

1

Asterids

Asterids: second of the two large groups of eudicots

Rosids:
Separate petals

Asterids:
Fused petals

2

Asterids

- (1) fused petals
- (2) stamens = or less than number of petals
- (3) stamens fused to petals

3

**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

4

**Ericaceae - blueberry family



Rhododendron (Ledum)
Labrador tea
Note revolute leaves

evergreen plants, with tough, leathery leaves often **revolute** or inrolled along edge of leaf, with sunken stomata, and bottom of leaves often covered with protective hairs



Arctostaphylos
bearberry
Chimaphila
shinleaf

5

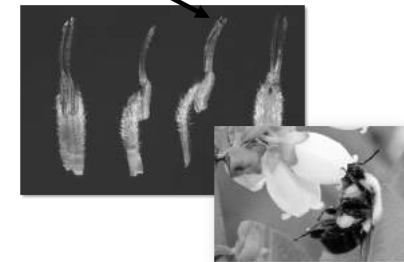
**Ericaceae - blueberry family



CA (4-5) CO (4-5) A 8-10 \overline{G} (4-5)

corolla tube bell or vase shaped - most of our species are 5 merous

Stamens are 2X the number of petals with **terminal pores** for pollen release - rather than slits - for **buzz pollination** by bees



6

**Ericaceae - blueberry family



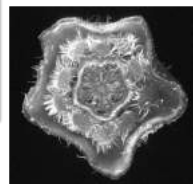
CA (4-5) CO (4-5) A 8-10 \overline{G} (4-5)



Superior pistil

Pistil is superior or inferior

Fruit a berry or capsule and many seeds



Inferior pistil

7

**Ericaceae - blueberry family



Bog rosemary has alternate leaves, revolute, and glaucous (white powdery) on the undersides



Andromeda glaucophylla - bog rosemary

8

**Ericaceae - blueberry family



*Chamaedaphne
calyculata*
leatherleaf



- dominant shrubby member of bogs
- leaves are glandular dotted.
- fruit is a dry berry/capsule.

9

**Ericaceae - blueberry family



Kalmia polifolia - pale laurel



*Rhododendron
groenlandicum*
(*Ledum*) Labrador tea

2 bog genera

10

**Ericaceae - blueberry family



V. macrocarpon
cranberry



Vaccinium myrtilloides
Velvet-leaf blueberry

Blueberries and cranberries are
inferior ovaried and berry fruited

Vaccinium angustifolium
Lowbush blueberry

11

**Ericaceae - blueberry family



Chimaphila umbellata
pipsissewa

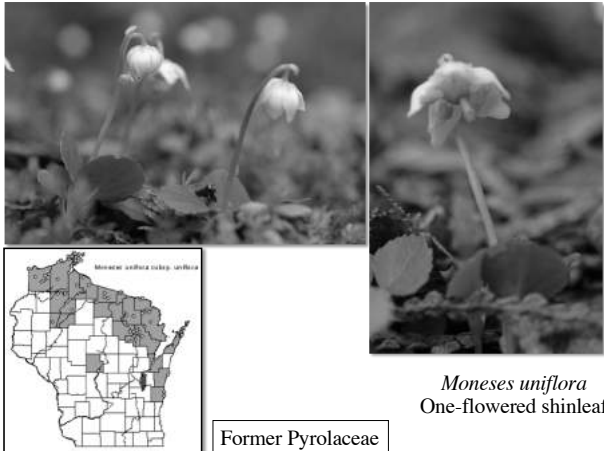


Pyrola rotundifolia
Round-leaved shinleaf

Former Pyrolaceae

12

**Ericaceae - blueberry family

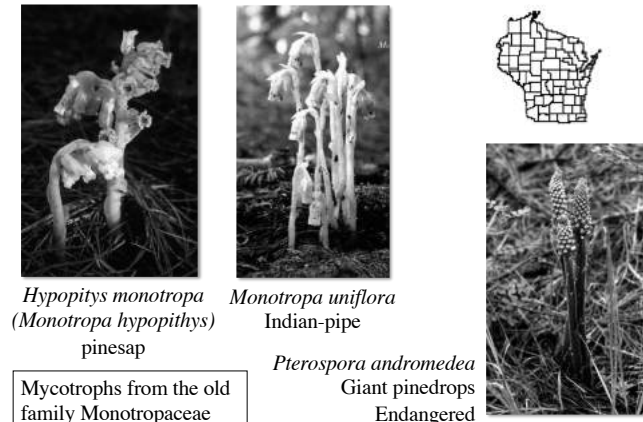


Moneses uniflora
One-flowered shinleaf

Former Pyrolaceae

13

**Ericaceae - blueberry family



Hypopitys monotropa
(*Monotropa hypopithys*)
pinesap

Monotropa uniflora
Indian-pipe

Pterospora andromedea
Giant pinedrops
Endangered

Mycotrophs from the old
family Monotropaceae

14

*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. [Note: Michigan Flora separates into Primulaceae + Myrsinaceae]



Primula (Dodecatheon) - shooting star

CA (5) CO (5) A 5 G (5)

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



Lysimachia - loosestrife

15

*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. [Note: Michigan Flora separates into Primulaceae + Myrsinaceae]



Primula (Dodecatheon) - shooting star

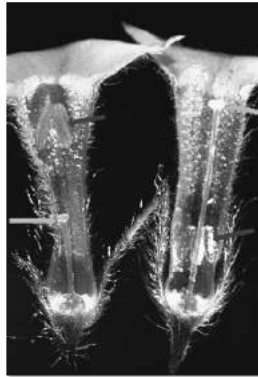
CA (5) CO (5) A 5 G (5)

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



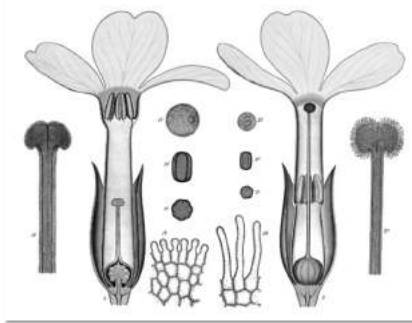
16

*Primulaceae - primrose family



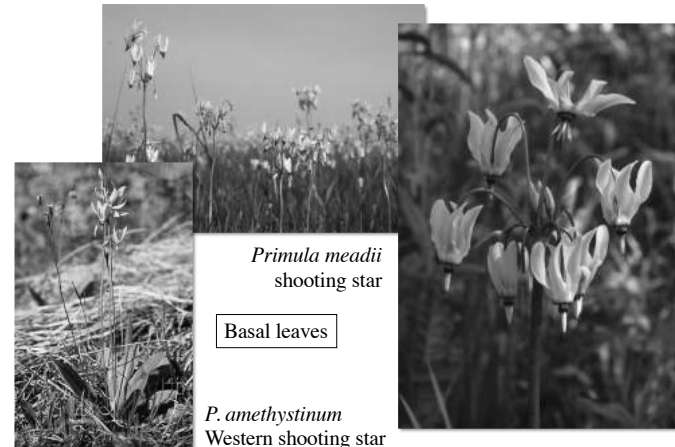
Primula - the classic study organism for heterostyly by Darwin

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



17

*Primulaceae - primrose family



Primula meadii
shooting star

Basal leaves

P. amethystinum
Western shooting star

both formerly in *Dodecatheon*

18

*Primulaceae - primrose family



Lysimachia ciliata
Fringed loosestrife

Opposite leaves

Lysimachia nummularia
Moneywort,
Creeping Charlie



Lysimachia thyrsiflora
Tufted loosestrife,
Swamp candles

19

*Primulaceae - primrose family



Trientalis borealis
(*Lysimachia borealis*)
Starflower

Ubiquitous
woodland herb with
whorl of leaves

Flower is unusual
with 7 merous
perianth

Whorled leaves

20

*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



21

*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 (N) poor habitats; mainly in bogs, but also in fens, lake edges, swales of Great Lakes

22

*Sarraceniaceae - pitcher plant family



Sarracenia purpurea - pitcher plant

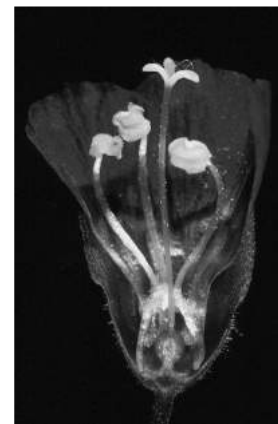
CA 5 CO 5 A ∞ G (5)

5 merous flower; unusual **peltate stigma**; flower structure ensures outcrossing by bees



23

**Polemoniaceae - phlox family



CA (5) CO (5) A 5 G (3)

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



24

**Polemoniaceae - phlox family



Phlox divaricata - woodland phlox

2 genera in Wisconsin

Phlox has opposite leaves

25

**Polemoniaceae - phlox family



Polemonium reptans - Jacob's ladder

Alternate leaved spring flowering plant of woodlands and openings [great Botany 401 final exam species!]



26

**Polemoniaceae - phlox family



Polemonium occidentale – western polemonium

Endangered species – Western Disjunct



27

*Balsaminaceae - jewelweed family

Small family of juicy-stemmed herbs with spurred sepals; we have two species



Impatiens capensis - orange jewelweed

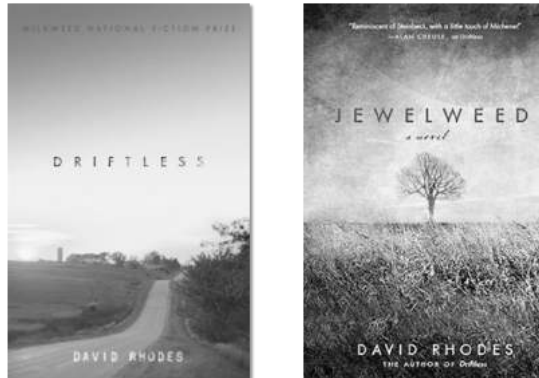


Impatiens pallida - yellow jewelweed



28

*Balsaminaceae - jewelweed family



Jewelweed – iconic plants of the Driftless Region

29

*Balsaminaceae - jewelweed family



Mature ripe capsule

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



Capsule sprun open

30

**Cornaceae - dogwood family



- Opposite (except for one) leaved shrubs or subshrubs
- Arcuate (arching) venation



31

**Cornaceae - dogwood family

CA 4 CO 4 A 4 \overline{G} (2)



Cornus foemina var. *racemosa* -
Gray dogwood

Congested 4-merous flowers often with
4 inflorescence bracts

Fruit a 1-seeded drupe



Cornus florida – flowering dogwood
(not native)

32

**Cornaceae - dogwood family



Cornus foemina var.
racemosa - Gray dogwood

Common component
of shrub carr

33

**Cornaceae - dogwood family



Cornus sericea (= *C. stolonifera*)
Red-osier

Common in wet places, distinctive
with red stems



34

**Cornaceae - dogwood family



Cornus canadensis - bunch berry

Low to ground circumboreal
subshrub, appears to have a whorl
of leaves, and has 4 showy bracts
below flowers



35

**Cornaceae - dogwood family



Eastern North American small
tree with 4 conspicuous white
bracts

Cornus florida - flowering dogwood



36