Diversity of Wisconsin Rosids

roses, currants, raspberries . . .

we will be seeing, in the next few lectures, many of the woody plants (trees/shrubs) present at your sites.
Rosids are one of the two large groups of dicots; the other group are the Asterids.

**Rosids:**
- Separate petals

**Asterids:**
- Fused petals

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Hamamelidaceae - witch hazel family

Trees and shrubs in subtropical and temperate areas but only 1 species in Wisconsin - witch hazel found in rich deciduous woods. A very distinctive shrub with asymmetrical crenate leaves and late-blooming flowers.

*Hamamelis virginiana*
Witch hazel
Hamamelidaceae - witch hazel family

Simple, alternate leaves on flattened branches; these leaves usually with palmate venation or at least pronounced basal veins

Hamamelis virginiana
Witch hazel

Witch hazel yields an astringent and soothing lotion for cuts and bruises, hemorrhoids

Water diviners favor witch hazel for their dowsers (the divining rod to find water underground)

Hamamelidaceae - witch hazel family

The flowers 4 merous (the family can be five merous), and insect pollinated in the fall (images from Sept)

Petals are ribbon-like

4 stamens opposite the sepals, but 4 small staminodia are opposite the petals

Hamamelis virginiana
Witch hazel

Ovary is generally inferior or half-inferior with the tops somewhat separated

The two locules each have one or more ovules

Fruit woody, dehiscent at top

Hamamelis virginiana
Witch hazel

Previous year’s fruit
Crassulaceae - stonecrop family

- Leaf succulent herbs or small shrubs
- Common as potted plants or in rock-gardens
- CAM (crassulacean acid metabolism) type of photosynthesis adaptive in xeric environments
- All Wisconsin species are introduced, and some invasive – mainly in sandy sites

*Sedum acre* - Gold-moss stonecrop, Yellow sedum

Crassulaceae - stonecrop family

- Flowers typically 5 merous with stamens 2X number of sepals (3, 4, or 6 merous species occur)
- Carpels are essentially separate and produce follicles when mature
- Nectary scales usually evident at base of each carpel

*Sedum acre* - Gold-moss stonecrop, Yellow sedum

Saxifragaceae - saxifrage family

- Major distinctive vegetative feature is the usual set of basal leaves which are often gland-tipped along the edges.
- Most prefer wet woods, swampy conditions, or drippy cliffs as in the driftless region.

*Micranthes (Saxifraga)* in swampy woods

Saxifragaceae - saxifrage family

- 5 merous flowers
- Superior pistil is made of 2 carpels, usually separated, at least from the middle up; perigynous hypanthium often present
- Fruit 2 follicles or 1 splitting capsule

*Micranthes (Saxifraga)* in swampy woods

*Micranthes (Saxifraga)* in swampy woods
Saxifragaceae - saxifrage family

Mitella diphylla
Bishop’s-cap or miterwort [with 2 stem leaves]

Mitella nuda
Small Bishop’s-cap

Note cup-like hypanthium

Grossulariaceae - currant family

One genus, 150 species of shrubs from the N Hemisphere and Andes
Characterized by lobed leaves, raceme inflorescences, and fleshy fruits (currants and gooseberries)

Ribes americanum - American black currant

Saxifragaceae - saxifrage family

Heuchera richardsonii
Prairie alumroot

Endangered boreal sp.

Grossulariaceae - currant family

Ribes americanum - American black currant

Gynoecium inferior of 2 fused carpels

Flowers 5 merous with sepals large and petals smaller

CA 5 CO 5 A 5 G (2)

well developed hypanthium

ovary
Grossulariaceae - currant family

**Ribes americanum**
American black currant

**Ribes triste** - swamp currant

**Ribes missouriense**
Missouri gooseberry

**Ribes cynosbati** - prickly gooseberry, dogberry

**Ribes triste** identified by long racemes of many flowers

**Ribes americanum**

**Ribes triste - swamp currant**

**Ribes missouriense**

**Ribes cynosbati - prickly gooseberry, dogberry**

Grossulariaceae - currant family

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Rosaceae - rose family

Rosaceae is a large family distributed worldwide but most common in the north temperate regions - important fruit family

- herbs, shrubs, or trees
- simple, pinnately compound or palmately compound leaves

**Stipules** well developed in compound leaves

Rosaceae - rose family

Flowers are showy, 5 merous, with numerous stamens

Gynoecium is variable and used to define subfamilies

**CA 5 CO 5 A = G [variable]**
Rosaceae - rose family

Hypanthium is present to some degree in all these forms
Bracts on calyx (epicalyx) often present

Flowers are showy, 5 merous, with numerous stamens
Gynoecium is variable and used to define subfamilies

CA 5, CO 5, A = G (variable)

Rosaceae - rose family

The gynoecium is variable as we will see and has been used to define 4 main groups

1. Spiraeoideae (meadow-sweet)
2. Rosoideae (rose, strawberry)
3. Prunoideae (cherry)
4. Pomoideae or Maloideae (apple)

Gynoecium variability encompasses size of receptacle, position of ovary, size of hypanthium, and the resulting fruit types:

Rosaceae – ninebark & relatives

Physocarpus opulifolius - ninebark

CA 5, CO 5, A > G 2-8
apocarpic, superior pistils short hypanthium, follicle fruits

Follicles, drupelets, achenes, aggregate of achenes, drupes, pomes

**Rosaceae – ninebark & relatives**

- *Spiraea alba* - meadow-sweet
- *Spiraea tomentosa* - hardhack

**Rosaceae – rose & relatives**

- Herbs mostly with compound leaves
- Plants with stolons (running stems above ground) or running rhizomes

**Flowers apocarpic with many carpels**

- **Hypanthium** well-developed or receptacle elongated
- One-seeded achenes

**Achenes often modified into aggregate of achenes (from one flower) as in the strawberry or fleshy drupelets as in raspberry, dewberry**

- *Rubus idaeus* - American raspberry
- *Fragaria sp.* - strawberry
Rosaceae – rose & relatives

*Fragaria virginiana* - wild strawberry

*Geum triflorum* - prairie smoke

Rosaceae – rose & relatives

*Agrimonia gryposepala* - common agrimony, harvest lice

2 achenes, but hypanthium disperses as a unit with "velcro"-like barbs from top of hypanthium

Rosaceae – rose & relatives

*Potentilla simplex* - Common cinquefoil

*Potentilla anserina* [Argentina anserina] - silverweed

Rosaceae – rose & relatives

*Rubus parviflorus* - thimbleberry

*Rubus hispidus* - swamp dewberry

*Rubus allegheniensis* - blackberry
Rosaceae – rose & relatives

Rubus parviflorus
thimbleberry

Great Lakes – western North American disjunct pattern

Rosaceae – rose & relatives

Rosa rugosa
Beach rose

Rosa palustris
Swamp rose

Rosa multiflora
Multiflora rose
Invasive weed

Rosaceae – cherry & relatives

Subfamily Prunoideae

Prunus
(cherry)
gynoecium = monocarpic
fruit = drupe

CA 5 CO 5 A 1

Shrubs and trees with simple leaves, often with glands along petiole (cherries, plums, peaches)

Gynoecium superior with one carpel = monocarpic

Fruit a drupe = fleshy, with one bony seed

Prunus serotina
wild black cherry

Prunus virginiana
choke cherry
**Rosaceae – cherry & relatives**

*Prunus pumila* - sand cherry

**Rosaceae – apple & relatives**

*Prunus americana* - Wild plum

common 401 final exam shrub!

Shrubs or trees with showy 5 merous flowers

Gynoecium inferior of 3 to 5 fused carpels

*Hypanthium* thickens in fruit to form *pome* fruit

*Malus pumila* (*Pyrus malus*) - apple

*Malus pumila* (*Pyrus malus*) - apple

**Rosaceae – apple & relatives**

*Aronia melanocarpa* - black chokeberry

*Pyrus communis* - Pear (introduced)
Amelanchier laevis
Serviceberry, Juneberry

Rosaceae – apple & relatives

Craaegus crus-galli - cockspur hawthorn

Crataegus mollis - downy hawthorn

common 401 final exam shrub!