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TWO NEW SPECIES OF *POLYGALA* (POLYGALACEAE) FROM WESTERN MEXICO

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Abstract: Two new species of *Polygala* subgenus *Polygala* (Polygalaceae) are described from western Mexico. *Polygala mcvaughii* is related to *P. subalata*, from which it differs by its shorter, broader racemes, longer pedicels, and always annual habit, and to *P. conferta*, differing from that species by its larger seeds and larger, usually \pm non-stipitate fruits. It is known from 1200–2250 m in Michoacán, Jalisco, Aguascalientes, and extreme southern Zacatecas. *Polygala tellezii* belongs to a group of species in which a reduced or no aril and short seed hairs are the norm, and in which a vegetative vestiture of minute capitate hairs is common. This new species is in some ways morphologically most similar to the South American *P. exigua*, but it is perhaps most closely related to the sympatric *P. glochidiata*, from which it differs in its entirely alternate leaves and non-uncinate seed hairs. *Polygala tellezii* is known only from three localities in lowland savannas in southern Nayarit.

Resumen: Se describen dos especies de *Polygala* subgénero *Polygala* (Polygalaceae) del oeste de México como nuevas para la ciencia. *Polygala mcvaughii* está relacionada con *P. subalata*, pero difiere de esta especie en los racimos más cortos y más anchos, los pedicelos más largos, y el hábito siempre anual; y a *P. conferta*, de la cual difiere en sus semillas más grandes y sus frutos más grandes y normalmente \pm sin estípites. Ha sido recolectada de los 1200–2250 m.s.n.m. en Michoacán, Jalisco, Aguascalientes, y el extremo sur de Zacatecas. *Polygala tellezii* pertenece a un grupo de especies que generalmente presentan un arilo muy pequeño o ausente y los pelos de las semillas cortos; en este grupo, los pelos capitados diminutos son característicos de muchas especies, pero no todas. La especie nueva se asemeja a la especie sudamericana *P. exigua* en algunos aspectos de su morfología, pero es más probable que esté más cercanamente emparentada a la especie simpátrica *P. glochidiata*, de la cual difiere en sus hojas completamente alternas y los pelos no uncinados de las semillas. *Polygala tellezii* se conoce solamente de tres localidades en sabanas de tierras bajas en el centro y sur de Nayarit.

Keywords: Flora of Mexico, Nueva Galicia, *Polygala*, Polygalaceae.

The large, nearly cosmopolitan genus *Polygala* L. has been subdivided into varying numbers of either subgenera or sections (often about ten) of varying circumscriptions by diverse workers (e.g., Chodat, 1893, 1896; Blake, 1916, 1924; Adema, 1966; Paiva, 1998; Bernardi, 2000), and there is as yet no modern consensus on its infrageneric classification. For ease of discussion, in this paper I will follow Blake (1916) and Paiva (1998) in treating the primary subdivisions of the genus as subgenera. Some workers have treated some of these erstwhile infrageneric groups as separate genera (e.g., Paiva, 1998; Rankin Ro-

dríguez, 2003; and many others previously). Based on phylogenetic analyses of morphological (Eriksen, 1993) and plastid DNA (Persson, 2001) evidence, it indeed appears that *Polygala* in the traditional, broad sense is polyphyletic and that some segregation of groups, as well as accretion of others, will be necessary to circumscribe a monophyletic *Polygala*. Nevertheless, the majority of the species of the genus fall within the typical subgenus *Polygala*, characterized generally by, among other traits, the combination of the presence of an apical multilobed or fimbriate crest on the keel-petal and the persistence of all sepals in fruit.

Barring extreme splitting of the genus, it seems likely that these species will remain in, and form the core of, any future incarnations of a recircumscribed monophyletic *Polygala sensu stricto*.

Two new species belonging to this subgenus are here described from western Mexico. In describing and discussing these new species, the following conventions are employed: 1) the wing-sepal and pedicel sizes in fruit (as opposed to flower) are emphasized, as these are the most constant and easily measured; 2) the "apex" of the seed is defined as the apiculate and/or arillate end of the seed, the base being the chalazal end toward which the seed hairs are directed; 3) the "true length" of the raceme is the entire length from apex to the lowest node which bore a flower/fruit, whether already fallen or not, while the "apparent length" refers to the often much shorter region from the apex to the lowest still-present flower or fruit; 4) similarly, the "true length" of the peduncle refers to the distance from the uppermost leaf (fallen or not) to the lowest flower-bearing node (from which the flower has fallen or not), while "apparent length" of the peduncle is the often much greater distance from the uppermost still-present leaf to the lowest still-present flower or fruit.

Polygala mcvaughii T. Wendt, sp. nov. (Figs. 1, 3)

TYPE. MEXICO. MICHOACÁN: [Mpio. Yurécuaro]. Ladera NW del Cerro Grande de Cujuarato ["Cujuarato"], cerca de La Piedad, encinar bajo, 2250 m, 16 Nov 1971, Rzedowski & McVaugh 560 (HOLOTYPE: ENCB!; ISOTYPES: MEXU!, MICH!)

A *Polygala conferta* A. W. Benn. fructibus plus minusve exstipitatis grandioribus 2.0–3.0 mm longis 1.8–2.5 mm latis et seminibus longioribus 1.3–2.0 mm longis, a *P. subalata* S. Watson racemis brevioribus 6–17(–20) mm longis latioribus 6–8 mm latis et pedicellis longioribus (0.8–)1.0–1.5 mm longis, recedit.

Erect glabrous ANNUALS from little-branched small taproot, 7–30 cm tall, often with 1–few ascending straight branches from the ca. middle part of the plant, in grazed plants frequently also branching at or near the base; STEMS very narrowly winged or ridged from leaf base insertions downward, the wings entire or minutely scarious-scarious, to ca. 0.2 mm wide just below leaf bases. LEAVES whorled in the lower $\frac{1}{3}$ – $\frac{2}{3}$ of plant or sometimes all leaves whorled, in grazed (basally branched) plants sometimes whorled only at extreme base or even with no whorls obvious, mostly 4–5 leaves/whorl, whorls scattered (internodes typically 1.5–6 cm long, much longer than the leaves) except near base (where internodes often less than 1 cm long), the upper (0)1–9 leaves alternate; the bases of lateral branches typically with two linear SCALE-LIKE LEAVES 1–4 mm long, these appearing between the normal leaves of the subtending whorl; typical LOWER LEAVES (ca. lowest two whorls) elliptic or obovate to suborbicular, 4–13 mm long by 1.7–5.5 mm wide, 1.5–3.0 times as long as wide, distally rounded to acute and usually with a minute terminal mucron, basally more or less abruptly attenuate; typical MID LEAVES the longest of the plant, relatively narrower than the lower ones, narrowly elliptic, 9–28 mm long, 1.0–4.2 mm wide, 4–10 times as long as wide, distally acuminate, mucronate, basally acuminate to attenuate; typical UPPER LEAVES linear, 4–20 mm long; well developed plants with lower, mid, and upper leaves as described, but depauperate or grazed (basally branched) plants often with mostly linear leaves except at extreme base; LEAF MARGINS entire or microscopically and irregularly toothed; mostly round to elongate pellucid GLANDS 0.1–0.4 mm long embedded in leaf tissue (visible abaxially but sometimes not obvious in dried material unless rehydrated); PETIOLE essentially lacking but the attenuate leaf-base often approximating a petiole 0.5–1.5 mm long in the lower leaves. RACEMES terminal, true length 6–25 mm, apparent length 6–17

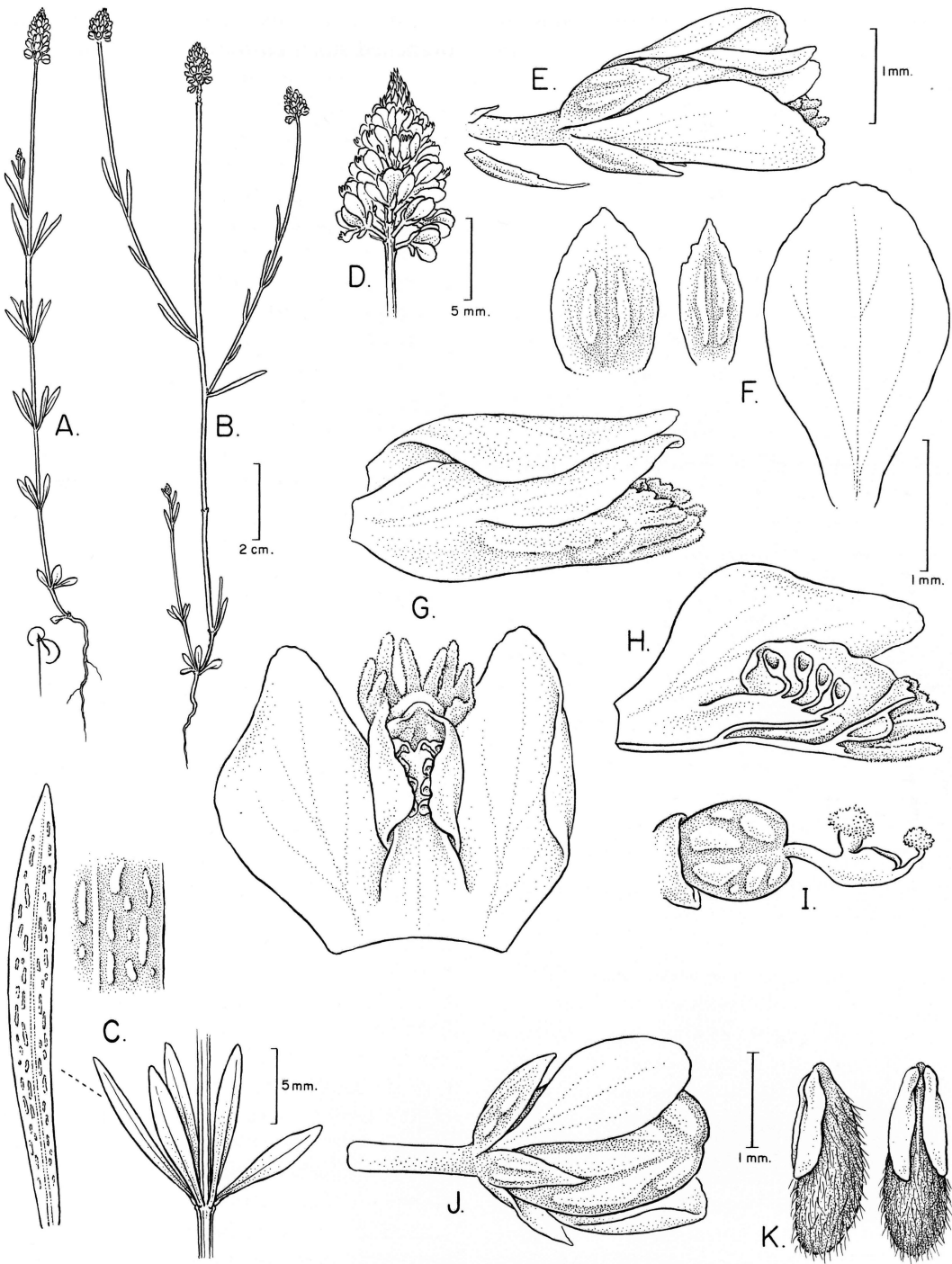


FIG. 1. *Polygala mcvaughii*. A. Unbranched plant. B. Branched, perhaps grazed plant. C. Whorl of leaves with details of leaf glands in abaxial views. D. Raceme. E. Flower, with detached bract below. F. Upper sepal (left), lower sepal (middle), and wing sepal (right). G. Corolla and adnate androecium, side view (above) and adaxial, open-out view (below). H. Corolla and adnate androecium, longitudinally halved for interior view. I. Gynoecium. J. Fruit with persistent sepals. K. Seeds, lateral (left) and adaxial (right) views. A and C from *McVaugh 13262* (MICH); others from the MICH isotype. Drawn by Bobbi Angell.

(–20) mm, 6–8 mm wide, densely flowered (the rachis hidden), conical to cylindrical, distinctly acute or apiculate to rounded at tip; true PEDUNCLE length 1–10 cm long, apparent length essentially the same; BRACTS lanceolate with a \pm setaceous tip, ca. 1 mm long, deciduous before or with fruit; BRACTEOLAS lanceolate, ca. 0.3–0.4 mm; PEDICELS in fruit (0.8–)1.0–1.5 mm long, patent to somewhat ascending, generally somewhat shorter and more ascending at anthesis. CALYX persistent in fruit; OUTER SEPALS (i.e., upper and two lowers) yellowish-green with a medium to broad white margin, often distally rose-tinged, much of the yellow-green portion occupied by a pair of immersed longitudinal opaque glands (one on each side of the midvein), the margins entire to slightly erose distally; UPPER SEPAL ovate to elliptic, often broadly so, concave, 0.9–1.6 mm long, 0.5–1.1 mm wide, with 1 main vein and 2 short laterals from base, the apex acute to rounded, the base rounded; LOWER SEPALS free, narrowly ovate to elliptic, 0.7–1.3 mm long, 0.3–0.7 mm wide, 1-veined, the apex acute to obtuse; WING SEPALS elliptic to obovate from a short-clawed to cuneate base, in fruit 2.0–3.0 mm long, 1.0–1.7 mm wide, 1.4–2.0 times as long as wide, slightly shorter to slightly longer than fruit, white to rose-veined or -tinged, with or without an immersed yellowish to greenish linear opaque gland apparent along each side of the midvein distally, with a central vein and a pair of weaker laterals almost as long from near the base, the apex narrowly to broadly rounded. COROLLA caducous in fruit; KEEL-PETAL 1.5–2.1 mm long excluding the crest, the adaxial margins of the saccate portion truncate at base, the tissue of the saccate portion occupied by 3–5 large opaque glands, the apical crest 0.5–0.7 mm long with each half composed of 2–4 finger-like lobes including a shorter, thicker lateral one; UPPER PETALS 2.0–2.5 mm long, 0.8–1.4 mm wide, broadly obliquely rhombic, distally slightly upturned to a rounded to narrowly rounded tip, free from staminal

column and keel for 1.0–1.8 mm, with 1 major vein at base that quickly gives rise to several major laterals. STAMENS 8, the filaments free for 0.2–0.4 mm, the anthers ca. 0.3–0.4 mm long. CAPSULE elliptic to slightly ovate in outline (often obliquely so), 1.8–2.5 mm long (including small stipe when present), 1.3–1.8 mm wide, without pellucid septal glands but the fruit walls often filled with white opaque glands (these apparent upon rehydration but typically not in dried material), the margin completely unwinged, the apex broadly to narrowly rounded to a \pm notched apex, the base subtruncate to an obscure to infrequently well-formed (0.5 mm) flattened stipe, the upper locule usually distally displaced very slightly relative to the lower. SEEDS alike in both locules, 1.3–2.0 mm long excluding hairs; SEED-BODY ellipsoid-ovoid, 1.2–1.8 mm long excluding apiculum, moderately pubescent with straight to laxly curved hairs 0.1–0.2(–0.3) mm long, the base rounded, the apex narrowly obliquely rounded to an apiculum ca. 0.1–0.2 mm long; SEED-COAT very obscurely pitted; ARIL 0.7–1.7 mm long, 1/3–1 times as long as the seed body, with two oblong or elliptic descending lobes.

PHENOLOGY. Collected with flower and fruit from August through January.

DISTRIBUTION AND HABITAT. Northwestern Michoacán, eastern and northern Jalisco, extreme southern Zacatecas, and western Aguascalientes, growing in tropical deciduous forest, grassland, low oak forest, pine forest, pastures and roadsides at 1200–2250 m. Label data indicate that it is often locally abundant. Based on the known distribution (Fig. 3), it seems likely that it also occurs in western Guanajuato.

CONSERVATION ASSESSMENT. *Polygala mcvaughii* appears to be widespread and somewhat common at intermediate elevations within western Mexico, including in disturbed sites such as roadsides, and thus does not appear to merit special conservation concern at present.

ADDITIONAL SPECIMENS EXAMINED. **MEXICO.** **AGUASCALIENTES.** [Mpio. Calvillo]: Road to Calvillo, 19–20 mi W of Aguascalientes, 2100 m, 3 Nov 1959, R. McVaugh & W. N. Koelz 80 (MICH). **JALISCO.** [Mpio. Arandas]: 11–12 mi W of Arandas, 2000 m, 29 Sep 1952, R. McVaugh 13262 (MICH). [Mpio. Chapala]: Near Chapala, 5 Oct 1903, J. N. Rose & J. H. Painter 7622 (US). [Mpio. Mezquitic]: Ca. 3 km SE of Mezquitic, 1700 m, 4 Nov 1963, C. Feddema 2431 (MICH). [Mpio. Teocaltiche]: Presa La Calera, 11 km al N de Teocaltiche, 1700 m, 7 Sep 1973, L. M. Villarreal 5154 (IBUG) [same coll. number applied to two separate collections, see below]; 12 mi SW of Teocaltiche, road to Yahualica, 1850 m, 6 Nov 1959, R. McVaugh & W. N. Koelz 275 (MICH). **Mpio. Villa Guerrero:** Ca. 5 km E of Villa Guerrero, 1800 m, 17 Jan 1975, R. McVaugh 25805 (MICH). **Mpio. Zapopan:** Puente Hidalgo, crossing of Río Grande de Santiago on the Guadalajara-Zacatecas highway, 20°50'N, 103°21'W, 1200 m, 15 Aug 1973, M. C. Johnston, T. L. Wendt & F. Chiang 12249A (TEX). **MICHOACÁN.** **Mpio. Erongaricuar:** Cerro Zira, parte baja de la ladera S, 2160 m, 2 Nov 1985, J. Espinosa Garduño 1946 (ENCB, mixed with *P. conferta*). [Mpio. Morelia]: Morelia, "Rte. de México," 1900 m, 13 Sep 1910, Arsène 6889 (US). [Mpio. Peribán]: NW foothills of Cerro Tancitaro, steep mountainsides, 6–7 km S of Peribán de Ramos, 1600 m, 29 Nov 1970, R. McVaugh 24847 (MICH). [Mpio. Tingambato]: 33 km W of Pátzcuaro on road to Uruapan, 2130 m, 26 Nov 1983, D. E. Breedlove & F. Almeda 60528 (CAS, mixed with *P. subalata*). [Mpio. Jiménez]: 7 km al E de Villa Juárez, sobre el camino a Copándaro, 2050 m, 5 Oct 1986, Rzedowski 40749 (ENCB, MEXU). **ZACATECAS.** **Mpio. Apozol:** 15 km NE of Juchipila on the Guadalajara-Zacatecas highway, 21°30'N, 103°07'W, 1500 m, 15 Aug 1973, M. C. Johnston, F. Chiang & T. L. Wendt 12239 (TEX). [Mpio. Nochistlán de Mejía]: 25 km al W de Teocaltiche, sobre la carretera a Nochistlán, 6 Sep 1973, L. M. Villarreal 5154 (ENCB) [same number applied to two separate collections, see above; on label this locality said to be in Jalisco but data given indicate nearby Zacatecas].

Polygala mcvaughii is related to several other species that occur in western Mexico, including *P. subalata* S. Watson, *P. aparinoides* Hook. & Arn., and *P. conferta* A. W. Benn. These and/or related species have been placed by Blake (1916) and Marques Mendes (1988) in series *Galioideae* Chodat and are characterized as New World annuals or perennials with usually at least the lower leaves whorled, narrowly winged or ridged stems, leaves with immersed glands,

usually dense inflorescences, wing-sepals about the length of the keel-petal, seeds with arils and relatively short hairs, and similar style structure (Fig. 1-I). In Blake's 1916 key, *P. mcvaughii* will key with least difficulty to *P. subalata* or *P. conferta* (or to two Caribbean species that are not close to the new species), and I find no other species to which *P. mcvaughii* seems more closely related. Unlike *P. mcvaughii*, *P. subalata* is a perennial, typically with numerous branches from the base; however, it apparently often flowers the first year and at that time cannot be distinguished from *P. mcvaughii* by habit. However, the inflorescences of the two species are also quite different. Those of *P. mcvaughii* are short (apparent length rarely over 17 mm) and relatively thick (6–8 mm), the length/width ratio of mature inflorescences thus only ca. 0.9–2.0(–2.5), and are frequently borne on relatively long peduncles (apparent length typically 3–10 cm). The fruiting pedicels are (0.8–)1.0–1.5 mm long. The mature inflorescences of *P. subalata*, on the other hand, are both absolutely and relatively narrower and often much longer: almost any plant will have some inflorescences over 15 mm long (and up to 45 mm or more), and these will be 4–6(–7) mm thick and (2.8–)3–7 times as long as thick, with the plants typically leafy nearly to the base of the raceme and the pedicels rarely over 0.8 mm long.

The diminutive annual *Polygala conferta* has inflorescences somewhat more like those of *P. mcvaughii* in that they are short and thick, with long peduncles and pedicels. However, they are shorter (apparent length 5–8 mm) and consistently broadly rounded or blunt apically (as opposed to typically conical or rounded but apiculate in *P. mcvaughii*). *Polygala conferta* also differs in its generally smaller parts and different fruit: its capsules are 1.2–2.0 mm long (including a well-developed flattened stipe ca. 0.3–0.5 mm long) by 0.9–1.3 mm wide, with seeds 0.9–1.3 mm long, as opposed to *P. mcvaughii* with usually essentially stipe-

less capsules 2.0–3.0 mm long by 1.8–2.5 mm wide, the seeds 1.3–2.0 mm long.

The epithet honors Dr. Rogers McVaugh, the preeminent scholar of the flora of western Mexico and of the history of its collection and study.

Polygala tellezii T. Wendt, sp. nov. (Figs. 2, 3)

TYPE. MEXICO. NAYARIT: Mpio. Ruiz. 1–3 km W of El Venado along road from Ruiz to Jesús María, savanna, 60 m, 9 Aug 1980, D. E. Breedlove & F. Almeda 45292 (HOLOTYPE: CAS!; ISOTYPE: CHAPA!)

A *Polygala glochidiata* H.B.K. foliis alternis et pilis seminis rectis 0.1–0.2 mm longis, a *P. exigua* A. W. Benn. basi sacci carinae truncata et petalis supernis per plus quam dimidium longitudinis a carina et androecio liberis, recedit.

Delicate erect ANNUALS from fibrous very small root system, 9–47 cm tall, with a few ascending branches distally; STEMS sparsely and obscurely minutely granular-puberulent with capitate hairs ca. 0.03 mm long, at times so sparsely so as to appear glabrous, axis of raceme and leaves occasionally also with very scattered such hairs, plant otherwise glabrous. LEAVES more or less sparse, alternate throughout or with an obscure lowest opposite pair; LOWER LEAVES obovate to usually oblanceolate, 4–9 mm long, 1.0–1.7 mm wide, 2.8–7.5 times as long as wide, the base long-cuneate, the apex acute with or without a mucronulate tip; UPPER LEAVES gradually narrower, linear, 3–10 mm long, the uppermost often reduced and scale-like; round to elongate pellucid GLANDS 0.1–0.4 mm long embedded in distal $\frac{1}{4}$ – $\frac{1}{2}$ of blade or essentially absent; PETIOLE poorly differentiated from the gradually cuneate blade-base. RACEMES terminal (occasionally leaf-opposed), true length 1–20 cm, apparent length 1.0–5.5 cm, sparsely (i.e., rachis apparent except at tip) but many-flowered, elongate, loosely cylindrical to acute or acuminate apex; true PEDUNCLE length 0.3–1.2 cm but apparent length often very long (1–20 cm); BRACTS

lance-ovate to an acuminate tip, 0.5–0.7 mm long, deciduous before anthesis; BRACTLETS lance-linear to lance-ovate, 0.3–0.4 mm long; PEDICELS in fruit 0.3–0.6 mm long, reflexed, similar in length but ascending in flower. CALYX persistent in fruit; OUTER SEPALS (i.e., upper and two lowers) with color and texture like wings except for greenish center/base; UPPER SEPAL broadly elliptic to broadly elliptic-ovate, 0.7–1.2 mm long, 0.5–0.8 mm wide, with 1 main vein and 2 very short to well developed laterals, the apex obtuse, the base rounded to truncate; LOWER SEPALS free, elliptic or narrowly so, 0.4–0.8 mm long, 0.2–0.3 mm wide, markedly to slightly longer than fruit, 1-veined, the apex acute to narrowly rounded; WING-SEPALS obliquely broadly elliptic above long-cuneate base, in fruit 1.6–2.1 mm long, 0.8–1.1 mm wide, 1.9–2.6 times as long as wide, markedly to slightly longer than fruit, white to pinkish-purple, with a central vein and 2 shorter laterals from near the base, the apex broadly rounded. COROLLA caducous in fruit; KEEL-PETAL 0.9–1.4 mm long excluding the crest, the adaxial margins of the saccate portion truncate-auriculate at base, apical crest 0.5–0.6 mm long with each half of 3–6 finger-like lobes including a shorter, thicker lateral one; UPPER PETALS 1.3–1.7 mm long, obliquely rhombic, distally constricted into an upturned oval portion with an irregularly rounded to erose-truncate tip, free from the staminal column and keel for 1.1–1.5 mm, with 1 major vein and a shorter lateral from near the base. STAMENS 8, the filaments free ca. 0.2–0.4 mm, the anthers ca. 0.2–0.3 mm long. CAPSULE oval to ovate-oval in outline, 1.4–1.7 mm long, 0.8–1.0 mm wide, without pellucid septal glands, the margin unwinged, the apex rounded (usually obliquely so because upper locule slightly longer than lower), the base acute. SEEDS alike in both locules, 0.8–1.2 mm long excluding hairs; SEED-BODY ellipsoid to slightly ovoid, 0.8–1.1 mm long excluding apiculum, sparsely to moderately pubescent with straight to laxly curved hairs

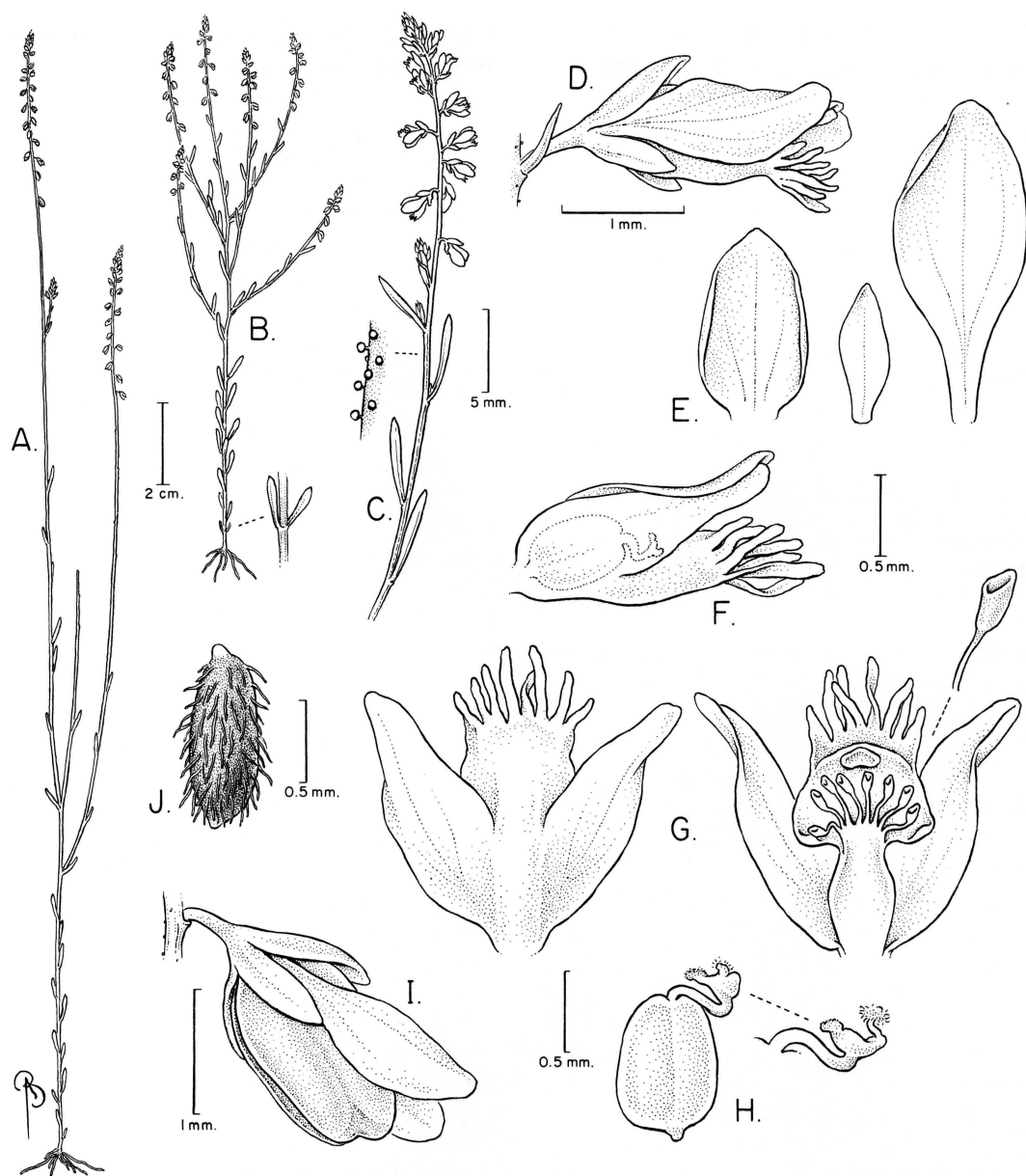


FIG. 2. *Polygala tellezii*. A. Tall nearly unbranched plant. B. Short branched plant, with enlargement of lowermost pair of leaves that may be opposite. C. Inflorescence and upper portion of branch, with enlargement showing capitate hairs. D. Flower. E. Upper sepal (left), lower sepal (middle), and wing sepal (right). F. Corolla and adnate androecium, side view, surrounding gynoecium (stippled). G. Corolla and adnate androecium, abaxial view (left) and adaxial view (right), with enlargement of anther. H. Gynoecium, with enlargement of style, stigma, and stylar appendage. I. Fruit with persistent sepals. J. Seed. A from McVaugh 19281 (MICH); others from the holotype. Drawn by Bobbi Angell.

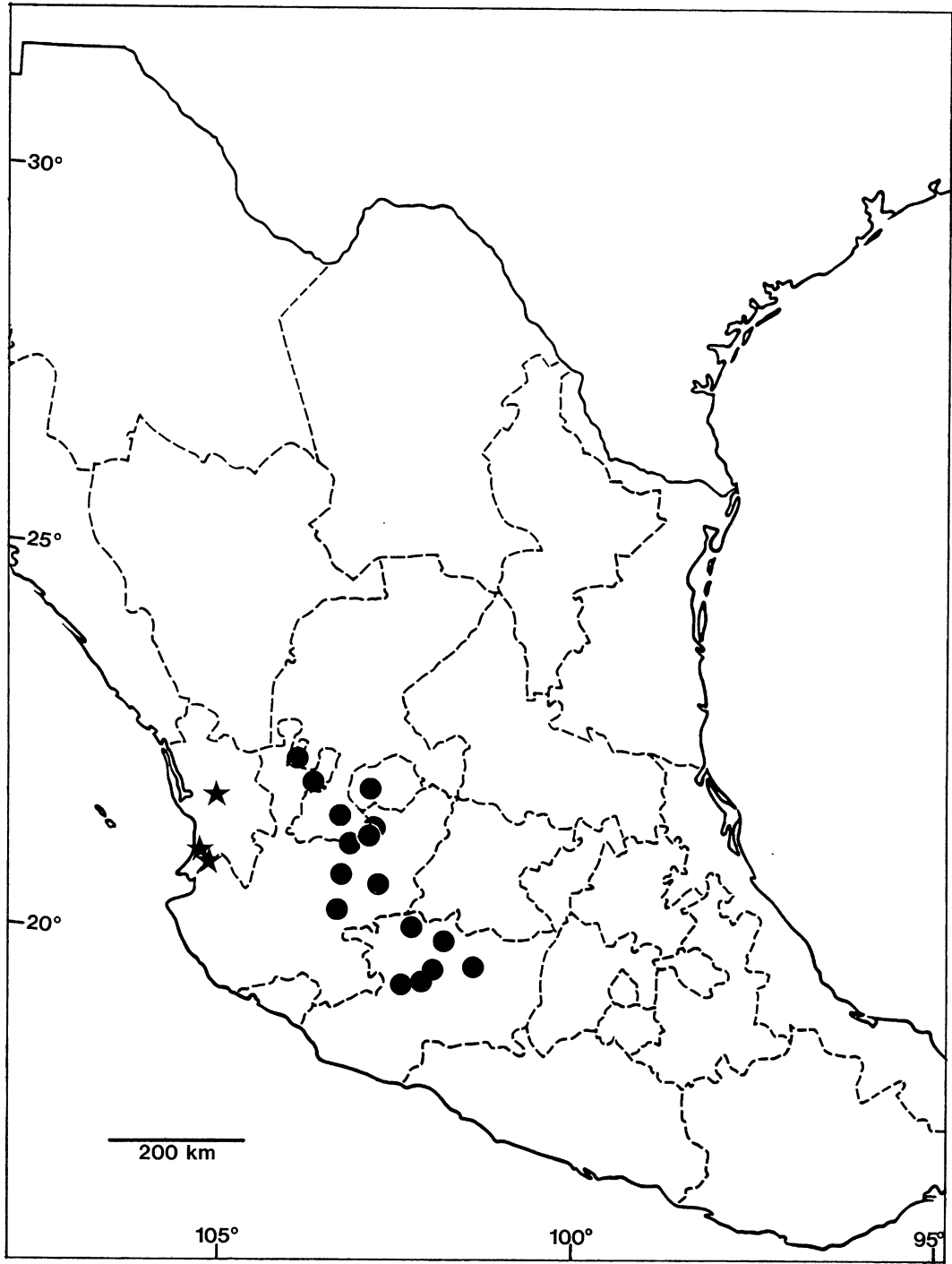


FIG. 3. Known distributions of *Polygala mcvaughii* (circles) and *P. tellezii* (stars) in Mexico.

0.1–0.2 mm long, the base rounded, the apex rounded to an apiculum less than 0.1 mm long; SEED-COAT very finely pitted; ARIL obsolete.

PHENOLOGY. Collected with flower and fruit from August through November.

DISTRIBUTION AND HABITAT. A little-collected species of central and southern Nayarit, where it grows in lowland savannas at 60–100 m elevation. Its local abundance, according to label data, varies from “occasional” to “abundant.” In the municipio of Compostela it has been collected within a few kilometers of the border with Jalisco and thus is to be expected in that state.

CONSERVATION ASSESSMENT. Too little is known of this species to be able to reasonably apply the IUCN (The World Conservation Union) Red List guidelines (IUCN, 2001) for determining a conservation status for *Polygala tellezii*. Relevant observations, however, include the following: 1) the species is known from only three collections, with the farthest being ca. 120 km apart; 2) it is an annual, and as such population sizes can vary dramatically from year to year; 3) it can clearly be locally abundant at least in some years, as indicated by label data; 4) it is an inconspicuous plant in a somewhat poorly collected area, in a habitat type (savanna) which typically has several similar-looking species of *Polygala*, and for all these reasons is probably under-collected. It seems likely, therefore, that the species is not immediately vulnerable to extinction, but that, on the other hand, its persistence is closely tied to the persistence of the savannas of Nayarit.

ADDITIONAL SPECIMENS EXAMINED. MEXICO. NAYARIT. [Mpio. Compostela]: 1 km N of El Cuatante, ca. 40 km (airline) NNE of Puerto Vallarta, Jalisco, 100 m, 18 Nov 1963, C. Feddema 2639 (MICH); 2 mi SE of Las Varas, 60–90 m, 21 Sep 1960, R. McVaugh 19281 (MICH).

Species characterized by seeds with seed hairs present but with no aril, as in *Polygala tellezii*, are relatively few within *Polygala*, a genus in which the vast majority of species

have both a well-developed aril and seed hairs (and a small number of species have neither). Species that share these seed characteristics with *P. tellezii* and that are generally similar otherwise (i.e., annual members of subgenus *Polygala* with similar style morphology (Fig. 2-H), corollas caducous in fruit, seed hairs rather short, and generally elongate and lax inflorescences) have generally been considered to form part of a group of related species. The species with this morphology of Mexico, Central America, and the Caribbean (Blake, 1916) and of Brazil (Mendes Marques, 1988), along with other similar species with very reduced or, rarely, moderately well developed arils, have been placed in the related series *Tenuis* Chodat (with straight seed hairs) and *Glochidiatae* Chodat (with uncinat seed hairs). The species of these series, along with similar African species (see Paiva, 1998), seem to form a natural group of perhaps three dozen species that includes the now nearly pantropical weed *P. paniculata* L. (in which an aril is present), as well as such widespread Neotropical species as *P. glochidiata* H.B.K. and *P. leptocaulis* Torr. & A. Gray. The minute capitate hairs typical of *P. tellezii* are widespread but not universal in this group, while this character is quite uncommon elsewhere in the genus. Many of the species are typical of savannas and other tropical grasslands.

Among the New World members of this group, *Polygala tellezii* shares the combination of alternate leaves throughout, sparse granular vestiture of minute erect capitate hairs, glandless sepals and fruits, short non-uncinate seed-hairs, and general flower dimensions only with some forms of the widespread South American species *P. exigua* A. W. Benn. (including *P. exigua* var. *fendleri* (Chodat) Marques) as circumscribed by Mendes Marques (1988). *Polygala tellezii* consistently differs from that species, however, in details of the floral structure: in *P. exigua* the adaxial margin of saccate portion of keel-petal is acute at the base (versus truncate-auriculate in *P. telle-*

zii) and the upper petals are fused for more than half their length to the keel and staminal column (versus mostly free). In addition, it is only in rare forms of *Polygala exigua* that non-uncinate hairs (like those of *P. tellezii*) are found. In general flower structure, the new species is closer to *P. glochidiata*, a widespread species that, like *P. tellezii*, occurs in western Mexico. *Polygala glochidiata* is, however, easily distinguished by its uniformly uncinat seed hairs and lower leaves in whorls (the latter character at times not obvious in grazed specimens).

At the regional level, *Polygala tellezii* is distinguished from all previously described *Polygala* species known from north of Panama by the combination of seeds with straight (i.e., non-uncinate) short (0.1–0.2 mm) hairs but no aril, with the following exception. *Polygala leptocaulis*, a widespread Neotropical annual of the general habit of *P. tellezii*, is generally described and keyed as having a minute bilobed aril (e.g., Blake, 1924; Mendes Marques, 1988). However, in western Mexico (and at least sporadically elsewhere), the seeds of this species lack even this tiny aril, and therefore could be confused with *P. tellezii*. However, *P. leptocaulis* may be distinguished from *P. tellezii* by its complete lack of pubescence (although it must be noted that the capitateglandular vestiture of *P. tellezii* can be extremely sparse), and by its fruit, which is characterized by glands in the capsule wall near the septum, especially distally (versus lacking in *P. tellezii*), and by its unique post-dehiscence morphology, in which the free locule wall edges roll back strongly and tightly to form a thickened, cartilaginous-appearing margin. Indeed, *P. tellezii* seems more closely related to other species, as discussed above. In western Mexico, *P. leptocaulis* occurs only above 900 m elevation, while *P. tellezii* is restricted to lowland savannas.

The epithet honors Dr. Oswaldo Téllez Valdés, presently of the Facultad de Estudios Superiores Iztacala (herbarium IZTA) of the Universidad Nacional Autónoma de

México (U.N.A.M.). His publications (e.g., Téllez, 1995; Téllez et al., 1995) and extensive collections from Nayarit have substantially increased our floristic knowledge of that state.

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