple, heart-shaped, 4"-7" long, shiny, dark green above, tufts of rusty hair beneath, margins sharply toothed.

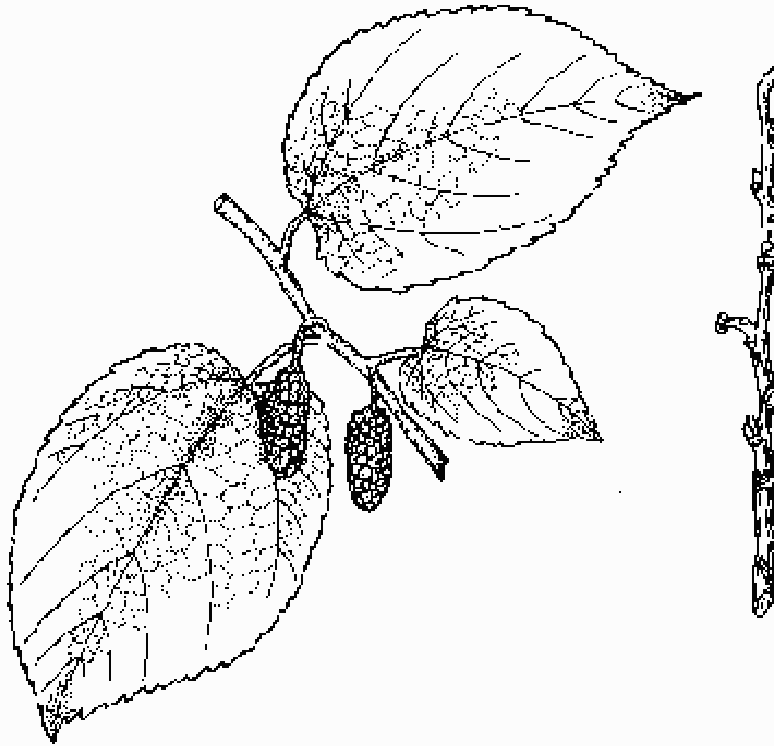
TWIGS: Green or reddish when young, turning brownish-red, usually zigzag, buds deep red to greenish usually lopsided with 2-3 visible scales.

FRUIT: Nut-like, thick-shelled, downy, about the size of a pea, borne in groups from a long stem attached to narrow modified leaf called a bract. The clustered fruit and bracts may remain on the tree until late winter. Flowers yellowish-white, fragrant.

BARK: Young trunks smooth, dark gray, breaking into narrow scaly ridges on older trees.

GENERAL: A large tree usually found in mixture with other hardwoods on moist, rich valley soils. Wood used for a variety of products including boxes venetian blinds, sashes, doors, picture frames and furniture. Also called Basswood.

41
Red Mulberry
(*Morus rubra* L.)



LEAVES: Alternate, simple, most often heart-shaped but sometimes lobed, 3"-5" long, rough on the upper surface; margins toothed.

TWIGS: Stout, smooth, glossy, slightly zigzag, greenish-brown tinged with red; enlarged at the nodes. A milky juice is excreted from cuts.

FRUIT: An aggregate fruit, about 1" long, composed of many small drupes, appears in July. First green, later red and finally dark-purple.

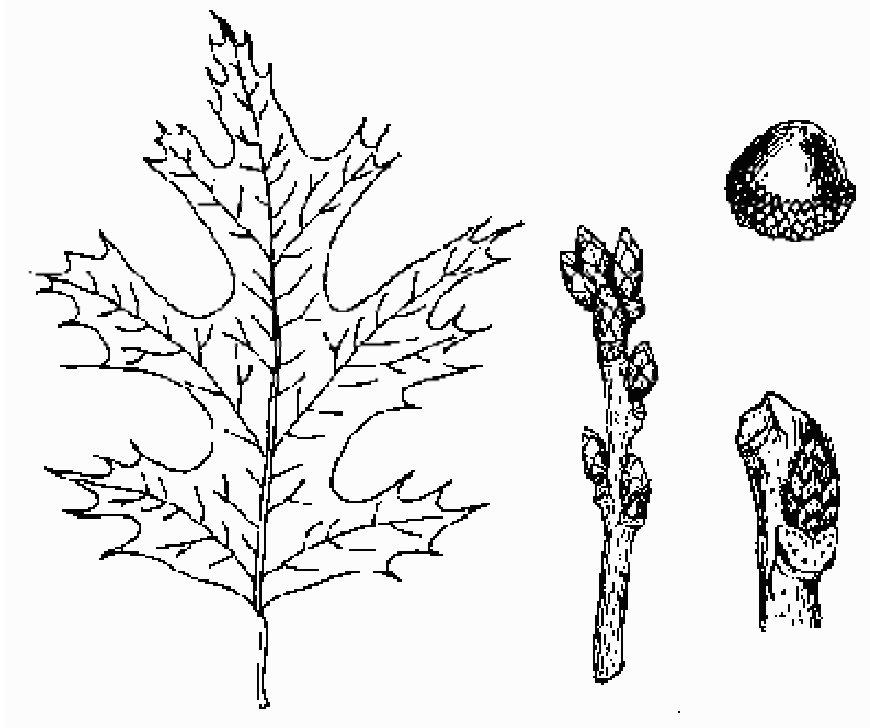
BARK: Dark grayish-brown, after 3 years roughed by longitudinal and diagonal splits and peeling in long, narrow flakes.

GENERAL: Typically found in rich, moist alluvial soils and lower slopes, attaining a height of 35'-50' and 12"-18" in diameter. The fruits are eaten by many birds, animals and people. The wood is durable in contact with the soil and has been used for fenceposts. An attractive ornamental, it should only be planted in large spaces because of its spreading growth form.

42

Black Oak

(*Quercus velutina* Lam.)



LEAVES: Alternate, simple, 4"-8" long, 3"-5" wide; each has 5-7 pointed, bristle-tipped lobes, sinuses between the lobes go halfway to the mid-rib on lower leaves, deeper on top leaves; smooth and shiny above and usually covered with a rust-brown fuzz below.

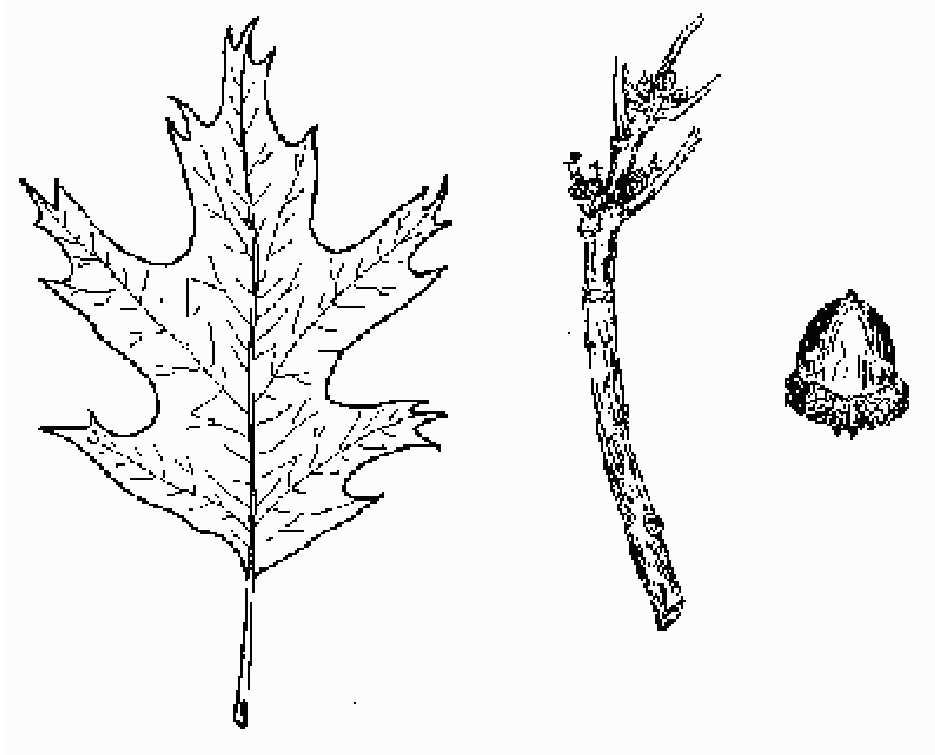
TWIGS: Reddish brown, usually fuzzy. Buds blunt pointed, ridged, yellow-grey, wooly.

FRUIT: An acorn, ½"-1" long, somewhat round, light brown. The acorn-cup is bowl-like with wooly hairs, covering 1/2 or more of the nut; cup-scales sharp-pointed, forming a loose fringe at the rim. Black oak acorns need two growing-seasons to ripen; kernels are yellow and extremely bitter.

BARK: Smooth and dark brown for many years, older trunks are dull black, furrowed, furrows forming irregular blocks; inner bark orange to orange-yellow.

GENERAL: A relatively fast-growing tree to 75' high, one of the most common oaks on dry, upland sites. The acorns are eaten by wildlife, but not preferred; the young stems and twigs are browsed by deer. A yellow dye can be made from the bark. The wood is lumped with other oak species and sold as red oak for general construction lumber and furniture.

43
Northern Red Oak
(*Quercus rubra* L.)



LEAVES: Alternate, simple, 4"-9" long, to 6" wide, with 7-11 bristle-tipped lobes, sinuses between lobes extend half-way to the mid-rib. Smooth, dull green above, paler with small tufts of reddish-brown hair in vein-axils beneath.

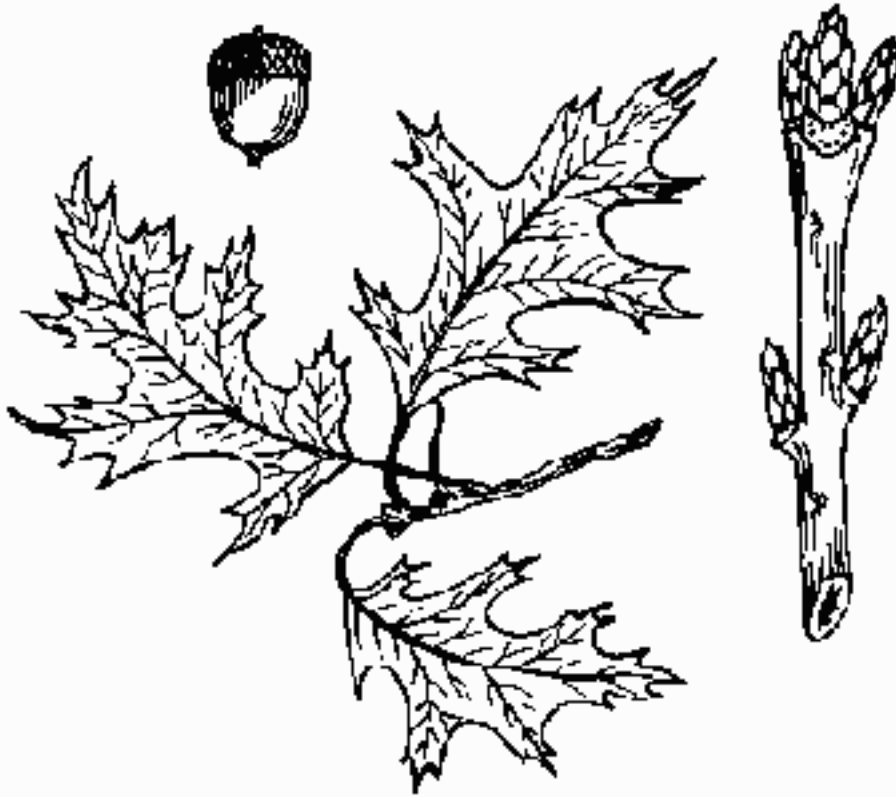
TWIGS: Greenish brown to reddish brown, smooth when mature. Buds pointed, light brown, smooth.

FRUIT: An acorn, $\frac{3}{4}$ " to $1\frac{1}{4}$ " long; the cup shallow, saucer shaped, covering $\frac{1}{4}$ of the nut, cup-scales reddish-brown, narrow, tight, sometimes fuzzy on the edges. The acorns need two growing-seasons to ripen; the kernel is bitter.

BARK: Smooth and greenish-brown or grey, maturing to dark grey or nearly black and is divided into rounded ridges.

GENERAL: A dominant forest tree throughout the state growing to 90' in moist to dry soils. Deer, bear, and many other mammals and birds eat the acorns. It is often planted as a shade tree. The hard strong wood is used for furniture, flooring, millwork, railroad ties and veneer. The "red oak group" includes all oaks with bristle-tipped leaves and acorns ripening over two seasons.

Pin Oak

(Quercus palustris Muenchh.)

LEAVES: Alternate, simple, 4"-6" long. to 4" wide, with 5-7 narrow, bristle-tipped lobes, sinuses between the lobes deep (over half-way to the mid-rib) and rounded at the base; leaf surfaces smooth, shining above and paler below with tufts of hairs in the vein-axils.

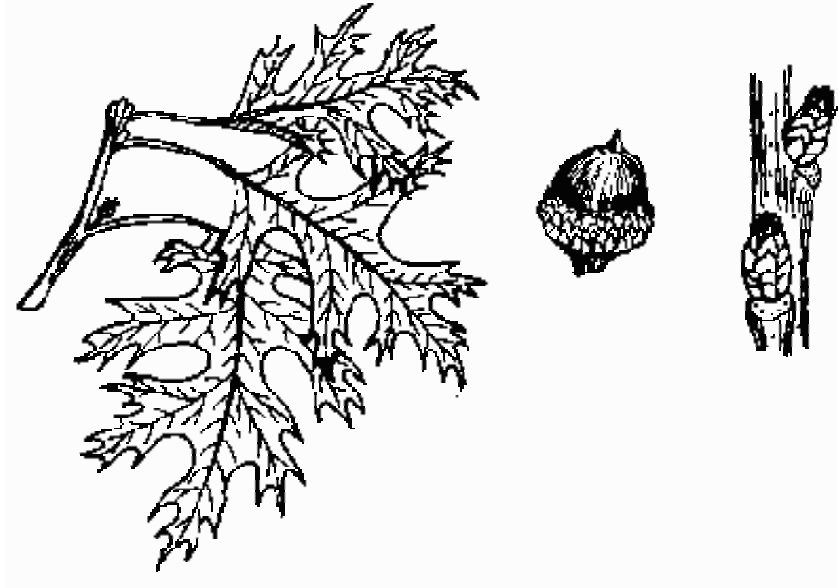
TWIGS: Dark brown-red, shiny, slender, often thorn-like sides shoots which give this species its popular name. Buds smooth, reddish brown. Lower branches grow at a descending angle, middle branches are horizontal, the upper ascending.

FRUIT: An acorn, round about $\frac{1}{2}$ " in diameter, light brown, often striped with dark lines. Acorn-cup thin, saucer-shaped, enclosing about $\frac{1}{3}$ of the nut; cup scales tight, with a dark margin. Ripens in two seasons.

BARK: Light gray-brown, smooth for many years, old trunks with shallow fissures and narrow flat ridges.

GENERAL: Wild Pin oaks are typically found in wet sites growing to 60' high. It is often planted as a street tree because of its beautiful form and ability to withstand the low oxygen content of urban soils. The acorns are valuable wildlife food for wetland birds and mammals. The wood is not as valuable as other oaks because in drying, it tends to warp and split.

45
Scarlet Oak
(*Quercus coccinea* Muenchh.)



LEAVES: Alternate, simple, 3"-6" long, with 7-9 narrow, bristle-tipped lobes, sinuses between the lobes go almost to the mid-rib. Shiny bright green above, paler and smooth beneath except for small tufts of hair in vein-axils; named for its scarlet autumn color.

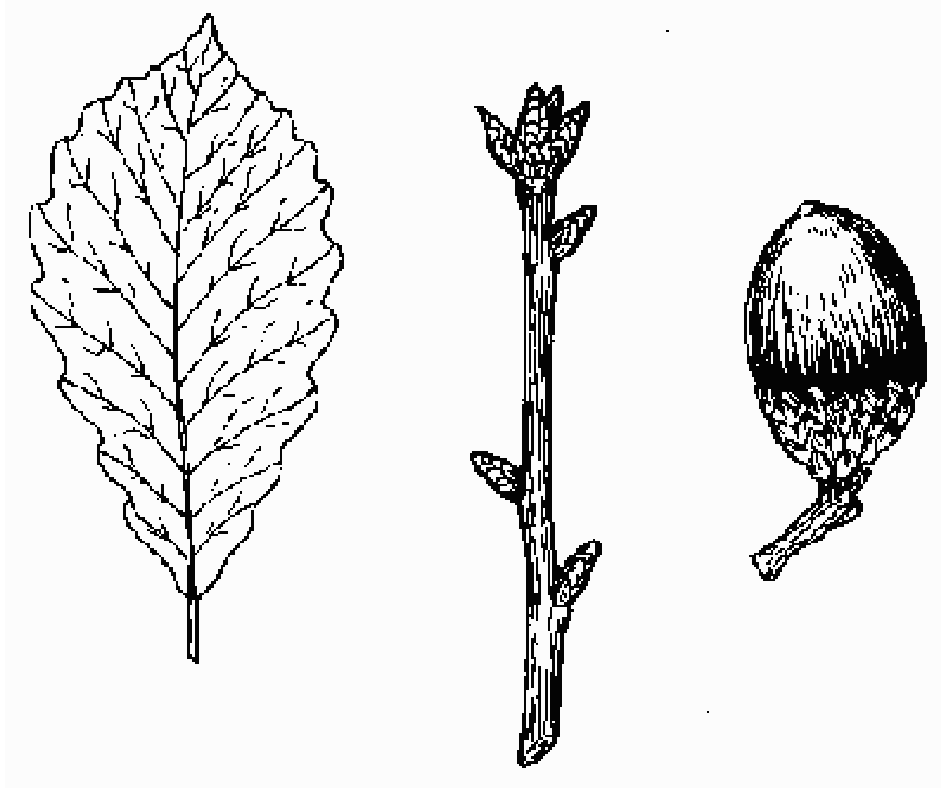
TWIGS: Reddish brown, smooth when mature. Buds blunt pointed, to 1/4" long, upper half wooly.

FRUIT: An acorn, to 1" long, oval, light brown; kernel white and bitter, ripening over two growing seasons. Cup bowl-like, covering 1/2" of the nut; cup scales sharp pointed, smooth and tight.

BARK: Smooth and light brown for many years, older trunks are ridged, darker; inner bark reddish.

GENERAL: A medium to large sized tree to 75', of dry upland sites and many parks and streets. Drooping dead lower branches persist on the tree for many years. The acorns are important food for many mammals and larger birds. Fungus often infects Scarlet oaks as they reach medium size, rotting the wood.

46
Chestnut Oak
(*Quercus montana* Willd.)



LEAVES: Alternate, simple, 5"-9" long, to 3" wide; with course, rounded teeth. Dark green and smooth above, paler and occasionally downy beneath.

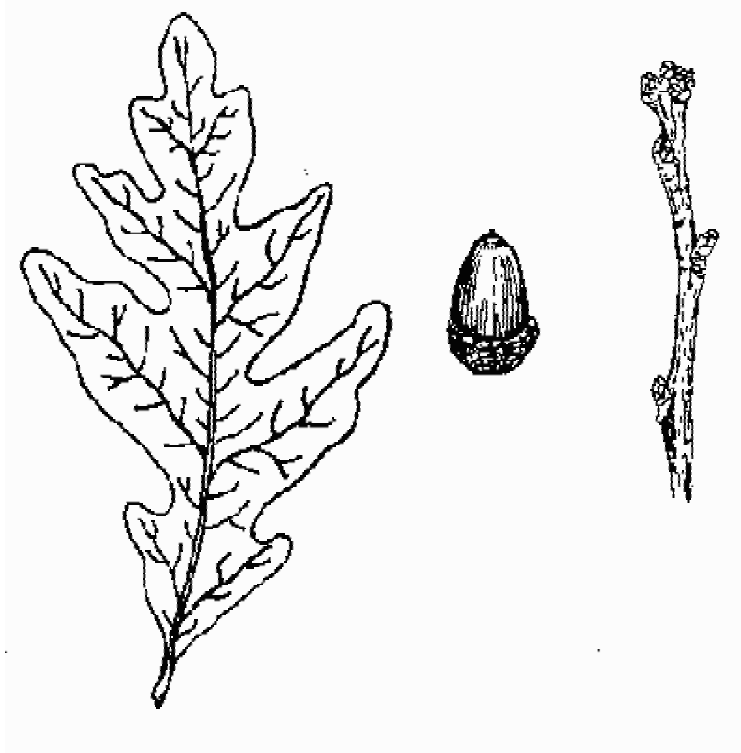
TWIGS: Smooth, orange-brown to reddish-brown. Buds light brown, sharp pointed, edges of scales hairy, ¼ to ½" long.

FRUIT: An acorn, 1 to 1½" long; rich dark brown, shiny. Cup thin, hairy inside, enclosing 1/3-1/2 of the nut; cup scales knobby. Fruit ripens in one growing season with kernels moderately sweet.

BARK: Grey and smooth on young trees, later brownish gray to dark gray, thick, tough, deep-fissured.

GENERAL: Also called Rock oak and Basket oak this tree grows to 80' on dry slopes and ridgetops throughout Pennsylvania. Large crops of acorns produced every 4-7 years are important food for deer, bear, turkey and many other birds and animals. The bark is very rich in tannin and the wood heavy and strong. It is used for furniture, flooring, millwork, and railroad ties.

47
White Oak
(*Quercus alba* L.)



LEAVES: Alternate, simple, 6"-9" long, and 4" wide, with 6-10 rounded lobes; bright green above, paler below, both surfaces smooth on mature leaves.

TWIGS: Red-grey, often with a grayish coating. Buds rounded, reddish-brown, smooth, to 1/8" long; end buds clustered.

FRUIT: An acorn, 3/4-1" long, light brown, cup bowl like, hairy inside, enclosing 1/4 of the nut; cup scales warty at the base. Acorn ripens in September after one season.

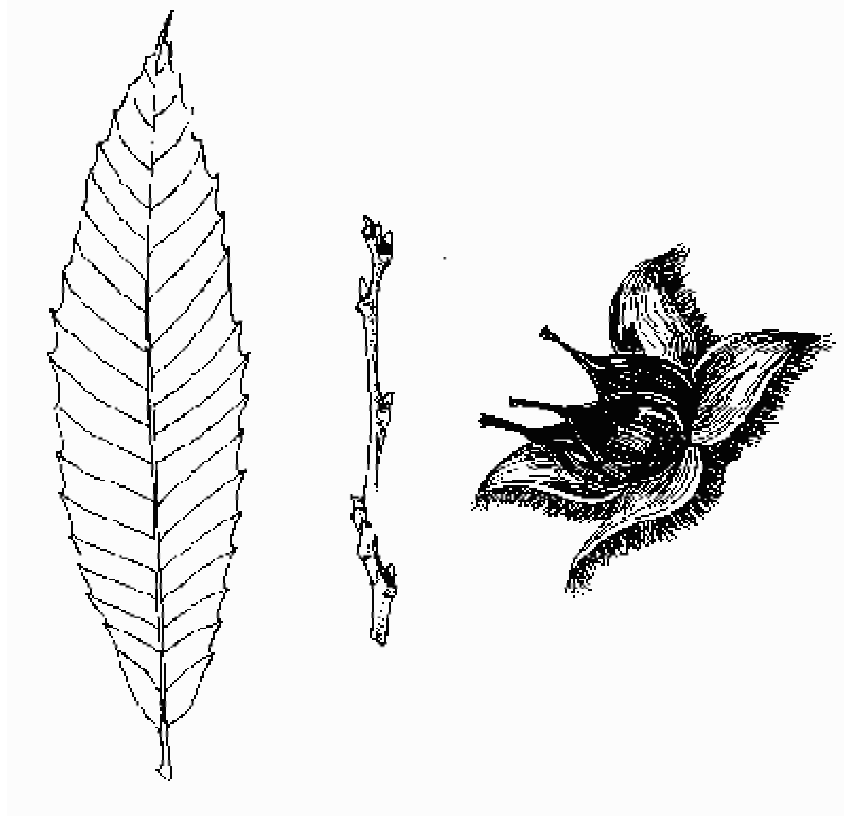
BARK: Pale grey, scaly, not deeply fissured, often flaky.

GENERAL: A dominant forest tree on dry to moist sites throughout the Commonwealth usually reaching 80'-100' high. This tree is very important to both wildlife and people. The acorn is an important wildlife food and eastern Native Americans made a flour from these acorns. Traditional uses of White oak wood include hardwood flooring, whiskey barrels and boat building. The famous Revolutionary War frigate, USS Constitution, "Old Ironsides", was made of White oak. The "white oak group" includes all oaks without bristle-tipped lobes and acorns that ripen in one season.

48

American Chestnut

(*Castanea dentata* (Marshall) Borkhaussen)



LEAVES: Alternate, simple, sharp-pointed at the tip and toothed on the margins; smooth on both upper and lower sides, 6"-11" long.

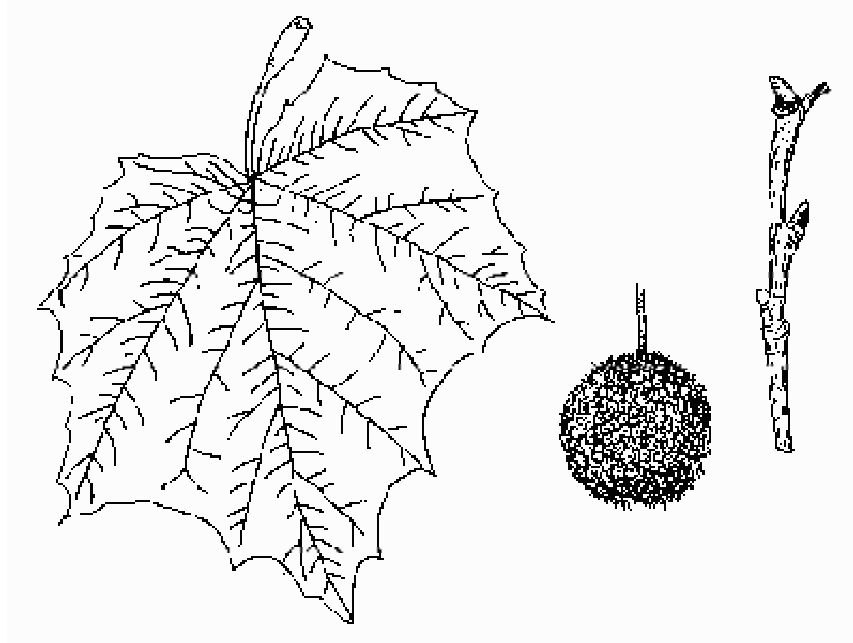
TWIGS: Stout smooth greenish to brown, with numerous small, white, raised lenticels.

FRUIT: A prickly bur 2"-3" across, containing 2-3 nuts. Nuts, flattened on one side, are shiny brown, sweet and edible.

BARK: Dark brown and thick with shallow irregular furrows separating broad flat ridges.

GENERAL: Formerly the most common and arguably the most valuable tree in Pennsylvania for both its wood and nuts. It now persists as stump sprouts and small trees due to the bark disease commonly called chestnut blight. Chinese chestnut, (*Castanea mollissima* Blume) is planted for its 1" nuts. Its leaves are shorter, up to 6" long and pubescent beneath. Chinese chestnut is resistant to chestnut blight and breeding programs designed to bring this resistance into American chestnut are underway.

49
Sycamore
(*Platanus occidentalis* L.)



LEAVES: Alternate, simple, 3-5 lobed, 4"-7" across, generally wider than long, light green above, paler and wooly beneath, petiole hollow at the base, enclosing next year's bud.

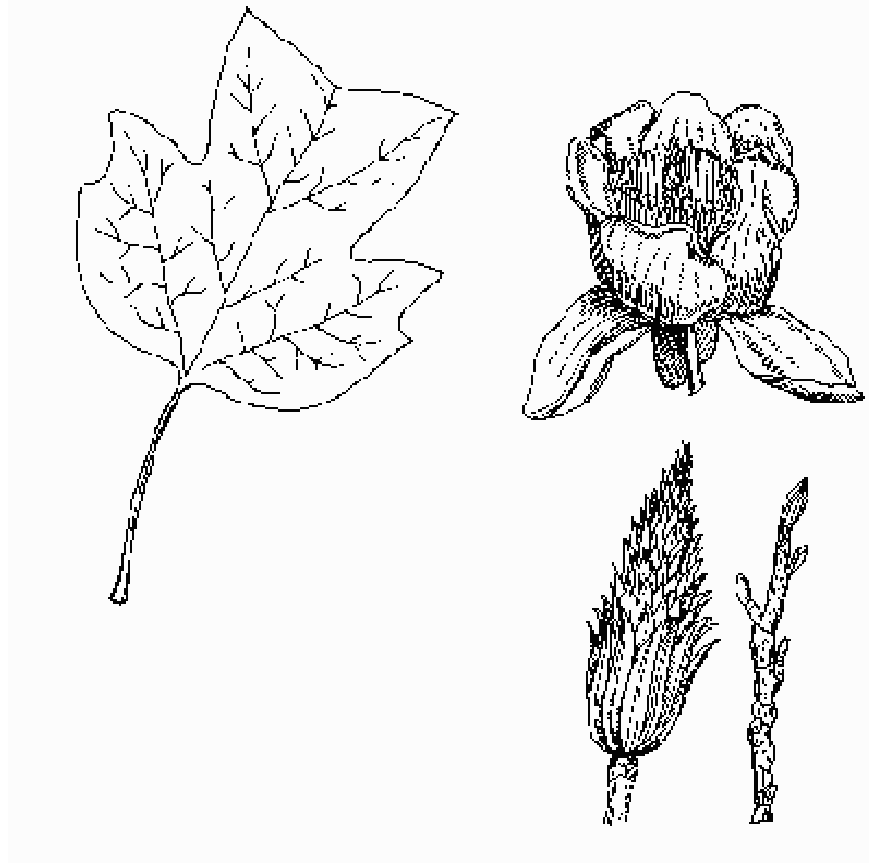
TWIGS: At first green and hairy, later brownish, smooth, zigzag, buds cone-like with a single, smooth reddish brown scale.

FRUIT: A round, light brown ball 1"-1¼" in diameter, made up of many seeds surrounded by silky hairs, hanging singly or in pairs by a tough, slender stalk throughout the winter.

BARK: Consists of two layers, the outer peeling in brown flakes, the inner whitish, yellowish or greenish, the base of old trunks dark brown and fissured.

GENERAL: Large, massive trees typically found on streambanks and floodplains attaining heights of 70'-125' or more. Also called Buttonwood or American planetree, the wood is used for furniture, butcher blocks and flooring. The London planetree, *P. x acerifolia* Willd., with 2-4 fruits per stalk, is commonly planted as a shade tree in urban areas.

50
Tulip Tree
(*Liriodendron tulipifera* L.)



LEAVES: Alternate, simple, 4"-6" in diameter, generally 4 lobed, bright green, turning yellow in autumn.

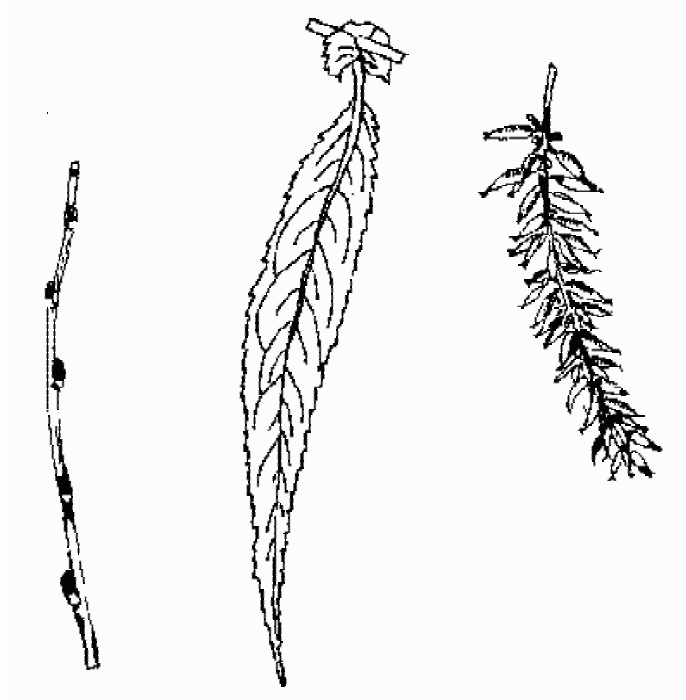
TWIGS: In spring and summer, green, sometimes with purplish tinge; during winter reddish brown, smooth, shiny. Buds large, smooth, flattened, "duck-billed."

FRUIT: At first green, turning light brown when ripe in autumn; cone-like, 2½"-3" long, made up of winged seeds. Greenish yellow tulip-like flowers in May or June.

BARK: Young trees dark green and smooth with whitish vertical streaks, older trunks dark gray and furrowed.

GENERAL: Also known as Yellow poplar, Tulip poplar, White poplar and Whitewood. A large tree, the tallest of the eastern hardwoods. It grows rapidly and is an important timber and shade tree. The wood is valuable for veneer and many other uses. Songbirds and game birds, rabbits, squirrels and mice feed on the seeds. Whitetail deer browse the young growth.

51
Black Willow
(*Salix nigra* Marshall)



LEAVES: Alternate, simple, narrowly lance-shaped, very long-pointed, tapered or rounded at the base, finely toothed margins, smooth dark green above, pale green below. Conspicuous stipules (small leafy parts at the base of the leaf-stalk) surround the twig.

TWIGS: Slender, smooth and brittle, drooping, bright reddish-brown to orange.

FRUIT: Small reddish-brown capsules, ¼" long, in a long hanging cluster, each containing many tiny seeds. Each seed covered by a dense tuft of long, silky hairs.

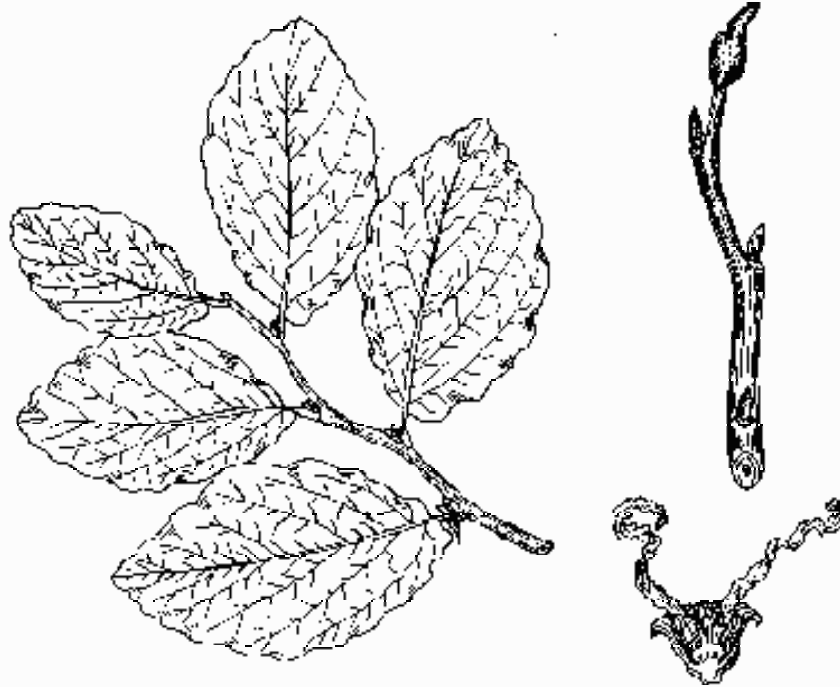
BARK: Thick, rough, deeply furrowed, blackish-brown, with wide ridges and thick plates.

GENERAL: The largest of our native willows, typically reaching 30' in height. Found on streambanks and in wet meadows throughout Pennsylvania, it is most common in the east and south. Black willow wood is used in wickerwork and the bark contains medicinal compounds. Deer browse Black willow shoots. Weeping willow, (*Salix babylonica* L.), is a commonly cultivated species originally from China.

52

Witch Hazel

(*Hamamelis virginiana* L.)



LEAVES: Alternate, simple, oval, 4"-6" long, rounded to acute at the tips, oblique at the base; margins dentate; dark green above, paler beneath midrib and primary veins prominent.

TWIGS: Zigzag, light-brown with small light green pith, rather slender, often downy or scaly especially near the end, but sometimes smooth and shiny, with a few scattered, white lenticels.

FRUIT: A yellowish-brown woody pod holding two shiny black seeds, ripens in October-November of the year following fertilization, at the same time as the current year's blossoms appear. Flowers with bright yellow strap-shaped petals. Ripe pods burst open throwing the seed five feet or more.

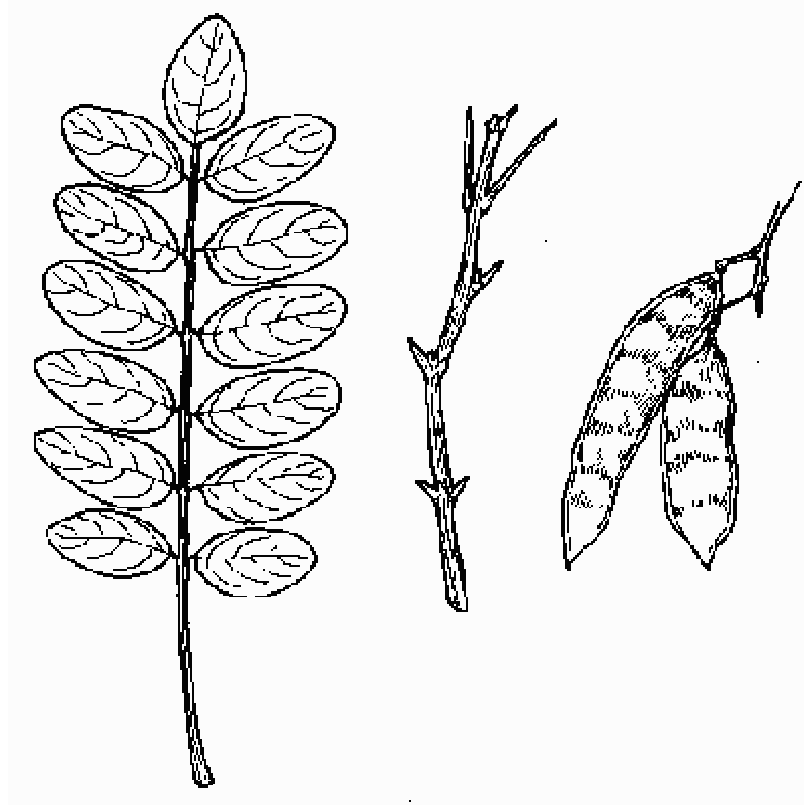
BARK: Light brown somewhat mottled, when young smooth, later scaly. Inner bark reddish purple.

GENERAL: A small tree or large shrub, to 25' high, tolerant of shade. Found in moist, rocky locations throughout the Commonwealth, occasionally ascending slopes to rather dry sites. A medicinal extract is distilled from the bark.

53

Black Locust

(*Robinia pseudoacacia* L.)



LEAVES: Alternate, compound, 7-19 oval leaflets 1"-2" long, margins smooth.

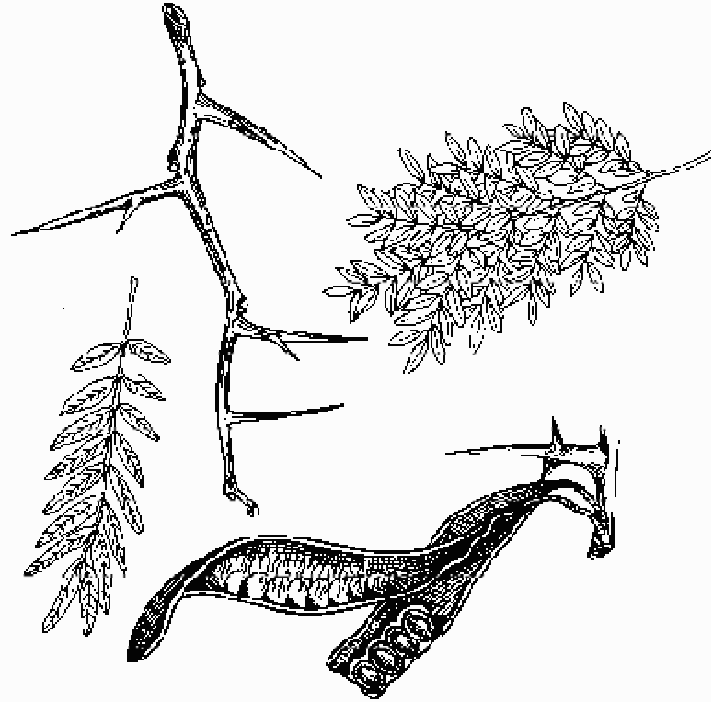
TWIGS: Angled, somewhat zigzag, brittle, with short stout prickles; no end bud, side buds small and hidden in winter.

FRUIT: A thin, flat pod, 2"-4" long; usually with 4-8 seeds; splits into halves when ripe. Flowers white, showy, very fragrant in drooping clusters, appearing in May and June.

BARK: Reddish brown, rough, furrowed, thick.

GENERAL: A medium-sized tree to 45' high, found in open woods, floodplains, thickets and fencerows throughout the State. Wood is durable in contact with the soil and in demand for posts, poles, railroad ties, and mine timbers. Unfortunately, several insects and wood rots cause heavy damage, especially to trees on poor soils. Squirrels eat the seeds and bees make honey from the nectar of locust flowers.

54
Common Honeylocust
(*Gleditsia triacanthos* L.)



LEAVES: Alternate, once and twice compound, 7"-8" long, having even numbers of 1" long leaflets with fine-toothed margins, petiole grooved above and somewhat hairy.

TWIGS: Moderately stout, shiny, smooth, reddish to greenish brown, commonly mottled or streaked, and often with long, branched, sharp thorns. Twigs have no end buds and very small side buds.

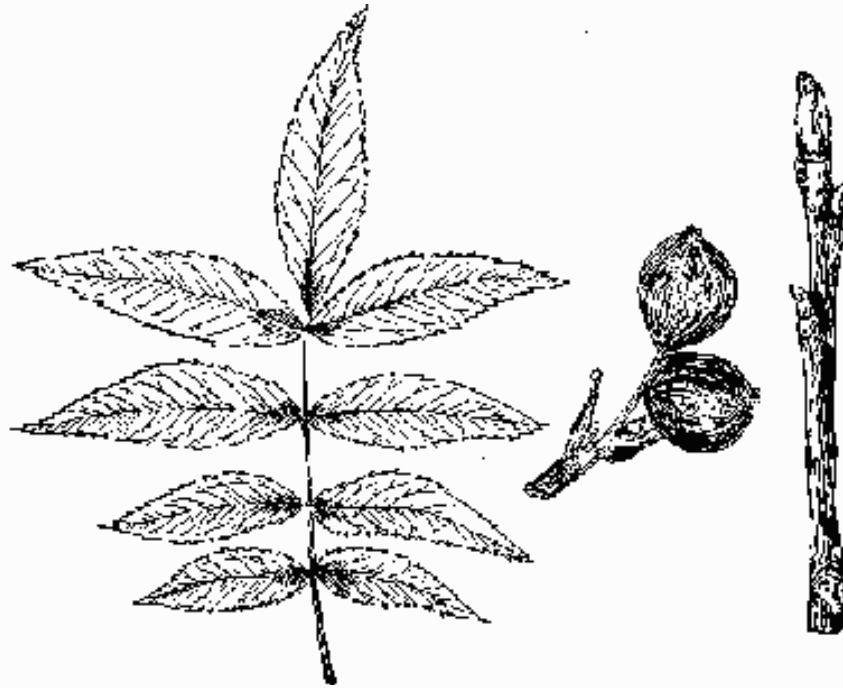
FRUIT: A leathery pod, 10"-18" long, flat, often twisted with numerous very hard, dark brown, oval seeds. Pods contain a sweetish, gummy pulp.

BARK: Greenish brown with many long raised, horizontal lines of lenticels on younger trees, becoming brown to nearly black with long, narrow, scaly ridges separated by deep fissures and often covered with clusters of large, branched thorns.

GENERAL: Medium sized, commonly 40'-50' but can reach 140' high. Found naturally on rich, moist bottomlands in southwestern Pennsylvania, but widely planted as an ornamental throughout. A thornless variety with clear yellow fall color has been developed for the nursery trade. The strong, hard wood is used for fence posts and general construction, but it is not widely available. Many animals, including cattle, feed on the pods and seedlings.

55

Bitternut Hickory
(*Carya cordiformis* (Wang.) K.Koch)



LEAVES: Alternate, compound, 6"-10" long, divided into 7-11 lance-shaped leaflets, bright green and smooth above, paler and somewhat downy beneath, margins finely to coarsely toothed.

TWIGS: Slender smooth, glossy, orange-brown to grayish with numerous pale lenticels. Buds covered by 4 sulphur-yellow, gland-dotted outer scales. End buds flattened, $\frac{3}{4}$ " long.

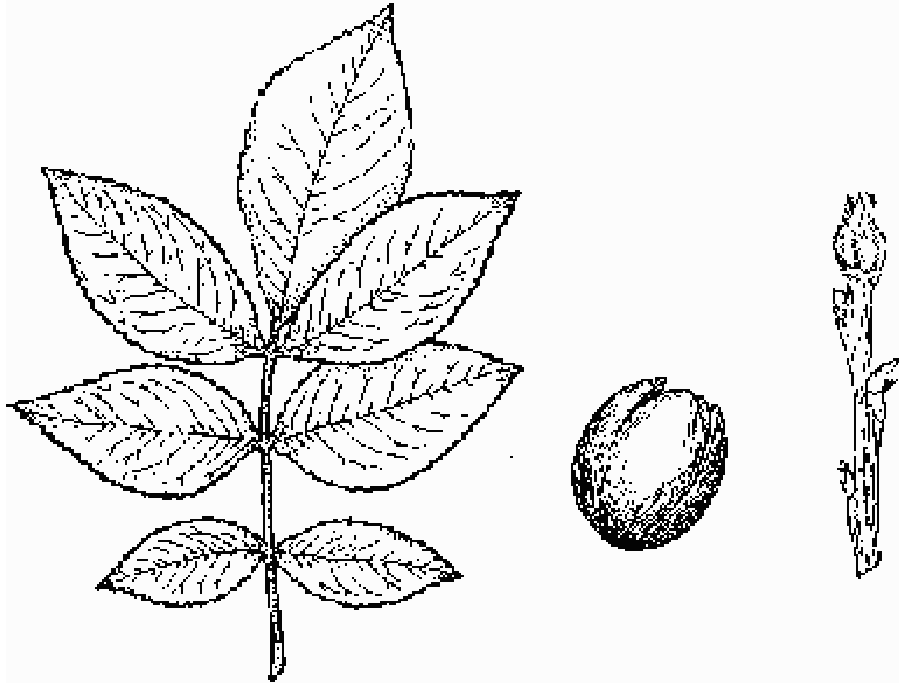
FRUIT: Nearly round, $\frac{3}{4}$ "-1 $\frac{1}{2}$ " in diameter with a thin, yellowish gland-dotted husk, which splits into 4 sections almost to the middle when ripe. The ridgeless reddish brown to gray brown nut has a thin shell protecting a bitter kernel.

BARK: The tight gray bark remains rather smooth for many years eventually developing shallow furrows and low, narrow interlacing ridges.

GENERAL: Bitternut hickory normally attains heights of 60'- 70' when growing on moist, fertile bottomland soils but it can also be found on well-drained uplands throughout the state. The wood of this species is somewhat more brittle than other hickories and the nuts are too bitter to eat. Bitternut hickory is reported to be the best wood for smoking ham and bacon, giving a rich "hickory smoked" flavor.

56

Mockernut Hickory
(*Carya tomentosa* (Lam.ex Poir.) Nutt.)



LEAVES: Alternate, compound, 8"-12" long with 7 to 9 leaflets, margins toothed, dark yellowish green above, brownish beneath with golden glandular dots, leaves very fragrant when crushed, the leaf stems finely hairy.

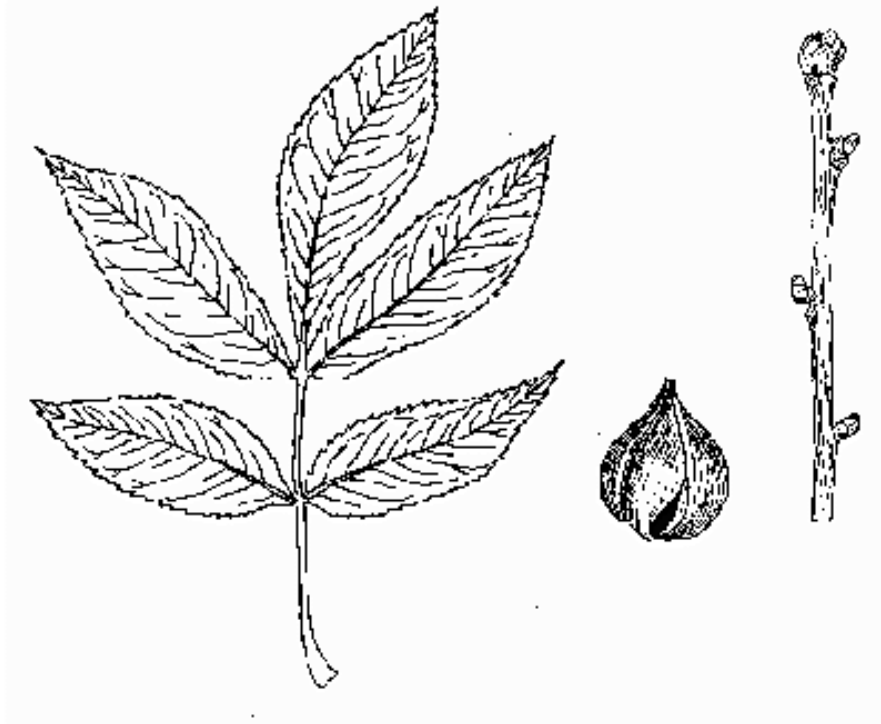
TWIGS: Stout and hairy, reddish brown to brownish gray with numerous pale lenticels and distinct three-lobed leaf scars. Buds large, with 3 to 5 yellowish brown, densely hairy outer scales, end buds $\frac{1}{2}$ " to $\frac{3}{4}$ " long.

FRUIT: Nearly round to egg-shaped, $1\frac{1}{2}$ "-2" long, with a thick husk which splits into 4 pieces when ripe. The slightly ridged, thick shelled nut is reddish brown with a sweet kernel. Flowers in catkins, about May when the leaves are half-developed.

BARK: The gray to dark gray bark is tight when young and becomes shallowly fissured as the tree ages.

GENERAL: Mockernut hickory is so named because the nuts are large but with thick shells and very small kernels. Found in moist open woods and slopes mostly in the southern part of the state, it usually reaches 50'-75' high. A black dye can be extracted from the bark by boiling it in vinegar solution. As with other hickories, the wood is heavy, hard, and strong and used for tool handles and furniture.

57
Pignut Hickory
(*Carya glabra* (P.Mill.) Sweet)



LEAVES: Alternate, compound, 8"-12" long usually divided into 5 toothed, lance-shaped leaflets. The leaf is smooth on both surfaces, dark yellowish green above and paler beneath.

TWIGS: Slender and usually smooth, reddish brown with numerous pale lenticels. Buds reddish brown to gray, blunt pointed, with 6 outer scales which fall off during winter exposing the grayish downy inner scales. End buds $\frac{1}{4}$ " to $\frac{1}{2}$ " long, smallest of our native hickories..

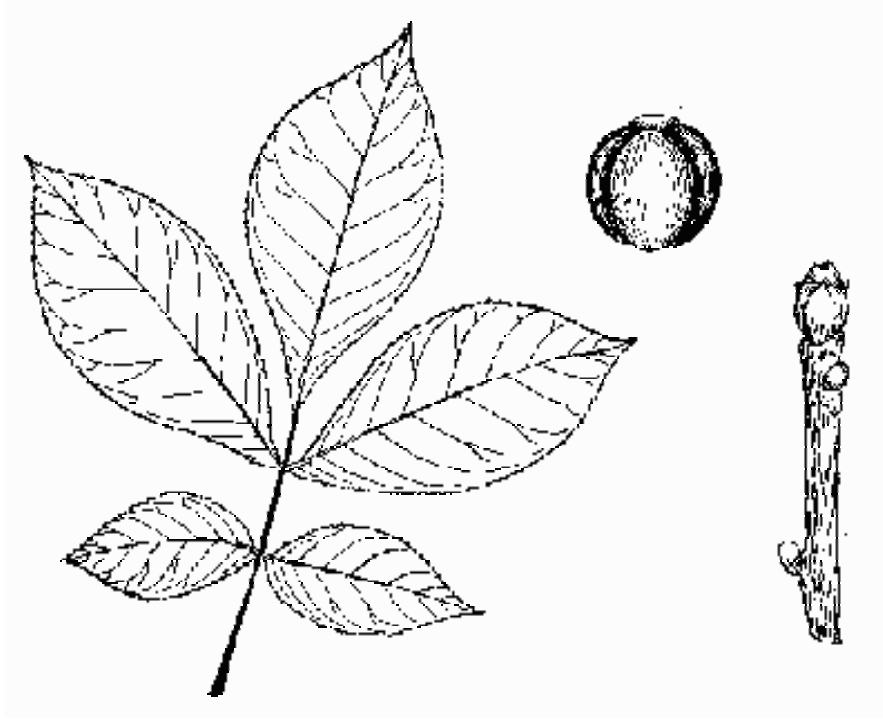
FRUIT: Somewhat pear shaped tapering toward the stem, 1"-2" long with a thin husk only partly splitting when ripe. Nuts brownish white, thick-shelled, kernels often taste bitter.

BARK: Gray to dark gray, usually tight, becoming shallowly fissured on older trees.

GENERAL: Pignut hickory reaches 50'-60' high growing on dry ridgetops and slopes throughout the southern half of the state. As with other hickories, the wood is heavy, hard, and strong with very high shock resistance, and is principally used for tool handles. Although the nuts are too bitter for human use, they are an important food for squirrels and chipmunks.

58

Shagbark Hickory
(*Carya ovata* (P.Mill.) K.Koch)



LEAVES: Alternate, compound, 8"-14" long, usually with 5 leaflets, dark yellowish green above, paler, often downy beneath, margins fine-toothed.

TWIGS: Gray-brown to reddish brown, stout and often hairy with numerous lenticels. Buds are large with 3 or 4 nearly smooth, dark brown, loosely fitting outer scales and velvety inner scales; end buds 1/2" to 3/4" long.

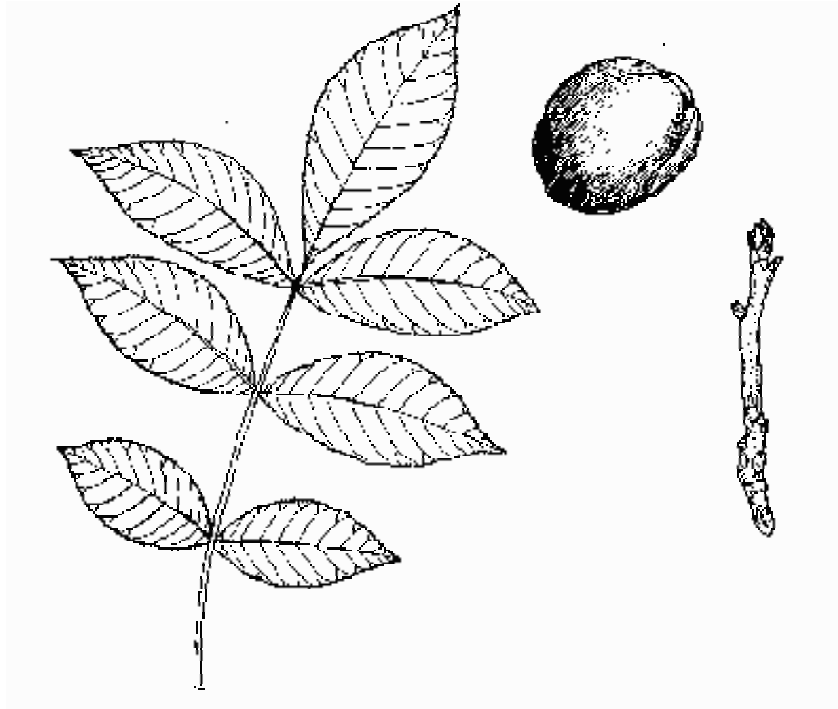
FRUIT: Nearly round, 1" to 2½" in diameter with a thick husk that splits into 4 pieces when ripe. The usually thin-shelled, 4-ridged, white nut is pointed at one end and has a sweet kernel.

BARK: Younger trees smooth and gray; older bark breaking into long, loosely attached plates giving the trunk a shaggy appearance.

GENERAL: This 70' to 80' tall tree is found in rich soils on slopes and valleys throughout the Commonwealth. The wood of all the hickories is heavy, hard, and strong and used principally for tool handles. Hickory is a valuable fuel wood and is used to give a smoked flavor to meats. Archaic uses included bow-wood, and wheel spokes for carriages and carts. The nuts are much relished by man and wildlife. The native Americans crushed the kernel, using the oil for cooking and the resulting flour for bread.

59

Shellbark Hickory
(*Carya laciniosa* (Michx.f.) Loud)



LEAVES: Alternate, compound, 10"-24" long, usually with 7 leaflets, dark green above, paler yellow green and hairy beneath, margins fine-toothed. The dried leaf axis, (petiole), often persisting on the tree all winter.

TWIGS: Orange-brown, usually hairy and often angled with numerous orange lenticels, somewhat stouter than Shagbark hickory and with orange colored leaf scars. The very large buds have 6 to 8 dark brown loosely fitting, keeled outer scales, end buds 3/4" - 1" long.

FRUIT: Largest of the native hickories, 1¾" - 2½" long with a thick husk splitting into four pieces when ripe. The thick-shelled nut yellowish white to reddish brown, 4 to 6 ridged, pointed at both ends and containing a sweet kernel.

BARK: Closely resembles that of Shagbark hickory but with straighter, tighter plates and appearing less shaggy.

GENERAL: Also known as Kingnut hickory, this species is found on moist to wet, fertile bottomlands across southern Pennsylvania. The nuts are much in demand by man and wildlife. As with other hickories, the wood is very heavy, hard, and strong with very high shock resistance, and is principally used for tool handles.

60

Tree of Heaven
(*Ailanthus altissima* (P.Mill.) Swingle)



LEAVES: Alternate, compound, 1½'-3' long, composed of 11-41 leaflets, the lower with a few coarse teeth near the base which have distinctive glands.

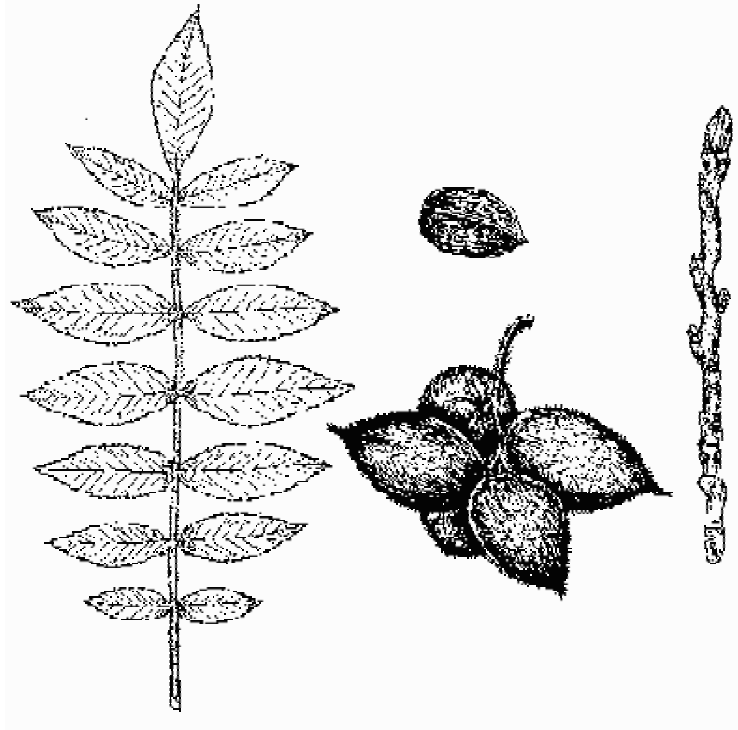
TWIGS: Stout, yellowish-green to reddish-brown, covered with a fine velvety down; Pith large, rather hard, light brown. Twigs have a rank odor when broken.

FRUIT: A spirally twisted wing, 1½" long, ½" wide, with 1 seed in the center, clusters often persist far into winter. Male and female flowers occur on separate trees.

BARK: Younger trunks smooth, light gray, older roughened with dark ridges, becoming dark gray and sometimes black.

GENERAL: This tree is originally from China and was first planted in this country near Philadelphia by English settlers. Often escaping cultivation, it is now found in disturbed woods, roadsides, vacant lots and railroad banks across southern Pennsylvania. The rapid growth of root sprouts makes it almost impossible to eradicate once established. Ailanthus can grow over 60' high but is often smaller.

61
Butternut
(*Juglans cinerea* L.)



LEAVES: Alternate, compound, leaflets 11 to 17, each 3"-5" long, small-toothed; dark yellow-green above, paler, hairy below; end leaflet same size as side leaflets; main leaf-stem with conspicuous sticky hairs. Butternut is one of the last trees to unfold its leaves in spring, and the first to shed them in autumn.

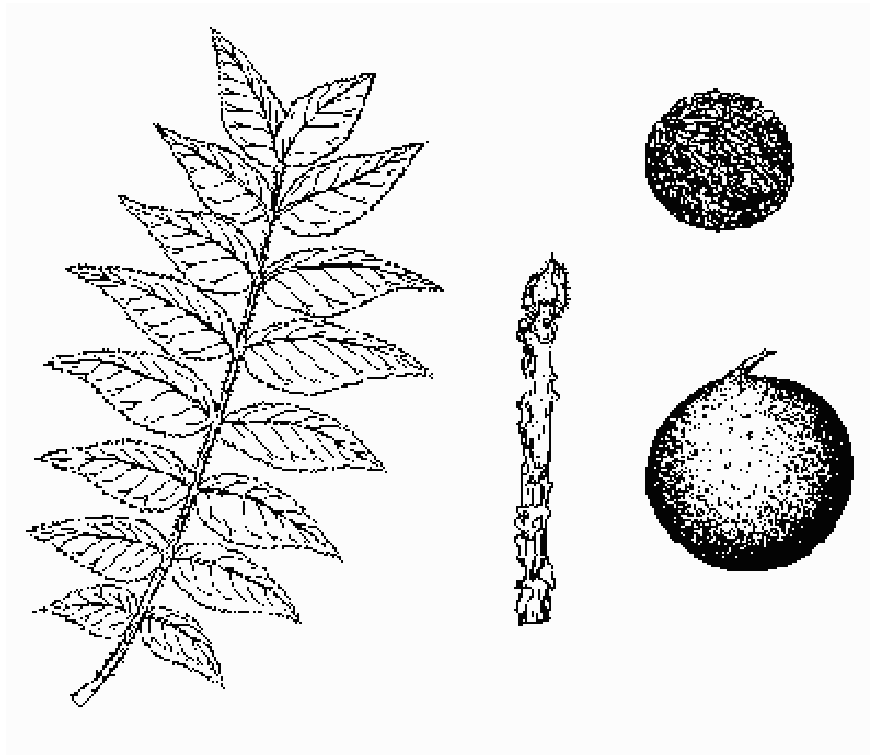
TWIGS: Stout, greenish-gray to tan, rough, brittle. Pith chocolate-brown, chambered. Buds light brown, hairy, not covered with scales; end bud $\frac{1}{2}$ "- $\frac{3}{4}$ " long, side buds smaller. Fringe of short hairs between leaf-scar and bud.

FRUIT: An oblong nut, $1\frac{1}{2}$ "- $2\frac{1}{2}$ " long, covered with a hairy, sticky husk. The rough nutshell is pointed at one end, the kernel oily and sweet.

BARK: Young trunks rather smooth, light-gray; later becoming darker, deeply furrowed with wide, smooth, flat-topped ridges.

GENERAL: A small to medium-sized tree, 30'-50' high usually in rich bottom lands and on fertile hillsides. Butternut is more common in northern tier counties and at higher elevations than Black walnut. Also called White walnut, its wood is used chiefly for furniture, instrument cases, and boxes and the nuts are an important wildlife food. Recently a fungal disease has killed many Butternut trees throughout its range.

62
Black Walnut
(*Juglans nigra* L.)



LEAVES: Compound, alternate; leaflets 15 to 23, each 3"-4" long, small-toothed; dark yellow-green above, paler, hairy below. End leaflet absent or very small. Main leaf-stem with very fine hairs.

TWIGS: Stout, orange-brown to dark brown, roughened by large leaf scars, easily broken; pith pale brown, chambered. Buds gray, downy; side buds 1/6" long, end bud larger.

FRUIT: A round nut, 1"-2" in diameter, shell rough, covered with a thick, almost smooth, green spongy husk; oily kernel sweet. Flowers in drooping green catkins, appearing with the unfolding leaves, which is also true of butternut.

BARK: Dark brown to gray-black, with narrow ridges.

GENERAL: A large-sized tree, found locally on rich soils mainly in the southern part of state. Wood valuable for quality furniture, veneer, gun stocks and musical instruments.

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