

**KEY TO
LAMIACEAE OF COLORADO**
(Mint Family)

Distinguishing Family Characteristics: Opposite leaves; square stems; foliage aromatic in about 70% of our species; corolla united, bilaterally symmetrical (look closely!); anther-bearing stamens 2 or 4; ovary superior, divided into 4 lobes that develop into nutlets; style arising between and usually at the base of the ovary lobes.

Preface: Lamiaceae keys typically rely heavily on the number of fertile stamens, and thus the presence of flowers is a requirement to identification. Nonetheless, most mints can be identified out of flower using other characteristics. The calyx in particular often has useful distinguishing characteristics and lasts much longer than the flower. This key puts a greater emphasis on calyx and vegetative characteristics, following the general approach in *Colorado Flora: Western Slope* by Weber and Wittman.

Notes:

1. The number of stamens refers to fertile, anther-bearing stamens.
2. Plant ranges, and numbers of infrequently collected species, are based on collections at COLO, RM, and CS¹.
3. Plant dimensions are based on the collection at COLO and regional botanical references.

- 1a. Rounded to mound-like shrub with small narrow grayish leaves; corolla light blue-lavender to whitish; sandy sites in the Four Corners region **Poliomintha**
- 1b. Herbaceous plants (*Monardella* and *Hedeoma drummondii* are woody at base).
 - 2a. Calyx with a prominent transverse ridge across the top; calyx 2-lipped, the lips entire; flowers in leaf axils, solitary or in a loose raceme **Scutellaria**
 - 2b. Calyx without a transverse ridge; flowers densely clustered or not.
 - 3a. Calyx regular with 10 teeth hooked at apex **Marrubium**
 - 3b. Calyx otherwise.
- 4a. Inflorescences appearing terminal, in hemispherical clusters or heads, spikes or racemes. Verticillasters usually subtended by bracts, with or without subtending leaves.
 - 5a. Inflorescence a terminal dense hemispherical cluster or head, sometimes also with a few dense clusters in the upper leaf axils.
 - 6a. Stem hirsute; flower clusters beset with narrow linear bracts; calyx bilabiate, somewhat curved **Clinopodium**
 - 6b. Stems not hirsute, either glabrous, pubescent or canescent; flower clusters subtended by foliaceous bracts, also some narrow bracts or bracteoles; calyx nearly regular, not curved.
 - 7a. Leaves entire; calyx throat not hairy; stamens 4 **Monardella**
 - 7b. Leaves serrate to subentire; calyx throat hairy on the inside; stamens 2 **Monarda**
 - 5b. Inflorescence a spike or raceme.
 - 8a. Leaves entire or slightly crenate-serrate.
 - 9a. Inflorescence a short dense spike; corolla purple; stamens 4 **Prunella**
 - 9b. Inflorescence more raceme-like, at least partly interrupted; corolla blue; stamens 2. **Salvia**
 - 8b. Leaves distinctly toothed, either serrate, crenate, or pinnatifid.
 - 10a. Small flowers, calyx \leq 3 mm long, corolla \leq 5 mm long **Mentha**
 - 10b. Larger flowers.

¹ COLO = Univ. of Colorado Herbarium; RM = Rocky Mountain Herbarium; CS = Colo. State Univ. Herbarium

- 11a. Spine-toothed bracts; upper leaves spiny-toothed or at least very sharp-toothed
.....**Dracocephalum**
- 11b. Bracts and leaves not spine-toothed.
 - 12a. Leaves deeply pinnatifid; corolla white and 1-lipped**Teucrium lacinatedum**
 - 12b. Leaf margins serrate, crenate, or subentire.
 - 13a. Leaves triangular to ovate; roots not rhizomatous.
 - 14a. Calyx distinctly bilabiate; stamens 2 **Salvia**
 - 14b. Calyx regular or slightly bilabiate, with 5 teeth; stamens 4.
 - 15a. Calyx teeth green, unequal; calyx hirsute; foliage fragrant; stamens little exerted; anther sacs divergent**Nepeta**
 - 15b. Calyx teeth often colored or whitish, nearly equal; calyx minutely hairy; aromatic or not; stamens little to very exerted; anther sacs \pm parallel **Agastache**
 - 13b. Leaves narrowly ovate to lanceolate; roots rhizomatous.
 - 16a. Inflorescence a congested spike; flowers pedicellate; leaf petioles \geq 4 mm long; leaf margins serrate, cuneate at base; corolla appearing 1-lipped, the stamens exposed **Teucrium canadense**
 - 16b. Inflorescence an interrupted spike; flowers sessile to subsessile; leaves sessile to very short-petioled; leaf margins crenate-serrate, base rounded to subcordate, sometimes cuneate; corolla obviously 2-lipped, the upper lip covering the stamens**Stachys**
- 4b. Inflorescences axillary, the flowers or verticillasters mostly subtended by leaves.
 - 17a. Plants creeping or weak-stemmed; leaves \pm cordate-based, serrate, crenate or coarsely lobulate.
 - 18a. Stems creeping; flowers pedicellate, 2-6 per cluster**Glecoma**
 - 18b. Stems decumbent to semi-erect; flowers sessile and more numerous **Lamium**
 - 17b. Plants erect; leaves either not cordate-based or else deeply palmately lobed.
 - 19a. Leaves deeply and sharply palmately lobed (maple-like) **Leonurus**
 - 19a. Leaves not palmately lobed.
 - 20a. Leaves $<$ 2 cm long, linear to elliptic, entire; flowers few in leaf axils **Hedeoma**
 - 20b. Larger leaves, margins serrate to scarcely crenate; flowers densely clustered.
 - 21a. Flowers small; calyx $<$ 5 mm long; corolla $<$ 5 mm long, nearly regular with 4-5 subequal lobes.
 - 22a. Strong mint aroma; flowers pedicellate; corolla pink-purple to whitish; stamens 4, exerted from the corolla **Mentha arvensis**
 - 22b. Not or scarcely aromatic; flowers sessile; corolla white; stamens 2, not exerted
..... **Lycopus**
 - 21b. Flower larger; corolla bilabiate.
 - 23a. Stems hirsute; stamens 4.
 - 24a. Leaves crenate-serrate; flowers sessile; calyx regular, slightly inflated at maturity; flower clusters mainly axillary with small subulate bracteoles 3-5 mm long; corolla \leq 12 mm long **Galeopsis**

24b. Leaves scarcely crenate; flowers pedicellate; calyx bilabiate; flowers in a terminal cluster and a few clusters in the upper leaf axils, beset with slender spreading-ciliate bracts about as long as the calyxes; corolla longer. **Clinopodium**

23b. Stems not hirsute, but finely pubescent; stamens 2. **Monarda pectinata**

AGASTACHE, Giant hyssop

Perennials.

- 1a. Leaf undersides whitened by minute pubescence (use 30X magnification); calyx teeth and corolla blue to violet. **A. foeniculum**. Calyx teeth ≤ 2 mm long. Scattered locations at the eastern base of the mountains, 6800 – 7500 feet.
- 1b. Leaf undersides pale but not minutely pubescent; calyx teeth not blue but whitish to pink to purple, corolla white to rose to violet.
 - 2a. Calyx teeth similar in texture to the calyx tube, triangular; stamens exerted only 1-2 (3) mm beyond mouth of corolla; all 4 stamens ascending under the upper corolla lip; upper corolla lip straight to galeate-curved; leaves < 3 (5 ½) cm long. **A. pallidiflora**. Calyx teeth 1.5 - 2.5 (4) mm long. Southernmost counties west of San Luis Valley, 7700 – 10,000 feet.
 - 2b. Calyx teeth with margins thinner and paler than calyx tube, subulate-tipped; stamens exerted 4-7 mm beyond mouth of corolla; 2 stamens ascending under the upper corolla lip, the other 2 spreading; upper corolla lip spreading or reflexed; leaves mostly larger, 3 - 10 cm long. **A. urticifolia**. Calyx teeth 2.5 - 5 mm long. Western and north-central counties, 6800 – 10,800 feet.

CLINOPODIUM, Wild basil

Clinopodium vulgare (*Satureja vulgaris*). Perennial, rather slender; hairy; stamens 4. Alien in widely scattered locations, southern San Juan Mountains, Raton Mesa area, and Steamboat Springs, 7600 – 8800 feet.

DRACOCEPHALUM, Dragonhead

Dracocephalum parviflorum (*Moldavica parviflora*). Annual to short-lived perennial; the upper calyx tooth ovate and twice as wide as the other 4; stamens 4. Wide-ranging, 5200 – 10200 feet. Common along disturbed roadsides.

GALEOPSIS, Hempnettle, Deadnettle

Galeopsis bifida. Annual; calyx teeth spinulose-tipped; stems hirsute, with long multicellular hairs and shorter glandular hairs. Alien in widely scattered, usually moist locations, Jefferson, Gunnison, Pitkin, and Summit Counties, 7000 – 8900 feet.

GLECOMA, Ground ivy, Creeping charlie

Glecoma hederacea (*Glechoma hederacea*). Lax perennial, creeping at base; leaves cordate-orbicular to reniform, petioled, crenate; flowers few in leaf axils; calyx unequally toothed; stamens 4. Alien, of moist locations, rare in the wild. Used as a garden groundcover.

HEDEOMA, Mock pennyroyal, False pennyroyal

Aromatic, of small stature (< 3.5 dm tall); corollas ≤ 9 mm long; stamens 2.

- 1a. Upper and lower calyx teeth spreading, leaving the orifice open; annual; leaves narrowly linear. **H. hispidum**. Corolla < 7 mm long. Grasslands on plains and mesas, eastern slope, 3600 – 6650 feet.
- 1b. Upper and lower calyx teeth convergent, curved in the same direction and closing the orifice at maturity; perennial, somewhat woody at base; leaves more elliptic. **H. drummondii**. Corolla 7 – 13 mm long. Mostly rocky sites, east and west slopes, 3900 – 8000 feet.

LAMIUM, Deadnettle

Annual or winter annual, stems weak, flowers clustered in leaf axils, appearing terminal also; stamens 4.

- 1a. Upper stem leaves sessile or clasping the stem, green, only the lower leaves with distinct petioles; calyx hirsute. **L. amplexicaule**, henbit. Alien, rare in the wild, usually in moist sites, more frequently found in urban environments.
- 1b. All leaves petioled, upper stem leaves purple; calyx sparsely hirsute on veins. **L. purpureum**, purple deadnettle. Alien, only one record from the wild, along irrigation canals near Montrose.

LEONURUS, Motherwort

Leonurus cardiaca. Perennial; leaves deeply palmately cleft and lobed; calyx teeth firm and spinulose, the 2 lower teeth deflexed or widely spreading; flowers in dense axillary clusters near the apex of the stem; corolla densely wooly; stamens 4. Alien, a weed in mostly shaded, often riparian sites near towns. Common along the Boulder Creek path.

LYCOPUS, Bugleweed, Water horehound

Rhizomatous perennials of wetlands; flowers densely clustered in leaf axils; corolla 4-lobed, white to pinkish.

- 1a. Lower and middle stem leaves irregularly incised-toothed or pinnatifid, short-petioled; apex of nutlets smooth and broadly rounded; roots barely or not tuberous. **L. americanus**. Calyx has narrow lobes that exceed the nutlets. 3100 – 7500 feet.
- 1b. Leaves only serrate, sometimes coarsely so; apex of nutlets truncate and often irregular; roots with tubers.
 - 2a. Calyx lobes much exceeding the nutlets, the lobes acute to subulate at the apex. **L. asper**. 4800 – 7700 feet.
 - 2b. Calyx shorter than to barely equaling the nutlets, the lobes triangular and acute to obtuse at the apex. **L. uniflorus**. Wet lowlands, known only from the Boulder valley.

MARRUBIUM, Horehound

Marrubium vulgare. Taprooted perennial; stems white-wooly, 3 – 10 dm long; leaves roundish, crenate, usually petioled, the veins deeply impressed; flowers in dense axillary clusters; corolla whitish; stamens 4. Common weedy alien, often on disturbed sites, 4400 – 8900 feet.

MENTHA, Mint

Aromatic, rhizomatous perennials; leaves serrate; corolla nearly regular, 4-lobed; stamens 4, exserted.

- 1a. Flowers in dense axillary whorls. **M. arvensis**, field mint. Wetlands, 3100 – 9400 feet.
- 1b. Flower mainly in terminal spikes.
 - 2a. Calyx 1 - 2 mm long; leaves sessile or subsessile, any petioles \leq 3 mm long; spikes narrow and mostly interrupted, usually $<$ 1 cm wide; **M. spicata**, spearmint. Alien, escaped from cultivation, most often along streams and drainage ways, 4800 – 6800 (9200) feet.
 - 2b. Calyx 2 – 3 mm long; leaf petioles commonly $>$ 4 mm long; spikes thick and dense, usually $>$ 1 cm wide. **M. piperita**, peppermint. Alien, a sterile hybrid between *M. arvensis* and *M. aquatica*. Probably only propagates vegetatively. Only one Colorado collection from the wild, and that is of dubious identity (it is likely *M. spicata*).

MONARDA, Horsemint, Beebalm

Aromatic; calyx nearly regular, 5-toothed, hairy at mouth of throat.

- 1a. Calyx teeth ~ 1 mm long; flower head solitary at the end of stem; corolla mostly (2) 2.5 – 3.5 cm long, rose pink; perennial. **M. fistulosa** var. **mentifolia**, wild bergamot. Streamsides, canyonsides, and meadows in the foothills, 5400 – 9000 feet.
- 1b. Calyx teeth 2 – 4 mm long; flower heads usually more than one, one terminal one, and one or more in the upper leaf axils; corolla mostly 1.3 – 2.3 cm long, white to pink; annual. **M. pectinata**, spotted or plains beebalm. Plains and foothills, 4400 – 9200 feet.

MONARDELLA

Monardella odoratissima. Clump-forming perennial from a woody caudex; leaves entire or nearly so, strongly aromatic; corolla rose-purple to whitish; flowers borne in a terminal head subtended by broad, often colored, bracts forming a distinct involucre. Rocky and dry sites, and sagebrush meadows on the west slope, 5600 – 10,600 feet.

NEPETA

Nepeta cataria, catnip. Fragrant perennial; short pubescent on stems and lower leaf veins; leaves cordate-triangular, petiolate, coarsely toothed; corolla whitish with purple spots. Weedy alien of riparian and disturbed sites, 3700 - 8500 feet.

POLIOMINTHA

Poliomintha incana, frosted mint, purple sage. Aromatic shrub; calyx white villous; leaves linear to oblong, entire, minutely canescent. Sandy sites, especially stabilized sand dunes. A few collections from southwest of Cortez near the Utah border, 4700 – 4800 feet. A peripheral species from the Four Corners region.

PRUNELLA, Self-heal, Heal-all

Prunella vulgaris. Perennial; leaves entire or nearly so; inflorescence a dense terminal bracteate spike; calyx bilabiate, the upper lip broad and shallowly 3-toothed, the lower deeply cleft into 2 teeth; bracts depressed ovate to suborbicular, with an acuminate apex. Common in moist areas, 5300 – 11700 feet. Adapts to moist mowed lawns.

SALVIA, Sage

Perennial, biennial or annual; flowers in terminal bracteate spike-like racemes; calyx obviously bilabiate; foliage often rank-smelling (in ours); bracts vary from inconspicuous and deciduous to conspicuous and persistent.

- 1a. Leaves large, > 6 cm long, cordate-ovate, rankly aromatic; corolla violet-blue or white; upper calyx lip with 3 minute teeth.
- 2a. Corolla whitish, inflorescence pyramidal; leaves densely tomentose, at least below; biennial. **S. aethiopsis**, med. (Mediterranean) sage. Bracts conspicuous and persistent. An alien noxious weed in the Boulder area; also recorded from Mesa Verde in 2001.
- 2b. Corolla violet-blue; leaves not densely tomentose; perennial.
 - 3a. Corolla 9 – 12 mm long; cauline leaves prominent. **S. nemorosa** (*S. sylvestris*), woodland sage. Perennial. Alien established near Cedaredge, near Aspen, and in northern Larimer County. *S. nemorosa* is frequently sold in garden centers.
 - 3b. Corolla (1) 1.5 - 3 cm long; leaves mostly basal. **S. pratensis**, field sage, meadow clary². Perennial. Alien, one locality, well established in a pasture north of Boulder.
- 1b. Leaves mostly smaller, lanceolate to ovate, not cordate; aromatic or slightly so; corolla blue; upper calyx lip with a single tooth.
 - 4a. Plants tall, mostly 5 – 15 dm high, perennial; inflorescence often congested; corolla >10 mm long. **S. azurea** var. **grandiflora** (*S. pitcheri*), blue sage, pitcher sage. Abundant alien at the Mt. Sanitas trailhead in Boulder. Native farther east on the plains.
 - 4b. Plants smaller, annual; inflorescence interrupted; corolla smaller. **S. reflexa**, lance-leafed sage. Collected as early as 1871 in E. Colorado - Weber and Wittman consider it alien to Colorado - Great Plains Flora considers it native, but adventive eastward. Plains, drainageways, shorelines, and disturbed areas, 3800 – 6600 feet.

² For more details about *Salvia pratensis*, see www.plantlife.org.uk.

SCUTELLARIA, Skullcap

Non-aromatic perennials; calyx bilabiate with entire lips, bearing a raised transverse ridge across the upper lip; stamens 4.

- 1a. Leaves almost as wide as long; taprooted. **S. resinosa**. Flowers 2 per node. A single collection from 6000 feet near the Utah line in Montrose County, very disjunct; this specimen was originally labeled as *S. antirrhinoides*, a plant of the Cascade and Sierra Nevada regions. *S. resinosa* is a plant of the southern Great Plains.
- 1b. Leaves at least twice as long as wide; spreading by rhizomes.
 - 2a. Flowers in axillary racemes. **S. lateriflora**. Only a few collections, from the far eastern plains. Riparian areas, usually stream banks, on the Great Plains.
 - 2b. Flowers 2 per node, one per leaf axil.
 - 3a. Plants of dry sites; leaves entire; corolla 2 - 3 cm long. **S. brittonii**. Foothills and adjacent plains, mostly on the east slope. Common on granitic soils in pine forests. 4800 – 9050 feet.
 - 3b. Plants of wet meadows; leaves shallowly crenate-serrate; corolla 1.5 – 2 cm long. **S. galericulata** var. **epilobiifolia**, marsh skullcap. Stems mostly erect but weak. 4900 – 9200 feet.

STACHYS, Hedge-nettle

Stachys palustris subsp. **pilosa**. Rhizomatous perennial with a rank odor; hirsute with long hairs, occasionally with shorter gland-tipped hairs; calyx sub-equally 5-toothed; stamens 4. Wet areas of lower and middle elevations, 5200 – 9300 feet. Occasionally mistaken for *Galeopsis bifida*.

TEUCRIUM, Germander, Wood sage

Perennials; corolla appearing 1-sided, stamens 4, exserted; ovary merely 4-lobed.

- 1a. Leaves merely serrate or crenate; tall and erect, stems $\geq 2 \frac{1}{2}$ dm long. **T. canadense** subsp. **occidentale**. Rhizomatous; foliage spreading-hairy. Wet lowlands, 3800 – 5700 feet.
- 1b. Leaves deeply pinnatifid; plants $\leq 2 \frac{1}{2}$ dm tall, bushy branched from base. **T. laciniatum**, cut-leaf germander. From caespitose caudices and deep creeping roots. South-central and southeastern counties, 4600 – 6800 feet. Uplands, rocky sites, and roadsides.