Diversity of Wisconsin Asterids

... dogwoods, blueberries, and primroses...

Asterids

- fused petals
- stamens = or less than number of petals
- stamens fused to petals

Asterids

- Rosids: Separate petals
- Asterids: Fused petals

Ericaceae - blueberry family

- Worldwide family of subshrubs, shrubs, epiphytes, and small trees. Characteristic of nutrient-poor soils; in Wisconsin common in bogs, acidic pine-dominated forests, or sandy soils.

- Symbiotic relationship with mycorrhizal relationship, forming haustoria - root to fungus connection, permits nutrient uptake by plants, carbon uptake by fungus.

- Ericaceae now includes the totally fungus dependent mycotrophs - non chlorophyllous, all food and water from fungi

Leatherleaf in bog

Pinesap in pine forest
Ericaceae - blueberry family

Plants are generally evergreen, with tough, leathery leaves often revolute or involute along edge of leaf, with sunken stomata, and bottom of leaves often covered with protective hairs.

Ledum
Labrador tea
Note revolute leaves

Arctostaphylos
bearberry

Chimaphila
shinleaf

Calyx and corolla are fused, the corolla tube bell or vase shaped - most of our species are 5 merous

Stamens are 2X the number of petals; they often exhibit terminal pores for pollen release - rather than slits - for buzz pollination by bees.

Pistil is superior in most genera, but inferior in blueberries and relatives

Fruit a berry or capsule with 4-5 partitions and many seeds

Bog rosemary has alternate leaves, revolute, and glaucous (white powdery) on the undersides.
**Ericaceae - blueberry family**

- *Arctostaphylos uva-ursi*  
  Bearberry  
  Creeping subshrub often seen on beaches  
  “uva-ursi” translates as bearberry, indicating at least one dispersal agent of the plant

- *Chamaedaphne calyculata*  
  Leatherleaf  
  Leatherleaf is often a dominant shrubby member of bogs. Has an extensive stem and root system under the peat. Leaves are glandular dotted. Fruit is a dry berry/capsule.

- *Epigaea repens*  
  Trailing arbutus

- *Gaultheria procumbens*  
  Creeping snowberry  
  Wintergreen

- *Ledum groenlandicum*  
  Labrador tea

- *Kalmia polifolia*  
  Pale laurel  
  2 bog genera
Ericaceae - blueberry family

*Rhododendron lapponicum* - lapland rosebay
Endangered

Circumboreal species found in Wisconsin only in driftless area and on cliffs along Wisconsin and Kickapoo River gorges

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Ericaceae - blueberry family

*V. macrocarpon* cranberry

Blueberries and cranberries are inferior ovated and berry fruited

*Vaccinium angustifolium* lowbush blueberry

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Ericaceae - blueberry family

*Gaylussacia baccata* huckleberry

Similar to blueberries with which it is often confused, but flowers mainly reddish, fruits mature to more blackish color and more crunchy with 10 “stones”, reddish resin dots on leaves

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Ericaceae - blueberry family

*Chimaphila umbellata* pipésséwa

*Pyrola rotundifolia* round-leaved shinleaf

Former Pyrolaceae
**Ericaceae - blueberry family**

Moneses uniflora
One-flowered shinleaf

Monotropa hypopitys
pinesap

Monotropa uniflora
Indian-pipe

Pterospora andromedea
Giant pinedrops
Endangered

**Primulaceae - primrose family**

Chiefly north temperate family of herbs; 20 genera and about 1000 species. In Wisconsin we have 5 genera and about 15 species.

5 merous, stamens attached unto petals, and opposite the petals rather than the sepals

Dodecatheon - shooting star

Lysimachia - loosestrife

5 petals, stamens attached unto petals, and opposite the petals rather than the sepals

Pistil is superior, anillocular, with free-central placentation, fruit a capsule

Dodecatheon - shooting star
Primulaceae - primrose family

*Primula* - the classic study organism for heterostyly by Darwin

Pollen and stigmatic differences in thrum (L) and pin (R) flowers

Primulaceae - primrose family

**Dodecatheon meadii**

shooting star

**D. amethystinum**

Western shooting star

Primulaceae - primrose family

**Lysimachia ciliata**

Fringed loosestrife

**L. thyrsiflora**

Tufted loosestrife, Swamp candles

Opposite leaves

**Lysimachia nummularia**

Moneywort, Creeping Charlie
Primulaceae - primrose family

*Trientalis borealis*

Starflower

Ubiquitous woodland herb with whorl of leaves just below single flower

Flower is unusual with 7 merous perianth; note how stamens are lined up with petals rather than sepals

Whorled leaves

Sarraceniaceae - pitcher plant family

*Sarracenia purpurea*

-Pitcher plant

Insectivorous family of 3 genera; 1 species in Wisconsin.

Pitfall trap (pitcher) from modified leaf; luring color, odor, downward projecting hairs; slippery slope; drowning pool; digesting enzymes

All adaptations to live in nutrient-poor habitats; mainly in bogs, but also in fens, lake edges, swales of Great Lakes

5 merous flower; unusual peltate stigma; flower structure ensures outcrossing by bees
Polemoniaceae - phlox family

5 merous flowers, corolla tube with 5 stamens fused to inside of tube, often at different heights; 3 fused carpels and 3 styles

Phlox divaricata - woodland phlox
2 genera in Wisconsin
Phlox has opposite leaves

Phlox pilosa - prairie phlox
Common in prairies

Phlox glaberrima - smooth phlox
Endangered; restricted to wet prairies and sedge meadows of SE Wisconsin

Phlox has opposite leaves
Polemoniaceae - phlox family

Polemonium reptans - Jacob’s ladder
Alternate leaved spring flowering plant of woodlands and openings [great Botany 401 final exam species!]

Balsaminaceae - jewelweed family

Impatiens capensis - orange jewelweed
Impatiens pallida - yellow jewelweed

Balsaminaceae - jewelweed family

Fruit is explosive to the touch - so also called touch-me-nots

Cornaceae - dogwood family

• Opposite (except for one) leaved shrubs or subshrubs
• Arcuate (arcing) venation
Cornaceae - dogwood family

Flowers small, grouped in tight inflorescences often with 4 inflorescence bracts; 4 merous and with a 2 carpellate inferior ovary; fruit a 1-seeded drupe.

Cornus racemosa - Grey dogwood

Cornus racemosa
Gray dogwood

Cornus stolonifera - Red-osier

Common in wet places, distinctive with red stems

Cornus canadensis - bunch berry

Low to ground circumboreal shrub, appears to have a whorl of leaves, and has 4 showy bracts below flowers
Eastern North American small tree with 4 conspicuous white bracts

**Cornus florida** - flowering dogwood

**Cornaceae** - dogwood family

Closely related to dogwood family, small family of trees and shrubs from North Temperate region

**Nyssa sylvatica** - sour gum, black gum, black tupelo

• rare, flowers unisexual with male flowers in umbels; drupes black

**Nyssaceae** - sour gum family

2 species of small trees or shrubs in Wisconsin; alternate leaves, polygamodioecious, red drupes; found in wetter sites (swamps, bogs)

**Ilex verticillata** - winterberry, black alder

**Aquifoliaceae** - holly family