Tree Taxonomy and Names

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What is taxonomy?

• The practice and science of classification
• Tree taxonomy – classifying trees botanically
• Usually classify by anatomy, especially flowers and fruit; sometimes vascular, etc.
• Often ecological similarities at family level and below
• Humans are classifiers
• Knowing tree taxonomy let’s you predict...
  – what tree will look like
  – how big it will get
  – how it will react to environment
• The more precisely you can classify, the more precisely you can predict these things
Maple Example

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- ‘Rocky Mountain Glow’ canyon maple – so-so fall color, tree form
Taxonomic Levels – Canyon Maple

- Kingdom Plantae (Plants)
  - Division Magnoliophyta (Angiosperms; flowering plants)
  - Class Magnoliopsida (Dicotyledons)
    - Subclass Rosidae (many orders; showy flowers)
      - Order Sapindales (many families – citrus, cashew, etc.)
        - Family Aceraceae (2 genera – Acer, Dipteronia)
          - Genus Acer (120 species of maples)
            - Species Acer grandidentatum (canyon maple)
              - Variety ‘Rocky Mountain Glow’
Family

- Always end in “aceae” (pronounced ay-see-see)
- Usually also a common name
- Not italicized
- Named for most typical genus
  - Aceraceae (Acer – maples)
  - Pinaceae (Pinus – pines; also Abies, Picea, Larix, etc.)
  - Fagaceae (Fagus – beeches; also Quercus, Castanea)
  - Cupressaceae (Cupressus – cypresses; also Juniperus, Chamaecyparis, Thuja, Calocedrus)
Family

- Sometimes significant ecologically, culturally
  
  Most Oleaceae (*Olea, Fraxinus, Chionanthus, Syringa, Forsythia*) drought hardy, shade intolerant, borer-prone
Family

- Sometimes significant ecologically, culturally
  - Many Cupressaceae (*Cupressus, Juniperus*) drought hardy, shade intolerant, but not *Thuja, Chamaecyparis*
“Genus” singular, “genera” plural
Usually also a common name
Always italicized and first letter capitalized
Example: witch-hazel
genus is *Hamamelis*
(family Hamamelidaceae)
More likely significant ecologically, culturally
- Most oaks (*Quercus*) drought tolerant
More likely significant ecologically, culturally
- Most firs (*Abies*) shade tolerant, moisture-loving
• More likely significant ecologically, culturally
  – All willows (Salix) shade intolerant, need moisture, I&D prone
• “Species” singular AND plural (no “specie”)
• Always combined with genus
  – “Mike” not useful unless combined with “Kuhns”
  – virginiana not useful unless used w/ Pinus or Quercus
• Always italicized or underlined
• Never capitalized
• Often end in “ii” (pronounced ee-eye)
  – Quercus muehlenbergii
• Very ecologically significant (all Abies concolor are tolerant of shade, but less so than A. lasiocarpa)
Latin or Scientific Names, Binomials

- 2 part name – Genus + species
  - Together called Latin name or binomial, or just species
  - *Pseudotsuga menziesii*
- Latin for consistency
- One agreed-on name for each species
- Latin from features, geography, discoverers, etc.
  - pseudo = false
  - tsuga = hemlock genus
  - Archibald Menzies first described the species
Sometimes person(s) who most recently named the species are cited afterward.

Can get quite complicated.

*Pseudotsuga menziesii* (Mirb.) Franco
  - Mirbel named the species; Franco revised the classification into varieties.
Cultivars, Varieties

- Latin (may be italicized, but should not) or English name in single quotes after species
- May have cv. or var. in front of it (*Populus tremula* cv. ‘Erecta’)
- Subdivides species (also are varieties, sub-species, etc.)
- Cultivar defined as “cultivated variety”
  - Cultivated true to form (grafted, etc.)
Acer saccharum
‘Columnare’ – Sugar Maple
Catalpa binonoioides
‘Nana’ –
Southern Catalpa
Thuja plicata ‘Zebrina’
–
Western Redcedar
Chamaecyparis pisifera
‘Golden Mop’ – Sawara Falsecypress
Common Cultivar Names

- Color – Alba, Aurea, Glauca, Nigrum, Rubra
- Shape – Columnare, Globosum, Pendula, Pyramidalis, Stricta
- Size – Nana
- Other – Filifera, Variegata, Oculus-draconis

*Pinus densiflora* ‘Oculus-draconis’

Japanese red pine ‘Dragon’s Eye’
Hybrids

- Genetic crosses between two species
- Usually in same genus
- Indicated by X
- Human-made or natural hybrids
Hybrid Examples – Interspecific

silver maple
(Acer saccharinum)

red maple
(Acer rubrum)

Acer X freemanni ‘Autumn Blaze’
Hybrid Examples – Interspecific

American sycamore (Platanus occidentalis)

Oriental sycamore (Platanus orientalis)

London planetree (Platanus X acerifolia)
Hybrid Examples – Interspecific

lily magnolia (Magnolia liliiflora)

saucer magnolia (Magnolia X soulangiana)

Yulan magnolia (Magnolia denudata)
Hybrid Examples – Intergeneric

Monterey cypress
*(Cupressus macrocarpa)*

Nootka cypress
*(Chamaecyparis nootkatensis)*

Leyland cypress
*(X Cupressocyparis leylandii)*
Common Names

- Many names for one species
  - *Pseudotsuga menziesii* called Douglas-fir, Douglas fir, red fir, red pine
- One name can refer to more than one species
  - Red pine used for *P. menziesii* & *Pinus resinosa*
- Vary regionally; confusing
- Examples: pine, boxelder, redcedar, red maple
Common Names

• If hyphenated or run together…
  – Often indicates misleading common names
  – Douglas-fir, boxelder, mountain-ash, etc.
Communication and Professionalism

• Latin names can sound uppity, academic, snobbish but…
  …knowing and appropriately using them is useful for clear communication; part of professionalism

• Mechanics don’t say “hand me that whatchamacallit wrench so I can take off this thingey” (not good mechanics)
References

• USU Extension Forestry
  – https://forestry.usu.edu/

• USU Tree Browser
  – www.treebrowser.org

• Dendrology at Virginia Tech
  – https://dendro.cnre.vt.edu/dendrology/

• Plants Database
  – plants.usda.gov/index.html