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A NEW SUBSPECIES OF *SIDALCEA HICKMANII* FROM OREGON

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ABSTRACT

Sidalcea hickmanii subsp. **petraea** S.R. Hill & R. Halse, **subsp. nov.**, is described from Jackson County in southwestern Oregon. It is the only representative of the otherwise Californian *Sidalcea hickmanii* in Oregon and is the northernmost of the seven subspecies known. All are local endemics thought to be isolated remnants of a previously more widespread species. The new subspecies differs from the other subspecies in its predominantly white flowers and by the predominance of 2, rather than the more typical 3, involucellar bractlets. It is a several-stemmed perennial with congested spicate racemes, and it is known from a single location, Neil Rock.

An entry for a new subspecies of *Sidalcea hickmanii* Greene in Oregon was included on the Oregon Natural Heritage Program February 2001 list as *S. hickmanii* subsp. nov. (ONHP 2001). This was of particular interest to Hill because he was in the process of writing the treatment for North American *Sidalcea* for the Flora North America, Vol. 6 (in edit), and to Halse because he was compiling a list of all of the Oregon species of *Sidalcea* and *S. hickmanii* was not previously known for the state.

The ONHP listing was based upon the first collections of this plant, from the top of Neil Rock in southern Oregon. The first known collection of the plant was made 25 June 1998 by Marcia Wineteer of the Medford District Bureau of Land Management [BLM], and the second was made 13 June 2003 also by Wineteer. The 2003 collection was sent by the BLM to Halse in 2007, who identified it as *Sidalcea hickmanii* and recognized it as a possible new subspecies of that taxon, but it was an incomplete specimen and not suitable for a full description. On 13 June 2003 the plant was in early flower and the inflorescence was somewhat immature. The specimen was pistillate with non-functional anthers on one stem of the collection, and the other (unconnected) stems had bisexual flowers. In March 2008 the specimen was brought to the attention of Hill, who was in the process of describing two new subspecies of *S. hickmanii* from northern California (Hill 2008).

The location of this new subspecies, Neil Rock, is defined by the U.S. Geologic Survey as a "pillar" within the Cascade Volcanic Arc and it is at 42.541512° (42° 32’ 29”) N and 122.970326° (122° 58’ 13”) W in Meadows District, Jackson Co., Oregon, on the Boswell Mountain U.S.G.S. topographic map northwest of Eagle Point, 8.3 miles from Gold Hill. The peak is at 2775 feet (845 meters). Neil Rock is composed of sandstone with significant deposits of hot-springs deposited cinnabar, a source of mercury (Wiley & Hladky 1992). According to the Jackson County area soil survey (Johnson 1994) the area is in the McMullin Rock outcrop complex, with 35–60 percent slopes. The McMullin soil is formed in colluvium derived from igneous and metamorphic rock. While most

populations of *Sidalcea hickmanii* are found in areas with serpentine (Hill 2008, 2012), there appears to be no serpentine associated with this new subspecies. The site is known to have occasional fires (the last apparently in 1994) and these appear to greatly benefit the population by stimulating seeds in the seed bank to germinate and to eliminate competition from other plants, especially woody ones, as in the case of the other *S. hickmanii* subspecies (Hill 2008).

According to Wineteer (pers. comm.), the site was surveyed by botanical consultant Richard Callagan in 1992 and there was no sign of *Sidalcea* at that time. In 1994 there was a large forest fire on and around Neil Rock (the Hull Mountain Fire) and in May 1995 the *Sidalcea* was first seen by Callagan. In May and July 1997 Callagan again visited the site and recorded more than 500 individuals of this plant, 90% of which were mature. On 22 May the plants were in bud with several in flower, on 6 July the plants were fruiting. In 1998 Wineteer visited the site and vouchered this population. Wineteer and Callagan again visited the site in 2003 and collected additional material and recorded their observations. Several additional site visits have been made since that time.

Halse traveled to Neil Rock on 11 Jun 2009 to study the plant and to collect more specimens (Figs. 1–4). The population was noted to be gynodioecious by Halse. There were both bisexual-flowered plants and pistillate-flowered plants. A few were starting to set seed and these all seemed to be the pistillate plants. Bisexual-flowered plants may or may not have been successfully forming seeds because they were immature. Both plant types were visited by pollinators that included 28 insect species in 6 orders (Schroeder et al. 2012). The most numerous were Hymenoptera dominated by Megachilidae, including *Hoplitis* and *Osmia*, and Coleoptera, including *Anthonomus* (Curculionidae) and *Trichodes* (Cleridae). The vast majority of the plants had white flowers (Figs. 1, 2, 4). One or two of the pistillate plants with reduced petals had pink or pale pink flowers (Fig. 3). Specimens from this gathering have been chosen as the type specimens.

Sidalcea hickmanii Greene subsp. **petraea** S.R. Hill & R. Halse, **subsp. nov.** Figures 1–4. **TYPE: USA. Oregon**. Jackson Co.: Top of Neil Rock, ca. 14 air mi NNW of Medford, elev. 845 m, N 42.54145° W 122.96996° WGS84, shallow soils over rock, W-facing slope; plants perennial, flowers white, bisexual; associated taxa *Ceanothus*, *Quercus*, *Pinus*, *Arctostaphylos*, *Toxicodendron*, *Clarkia*, *Eriophyllum*, 11 Jun 2009, *R. Halse 7644* (holotype: OSC 242200 [Fig. 1]; isotypes: CAS, GH, ILLS, MO, NY, WTU).

The white flowers (rare in *Sidalcea*) of subsp. *petraea* in congested spicate racemes terminating several branches per stem are somewhat reminiscent of *Sidalcea malachroides* (Hook. & Arn.) A. Gray. Vegetatively it most closely resembles subsp. *parishii* (B.L. Rob.) C.L. Hitchc. but can be distinguished from that by its predominantly 2 rather than 3 bractlets, its predominantly white flowers, and its geographic range. In addition, it and subsp. *anomala* are the only subspecies that produce both pistillate and bisexual flowers so far as is known.

Herb, perennial, (0.3–)0.5(–0.9) m tall, finely stellate pubescent (some parts ciliate, and minute simple hairs sometimes present), stellate hairs 0.1–1.0 mm in diameter, 2–5-rayed, with woody caudex and taproot. **Stems** few to many, clustered, often tinted pale brick-red proximally, simple or 2–10-branched above, erect, not hollow (pithy). **Leaves**: cauline; stipules on main stems 4–6 mm x 1.5–2.5 mm, falcate, ovate to lanceolate, acute to obtuse, gen. 3-veined, ciliate and puberulent; proximal petioles (3.5–)5.0–6.5(–9) cm long, distal shorter, (0.5–)1–2(–3.2) cm long, finely stellate-pubescent, 1/2 to 3 times as long as blade, shortest on distal-most leaves; blades not lobed, all similar in shape, nearly equal in size except for distal-most which are gradually reduced, crenate-dentate, usually flabelliform or reniform, rounded at apex, base wide cuneate, truncate, to wide-cordate, generally wider than long, proximal (2.0–)3–4.5 cm long x (2.3–)3.0–5.5 cm wide, distal blades 2.1–3.5 cm long x 3.0–5.0 cm wide, stellate-pubescent, hairs 2–3(–4)-rayed, mostly on veinlets, generally not overlapping, sparser on adaxial surface. **Inflorescences** terminal spicate

racemes, each simple and not or little elongating in age, (1.5–)3.5–5.0(–7.5) cm long (excluding peduncle, if present), flowers usually congested, proximal-most sometimes solitary axillary, calyces overlapping at least distally and in bud; axis densely stellate-pubescent; bracts 5.0–6.0(–8.0) mm long x 1.0–1.5 mm wide, about (1–)2 times longer than pedicels and slightly shorter than calyx, narrowly lanceolate to oblanceolate, 1–3-nerved, persistent, finely stellate-puberulent, ciliate, 1–2, paired or bifurcate to simple (i.e., bracts fused); involucellar bractlets 2 (rarely 3), linear to narrowly lanceolate, 4.0–5.0 mm long x 0.2–1.0 mm wide, slightly shorter than calyx (1–2 mm shorter than sepal apices), minutely ciliate-pubescent, 1-veined. **Pedicels** 1.5–2.0 mm long, gen. not obscured by bracts. **Flowers**: bisexual or pistillate, plants gynodioecious; calyx 5–6 mm long, finely stellate pubescent, often sparsely so, lobes 2–2.5 mm x 4 mm, short-acuminate, 3 veins often visible; petals of bisexual flowers 10–11 mm x 6–7 mm wide, generally white (figs. 1, 2, 4), apex notched 1–2 mm deep; petals of female flowers smaller, white or occasionally pink (fig. 3), 6 mm x 2.5–4 mm wide; staminal column 5–6 mm, minutely stellate pubescent, anthers white; perfect flowers protandrous; stigmas 6–8. **Fruits** schizocarps ca. 5–7 mm in diameter; mericarps 6–8, each 2 mm x 2.5 mm, glabrous; margins, back corrugated-ridged, back with a medial ridge; mucro 0. **Seeds** 1.5–2 mm, glabrous. ***2n*** = ? [probably $2n = 20$].

Flowering late May–June, fruiting June–August. Shallow soil, rocky areas, outcrops; shrub community (ridge chaparral), associated taxa *Arctostaphylos, Quercus, Pinus, Toxicodendron, Ceanothus cuneatus, Calocedrus, Clarkia, Trifolium, Chondrilla, Bromus, Daucus pusillus, Eriophyllum, Chlorogalum, Cynosurus;* 845 m. Known only from Neil Rock in Jackson Co., Oregon.

Additional specimens examined. **USA**. **Oregon**. Jackson Co.: Top of Neil Rock, off Rock Creek Road [and Duggan Road on BLM Road 35-2-20.0], T35S, R02W, Sec. 8, 25 Jun 1998, *Wineteer s.n.* (BLMM923); top of Neil Rock, NESW Sec. 8 T35S, R2W, 13 Jun 2003, *Wineteer MW-1-061303* (BLMM2126; OSC); top of Neil Rock, ca. 14 air mi NNW of Medford, elev. 845 m, N 42.54145°, W 122.96996°, shallow soils over rock, W-facing slope, associated taxa *Ceanothus cuneatus, Arctostaphylos, Quercus, Pinus, Trifolium, Daucus pusillus, Toxicodendron,* 11 Jun 2009, *Halse 7645* (ILLS, OSC 242202, WTU), *Halse 7646* (ILLS, OSC 242203 & 242204, WTU), *Halse 7647* (ILLS, OSC 242201, WTU).

Sidalcea hickmanii subsp. *petraea* is the most northern population of the species and the only population known in Oregon. Subsp. *petraea* is known only by a single population.

Subsp. *petraea*, named after its rocky habitat, is included within *Sidalcea hickmanii* because of the congruence of the habitat, habit, leaf, bractlet, floral, and fruit characters. The subspecies of *S. hickmanii* all share the following characters: lack of basal leaves, cauline leaves that are evenly spaced and differ little in size and shape from proximal to distal portions of the stems, presence of (2–)3 involucellar bractlets, and non-cuspidate (without a cusp, mucro or 'beak') mericarps. The new subspecies differs from the others in having predominantly 2 involucellar bractlets and usually white flowers, only rarely seen in *Sidalcea* (previously known only in *S. malachroides* and *S. candida* A. Gray, rarely in individuals of *S. calycosa* M.E. Jones subsp. *calycosa,* and, perhaps, in *S. malviflora* (DC.) A. Gray subsp. *laciniata* C.L. Hitchc.).

The species *Sidalcea hickmanii* is found in small, isolated populations from southern California to southwestern Oregon and appears to have a relict distribution. Andreasen and Baldwin (2001, 2003) suggested that it is one of the basal species within the genus.

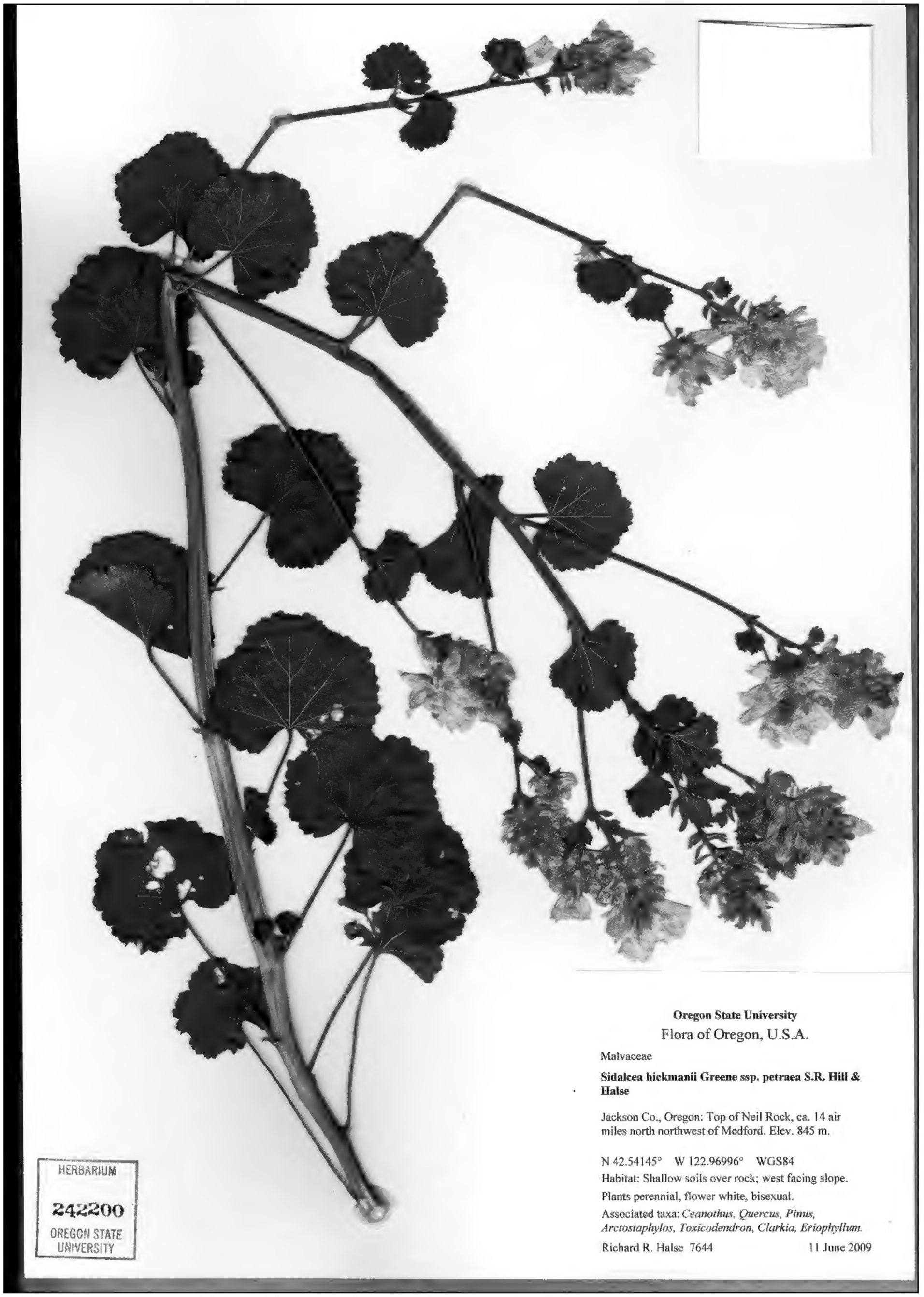

Figure 1. Holotype of *Sidalcea hickmanii* Greene subsp. *petraea*. Bisexual individual.

Figure 2. *Sidalcea hickmanii* subsp. *petraea* individual at the type locality. Typical white-flowered individual. Bisexual individual. Photo R.Halse, 11 June 2009.

Figure 3. *Sidalcea hickmanii* subsp. *petraea* at the type locality. Less frequent pink-flowered pistillate individual. Photo R.Halse, 11 June 2009.

Figure 4. *Sidalcea hickmanii* subsp. *petraea* bisexual individual at the type locality, with *Eriophyllum*. Photo R.Halse, 11 June 2009.

Key to the subspecies of *Sidalcea hickmanii*

1. Most leaf blades deeply lobed +/- to base; California.

    2. Bracts (7–)10–12 mm, equaling or shorter than calyx; San Luis Obispo Co. ..... **subsp. anomala C.L. Hitchc.**
    2. Bracts 5.5–7 mm, shorter than calyx; Napa Co. ..... **subsp. napensis S.R. Hill**

1. Leaf blades unlobed or deeply crenate to shallowly lobed; California, Oregon.

    3. Involucellar bractlets predominantly 2; petals white to infrequently pale pink; flowers bisexual or pistillate; sw Oregon ..... **subsp. PETRAEA**
    3. Involucellar bractlets 3; petals pink, pale pink, or pinkish lavender to pale lavender; flowers bisexual; California.

        4. Bracts broadly lanceolate, 5–7(–10) x 2.5–4 mm, slightly shorter than calyx; involucellar bractlets equaling or slightly shorter than calyx; distal leaf blades unlobed or very shallowly lobed to 1/4 their lengths; Santa Barbara and San Bernardino cos. ..... **subsp. parishii (B.L. Rob.) C.L. Hitchc.**
        4. Bracts linear, lanceolate, or oblong, 2–7 x 0.5–2 mm, shorter than calyx; involucellar bractlets shorter than calyx; distal leaf blades usually unlobed; Lake, Marin, or Monterey cos.

            5. Plants 0.4–0.8 m, greenish- to grayish-canescent; calyces stellate-puberulent, marginal hairs longest; involucellar bractlets 2–7 mm; largest leaf blades deeply cordate, 2.5—7 cm wide; inflorescences dense; Monterey Co. ..... **subsp. hickmanii**
            5. Plants 0.1–0.4 m, greenish, sparsely or moderately hairy; calyces stellate-puberulent, hairs uniform in length; involucellar bractlets 2–4 mm; largest leaf blades truncate to wide-cuneate, 0.7–2.7 cm wide; inflorescences open; Lake or Marin cos.

                6. Bracts of distal flowers 1, cupped; leaf blades 0.6–1.5 x 0.7–2.2 cm; stems distally with appressed hairs 0.2–0.5 mm; plants 0.1–0.2(–0.4) m; inflorescences not spicate, to 10-flowered; calyces 4–5.5 mm; n Lake Co. ..... **subsp. pillsburiensis S.R. Hill**
                6. Bracts of distal flowers usually 2, flat or cupped; leaf blades (1–)2–4 x (1–)2.7 cm; stems distally with tufted hairs 0.5–1.2 mm; plants (0.2–)0.3(–0.4) m; inflorescences spicate in age, 10+-flowered; calyces 6–7 mm; Marin Co. ..... **subsp. viridis C.L. Hitchc.**

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