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## *Scutellaria cuevasiana* and *Scutellaria sublitoralis* (Lamiaceae), two new species from Jalisco and Nayarit, Mexico

### *Scutellaria cuevasiana* y *Scutellaria sublitoralis* (Lamiaceae), dos especies nuevas de Jalisco y Nayarit, México

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**Abstract.** *Scutellaria cuevasiana* J. G. González et A. Vázquez and *Scutellaria sublitoralis* J. G. González are described and illustrated. *Scutellaria cuevasiana* fits best within section *Uliginosae* (Epling) Epling. It is morphologically close to *S. blepharophylla* Epling, *S. rosei* Fernald and *S. seleriana* Loes. It differs from them by its magenta corollas, small and sessile floral bracts, longer petioles and bigger leaves. *Scutellaria sublitoralis* does not manifest any clear morphological affinity with species of the sections enumerated by Epling. It could be related to species in sections *Pallidiflorae* Epling or *Uliginosae*, particularly with the "*Scutellaria ovata*" or "*Scutellaria caerulea*" species groups defined by Paton. It is morphologically similar to *S. pallidiflora* Epling; however, it can be recognized by wider leaves with usually cordate to subcordate bases, persistent floral bracts, floral axis and calyces without glandular-capitate hairs, longer corollas, and narrower toward the throat.

Key words: *Scutellaria caerulea* group, *Scutellaria ovata* group, section *Pallidiflorae*, section *Uliginosae*.

**Resumen.** Se describen e ilustran *Scutellaria cuevasiana* J. G. González et A. Vázquez y *Scutellaria sublitoralis* J. G. González. *Scutellaria cuevasiana* se ajusta mejor a la sección *Uliginosae* (Epling) Epling; es cercana en su morfología a *S. blepharophylla* Epling, *S. rosei* Fernald y *S. seleriana* Loes. Difiere de las mismas debido a sus corolas magenta, brácteas florales más pequeñas y sésiles, peciolos más largos y hojas más grandes. *Scutellaria sublitoralis* no muestra una clara afinidad con las especies de las secciones establecidas por Epling; podría estar relacionada con las especies de las secciones *Pallidiflorae* Epling o *Uliginosae*, particularmente con los grupos de especies de "*Scutellaria ovata*" y "*Scutellaria caerulea*" definidos por Paton. Es morfológicamente similar a *S. pallidiflora* Epling; sin embargo, puede reconocerse por sus hojas más anchas con bases por lo usual cordadas a subcordadas, brácteas florales persistentes, eje floral y cálices sin tricomas capitado-glandulares, corolas más largas, y estrechas hacia el ápice.

Palabras clave: grupo de *Scutellaria caerulea*, grupo de *Scutellaria ovata*, sección *Pallidiflorae*, sección *Uliginosae*.

## Introduction

The genus *Scutellaria* includes approximately 360 species, and exhibits a subcosmopolitan distribution: absent or scarcely represented in the arctic, lowland tropical areas, deserts, southern Africa and the Pacific Islands; and present on temperate mountainous areas from the tropics and southern hemisphere, with Central Asia and China as the richest region (Paton, 1990a, 1990b).

The morphology of Mesoamerican species of genus *Scutellaria* was well synthesized by Pool (2006), her thorough descriptions may be also applicable for the

Mexican species. In Mexico, *Scutellaria* is represented by 34 to 45 species (Ramamoorthy and Elliott, 1998; Domínguez et al., 2003; Villaseñor, 2004). The Mexican species of *Scutellaria* grow mainly in temperate mountainous areas (Ramamoorthy and Elliott, 1998).

A revision of the Lamiaceae family in the state of Jalisco, western Mexico, as part of the "Flora de Jalisco y Áreas Colindantes" project, brought us to the discovery of 2 forms of the genus *Scutellaria* L. (Lamiaceae), that do not belong to any of the currently recognized taxa. They are described and illustrated here as 2 new species morphologically similar to sections *Pallidiflorae* Epling and *Uliginosae* (Epling) Epling.

## Descriptions

*Scutellaria cuevasiana* J. G. González et A. Vázquez sp. nov.

Figure 1.

*Type:* Villa Purificación, Villas de Cacoma, 19°49'15" N, 104°33'18" W, 1 607 m, 30 Apr 2010 (fl.), *J. L. Rodríguez, J. G. Morales and L. G. Medina* 263 (holotype: ZEA; isotypes: IBUG, IEB, MEXU).

*Scutellariae selerianae* Loes. affinis sed petiolis longioribus (1.5-3.5 cm vs. 0.5-1.3 cm longis), laminis magnioribus (3-9.5 × 2-6 cm vs. 0.5-4.5 × 0.8-1.2 cm), bracteis floralibus sessilibus ob lanceolatis vel ovatis (vs. pedicellatis orbicularibus) et parvioribus (1-2.7(-5) × 0.2-0.8(-2.1) mm vs. 4-6 × 4-6 mm), nuculis sparse spinulosis, non squamosis (vs. tuberculatis; tubercula squamis stellato-peltatis) differt.

Perennial herbs (17-) 30-60 cm tall; erect; roots fasciculate; stems cylindrical or subquadrangular, moderately to densely covered by tiny appressed and retrorse hairs (also present on the floral axis, where occasionally are erect). Petioles (1.5-) 3-3.5 cm long, densely covered with retrorse and erect hairs. Blades variable, lanceolate, ovate-lanceolate to rhomboid, often asymmetric, (3-)5-7.5(-9.2) cm long, (2-)3.5-4.5(-6) cm wide, acute to acuminate at apex, rounded and abrupt and shortly cuneate, or cuneate at base, margin broad and irregularly crenate or sometimes serrate with simple hairs along its border, adaxial surface dark green with some appressed simple hairs, abaxial surface paler with appressed simple hairs only on the veins. Inflorescences in racemes, terminal and lax, 5-6 cm long; flowers alternate or subopposite (sometimes opposite), spirally arranged, nodes 4-6 mm apart at the inflorescence base. Floral bracts lanceolate to ovate, 1-2.7(-5) mm long, 0.2-0.8(-2.1) mm wide, persistent or late deciduous, glabrous or with some tiny hairs, mainly along the margin, rounded to acuminate at apex, truncate at base, margin entire. Pedicels 1.4-2.5 mm long, 3-5.1 mm long in fruit, moderately covered with tiny antrorse hairs. Calyces 2-2.3 mm long, 1.5-2 mm wide at throat (6 mm long, 3.5 mm wide in fruit), pale green, with appressed hairs on the middle vein, the scutellum rib and the base near the pedicel, sparsely covered with tiny translucent glandular dots, the margin of the lips reddish; scutellum 0.3-0.6 mm tall in flower, 3.8-4.5 mm tall in fruit, green with the dorsal margin reddish. Corollas magenta or rarely white; tube 1.9-2.1 cm long, straight or slightly bent basally at 3.7-4 mm, then again straight (1.1-1.2 mm wide), and gradually expanding to 3.2-3.5 mm wide at throat, glabrous inside, sparsely covered with erect tiny hairs outside; upper lip 2.7-3 mm long, lower lip 4-5 mm long, with glandular-capitate hairs along the

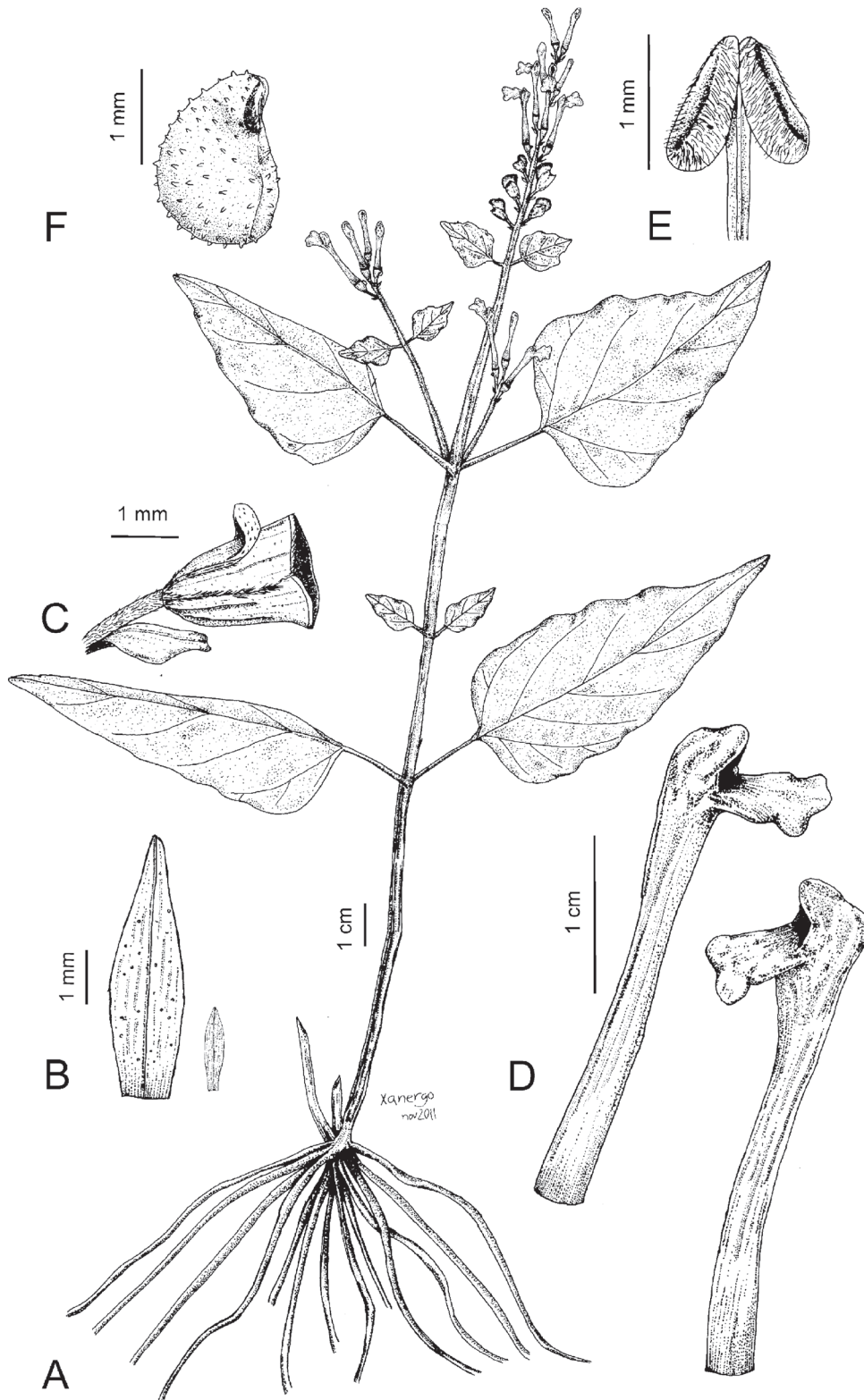
margin of the lips, mainly on the upper one. Filaments of the upper stamens (3.5-) 4.5-5.2 mm long, filament of the lower stamens 6-6.5 mm long; anthers 1 mm long, white pilose on the slits. Style 2.1-2.2 cm long, glabrous. Nutlets subreniform to piriform, (1-)1.6-1.8 mm long, 1 mm wide, black, surface sparsely spinulose, glabrous.

### *Taxonomic summary*

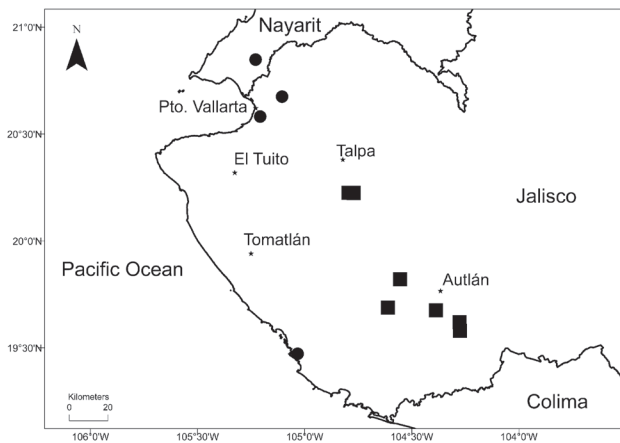
*Distribution, habitat and phenology.* *Scutellaria cuevasiana* is endemic to Jalisco (Fig. 2). It ranges between (1 000-) 1 400-1 800 (-2 090) m. It grows in montane cloud, pine-oak and riparian forests. It shares habitat with *Quercus laeta* Liebm., *Q. resinosa* Liebm., *Clethra rosei* Britton, *C. hartwegii* Benth., *Eugenia culminicola* McVaugh, *Alnus jorullensis* Kunth, *Symplocos novogaliciana* L. M. González, *Magnolia iltisiana* A. Vázquez, *M. pacifica* A. Vázquez, *Cedrela odorata* L., *Ardisia revoluta* Kunth, *Croton wilburi* McVaugh, *Euphorbia* aff. *palmeri* Engelm. ex S. Watson, *Sideroxylon cartilagineum* (Cronquist) T. D. Penn., *Trophis racemosa* (L.) Urb., *Oreopanax peltatus* Linden, *O. echinops* (Cham. et Schltdl.) Decne. et Planch., *Ficus velutina* Humb. et Bonpl. ex Willd., *Fraxinus uhdei* (Wenz.) Lingelsh., *Clusia salvinii* Donn. Sm., *Sipatuna thecaphora* (Poepp. et Endl.) A. DC., *Conostegia* sp., *Parathesis* sp. and *Leucaena* sp. This plant blooms and fructifies from August to middle December.

*Etymology.* *Scutellaria cuevasiana* is named in honor of Ramón Cuevas-Guzmán, from the Instituto Manantlán de Ecología y Conservación de la Biodiversidad, Universidad de Guadalajara, Mexico. He has contributed greatly to the exploration and knowledge of the flora of Jalisco, and to the formation of new botanists and ecologists.

*Additional material examined.* **Mexico.** Jalisco. Autlán de Navarro: Las Joyas, Sierra de Manantlán, 1 800 m, 20 Aug 1982 (fl., fr.), *Pérez* 192 (IBUG); camino de Las Mantequillas a la cascada Las Juntas, Las Joyas, 1 600 m, 8 Dec 1985 (fr.), *Vázquez* 3766 (ZEA); de Las Galeras a la cascada grande, 1 600-1 650 m, 3 Aug 1986 (fl.), *Cuevas* 1442 (MEXU); 12-13 km al S de Autlán, 1 500 m, 24 Jul 1988 (fl.), *Santana and De Niz* 3670 (ZEA). Ayutla: Las Iglesias, 2 090 m, 24 Dec 2002 (fr.), *Cuevas et al.* 7594 (ZEA). Casimiro Castillo: Sierra de Manantlán Occidental, 2 km E of the microondas tower above puerto Los Mazos, 9 km (by air) NE of Casimiro Castillo, 1 760 m, 16 Dec 1988 (fl., fr.), *Iltis and Santana* 30109 (MEXU), 30123 (ZEA); Los Mazos, al W de Autlán, 1 800 m, 10 Sep 1989 (fr.), *Ramírez and González-T.* 1570 (IBUG); Los Mazos, Sierra de Manantlán, 9-10 km al SSW de Autlán, 9-10 km al NNE de Casimiro Castillo, 1 750 m, 15 Jul 1992, *Santana et al.* 11183 (ZEA); Los Mazos, Sierra de Manantlán, 9-10 km al SSW de Autlán, 9-10 km NNE de Casimiro Castillo, 24 Nov 2008 (fl.,



**Figure 1.** *Scutellaria cuevasiana* J. G. González. A, general appearance; B, floral bract variation, dorsal view; C, calyx with a fragment of the petiole and floral bract; D, corollas; E, anther; F, nutlet (A-E based on *J. L. Rodríguez 263 et al.*, and F, based on *Machuca and Cházaro 7517*; drawn by J. G. González-Gallegos).



**Figure 2.** Distribution map of *Scutellaria cuevasiana* J. G. González (squares) and *S. sublitoralis* J. G. González (dots).

fr.), *Sigala et al.* 23 (ZEA), *Mendoza* 15 (ZEA). Talpa de Allende: km 19 del camino Talpa-La Cuesta, 1 400 m, 17 Nov 1989 (fl., fr.), *Ramírez et al.* 1857 (IBUG); brecha Talpa-La Cumbre, 1 400 m, 28 Jul 1990, *R. Ramírez D.2121* (IBUG); brecha de Talpa a La Cuesta, en Paso Hondo, 1 550 m, 15 Oct 1995 (fl., fr.), *Machuca and Cházaro* 7517 (IBUG); Talpa-La Cuesta, 20°12'58.5" N, 104°46'27.4" W, 1 426 m, 8 Aug 2009 (fl.), *Quedensely and Arroyo* 10160 (CIIDIR).

**Remarks.** We agree with Pool (2006) and Cuevas (2010) considering the infrageneric classifications proposed by Epling (1939, 1940) and Paton (1990) as unsatisfactory in the circumscriptions of their groups. However, their proposals are still the basis for the study of the genus, until an exhaustive revision and a new natural classification are developed.

*Scutellaria cuevasiana* J. G. González et A. Vázquez fits within section *Uliginosae* (Epling) Epling, which is equivalent to section *Scutellaria* and "*Scutellaria uliginosa*" species group of Paton (1990), because the magenta corollas (purplish), small (less than 60 cm tall) herbaceous habit, fibrous or fasciculate roots, slightly hirsute leaves on the adaxial surface, and with appressed hairs on the vein of the abaxial one, alternate or subopposite flowers, spirally arranged in terminal racemes (Epling, 1939, 1942; Pool, 1998). However, the corollas are slightly longer than those exhibited by the members of section *Uliginosae*: 2.2-2.4 cm vs. 1.1-1.8 cm long (measurements including the upper lip length).

*Scutellaria blepharophylla* Epling, *S. rosei* Fernald and *S. seleriana* Loes. are morphologically similar with *S. cuevasiana*. They share similar habit, leaf size and shape, terminal lax inflorescences, generally persistent floral bracts, flowers spirally arranged, corollas with reddish colors (magenta, pale to deep red-purple, rose-purple),

except for *S. blepharophylla* which possess dark blue corollas, and overlapping corolla tube length (Table 1). It differs from *S. blepharophylla* in having much longer petioles (15-35 mm vs. 3-4 mm long), shorter floral bracts (1-2.7(-5) mm vs. 7 mm long), shorter pedicels (2-2.4 mm vs. 3-4 mm long), and magenta corollas instead of dark blue ones (Table 1). It is different from *S. rosei* because of its longer petioles (15-35 mm vs. 1-3 mm long), shorter inflorescences (5-6 cm vs. 20-30 cm long), shorter floral bracts (1-2.7(-5) mm vs. 5-8 mm long), shorter pedicels (2-2.4 mm vs. 3-7 mm long), absence of glandular-capitate hairs on the calyces, and smaller lower corolla lip (4-5 mm vs. 9-10 mm long) (Table 1). Finally, it differs from *S. seleriana* in having longer petioles (15-35 mm vs. 5-13 mm long), larger leaves (3-9.5 cm long and 2-6 cm wide vs. 0.5-4.5 long and 0.8-1.2 cm wide), floral bracts lanceolate to ovate vs. orbicular, sessile vs. pedicellate, and smaller (1-2.7(-5) mm long and 0.2-0.8(-2.1) mm wide vs. 4-6 mm long and 4-6 mm wide), and nutlets sparsely spinulose without scales vs. tuberculate with stellate-peltate scales (Table 1).

It should be noticed that the specimen *Cuevas 1442* (MEXU) includes both *Scutellaria dumetorum* Schldtl. and *S. cuevasiana* in the same sheet. The first one can be easily distinguished by means of its flowers disposed in the axils of the leaves rather than in terminal racemes. On the other hand, Iltis and Santana collected 2 specimens of *S. cuevasiana* with the numbers 30109 and 30123, and they wrote on the labels that one plant had purple corollas and the other white ones; apart from this, there are not more differences between the specimens, indicating that this species can have magenta corollas and less frequently white ones (this can be partially observed in the holotype and isotypes, because dried flowers have 2 different colors).

***Scutellaria sublitoralis* J. G. González sp. nov.**

Figure 3.

**Type:** Mexico. Jalisco. Puerto Vallarta, 3.5 km al SE por la brecha de Puerto Vallarta a Cuale a partir del puente del Remance, 500-700 m al SE del arco del ejido Jorullo, junto a una cascada que vierte en el río Cuale, 20°34'53.8" N, 105°12'28.4" W, 92 m, 24 Oct 2010 (fl., fr.), *J. G. González-Gallegos* 754 (holotype: IBUG; isotype: MEXU).

Species habitus *Scutellariae pallidiflorae* Epling optima congruens, sed laminis latioribus (3.5-6 cm vs. 3-3.5 cm longis), bracteis floralibus lanceolatis persistentibus (vs. linearibus deciduis), axe inflorescentiae et calycibus sine pilis glanduliferis, tubis corollarum angustis at apicem (vs. ampliatis at apicem), intus nudis (vs. intus annulis pilorum ornatis) differt.



**Table 1.** Character comparison between *Scutellaria cuevasiana* J. G. González et A. Vázquez and its most morphologically similar species

Character	<i>S. cuevasiana</i>	<i>S. blepharophylla</i>	<i>S. rosei</i>	<i>S. seleriana</i>
Habitat	Perennial herb, erect	Perennial herb, erect	Perennial herb, erect	Perennial herb, erect
Height (cm)	(17-)30-60	25-35	60-70	10-50
Leaves				
Petiole length (mm)	(15-)30-35	3-4	1-3	5-13
Blade shape	Lanceolate, ovate-lanceolate to rhomboid	Widely ovate	Ovate	Widely ovate
Blade size (cm)	(3-)5-7.5(-9.2) × (2-)3.5-4.5(-6)	3-4.2 × 3.1-3.3	(3.5-)4-6 × (2.8-)3-4	(0.5-)1.2-1.8(4.5) × 0.8-1.2
Base of the blade	Rounded and abrupt and shortly cuneate	Rounded	Rounded to subtruncate	Widely cuneate to subtruncate
Apex of the blade	Acute to acuminate	Obtuse to acute	Acuminate	Obtuse to acute
Margin	Broad and irregularly crenate or sometimes serrulate	Sinuate-dentate	Crenate to dentate	Crenate to subentire
Inflorescence				
Length (cm)	5-6	3-8(-15)	20-30	2-5 (sometimes the flowers in the axils of the uppermost leaves)
Floral bract				
Shape	Lanceolate to ovate	Lanceolate	Lanceolate	Orbicular
Size (mm)	1-2.7(-5) × 0.2-0.8(-2.1)	7 × 3	5-8 × 2.5-4	4-6 × 4-6
Apex	Rounded to acuminate	Acuminate to acute	Acuminate to acute	Rounded
Base	Truncate	Cuneate	Truncate	Rounded to slightly cuneate
Duration	Persistent to late deciduous	Persistent	Persistent	Persistent
Pedicels				
Length in flower (mm)	1.4-2.5	3-4	3-7	3-4
Calyces				
Size (mm)	2-2.3 × 1.5-2	3-4 × 2.5-3	3-5 × 4-5	1.5-2 × 2.5-3
Pubescence	Sparsely covered with appressed eglandular hairs	Glabrous to glabrescent	Glandular-capitate	Densely covered with appressed simple hairs
Corolla				
Color	Magenta	Dark blue	Rose-purple to red-purple	Pale to deep red-purple
Tube size (mm)	19-21	17-19	19-25	(10-)12-15(-18)
Upper lip length (mm)	2.7-3	3-4	6-7	2
Lower lip length (mm)	4-5	6-7	9-10	3.5
Nutlets				
Shape	Subreniform to piriform	Not seen	Not seen	Ovoid
Surface	Sparsely spinulose	Not seen	Not seen	Tuberculate with stellate-peltate scales

**Table 1.** Continues

Character	<i>S. cuevasiana</i>	<i>S. blepharophylla</i>	<i>S. rosei</i>	<i>S. seleriana</i>
Length (mm)	(1-)1.6-1.8	Not seen	Not seen	1.25-1.75
Habitat	Montane cloud, pine-oak and riparian forests	Grasslands	Unknown	Montane cloud forests
Phenology	Blooms and fructifies from August to middle December	Blooms and fructifies in July	Blooms and fructifies in July	Blooms and fructifies from July to December
Distribution	Mexico: Jalisco	Mexico: Guerrero, Estado de México, and Michoacán	Mexico: Sinaloa	Guatemala: Huehuetenango, Petén, Quiché. Mexico: Chiapas, Veracruz, Puebla, Oaxaca, San Luis Potosí

Perennial herb 20-50 cm tall; erect, roots thin and fasciculate; stem cylindrical to quadrangular, moderately to densely covered with tiny appressed and retrorse hairs, these hairs are present also on the floral axis. Petioles 2.5-4 cm long, covered with appressed and retrorse hairs. Blades ovate, slightly asymmetric, (4-) 5-6.5 cm long, (3.5-) 4-6 cm wide, acute at apex, cordate to subcordate or truncate at base, margin irregularly and sparsely crenate or undulated, adaxial surface dark green, abaxial surface slightly paler, both surfaces glabrous or with some patent hairs along the margin. Inflorescences in racemes, terminal and lax, 6-15 cm long, flowers alternate to opposite, spirally arranged, nodes 7-12 mm apart from each other. Floral bracts linear, 1.5-2.7 mm long, 0.1-0.2 mm wide, persistent, with tiny erect hairs concentrated at base and along the margin, acuminate at apex, truncate at base, margin entire. Pedicels 2-3 mm long, 3.5-4 mm in fruit, covered with tiny retrorse hairs. Calyces (2-) 2.7-3.2 mm long, 1.4-1.7 mm wide at apex (3.5 mm long, 2.2 mm wide in fruit), green, margin of the lips with a fine purple line invisible to the naked eye, sparsely covered with erect tiny hairs, those concentrated at base and the margin of the lips, scutellum 1 mm tall and wide in flower, 1.5-2 mm tall and 3 mm long in fruit, green with the dorsal margin bordered with a narrow purple line. Corollas white; tube (1.3-) 1.4-2 cm long, slightly bent at 3.5-5 mm long, then straight and consistently narrow (1.1-1.2 mm wide) for 4.7-6 mm long, and gradually expanding to 3-3.3 mm wide at throat, glabrous inside, with sparse glandular-capitate and glandular simple hairs outside; upper lip 3-4 mm long, lower lip 5-6 mm long, tiny glandular-capitate hairs along the margin of the lips. Filaments of the upper stamens 3-4 mm long, filaments of the lower stamens 5.5-6.5 mm long; anther 0.3-1 mm long, white pilose on the slits. Styles 1.4-2.4 cm long,

glabrous. Nutlets orbicular to subreniform, 1.5 mm long, 1.2-1.5 mm wide, black, the surface densely tuberculate (tubercules truncate at the apex), glabrous, covered with bright and tiny glandular dots.

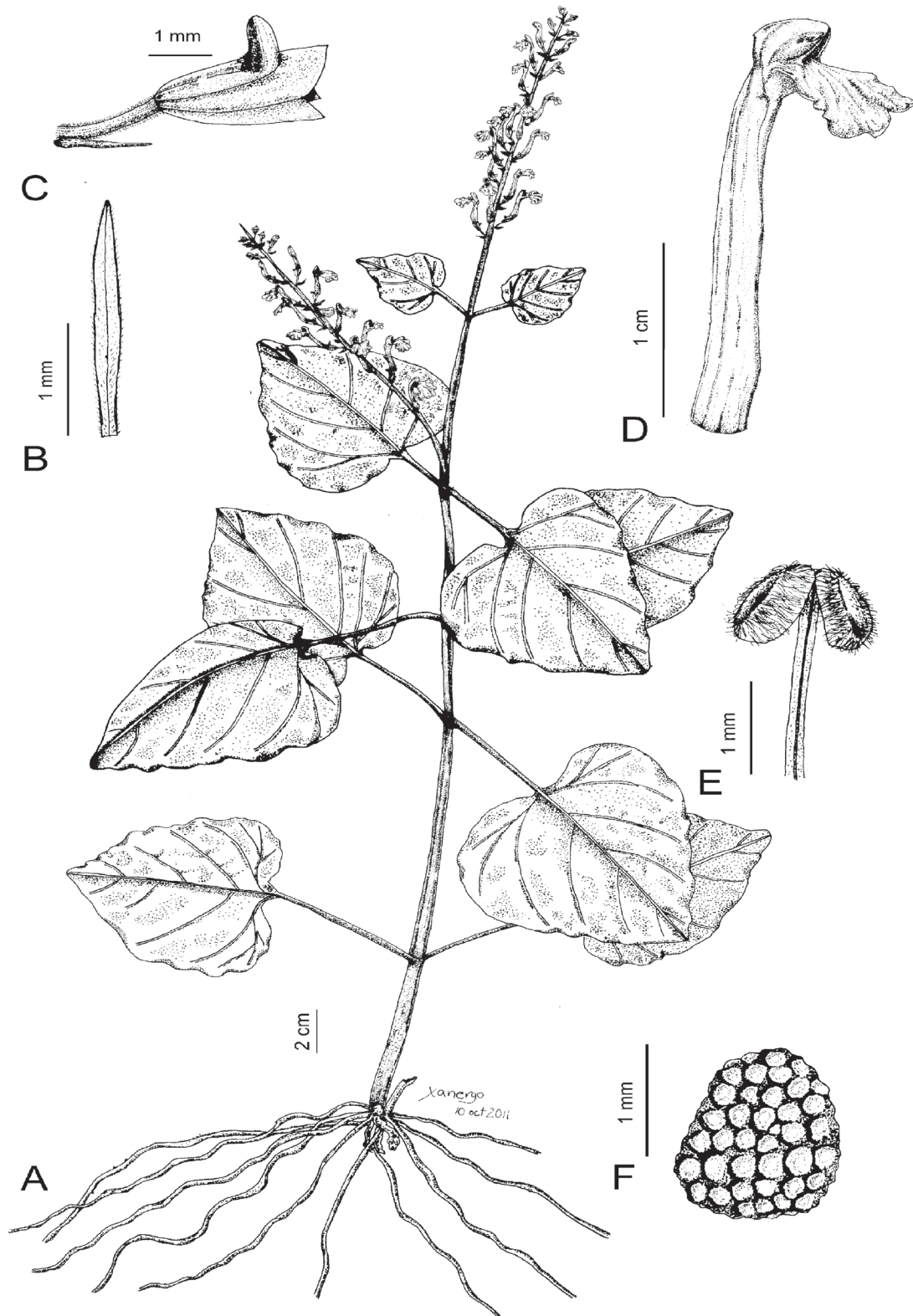
*Taxonomic summary*

*Distribution, habitat and phenology.* *Scutellaria sublitoralis* grows in tropical subdeciduous forests, in wet and shady ravines, near the coasts of Jalisco and Nayarit (figure 2). It grows in a narrow altitudinal range, from 50-125 m, together with *Hura polyandra* Baill., *Brosimum alicastrum* Sw., *Ficus insipida* Willd., *Euphorbia mexiae* Standl., *Begonia plebeja* Liebm., *Achimenes* sp. Collected in flower and fruit from August to late November.

*Etymology.* The name of *S. sublitoralis* remarks its subcoastal distribution, always growing under 150 m and above 50 m altitude.

*Additional material examined.* **Mexico.** Jalisco. La Huerta: arroyo Maderas, 22 Aug 1985 (fl.), *Solis 4410* (MEXU); 500 m sobre el arroyo Tepeixtles, km 55.5 de la carretera Barra de Navidad-Puerto Vallarta, 3 km al SE de la entrada de la Estación de Biología Chamela, UNAM, 70 m, 12 Sep 1997 (fl.), *Téllez et al. 13244* (MEXU), *Téllez and Domínguez 13228* (MEXU). Puerto Vallarta: La Palapa (Las Peñas), 20°40'30" N, 105°6'20" W, 125 m, 21 Feb 1993 (fr.), *Castillo et al. 9968* (XAL). Nayarit. Bahía de Banderas: faldas de la sierra de Vallejo, entre Valle de Banderas y San Juan de Abajo, 20°50'53" N, 105°13'45" W, 55 m, 25 Nov 1997 (fl.), *Ramírez et al. 4642* (IBUG).

*Remarks.* *Scutellaria sublitoralis* is morphologically similar to *Salvia pallidiflora* Epling in sect. *Pallidiflorae* Epling. It shares with these, perennial herbaceous habit, fasciculate roots, ovate or elliptic petiolate blades, flowers arranged in short racemes, pale or essentially



**Figure 3.** *Scutellaria sublitoralis* J. G. González. A, general appearance; B, floral bract, dorsal view; C, calyx with a fragment of the petiole and floral bract; D, corolla; E, anther; F, nutlet (A-F based on J. G. González-Gallegos 754; drawn by J. G. González-Gallegos).



white corollas, and narrow tube. However, it shows some small discrepancies: the bracts are persistent instead of mostly deciduous, and the tube is not internally pilose. Furthermore, *S. sublitoralis* can be distinguished by its wider leaves (3.5-6 cm vs. 3-3.7 cm wide), generally cordate at base vs. rounded, calyx and floral axis without glandular-capitate hairs, pedicel as long as calyx in flower

(vs. twice or more in length than the calyx in flower), and white corolla.

There is also an abrupt difference between the habitat preference of *S. pallidiflora* and *S. sublitoralis*. The first one is known exclusively by the type specimen (*Rose 2487*, seen in a natural sized photograph), where the locality is written as “near Huejuquilla”. McVaugh (1972) adds more information to the locality data of this

**Table 2.** Character comparison between *Scutellaria sublitoralis* J. G. González and *S. pallidiflora* Epling

Character	<i>S. sublitoralis</i>	<i>S. pallidiflora</i>	<i>S. vitifolia</i>
Habitat	Perennial herb, erect	Perennial herb, erect	Perennial herb, erect
Leaves			
Petiole length (cm)	2.5-4	1.5-2.5	2-7
Blade shape	Ovate	Ovate	Ovate to deltoid
Blade size (cm)	(4-)5-6.5 × (3.5)4-6	5-5.5 × 3-3.7	2.5-12 × 2-10
Base of the blade	Cordate to subcordate to truncate	Rounded	Cordate to subcordate
Apex of the blade	Acute	Obtuse	Acute to acuminate
Margin	Irregular and sparsely crenate to undulated	Subentire	Crenulate
Inflorescence			
Length (cm)	6-15	5-9	2-7
Floral bract			
Shape	Linear	Ovate	Narrow elliptic
Size (mm)	1.5-2.7 × 0.1-0.2	1.5-2 × 0.5	6-8 × 2-3
Apex	Acuminate	Acuminate	Acute
Base	Truncate	Truncate	Truncate
Duration	Persistent	Deciduous	Persistent
Pedicels			
Length (mm)	2-3	3-4	5-8
Calyces			
Size (mm)	(2-)2.7-3.2 × 1.4-1.7	2-3 × 2-3	7-10 × 5-7
Pubescence	Sparsely covered with erect tiny hairs	Covered with glandular-capitate hairs	Sparsely covered with erect hairs
Corolla			
Color	White	White	Blue to rarely purple
Tube size (mm)	(13-)14-20	13-16	15-17
Upper lip length (mm)	3-4	4-5	5-8
Lower lip length (mm)	5-6	6-7	12-13
Nutlets			
Shape	Orbicular to subreniform	Not seen	Not seen
Surface	Tuberculate	Not seen	Not seen
Size (mm)	1.5 × 1.2-1.5	Not seen	Not seen
Altitudinal range (m)	50-125	1000-1700	60-2 100

**Table 2.** Continues

Character	<i>S. sublitoralis</i>	<i>S. pallidiflora</i>	<i>S. vitifolia</i>
Habitat	Tropical subdeciduous forests	Pine-oak forests	Montane cloud or pine-oak forests
Phenology	Blooms and fructifies from August to late November	Blooms and fructifies in August	Blooms and fructifies from July to September
Distribution	Mexico: coast of Jalisco and southwestern Nayarit	Mexico: Jalisco	Mexico: Chiapas; Guatemala; Quetzaltenango

collection: between San Juan Capsitrano (Zacatecas) and Huejuquilla (Jalisco). In this area, according to Vázquez et al. (2004), there are several patches mainly composed of pine-oak and tropical deciduous forests, crassicaule bush and Chihuahuan desert, in an altitudinal range from 1 000-1 700 m. In contrast, *S. sublitoralis* grows in tropical subdeciduous forest under 150 m altitude. This kind of habitat is remarkably unusual among the Mexican *Scutellaria*, most of which occupy temperate mountainous areas above 1 500 m altitude.

*Scutellaria vitifolia* Brandegees also shares some characters with *S. sublitoralis*. The habit and height, petiole length, blade shape and size, apex and base of the blade, inflorescence length, tube and upper lip length. However, *S. sublitoralis* can be distinguished by stems and calyces without glandular-capitate hairs, white corolla (vs. blue to rarely purple), corolla tube internally glabrous (vs. pubescent internally in the central middle portion), nutlets ornate with tubercules truncate at the apex (vs. nutlets with tubercules ornate with stellate-peltate scales at apex) (Table 2). Moreover, *S. sublitoralis* is exclusive of Jalisco and Nayarit lowlands from 50-125 m altitude; while, *S. vitifolia* is known from Chiapas (Mexico) and adjacent areas of Guatemala, and it grows in a wider altitudinal range, from 60 to 2 100 m altitude (Table 2).

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