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Willdenowia
Annals of the Botanic Garden and Botanical Museum Berlin

JESÚS GUADALUPE GONZÁLEZ-GALLEGOS[1], JOSÉ HUMBERTO VEGA-MARES[2*] & JESÚS A. FERNÁNDEZ[2]

Salvia reginae and *S. spellenbergii* (*Lamiaceae*), two new species from Chihuahua, Mexico

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Abstract: During botanical explorations in the highlands of NW Mexico, two new *Salvia* L. species were discovered in the state of Chihuahua: *S. reginae* J. G. González & J. H. Vega and *S. spellenbergii* J. G. González. The first one is morphologically similar to *S. concolor* Lamb. ex Benth., from which it differs by having smaller floral bracts, a longer upper corolla lip, stamens parallel to the dorsal corolla line, longer filament and connective, the latter ornate with an antrorse tiny acute tooth, longer thecae, longer and exserted styles, and bigger mericarps. *Salvia spellenbergii* resembles *S. fruticulosa* Benth., *S. goldmanii* Fernald and *S. pruinosa* Fernald; however, it can be distinguished from these because of its shorter petioles, smaller leaf blades, usually fewer floral nodes, fewer flowers per floral node, and regularly shorter calyces. Both species are described and illustrated. Tables with morphological comparisons, illustrations, conservation assessment, and a distribution map are also presented.

Key words: Chihuahua, *Lamiaceae*, melithophilous, Mexican flora, Mexico, Mohinora mountain, new species, ornithophilous, *Salvia*, Sierra Madre Occidental

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Introduction

Salvia L. is the largest genus within *Lamiaceae* with an estimated diversity among 900–1000 species worldwide (Frodin 2004; Harley & al. 2004; Drew & al. 2017). However, considering recent taxonomic rearrangements (Drew & al. 2017) and constant description of new species around the globe (Fernández-Alonso 2014; Celep & al. 2015; Hu & al. 2017; Zamudio & Bedolla-García 2018; as some examples), an updated and more stable account is still needed. The systematic research on the genus is very active with several efforts attempting to readjust its taxonomy and classification in order to recognize several smaller monophyletic genera (Will & Claßen-Bockhoff 2017) or a broader natural genus (Drew & al. 2017). The rearrangements in the traditional *Salvia* circumscription and classification (Bentham 1832–1836, 1848, 1876) are compulsory because the results of phylogenetic analyses have proved that these are largely artificial (Walker & al. 2004; Walker & Sytsma 2007). Between the different alternatives to deal with the polyphyly of *Salvia*, the transfer of the genera *Dorystaechas* Boiss. & Heldr. ex Benth., *Meriandra* Benth., *Perovskia* Kar., *Rosmarinus* L. and *Zhumeria* Rech. f. & Wendelbo to a broader *Salvia* circumscription has been defended as the most equitable solution

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based on molecular and morphological evidence, and which is congruent with practical and ethical commitments, i.e. avoiding excessive taxonomic changes that would destabilize the taxonomy of the group creating confusion and hindering communication between the systematic community and general users of the nomenclature (Drew & al. 2017). The latter approach is the one followed and accepted herein.

The overwhelming *Salvia* diversity at global scale is mirrored in Mexico with more than 300 species currently recognized (Martínez-Gordillo & al. 2017), being the country with the highest diversity of the genus worldwide. In fact, according to the most recent inventory of the vascular plants in Mexico, *Salvia* is the most speciose genus of the Mexican Flora (Villaseñor 2016). This outstanding diversity is reflected in the wide array of morphological variation, ecological preferences, wide distribution and diversity of geographical patterns exhibited by the Mexican species (Cornejo-Tenorio & Ibarra-Manríquez 2011; González-Gallegos & al. 2016). However, besides the relevance of the genus, the knowledge of its diversity is still deficient, and research efforts have resulted in continuous discovery of novelties in both distribution and taxonomy (Bedolla-García & Zamudio 2015, 2017; Fragoso-Martínez & al. 2015; González-Gallegos 2015a, 2015b; González-Gallegos & Castro-Castro 2016; González-Gallegos & López-Enríquez 2016; Martínez-Gordillo & al. 2016a, 2016b; Olvera-Mendoza & al. 2017; Zamudio & Bedolla-García 2018). As part of ongoing research on the diversity of Mexican *Salvia*, in concert with exploration of Mohinora mountain in NW Mexico, two undescribed species were discovered; both belong to *S.* subg. *Calosphace* (Benth.) Epling, according to stamen morphology (elongated connective with only two fertile thecae at apex of anterior arms, and the posterior ones connate between them). Consequently, the new taxa are here described and illustrated as part of the growing information towards an updated monograph of *Salvia* diversity in Mexico.

Material and methods

Herbarium specimens of both taxa were collected on August 2016 and 2018, respectively; these were herborized and prepared according to standard procedures (Lot & Chiang 1986). The herbarium specimens collected of both new species for this study, and those of *Salvia spellenbergii* sp. nov. already deposited in CIIDIR and MEXU herbaria, were thoroughly examined and collated against specialized literature for its identification (Epling 1939; Ramamoorthy 2005; Klitgaard 2012; González-Gallegos & al. 2016), as well as compared with type specimens of morphologically similar species at JSTOR Global Plants (JSTOR 2019). After the previous step, it was clear that these specimens belonged to undescribed species, accordingly, qualitative and quantitative characters were assessed using a dissecting microscope Zeiss Stemi 508, and the descriptions were prepared. The conservation status of the species was evaluated according to IUCN (2012) categories and criteria, and with the help of GeoCAT (Bachman & al. 2011).

Results and Discussion

Salvia reginae J. G. González & J. H. Vega, **sp. nov.** – Table 1, Fig. 1.

Holotype: Mexico, Chihuahua, Municipio de Guadalupe y Calvo, Cerro del Mohinora, Área de Protección de Flora y Fauna, 25°58'39.5"N, 107°02'21.8"W, 2675 m elev., fl., fr., 16 Aug 2017, *H. Vega & S. Ochoa 3143* (CIIDIR; isotypes: Herbario de la Facultad de Zootecnia y Ecología – Universidad Autónoma de Chihuahua, MEXU).

Table 1. Comparison of diverging characters between *Salvia reginae* and *S. concolor*.

Characters	***S. reginae***	***S. concolor***
Floral bract size [mm]	6.5–7.2 × 3–3.3	7–12(–23) × (1–)5–8(–18)
Corolla upper lip length [mm]	(6.5–)8.4–9.7	4–7
Stamen disposition with respect to corolla upper lip	exserted by 8–10 mm	totally included
Filament length [mm]	4.3–4.4	1–2
Connective length [mm]	35.5–37.6	7.5–8.5
Connective ornamentation	antrorse tiny acute tooth	entire
Theca length [mm]	2–2.2	1–2
Style length [mm]	49.4–49.6	24–25
Style disposition with respect to upper corolla lip	stigmatic branches and a portion of 11–17 mm long, exserted	stigmatic branches exserted, the rest included
Mericarp size [mm]	2.5–2.7 × 1.7–2	2–2.3 × 1.3–1.4
Distribution	NW Mexico (Chihuahua)	C, NW, SW and W Mexico (Ciudad de México, Chiapas, Durango, Estado de México, Guerrero, Jalisco, Michoacán and Puebla)

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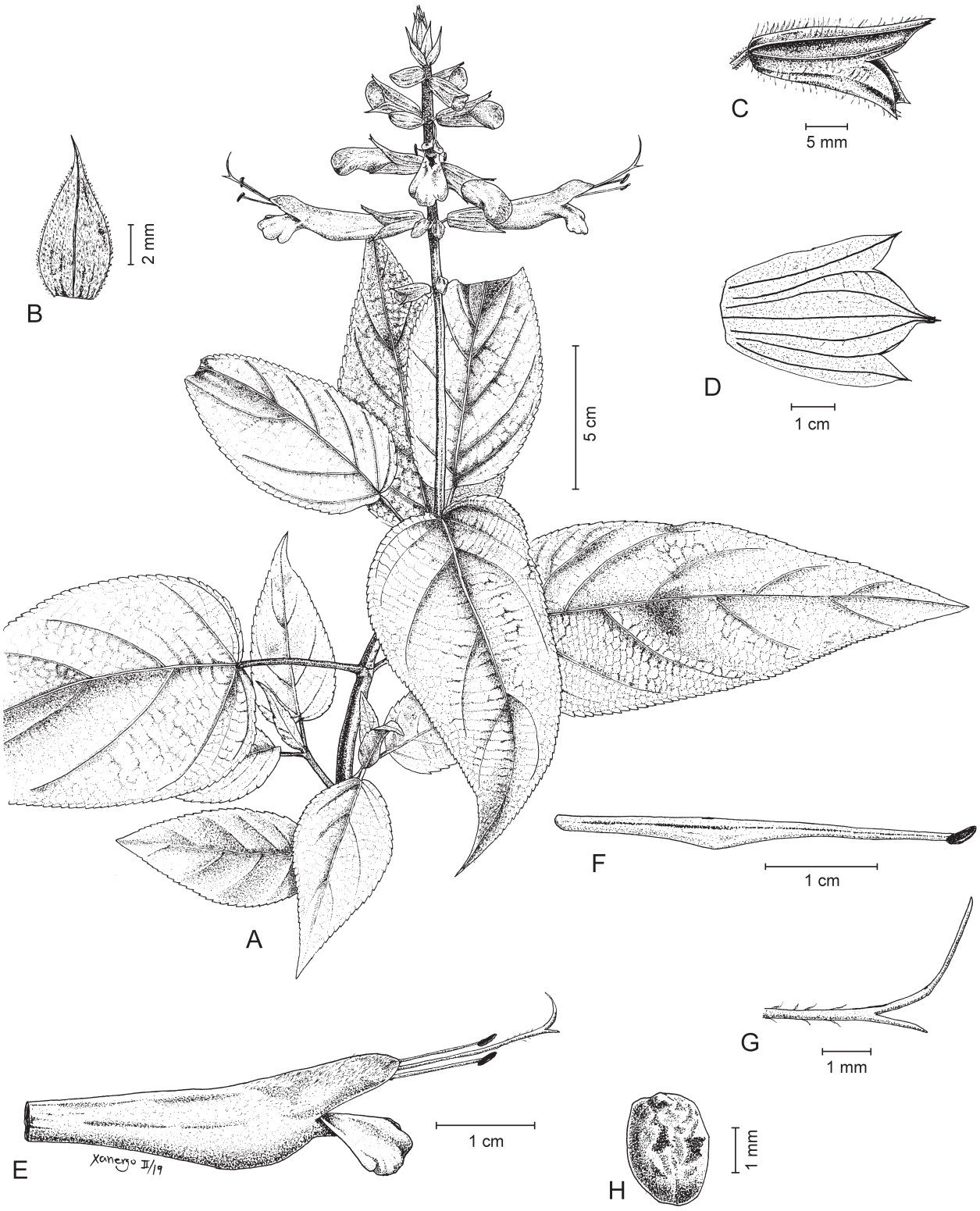


Fig. 1. *Salvia reginae* – A: flowering branch; B: floral bract (outer surface); C: calyx; D: dissected calyx showing venation pattern; E: corolla; F: connective and theca; G: anterior portion of style showing stigmatic branches; H: mericarp. – Drawn by J. G. González-Gallegos, based on holotype and isotypes.

Diagnosis — *Salvia reginae* is morphologically similar to *S. concolor* Lamb. ex Benth. They both are perennial herbs to shrubs, and share similar height, pubescence, leaf shape and size, calyces with the upper lip trimucronate and 5-veined, and corolla tube and lower lip size. However, *S. reginae* deviates from the latter because of its smaller floral bracts, longer upper corolla lips, stamen position (parallel to corolla dorsal line instead of oblique in respect to this), these exserted by 8–10 mm, longer filaments and connectives, the latter ornate with an an-

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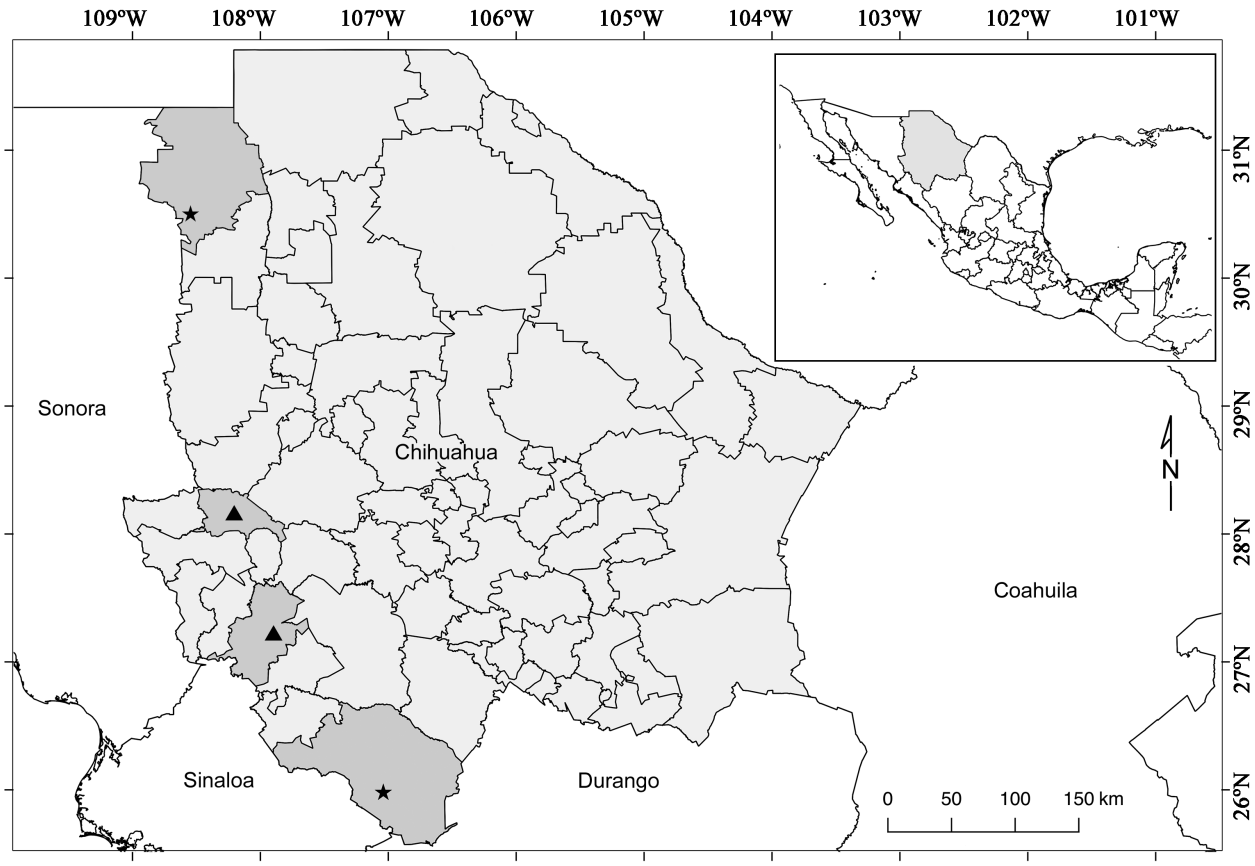


Fig. 2. Distribution map of *Salvia reginae* (★) and *S. spellenbergii* (▲); inset at top right shows location of Chihuahua state, shown in pale grey on both maps; shown in darker grey, from north to south, are Janos, Ocampo, Urique and Guadalupe y Calvo municipalities.

trorse tiny acute tooth, longer thecae, longer and exserted styles by 11–17 mm, and bigger mericarps.

Description — Perennial herb or shrub (0.8–)1.3–1.9 (–2.7) m tall, stem 1–1.3 cm in diam., hollow, sparsely short pilose. Leaves with petioles (2.6–)6–9.5 cm long, sparsely short pilose; leaf blade ovate to ovate-lanceolate, (8–)14–23 × (4–)9.5–11 cm, apex long acuminate, base obscurely cuneate, subcordate to oblique, margin serrate, upper surface slightly rugose, sparsely short pilose on both surfaces, hairs concentrated on main and secondary veins, covered with amber glandular dots beneath; with several fascicles of immature leaves at axils. Inflorescence in racemes, 11–20 cm long, 5–8 floral nodes in each one, these (4–)10–12-flowered, lowermost nodes 1.9–2.3 cm apart from each other, floral axis densely covered with glandular-capitate hairs. Floral bract ovate to rhombic, 6.5–7.2 × 3–3.3 mm, deciduous, apex long caudate, base truncate, margin entire and ciliate, outer surface densely short pilose, hairs glandular-capitate. Flowers with pedicels 2.2–3.7 mm long, accrescent, up to 8.8–13.3 mm in fruit, densely short pilose with glandular-capitate hairs. Calyx 11.3–23 × 3.7–6 mm, accrescent, up to 16.5–18.9 × 6–8 mm in fruit, upper lip long caudate, trimucronate at apex and 5-veined, lower with lobes acute, externally short pilose with glandular-capitate hairs, internally hispidulous towards throat. Corolla deep blue to dark violet, without visible nectar guides on lower lip, sparsely short pilose, hairs concentrated on upper lip and ventral portion of lower one; tube (23–)28.6–32.5 × (4.4–)7.9–8 mm, slightly ventricose towards lips, straight at base and internally epapillate; upper lip (6.5–)8.4–9.7 mm long; lower lip 8.8–9.4 × 7–9.3 mm. Stamens exserted by 8–10 mm; filament 4.3–4.4 mm long; connective 35.5–37.6 mm long, ventrally ornate with a tiny antrorse acute tooth; theca 2–2.2 mm long, staminodes not seen. Gynobasic horn 2.1–2.3 mm long; style 49.4–49.6 mm long, exserted by 11–17 mm, scarcely short pilose towards apex, lower stigmatic branch acute. Mericarp ovoid, 2.5–2.7 × 1.7–2 mm, dark brown and sparsely marbled with a lighter tone, smooth, glabrous.

Phenology — Flowering and fruiting from August to early December.

Distribution and ecology — Salvia reginae is an endemic species from Chihuahua, Mexico (Fig. 2). It is known only from two localities, the base of Mohinora mountain peak and Cañón Prieto near Mesa de Las Guacamayas. It grows in very humid ravines, mainly at the surroundings of small streams, in pine forest or riparian vegetation.

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It shares habitat with several tree species like *Abies durangensis* Martínez, *Alnus oblongifolia* Torr., *Juniperus durangensis* Martínez and *Pseudotsuga menziesii* (Mirb.) Franco; the understory is occupied by *Dahlia sherffii* P. D. Sørensen, *Pleopeltis polylepis* (Roem. ex Kunze) T. Moore, *P. polypodioides* (L.) E. G. Andrews & Windham, *Senecio toluccanus* DC. and *Woodsia phillipsii* Windham. The plants were collected in an elevation range spanning from (1900–)2660–2690 m.

Conservation status — Until further botanical explorations in the area are carried out and more data compiled, *Salvia reginae* should receive a preliminary conservation status of Data Deficient. However, there is no doubt that, under geographical criteria, the species could be classified as Critically Endangered (CR) based on a calculated Extent of Occurrence (EOO) of 0.004 km^2, and a calculated Area of Occupancy (AOO) of 8 km^2 (IUCN 2012), these were estimated using a cell width of 2 km.

Etymology — The epithet of this species is dedicated to Regina Vega González, daughter of the second author, who at her young age (eight years old), has started to appreciate the beauty and diversity of wild plants.

Remarks — *Salvia reginae* is morphologically similar to *S. concolor*, which belongs to *S.* sect. *Dusenostachys* (Epling) Epling. This section is one of those in need of a restructuring because not all its species have been recovered as part of the same monophyletic group (Jenks & al. 2011, 2013). *Salvia reginae* can be differentiated from *S. concolor* by having smaller floral bracts, longer upper corolla lips, stamens exserted by 8–10 mm, longer filaments, longer connectives, ornate with an antrorse tiny acute tooth, longer thecae, longer styles and exserted by 11–17 mm, and bigger mericarps (Table 1).

Additionally, the connective in *Salvia concolor* is oblique to the corolla dorsal line, blocking the entrance to corolla tube; hence, the pollinators are forced to push it back when trying to get the nectar, and doing so, they activate the staminal lever mechanism. During this process the stamens descend, the thecae get exposed (from upper corolla lip) and the pollen is deposited on pollinator's body (Claßen-Bockhoff & al. 2003). In *S. reginae*, the stamens are parallel along dorsal line of the corolla tube; hence, the corolla tube entrance is not blocked, and the staminal lever mechanism could not be activated. Besides, the long corolla tubes and the exserted and immovable stamens suggest that in *S. reginae* the pollination is restricted to birds (Wester & Claßen-Bockhoff 2007). Wester & Claßen-Bockhoff (2011) classified *S. concolor* as a species with a transitional pollination syndrome between bees and birds (ornithophilous to melithophilous, or intermediate). They consider that the ample lower corolla tube of *S. concolor* plays a role as landing platform for bees, although the corolla tube length in morphs with the longer corollas would exclude bees from reaching nectar at the corolla bottom. The difference in stamen position between both species can have deep ecological implications in terms of how these species interact with their pollinators and floral visitors, it could also be an example of an evolutionary transition from one pollination syndrome to another, like to what was hypothesized for *S. platyphylla* Briq. and *S. pugana* J. G. González & Art. Castro in respect to *S. albiterrarum* J. G. González & Art. Castro (González-Gallegos & Castro-Castro 2013).

In addition, *Salvia concolor* and *S. reginae* are disjunct in distribution. The northernmost population of the first species is recorded from Durango (*J. H. Maysilles 7613*, MICH; *T. Walker s.n.*, ARIZ), 287 km further south than those of *S. reginae*.

Additional specimens examined (paratypes) — Mexico: Chihuahua: Municipio de Janos: Ejido 5 de Mayo, Cañón Prieto, road to Mesa de Las Guacamayas, UTM 12R 735440 3376600, 1900 m elev., 15 Sep 2009, *C. Cortes 14* (ASC). Municipio de Guadalupe y Calvo: cerro Mohinora, Área de Protección de Flora y Fauna, 25°58'39.5"N, 107°02'21.8"W, 2675 m elev., fl., fr., 3 Nov 2017, *H. Vega & S. Ochoa 3281* (CIIDIR).

Salvia spellenbergii J. G. González, **sp. nov.** – Table 2, Fig. 3.
Holotype: Mexico, Chihuahua, Municipio de Ocampo, Parque Nacional Cascada de Basaseachi, 28°10.9'N, 108°12.7'W, 1950 m elev., fl., fr., 28 Sep 1999, *R. Spellenberg & J. Bacon 12979* (CIIDIR; isotype: NMC).

Diagnosis — *Salvia spellenbergii* is morphologically similar to *S. fruticulosa* Benth., *S. goldmanii* Fernald and *S. pruinosa* Fernald. However, it differs from them because of its shorter petioles, smaller leaf blades, usually fewer floral nodes, fewer flowers per floral node, and regularly shorter calyces. It is also distinguished from *S. fruticulosa* and *S. goldmanii* by having smaller floral bracts and corolla tubes, and shorter filaments and styles. It is separate from *S. fruticulosa* and *S. pruinosa* due to the trimucronate upper calyx lips, and from *S. goldmanii* because of the lack of two folds inside the basal portion of corolla tube.

Description — Shrub 30–100 cm tall, stems moderately covered with branched hairs, older portions with exfoliating bark and glabrescent. Leaves with petioles 1.6–5.4 mm long, covered with branched hairs; leaf blade ovate, deltoid to ovate-deltoid, (7.6–)11.7–18.5 × (3.7–)5.5–13.5 mm, apex acute to rounded, base cuneate and shortly decurrent into petiole, margin crenate, upper surface bullate and sparsely covered by branched hairs, lower surface densely covered with branched hairs and dark amber glandular dots. Inflorescence in racemes, 5.6–11.5(–22.5) cm long, 6–9 floral nodes in each one, these 4–6-flowered, lowermost nodes 1.3–1.8 cm apart from each other. Floral bracts ovate, (2.1–)3.1–3.7 ×

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Table 2. Comparison of diverging characters between *Salvia spellenbergii* and morphologically similar species (*S. fruticulosa*, *S. goldmanii* and *S. pruinosa*).

Characters	***S. spellenbergii***	***S. fruticulosa***	***S. goldmanii***	***S. pruinosa***
Petiole length [mm]	1.6–5.4	5–15	(5–)10–15	5–25
Leaf shape	ovate, deltoid to ovate-deltoid	ovate, subdeltoid, ovate-lanceolate to lanceolate	lanceolate, ovate, oblong-ovate to oblong-lanceolate	deltoid-ovate
Leaf size [mm]	(7.6–)11.7–18.5 × (3.7–) 5.5–13.5	(10–)20–42 × (5–)9–25	(18–)44–85 × (7–)12–22	(25–)30–58 × (13–)20–42
Floral nodes	6–9	8–18	(6–)12–19	7–14
Distance between floral nodes [cm]	1.3–1.8	1.9–3(–3.7)	(1.5–)2.7–3.6	1.5–2.2
Flowers per floral node	4–6	8–12	6–20	6–10
Floral bract size [mm]	(2.1–)3.1–3.7 × 1.2–3	4.6–7 × 3.2–4	(3.9–)5.9–8.2 × (2–)3.6–4.8	2–2.6 × 1–1.4
Calyx length [mm]	3.2–4	(3–)3.9–5.5	5–7.5	3.8–5
Upper calyx lip	trimucronate and 5-veined	entire and 5–7-veined	trimucronate and 5–7-veined	entire and 5-veined
Corolla tube size [mm]	4–5.8 × (1.6–)2.2–2.9	(5–)6.5–7.8 × (2.3–)3.7–4.2	6.5–8.4 × 2.7–3.6	5–5.5 × 1.8–2.2
Folds inside corolla tube base	0	0	2	0
Filament length [mm]	1.2–1.8	1.3–2.4	1.8–2.3	1–1.3
Style length [mm]	7.4–8.9	9.4–10.8	9.3–11	8–9
Distribution	NW Mexico (Chihuahua)	S Mexico (Oaxaca and Puebla)	NW Mexico (Chihuahua, Sinaloa and Sonora)	W and NW Mexico (Durango and Jalisco)

1.2–3 mm, deciduous, apex acute to acuminate, base truncate, margin entire, outer surface profusely covered with branched hairs and dark amber glandular dots. Flowers with pedicels 1.1–1.9 mm long, densely covered with branched hairs. Calyx 3.2–4 × 2.2–2.7 mm, lips almost truncate, upper lip trimucronate at apex and 5-veined, externally covered with a whitish tomentum of branched hairs and dark amber glandular dots, hispidulous (simple hairs) inside towards throat. Corolla deep blue to violaceous and with white nectar guides on lower lip, covered with branched hairs and dark amber glandular dots especially concentrated on back, upper lip, and ventral portion of lower one; tube 4–5.8 × (1.6–)2.2–2.9 mm, slightly widened toward throat but not ventricose, base straight and epapillate inside; upper lip 3.4–5.2 mm long; lower lip (2.9–)4.4–7 × (2.7–)4.1–5.8 mm. Stamens included; filament 1.2–1.8 mm long; connective (3.8–)5.2–6.2 mm long, ventrally ornate with an antrorse acute tooth; theca 0.9–1.2 mm long; a pair of staminodes above and behind filament insertion, 0.4–0.5 mm long. Gynobasic horn 0.7–0.9 mm long; style 7.4–8.9 mm long, short pilose towards apex with hairs concentrated in back, lower stigmatic branch acute. Mericarp ovoid, 1.8–2 × 1.2–1.4 mm, light brown, smooth, covered with branched hairs at apex.

Phenology — Flowering and fruiting from the end of July, most likely until November or December.

Distribution and ecology — *Salvia spellenbergii* is an endemic species from the state of Chihuahua, Mexico (Fig. 2). It is known only from the area of Cascada de Basaseachi National Park and the surroundings of Urique town, where it grows in pine-oak forest. The habitat is shared with *Agave multifilifera* Gentry, *Brickellia eupatorioides* (L.) Shinners, *Cupressus lusitanica* Mill., *Juniperus deppeana* Steud., *Pinus durangensis* Matínez, *P. engelmanii* Carrière, *P. herrerae* Martínez, *P. leiophylla* Schiede ex Schltdl. & Cham., *P. pseudostrobus* Debreczy & I. Rácz, *P. strobiformis* Engelm., *Quercus arizonica* Sarg., *Q. depressipes* Trel., *Q. durifolia* Seemen, *Q. hypoleucoides* A. Camus, *Q. jonesii* Trel., *Q. rugosa* Née and *Q. tarahumara* Spellenb. & al. Its elevation range goes from 1900–2155 m.

Conservation status — The species is known only from five localities, four in the protected area of Cascadas de Basaseachi National Park, and another nearby Urique. Based on geographical criteria, it is suggested to assign *Salvia spellenbergii* a preliminary conservation status of Critically Endangered (CR) or Endangered (EN) following IUCN Red List categories and criteria (IUCN 2012). The Extent of Occurrence (EOO) was calculated as 88.608 km^2 and the Area of Occupancy (AOO) was estimated as 12 km^2 based on a cell width of 2 km. However, the species grows in an orographically complex area with several inaccessible sites, so other populations might eventually be found. Moreover, con-

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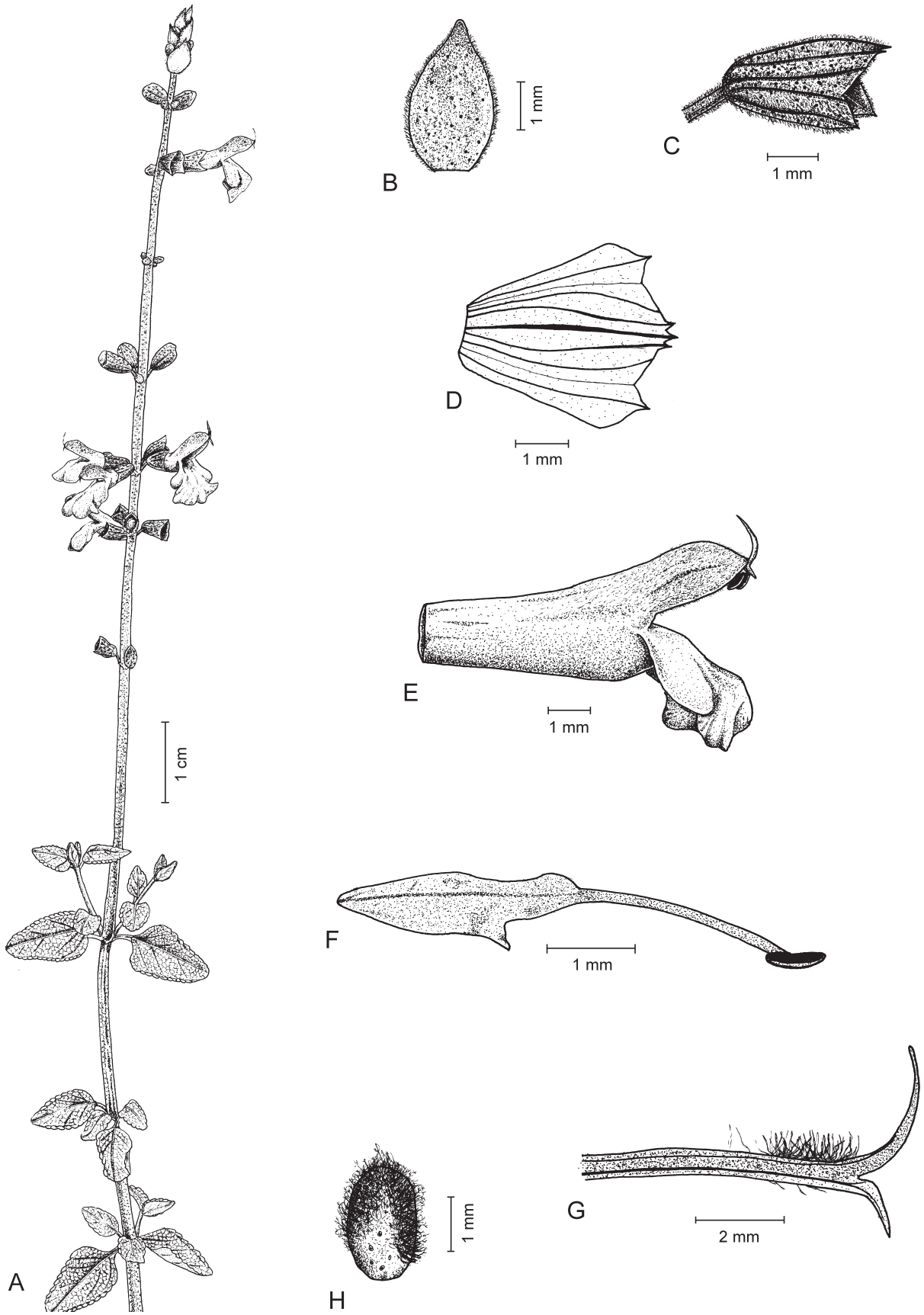


Fig. 3. *Salvia spellenbergii* – A: flowering branch; B: floral bract; C: calyx; D: dissected calyx showing venation pattern; E: corolla; F: connective and theca; G: anterior portion of style showing stigmatic branches; H: mericarp. – Drawn by J. G. González-Gallegos, based on holotype and isotype.

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sidering that the species grows within a National Park population decline and conservation threats should be minor. The species can remain as Data Deficient until a thorough evaluation is conducted.

Etymology — The epithet is dedicated to Richard W. Spellenberg, Emeritus Curator of the NMC herbarium (Las Cruces, New Mexico), one of the first in collecting the new species, and enthusiastic contributor to the knowledge of the NW Mexican flora. One of his contributions consists of a floristic inventory of Basaseachi National Park (Spellenberg & al. 1996). In that publication, the specimen *Spellenberg* & al. *8807* (MEXU, NMC) was included under the name *Salvia chamaedryoides* Cav.; however, this belongs to *S. spellenbergii*.

Remarks — *Salvia spellenbergii* can be assigned to *S.* sect. *Tomentellae* (Epling) Epling because of the perennial habit, branched hairs, deciduous floral bracts, 5–7-veined upper calyx lip, non-invaginated corolla tube at base, included stamens, geniculate connective and densely pubescent mericarps (Epling 1939). Among the species of this section, the new taxon is morphologically similar to *S. fruticulosa*, *S. goldmanii* and *S. pruinosa* in having ovate, deltoid-ovate to oblong-lanceolate leaf blades, and pubescent mericarps. However, there are several characters that warrant the recognition of *S. spellenbergii* as a different species. It can be distinguished from *S. fruticulosa* in having shorter petioles, slightly smaller leaf blades, fewer floral nodes, more lax inflorescences, fewer flowers per node, and a trimucronate and 5-veined upper calyx lip (Table 2). *Salvia spellenbergii* differs from *S. goldmanii* by the shorter petioles, leaf blade shape, fewer flowers per floral node, smaller floral bracts, shorter calyces and 5-veined upper calyx lips, shorter corolla tubes, corolla tube naked inside, shorter filaments, and shorter styles (Table 2). In contrast to *S. pruinosa*, the new species possesses smaller petioles, smaller leaf blades, bigger floral bracts, and trimucronate upper calyx lips (Table 2).

Moreover, of the three similar species, only *Salvia goldmanii* is distributed in the state of Chihuahua; whereas, *S. pruinosa* also inhabits the Sierra Madre Occidental, but not in the same state. *Salvia fruticulosa* is the most geographically distant species, distributed in the Sierra Madre del Sur biogeographic province in Oaxaca and Puebla (Table 2).

It should be noted that several of the specimens examined of this species, and that in the published list of vascular plants growing in Cascada de Basaseachi National Park (Spellenberg & al. 1996), were identified as *Salvia chamaedryoides*, a species of *S.* sect. *Flocculosae* (Epling) Epling. However, this species can be easily differentiated by having an entire upper calyx lip and 7-veined, ventricose and invaginated corolla tube, connective ornate with a retrorse acute tooth, and glabrous mericarps.

Additional specimens examined (paratypes) — MEXICO: CHIHUAHUA: Municipio de Ocampo: at the top and along the E side of Cascada de Basaseachi, 13 Oct 1980, *R. A. Bye 9842* (COLO); Cascada de Basaseachi, 3 km al SE de Basaseachi, 1960 m elev., fl., fr., 26 Sep 1983, *P. Tenorio-L. & R. Torres-C. 4461* (MEXU, SLPM); Cascada de Basaseachi, 3 km al SE de Basaseachi, 1960 m elev., fl., fr., 26 Sep 1983, *R. Torres-C. & P. Tenorio-L. 3785* (CIIDIR, MEXU); Cascada de Basaseachic, above falls, 28°10'20"N, 108°13'00"W, 1900 m elev., fl., 23 Jul 1986, *P. S. Martin* & al. *86-111* (NMC); Parque Nacional de Cascada de Basaseachi, 1800 m elev., fl., fr., 4 Oct 1986, *R. Spellenberg* & al. *8807* (MEXU, NMC); Cascada de Basaseachi, 28°10.613'N, 108°12.792'W, 1945 m elev., fl., 6 Aug 2016, *J. G. González-Gallegos* & al. *2103* (CIIDIR, IBUG, MEXU). Municipio de Urique: on road between Cerocahui and Urique, 14.7 km N of Urique, 27.240260°N, 107.948969°W, 2155 m elev., fl., 4 Oct 2009, *R. Spellenberg & W. Anderson 14124* (CIIDIR, MEXU, NMC, NY); on road between Cerocahui and Urique, 8 km of Mesa de Arturo, 27.241220°N, 107.955235°W, 2140 m elev., fl., 16 Aug 2011, *R. Spellenberg & W. Anderson 14326* (CIIDIR, NMC); on road between Cerocahui and Urique, 8 km of Mesa de Arturo, 16.5 km N of Urique, 27.237231°N, 107.957693°W, 2130 m elev., fl., 25 Aug 2012, *R. Spellenberg & W. Anderson 14435* (ARIZ, CIIDIR, MEXU, NMC).

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