

Into the Woods

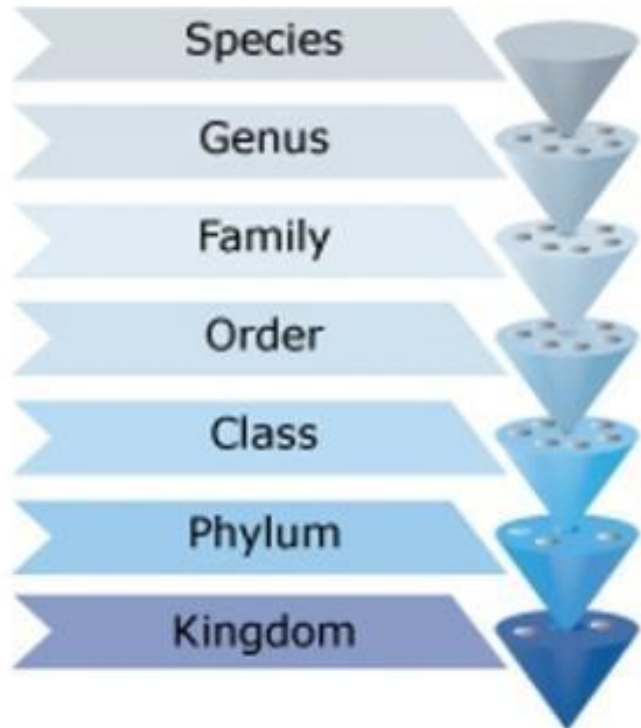
Identifying native trees in ReForester plots



Maria Paula Mugnani
Research and Restoration Coordinator

Plant Taxonomy

Classifying a plant into groups based on physical appearance.



Common Name: White Oak
Genus + Species: *Quercus alba*
Genus: *Quercus*
Family: Fagaceae

Native, Invasive or Non-Native?

NATIVE

Northern Spicebush
(*Lindera benzoin*)



EXOTIC/NON-NATIVE

Apple
(*Malus domestica*)



INVASIVE

Porcelainberry
(*Ampelopsis brevipedunculata*)



Origin

Behavior/Traits

Local

- Adapted to conditions/species
- Vulnerable to foreign pests
- Human intervention unnecessary

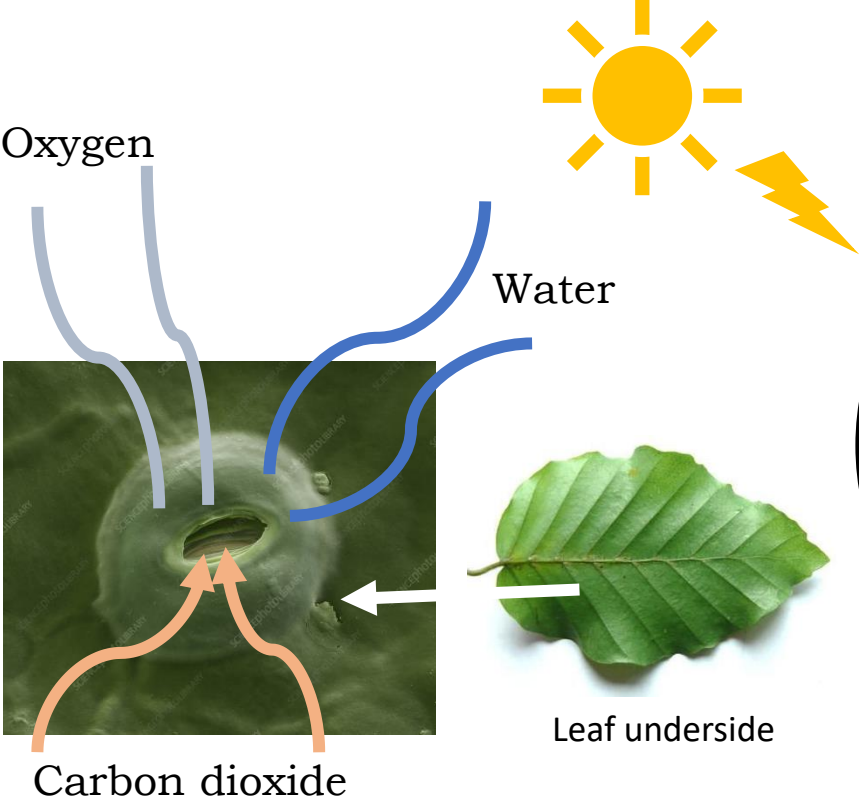
Foreign

- Reproduces but does not outcompete others
- Over time, considered “naturalized”
- May need human intervention

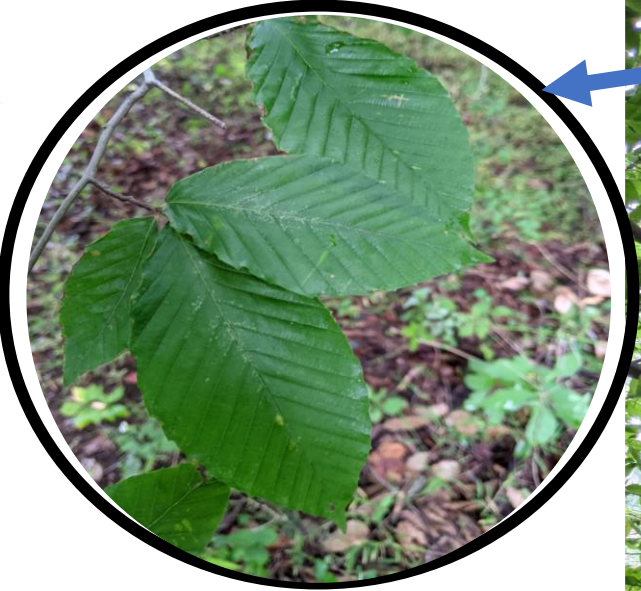
Foreign

- Outcompetes other species
- Alters ecosystems
- Mocks human intervention





Photosynthesis



Expanding to another ring of cambium growth under bark

Tissues distributing water, sugar, and nutrients

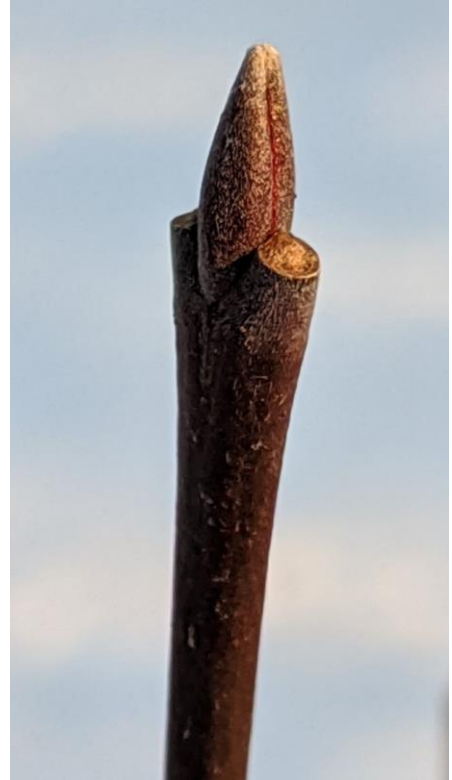
Absorbing water and nutrients
Interacting with fungi



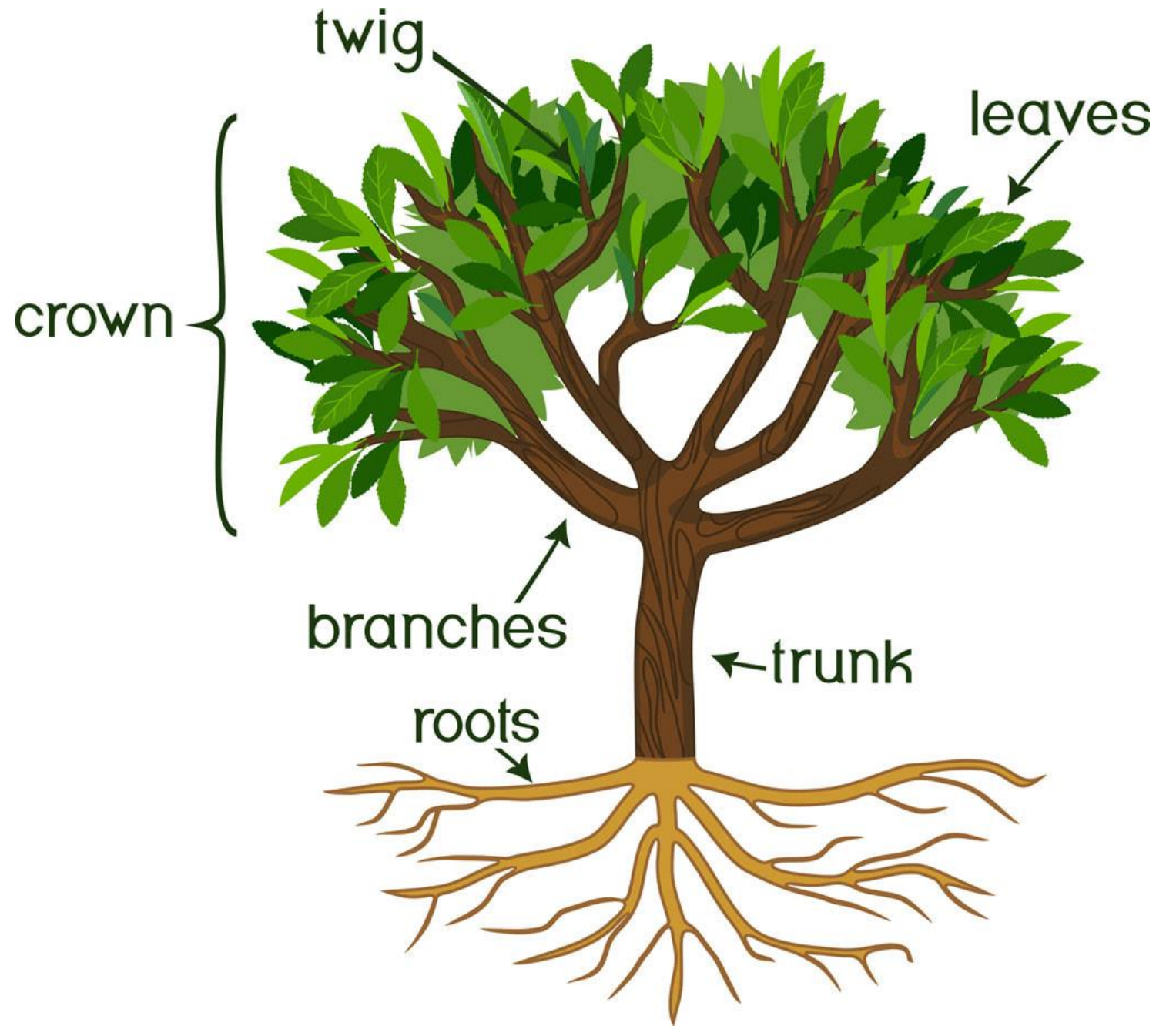
Lenticels



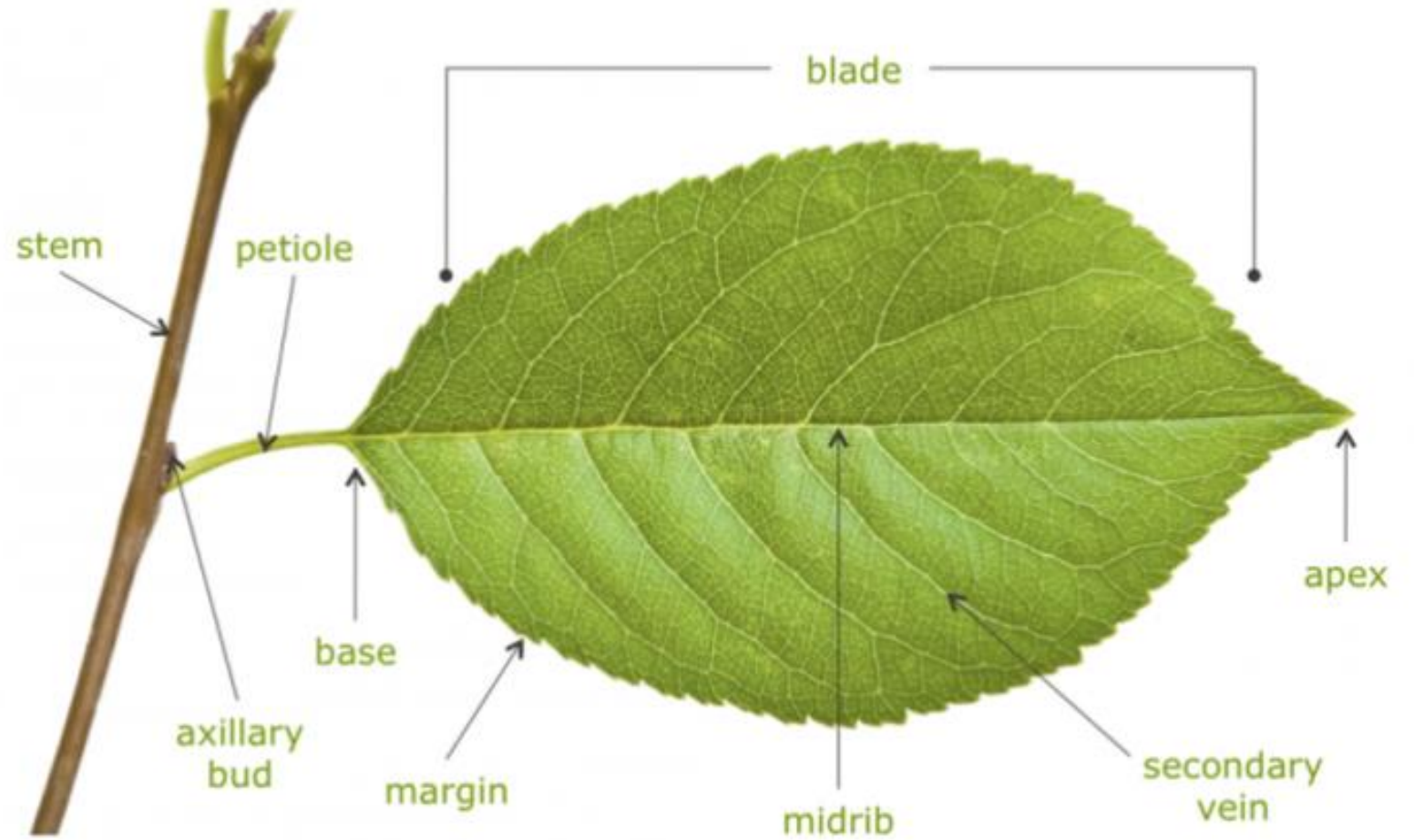
Opening your eyes to details



Tree Anatomy



Tree Anatomy



What are buds?

Dormant clusters of cellular plant tissue surrounded by **scales** or **hairs**



Tulip poplar (*Liriodendron tulipifera*)

Buds



Imbricate
(overlapping scales)



Valvate
(scales form a clam shell)



Naked
(no scales)



Leaf petiole

Bud scale scar

**Last year's
growth**

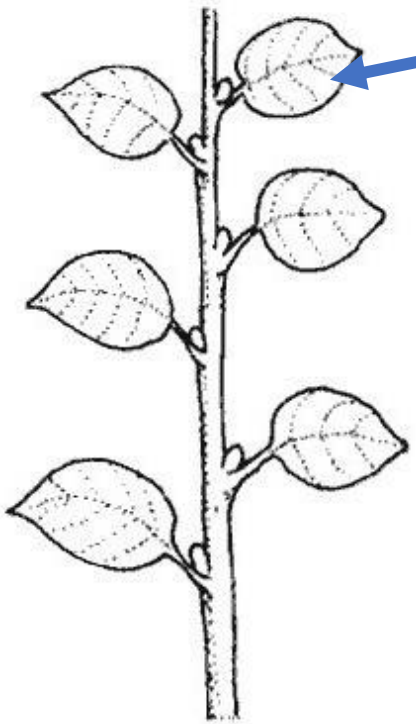


Leaf scar



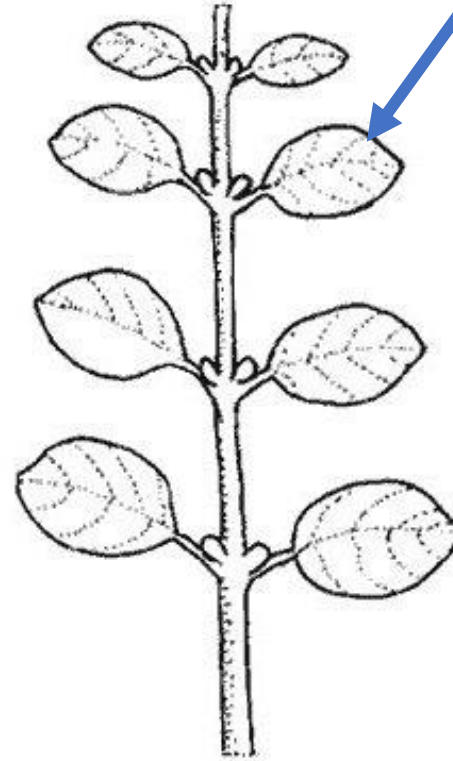
Bud/Leaf arrangement

Each is
One Leaf



Alternate

Most common for families and genera



Opposite

Less common. Maples, ashes, most dogwoods

Compound leaves

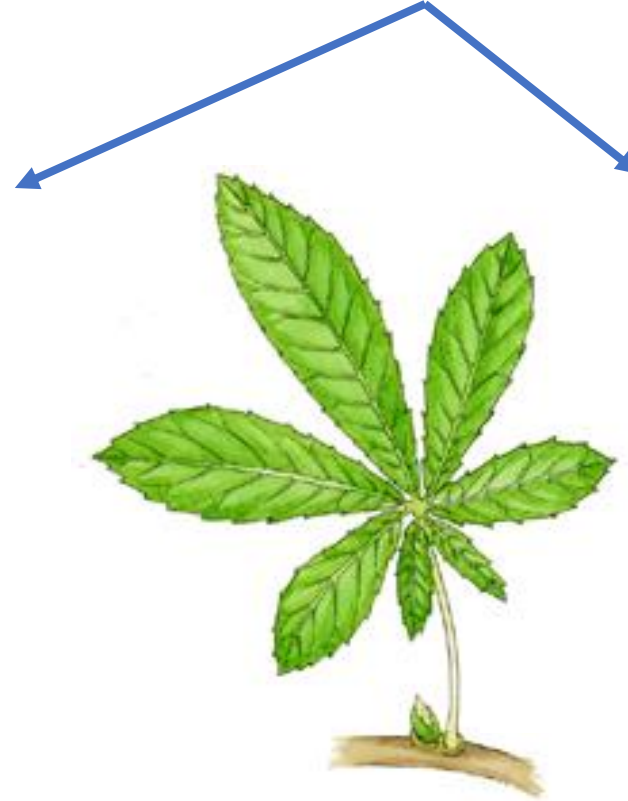
Leaflet



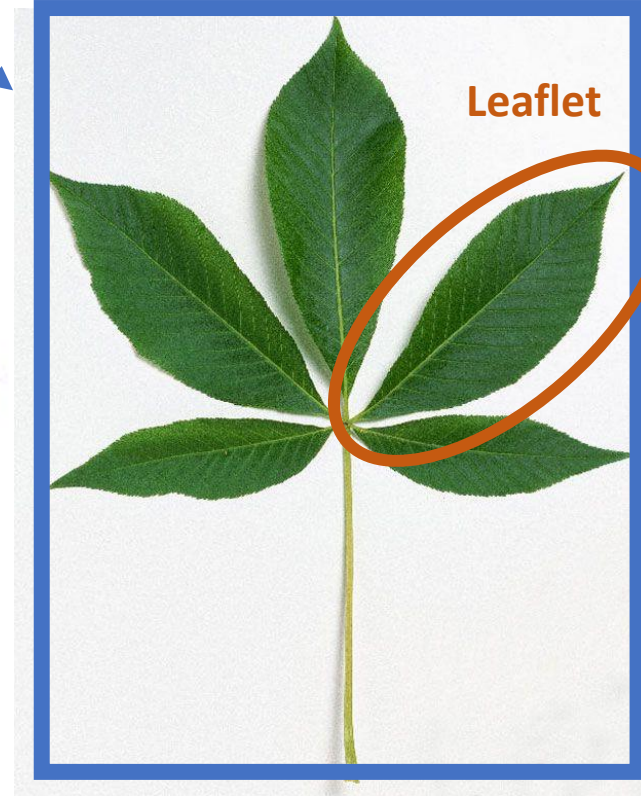
Pinnately Compound

Leaf is split into leaflets that are opposite each other like a feather

One Leaf



Leaflet



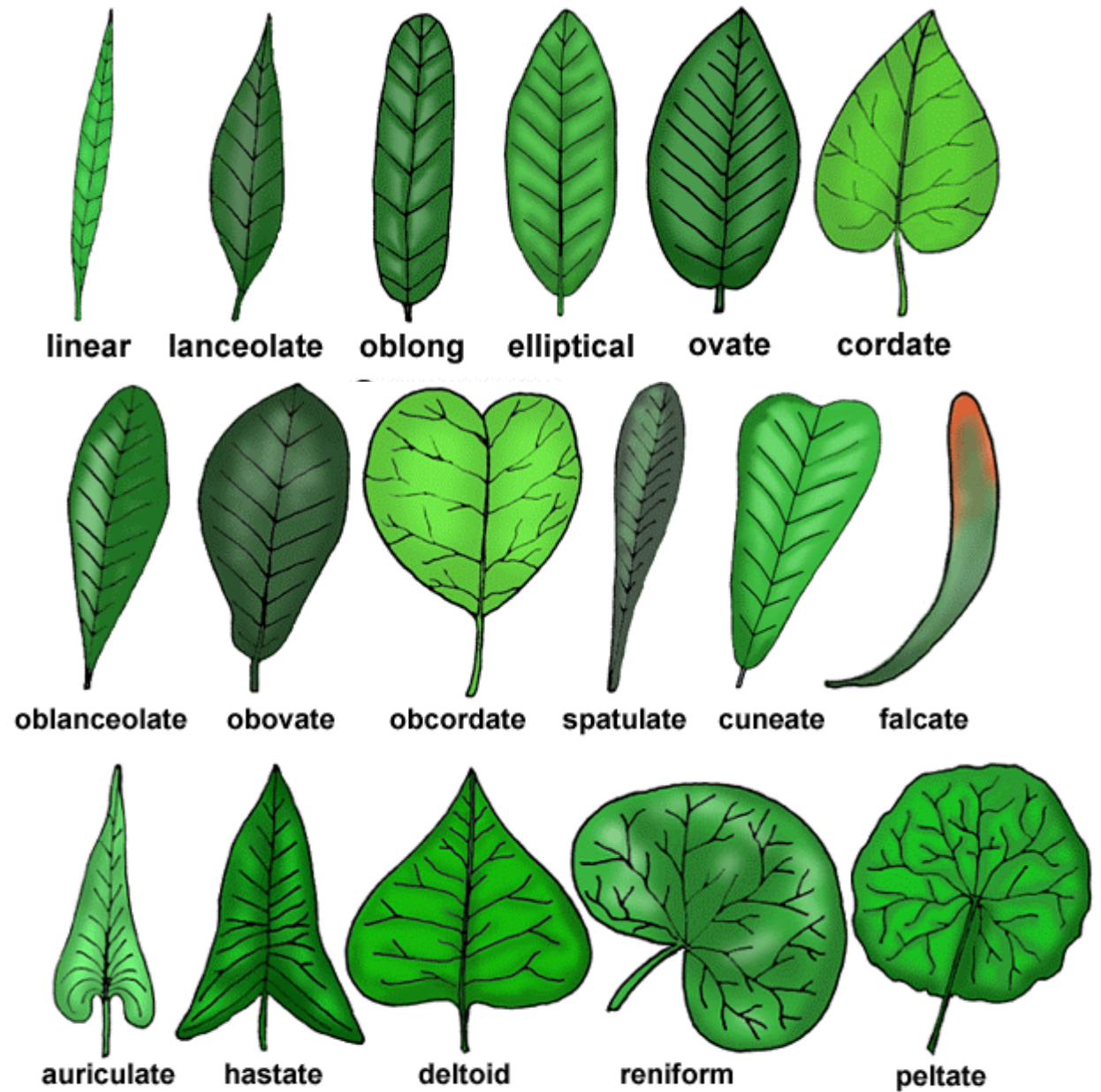
Palmately Compound

Leaf is split into leaflets that are radially arranged coming from one point, like a hand

Leaf shape



Ovate/Ovoid leaf



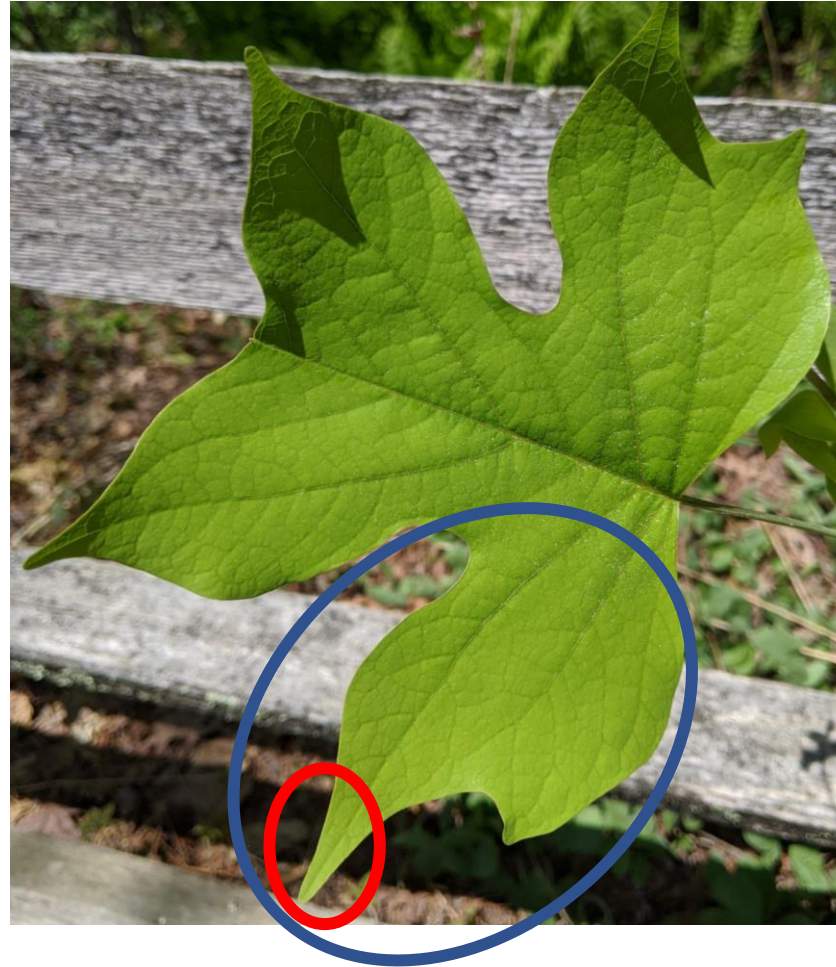
Lobing on **single** leaves

Lobes Teeth



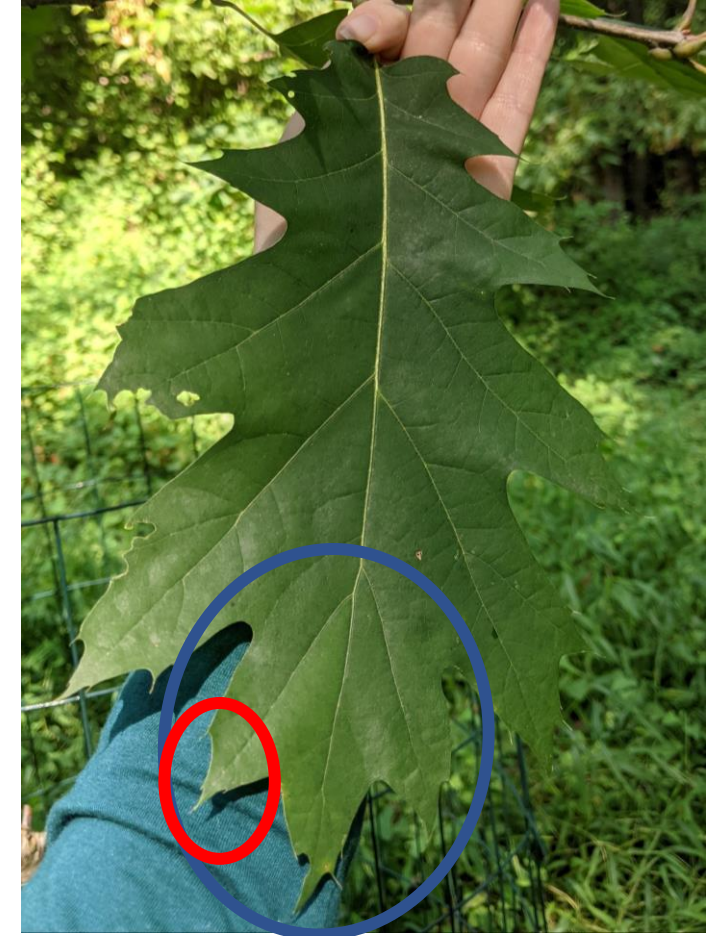
Simple

No, lobing, leaf is entire



Palmately lobed

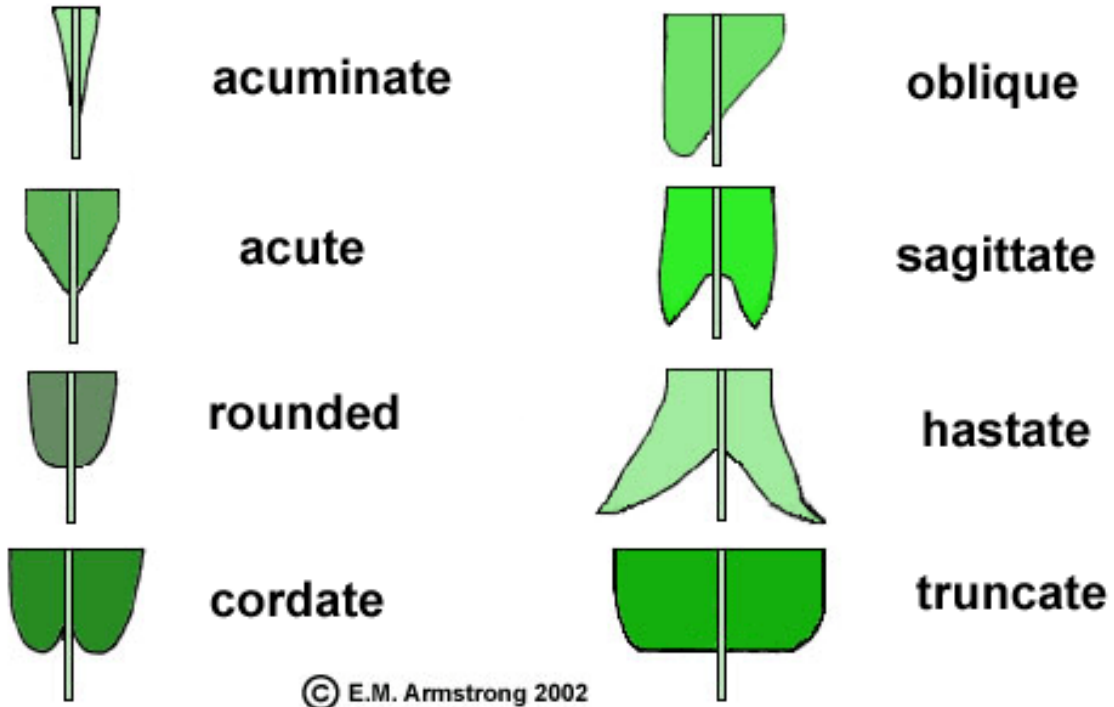
Lobes are radially arranged coming from one point, like a hand



Pinnately lobed

Lobes are opposite each other like a feather

Leaf bases

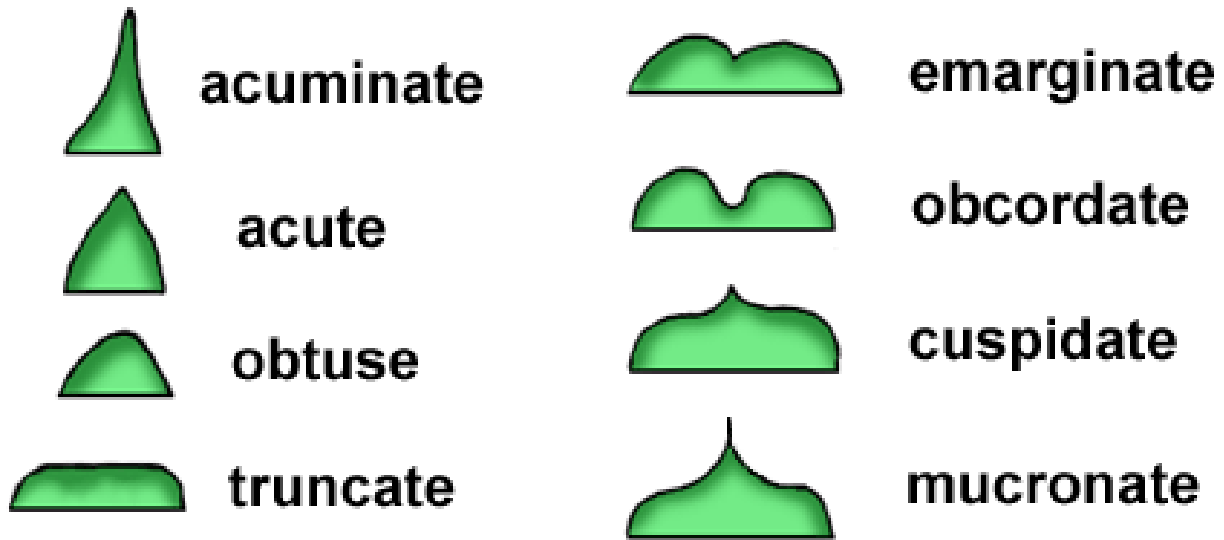


Cordate (heart-shaped) base
on a Redbud (*Cercis canadensis*)



Asymmetrical leaf base

Leaf apices (tips)



© E.M. Armstrong 2002



Acute
(most common)



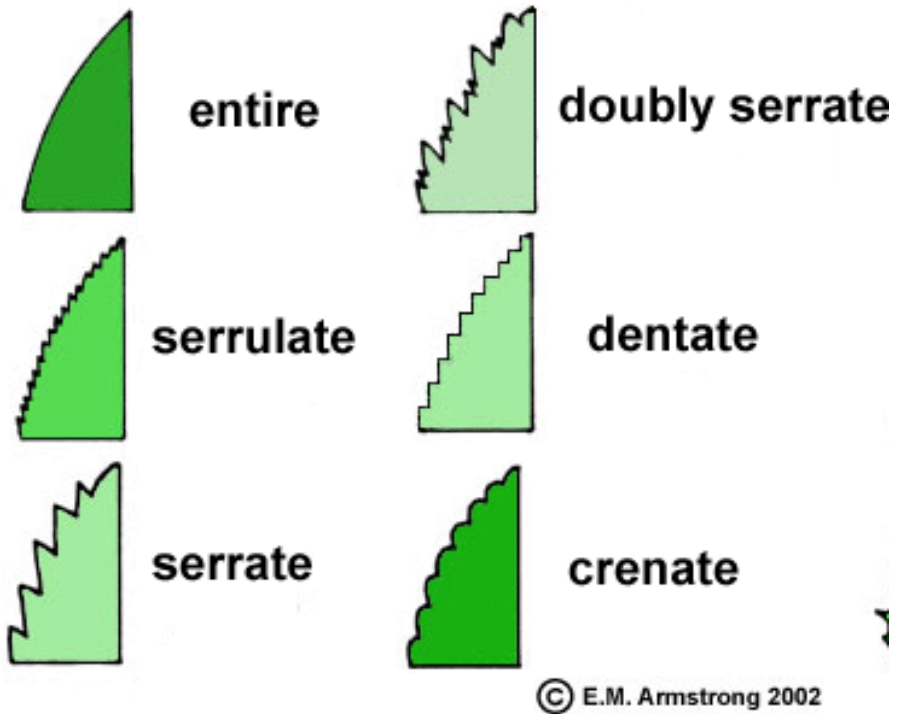
Acuminate/attenuate
(gradual long tapering)

Abrupt
leaf tip



Black Gum/Tupelo

Most common leaf margins



Entire (no teeth)



Serrate



Crenate



Doubly-serrate

Why is there so much variation in tree species?

Long-term evolution of survival strategies:

- Faster growth rate to reach canopy
- Thick bark

Efficiency with photosynthesis

- Presence of lenticels/stomata for gas exchange
- Lobes and more complex edges = less surface area and less shading
- Leaves smaller at top of the canopy



How to Familiarize yourself with a Tree?

1. Look at tree carefully

- Consider all the features present in the season

2. Note characteristics

- Arrangement, leaf complexity
- Leaves, fruits/flowers, buds, twigs, special features
- Look at multiple examples of each feature



Using the Arboretum



American Basswood/Linden

(*Tilia americana*) Family: MALVACEAE

Small deciduous tree. Native.

Buds: Often distinctly and red (sometimes more chestnut brown or green) with one or two scales. Alternately arranged on twig. Plump shape and asymmetrically attached to the twig (see photo).



American Basswood/Linden

(*Tilia americana*) Family: MALVACEAE

Small deciduous tree. Native.

Buds: Often distinctly red (sometimes more chestnut brown or green) with one or two scales. Alternately arranged on twig. Plump shape and asymmetrically attached to the twig (see photo).

Leaves: Alternate, simple. Large leaf with small serrations along the margin. Leaf tip abruptly narrows. Leaf base either heart-shaped or square. Dark green above and pale green below. 3-5 veins arising from the base of the leaf.

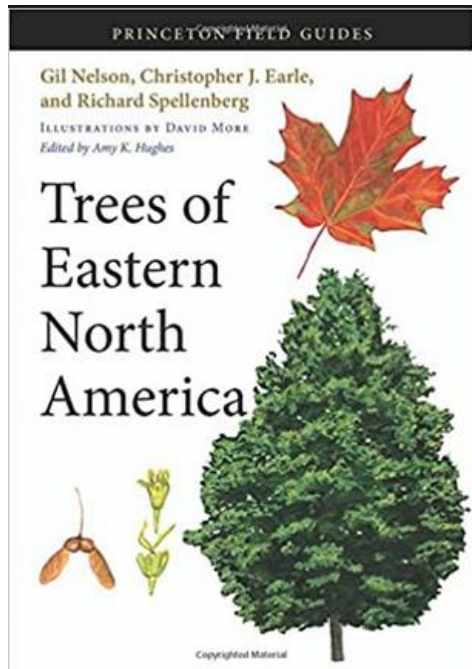
Bark: Gray-brown, with flattened furrows.

Flowers: Light yellow, drooping in clusters. Spring.



Next Steps

- Test Arboretum and provide feedback
- Expand Arboretum into lowland sites
- Use foundational knowledge to use other resources and in other areas
- Have fun!



Field Keys

- 16. Leaves simple.
 - 23. Leaves lobed.
 - 24. Leaves palmately lobed.
 - 25. Margins of the 3–5 shallow lobes sparsely toothed. (47) Sycamore
 - 25. Margins of lobes entire.
 - 26. Leaves 2–3 lobed or entire, with aromatic odor when crushed; leaf or lobe apex pointed. (43) Sassafras
 - 26. Leaves 3–4 lobed, the apex truncate. (48) Tulip Tree
 - 24. Leaves pinnately lobed.
 - 27. Twigs with thorns. (21) Hawthorn
 - 27. Twigs lacking thorns.
 - 28. Lobes rounded, not bristle-tipped.
 - 29. Clefts halfway to midrib; leaves dark green above, paler below. (38) White Oak
 - 29. Clefts very shallow, the leaf appearing coarsely toothed. (35) Chestnut Oak
 - 28. Lobes with bristle tips.
 - 30. Leaves dull green on upper side, hairy along midrib below. (34) Black Oak

ReForesters Resources

Pennpack Trust Arboretum

Interested in learning to identify the native tree species in your plot? Enter the Pennpack Trust Arboretum to learn more! [Click here to download instructions](#) on to learn how to find and use the Arboretum.

