



A new species of *Dalea* (Fabaceae, Faboideae) from Jalisco, México

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In this paper we describe and illustrate *Dalea jaliscana* as a new species from Jalisco, Mexico, morphologically related to *Dalea sericea*.

Key words: Amorpheae, Novo Galicia, Sierra Madre Occidental

Introduction

Dalea is a genus comprising 172 species (Estrada *et al.* 2011) distributed from Canada to Argentina and Chile, most abundant and diverse in Mexico, with a secondary center focus of speciation along the Andes of South America (Colombia, Argentina and Chile) and in the Caribbean Islands (Barneby 1977). The species of *Dalea* are distributed in deserts, grasslands, thornscrub, tropical dry forest, and tropical montane forest areas. Its greatest richness occurs in the oak-pine forest in Mexico and Central America.

According to the cohesion or separation of the keel petals (imbricately adherent or valvately coherent), inflorescence type (loosely or densely racemose), and leaf type (pinnate or trifoliolate), five subgenera are recognized (Barneby, 1977). This new species is included into the subgenus *Parosela*, section *Parosela*, and series *Sericeae* (keel petals valvately coherent, densely racemose inflorescences, and pinnate leaves).

Materials and methods

Based on morphological characteristics of dry material stored in the California Academy of Sciences (CAS) herbarium (San Francisco, California) collections, a new species of *Dalea* with blue flowers, pinnate leaves, and lanceolate-obovate to oblong-obovate leaflets was found. To date the main contribution to the taxonomy of this genus in western Mexico is McVaugh's (1989) *Flora Novo-Galiciana* (Leguminosae) treatment. Material was examined by using Olympus SZ-11 Stereo Microscope with 110X magnifications.

Taxonomy

Dalea jaliscana A. E. Estrada & Villarreal, *sp. nov.* (Fig. 1 A–L)

Dalea jaliscana is morphologically similar to *Dalea sericea* but differs in pair number, size, shape and pubescence of the leaflets; stipule size; intra-petiolar gland shape; size and diameter of the spikes without flowers; calyx size; flower color and size of the petals.

Type:—MEXICO. Jalisco (Municipality of Atenguillo): 12 km NW of Los Volcanes, grassy slopes with *Pinus* and *Quercus*, 20°24'00" N, 104°36'23.08" W, 1900 m, 30 October 1973, D. E. Breedlove 35838 (holotype CAS).

Plant perennial, herbaceous, up to 88 cm tall. **Stems** branched from the base, ascending or the base horizontal and suddenly curved up, green or purple, striate with yellow bands, glabrous with tiny sparse, black, circular dots (smaller than glands of the leaflets), glabrate or sparse-pilose in the middle vein adaxially, the trichomes 0.8–1.4 mm long; **stipules** 0.9–1.3 mm long, lanceolate to triangular-lanceolate, reddish, with a series of minute reddish, cylindrical ca. 0.1 mm glands at base of the adaxial side; intra-petiolar glands 2, circular, impressed; post-petiolar glands 0–2. **Leaves** imparipinnate, 1.0–2.9 cm long, petiole 0.8–4.5 mm long, channeled in adaxial side, glabrous in upper leaves or ciliate-pilose in basal leaves with few, straight, erect to sub-adpressed, fine, white, spiraled twisted, denser in the abaxial side, especially in the midvein, 0.6–1.0 mm long, sparse trichomes; **leaflets** 4–9 pairs, terminal leaflet petiolulated, 3.6–7.0 mm long, 1.0–2.3 mm wide, lanceolate-obovate to oblong-obovate, flat or loosely folded, glabrate or sparse-ciliate adaxially, bicolored, lighter abaxially, with sparse, tiny circular glands abaxially. **Inflorescences** terminal, 2.2–4.7 cm long, the spikes oblong-cylindrical, dense, 0.8–1.2 cm

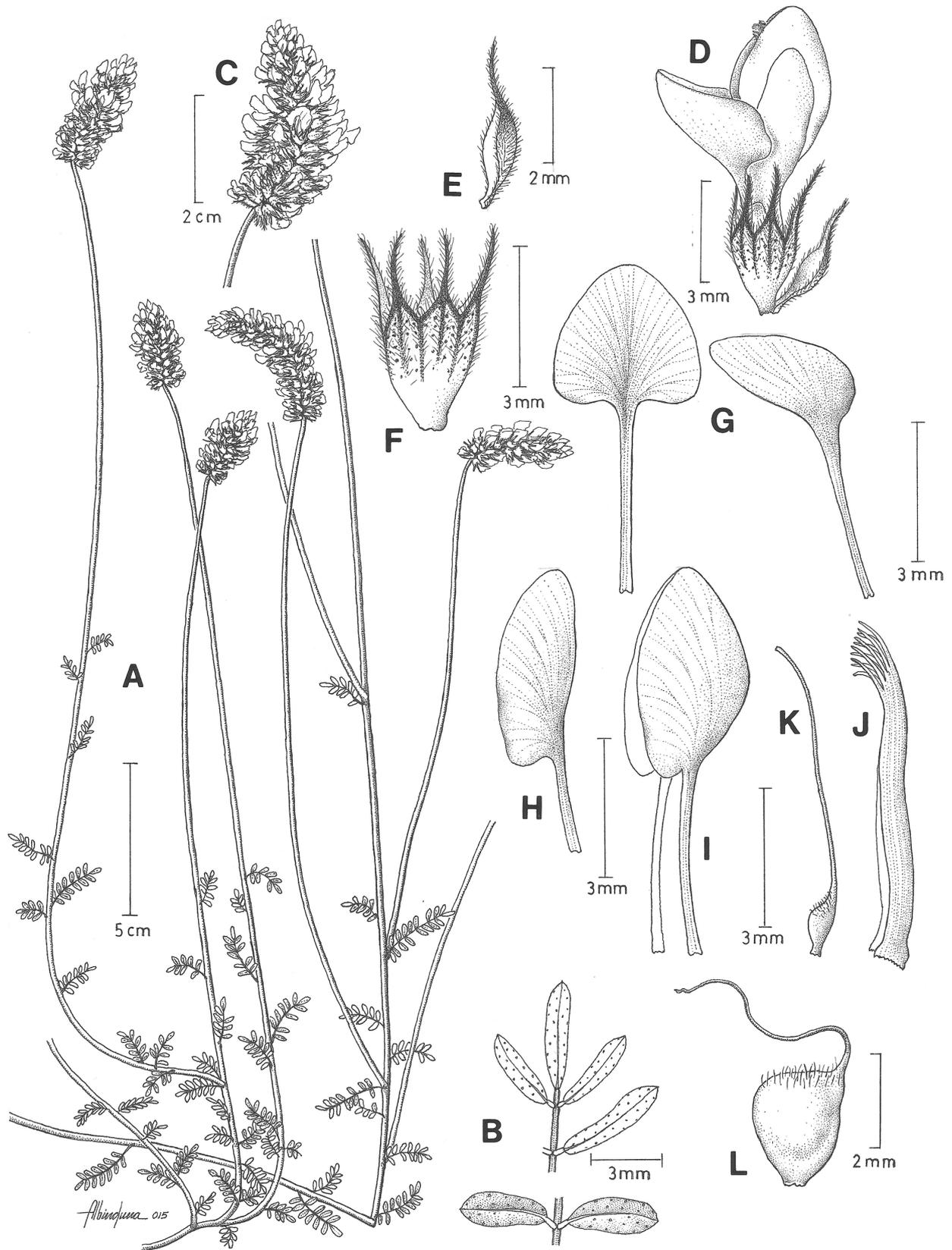


FIGURE 1. A. Plant, B. Leaflets (up, adaxial view; down, abaxial view). C. Inflorescence. D. Flower (calyx and petals). E. Bract. F. Calyx. G. Banner (front and lateral view). H. Wing. I. Keel. J. Stamens. K. Ovary and style. L. Fruit.

diameter, rachis evident or hidden by flowers, densely pilose, trichomes straight to slightly reflexed, white, 0.3–0.5 mm long. Peduncles elongate, erect, 10.5–22.5 cm long, lateral and terminal, and continuous with the main stem-axis, glabrate, brown to purple, striate. Bracts soon deciduous, 3.0–3.9 mm long, ovate, acuminate, cuneate at base, abruptly narrow at apex, dark in the distal half, white in the proximal half, densely to sparsely ciliate abaxially, glabrous internally, membranous, with few circular, honey colored, circular oil glands. **Flowers** 6.5–8.0 mm long, sessile. Sepals united, calyx campanulate, 4–5 x 2–2.4 mm, the tube 2.0–2.5 mm long, its orifice symmetric or slightly oblique, pilose, the trichomes spread, denser in the upper half and between teeth or edges of the teeth, ribs evident, green in the upper half including the teeth, white or yellow in the bottom half, intercostal spaces with 1–13 irregular, spread circular, honey colored or almost transparent, tiny circular, rarely cylindrical glands; the teeth 1.2–3.0 mm long, triangular-aristate, equal or unequal, and the dorsal one longest, 2.5–3.0 mm long. Petals blue, turning purple when dry, perched well below middle; the banner 6.5–7.8 x 3.1–3.8 mm, deltate, obtuse or slightly cordate in the base, the claw 4.1–4.8 mm long, the blade 2.5–3 mm long, dyed white in the center of the blade and sprinkled with tiny circular glands, or the glands absent; the wings 6–6.3 x 1.5–2 mm, oblong to obliquely oblong, apex rounded, the claw 1.9–2.1 mm long, the blade 4.1–4.2 mm long, with 1 or few apical glands or the glands absent; the keel 8.3–9.0 x 1.7–2.2 mm, its petals valvately coherent, obovate to wide-obovate, straight or slightly incurved, the claw 3.8–4.0 mm long, the blade 4.5–5 mm long. Stamens 10-merous, 6.3–7.5 mm long, the longer filament free for 2–2.5 mm long, the connective gland tipped, the anthers 0.5–0.7 mm long. Ovary elliptic, 1.3–1.5 mm long, sparsely pilose or almost glabrous, the style 5.4–5.9 mm long, linear, glabrous. **Pod** in lateral view, obovate to oblique-obovate, 2.4–2.6 x 2 mm, the ventral suture almost straight or slightly concave, valves thin, hyaline at base, pilose in the upper half or upper third, glandular; seeds 1.8–2.0 x 1.1–1.3 mm, light brown, semi opaque.

Distribution and habitat:—So far as we know, *Dalea jaliscana* is known only from the type locality, inhabiting grassy slopes and *Pinus* and *Quercus* forest in mountains, at 1800–1900 m elev., in the municipality of Atenguillo, Jalisco.

Etymology:—The species epithet name refers to the state of Mexico where the specimen was collected (Jalisco).

Additional specimens examined (paratypes):—Herbarium collections at ANSM, CAS, CFNL, MEXU, NY, TEX, and US, were reviewed, and to date, there is no record of another collection of this species.

Discussion:—*Dalea jaliscana* morphologically resembles *D. sericea* Lag. (Barneby 1976: 541), but can be distinguished from that species by the characters noted in the following key:

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| 1 | Perennial herbaceous, 0.25–1.5 m tall; stipules (3–)4–11(–17) mm long; intra-petiolar glands circular; leaflets (2–)4–5(–6) pairs, (4–)5–20(–22) mm long; spikes 2.2–4.7 x (1–)1.3–2.1(–2.9) cm; calyx 4.6–8.7 mm long; petals violet purple, turning blue or bluish-purple when dry; banner 5.7–9 mm long; wings (5.1–)5.5–8.5 mm long; keel 6.5–10 mm long..... | <i>D. sericea</i> |
| 1 | Herbaceous perennial, up to 0.8 m tall; stipules 0.9–1.3 mm long; intra-petiolar glands spiculiform; leaflets 4–9 pairs, 3.6–7 mm long; spikes (1–)1.5–7(–8.5) x 0.8–1.2 cm; calyx 4–5 mm long; petals blue, turning purple when dry; banner 6.5–7.8 mm long; wings 6–6.3 mm long; keel 8.3–9 mm long..... | <i>D. jaliscana</i> |

Dalea sericea occurs in grama grassland and oak-pine forest from 1400–2600 m elevation. It is distributed from West-central Mexico to Honduras, and it is sympatric in Jalisco with *D. jaliscana*.

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References

- Barneby, R.C. (1977) Daleae Imagines. *Memoirs of the New York Botanical Garden* 27: 1–892.
- Estrada, A.E., Villarreal, J.A. & López, L. (2011) A new species of *Dalea* ser. Versicolores (Leguminosae: Amorpheae) from Durango, Mexico. *Brittonia* 63 (4): 465–468.
<http://dx.doi.org/10.1007/s12228-011-9198-9>
- McVaugh, R. (1987) Leguminosae. In: *Flora Novo-Galiciana*. Vol. 5. The University of Michigan Press. Ann Arbor, Mich, pp. 399–448.