Diversity and Evolution of Asterids

... snapdragons and honeysuckles ...

Scrophulariaceae - figwort family

Large family of herbs and small shrubs. Many are hemi-parasitic = green and photosynthetic but parasitize roots of other plants (these closely related to Orobancheae of holo-parasites). Others related to Plantaginaceae (plantains). Leaves opposite or alternate.

Flowers generally zygomorphic and can be confused with mints; sometimes with fusion of two upper petals and appearing 4-petaled.

Scrophularia marilandica - eastern figwort, carpenter’s-square

Verbascum blattaria - moth mullein

GROUP A

Scrophularia marilandica - eastern figwort, carpenter’s-square

Stamens 5, or 2 sets of 2, or reduced to 2. Gynoecium bi-carpellate, axile placentation, and usually producing many seeded capsules.

CA (4–5) CD (2+3) A 8–2+2, 2 G (2)

Stamens 5, or 2 sets of 2, or reduced to 2. Gynoecium bi-carpellate, axile placentation, and usually producing many seeded capsules.
Scrophulariaceae - figwort family

Verbascum thapsus - common mullein  weedy biennial (1st year as a rosette)

Chelone glabra - turtlehead

GROUP B - related to Plantaginaceae

Linaria vulgaris - butter and eggs

Veronicastrum virginicum - Culver’s-root

Veronica catenata - water speedwell
Scrophulariaceae - figwort family

Veronica persica - Bird's-eye speedwell

Scrophulariaceae - figwort family

Castilleja coccinea - Indian paintbrush
Group C of hemi-parasites related to Orobanchaceae

Scrophulariaceae - figwort family

Castilleja sessiflora - downy paintbrush

Scrophulariaceae - figwort family

Pedicularis canadensis - wood betony

Scrophulariaceae - figwort family

Pedicularis lanceolata - swamp lousewort
Plantaginaceae - plantain family

Small family of 2 genera. Plantago (plantains) are wind pollinated derivatives of the snapdragon family. Leaves are basal and with strongly arcuate venation. Note the circumscissile capsule below.

Plantago lanceolata - English plantain

Plantago major - common plantain

Plantago patagonica - wooly plantain
Orobanchaceae - broomrape family

Holo-parasitic family (totally non-green) with snapdragon like flowers

Now shown to be closely related to the hemi-parasitic genera of Scrophulariaceae only

Conopholis americana (squaw-root)

Orobanchaceae - broomrape family

Epifagus virginiana - beech drops
Grows only on roots of beech (Fagus)

Orobanchaceae - broomrape family

Orobanche fasciculata - fascicled broomrape
Threatened: grows only on Artemisia campestris - wormwood

Orobanchaceae - broomrape family

Orobanche uniflora - one-flowered broomrape

Lentibulariaceae - bladderwort family

Insectivorous herbs, aquatic or of wetlands. Wisconsin has 2 of the 3 genera — Utricularia (bladderworts) with mouse-trap like modified leaves and Pinguicula (butterwort) with sticky fly-paper modified leaves. Plants are rootless.

Pinguicula - butterwort
Utricularia - bladderwort
Lentibulariaceae - bladderwort family

*Utricularia cornuta* - horned bladderwort

*Utricularia intermedia* - flat leaved bladderwort

Flowers strongly zygomorphic and often spurred. Many of the species are threatened or endangered.

*Utricularia vulgaris* - common bladderwort

Bladderworts separated based on habitat, floral color, and position of bladders.

*Utricularia purpurea* - purple bladderwort

*Utricularia resupinata* - resupinate bladderwort

Endangered in WI and found only in Apostle Islands on exposed, bare rock (right). Far more common in MI and found in various habitats (above).
**Acanthaceae - acanthus family**

1 endangered species in Wisconsin; large tropical family of herbs or shrubs

Style lobes often asymmetric; capsules explosive

*Ruellia humilis - hairy ruellia*

**Bignoniaceae - trumpet creeper family**

Tropical family of trees, shrubs, and woody vines consisting of 113 genera and 800 species.

Leaves mostly compound (exception is catalpa from North America).

*Campsis radicans - trumpet creeper*

Cultivated; from eastern North America

**Bignoniaceae - trumpet creeper family**

Elongated capsules appearing like legumes

*Catalpa speciosa - Catalpa*

Introduced from eastern North America and often escaped

**Adoxaceae - muskroot family**

• unusual reduced woodland herb with musky scent and trifoliate, spiralled leaves

• small herb of drippy cliffs of the Driftless Region of SW Wisconsin
Caprifoliaceae - honeysuckle family

Northern hemisphere family (and tropical mountains) of 15 genera and about 400 species of shrubs or subshrubs

Family (and relate families) recognized by opposite leaves and inferior ovary

Flowers are 5 merous and either bell-shaped or strongly zygomorphic

Inferior ovary forms berry

Caprifoliaceae - honeysuckle family

Short-styled flowers vs. long-styled flowers

Family is composed of two groups of genera, which are each related to other families

Short-styled flowers are only 2 - Viburnum (viburnums) and Sambucus (elderberries) - and are now included with Adoxaceae

Viburnum - viburnum

Lonicera - honeysuckle

Sambucus canadensis - Common elder

Coarse herbaceous shrub of open areas with compound leaves; flat-topped inflorescence; black berries used for wine
Caprifoliaceae - honeysuckle family

**Sambucus racemosa**
Red-berried elder

Common in understory or edge of forests; fruits red in more panicked umbels

Caprifoliaceae - honeysuckle family

**Viburnum opulus** *(trilobum)* high-bush cranberry

Viburnums are simple leaved shrubs, but often lobed, or coarsely toothed

Note enlarged, sterile flowers on periphery of inflorescence for pollinator attraction

Caprifoliaceae - honeysuckle family

**Viburnum acerifolium**-Maple-leaved viburnum

Viburnum lentago - nannyberry

Other spring or early summer blooming species; many have glands on petioles

Caprifoliaceae - honeysuckle family

**Viburnum rafinesquianum** - arrowwood

**Lonicera tatarica** - tartarian honeysuckle

Long-styled genera include 4 genera - and are now combined with Dipsacaceae (teasels) and Valerianaceae (valerians)

Honeysuckles include native (right) and introduced aggressive shrubs (below) or vines

Caprifoliaceae - honeysuckle family

**Lonicera canadensis** - fly honeysuckle
Caprifoliaceae - honeysuckle family

*Lonicera reticulata* - grape honeysuckle

*Lonicera dioica* - red honeysuckle

*Lonicera xylosteum* - European fly honeysuckle

*Lonicera X bella* - pretty honeysuckle

Leaf miners

*Lonicera tatarica* - tartarian honeysuckle

*Diervilla lonicera* - bush honeysuckle

*Triosteum perfoliatum* - Horse gentian

Note the "perfoliate" leaves - opposite leaves whose blade tissue continue across the stem and connect

*Linnaea borealis* - twinflower

Characteristic subshrub of (circum)boreal forests where it forms large colonies. Two flowers form per inflorescence.
Caprifoliaceae - honeysuckle family

*Linnaea borealis* - twinflower

Carolus Linneaus modestly named the genus after himself because of the diminutive stature of the plant. He is shown holding the twinflower in this wedding day picture.