


## 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)




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## Botany 401 Vascular Flora of Wisconsin

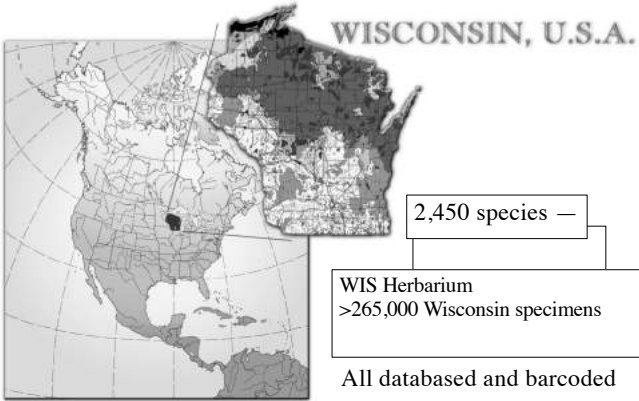
Objectives for the course

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



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## Vascular Flora of Wisconsin



2,450 species —

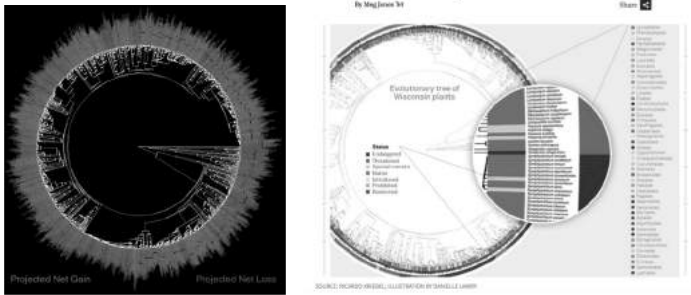
WIS Herbarium  
>265,000 Wisconsin specimens

All databased and barcoded

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## Vascular Flora of Wisconsin


Projecting species niche models to 2070 under climate change model



DNA Barcode phylogenetic tree of Wisconsin vascular flora

*Spalink et al. 2018 American Journal of Botany*

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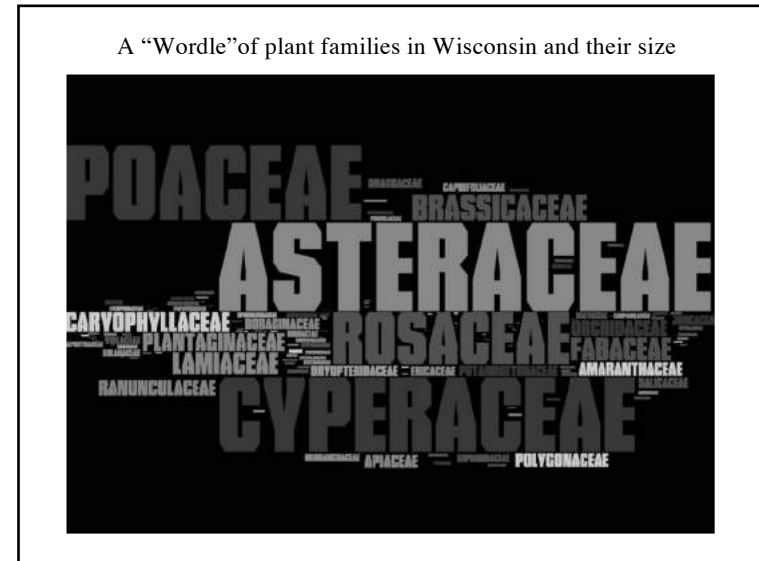


*Arethusa bulbosa*  
Dragon's mouth orchid  
Native species = 1,659

*Alliaria petiolata*  
Garlic mustard  
Introduced species = 791

164 families    787 genera    2,450 species

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### Phyla of Land Plants

- Marchantiophyta – liverworts
- Bryophyta – mosses
- Anthocerotophyta - hornworts
- Lycopodiophyta - spike & club mosses
- Polypodiophyta – ferns & horsetails
- Pinophyta - gymnosperms
- Magnoliophyta - angiosperms, flowering plants


| non-vascular

| vascular

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*Marchantia* - liverwort

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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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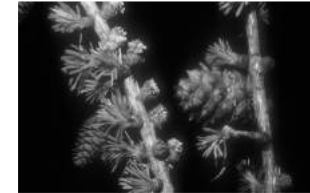


*Adiantum* - fern

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*Larix* - larch

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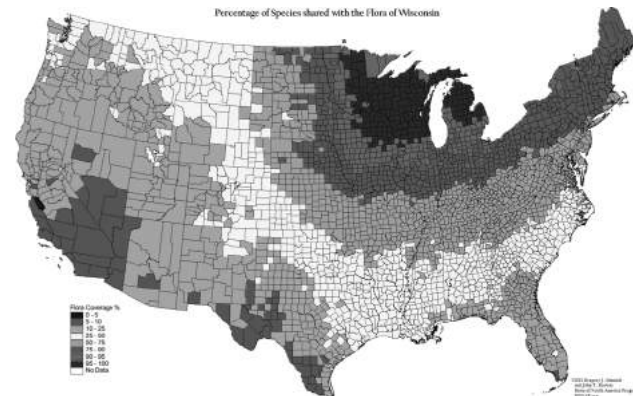


*Cypripedium* - orchid

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### Floristic elements and provinces

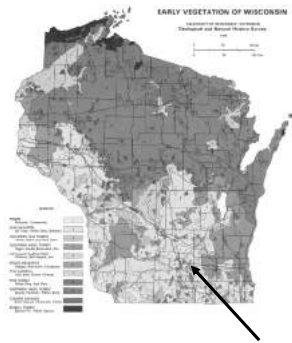
The flora of WI can be divided into a number of **elements**, each of which shares a common type of past and/or current geographical range.



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## Floristic elements and provinces

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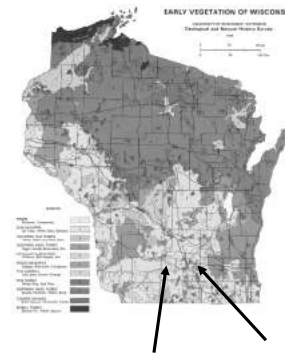


- 1. Alleghenian:** group of species with ranges centered from Cumberland and Great Smoky mountains; dominant in deciduous forests; e.g. white pine, hemlock and basswood; ancient element extending back to the Tertiary

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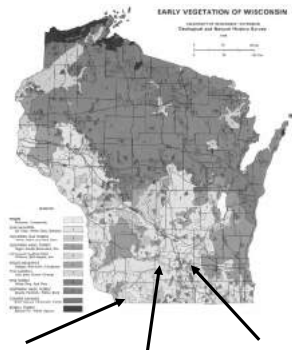


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- 2. Ozarkian:** species grouped around the Ozark Mts. of Arkansas and Missouri; more adapted to xeric or dry conditions, but similar to Alleghenian (many genera, but not species overlapping between the two elements); e.g. bur oak and black oak, hickory

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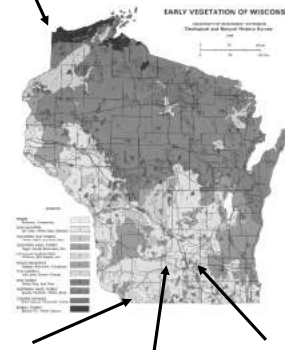


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- 3. Prairie:** species whose ranges includes all or part of existing prairies e.g. needle grass, side oats

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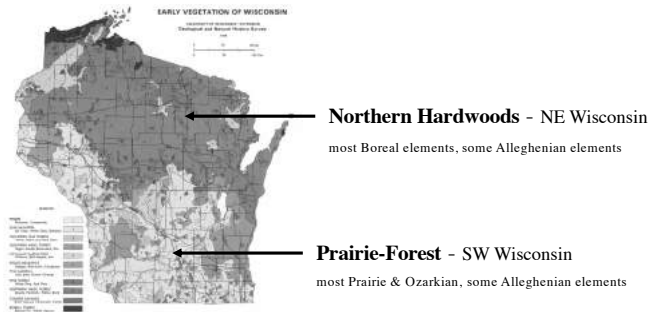


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- 3. Prairie:** species whose ranges includes all or part of existing prairies e.g. needle grass, side oats
- 4. Boreal:** species w/ ranges from Alaska to Upper Great Lakes, many species circumboreal (with ranges in Eurasia) e.g. tamarack, white spruce, and balsam fir

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## Floristic elements and provinces

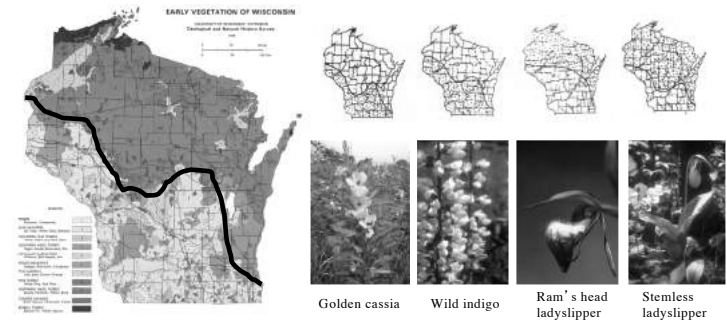
These floristic elements are not distributed uniformly throughout the state. There are 2 **floristic provinces**:



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## Floristic elements and provinces

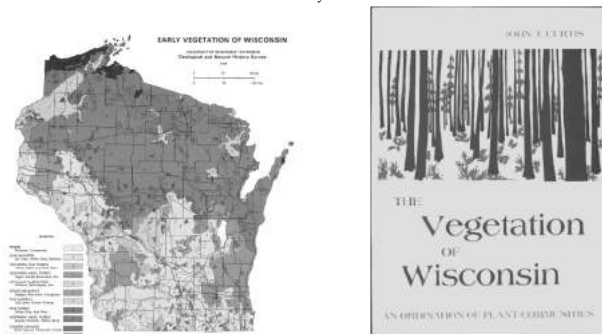
The 2 provinces are separated by a narrow band or zone: **tension zone** which is based on the upper and lower limits of the southwest and northeastern species, respectively.



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## Plant Communities

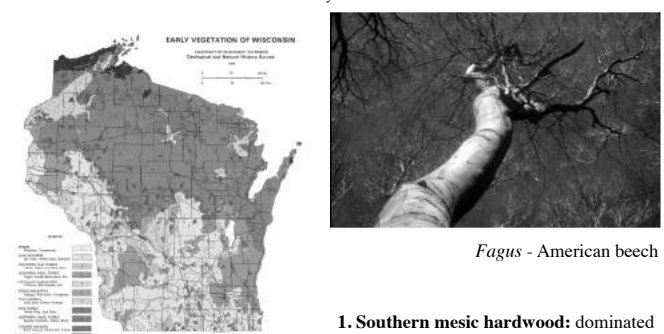
Within each province, there are ecological (not floristic) assemblages of species called **plant communities**. John Curtis in the *Vegetation of Wisconsin*, described about 35 communities. We will briefly look at a few of these:



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## Plant Communities

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**1. Southern mesic hardwood:** dominated by beech, sugar maple, and basswood.

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*Acer saccharum* - sugar maple

**1. Southern mesic hardwood:** dominated by beech, sugar maple, and basswood.

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*Trillium grandiflorum* - showy trillium

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*Dicentra cucullaria* - Dutchman's breeches

**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

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*Quercus macrocarpa*  
Bur oak



*Carya ovata*  
Shagbark hickory

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

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*Prunus virginianum*  
Choke cherry

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

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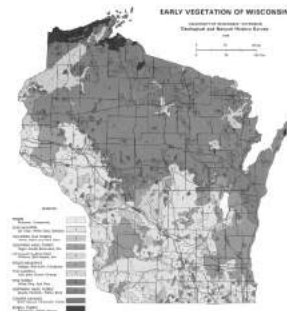
*Corylus*  
American hazelnut

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

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*Geranium*  
Wild geranium

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

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*Monotropa*  
Indian pipe



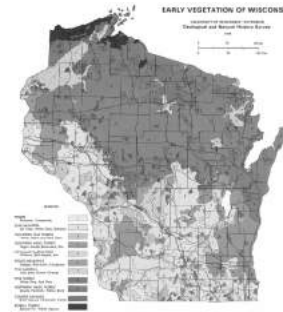
*Pyrola*  
Shin leaf

**3. Northern xeric hardwood:** acidic nature of oak and conifer forests supports a range of unusual growth forms involving fungal associates

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**4. Prairie:** non-tree communities dominated by grasses, legumes, and composites; range from dry to wet

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*Andropogon*  
Bluestem



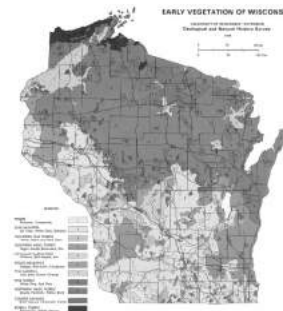
*Baptisia*  
Wild indigo

**4. Prairie:** non-tree communities dominated by grasses, legumes, and composites; range from dry to wet

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*Ratibida*  
Coneflower



*Liatris*  
Blazing star

**4. Prairie:** non-tree communities dominated by grasses, legumes, and composites; range from dry to wet

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

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*Dasiphora*  
Shubby cinquefoil



*Gentianopsis*  
Fringed gentian

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

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*Solidago*  
Goldenrod



*Cypripedium*  
White ladyslipper

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

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