BIOL 325 – Plants Systematics Laboratory

Asterid Eudicots part 3 & Caryophyllids

I. Asterids Part 3

A. Families to Know on Sight

1. Ericaceae (heaths, blueberries, rhododendrons)

Diagnotistic Summary: Evergreen or semievergreen shrubs (herbs or small trees) with funnelform or urceolate corollas and 10 stamens with poricidal anthers.

Generalized Flora Formula:

fl regular or irregular: **Ca**[5] **Co**[5], funnelform or urceolate **A**10, poricidal, barely epipetalous **G**[5], capsule or **G**[5], berry

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

Ericaceae – p. 733

1) *Rhododendron* (shrubs)
2) *Kalmia* (shrubs)
3) *Vaccinium* (shrubs)

Aquifoliaceae – p. 850

4) *Ilex* (shrubs and trees)

Cornaceae -

5) *Cornus* (shrubs and trees)

Apocynaceae – p. 771

6) *Asclepias* (herbs)

Araliaceae – p. 852

7) *Hedera*(woody vines)

Apiaceae – p. 857

8) *Daucos* (herbs)

C. Economic Botany

- Apiaceae is the source many herbs and vegetables such as carots (*Daucos*), celery (*Apium*) and fennel (*Foeniculum*), cilantro & coriander (*Coriandrum*), cumin (*Cuminum*), dill (*Anethum*), parsley (*Petroselinum*), and caraway (*Carum*). Paradoxically, it is also the source of poison-hemlock (*Conium*), the plant used to execute Socrates.
- Araliaceae is the source of English-ivy (*Hedera*) and ginseng (*Panax*).
- Aquifoliaceae are the source of hollies and the Souther American stimulating beverage yerba mate (*Ilex*).
- Ericaceae are the source of blueberries and cranberries (*Vaccinium*), rhododendrons and azaleas (*Rhododendron*), our state flower the mountain-laurel (*Kalmia*), and numerous other ornamentals such as pieris (*Pieris*).

II. Caryophyllids

The caryophyllids comprise of clade closely related to the ssterids but which lacks the typical combination of core asterid characters of 5 fused petals, 5 or fewer epipetalous stamens, and 2 fused carpels. Most caryophyllids are herbs and there are quite a number of succulents. One chemical character present in some (but not all) caryophllids is the production of betalain pigment, a putative derivation from the more normal anthocyanin pigments. Betalains give beets and the flesh of poke and prickly-pear berries their rich, saturated red-purple color.

A. Families to Know on Sight

1. Polygonaceae (Buckwheat & Smartweed Family)

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

2. Cactaceae (Cactus Family)

Diagnostic Summary: Stem-succulent herbs to shrubs 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: **Ca**^{0} **Co**$^{\text{many, spiral}}$ **A**^{many} **G**$^{[\text{many}]}$

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

Cactaceae – p. 482

1) *Cereus sensu lato* (herbs to shrubs)
2) *Schlumbergera* (herbs to shrubs)
3) *Opuntia* (herbs to shrubs)

Phytolaccaceae – p. 481

4) *Phytolacca* (herbs to subshrubs)

Polygonaceae – p. 440

5) *Persicaria* (herbs)
6) *Rumex* (herbs)

C. Economic Botany

- Cactaceae are 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*).
- Polygonaceae is 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.