

Caryophyllid Eudicots

Caryophyllids comprise a small but important clade of Angiosperms situated in the phylogeny between the Rosids and Asterids. Although not that closely related to the Basal Eudicots, Caryophyllids share with them plesiomorphic floral characteristics of either numerous parts, parts in threes, and/or poor differentiation between the floral whorls. Most plants in the clade are herbs, although some cacti grow into trees. Derived characteristics that unite the Caryophyllids as a group are the presence of unique anthocyanin-derivatives called betalains in many taxa, and a tendency towards succulence in a number of taxa.

Table 1. FYI: Economically important members of the Caryophyllids (alphabetically by family).

- 1) **Cactaceae**: of tremendous horticultural import, since virtually all of the 1600 cactus species are cultivated as ornamentals somewhere in the world. Edible fruits and stems from the prickly-pear cactus (*Opuntia*), edible fruits from the dragon fruit cactus (*Hylocereus*).
- 2) **Polygonaceae**: the source of buckwheat grain (*Fagopyrum*) and rhubarb (*Rheum*). Mile-a-minute vine (*Persicaria perfoliata*) is an invasive weed in North America which has had great environmental damage and is expensive to manage (eradicate) on natural lands
- 3) **Amaranthaceae**: a diverse family that includes spinach (*Spinacia oleracea*), quinoa (*Chenopodium quinoa*), and root vegetables and sugar from beets (*Beta vulgaris*).

I. Caryophyllids

A. Families to Know on Sight

1. Polygonaceae (Buckwheat & Smartweed Family) – p. 440

Diagnostic Summary: Herbs or vines (shrubs to small trees) with simple lvs and ocreae (singular form: ocrea); nodes swollen, stems jointed in appearance; Fls small, fruit a trigonal or lens-shaped nut or achene surrounded by persistent perianth.

Generalized Flora Formula: fl regular: $\text{Ca}^{[4-5] \text{ or } [3+3]} \text{A}^{3-9} \underline{\text{G}}^{[2-3]}$, lenticular or trigonal nut or achene enveloped by persistent Ca

2. Cactaceae (Cactus Family) – p. 482

Diagnostic Summary: Stem-succulent herbs to shrubs or small trees lacking lvs with expanded blades; axillary buds (areoles) with clustered spines; Fls large, showy, with many spirally arranged petals, many stamens, and inferior ovary with areoles on the surface.

Generalized Flora Formula: fl regular or irregular: $\text{Ca}^0 \text{Co}^{\text{many, spiral}} \text{A}^{\text{many}} \text{G}^{[\text{many}]}$

B. Genera to Know (you can write your own key to genera)

1. Cactaceae – p. 482

- 1) *Cereus* sensu lato (succulent herbs, shrubs or small trees)
- 2) *Opuntia* (succulent herbs to shrubs)

2. Phytolaccaceae – p. 481

- 3) *Phytolacca* (herbs)

3. Polygonaceae – p. 440

- 4) *Persicaria* (herbs and vining herbs)