






Dendrology

FORS 2319

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Lecture 7:

Identifying Unknowns with Keys





Taxonomic Keys

- Keys are used to identify an unknown plant
  - Often difficult to get to an herbarium
  - Don’t have access to digital resources in field
- Keys are a series of statements
  - Compare physical characteristics with your specimen
  - If they don’t match up, eliminate that possibility
  - Eventually, you can identify the species

Types of Keys

- Dichotomous
  - Indented (Nixon)
  - Bracketed
- Multichotomous
  - Database driven (VT)
  - Multiple choices

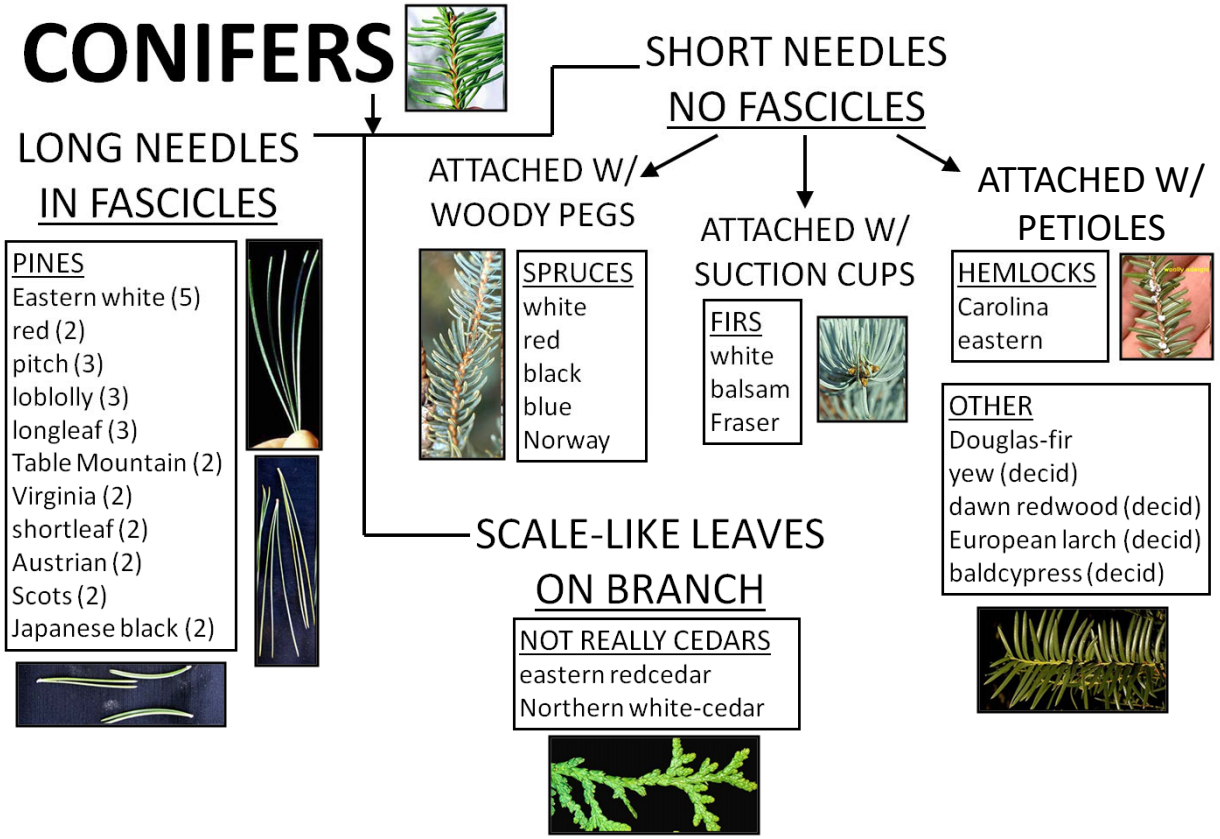
Dichotomous Keys (Indented)

1. Choice A (nope, not my species)…….(2)
1. **Choice B (hey, that looks right)…….(3)**
    2. Choice C (we don't care)……(4)
    2. Choice D (we don't care)……(5)
3. Choice E (not quite right, but close)…… Spp. A
3. **Choice F (hey, that's what I have!)…… Spp. B**

Dichotomous Keys (Bracketed)

1. Leaves in crowns at ends of 1–4(–8) trunk-like stems usually 1–4.3 m tall (often relatively short in *Y. gloriosa*); leaves broad, 2.5–8 cm wide, stiff and spear-like, thickish (except flexible and thin in *Y. gloriosa*); fruits indehiscent, eventually drooping (except erect in *Y. gloriosa*).
   2. Leaves 12–40(–50) cm long; plants flowering Jun–Aug(–fall); fruits at maturity 3.5–5 cm long _____ **Y. aloifolia**
   2. Leaves 30–110 cm long; plants flowering in spring (Feb–May); fruits at maturity 5–14 cm long (except 2.5–4.5 cm long in *Y. gloriosa*).
      3. Leaves flexible, mostly recurved; fruits 2.5–4.5 cm long, leathery, erect; plants persisting and escaping in ne part of East TX _____ **Y. gloriosa**
      3. Leaves stiff, spear-like; fruits 5–14 cm long, succulent, eventually drooping; plants of s part of East TX
         4. Leaves with marginal fibers, the apical portion of leaves usually rolled inward so that margins nearly touch; ovary slender for its length, not over 7 mm in diam. at flowering time _____ **Y. torreyi**
         4. Leaves without marginal fibers, apical portion of leaves not inrolled; ovary stout for its length, 7–12 mm in diam. at flowering time _____ **Y. treculeana**
1. Leaves in a basal cluster (without visible stems) or at ends of very short trunk-like stems 0.4 m or less tall; leaves usually narrower, 0.8–4 cm wide (to 6.5 cm in the rare *Y. cernua*), not stiff and spear-like (but can be either straight or drooping); fruits dehiscent at maturity, not drooping.
   5. Leaf margins yellowish to dark orangish red or reddish brown, smooth or minutely toothed, not shredding into fibers; pistils usually 2–4.5 cm long.
      6. Panicle moderately to densely floccose, the branches recurved and drooping with age; tepals 0.75–1.7 cm wide; stamens 1.2–1.9(–2.2) cm long; species known only from Jasper and Newton counties in the eastern Pineywoods _____ **Y. cernua**
      6. Panicle glabrous or slightly pubescent, the branches wide-spreading to erect-spreading; tepals (1.4–)2–3.2 cm wide; stamens 1.8–3.2 cm long; species of western Blackland Prairie, Cross Timbers and Prairies, and Edwards Plateau.
         7. Leaves twisted, with margins inrolled most of their length, dark green, not glaucous, ± scabrous on both surfaces; leaf margins usually dark orangish red or reddish brown or occasionally yellowish, wavy _____ **Y. rupicola**

Multichotomous Keys



Key Use Example

1. Specimen has opposite leaf arrangement……2
1. Specimen has alternate leaf arrangement……3
    2. Serrate margins…..*Acer rubrum*
    2. Entire margins….*Acer floridanum*
3. Oval leaf shape…..*Ostrya virginiana*
3. Deltoid leaf shape….*Betula nigra*

Tips to Constructing a Good Key

From Fralish and Franklin 2002

- Develop a title that gives the scope
  - Morphology (leaf, twig)
  - Geographic range
  - Then stay within your scope
- Provide a list of species included
- Include only 2 alternatives in a couplet
- Make sure alternatives actually oppose each other
  - Leaf > 1.4 cm vs. twig brown: what do you do when both are true?
  - Leaf $\geq$ 1.4 cm vs. leaf < 1.4 cm long works better

Tips to Constructing a Good Key

From Fralish and Franklin 2002

- Use correct jargon
- Use quantitative measurements
  - Not long vs. short
  - More than 6 in. vs. less than or equal to 6 in.
- Don’t use negatives
  - Leaf margin entire is better than margin not serrate
- Name plant part (i.e. margin, apex, bud scale) before describing it

Tips to Constructing a Good Key

From Fralish and Franklin 2002

- Check for dead ends and logical inconsistencies
- About same number of couplets as species is reasonable
  - More means it could be done better
  - Less means it is probably wrong
- KISS