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

- Feathers
  - yes
  - no

- Swims
  - yes
  - no

- Legs
  - yes
  - no

- Duck
- Hen
- Lizard
- Snake
### 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 curved              | go 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             | Platyptiza |
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
- Opposite
- Whorled
Maple

Ash

Dogwood

HORSE chestnut/
BUCK eye
Twig morphology

- terminal bud
- bud scales
- lateral bud
- lenticels
- leaf scar
- internode
- node
- bundle trace in leaf scar
- ring of bud scale scars from previous year's terminal bud
- pith
Bark texture
Twig pubescence
Staghorn vs. smooth sumac
Leaf texture
Armaments
Crabapple vs. hawthorn
Fruits
Seeds
Fall color
Leaf characteristics

Simple leaf

Leaflet

Axillary bud

Compound leaf
Types of compound leaves

Pinnate Compound  Palmate Compound  Doubly-Compound
Leaf venation

Pinnate

Palmate

Parallel
Leaf shape

linear  lanceolate  oblong  elliptical  ovate  cordate

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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
Fall color
Green ash
(*Fraxinus pennsylvanica*)

- Opposite leaves
- Pinnately compound leaves
- Pinnate venation
- Fruit is a samara (winged)
EAB
Oaks
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
## Tree Leaf Identification Guide

<table>
<thead>
<tr>
<th></th>
<th>Cottonwood</th>
<th>Beech</th>
<th>White Birch</th>
<th>White Oak</th>
<th>Sugar Maple</th>
<th>Staghorn Sumac</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall color</td>
<td>Fall color: yellow</td>
<td>Fall color: rich golden brown</td>
<td>Fall color: yellow</td>
<td>Fall color: red or brown</td>
<td>Fall color: yellow, red, orange</td>
<td>Fall color: brilliant red, orange</td>
</tr>
<tr>
<td></td>
<td>Quaking Aspen</td>
<td>American Elm</td>
<td>Grey Birch</td>
<td>Red Oak</td>
<td>Red Maple</td>
<td>White Ash</td>
</tr>
<tr>
<td>Fall color</td>
<td>Fall color: yellow</td>
<td>Fall color: yellow</td>
<td>Fall color: yellow</td>
<td>Fall color: dark red, orange, brown</td>
<td>Fall color: brilliant crimson red</td>
<td>Fall color: yellow to deep purple</td>
</tr>
<tr>
<td></td>
<td>Big Tooth Aspen</td>
<td>Basswood</td>
<td>Black Cherry</td>
<td>Ash-leaf Maple (Box Elder)</td>
<td>Striped Maple</td>
<td>Butternut</td>
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<tr>
<td>Fall color</td>
<td>Fall color: yellow</td>
<td>Fall color: yellow</td>
<td>Fall color: red, yellow, brown</td>
<td>Fall color: yellow</td>
<td>Fall color: yellow</td>
<td>Fall color: yellow</td>
</tr>
</tbody>
</table>
Binomial nomenclature
What are they?

- Latin or scientific names
What do they look like?

Genus *species*

- Upper case
- Lower case
- Italics
<table>
<thead>
<tr>
<th>Genus</th>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quercus</td>
<td>Oak</td>
</tr>
<tr>
<td>Acer</td>
<td>Maple</td>
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<tr>
<td>Ulmus</td>
<td>Elm</td>
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<tr>
<td>Fraxinus</td>
<td>Ash</td>
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<tr>
<td>Carya</td>
<td>Hickory</td>
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<tr>
<td>Juglans</td>
<td>Walnut</td>
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<tr>
<td>Platanus</td>
<td>Sycamore</td>
</tr>
<tr>
<td>Fagus</td>
<td>Beech</td>
</tr>
</tbody>
</table>
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

Ostrya virginiana

Ironwood
Hop hornbeam
Hardhack
Leverwood
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?

Acer x freemanii

Genus X denotes hybrid hybrid name

OR

A. rubrum x A. saccharinum

Mommy Daddy
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*)
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 dioicus*)

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