

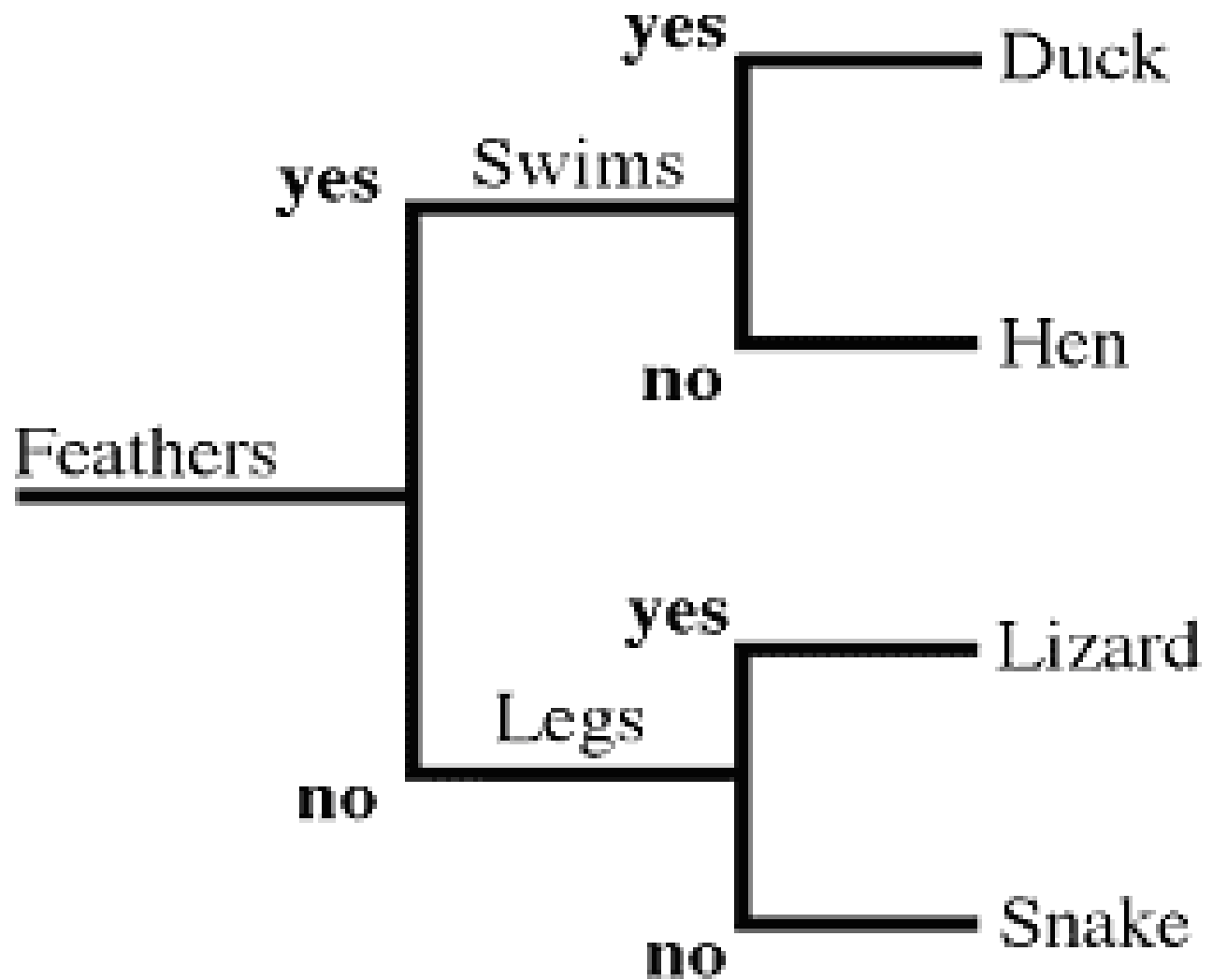
Tree morphology and identification

TreeKeepers
March 18, 2017

Tree identification keys

- What if you don't know what kind of tree it is?
- Dichotomous keys work you through it.
- Ask a series of yes or no questions that will lead you to the right tree.

Dichotomous key





Bird W



Bird X



Bird Y



Bird Z

Dichotomous Key to Representative Birds

1. a. The beak is relatively long and slender.....*Certhidea*
 b. The beak is relatively stout and heavy.....go to 2
2. a. The bottom surface of the lower beak is flat and straight*Geospiza*
 b. The bottom surface of the lower beak is curvedgo to 3
3. a. The lower edge of the upper beak has a distinct bend*Camarhynchus*
 b. The lower edge of the upper beak is mostly flat*Platyspiza*



Deciduous vs coniferous

Deciduous:

- Broad leaves
- Lose leaves in winter



Coniferous:

- Needles
- Leaves persistent (evergreen*)
- Seeds in a cone



Types of conifers

Needles



Scales



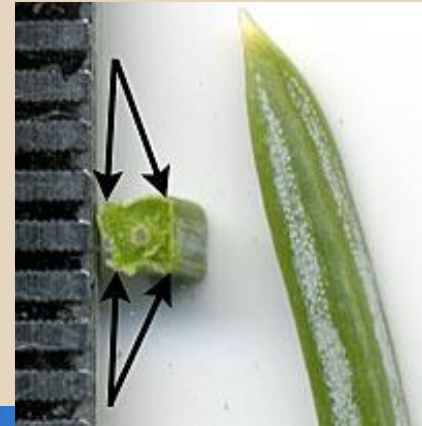
Pines

- Needles in bundles
- Needles usually long



Spruces

- Single needles
- Needles square or diamond shaped
 - See if you can roll them in your fingers
- Needles pointy
- Cones downwards



Firs

- Single needles
- Needles flat
 - Cannot roll in your fingers
- Needles tips rounded
- Cones upright



Quiz!

Tree identification website

<http://www.arborday.org/trees/what-tree/index.cfm>



Deciduous species

Leaf attachment



Alternate



© Stephen M. Seiberling, University of North Carolina Herbarium

Opposite



Whorled

Karren Wcisel © 2008









Maple



Ash



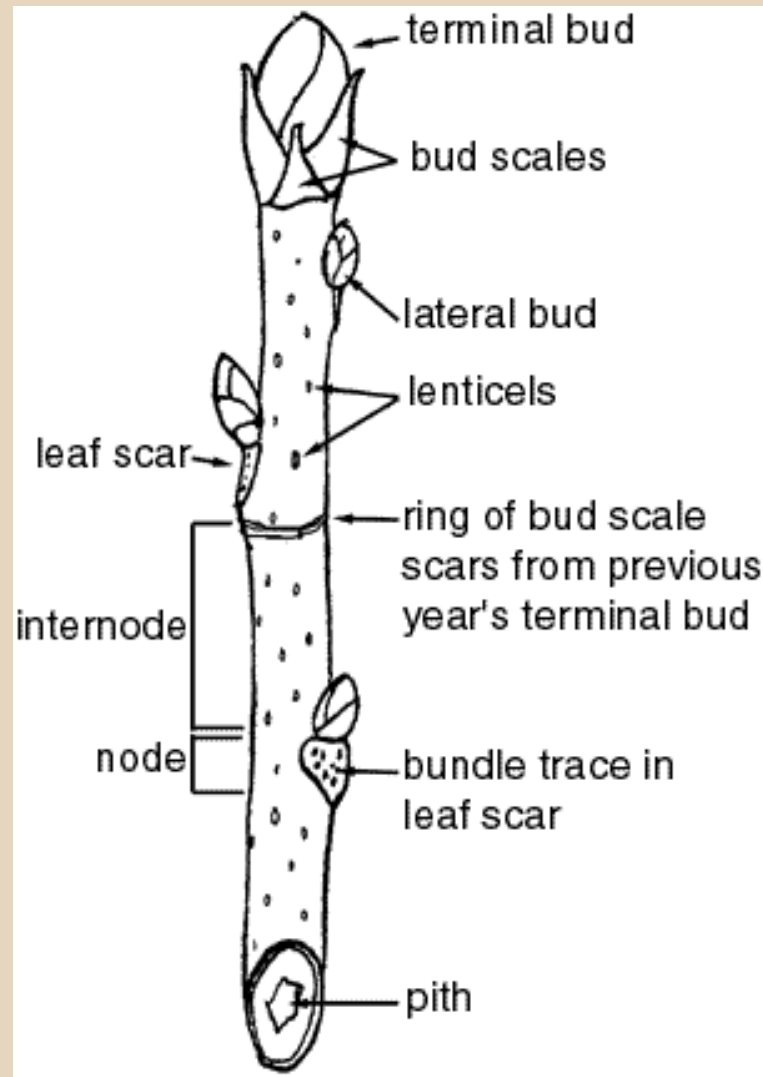
Dogwood



HORSEchestnut/
BUCKeye



Twig morphology







UGA0008165

Bark texture



Twig pubescence



Staghorn vs. smooth sumac



Leaf texture



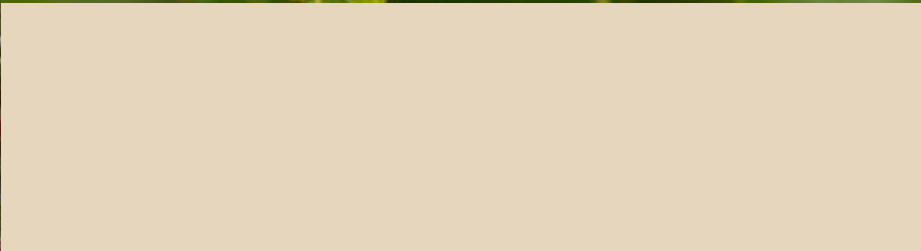
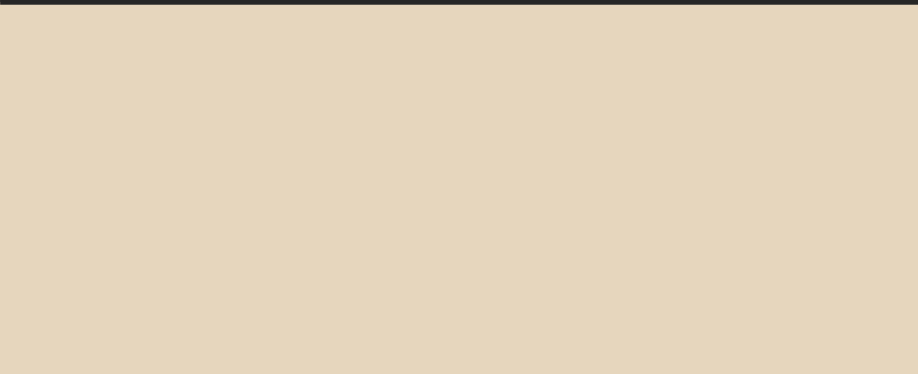
Armaments



Crabapple vs. hawthorn



Fruits



Seeds





©2004 Gary Fewless



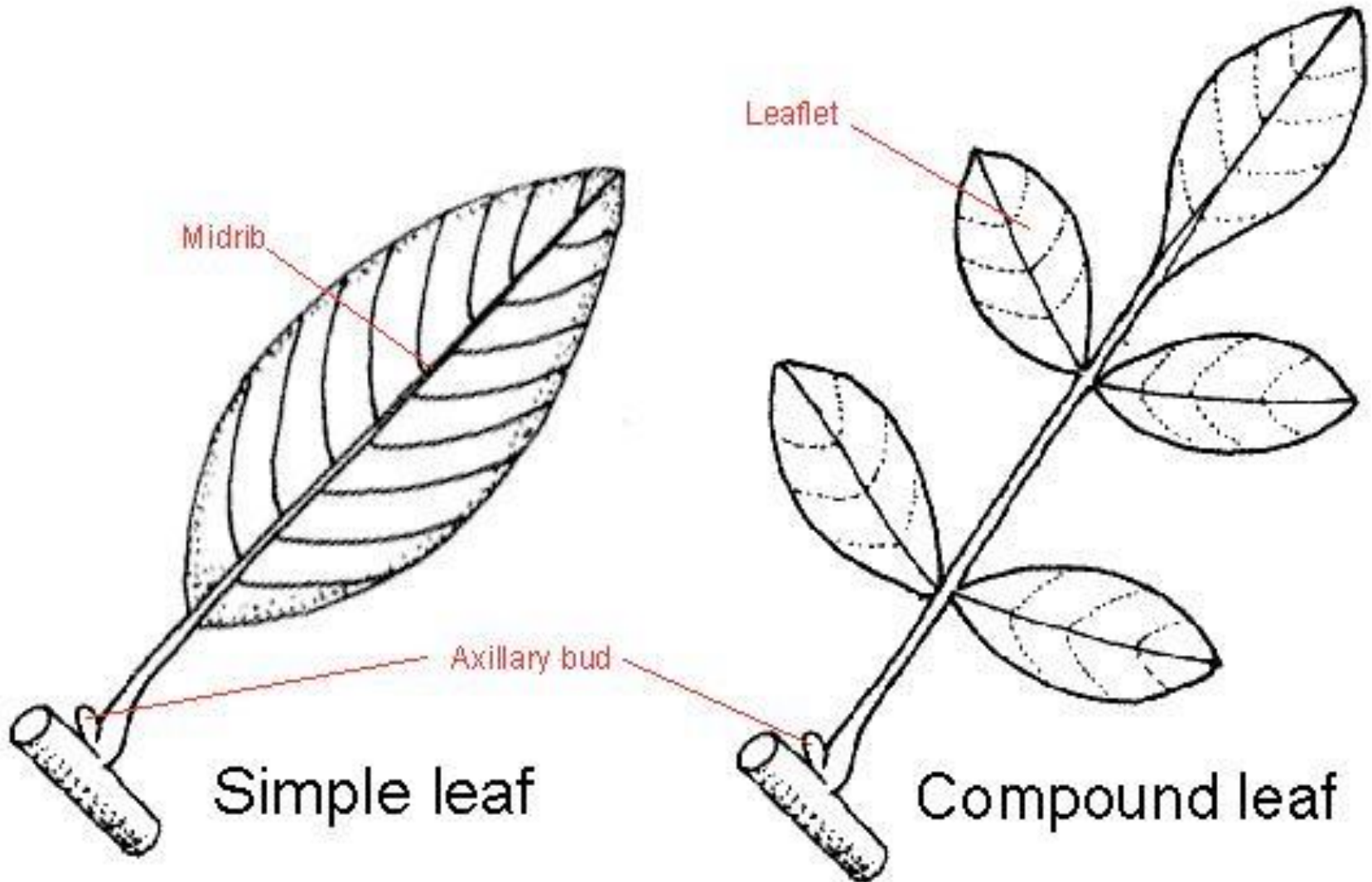
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<http://davesgarden.com/members/hc3one6/>

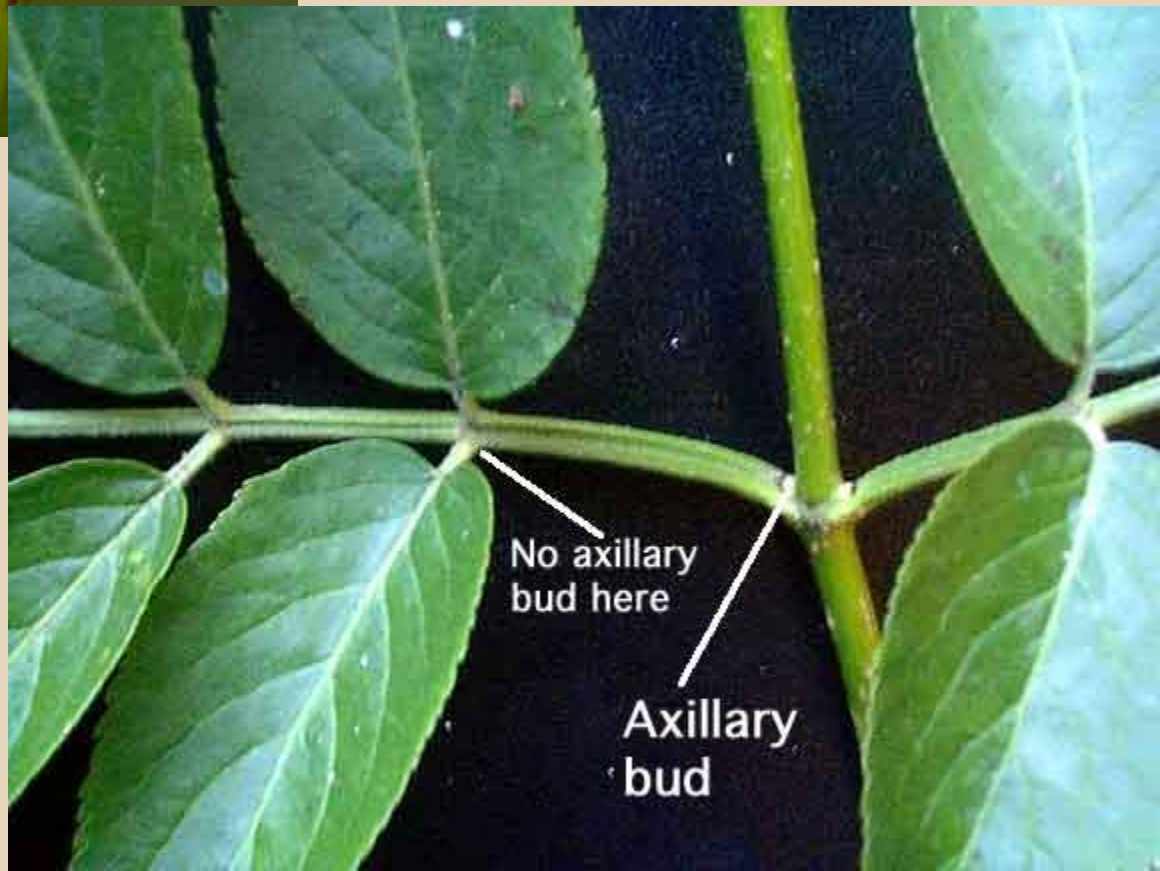


Fall color



Leaf characteristics

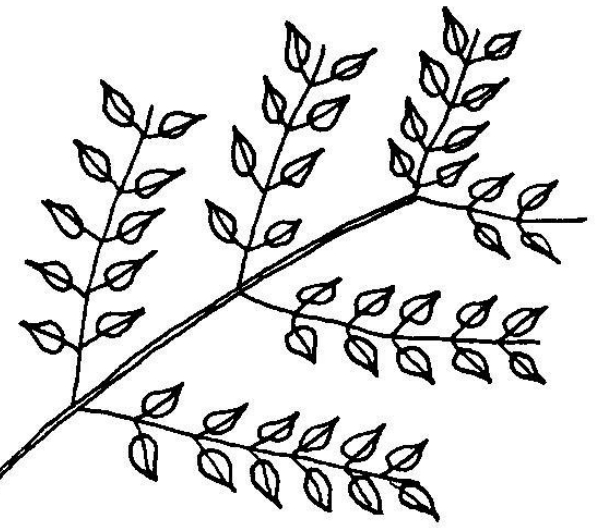
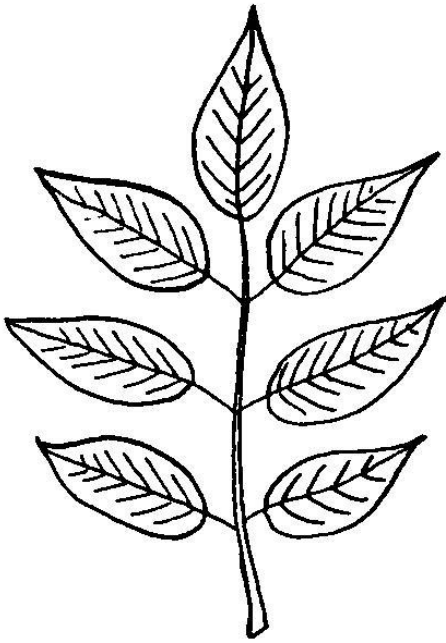




No axillary
bud here

Axillary
bud

Types of compound leaves

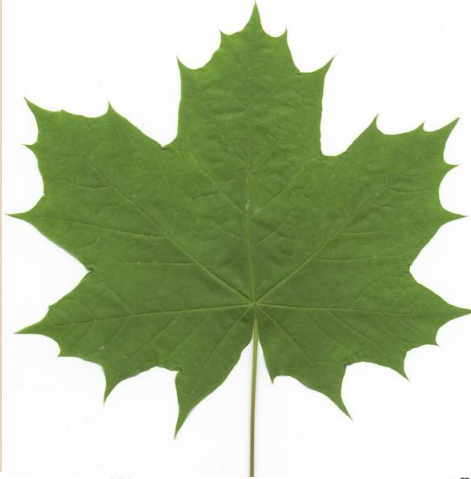


Pinnate Compound

Palmate Compound

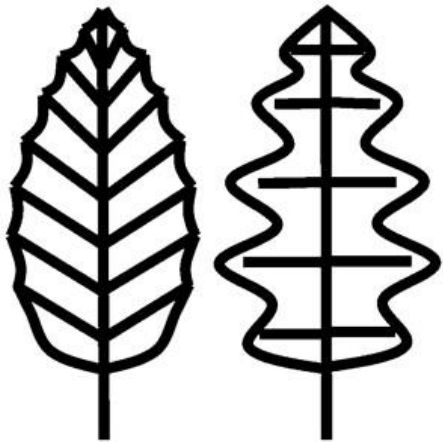
Doubly-Compound

Leaf venation

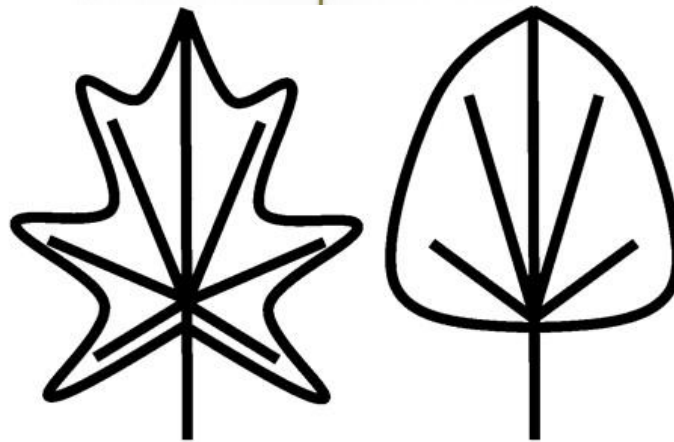


AllProssers

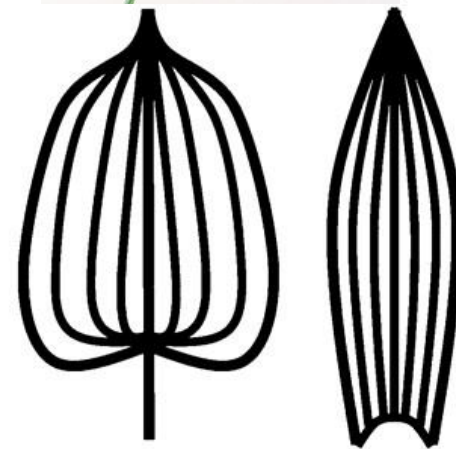
A



Pinnate



Palmate

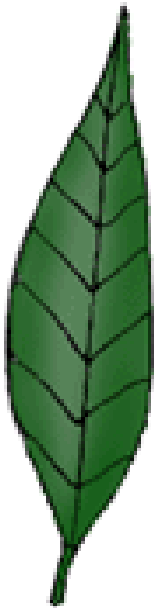


Parallel

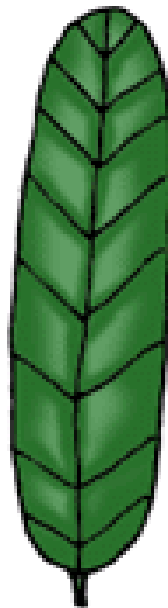
Leaf shape



linear



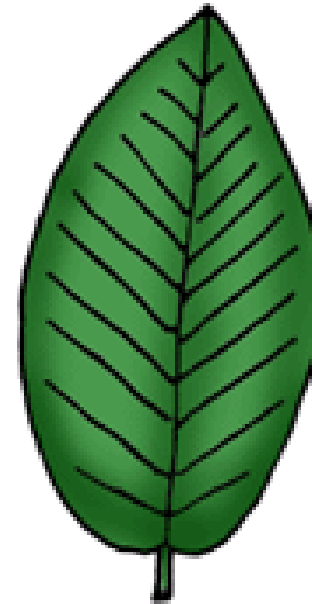
lanceolate



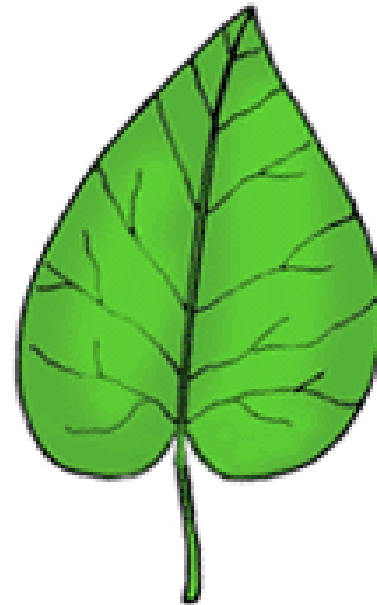
oblong



elliptical

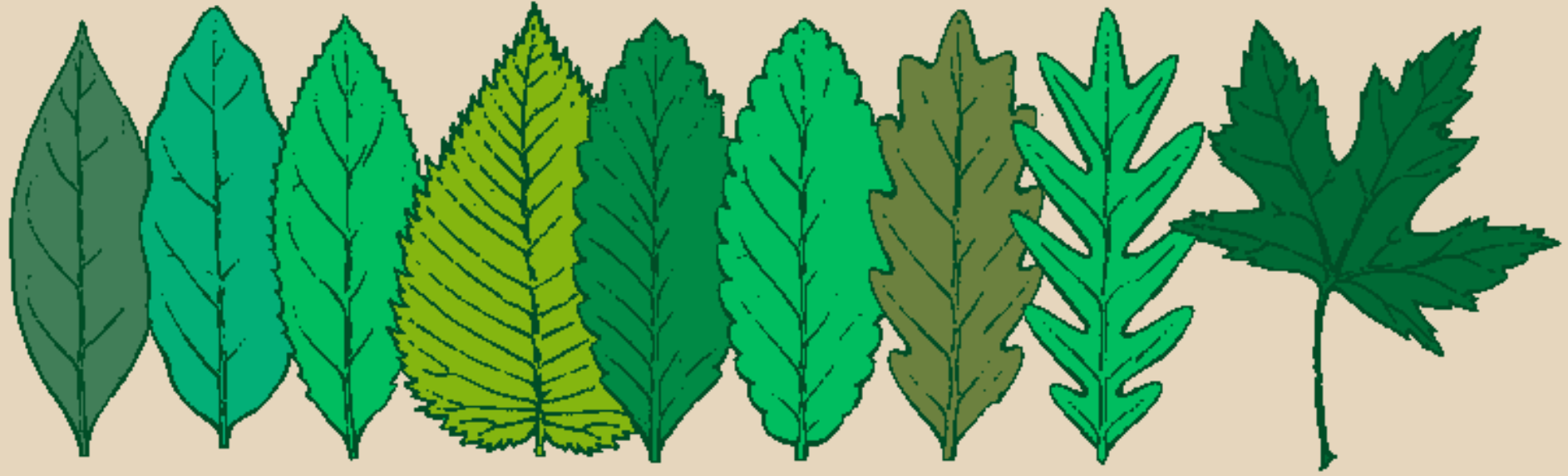


ovate



cordate

Leaf margins



Entire

Undulate

Serrate

**Doubly
Serrate**

Dentate

Crenate

**Lobed
(Pinnately)**

**Parted
(Pinnately)**

**Lobed
(Palmately)**



Quiz!

Tree identification website

<http://www.arborday.org/trees/what-tree/index.cfm>



Honey locust* (*Gleditsia triacanthos*)

- Pinnately compound leaves
- Alternate attachment
- May have armaments
- Gray, plate-like bark
- Long seed pods

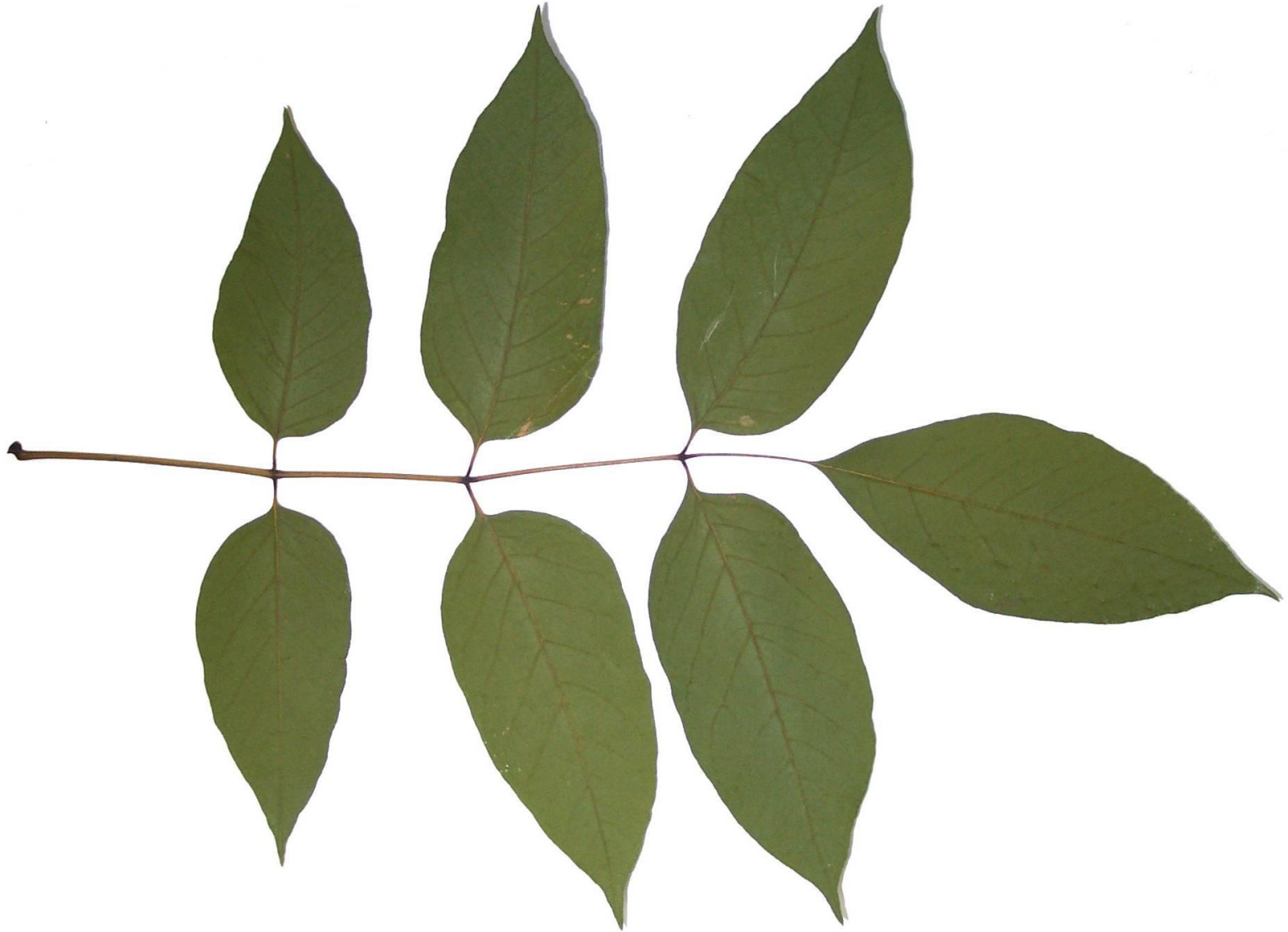


Gleditsia triacanthos 'Skyline'



Some common trees

Ashes







White ash



Green ash*

Fall color



Green ash

(*Fraxinus pennsylvanica*)*

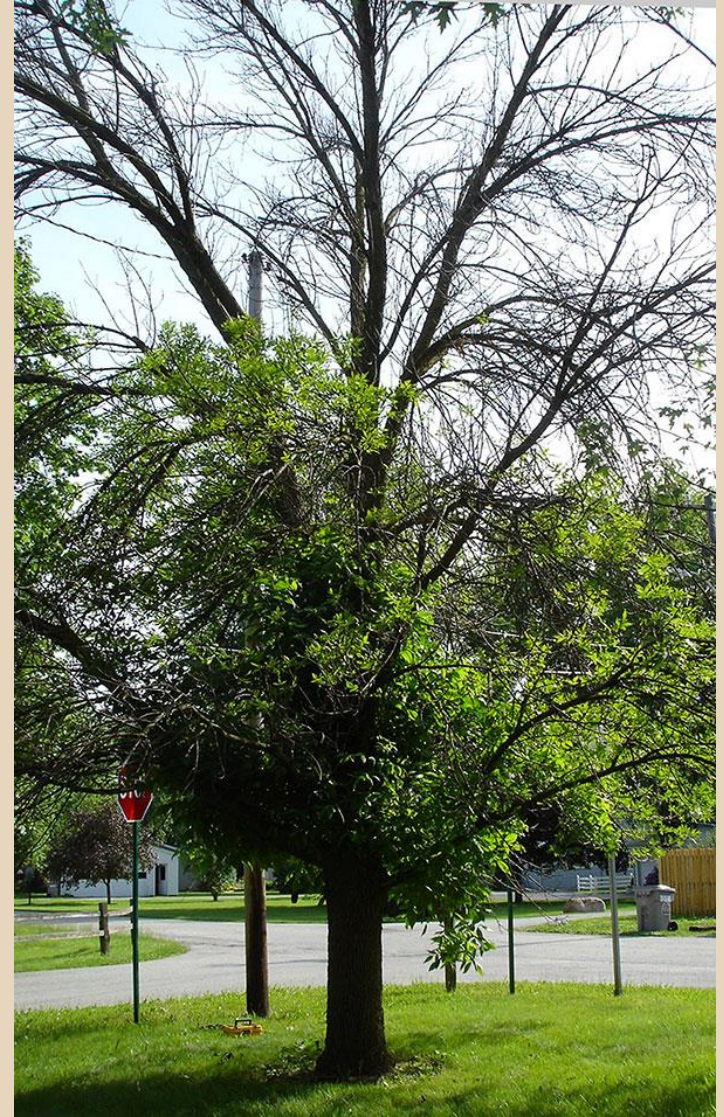
- Opposite leaves
- Pinnately compound leaves
- Pinnate venation
- Fruit is a samara (winged)



EAB



EAB



Oaks







Bur oak



Red oak*



White oak



Swamp white oak

Red oak (*Quercus rubra*)*

- Alternate leaves
- Simple, pinnately lobed leaves
- Pointy tips
- Good fall color







Maples





So many maples



Sugar Maple



Silver Maple



Red Maple



Norway Maple*

Norway maple (*Acer platanoides*)*

- Opposite leaves
- Simple, palmately lobed leaves
- Yellow in fall
- White sap in leaves
- Overplanted in cities
- Invasive

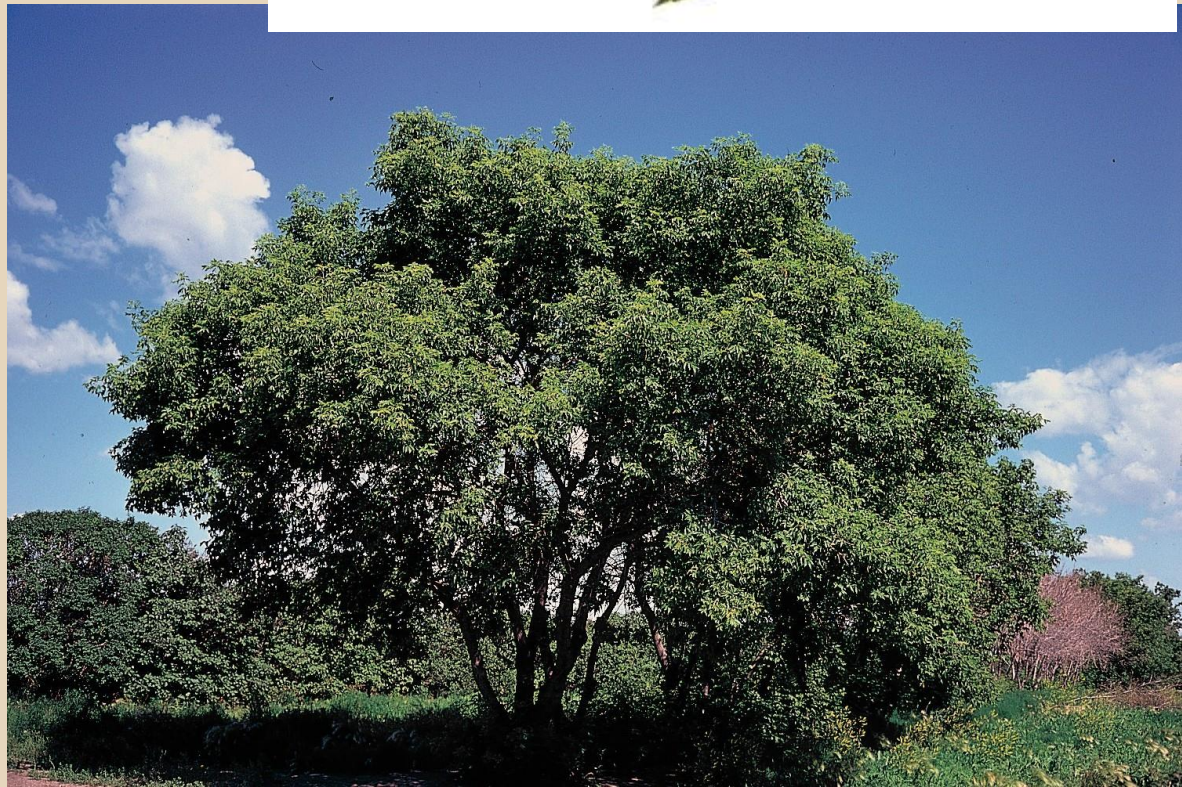


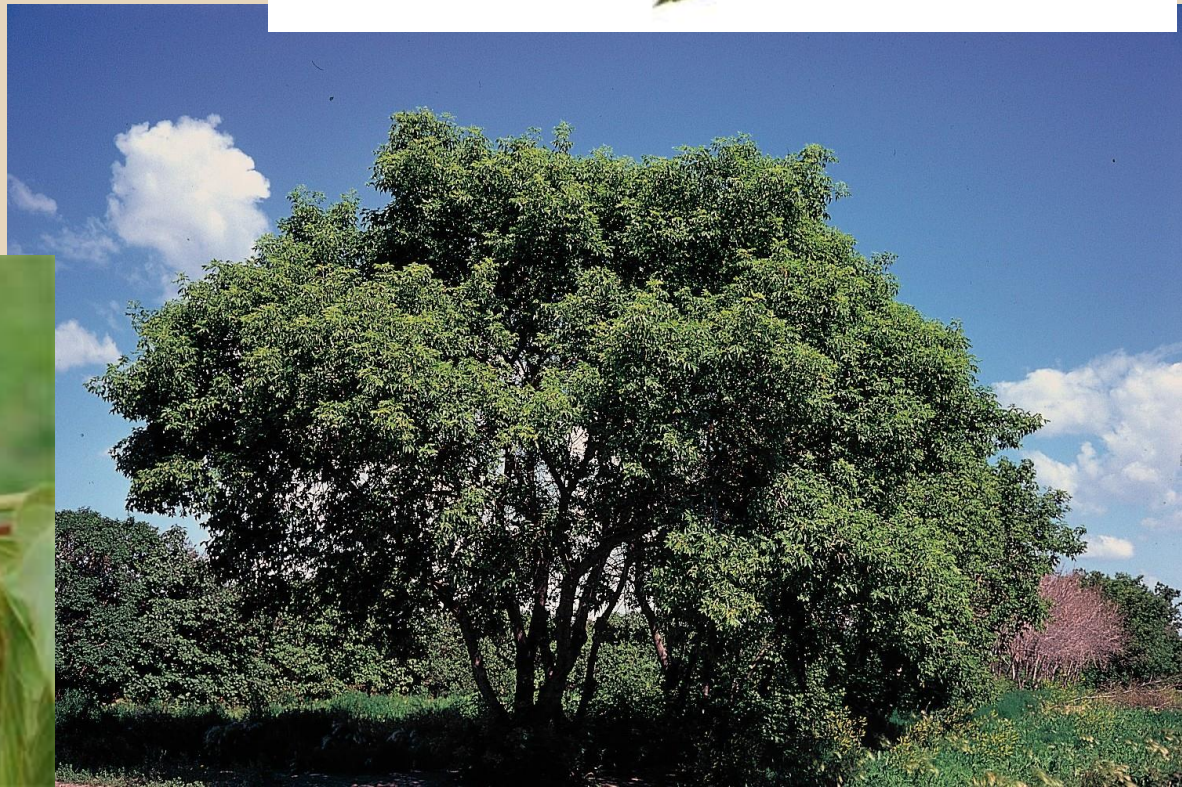
Norway maple 'Crimson King'

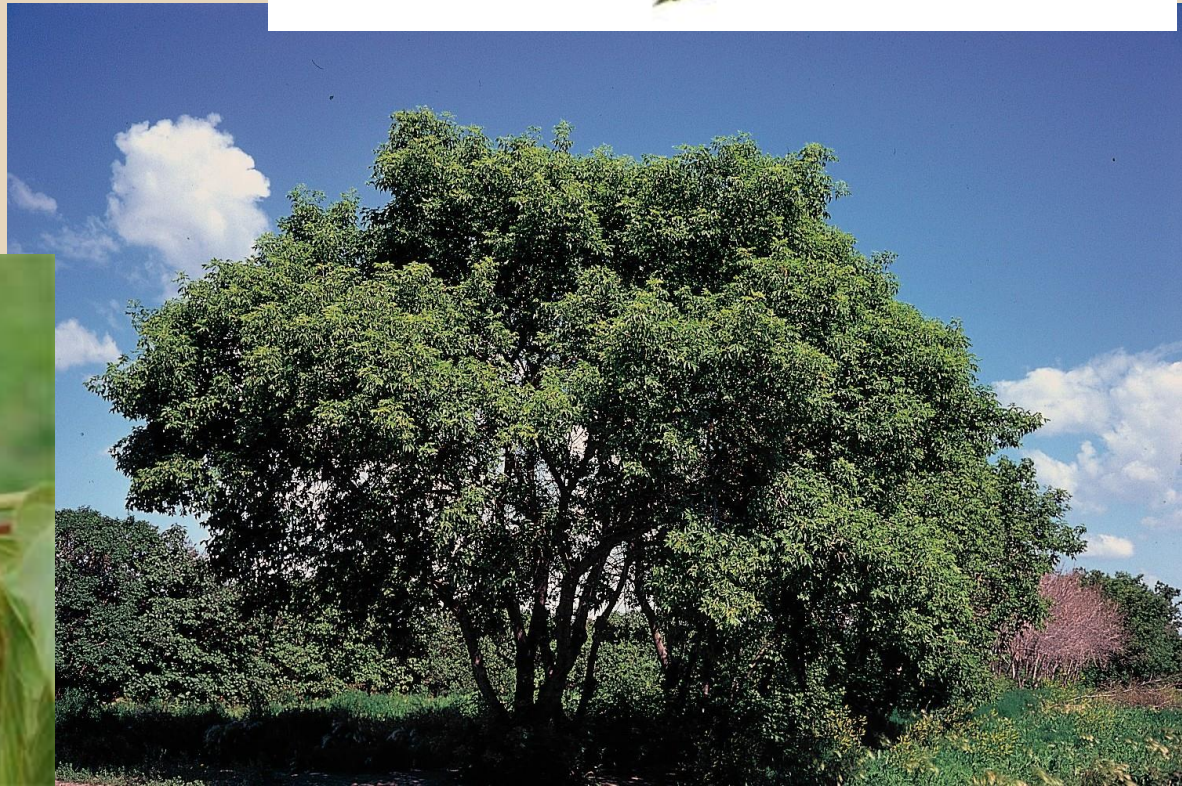


Cultivars and hybrids

- Cultivars are trade names
 - Consistent appearance
 - Frequently genetically identical
 - Bred for specific traits
- Hybrids occur when two species (or sometimes genera) interbreed
 - Sometimes occurs naturally
 - Frequently used to create interesting new plant varieties

























Boxelder (*Acer negundo*)*

- Opposite leaves
- Palmately compound leaves
- Quite weedy
- Not frequently planted, but abundant



Questions?

Tree Leaf Identification Guide

<p>Cottonwood</p>  <p>Fall color: yellow</p>	<p>Beech</p>  <p>Fall color: rich golden brown</p>	<p>White Birch</p>  <p>Fall color: yellow</p>	<p>White Oak</p>  <p>Fall color: red or brown</p>	<p>Sugar Maple</p>  <p>Fall color: yellow, red, orange</p>	<p>Staghorn Sumac</p>  <p>Fall color: brilliant red, orange</p>
<p>Quaking Aspen</p>  <p>Fall color: yellow</p>	<p>American Elm</p>  <p>Fall color: yellow</p>	<p>Grey Birch</p>  <p>Fall color: yellow</p>	<p>Red Oak</p>  <p>Fall color: dark red, orange, brown</p>	<p>Red Maple</p>  <p>Fall color: brilliant crimson red</p>	<p>White Ash</p>  <p>Fall color: yellow to deep purple</p>
<p>Big Tooth Aspen</p>  <p>Fall color: yellow</p>	<p>Basswood</p>  <p>Fall color: yellow</p>	<p>Black Cherry</p>  <p>Fall color: red, yellow, brown</p>	<p>Ash-leaf Maple (Box Elder)</p>  <p>Fall color: yellow</p>	<p>Striped Maple</p>  <p>Fall color: yellow</p>	<p>Butternut</p>  <p>Fall color: yellow</p>



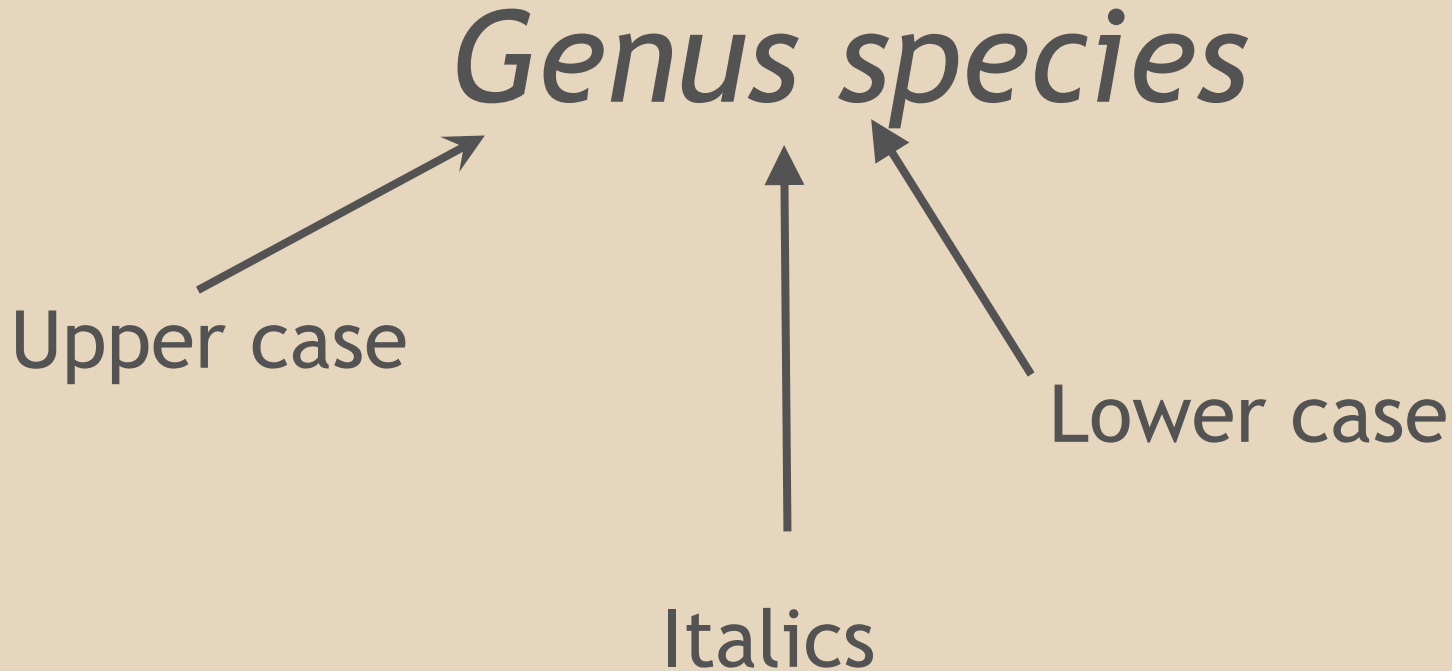
Binomial nomenclature

What are they?

- Latin or scientific names



What do they look like?



Genus

Quercus

Oak

Acer

Maple

Ulmus

Elm

Fraxinus

Ash

Carya

Hickory

Juglans

Walnut

Platanus

Sycamore

Fagus

Beech

species

Usually describes a unique attribute of that plant

But they're so long

- You can abbreviate them

Acer platanoides = *A. platanoides*

Where did they come from?



Where did they come from?

*Arbutus caule erecto, foliis glabris serratis,
baccis polyspermis*

(Arbutus with upright stems, hairless, saw-toothed leaves and many-seeded berries)

Arbutus unedo



Linnaeus

- Named over 9,000 plants.
- Had minions send him plant samples from around the world.
- Most of his names are still used.

Binomial names

- Is it really necessary to know two names?
 - Yeah, probably

Scientists love them

- Same name regardless of language
- They are widely used, so it is important that you have a little bit of familiarity with them.

Common names confusing



Pin oak



Pin oak

Common names confusing



Pin oak
Quercus palustris



Pin oak
Quercus ellipsoidalis

Common names confusing



Ironwood
Hop hornbeam
Hardhack
Leverwood

Ostrya virginiana

Latin names are descriptive

Robinia pseudoacacia
(Black locust)



Latin names are descriptive

Fraxinus quadrangulata
(Blue ash)



Latin names are descriptive

Tilia cordata
(Littleleaf linden*)



Littleleaf linden (*Tilia cordata*)*

- Alternate leaves
- Simple, pinnate venation
- Flowers inconspicuous
- Smell incredible
- Showy flower stipules



Latin names are descriptive (kind of)

Tilia tomentosa
(Silver linden)



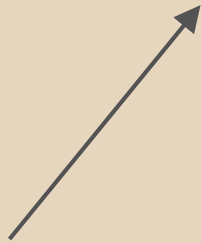
Sometimes latin names are the same.

Aesculus hippocastanum



What do we do with cultivars?

Acer platanoides 'Crimson King'

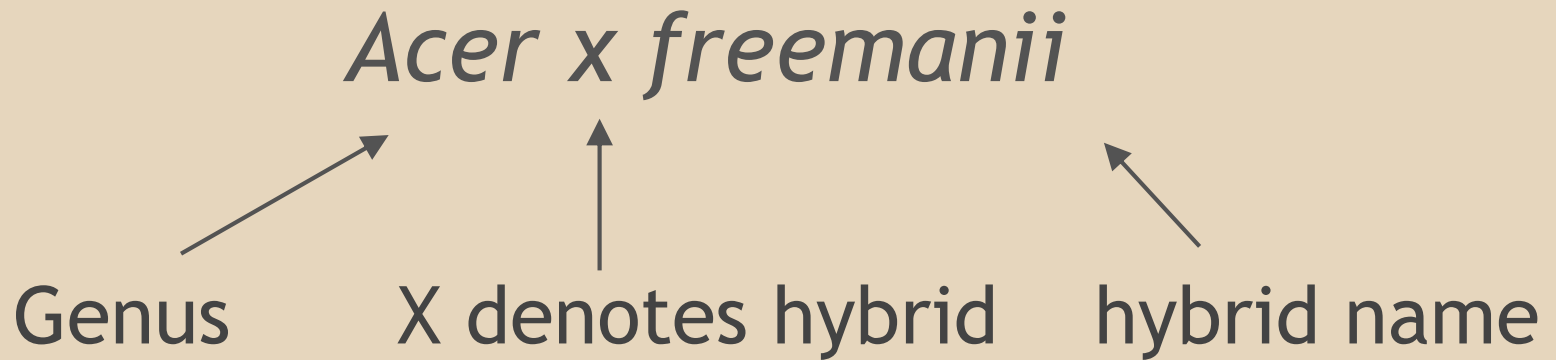


Normal latin name

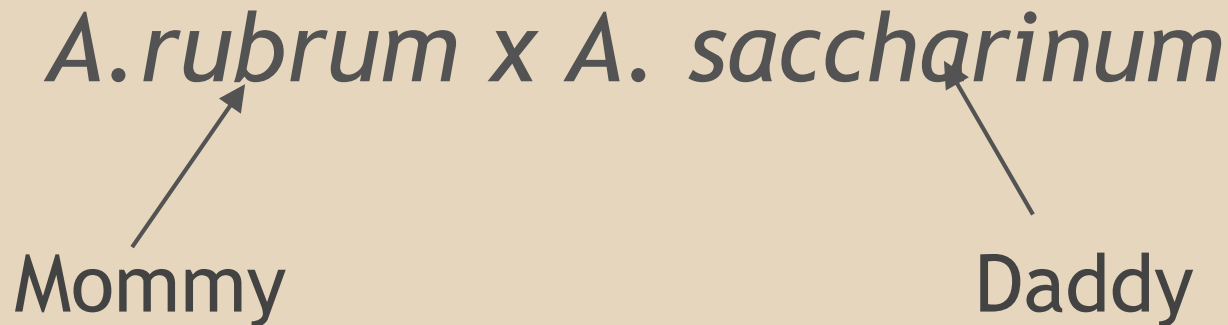


No italics, capitalized,
in '...'

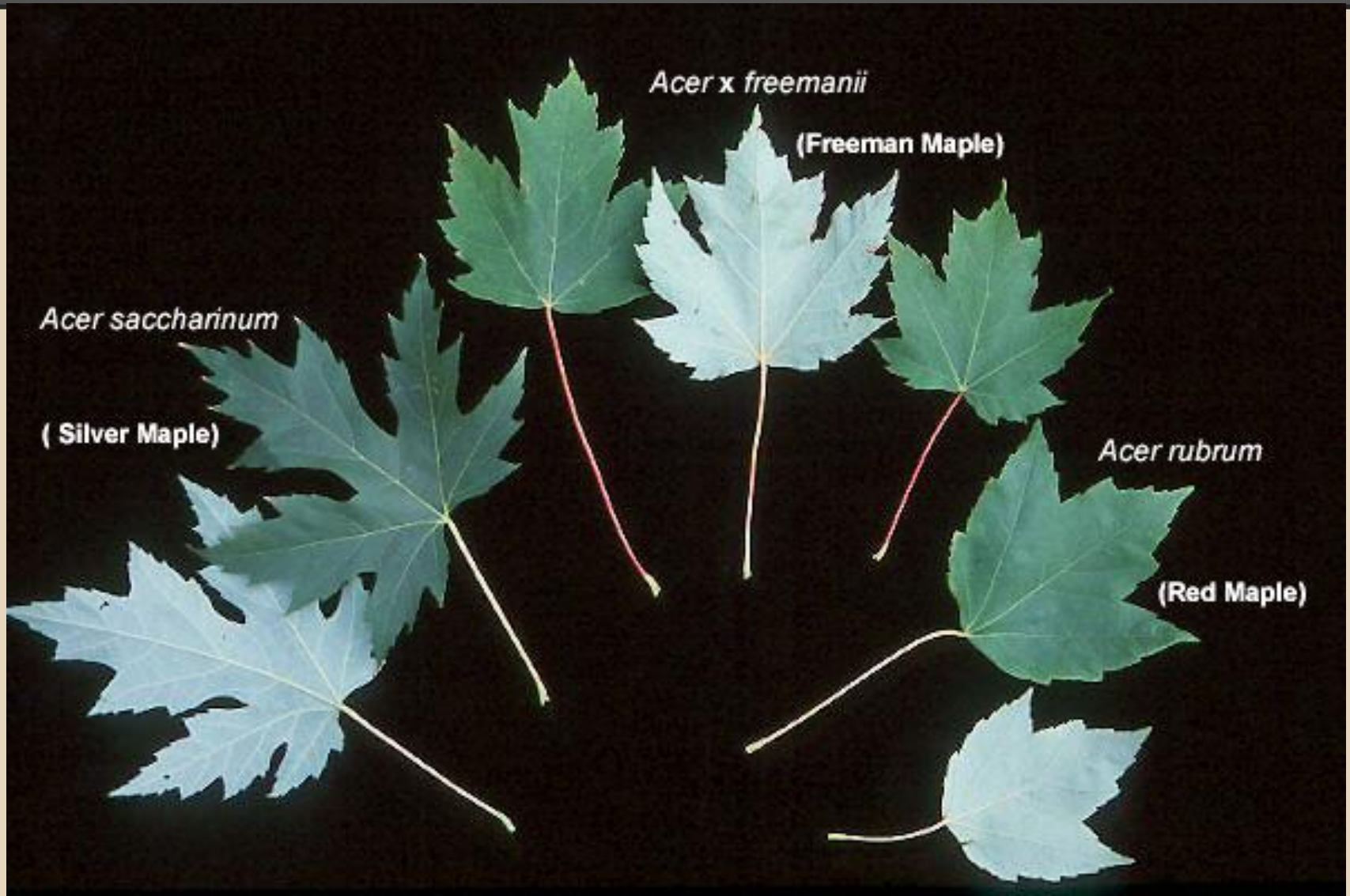
What do we do with hybrids?



OR



Freeman maple



More species to know!









American sycamore (*Platanus occidentalis*)*

- Alternate leaves
- Leaves look kind of like maples, but huge
- Exfoliating bark = really pretty
- Seeds are in poofy balls



American elm*

(*Ulmus americana*)



Korhnek

American elm*

(*Ulmus americana*)

- Simple leaf
- Alternate attachment
- Pinnate venation
- Uneven leaf base



American elm*

(*Ulmus americana*)

- Simple leaf
- Alternate attachment
- Pinnate venation
- Uneven leaf base
- Vase shaped tree



American elm*

(*Ulmus americana*)

- Simple leaf
- Alternate attachment
- Pinnate venation
- Uneven leaf base
- Vase shaped tree
- Dutch elm disease



Kentucky coffeetree (*Gymnocladus dioica*)

- Doubly pinnately compound leaf
- Alternate attachment
- Brown pods
- Great street tree

