

North Dakota vascular plants: manual to the Labiatae s.l.

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<i>Plantago</i> L., plantain	6

This family is understood here in the extremely broad sense: it includes representatives of Bignoniaceae, Lentibulariaceae, Linderniaceae, Orobanchaceae, Pedaliaceae, Phrymaceae, Plantaginaceae, Scrophulariaceae, Verbenaceae and some other groups.

Main Key

1. Trees or woody vines 2.
 - True water plants which do not only grow in water, but also use water for their body support 4.
 - = Principally terrestrial, herbaceous or shrubby plants 6.
2. Trees 3.
 - Woody vines *Campsis*
(*Campsis radicans*)
3. Leaves simple, whorled *Catalpa*
 - Leaves pinnate, opposite *Tecoma*
(*Tecoma stans*)
- 4 (1). Plants with dissected leaves bearing animal-trapping bubbles, flowers showy, yellow, labiate, in lax inflorescences *Utricularia*
In fact, leaves of bladderwort are modified shoots.
 - Leaves are not dissected 5.
5. Flowers small, white with yellow centers *Bacopa*
(*Bacopa rotundifolia*)
 - Flowers small, inconspicuous, perianth reduced *Callitriche*
- 6 (1). Perianth non-showy, green, brown or completely absent 7.
 - Perianth showy, white, yellow, blue, red or purple 9.
7. Flowers with reduced perianth but stamens purple *Besseya*
(*Besseya wyomingensis*)
 - Does not occur in North Dakota but might be found here.
 - Stamens are also non-showy 8.

- Flowers axillary, secondary veins arcuate *Dracocephalum*
(*Dracocephalum thymiflorum*)
- 21 (16). Inflorescences axillary: flowers arise from axils of (almost) “normal” leaves 22.
 - Inflorescences terminal 23.
- 22. Upper lip short, cleft *Glechoma*
(*Glechoma hederacea*)
 - Upper lip long, curved *Lamium*
(*Lamium amplexicaule*)
- 23 (21). Calyx collar-like, much bigger than corolla *Moluccella*
(*Moluccella laevis*)
 - Calyx not collar-like, its size is comparable with the size of corolla 24.
- 24. Calyx actinomorphic, lobes are similar 25.
 - Calyx zygomorphic, some lobes longer, wider or differently oriented 29.
- 25. Styles and/or stamens exerted from the corolla 26.
 - Styles and stamens are not exerted 27.
- 26. Inflorescences hemispheric *Monarda*
 - Inflorescences spike-like *Agastache*
(*Agastache foeniculum*)
- 27 (25). Lower leaves with crenate margins, pilose. Plants tall (usually more than 1 m), flowers pink with large upper lip *Phlomis*
(*Phlomis tuberosa*)
 - Lower leaves with dentate or serrate margins 28.
- 28. Plants annual, inflorescence frondose (bracts leaf-like), calyx lobes with long sharp tips, odor mild *Galeopsis*
 - Plants perennial, inflorescence bracteose (bracts are not leaf-like), calyx lobes without long sharp tips, odor strong, unpleasant *Stachys*
- 29 (24). Corolla tube inflated, funnel-shaped, relatively long (longer than corolla lobes) *Physostegia*
 - Corolla tube not inflated and funnel-shaped, usually shorter than corolla lobes 30.
- 30. Leaves with long, sharp teeth *Dracocephalum*
(*Dracocephalum parviflorum*)
 - Leaves with dentate or serrate margins but without long, sharp teeth 31.
- 31. Calyx strongly bilabiate *Salvia*
 - Calyx with 5 lobes *Nepeta*
(*Nepeta cataria*)

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- 32 (10). Corollas red, pink, white, blue, purple (sometimes, some of these colors occur together, or flower centers are yellow) 42.
 - Corollas creamy, bright yellow or yellow-orange (sometimes mixed with white) 33.
- 33. Most of upper leaves opposite 34.
 - Most of upper leaves alternate 37.
- 34. Flowers with two well-visible lips, the upper lip hood-like 35.
 - Flowers with no upper hood-like lip or without lips 36.

35. Calyx inflated, almost circular with fruit; corolla short, not more than 2 times longer than calyx
 *Rhinanthus*
 (*Rhinanthus minor*)
 – Calyx not inflated; corolla more than 2 times longer than calyx *Pedicularis*
 (*Pedicularis lanceolata*)
- 36 (34). Sepals fused, corolla zygomorphic, lower lip arches near the entrance to the corolla tube
 *Mimulus*
 Yellow monkey-flowers are now frequently treated within genus *Erythranthe*.
 – Sepals almost free, corolla almost actinomorphic, corolla tube with hairs near the entrance ...
 *Gratiola*
 (*Gratiola aurea*)
- 37 (33). Flower fully open, petals fused only at the base, stamens 5 *Verbascum*
 – Flowers with the relatively long corolla tube 38.
38. At least some upper leaves dissected, lobed or pinnately toothed 39.
 – All leaves whole, with (almost) entire margins 40.
39. At least some upper leaves pinnately lobed or toothed *Pedicularis*
 (*Pedicularis canadensis*)
 – At least some upper leaves triply dissected *Castilleja*
 (*Castilleja sessiliflora*)
- 40 (38). Flower with two visible lips, corolla more or less open 41.
 – No visible lips, corolla closed *Orthocarpus*
 (*Orthocarpus luteus*)
41. Corolla with a long spur *Linaria*
 – Corolla with a broad pouch at the base *Antirrhinum*
 (*Antirrhinum majus*)
- 42 (32). Flowers with 4 petals and 2 stamens; fruits are heart-shaped or globose capsules 43.
 – Flowers different from the above 45.
43. Calyx lobes almost equal, 5. Flowers white, with conspicuous tube, in dense terminal spikes
 *Veronicastrum*
 (*Veronicastrum virginicum*)
 – Calyx lobes 4 or 4 bigger and 1 smaller. Flowers usually blue 44.
44. Corolla tube conspicuous, fruit almost globose, spikes terminal, dense *Pseudolysimachion*
 (*Pseudolysimachion longifolium*)
 – Corolla tube inconspicuous, fruit flattened, spikes terminal or axillary, lax *Veronica*
- 45 (42). Flowers actinomorphic or only slightly zygomorphic, without lips 46.
 – Flowers distinctly zygomorphic, usually with lip(s) 50.
46. Leaves whole with entire margins 47.
 – Leaves with toothed margins and/or dissected or lobed 48.
47. Leaves elliptic *Bacopa*
 (*Bacopa rotundifolia*)
 – Leaves linear or spatulate *Limosella*
- 48 (46). At least some lower leaves double dissected, inflorescences head-like *Glandularia*
 (*Glandularia bipinnatifida*)
 – Leaves toothed, whole, once lobed or dissected, inflorescences long or short spikes 49.
 = Leaves whole, serrate, flowers axillary *Gratiola*

49. Corolla slightly zygomorphic (two upper petals are slightly different), stems with only few pairs of developed leaves *Stylodon*
(*Stylodon carneus*)
Likely absent in North Dakota.
- Corolla almost actinomorphic, stems with many pairs of developed leaves *Verbena*
- 50 (45). Most of upper leaves opposite 51.
- Most of upper leaves alternate 57.
51. Flowers mostly axillary or in lax inflorescences 52.
- Flowers in distinct terminal inflorescences 56.
52. Leaves linear, 1–2 mm wide; flowers on long pedicels, usually pink or purple *Agalinis*
– Leaves broader 53.
53. Creeping plant with heart-shaped, pubescent, viscid leaves; fruits with two prominent horns *Proboscidea*
(*Proboscidea louisianica*)
- Plant are different from the above 54.
54. Corolla without lip *Gratiola*
– Lower lip of two differently colored, partially free petals *Collinsia*
(*Collinsia parviflora*)
= Lower lip of three fused petals 55.
55. Corolla purple or blue, sepals fused, stamens 4 *Mimulus*
(*Mimulus ringens*)
– Corolla white or white-purple, sepals almost free, stamens 2 *Lindernia*
(*Lindernia dubia*)
- 56 (51). Sepals fused almost completely, calyx zygomorphic; flowers small (less than 0.5 cm), in long narrow spikes; forest plants *Phryma*
(*Phryma leptostachya*)
– Sepals almost free, calyx actinomorphic; flowers typically bigger, inflorescences are not long and narrow; plants of open spaces *Penstemon*
- 57 (50). Upper lip of the flower strongly arched forming the hood; flowers frequently purple with yellow parts *Pedicularis*
(*Pedicularis canadensis*)
– Hood absent 58.
58. Corolla with a broad pouch at the base; flowers 2–4 cm long; plants typically taller than 0.5 m *Antirrhinum*
(*Antirrhinum majus*)
– Corolla with slender spur at the base 59.
59. Flowers in terminal racemes *Nuttallanthus*
– Flowers solitary in leaf axils *Chaenorhinum*
(*Chaenorhinum minus*)

Plantago L., plantain

- 1. Grass-like, small, slender annuals with linear or narrowly lanceolate leaves 2.
 - Perennials, usually with broader leaves 4.
 - 2. Plants glabrous, corolla lobes minuscule, about 1 mm *Plantago elongata*
 - Plants pubescent, corolla lobes more than 1 mm 3.
 - 3. Leaves pubescent below but almost glabrous above, bracts with long appendages, plants darkening when drying *Plantago aristata*
 - Leaves pubescent on both sides, bracts with or without long appendages, plants not darkening when drying *Plantago patagonica*
 - 4 (1). Leaves broad, elliptic, ovate or even circular; spike long (takes most of flowering stem) and dense; no taproot, roots fibrous 6.
 - Leaves lanceolate; spike short and dense or long and lax; with taproot 5.
 - 5. Stem ridged, sepals 3 (one sepal has two keels), spike short, grows in dry places *Plantago lanceolata*
 - Stem not ridged, sepals 4, spike usually long, grows in wet places *Plantago eriopoda*
 - 6 (4). Capsules narrowly lanceolate, seeds mainly 4, elongated and dark; leaves frequently not decumbent, elliptic *Plantago rugelii*
 - Capsules lanceolate or ovoid, seeds mainly 6 or more, short, brown or yellow, angled; leaves frequently decumbent, broadly ovate *Plantago major*
- It is almost impossible to distinguish these two species on earlier stages of development, without capsules and ripe seeds.