Interesting Inflorescences

Heads, Gynostegiums and Cyathiums

Asteraceae - floral diversity

1. Disk or tubular florets are actinomorphic
2. Ray florets are usually 3 long fused petals + 2 short petals
3. Ligulate florets are 5 fused petals but split open
Asteraceae - floral diversity

The fruit is a one-seeded achene with the pappus serving as the fruit disperser (e.g., barbs for animal dispersal, hairs for wind dispersal)

Asteraceae - head diversity

These various types of florets combine to form a number of different looking heads

Radiate head: disk florets in the center, ray florets along the edge (these usually pistillate)

Discoid head: only disk or tubular florets comprise the entire head

Ligulate head: only ligulate florets comprise the entire head

Cichorium - chickory
Asteraceae - tribes

**Tribe Lactuceae (Cichorieae)**

*Hieracium* - hawkweeds

*Krigia biflora* - false dandelion

Asteraceae - tribes

**Tribe Cardueae (Cynareae)**

*Cirsium* - thistles

- spiny phyllaries and often leaves and stems
- heads never radiate
- petals white or cyanic colors (blues, purples)
- thistle, knapweed, burdock
Asteraceae - tribes

**Tribe Heliantheae**

Large tribe with radiate, multi-layered phyllaries, rays mostly yellow, tendency for opposite leaves

Coneflower, sunflower, rosinweed, ox-eye, black-eyed Susan, prairie dock, coreopsis, Peruvian daisy

*Ratibida pinnata* - coneflower

*Helianthus annuus* - sunflower

Asteraceae - tribes

**Tribe Astereae**

Conspicuous rays in radiate head, pappus of plumose bristles; asters, goldenrods, fleabanes

*Solidago rigida* - stiff goldenrod

*Aster novae-angliae* - New England aster
**Asteraceae - tribes**

**Tribe Anthemideae**

*Achillea millefolium* - yarrow

*Matricaria discoidea* - pineapple weed

**Asclepiadaceae – the milkweeds**

Worldwide family of trees, vines, herbs with opposite leaves
415 genera, 4600 species.

*Apocynum sibiricum*
Hemp dogbane

*Asclepias syriaca*
Common milkweed
Evolution of the milkweeds

Apocynaceae – the dogbanes

CA (5)  CO (5)  A 5  G 2  primitive

- flowers 5 merous
- left contorted perianth
- 2 separate carpels - follicles

Apocynum sibiricum
Hemp dogbane

Apocynum androsaemifolium
Spreading dogbane
Apocynaceae – the dogbanes

- ‘pollen presentation’ - style plunger or bottle brush to expose pollen
- 5 stamens begin to be connivent

Asclepiadaceae – the milkweeds

- stamens fuse to each other and to style region - gynostegium
- pollen forms pollinia
- more seeds with tufts of hairs
Asclepiadaceae – the milkweeds

Note 2 free carpels slightly fused at top

Asclepiadaceae – the milkweeds

Corona for nectar reward

Corona = hood + crest
Asclepiadaceae – the milkweeds

Fusion of 5 stamens and top of gynoecium

Corona = hood + crest
Gynostegium = A + G

Gland is attached to 2 pollinia

Corona = hood + crest
Gynostegium = A + G
Pollinia = pollen mass
Euphorbiaceae - spurges

Majority of the family has unisexual flowers, 5 sepals, no petals, numerous stamens, 3 fused carpels, and capsules.

Euphorbiaceae - spurges

A quite different arrangement of unisexual flowers is seen in many of our spurges of the genera Euphorbia and Chamaesyce.

Flower or inflorescence?
Euphorbiaceae - spurges

The “flower” of our flowering spurge is actually a highly modified inflorescence = cyathium.

Shown here are 3 cyathia; the whole unit here is one cyathium.

Euphorbiaceae - spurges

Cyathium is composed of:
glands
appendages of glands
∞ male flowers, 1- stamened (no perianth)
1 female flower (tricarpellate - 3 styles)