

Previous final question: the answer

How Compositae differs from Campanulaceae?

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- ▶ Compositae have pseudanthia (flowering heads which imitate flowers)
- ▶ Compositae have pappus (sepals modified into hairs, scales or bristles)

Flora of North Dakota: accessible literature 1

- ▶ Flora of North America. Volumes 2-5, 6-8, 19-23, 26-27
<http://efloras.org>
- ▶ Grondahl, Ch., and A. Evelsizer. 2002. Prairie wildflowers and grasses of North Dakota. North Dakota Game and Fish Department, Bismarck, ND. 27 pp. <http://www.npwrc.usgs.gov/resource/plants/pwgofnd/index.htm>
- ▶ Hansen, K. 2008. Plants of the Grand River and Cedar River National Grasslands: 2008. USDA-Forest Service, Dakota Prairie Grasslands, internal report. 56 pp.
<http://www.fs.fed.us/r1/dakotaprairie/recreation/plants-grand-river-brochure-khansen-07-08-opt.pdf>
- ▶ Identifying Plants on Soaring Eagle Prairie
<http://www.und.nodak.edu/org/soaringeagleprairie/2005/identifyingplants/startidentifyingplants.htm>

Flora of North Dakota: accessible literature 2

- ▶ Larson, G.E. 1993. Aquatic and wetland vascular plants of the northern Great Plains. Gen. Tech. Rep. RM-238. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station. 681 p.
<http://www.treesearch.fs.fed.us/pubs/30420>
- ▶ Midwestern wetland flora: Field office guide to plant species. 1987. USDA Soil Conservation Service, Midwest National Technical Center, Lincoln, Nebraska.
<http://www.npwrc.usgs.gov/resource/plants/floramw/>
- ▶ Sedivec, K.K., Barker W.T. 1998. Selected North Dakota and Minnesota Range Plants. NDSU Department of Animal and Range Sciences : Fargo.
<http://www.ag.ndsu.edu/pubs/ansci/range/eb69-1.htm>
- ▶ USDA Plants database <http://plants.usda.gov/>

Books

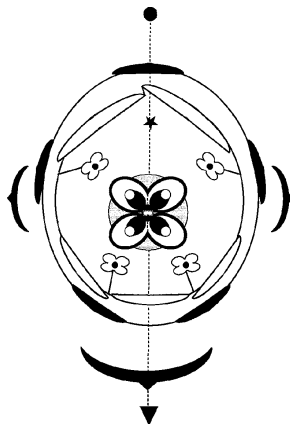
Labiatae—mint family

- ▶ $\approx 3,200$ species
- ▶ Cosmopolitan, but better represented in Mediterranean region
- ▶ Prefer open spaces

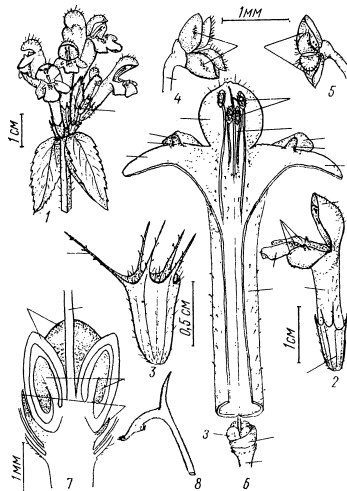
Morphology of Labiatae

- ▶ Aromatic, often hairy, herbs or shrubs; epidermal glands contain ethereal oils; plants also contain iridoid compounds
- ▶ Young stems are typically quadrangular; leaves opposite, without stipules, simple, with pterodromous venation
- ▶ Flowers in axillary inflorescences, zygomorphic (monosymmetric)
- ▶ Calyx tubular, petals also fused, with two upper and one lower petals bigger than others, stamens in two pairs, attached to corolla
- ▶ Pistil with two carpels, but each carpel is secondary divided
- ▶ Fruit is schizocarp of four half-carpellary nutlets, seeds with little endosperm

Labiatae flower



$$\uparrow K_{(5)} [C_{(2,3)} A_{2,2}] \underline{G_{(2 \times 2)}}$$

Galeopsis (hemp nettle) flower

Representatives of Labiatae

Spices, ornamentals and medicinal plants

- ▶ *Lycopus*—hoarhound
- ▶ *Physostegia*—obedient plant
- ▶ *Monarda*—wild bergamot
- ▶ *Mentha*—mint
- ▶ *Thymus*—thyme

Mentha spicata (mint)



Thymus sp. (thyme)



Scrophulariaceae (figwort family) alliance

- ▶ $\approx 5,000$ species
- ▶ Cosmopolitan, but occur mostly in Northern Hemisphere
- ▶ Prefer open spaces: meadows and grasslands

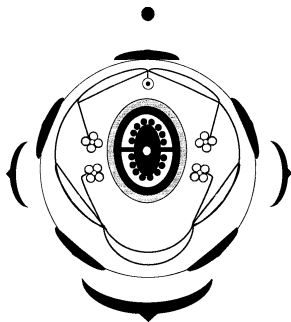
└ Scrophulariaceae (figwort family) alliance

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Morphology of alliance

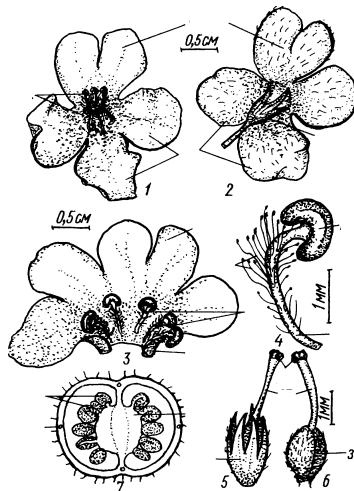
- ▶ Herbs; contain iridoid compounds
- ▶ Young stems are typically quadrangular or round; leaves opposite or alternate, without stipules, simple, with pterodromous venation
- ▶ Flowers in axillary or terminal inflorescences, zygomorphic (monosymmetric), but plantains (*Plantago*) have almost actinomorphic flower
- ▶ Calyx tubular, petals also fused, corolla often forms two lips, stamens 4 or 5, attached to corolla
- ▶ Pistil with two carpels
- ▶ Fruit is capsule, seeds with endosperm

Alliance flower

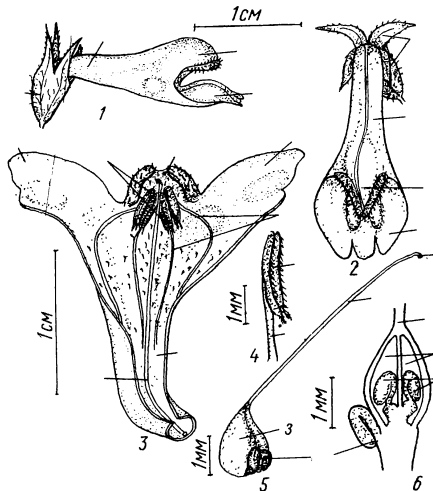


$$\uparrow K_{(5)} [C_{(2,3)} A_4] \underline{G_{(2)}}$$

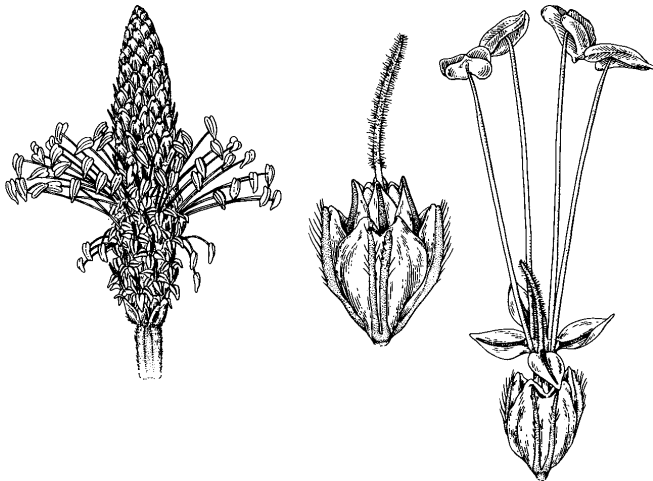
Verbascum (mullein) flower



Melampyrum flower



Plantago (plantain) flowers



- ▶ Scrophulariaceae s.str. (figwort family in strict sense)
 - ▶ *Verbascum*—mullein
- ▶ Plantaginaceae s.l. (plantain family in wide sense)
 - ▶ *Veronica*—speedwell
 - ▶ *Plantago*—plantain
 - ▶ *Penstemon*—beardtongue

Diversity of alliance (contd.)

- ▶ Orobanchaceae s.l. (broomrape family in wide sense)
 - ▶ *Castilleja*—painted cup
 - ▶ *Pedicularis*—lousewort
 - ▶ *Agalinis* (*Gerardia* nom.illeg.)—false foxglove
 - ▶ *Orobanche*—broomrape
- ▶ Phrymaceae—loopseed family
 - ▶ *Mimulus*—monkeyflower
 - ▶ *Phryma*—loopseed

- ▶ Labiatae and families of “Scrophulariaceae alliance” have similar, two-lobed structure of flower with 4 stamens and bicarpellate ovary.
- ▶ In most contemporary classifications of flowering plants, they belong to **order Lamiales**

For Further Reading



O. A. Stevens.

Handbook of North Dakota plants. 3rd edition.

NDSU, 1963.

Mint family—figwort family. P. 239–259.