College of Agriculture, Food and Environment

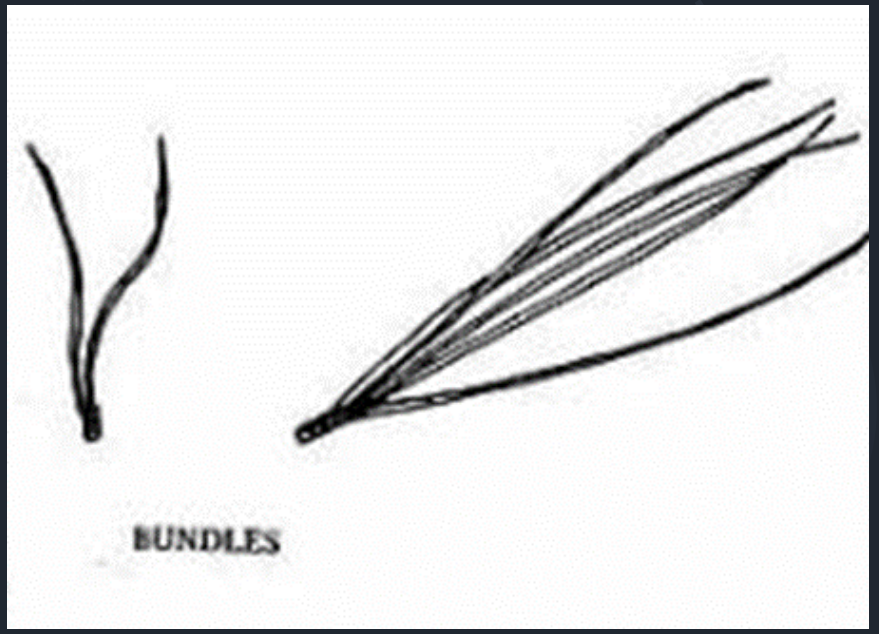
Forestry and Natural Resources Extension

Kentucky Trees

Envirothon

Conifer Leaf Characteristics

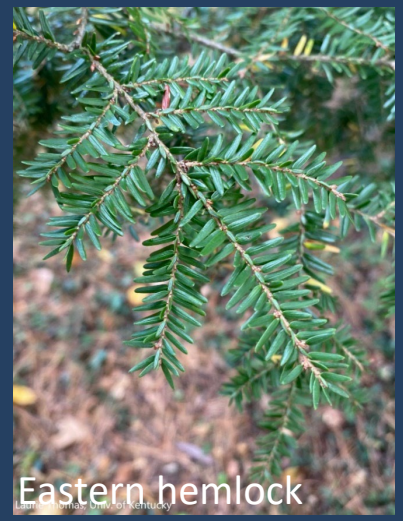
- **Needles – number of needles per fascicle, length**
- **Scale-like needles – eastern redcedar or northern white cedar (in Kentucky)**



Needle-like Leaves

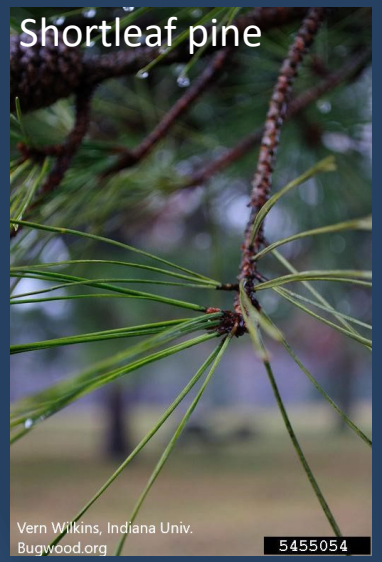
1. Eastern redcedar *(scale-like needles)*
2. Eastern hemlock *(single needle)*
3. Baldcypress *(single needle)*
4. Eastern white pine *(needles in 5s)*
5. Pitch pine *(needles in 3s)*
6. Shortleaf pine *(needles in 2s & 3s)*
7. Virginia pine *(needles in 2s)*

Eastern redcedar


Eastern hemlock

Eastern white pine

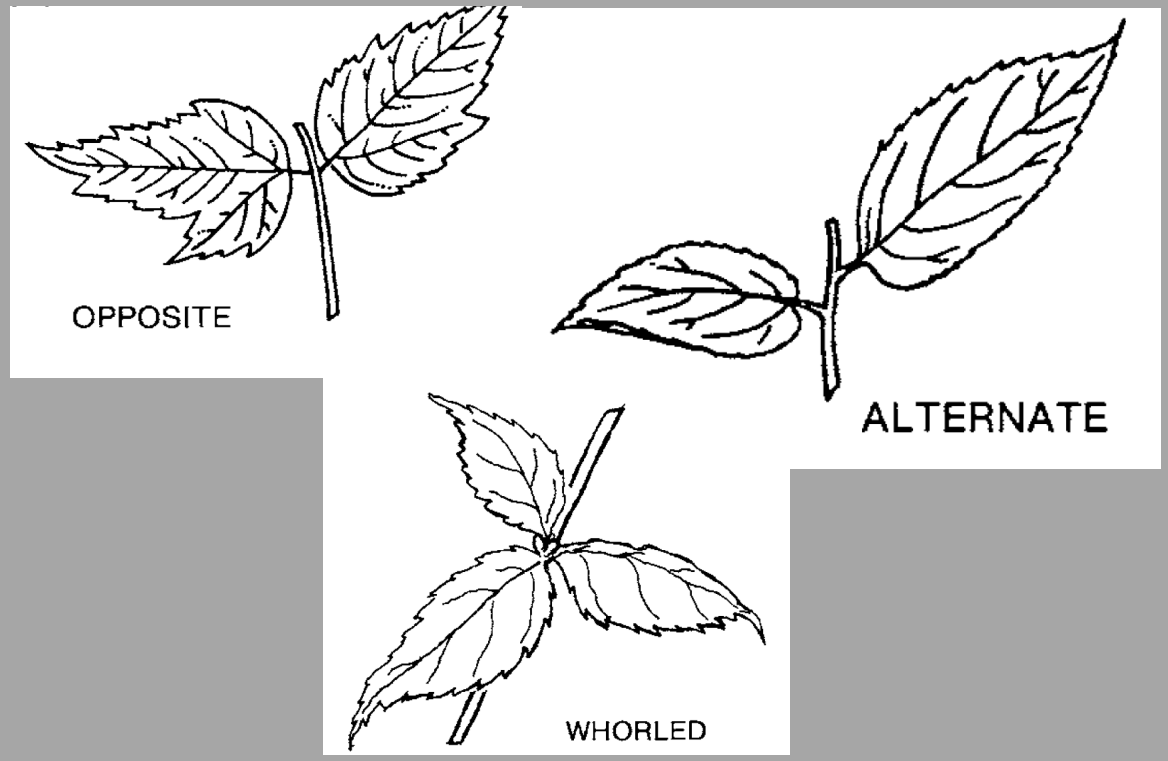

Baldcypress

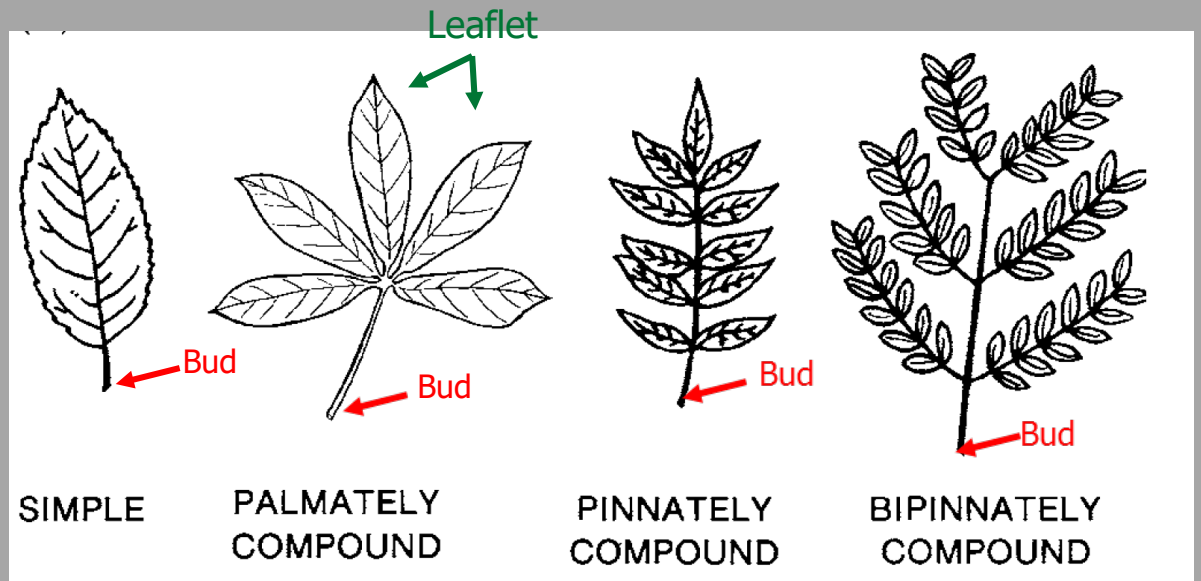


Virginia pine

Broadleaf Tree Leaf Characteristics

- Leaf arrangement (opposite or alternate or whorled)
  - Opposite: leaves occur opposite one another in pairs on twig
    - In KY, 4 groups of trees have opposite leaf arrangement
      - Maples, Ashes, Dogwoods and Buckeyes (MADBuck)
  - Alternate: leaves occur staggered on the twig
  - Whorled: several leaves come out circling the twig (Northern Catalpa)
- Leaf Form / Composition (simple or compound)
  - Simple – only 1 blade per leaf stem
  - Compound (pinnately compound/palmately compound) – multiple leaflets per leaf stem





Eastern redcedar *(Juniperus virginiana)*

*one of the seven different conifers (cone bearing trees) native to Kentucky

- **Evergreen leaves**
- **Occur in two forms - on seedlings and new twigs, the leaves are pointed and needle-like, often light green - On mature branches they are over-lapping scale-like leaves that are tight against the twig**

Eastern hemlock (*Tsuga canadensis*)

- **An evergreen conifer with needle-like leaves**
- **Needles are flat attached singly to the stem not in groups or bundles**
- **Needles are mostly two-ranked *(the needles are on opposite sides of the twig 180 degrees apart which allow the branches to lay flat)***
- **Needles are typically ½ inch long and taper to dull point**
- **Shiny dark green on top and have 2 white lines of white stomata on the underside *(the stomata are minute pores in the surface of the leaf or needle)***

Baldcypress (*Taxodium distichum*)

- **<u>Deciduous conifer</u> that has small linear, flat needle-like leaves that are soft to the touch**
- **Each needle ¼ to ¾ inches long and are usually two-ranked (which is a leaf arrangement where the leaves on a stem are arranged in two vertical columns on opposite sides of the stem)**
- **The branchlet structures resemble a feathery compound leaf**

Shortleaf pine (*Pinus echinata*)

- **Evergreen conifer with needle-like leaves**
- **The needles are bundles or fascicles of <u>2s or 3s</u> **(pitch pine needles are in bundles of 3s)***
- **Needles are typically 3 to 5 inches long, slender and flexible**

Eastern white pine (*Pinus strobus*)

- An evergreen conifer with needle-like leaves
- Needles are soft, flexible, 3 to 5-inch-long needles that occur in <u>groups or bundle of 5s</u>
- Needles are bluish green in color

Pitch pine (*Pinus rigida*)

- Evergreen conifer with needle-like leaves
- Needles are 2 ½ to 5 inches long usually 3 slightly twisted needles per fascicle or bundle. ****(This is a good characteristic to distinguish from shortleaf pine which usually needles in groups of 2 and 3)***
- The needles are stiff and typically yellow-green to green in color

Virginia pine (*Pinus virginiana*)

- **Evergreen conifer with needle-like leaves**
- **Needles are short, 1 ½ to 3 inches long and often twisted and in groups of 2s **(these are good identification characteristics because our other native pines have longer needles that are not twisted in groups of threes to fives except shortleaf pine that has needles in groups of twos and threes)***

Maples

***Maples have <u>Oppositely</u> arranged leaves**

Red Maple (*Acer rubrum*)
(3 to 5 lobes, serrated leaf margins)

Sugar Maple (*Acer saccharum*)
(5 lobes, entire (not serrated) leaf margins)

Maples

***Maples have <u>Oppositely</u> arranged leaves**

Boxelder (*Acer negundo*)

(*compound leaf with 3 to 5 leaflets

Silver maple (*Acer saccharinum*)

(5 lobes, coarsely serrated margins)

Ashes

***Oppositely arranged, Pinnately Compound Leaves**

White ash (*Fraxinus americanan*)

- 7 to 9 leaflets oval to elliptical in shape
- Serrated to smooth leaflet margins

Green ash (*Fraxinus pennsylvanica*)

- 7 to 9 leaflets elliptical to lance-shaped
- Serrated leaflet margins

Ashes

Blue ash (*Fraxinus quadrangulata*)

- **7 to 11 leaflets, elliptical to lance-shaped**
- **Serrated leaflet margins**
- ***Square or 4 sided twigs**

Flowering dogwood (*Cornus florida*)

- **<u>Oppositely</u> arranged**
- **<u>Simple</u>**
- **oval-shaped**
- **smooth leaf margins**
- ***arcuate venation (curve toward top of leaf)**

Buckeyes

***Buckeyes have <u>Oppositely</u> arranged, Palmately <u>Compound</u> leaves**

Ohio buckeye (*Aesculus glabra*)
(palmately compound, 5 lance-shaped leaflets with finely serrated margins, bruised twigs and leaves give off disagreeable odor)

Yellow buckeye (*Aesculus flava*)
(palmately compound, 5 elliptical-shaped leaflets with finely serrated margins)

Birches

***Birches have <u>Alternately</u> arranged and <u>Simple l</u>eaves**

Sweet birch (*Betula lenta*)
(egg-shaped leaf with serrated leaf margins)

River birch (*Betula nigra*)
(rhombic to egg-shaped leaf with doubly serrated leaf margins)

Pawpaw (*Asimina triloba*)

Alternately arranged, simple leaf that is oblong in shape with smooth leaf margins *fuzzy brown terminal bud

Catalpa (*Catalpa speciosa*)

3 leaves are <u>Whorled</u> around twig, <u>Simple</u>, <u>heart-shaped</u> with smooth leaf margins, 5-12” long

Hackberry (*Celtis occidentalis*)

- **<u>Alternately</u> arranged**
- **<u>Simple</u> leaves**
- **Coarsely serrated leaf margins**
- **Warty, corky bark**

Eastern Redbud (*Cercis canadensis*)

- **Alternately arranged**
- **Simple leaves**
- **Heart-shaped**
- **Smooth leaf margins**
- **3-5” long**

Sweetgum (*Nyssa sylvatica*)

- Leaves are star-shaped *
- Leaves alternately arranged and simple in form
- Usually have 5 to 7 pointed lobes
- Leaf margins are serrated

Yellow-poplar (*Liriodendron tulipifera*)

- Leaves alternately arranged
- Some what shaped like a tulip.
- Terminal bud resembles a duck's bill

Osage-orange (*Maclura pomifera*)

- Leaves alternately arranged and simple
- Pinnately veined, with veins radiating from mid rib out to the end of the leaf
- Oblong to egg-shaped with entire or smooth margins
- Twigs armed with thorn at base of leaf petiole

Cucumbertree *(Magnolia acuminata)*

- Leaves alternately arranged and simple
- Leaves are elliptical to ovate in shape and typically 6 to 10 inches long
- Leaves have pinnate venation, entire margins and an acuminate tip (which means shaped like an acute angle with a long-attenuated point)

Bigleaf magnolia (*Magnolia macrophylla*)

- **Leaves alternately arranged and simple in form**
- **20 to 36 inches long with entire and somewhat wavy edges**
- **Leaf base resembles 2 earlobes or the letter B (good way to tell bigleaf magnolia from umbrella magnolia which has a V-shaped leaf base)**

Umbrella magnolia (*Magnolia tripetala*)

- Very large alternately arranged, simple leaves
- 12 to 24 inches long with smooth entire margins
- Leaves obovate or inversely ovate with wider part of the leaf at the top
- Leaf base is acute, like an acute angle as compared to its relative the bigleaf magnolia which has an B-shaped base

White mulberry (*Morus alba*)

- **Leaves alternately arranged and simple**
- **Somewhat circle or oval in shape, and highly variable**
- **Some leaves have no lobes and others have numerous lobes**
- ***Leaves of white mulberry tend to be smaller and have a <u>smooth shiny surface</u> than red mulberry**

Red mulberry (*Morus rubra*)

- Leaves alternately arranged and simple
- Somewhat circle or oval in shape, and highly variable
- Some leaves have no lobes and others have numerous lobes
- Green above and the surface is rough somewhat like fine sandpaper.
- *Leaves of white mulberry tend to be smaller and have a <u>smooth shiny surface</u>

Blackgum (*Nyssa sylvatica*)

- Leaves alternately arranged and simple
- Oblong to obovate in shape, typically 3 to 5 inches long with pinnate venation (leaf has one main vein extending from the base to the tip of the leaf with smaller veins branching off)
- Dark green, usually glossy above and paler below

Sourwood (*Oxydendrum arboreum*)

- Leaves alternately arranged and simple
- Lance shaped and 4 to 7 inches long.
- Leaf margins are finely serrated, and the underside midrib has small hairs
- Spring flowers are in long panicles and the flowers are urn-shaped

American beech (*Fagus grandifolia*)

- Alternately arranged leaves and simple in form
- Typically 2 ½ to 5 ½ inches long
- Leaves are pinnately veined (which is a type of venation pattern in which the secondary veins run parallel to each other from the midrib toward the margin)
- Each vein ends in a sharp distinct tooth at the leaf margin
- Smooth gray bark

American sycamore (*Platanus occidentalis*)

- Leaves alternately arranged on the twig and simple
- Relatively large leaf 4 to 8 inches wide with three to five palmate lobes (means the midribs radiate from one point at the base of the leaf)
- Leaf margins are coarsely serrated

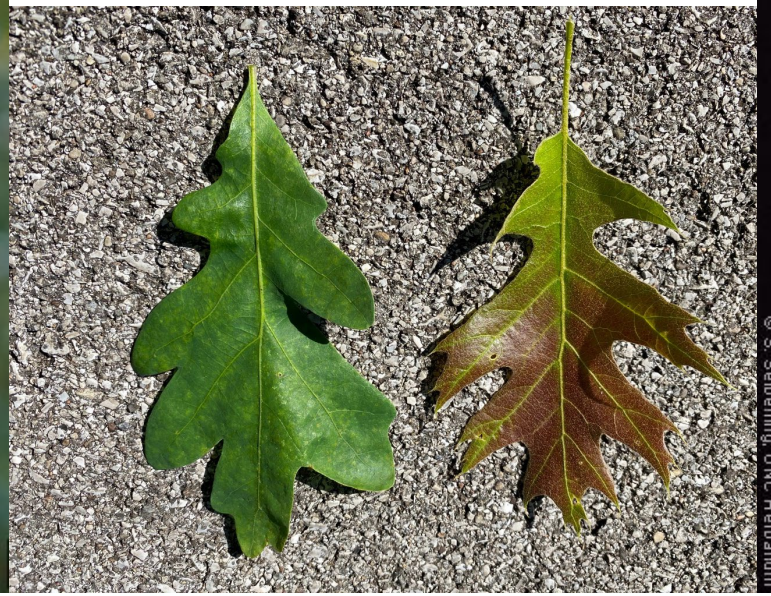
Black cherry (*Prunus serotina*)

- Leaves alternately arranged on the stem and they are simple
- 2 to 5 inches long, oblong to lance-shaped with finely serrated margins
- Flowers are small and white, and are grouped in hanging, narrow clusters called racemes, 4 to 6 inches long

White oak (*Quercus alba*)

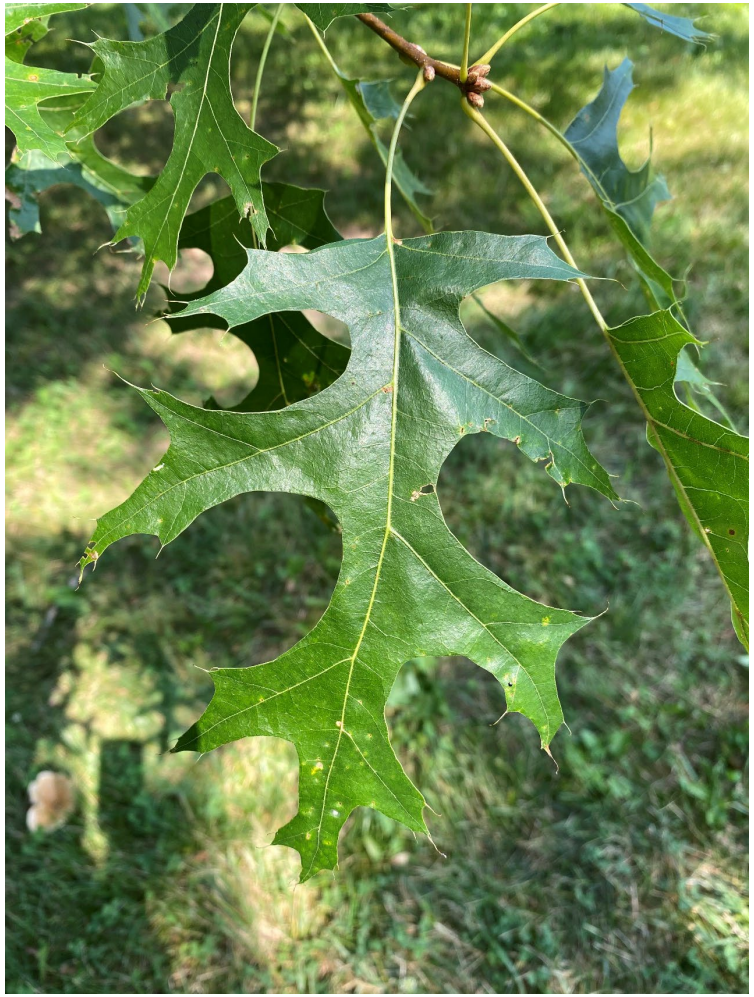
- **Leaves alternately arranged on the twig and simple in form**
- **4 to 7 inches long with 7 to 10 rounded lobes.**
- **You can tell white oak leaves from red oak leaves by the lobes white oaks have rounded lobes and red oak have bristle-tipped lobes**

White Oak Red Oak



Bristle-tipped Lobes

Scarlet oak (*Quercus coccinea*)



- Alternately arranged, simple leaves
- Between 3 to 7 inches long, oval in shape and lobed with very deep sinuses *(indentations between lobes)*
- Leaves usually have between 5 and 9 lobes and each lobe has a bristle tip
- Upper surface is shiny green, and the underside is paler with occasional tufts in the vein axils

Southern red oak (*Quercus falcata*)

- Alternately arranged, simple leaves
- 5 to 9 inches long with bristle-tipped lobes
- Southern red oak leaves have two forms:
  - 3 lobes with shallow sinus (the space between lobes) it resembles a turkey's foot with the one long terminal lobe and two shorter lobes on the side
  - 5 to 7 lobes with deeper sinuses
  - Leaves are shiny green above and paler and fuzzy below

Bur oak (*Quercus macrocarpa*)

- Alternately arranged, simple leaves
- 6 to 12 inches long
- kind of fiddle shaped with the leaf tapering to a wedge at the base
- Have numerous lobes a few with sinuses (the indentations) reaching almost to the midrib of the leaf
- Many times, the lobes near the tip of the leaf resemble a crown

Chinkapin oak (*Quercus muhlenbergii*)

- Alternately arranged, simple leaves that resemble chestnut-like leaves
- 4 to 7 inches long, oblong to obovate in shape
- Have coarsely serrated or toothed margins
- Each “tooth” is tipped with a small gland or callus
- Dark and sometimes shiny on the upper surface and much paler below

Pin oak (*Quercus palustris*)

- Alternately arranged simple leaves
- 3 to 6 inches long, oblong or oval with 5 to 9 bristle-tipped lobes
- Sinuses between the lobes are irregularly deep, u-shaped and may extend to the midrib
- Bright green above and pale below with small tufts in the leaf vein axil on the underside of the leaf

Willow oak (*Quercus phellos*)

- Alternately arranged, simple leaves
- 2 to 5 inches long, linear to lanceolate in shape
- Margins are entire, and the tip of the leaf has a bristle tip like other red oaks

Chestnut oak (*Quercus montana*)

- Leaves resemble Am. Chestnut leaves
- Alternately arranged on the twig and simple in form
- Oval narrowing at the top and bottom of the leaf
- Margins are scalloped, the surface is shiny green and pale on the underside of the leaf
- Bark is deeply furrowed

Northern red oak (*Quercus rubra*)

- Alternately arranged and simple leaves
- 5 to 8 inches long, with 7 to 11 pointed lobes that have bristle tips
- Sinuses between lobes are not deep
- Bark has shallow, flat-topped ridges that resemble ski tracts

Post oak (*Quercus stellata*)

- Type of white oak so rounded lobes
- Alternately arranged, simple leaves
- 6 to 10 inches long with typically 5 lobes, the two middle lobes are squarish and nearly opposite, giving the leaf a cruciform or cross shape
- Leaves tend to be thick and green above with scattered stellate hairs and the underside is paler and typically pubescent or hairy

Black willow (*Salix nigra*)

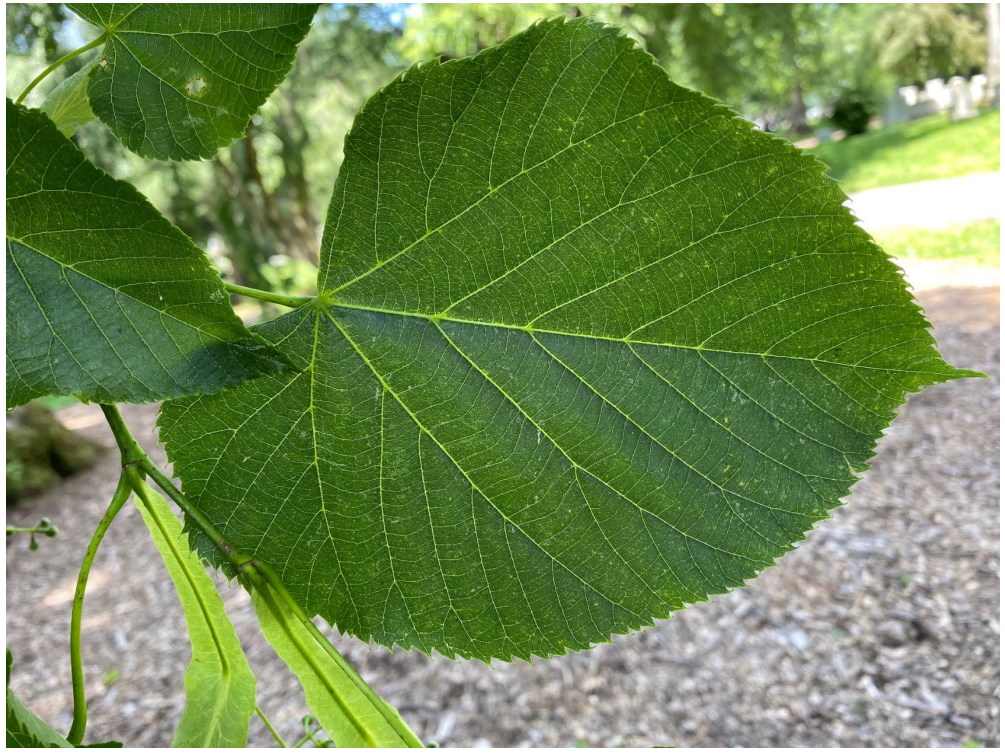
- Alternately arranged simple leaves
- Leaves are lance-shaped, 3 to 6 inches long and pinnately veined (meaning the veins run parallel from the midrib to the leaf edge)
- Margins are finely serrated margins
- Dark green and somewhat shiny above and light green on the underside

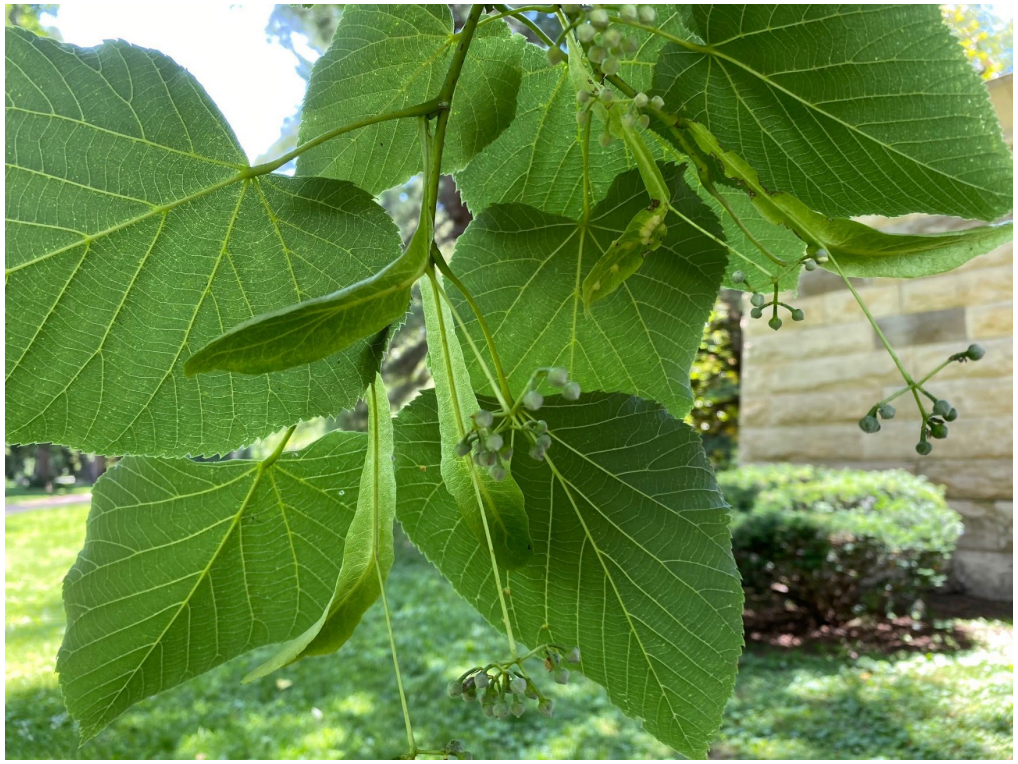
Sassafras (*Sassafras albidum*)

- Alternately arranged simple leaves
- Ovate to elliptical, 3 to 6 inches long
- Variable in shape, they can be entire with no lobes, have two lobes and resemble a mitten or three lobes and all three shapes may be present on the same branch
- Margins are smooth without serrations
- Leaves are very fragrant when crushed, some describe the fragrance as smelling like fruit-loops

American basswood (*Tilia americana*)

- **Alternately arranged, simple leaves**
- **<u>Heart-shaped with an unequal base</u>**
- **Serrated margins and are pinnately veined meaning there is a dominant center vein, or “mid-rib” with other veins branching off from the middle towards the edge of the leaf**





American elm (*Ulmus americana*)

- Alternately arranged, simple leaves
- Leaves are ovate to oblong in shape and 3 to 5 inches long and between 1 and 3 inches wide
- Leaf base is offset or uneven and the margins are coarsely and doubly serrated
- Upper surface is green and occasionally scabrous (rough), underside of the leaf is pale green and downy
- Outer bark is layered with alternating buff colored and reddish layers, young trees tend to have spongy bark

Slippery elm (*Ulmus rubra*)

- Leaves alternately arranged on the twig and simple in form
- Ovate to oblong, 4-6 in. long and 2-3 in.wide
- Leaf margins are coarsely serrated, and the base of the leaf is unequal
- Dark green above and very rough almost like sandpaper, the underside is paler and also scruffy
- Bark is reddish brown and can be distinguished from American elm bark because it does not have layered buff-colored streaks

American holly *(Ilex opaca)*

- **Broadleaf evergreen with alternately arranged leaves**
- **Leaves are somewhat elliptical in shape, 2 to 4 inches long and have a spiny toothed margin**
- **Leaves are thick and leathery**

Hickories

Hickories have <u>Alternately</u> arranged, <u>Pinnately Compound</u> leaves

Bitternut hickory (*Carya cordiformis*)
(7 to 11 lance-shaped leaflets with serrated leaf margins *sulfur yellow bud)

Pignut hickory (*Carya glabra*)
(5 very occasionally 7 lance-shaped leaflets with serrated leaf margins *leaves are smooth no fuzz

Hickories

Hickories have <u>Alternately</u> arranged, <u>Pinnately Compound</u> leaves

Shagbark hickory (*Carya ovata*)
(5 ovate shaped leaflets, serrated leaf margins, smooth surface no fuzz) – shaggy bark

Shellbark hickory (*Carya laciniosa*)
(7 ovate shaped leaflets, serrated leaf margins, underside of leaf velvety) – shaggy bark

Hickories

Hickories have <u>Alternately</u> arranged, <u>Pinnately Compound</u> leaves

Mockernut hickory (*Carya tomentosa*)

(7 lance-shaped leaflets, serrated leaf margins, underside of leaf velvety and aromatic)- bark not shaggy

Honeylocust (*Gleditsia triacanthos*)

- Leaves are 5 to 8 inches long and either pinnately compound with 15 to 30 leaflets or bi-pinnately compound with 4 to 7 pairs of minor leaflets.
- The leaflets are small ½ to 1 ½ long and oval to elliptical in shape with smooth margins.
- The bark will often have large clusters of many branched thorns on the trunk.

*Alternately arranged leaves

*Bi-Pinnately Compound leaves

Kentucky coffeetree *(Gymnocladus dioicus)*

- Leaves are bi-pinnately compound (A leaf that is divided into multiple leaflets, with each leaflet further subdivided into smaller leaflets)
- Typically between 1 to 3 feet long
- The leaflets are ovate in shape with entire or smooth margins

*Alternately arrange leaves

*Bi-pinnately compound leaves

Black walnut *(Juglans nigra)*

- Alternately arranged leaves, 12 to24 in. long
- Leaves are pinnately compound (each leaf is comprised of numerous leaflets and leaflets arranged on each side of the leaf stalk (like a feather) with 10 to 24 leaflets
- Leaves typically are missing the terminal leaflet or it is poorly formed, the leaflets are serrated, and the leaf stem or rachis is stout and pubescent or hairy

Smooth sumac (*Rhus glabra*)

- **Large alternately arranged <u>compound</u> leaves**
- **12 to 18 inches long, pinnately compound (like a feather) with 11 to 31 lance-shaped leaflets.**
- **Leaflets are 2 to 4 inches long with serrated margins**

Black locust (*Robinia pseudoacacia*)

- Alternately arranged, pinnately compound leaves
- Each leaf is between 8 and 14 inches long with 7 to 19 leaflets
- Leaflets are oval, with smooth, entire margins
- Often have stipular spines or thorns at the base of the leaves