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James Henrickson
University of California, Los Angeles

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NEW SPECIES OF *SCUTELLARIA* (LAMIACEAE) FROM THE
CHIHUAHUAN DESERT REGION

JAMES HENRICKSON

*Department of Biology, California State University
Los Angeles, California 90032*

ABSTRACT

Three new species of *Scutellaria* are described from the Chihuahuan Desert Region of Mexico: *S. hintoniorum* from western Nuevo León, *S. wendtii* from eastern Chihuahua, and *S. carmenensis* from northern Coahuila.

Key words: Lamiaceae, *Scutellaria*, plant systematics.

INTRODUCTION

Studies in connection with the Flora of the Chihuahuan Desert Region project have revealed new taxa within *Scutellaria*.

TAXONOMY

***Scutellaria hintoniorum* Henrickson, sp. nov.**

Fig. 1

Differt a *Scutellaria* suffrutiscenti habitu condensatiore internodiis 1-5 mm longis, praesentia rhizomatum, et foliis confertis vestimento uniformi grossiore geniculati-strigoso.

Rhizomatous, colonial, gypsophilous perennials 1-1.5 dm tall forming small rounded-spreading plants 1-3.5 dm wide; lower stems spreading then erect-ascending; young stems yellow-green to maroonish, densely hirtellous with spreading, rarely slightly ascending hairs 0.06-0.15 mm long; internodes 1-5 mm long. Leaves crowded, overlapping, ascending; leaf blades broadly obovate, suborbicular to oblanceolate, broadly elliptical or elliptical, (3.5-)5.5-8.5 mm long, 3.3-6.5 mm wide, rounded to obtuse at the tip, broadly cuneate with margins tapering to a winged petiole 1-2 mm long at the base, entire, conduplicate, yellowish green, softly strigose with geniculate antrorse hairs 0.2-0.3 mm long and with yellow sessile glands, thick, the mid and secondary veins slightly raised beneath, impressed above. Flowers paired at upper nodes (1 per leaf axil); peduncles 0-1.2 mm long; bracteoles subulate, 0.5-1.1 mm long; pedicels 2.5-6 mm long, thickish, all vestitured as the young stems, often maroon; calyces 4.5-6 mm long, the lower lip entire, to 7 mm long in fruit, the upper lip with a crest 1-2(-3) mm high, the calyx yellow-green or tinged with maroon, hirtellous and with sessile glands throughout; corollas scarlet-deep red, ascending, 21-27 mm long, the tube curved upward at the base, 16-23 mm long, slightly ampliate, to 3.8-5 mm wide at the throat (pressed), the anterior lobe deflexed, 3.5-6 mm long and nearly as wide, retuse, with the margins reflexing, the upper lobe somewhat galeate, 5-6 mm long, the terminal lobe retuse, 2-3.5 mm long, covering the anthers and style, the marginal lobes 4-5 mm long, 1-2 mm wide, these reflexed, the corolla villous outside with red-septate, spreading hairs 0.4-0.5 mm long, glabrous inside except for a dense villous band of hairs 2-3 mm thick just above the base and with less

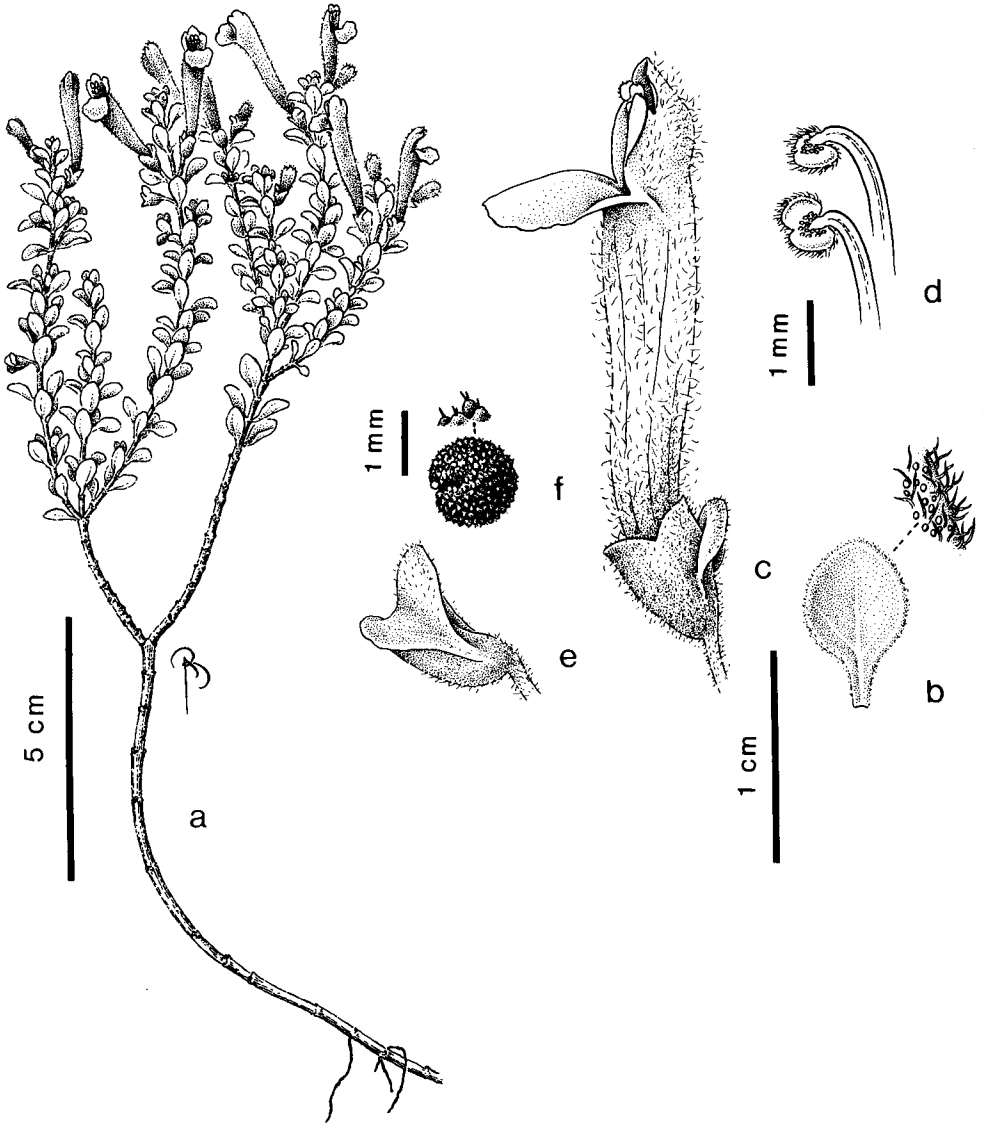


Fig. 1. *Scutellaria hintoniorum* Henrickson.—a. Habit showing terminal flowers and rhizome.—b. Leaf, vestiture magnified.—c. Flower showing calyx and galeate corolla.—d. Anthers, the more distally placed anterior anther has only one anther sac.—e. Fruiting calyx.—f. Seed, tubercles terminated by hairs magnified.—a–d from *Hinton 18213* (TEX);—e–f from *Henrickson 18951* (TEX). (Magnifications as indicated; 1 cm scale below c holds for c, b, and e.)

dense hairs near the anthers; stamens 4, the anterior free filaments 10–12 mm long, the posterior free filaments about 4–6 mm long, both locally villous, yellowish, recurved at the very tip presenting the anthers around the stigma inside the more or less galeate upper corolla lobe; anthers yellowish or purplish, 0.6–0.7 mm long, 0.8–0.9 mm wide, with dense aggregations of globose glands on both sides, the suture margins densely ciliate-hirtellous, the anterior more distal anthers with only 1 anther sac, the posterior anthers with 2 anther sacs; style glabrous,

broadening at tip. Nutlets subglobose, black, 1.4–1.5 mm long and wide, densely tuberculate with about 9 tubercles per 1 mm of surface, the tubercles each terminating in an array of trichomes.

Type.—MEXICO. NUEVO LEÓN: Santa Rita, Galeana, gypsum hillside, flowers congested, scarlet, colonies under pine trees, 2175 m, 11 May 1981, *G. B. Hinton 18213* (Holotype TEX, isotype MEXU).

Additional collections.—MEXICO. NUEVO LEÓN: Ca. 105 air km SE of Saltillo, ca. 16 air km W of Galeana, at Santa Rita de Cordeladas an abandoned settlement locality on W side of mts. just S of Cerro Potosí reached by trail N from Tokio, an extensive gypsum outcropping visible from Hwy. 57; area with *Pinus arizonica*, *Cercocarpus fothersgilloides*, *Verbesina*, *Eupatorium*, etc., flowers deep red, restricted to gypsum; near 24°47'N lat, 100°13'W long, 2200 m, 14 Jun. 1982, *J. Henrickson and W. Hess 18951* (TEX and to be distributed).

The new species appears most closely related to *S. suffrutescence* S. Wats of Epling's (1942) sect. *Spinosa* Epling characterized by its twiggy, rigid habit and red corollas. *Scutellaria suffrutescence* occurs on nongypsum sites in eastern Coahuila, western Nuevo León and adjacent Tamaulipas. Both have woody stems, scarlet, ascending flowers, geniculate hairs on similarly small leaves, hairs on the nutlet tubercles. *Scutellaria suffrutescence* has shorter calyces 3–4 mm long, a more shrubby, twiggy, divaricately branched habit with slender stems, lacks rhizomes and is considerably more variable in vestiture.

The new taxon also shows similarities to the recently described *S. molanguiensis* Hiriart (Hiriart 1984) from Hidalgo. Like *S. suffrutescence* this is a reduced, twiggy shrub with scarlet corollas, and like *S. hintoniorum* it has rhizomes (though more slender), densely hirtellous stems, short internodes, but Hiriart's species has glabrous, gland-dotted leaves, smaller flowers and its nutlets lack hairs on the tubercles. The species is named for the Hinton family, whose collections in Mexico have added greatly to the knowledge of the flora of the republic.

***Scutellaria wendtii* Henrickson, sp. nov.**

Fig. 2

Suffrutices humiles intricate divaricatae que ramosi. Folia parva ovata vel oblongo-ovata, sparsissime puberulentia glandibus sessilibus. Corolla caeruleo-violacea 9–12 mm longa, partibus basalibus tubi 1.5 longis interne grosse villosis. Mericarpija tuberculata, tubercula ad apicem pubescens pilis paucis 0.1 mm longis vel brevioribus.

Low spreading, intricately, divaricately branched, calcicolous subshrubs 5–15 cm tall and much broader from a deep woody caudex, the old flowering branches persisting as thorns; young stems yellowish green, incompletely but often densely hirtellous-canescens with stout, mostly geniculately decurved hairs under 0.03–0.1 mm long, also with sessile, yellow glands; internodes 8–13 mm long; leaves ascending; leaf blades oblong-ovate to ovate, 2.5–7(–10) mm long, 1.5–6(–7.5) mm wide, rounded to obtuse at the tip, mostly rounded to subcordate above petioles 0.5–2 mm long at the base, entire, dark green, dark green drying yellowish green, very sparsely puberulent with hairs to 0.1 mm long and with sessile, yellow glands on both surfaces, moderately thickened, only the midvein slightly depressed above, the midvein and secondary veins slightly raised, yellowish beneath. Flowers paired at upper nodes (1 per leaf axil); peduncles 0.4–0.7 mm long; bracteoles subulate, 0.3–0.5 mm long; pedicles 2–2.5 mm long, incompletely canescens; calyces 2–2.5 mm long (to 3.5 mm long in fruit), the lower lip to 3.5–4 mm long in fruit, the upper lip with a crest 1–1.5 mm high, 1.5 mm wide, the calyces

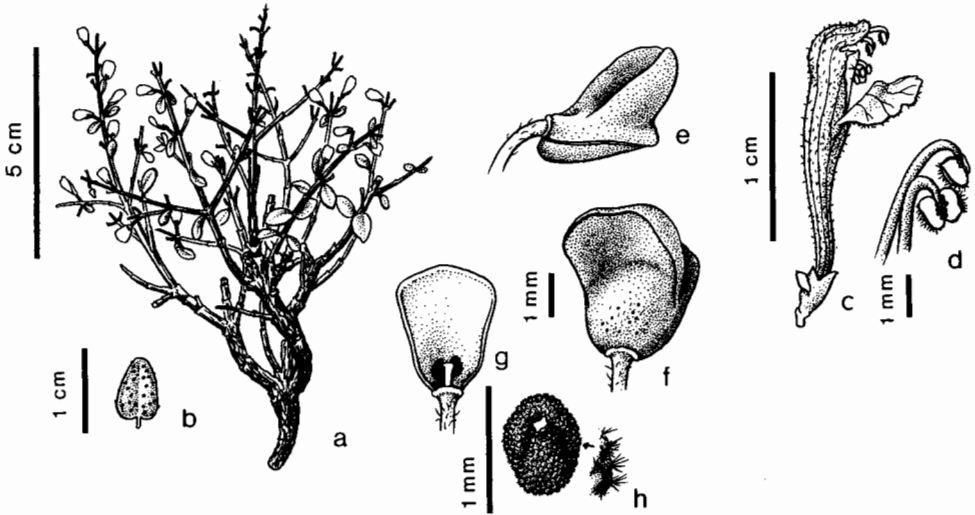


Fig. 2. *Scutellaria wendtii* Henrickson. —a. Stem showing strong, rather divaricate branching. —b. Leaf. —c. Flower showing calyx, corolla, exerted anthers. —d. Anthers, the more distally placed anterior anthers have only one anther sac. —e. Fruiting calyx, side view. —f. Fruiting calyx posterior view. —g. Dehiscent calyx showing stipe with two aborted nutlets. —h. Fruit, each tubercle is crowned with a tuft of hairs. All from Chiang, Wendt and Johnston 8414 (TEX). (Magnifications as indicated; 1 mm scale near f, holds for e, f, and g.)

yellow-green, often marked with maroon, very sparsely puberulent and with large yellow glands throughout; corollas bluish purple with a yellow area marked with blue dots on the lower lip and throat, 10–15 mm long, the tube sigmoidly curved, 6–10 mm long, slightly ampliate and to 1.5 mm broad (2.5 mm pressed) at the throat, the anterior lobe spreading-deflexed, broadly ovate, 3.5–5.5 mm long, retuse with a terminal notch to 1 mm deep, the margins reflexing, entire to erose, with a pair of raised ridges 2 mm long separated by a medial groove that extends into the tube, the upper lobe somewhat galeate, bent forward, 3.3–5.5 mm long, the terminal lobe emarginate, the lateral lobes shallow, 3 mm long, their margins reflexed backwards, the corolla villous outside with septate, spreading hairs 0.2–0.3 mm long, glabrous within except for a very densely villous zone 2–3 mm thick at the level of the calyx tube; stamens 4, the anterior free filaments 7–9 mm long, the posterior free filaments 2.5–4.5 mm long, both filaments mostly glabrous, partially villous, white to blue where exposed, recurved at the very tip; anthers whitish, 0.5–0.6 mm long, 0.7–0.8 mm wide, with aggregations of globose glands on each side, the suture margins densely ciliate-hirtellous, the anterior more distal anthers with only 1 anther sac, the posterior anthers with 2 anther sacs; style glabrous, the upper lobe not developed, slightly exerted. Nutlets obovoid, 0.9–1 mm long, black, tuberculate, tips of tubercles with an array of short conical hairs under 0.1 mm long.

Type. —MEXICO. CHIHUAHUA: Limestone pockets at summit of Sierra de Morrión just S and SE of Mina La Nueva Esperanza, rare and local, near 28°55'30"N lat, 105°31'33"W long, 1700 m, 10 Jul. 1972, F. Chiang, T. Wendt and M. C. Johnston 8414 (Holotype LL, isotypes MEXU, and to be distributed).

Additional collections.—MEXICO. CHIHUAHUA: Ca. 39 air mi NE of Cd. Chihuahua, on E side of limestone Sierra El Morrión near Mina La Nueva Esperanza, with *Fraxinus greggii*, *Acacia*, *Larrea*, *Ocotillo*, *Dasyllirion*, *Viguiera*, *Opuntia*, *Buddleia*, *Cassia*, *Jatropha dioica*, *Yucca canerosana*, *Agave lecheguilla*, grasses, etc., near 28°55'N lat, 105°32'W long, on vertical rocky limestone cliffs above mine, low rounded shrublets, lvs. dark green, flowers lavender-blue, with yellow-white on lower lobe, this flecked with blue, not aromatic, 1500 m, 9 Sep. 1980, *J. Henrickson and P. Bekey 18462* (TEX, RSA and to be distributed).

In its twiggy habit *S. wendtii* appears most similar to *S. suffrutescence*, but the former is a much smaller plant, has smaller, bluish (not deep red) corollas, smaller calyces, and a tighter, though similar, vegetative vestiture and lacks stipitate glands on calyces, corollas and inflorescences. It, however, appears to be allied to species of sect. *Spinosae* based on growth habit, the hairs on the nutlet tubercles and other features. The species is named for Thomas L. Wendt, who first collected this species during forays in the Chihuahuan Desert with Marshall C. Johnston and Fernando Chiang.

***Scutellaria carmenensis* Henrickson, sp. nov.**

Fig. 3

Differet a *Scutellaria parvulae* seminum morphologia, a *S. tuberosae* foliis integris, petiolis brevioribus, et vestimento brevioribus, a specibus *S. sect. resinosa* a rhizomatibus gracilibus.

Rhizomatous, colonial perennial herbs 1–2 dm tall; stems erect-ascending above often decumbent bases, green to purple; young stems sericeous-strigose with soft, strongly, geniculate to slightly decurved, slender, uniseriate hairs 0.15–0.3(–0.6) mm long, these mixed with scattered or rarely dense erect slender gland-tipped hairs 0.3–0.7 mm long in the lower third of the plant; internodes 7–25 mm long. Leaves with narrowly winged petioles 1–3 mm long; leaf blades ovate to oblong-ovate, 8–15(–20) mm long, 2.5–8(–11) mm wide, rounded to obtuse at the tip, broadly cuneate to rounded at the base, the margins entire or in larger leaves crenate, softly villous-strigose along the main veins and margins or throughout with decurved soft, tapering hairs 0.1–0.2(–0.4) mm long, these often more dense along the margins, the lower leaves progressively more pilose and with stipitate glands 0.3–0.5(–0.8) mm long along the veins and margins, or on the lowermost leaves throughout, both leaf surfaces with sessile glands. Flowers paired in mid to upper nodes (1 per leaf axil); pedicels 2–4 mm long, ebracteolate; flowering calyces 4.2–5 mm long with decurved hairs 0.1–0.3 mm long and scattered sessile glands; corollas purple-blue with white on the base of the tube and on the lower lip where spotted with blue, (17–)20–25 mm long, the tube curved at the base, amplate, 11–15(–17) mm long, to 4–5.5 mm wide at throat (pressed); anterior lobe spreading-deflexed, broadly oblong, 7–10 mm long, notched at the tip, often erose and with a deep marginal notch about half way to base; the galeate posterior lobe 5–5.5 mm long, with the terminal lobe 2.5–3 mm long and covering the anthers, the marginal lobes 3–4 mm long, reflexed marginally, the tube, throat and mid portion of the galea sparsely villous inside with hairs to 0.7 mm long, densely villous with uniseriate hairs 0.2–0.6(–0.9) mm long outside; stamens 4, the anterior free filaments 11–12 mm long, the posterior free filaments 4–5.5 mm long, both curved at the tip and sparsely villous with hairs 0.3–0.5 mm long; anthers blue; posterior anthers with both anther sacs, the anterior, more distal anthers with only 1 anther sac; anther sacs about 0.6 mm long, hirtellous along the suture margins and glandular on the connectives; stigmas located between the anterior and posterior anthers, lower stigma lobe 0.3 mm long, upper lobe 0.1

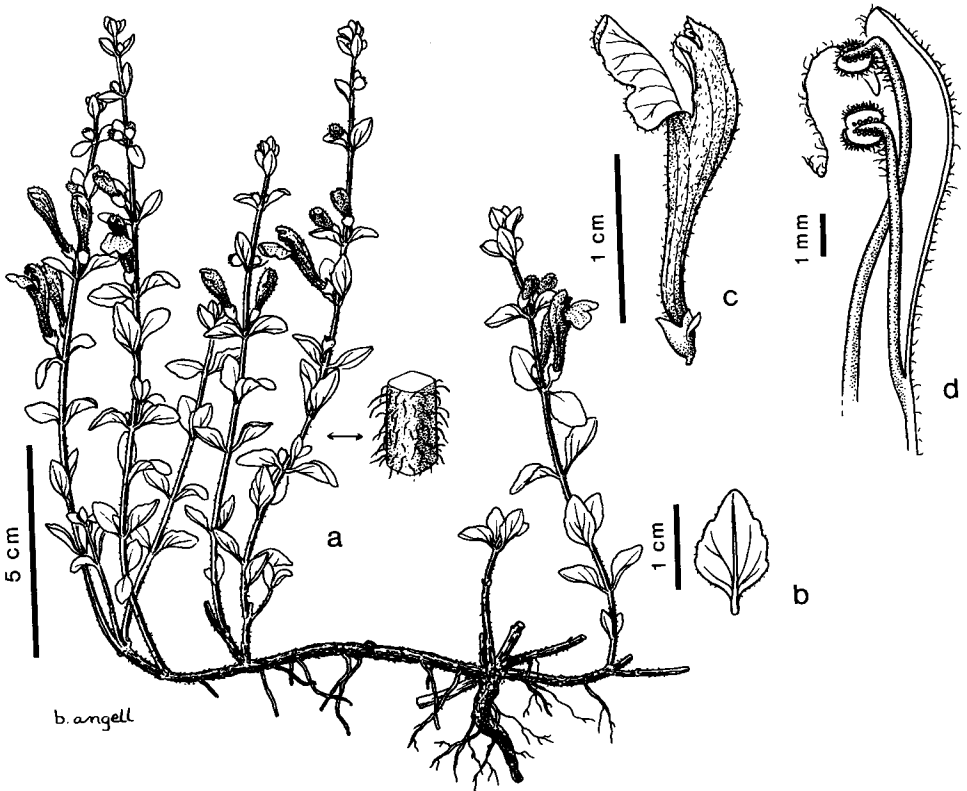


Fig. 3. *Scutellaria carmenensis* Henrickson.—a. Habit showing rhizomes and flower deposition, stem vestiture magnified.—b. Leaf.—c. Flower showing calyx and orientation of corolla lobes.—d. Stamens shown in relation to the adjacent posterior corolla lobes; the anterior free filaments are longer than the posterior filaments and have only one anther sac.—All from Riskind and Patterson 1783 (TEX). (Magnifications as indicated.)

mm long. Nutlets obovoid, black, 1.6 mm long, 1.3 mm wide, tuberculate, the tubercles rounded, about 5 per 0.5 mm of surface, immature seeds puberulent.

Type.—MEXICO. COAHUILA: Sierra Maderas del Carmen, on upper slope and ridge of peak in upper portion of Oso Canyon between Campo 0 and Campo 5 above and SSE of a *Stipa* meadow, with *Pinus ponderosa*, *P. strobiformis*, *Cupressus*, *Quercus sideroxyla*, and *Juniperus deppeana*, 102°33'N lat, 28°59'W long, flowers purple, 26 May 1975, D. H. Riskind and T. F. Patterson 1783 (Holotype LL).

Additional collections.—MEXICO. COAHUILA: (All from the Sierra Maderas del Carmen) Abundant annual herb in dense shade and rich, moist soil in floodplain of intermittent stream just below Casa del Ratón, flowers purple with white lip, with *Carex*, *Eleocharis*, *Aquilegia*, *Habenaria*, *Cornus*, *Physocarpus*, *Salix* and with mixed conifer-oak community, 6 Aug. 1974, D. H. Riskind, B. Bursleson and J. T. Baker 1745 (LL); open disturbed areas around Campo 2, in the high country, forest border area in the general area of mesic coniferous forest with *Abies coahuilensis*, *Pseudotsuga*, *Pinus strobiformis*, rhyolytic, near 28°59'30"N lat, 102°36'30"W long, rhizomatous perennial, flowers purple-violet with white in center of lower lip, 2300 m, 7 Aug. 1974, T. Wendt and A. Adamcewicz 528 (LL); at Ojo del Negro below and W of Campo 0 in pine-oak woodland, 28°59'N lat, 102°33'W long, ca. 2100 m, flowers lavender, 26 May 1975, D. H. Riskind and T. F. Patterson 1795 (LL); Madera Canyon

meadow, ca. 5 mi above Cohos Mine, flowers rich purple, 7100 ft, 21 Jun. 1976, P. Fryxell 2686 (LL).

Scutellaria carmenensis initially appears most similar to *S. parvula* Michx. in leaf shape, vestiture and presence of rhizomes, but differs in having larger flowers and black, uniformly tessellate, tuberculate mericarps not yellowish mericarps that are distinctively marked with an encircling band and peglike processes as in *S. parvula* (Lane 1983). Similarities also exist with *S. tuberosa* Benth. of western United States from southern Oregon through California to northern Baja California, Mexico but the latter has more strongly toothed leaves with longer petioles, more coarse, long villous vestiture on leaves and stems and the tendency to form tubers on the rhizomes, features not noted in *S. carmenensis*. Because of the presence of rhizomes, it would appear that the new taxon would lie within Epling's (1942) sect. *Galericularia*, however, as noted by Richard Olmstead who recently completed a study of this section and who has seen specimens of the new species, *S. carmenensis* has slender, fibrous rhizomes, not fleshy rhizomes that are swollen at the internodes as is characteristic of sect. *Galericularia*. Also the mericarps of the new species are black and uniformly tessellate, a pattern characteristic of other species of sect. *Resinosae* and shows no indication of a continuous band as is found in most species of sect. *Galericularia* (Lane 1983). Olmstead feels that distributionally and in mericarp sculpturing, the new taxon would appear to better fit into sect. *Resinosae* with closest relationships to the species complex including *S. resinosa* Torrey, *S. wrightii* Gray, *S. potosina* Brandegee and *S. tessellata* Epling ex Kearney & Peebles, species of the Chihuahuan Desert Region. From these species the new species differs in the presence of rhizomes, and the tendency for the inner surface of the corolla tube to be glabrous above the calyx, not with a villous interior annulus above the calyx.

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