

Subspecies *carotifera* was originally described as a species because it was thought to be perennial and morphologically distinct from other perennial Stephanomerias. However, field and greenhouse studies show that it is an obligate annual. When it was first described, the morphological characteristics of the annual Stephanomerias were not known and, consequently, its relationships were obscured. It is now clear, however, that in morphological features, karyotype, and reproductive compatibilities, subspecies *carotifera* is closely allied to the other subspecies of *S. exigua*. For some of the characters that distinguish it from these subspecies, it varies toward *S. virgata* ssp. *virgata*, a situation that suggests the possible effects of past hybridization (Gottlieb, 1971).

The coastal and inland populations are alike in most of their morphological features but they can be separated by several characteristics of their pappus bristles. Inland populations have strongly thickened bristle bases whereas the bristles of the coastal populations are not or only very slightly thickened as described above. Reproductively, both are fully crossable, and their hybrids are highly fertile. The minor morphological differences and the full reproductive compatibility mean that there is neither taxonomic nor biological reason for distinguishing them. Populations of subspecies *carotifera* hybridize with both subspecies of *S. virgata* in northern Ventura County. A hybrid swarm is present where subspecies *carotifera* and subspecies *coronaria* meet at the junction of Roads G16 and G17 at the Arroyo Seco Bridge in Monterey County.

1d. **Stephanomeria exigua** ssp. **macrocarpa** n.ssp. Differt ab aliis subspeciebus capitulis in ramulis abbreviatis et tegulis valde reflexis, acheniis longioribus (5.5-6.8 mm longis).

Herbage glabrous or tomentose on stems and involucre; heads solitary or clustered on short (5-10 mm) peduncles (fig. 2); heads averaging 6-8 florets; involucre subtended by strongly reflexed calyculate bracts; ligules various shades of pink or white on upper surface, occasionally purple-tinged on back; achenes averaging 5.5-6.8 mm long, five-sided with a narrow longitudinal groove on each side (fig. 3); pappus bristles averaging 13-19 in number, often connate in five groups of 2-4 each, 6.2-7.5 mm long, plumose on the upper 60-70% of their length, strongly thickened and tawny at the base, remaining on the achene. $n = 8$.

Type. On Route 168, 1/2 mile east of Tollhouse on road to Pineridge, Fresno County, California, September 4, 1970, *Gottlieb 7048*. (Holotype: UC).

Distribution. On western slope of Sierra Nevada from 1000 to about 4000 feet from Kern County to Stanislaus County (fig. 1). Flowers August and September.

Representative specimens. CALIFORNIA. Kern Co.: 3-4 miles east of Glennville on Rt. 155, *G-7028*. Mariposa Co.: 8 miles southwest of Mariposa on Merced Road, *Stebbins 2653*; 1 mile south of east fork Chowchilla Bridge on Rt. 49, *G-6954*. Stanislaus Co.: Knights Ferry, *Eastwood July 25, 1923*. Tulare Co.: near Eleven

Range View Point, Sequoia National Park, *J. T. Howell* 28901; 12 miles south of Fountain Springs and approximately 7 miles north of California Hot Springs, *G-7042*; between Lemon Cove and Badger on J21, *G-7044*. Tuolumne Co.: 1½ miles northeast of Riverside Station on North Fork, Tuolumne River, *G-7052*.

Specimens of subspecies *macrocarpa* have rarely been collected although it is common within its limited range of distribution. The achenes of this subspecies are the largest of any of the annual *Stephanomerias*. Reproductively, it is close to subspecies *coronaria* and the two hybridize where they come together in Kern County. The strongly reflexed calyculate bracts of subspecies *macrocarpa* also relate it to subspecies *carotifera*; experimental hybrids between them have not yet been grown. Subspecies *macrocarpa* is self-compatible and it is highly self-pollinating in the greenhouse.

1e. *Stephanomeria exigua* ssp. *coronaria* (Greene) n. comb.

Stephanomeria coronaria Greene, Bull. Calif. Acad. 1:194. 1885.

Ptiloria coronaria Greene, Pittonia 2:132. 1885.

Stephanomeria exigua var. *coronaria* Jepson, Man. Fl. Pl. Calif. 998. 1925.

Herbage glabrous or sparsely pubescent on stems and involucre; head solitary or clustered on short (3–5 mm) peduncles (fig. 2); heads averaging 5–11 florets; involucre subtended by appressed calyculate bracts; ligules various shades of pink or white on upper surface, generally purple-tinged on back; achenes averaging 2.3–3.1 mm long, five-sided with a narrow longitudinal groove on each side (fig. 3); pappus bristles averaging 7–20 in number, plumose on the upper 60–85% of their length, thickened (at least slightly) and occasionally connate in groups of 2–4 at the bases, which often remain adnate to the achene. $n = 8$.

Type. "California, Santa Lucia Mountains, August, 1885. T. S. Brandege." (Holotype: GH!)

Distribution (fig. 1). In California, widespread in many diverse habitats: equable maritime sites on off-shore islands and along coast from Goleta to Ventura; arid sandy soils in inner South Coast Ranges; raisin vineyards south of Fresno; openings in yellow pine forest to 6500 feet in Greenhorn and San Gabriel Mountains; volcanic soils in eastern Sierra Nevada to 9300 feet. In Oregon and Idaho on sandy or limestone or volcanic soils in sagebrush desert. Flowers July to October.

Representative specimens. CALIFORNIA. Contra Costa Co.: sand dunes at Antioch, near Kaiser plant, *G-6959*. Kern Co.: Tejon Pass, *J. T. Howell* 27490; Edison, *J. T. Howell* 32702; Castaic Valley, 1 mile south of Lebec on Frazier Park Road, *Twisselmann* 8004; entrance to Tehachapi Mountain Park, *G-7036*; 2.1 miles north of Greenhorn Summit on Tobias Pass Road, *G-7116*; ½ mile east of Woody on Route 155, *G-7117*. Inyo Co.: south side Wonoga Peak, *J. T. Howell*, 26288; Onion Valley Road, *J. T. Howell* 27439; 13.5 miles west of Bishop on Sabrina Lake Road, *G-6667*. Los Angeles Co.: Prairie Fork, San Gabriel River, *Johnston* 1654; ridge