Diversity of Wisconsin Rosids

...roses, currants, raspberries...

Saxifragales

Small group of families that include witch hazel, bishop’s cap, currants, peonies, and jade-plants. They can be generally identified with their two or more separate or semi-fused carpels.

Hamamelidaceae - witch hazel family

A medium sized family of 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.

Paeonia

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.

Witch hazel yields an astringent and soothing lotion for cuts and bruises; water diviners favor witch hazel for their dowsers (the divining rod to find water underground).

Hamamelis virginiana

Witch hazel

Hamamelidaceae - witch hazel family

The flowers are perfect, 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.

Hamamelis virginiana

Witch hazel

Previous year’s fruit

Crassulaceae - stonecrop family

Succulent herbs or small shrubs most common in arid temperate or warm temperate regions of the world.

Common as potted plants or in rock-gardens.

CAM (crassulacean acid metabolism) type of photosynthesis.

All Wisconsin species are introduced, although yellow sedum is spreading in sandy soils.

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

The family comprises about 30 genera and nearly 700 species; cosmopolitan in distribution. Saxifragaceae is now being broken up into unrelated families.

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.
Saxifragaceae - saxifrages family

5 merous flowers usually on leafless stems

Saxifraga pensylvanica - swamp saxifrage

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

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

Miella nuda
Small Bishop’s-cap

Heuchera richardsonii
Prairie alumroot

Endangered boreal sp.

Tiarella cordifolia
Foamflower
Endangered boreal sp.
**Saxifragaceae - saxifrage family**

*Parnassia* - grass of parnassus - has now been moved to its own family, unrelated to Saxifragaceae. Note the staminodia.

- *P. glauca* [threatened]
- *P. palustris* [threatened]
- *P. parviflora* [endangered]

**Grossulariaceae - currant family**

One genus, 150 species of shrubs from the north temperate regions and Andes. Characterized by lobed leaves, raceme inflorescences, and fleshy fruits (currants and gooseberries).

*Ribes americanum* - American black currant

**Calciphiles** (adapted to high calcium areas like fens, limestone pavement - e.g. Door Co.)

**Grossulariaceae - currant family**

One genus, 150 species of shrubs from the north temperate regions and Andes. Characterized by lobed leaves, raceme inflorescences, and fleshy fruits (currants and gooseberries).

Flowers 5 merous with sepals large and petals smaller

Gynocium inferior of 2 fused carpels

Well developed hypanthium

Ovary
Grossulariaceae - currant family

Currants identified by long racemes of many flowers

Ribes americanum
American black currant

Ribes triste - swamp currant

Ribes missouriense
Missouri gooseberry

Ribes cynosbati - prickly gooseberry, dogberry

Grossulariaceae - currant family

Gooseberries identified by paired flowers; stems often spiny

Rosids

Rosids are one of the two large groups of dicots; the other group are the Asterids

Rosids:
Separate petals

Asterids:
Fused petals

Rosaceae - rose family

Rosaceae is a large family of nearly 100 genera and almost 3000 species distributed worldwide but most common in the north temperate regions - important fruit family

Comprise herbs, shrubs, or trees and with 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

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\text{CA} 5 \quad \text{CO} 5 \quad A \quad G \quad \text{[variable!]} 
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Rosaceae - rose family

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

The gynoecium is variable as we will see and has been used to define 4 subfamilies:
1. Spiraeoideae
2. Rosoideae
3. Prunoideae
4. Pomoideae or Maloideae

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

- achenes
- aggregate of achenes
- follicles
- drupelets
- drupes
- pomes
Rosaceae - **Spiraeoideae** subfamily

- *Physocarpus opulifolius* - ninebark
  - Apocarpic, superior pistils
  - Short hypanthium
  - Follicle fruits

Rosaceae - **Rosoideae** subfamily

- *Rosaceae - Spiraeoideae subfamily*
  - *Spiraea alba* - meadow-sweet
  - *Spiraea tomentosa* - hardhack

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

- *Rosaceae - Rosoideae subfamily*
  - Flowers apocarpic with many carpels
  - Hypanthium well-developed or receptacle elongated
  - One-seeded achenes
Rosaceae - Rosoideae subfamily

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

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Rosaceae - Rosoideae subfamily

*Agrimonia gryposepala* - common agrimony, harvest lice

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

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Rosaceae - Rosoideae subfamily

*Fragaria virginiana* - wild strawberry

*Geum triflorum* - prairie smoke

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Rosaceae - Rosoideae subfamily

*Agrimonia gryposepala* - common agrimony, harvest lice

*Potentilla simplex* - Common cinquefoil

*Argentina argentea* - silverweed
**Rosaceae - Rosoideae subfamily**

- *Rubus parviflorus* – thimbleberry
- *Rubus hispidus* – swamp dewberry
- *Rubus allegheniensis* – blackberry

**Rosaceae - Rosoideae subfamily**

- *Rosa rugosa* – Beach rose
- *Rosa palustris* – Swamp rose
- *Rosa multiflora* – Multiflora rose

**Rosaceae - Prunoideae subfamily**

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

Gynoeicum superior with one carpel = monocarpic

Fruit a drupe = fleshy, with one bony seed

**Rosaceae - Prunoideae subfamily**

- *Prunus serotina* – wild black cherry
- *Prunus virginiana* – choke cherry
Rosaceae - **Prunoideae** subfamily

- *Prunus pumila* - sand cherry

Rosaceae - **Prunoideae** subfamily

- *Prunus americana* - Wild plum

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Rosaceae - **Pomoideae/Maloideae** subfamily

- Malus pumila or *Pyrus malus* - apple

Rosaceae - **Pomoideae/Maloideae** subfamily

- *Aronia melanocarpa* - black chokeberry

- *Pyrus communis* - Pear (introduced)
**Rosaceae - Pomoideae/Maloideae subfamily**

*Amelanchier laevis*

Serviceberry, Juneberry

**Rosaceae - Pomoideae/Maloideae subfamily**

*Crataegus crus-galli - cockspur hawthorn*

*Crataegus mollis - downy hawthorn*