**BioDiversity - Goals**

1. **Inventory earth’s biota:**
   - Worldwide: 1.6 million species have been described and named
   - Wisconsin: 32,000+ spp., and in terms of vascular plants 2,570 spp.

2. **Identify and name** species

3. **Classify** or place the species in groups

<table>
<thead>
<tr>
<th>Plantae</th>
<th>Magnoliophyta</th>
<th>Phylum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liliopsida</td>
<td>Class</td>
<td></td>
</tr>
<tr>
<td>Asparagales</td>
<td>Order</td>
<td></td>
</tr>
<tr>
<td>Orchidaceae</td>
<td>Family</td>
<td></td>
</tr>
<tr>
<td>Cypripedium</td>
<td>Genus</td>
<td></td>
</tr>
<tr>
<td>Cypripedium acaule</td>
<td>Species</td>
<td></td>
</tr>
</tbody>
</table>

**Hierarchical classification**

**Nomenclature - Using Names**

Nomenclature = a system of naming

**Common names**
- What are their advantages?
  - colorful and easy to remember
  - for most, only means of communication about earth’s diversity

**Stemless lady slipper**

**What is this tree?**
- Wapu'niaka'kwosêt

**Naming things**

**Wafer-ash**
**Stinking-ash**
**Hop-tree**

*Ptelea trifoliata*

**Rutaceae**
- citrus family
Nomenclature - Using Names

Nomenclature = a system of naming

Common names

What are their advantages?
• colorful and easy to remember
• for most, only means of communication about earth’s diversity

What are their disadvantages?
• One plant can have many names

Moccasin flower
Stemless lady slipper
Pink lady slipper

Common names

What are their advantages?
• colorful and easy to remember
• for most, only means of communication about earth’s diversity

What are their disadvantages?
• One plant can have many names

Garden pansy
200+ other names!

Common names

What are their advantages?
• colorful and easy to remember
• for most, only means of communication about earth’s diversity

What are their disadvantages?
• One plant can have many names
• One name can be given to unrelated plants

Fireweed
Erechtites
(Asteraceae)

Fireweed
Epilobium
(Onagraceae)

Sweet fern
(not a fern!)

• Names can be confusing or misleading
Nomenclature - Using Names

Common names

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What are their disadvantages?
- One plant can have many names
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- Names can be confusing or misleading

Hyphens often used with non-relationship of two terms

Nomenclature = a system of naming

Carex crawfordii

Scientific names

International Code of Nomenclature (for plants, algae, fungi):

the major goal of nomenclature is to provide one correct scientific name for each species

Scientific names are:
- binomial system, first used by Carolus Linneaus
- genus + specific epithet + authority

Species name: Carex crawfordii
Genus name: Carex
Specific epithet: crawfordii
Authority: Fernald - the person who came up with the name for this species

Scientific name is the genus + specific epithet + authority
**Scientific names - general rules**

- **Italics** or **underlined** for species name
- Generic name **must always** be capitalized
- Species epithet **may always** be lower case
- Species epithet should **never** be used alone

**Carex crawfordii** Fernald

**Scientific names - name changes**

- Unfortunately very common
- Gives rise to duplicate names - **synonyms**
  - for the same plant
- How many plant species are there vs. plant names?
  - ask the British
- MANY plants you will encounter in this course have synonyms

*Field Manual of Michigan Flora*

**Senecio aureus** L.

The golden ragwort was named by Linnaeus:

\[ \text{Senecio aureus} \text{ L.} \]

Switched to the genus *Packera* by Löve & Löve:

\[ \text{Packera aurea} \text{ (L.) Löve & Löve} \]

Note 4 things:

1. The name in parenthesis - Linnaeus - is the author of the specific epithet
2. Löve and Löve are the authors of the binomial
3. The gender has changed
4. *Senecio aureus* is now a **synonym** for *Packera aurea*; check out the Wisconsin State Herbarium to see how it is listed

*Senecio aureus* L.

*Packera aurea* (L.) Löve & Löve