Botany 401
Vascular Flora of Wisconsin

- Pick up syllabus from one of the instructors
- [http://courses.botany.wisc.edu/botany_401/class/Lecture.html](http://courses.botany.wisc.edu/botany_401/class/Lecture.html)

1. Become familiar with a local flora: species diversity, biogeographical patterns, rarity, natural history, and ethnobotany

2. Learn skills of identifying organisms, using keys and manuals – for use anywhere in the world

3. Take “ownership” of a forest site and learn the woody and herbaceous plants that exist there

Vascular Flora of Wisconsin

- WIS Herbarium
  - >265,000 Wisconsin specimens
  - All databased and barcoded

- DNA Barcode phylogenetic tree of Wisconsin vascular flora

- Projecting species niche models to 2070 under climate change model

Spalink et al. 2018 American Journal of Botany

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All databased and barcoded

>265,000 Wisconsin specimens
### Vascular Flora of Wisconsin

- **Families:** 164
- **Genera:** 787
- **Species:** 2,450

*Information source: Wisconsin State Herbarium [herbarium.wisc.edu/]*

- **Native species:** 1,659
  - *Arethusa bulbosa*: Dragon’s mouth orchid
  - *Alliaria petiolata*: Garlic mustard

- **Introduced species:** 791

#### Phyla of Land Plants

- **Marchantiophyta** – liverworts (non-vascular)
- **Bryophyta** – mosses
- **Anthoceratophyta** – hornworts
- **Lycophyta** – spike & club mosses
- **Polypodiophyta** – ferns & horsetails
- **Pinophyta** – gymnosperms
- **Magnoliophyta** – angiosperms, flowering plants

- **Marchantiophyta** – liverworts
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*Marchantia - liverwort*
Phyla of Land Plants

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Bryum - moss

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Anthoceros - hornwort

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Huperzia - club moss

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Equisetum - horsetail
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Adiantum - fern

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Larix - larch

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Cypripedium - orchid

Floristic elements and provinces

The flora of WI can be divided into a number of elements, each of which shares a common type of past and/or current geographical range.
Floristic elements and provinces
The flora of WI can be divided into a number of elements, each of which shares a common type of past and/or current geographical range. The 4 most important are:

1. Alleghenian: group of species with ranges centered from Cumberland and Great Smoky mountains; dominant in deciduous forests; e.g. white pine, hemlock and basswood; ancient element extending back to the Tertiary

2. Ozarkian: species grouped around the Ozark Mts. of Arkansas and Missouri; more adapted to xeric or dry conditions, but similar to Alleghenian (many genera, but not species overlapping between the two elements); e.g. bur oak and black oak, hickory

3. Prairie: species whose ranges includes all or part of existing prairies e.g. needle grass, side oats

4. Boreal: species with ranges from Alaska to Upper Great Lakes, many species circumboreal (with ranges in Eurasia) e.g. tamarack, white spruce, and balsam fir
Floristic elements and provinces

These floristic elements are not distributed uniformly throughout the state. There are 2 floristic provinces:

**Northern Hardwoods** - NE Wisconsin
- most Boreal elements, some Alleghenian elements

**Prairie-Forest** - SW Wisconsin
- most Prairie & Ozarkian, some Alleghenian elements

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Plant Communities

Within each province, there are ecological (not floristic) assemblages of species called plant communities. John Curtis in the *Vegetation of Wisconsin*, described about 35 communities. We will briefly look at a few of these:

1. Southern mesic hardwood: dominated by beech, sugar maple, and basswood.
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2. Southern xeric hardwood: oak and hickory dominated drier, more open forests

- *Prunus virginiana* — Choke cherry
- *Corylus* — American hazelnut
- *Geranium* — Wild geranium

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2. Southern xeric hardwood: oak and hickory dominated drier, more open forests

- *Quercus macrocarpa* — Bur oak
- *Carya ovata* — Shagbark hickory
- *Geranium* — Wild geranium
Within each province, there are ecological (not floristic) assemblages of species called **plant communities**. John Curtis in the *Vegetation of Wisconsin*, described about 35 communities. We will briefly look at a few of these:

3. **Northern xeric hardwood**: acidic nature of oak and conifer forests supports a range of unusual growth forms involving fungal associates. Examples include:
   - *Monotropa*
   - *Pyrola*
   - *Shin leaf*

4. **Prairie**: non-tree communities dominated by grasses, legumes, and composites; range from dry to wet. Examples include:
   - *Andropogon*
   - *Baptisia*
   - *Ratibida*
   - *Liatris*

These communities are crucial for understanding the biodiversity and ecological dynamics of the region.
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**5. Fen:** alkaline peat lands associated with ground water; dominated by forbs and sedges

- *Dasiphora* Shrubby cinquefoil
- *Gentianopsis* Fringed gentian

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- *Solidago* Goldenrod
- *Cypripedium* White ladyslipper

5. Fen: alkaline peat lands associated with ground water; dominated by forbs and sedges