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**

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

**Hamamelidaceae - witch hazel family**

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

**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

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

*Micranthes* (Saxifraga) in swampy woods

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.

*Sullivantia* under dripping cliffs

*Micranthes* (Saxifraga) in swampy woods

Saxifragaceae - saxifrage family

Note cup-like hymanthium

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

*Mitella nuda* Small Bishop's-cap
**Saxifragaceae - saxifrage family**

- *Tiarella cordifolia* - Foamflower
  - Endangered boreal sp.
- *Heuchera richardsonii* - prairie alumroot

**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)

**Grossulariaceae - currant family**

- *Ribes americanum* - American black currant
- Flowers 5 merous with sepals large and petals smaller
- Gynoecium inferior of 2 fused carpels
- well developed hypanthium
- ovary

**Grossulariaceae - currant family**

- *Ribes triste* - swamp currant
- Currants identified by long racemes of many flowers
Grossulariaceae - currant family

*Gooseberries* identified by paired flowers; stems often spiny

*Ribes missouriense* - Missouri gooseberry
*Ribes cynosbati* - prickly gooseberry, dogberry

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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

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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!]**

**23**

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!]**

**24**
Rosaceae - rose family

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

1. *spiraea* (spiraea, nine-bark)
2. *rose* (rose, strawberry)
3. *cherry* (cherry, plum)
4. *apple* (apple, pear, hawthorn)

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

- **25** Rosaceae - spiraea & relatives
  - *Physocarpus opulifolius* - ninebark
  - CA5 CO5 A=G 2-8
    - apocarpic, superior pistils
    - short hypanthium
    - **follicle** fruits

- **26** Rosaceae - rose family
  - drupelets
  - follicles
  - aggregate of achenes
  - drupes
  - pomes

- **27** Rosaceae - spiraea & relatives
  - *Physocarpus opulifolius* - ninebark

- **28** Rosaceae - spiraea & 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

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

Rosaceae – rose & relatives

Rubus parviflorus
thimbleberry
Rubus hispidus
swamp dewberry
Rubus allegheniensis
blackberry

Rosaceae – rose & relatives

Potentilla anserina
[Argentina anserina]
silverweed

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

- Prunus serotina
  Wild black cherry

- Prunus virginiana
  Choke cherry

- Prunus pumila
  Sand cherry

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 americana
Wild plum

Rosaceae – cherry & relatives

common 401 final exam shrub!

Rosaceae – apple & relatives

Malus pumila (Pyrus malus) - apple

Shrubs or trees with showy 5 merous flowers
Gynoecium inferior of 3 to 5 fused carpels

Hypanthium thickens in fruit to form pome fruit

Rosaceae – apple & relatives

Aronia melanocarpa
black chokeberry

Amelanchier laevis
Serviceberry, Juneberry

common 401 final exam shrub!
Rosaceae – apple & relatives

*Crataegus crus-galli* - cockspur hawthorn

*Crataegus mollis* - downy hawthorn