

**Draft Keys to the *Malacothamnus* (Malvaceae) of
San Diego, Orange, and Riverside Counties, CA
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Comments, corrections, and questions welcome at kmorse@rsabg.org

Two possible keys using dry measurements are presented.
Estimated measurements for fresh material is included in [square brackets].

Key 1

1. Green stem generally visible to the naked eye between trichomes at base of infl; longest rays of stellate trichomes on calyx 1-4 mm; calyx bracts 5-20 [6-24] mm long ..(2 *M. densiflorus* s.l.)
 - 1'. Stem yellow or white at base of infl due to densely overlapping trichomes, green stem rarely visible distally; longest rays of stellate trichomes on calyx 0.25-2 mm; calyx bracts 1-13 [1-15.5] mm long(3)
 2. Stellate trichomes on calyx tube generally dense; many glandular trichomes on the stem and calyx ≥ 0.3 mm..... *M. densiflorus* var. *viscidus*
 - 2'. Stellate trichomes on calyx tube generally sparse; all glandular trichomes on stem ≤ 0.1 mm, all glandular trichomes on the calyx ≤ 0.4 mm..... *M. densiflorus* var. *densiflorus*
 3. Calyx bracts 5.5-13 [6.5-15.5] mm; widest stipular bracts 1-8 [1-9.5] mm wide..... *M. enigmaticus*
 - 3'. Calyx bracts 2.5-6 [3-7] mm; widest stipular bracts 0.5-2(4) [0.5-2.5(5)] mm wide(4 *M. fasciculatus* s.l.)
4. Inflorescence an interrupted spike or panicle; longest stellate trichome rays on stem below inflorescence ≤ 0.4 mm, longest calyx rays ≤ 0.5 mm; north of San Diego County excluding possibly washdowns from the Santa Rosa Mountains in the Borrego Desert *M. fasciculatus* var. *laxiflorus*
- 4'. Inflorescence an interrupted spike (never a panicle), occasionally with axillary spikes at the base of the inflorescence; longest stellate trichome rays on stem below inflorescence and on calyx ≥ 0.3 mm; near the northern boundary of San Diego County and southward*M. fasciculatus* var. *fasciculatus*

Key 2

1. Inflorescence a narrow to wide panicle *M. fasciculatus* var. *laxiflorus*²
- 1'. Inflorescence an interrupted spike, occasionally with axillary spikes at the base of the inflorescence(2)
2. Calyx bracts ≥ 5 [6] mm long; if 5 [6] mm, then widest stipular bracts ≥ 2.5 [3] mm wide... (3)
- 2'. Calyx bracts ≤ 5 [6] mm long; if 5 [6] mm, then widest stipular bracts ≤ 1.5 [2] mm wide ... (5 *M. fasciculatus* s.l.)
3. Green stem not visible to the naked eye through trichomes; abaxial surface of calyx tube densely hairy; stellate trichome rays on stem mostly < 0.2 mm.....*M. enigmaticus*
- 3'. Green stem generally visible to the naked the through trichomes; abaxial surface of calyx tube

sparsely to densely hairy; stellate trichome rays on stem mostly > 0.3 mm..(4 *M. densiflorus* s.l.)
 4. Stellate trichomes on calyx tube generally dense; many glandular trichomes on the stem and calyx ≥ 0.3 mm..... *M. densiflorus* var. *viscidus*
 4'. Stellate trichomes on calyx tube generally sparse; all glandular trichomes on stem ≤ 0.1 mm, all glandular trichomes on the calyx ≤ 0.4 mm..... *M. densiflorus* var. *densiflorus*
 5. Longest stellate trichome rays on stem below inflorescence ≤ 0.4 mm, longest stellate trichome rays on calyx ≤ 0.5 mm; north of San Diego County excluding possibly washdowns from the Santa Rosa Mountains in the Borrego Desert *M. fasciculatus* var. *laxiflorus*²
 5'. Longest stellate trichome rays on stem below inflorescence and on calyx ≥ 0.3 mm; near the northern boundary of San Diego County and southward*M. fasciculatus* var. *fasciculatus*

Notes:

- Measurements from dry specimens. Estimated values for fresh specimen measurements in [square brackets] converted by multiplying by 1.2 and then rounding to nearest 0.5. Stellate trichome size should be the same dry or fresh. Glandular trichomes may be longer when fresh (not assessed).
- Calyx bracts are a whorl of three bracts beneath each calyx.
- Stipular bracts are stipule-like bracts between the calyx bracts and leaves.
- Stem hairs are measured near the base of the inflorescence where the stem is 2-4 mm wide.
- Superscript indicates number of places this taxon comes out in the key if greater than 1

M. densiflorus s.l.

The varieties appear to be clear with no intermediates but intermediates with *M. fasciculatus* may confuse matters. *M. densiflorus/fasciculatus* intermediates are geographically intermediate and have relatively dense stellate trichomes on the calyx tube but the glandular trichomes are much shorter than in *M. densiflorus* var. *viscidus*.

M. densiflorus var. *viscidus* is only known from the Otay Mountain to San Miguel Mountain region of San Diego County and adjacent Baja California. Previous keys led to a lot of plants erroneously identified to *M. densiflorus* var. *viscidus*.

Intermediates between *M. densiflorus* and *M. enigmaticus* are known in San Felipe Valley

M. enigmaticus

Known only from the desert transition zone and Laguna Mountains in San Diego County

Intermediates between *M. densiflorus* and *M. enigmaticus* are known in San Felipe Valley

M. fasciculatus s.l.

Photos on Calphotos currently IDed to var. *fasciculatus* include both var. *fasciculatus* and var. *laxiflorus*.

Var. *fasciculatus* and var. *laxiflorus* are distinct in their extremes but appear to fully intergrade. If recognized, these varieties still need a lot more work to clarify where the boundary should be drawn (if possible). Current genetic and morphological evidence indicates they probably should be recognized.

Var. *fasciculatus* mostly occurs in San Diego County and southward but some specimens from Orange County likely fit this variety. Its inflorescence is an interrupted spike (sometimes with proximal axillary spikes) and it tends to have longer trichomes.

Var. *laxiflorus* occurs north of San Diego County with the possible exception of plants collected in Coyote Creek near Borrego Springs that are likely washdowns of *laxiflorus* from the Santa Rosa Mountains. Its inflorescence can grade from an interrupted spike to a wide panicle, and it tends to have shorter trichomes.

Intermediates between *M. fasciculatus* and *M. densiflorus* occur where their ranges come together.