Identification of Trees

Jim Perry
What is a Tree?

Tree: Woody plants, excluding vines ≥ 20 feet in height & ≥3 inches DBH, regardless of height
What is a Tree?

Two major classifications:

**Angiosperms**

Deciduous

Evergreen
What is a Tree?

Gymnosperms

Evergreen

Deciduous
What is a Tree?

Tree: Woody plants, excluding vines $\geq 20$ feet in height & $\geq 3$ inches DBH, regardless of height

Sapling Woody plants (excluding vines): $\geq 20$-ft in height & $< 3$-in DBH
What is a Tree?

Tree: Woody plants, excluding vines ≥ 20 feet in height & ≥3 inches DBH, regardless of height

Sapling Woody plants (excluding vines): ≥ 20-ft in height & < 3-in DBH

Herb: All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody species, except woody vines, < 3 ft (1 m) in height.
What is a Tree?

Tree: Woody plants, excluding vines ≥ 20 feet in height & ≥ 3 inches DBH, regardless of height

Sapling Woody plants (excluding vines): ≥ 20-ft in height & < 3-in DBH

Herb: All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody species, except woody vines, < 3 ft (1 m) in height.

Shrub: Woody plants, excluding vines, from 3 to 20 ft (1 to 6 m) in height.

Woody Vine: Consists of all woody vines ≥ 3.28 ft in height.
Identification of Tree

Decision tree
(plant key)

Must learn to use three things:
  Sight;
  Smell;
  Taste.

What about bark?????
Beech  
Ironwood  
Crape Myrtle
Beech
Ironwood
American sycamore
American sycamore
Black Cherry

River Birch
Red Maple
So, instead of barking up the wrong tree, we turn to…

…a combination of bark, leaves and fruit characteristics.
Basic Leaf Arrangement

- Opposite
- Alternate
- Irregular
- Whorled

Dean Haddock
Basic Leaf arrangement

Helpful Facts: only 4 families of trees have opposite branches/leaf scars (ash, buckeye, dogwoods, maple)!
Two Main Types of Leaves

Simple leaf: blade not divided to midrib

Compound
Simple v. Compound

1. Simple Leaf
   - Lamina
   - Petiole
   - Pulvinus
   - Axillary Bud

2. Compound Leaf
   - Leaflet
   - Rachis
   - Pulvinus
   - Petiole
   - Petiolule
   - Axillary Bud
Two types of compound:

Palmately compound (palmettos, buckeye). Spread from a central point.

Pinnately compound (ash, hickory, plus others). Feather-like.
Parts of a Leaf

LEAF PART NAMES

- Vein
- Tip
- Axil
- Petiole
- Blade
- Stipule

Midrib
Parts of a Leaf
Overall
Leaf Shapes

- acicular, needle shaped
- linear
- oblong
- elliptic
- lanceolate
- oblanceolate
- ovate
- obovate
- cordate
- obcordat
- deltoid
- obdeltoid
- cuneate
- rhomboid
- reniform
- peltate
- orbicular
- spatulate
- hastate
- sagittate
- lunate
- pandurate
- flabellate
- fan-shaped
- subulate
- palmatifid
- palmatisect
- pinnatifid
- pinnatisect
Leaf Tips

1. Acute
2. Acuminata
3. Cuspidate
4. Rounded
5. Long tapering
6. Mucronate
7. Truncate
8. Emarginate
9. Notched
10. Bristle-tipped
11. Spine-tipped
MARGIN

- Ciliate with fine hairs
- Crenate with rounded teeth
- Dentate with symmetrical teeth
- Denticulate with fine dentition
- Doubly Serrate serrate with sub-teeth
- Entire even, smooth throughout
- Lobate indented, but not to midline
- Serrate teeth forward-pointing
- Serrulate with fine serration
- Sinuate with wave-like indentations
- Spiny with sharp stiff points
- Undulate widely wavy
Needles
Flowers/Fruit v. Cones

Angiosperms are “flowering” plants. Their “seed” is protected by a hard cover. These include acorns, apples, buckwheat, mustard seeds, hickory nuts, among many others.

Gymnosperms are a primitive plant (evolved before angiosperms). As such they have a “naked” ovule that is enclosed by “bracts”. These bracts make up the “cones”.
Gymnosperm vs. Angiosperm

- **Gymnosperm**: plants with "naked seed:
  - Seeds are not enclosed in chambers.
- **Angiosperm**: Seeds develop inside chambers
  - 90% of living plants
  - Consists of all flowering plants.
Specific Family Characteristics
(How to cheat!)

Pines have needles in clusters (fascicles). White pine is the only North American pine with five needles per fascicle.
Specific Family Characteristics
(How to cheat!)

Pines have needles in clusters (fascicles).

Spruce cones point DOWN while fir point up.
Specific Family Characteristics
(How to cheat!)

Eastern red cedar, bald cypress, and yew trees have fleshy “aril” surrounding their ovule.
 Specific Family Characteristics  
(How to cheat!)

Oaks: Acorns! Also, they are divided into two major tribes: white oaks (leucobalanus) and red oaks (erythrobalanus).

White oaks do NOT have marginal veins that extend beyond the leaf margin while red oaks always have veins extending beyond the leaf margin.
Specific Family Characteristics
(How to cheat!)

Elm family (elm and hackberry)

Elms have “oblique” leaf base and “zig-zag” twigs.
Specific Family Characteristics (How to cheat!)

Elm family (elm and hackberry)

Hackberry has “warty” bark and “oblique” leaf base.
Specific Family Characteristics
(How to cheat!)

Walnut and Hickory

Both have pinnately compound alternate leaves

Walnut leaflets are the smaller toward the tip while hickory (except pecan) are larger.
Specific Family Characteristics
(How to cheat!)

Walnut fruit does NOT show lines of dehiscing while hickory does (dehisces: breaks along specific lines of fruit).
Specific Family Characteristics
(How to cheat!)

As mentioned before, there are only four trees in North America that have opposite leaves (ash, buckeye, dogwood, and maple).

Both ash and buckeye are compound. Ash is pinnately compound while buckeye is palmately compound.

Both maple (with exception of box elder which is pinnately compound) and dogwood are simple. Maples, however, are lobed while dogwood is not.
Specific Family Characteristics
(How to cheat!)

Cherries have “bitter almond” smell.

Some birch, but not our river birch, have methylsalycylate odor.

Tulip poplar, wax myrtle, spice bush have distinctive odors.
Useful Web Sites:

Digital Atlas of Virginia Flora
(http://www.vaplantatlas.org/)
yellow-poplar Magnoliaceae *Liriodendron tulipifera* symbol: LITU

**Leaf:** Alternate, simple, palmately veined, orbicular, 4-lobed with an entire margin, 4 to 8 inches long, notched to flat top. Somewhat shaped like a tulip, light green to green.

**Flower:** Perfect, showy, resembling a large tulip, but high in the tree, 2 1/2 inches long, with yellow-green petals and an orange corolla, appearing in late spring to early summer.

**Fruit:** An oblong (cone-like) aggregate of samaras (2 inches long), deciduous at maturity; each samara is 1-winged, 1 1/2 inches long, and curved upwards at seed cavity (resembling the front keel of a boat); maturing August to October and disseminating through late fall and winter; base whorls of samaras persist on fruit into following spring and resemble wooden flowers high in the tree.

**Twig:** Red-brown in color, often with a shiny appearance or a waxy bloom. Stipules are large and encircle the twig; buds are elongated and valvate, resembling a "duck bill". Twigs have a sweet, spicy odor when broken.

**Bark:** Light gray-green and smooth when young, later developing flat-topped ridges and conspicuous white colored furrows in diamond shaped patterns. On older trees sapsucker holes are common.

**Form:** In a forest, a large tree with a long, straight limb-free bole very often reaching over 100 feet tall. Open-grown trees have a pyramidal crown when young, becoming oval in shape with time.

Additional Range Information: *Liriodendron tulipifera* is native to North America. Range may be expanded by planting. See states reporting yellow-poplar.

More Information: [Fall Color](#) - [Wood](#) - Landowner Factsheet

External Links: [USDAFS Silvics of North America](#) - [USDAFS Additional Silvics](#) - [USDA Plants Database](#) - [Horticulture Information](#) - [USDAFS Forest Products Lab](#)

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Using Your Book to Identify Trees

- Works in both summer and winter.

- Leaf terminology on page 6.

- Summer key begins on page 21.

- Initially takes you to GENUS, not necessarily to species, but will direct you to species key.
WAKE UP! It’s Time for Questions?