

LAMIACEAE: THE MINT FAMILY

A FRAGRANT FAMILY IMPORTANT
FOR MEDICINAL AND CULINARY
PURPOSES

The large Lamiaceae (formerly Labiatae) is found worldwide, with great diversity in California, Mexico, and the Mediterranean region

- The plants live in a wide variety of habitats, although many are drought adapted
- This is one of the few families (usually) recognized on the basis of vegetative features, a triplet of characters...
- Mints have square stems on the new growth (not the old) but several other families also have that feature (including Rubiaceae)
- Mints have opposite leaves, a trait shared with many other families
- Mints have fragrant leaves (also found in several other families), but...
- The combination of these traits identifies the mints

The mints are also noted for their floral features, including...

- Flowers often in whorled spikes,
- Irregular, two-lipped flowers with (sometimes) 5 sepals and 5 petals (several other families have two-lipped flowers)
- 2 or 4 stamens (a number in several other families)
- A superior ovary that is segmented into 4 lobes (the only other family with this feature is Boraginaceae)
- This latter trait about the ovary, and the fact it ripens into 4, one-seeded nutlets, is the most consistent feature throughout the family

Here you see the four-lobed ovaries which sit inside the fused sepals. People often mistake these sepals for an ovary containing four seeds but each ovary segment contains a single seed.



Because several other families feature 2-lipped flowers, a brief mention should be made (none of them have the 4 ovary segments)

- The snapdragon family, Scrophulariaceae (and its recently split off Plantaginaceae) commonly have a 2-lipped design as in penstemons, snapdragons, toadflaxes, and more
- The trumpet vine family, Bignoniaceae, also has two-lipped flowers as in jacaranda and catalpa
- The acanth family, Acanthaceae, has a two-lipped design as in shrimp plant, acanthus, and others
- Several other smaller related families also display the 2-lipped design, so...
- The usual combination of fragrant leaves and the definitive 4-segmented ovary is necessary to distinguish the mints

To key genera in the Lamiaceae, you'll need to see how the stamens relate to the upper lip, count the number of stamens, look at details of the sepals, and more

- This survey starts with the all-important genus *Salvia* (sage), which has 800 species worldwide. Salvias are among the few genera with only 2 stamens, and the upper anther is usually separated from the lower
- Salvias live in drylands (especially in California), mountain woodlands and forests (especially in Mexico), and a variety of other habitats elsewhere
- Salvias can be annual, ground covers, perennials, or small shrubs
- The flowers display a wide range of colors, those with vivid purples and reds often pollinated by hummingbirds

The word salvia comes from the Latin word to heal or save, and we have a close cognate in English, salve. The original medicinal salvia, *S. officinalis*, is the same species used to flavor food

Although other salvias have similar properties, many of them are thought of principally as ornamentals. These next examples are common ones in the Bay Area. Here you see the Canary Island sage, *S. canariensis*, with woolly leaves and purple flowers



Another shrubby dry growing sage is *S. africana-lutea*, aka golden sage. Note the hooded upper lip and interesting color



The scarlet sage, *S. coccinea*, is a bedding plant from South America attractive to hummingbirds



The giant shrub *S. gesneriflora* from the wooded mountains of Mexico is but one of the many handsome species from that area and a great hummingbird flower. This species is not drought tolerant.



Here follow some of California's native sages. *S. spathacea*, the hummingbird sage is a perennial ground cover from dry woodlands in central and Southern California.



By contrast, the Sonoma sage, *S. sonomensis*, is a woody ground cover on steep rocky, exposed slopes. The purple flowers attract bees.



The thick-leaf sage, *S. pachyphylla*, grows on slopes in desert mountains with gray leaves and clear blue flowers



Several native sages are small to medium-sized shrubs, such as black sage, *S. mellifera*, abundant on Mt. Diablo on south



Two other shrub sages include Cleveland sage, *S. clevelandii*, from Southern California whose blue flowers are among the last to bloom and...



...the mounded white or bee sage, *S. apiana*, whose white leaves are extremely fragrant



White sage sends up very tall flowering stalks in summer



California is also home to two annual sages, like this *S. columbariae* or chia, noted for its nutritious, edible nutlets



Chia leaves are unusual, being highly lobed and with a pungent fragrance



The annual thistle sage, *S. carduacea*, features large woolly leaves with sharp thistlelike spines, and...



...beautiful purple frilly flowers protected by spiny sepals



The genus *Phlomis* like this *P. fruticosa*, comes from the eastern Mediterranean and is referred to as Jerusalem sage, but is not a member of the genus *Salvia*



The phloemises feature four stamens and a conspicuous upper lip that partially covers the lower lip as seen here



We'll turn now to some of the culinary herbs, many of which originate in the Mediterranean region where they were used early on to preserve and flavor food. Here is a lavender in the

genus *Lavandula*



Lavenders are small shrubs with the characteristic fragrance. This Spanish lavender, *L. stoechas*, is noted for flaglike bracts at the top of a spike of small dark blue flowers.



Another Mediterranean herb is oregano, *Origanum vulgare*, an herbaceous perennial with small white to pale purple flowers



Other species of *Origanum* are also ornamental like this dittany of Crete, *O. dictamnus*, a sprawling ground cover with conspicuous pink bracts around the flowers



Rosmarinus officinalis or rosemary is one of the most celebrated herbs. It's a small evergreen shrub with needlelike leaves and clear blue flowers.



Rosemary flowers are noted for the stamens being above both lips of the flower, a good diagnostic feature, shared also with the germanders



Here you see the popular Mediterranean shrub germander, *Teucrium frutescens* with its deep blue flowers



The genus *Nepeta* is perhaps best known for catnip, but some better ornamentals in the genus include the slender purple spikes of *N. tuberosa*.



Often an annual weed in California, horehound (*Marrubium vulgare*) from Europe has been used as a medicinal herb.



The small white flowers of horehound are borne above conspicuous pairs of leaves.



Several mint genera occur in the drylands of Australia, the best of which are in the genus *Prostanthera*, and group of evergreen shrubs with bell-shaped purple, pink, or white flowers. This one is *P. rotundifolia* with highly fragrant round leaves.



A few other noteworthy nonnative mints include the spectacular lion's mane, *Leonotus leonurus*, from South Africa



Leonotus flowers are very long, brightly colored, and with the upper lip far exceeding the lower lip as seen here



From the dry mountains of Mexico comes the bushy *Poliomintha incana*, an evergreen shrub with long purple flowers and short lips.



The remainder of the presentation will focus on more native California mints, such as the confusedly named genus *Lepechinia*, aka pitcher sage, not a salvia at all.



The most common pitcher sage is *Lepechinia calycina*, found in chaparral and other dry areas. Unlike salvias, there are four stamens, and the sepals are conspicuous and inflated.



Pitcher sages are named for the pitcher-shaped sepals that enlarge in fruit. Note the strong ribs along the sides.



Most of the true mints are European, such as the sometimes naturalized peppermint and spearmint, but *Mentha arvensis*, is a native from wetlands with strongly mint-scented leaves.



The genus *Monardella* or coyote mint is most diverse in California. The common species, *M. villosa*, is a woody perennial with mint-scented leaves and dense heads of purple flowers attractive to butterflies and bumblebees.



A close view of monardella flowers shows the petal lobes are not very strongly two lipped.



The usually pale flowers of mountain coyote mint, *Monardella odoratissima*, are a common sight in the dry mountains of California.



While most monardellas are purple, pink, or white, *M. macrantha*, the hummingbird mint, has long tubular red flowers



The well-known evergreen ground cover from coastal areas is yerba buena, *Clinopodium douglasii* (formerly *Satureja*), with mint-scented leaves and tiny white flowers tucked in the leaf axils.



A second species of *Clinopodium*, *C. mimuloides*, produces tall stalks with red-orange monkeyflower-like blossoms. It lives in moist woods in the central Coast Ranges.



A poorly known genus, *Scutellaria* or skullcap, features small perennials with unscented leaves and snapdragon-like flowers. So much like the scroph family is the overall appearance, that recognizing the 4-segmented ovary is important.



While most skullcaps have blue or purple flowers, *S. californica*, found in dry woods in the foothills, has white flowers. Note the diagnostic skull-cap-like sepals.



The genus *Stachys*, aka woodmint or hedge-nettle, is found across the Northern Hemisphere; the Mediterranean lamb's ears is a well-known species. *Stachys* flowers are strongly 2-lipped, the upper lip often like a cowl. This one is *S. albens*.



Stachys albens, found in moist places, has softly furry whitish leaves. The genus is winter dormant. The best feature for recognition of the genus is the strong and, to many, unpleasant odor of the leaves.



The coast woodmint, *S. chamissonis*, is the giant of the genus, reaching up to 4 feet high in coastal bogs and marshes.



The small evergreen shrub, *Trichostema lanatum* or woolly blue curls, features narrow, rosemary-like leaves and spikes of blue-purple flowers with long curled stamens, and attracts hummingbirds



While woolly blue curls has pleasantly scented leaves, the annual *Trichostema lanceolatum*, a late summer-blooming annual is called turpentine weed for good reason.



A close view of turpentine weed shows the long curled stamens that lie completely above or below the two lips



Although not closely related to the true lavenders or *Lavandula*, California's desert lavender, *Hyptis emoryi*, has a wonderful lavender fragrance.



Desert lavender can grow to 6 feet high, blooming in winter to spring. This close view shows the densely white-woolly sepals around the blue petals.



These examples of the mint family only hint at the diversity both worldwide and in California.

- Most mints are easily recognized to family, and with practice to genus
- Most species are easy to propagate from softwood to semihardwood cuttings as well as seed
- Many of our native salvias await trial in gardens, especially the poorly known desert species