

## NEW AND RECONSIDERED MEXICAN ACANTHACEAE. VII

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## ABSTRACT

*Dyschoriste novogaliciana* is described and illustrated. It is known from four states in western Mexico, and has been collected numerous times in the Nueva Galicia region. A key to all species of *Dyschoriste* in the Nueva Galicia region of west-central Mexico is provided. *Ruellia leucantha* var. *postinsularis* is elevated to the rank of subspecies. It differs from *R. leucantha* subsp. *leucantha* from Baja California Sur by minor morphological features (shorter trichomes and capsules) that have a geographic basis. The name *Ruellia candida* is treated as a synonym of *Ruellia leucantha* subsp. *postinsularis*.

Key words: Acanthaceae, *Dyschoriste*, *Ruellia*, Mexico.

(tricomas y cápsulas más cortas) que tienen una base geográfica. Se trata el nombre *Ruellia candida* como sinónimo de *R. leucantha* subsp. *postinsularis*.

Palabras clave: Acanthaceae, *Dyschoriste*, *Ruellia*, México.

Ongoing studies of Acanthaceae for various floristic projects in Mexico continue to reveal undescribed species and the necessity for taxonomic and nomenclatural renovations. Here, a new species of *Dyschoriste* is described from western Mexico and *Ruellia leucantha* var. *postinsularis* from Sinaloa is treated as a subspecies of *R. leucantha*.

*Dyschoriste novogaliciana* T. F. Daniel, sp. nov. (Fig. 1).

## RESUMEN

Se describe e ilustra a *Dyschoriste novogaliciana*. Esta especie es conocida de cuatro estados en el occidente de México y se ha colectado muchas veces en la región de Nueva Galicia. Se presenta una clave para todas las especies de *Dyschoriste* en la región de Nueva Galicia de la parte oeste-central de México. Se trata a *Ruellia leucantha* var. *postinsularis* como una subespecie. Esta subespecie es diferente de *R. leucantha* subsp. *leucantha* de Baja California Sur en características menores

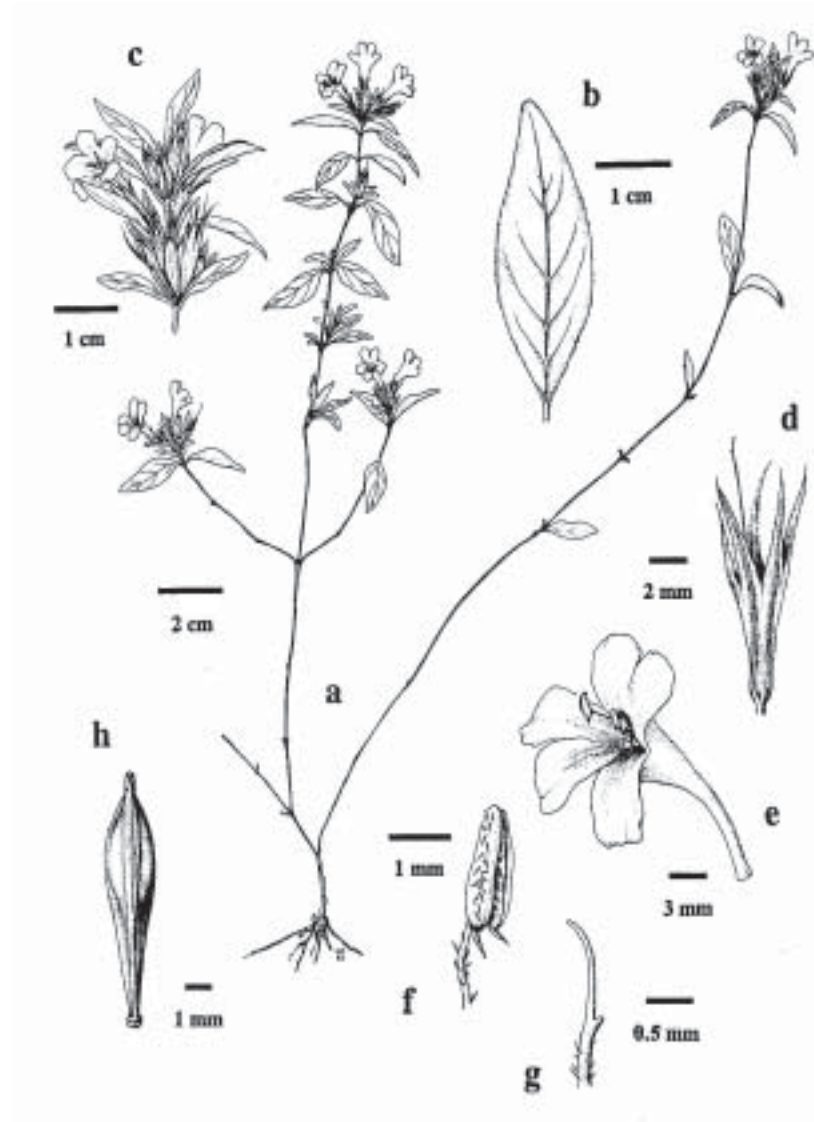
Herbae perennes plerumque decumbentes usque ad 5 dm longae. Folia sessilia vel petiolata petiolo usque ad 4 mm longa, lanceolatae vel lanceolato-ellipticae, 15-60 mm longa, 4-16 mm lata, 2.5-5.6-plo longiora quam latiora. Dichasia 1-3 (vel plus)-flora in axillis foliorum distalium, sessilia vel brevipedunculata. Bracteolae oblanceolatae vel ellipticae vel lineares-lanceolatae, 3-16 mm longa, 0.5-2.2 mm lata. Calyx (6-) 9-17 mm longus lobis tubo 0.8-1.6-plo longioribus. Corolla purpurea, 13-21 mm longa. Stamina 5-8 mm longa, 0.3-0.5 mm longa. Stylus 10-12 mm longus. Capsula 8-

12 mm longa, glabra. Spindly and mostly decumbent perennial herbs to 5 dm long. Young stems subquadrate to quadrate-bisulcate, bifariously or evenly pubescent with retrorse to retrorse-appressed eglandular trichomes 0.2-0.5 (-0.8) mm long. Leaves sessile to petiolate, petioles to 4 mm long, blades lanceolate to lance-elliptic to elliptic, 15-60 mm long, 4-16 mm wide, 2.5-5.6 times longer than wide, acute to subacuminate at apex, acute to attenuate at base, surfaces and margin pubescent with mostly antrorse eglandular trichomes or glabrate, margin entire to crenulate. Inflorescence of axillary sessile to short-pedunculate dichasia, peduncles to 1.5 mm long; dichasia 1-3 (or more)-flowered, usually clustered at or near shoot apex and appearing subcapitate. Bracteoles usually foliose, oblanceolate to elliptic to linear-lanceolate, 3-16 mm long, 0.5-2.2 mm wide; secondary bracteoles oblanceolate to lanceolate, 3-12 mm long, 0.5-1.5 mm wide. Flowers sessile to subsessile (i.e., borne on pedicels to 1 mm long). Calyx (6-)9-17 mm long, tube 0.4-0.6 times as long as calyx and 0.6-1.2 times as long as lobes, lobes lance-subulate, (3-)5-9 mm long, 0.8-1.6 times as long as tube, abaxially pubescent with flexuose to antrorse to antrorsely appressed eglandular trichomes 0.3-1 mm long. Corolla purplish with white or yellowish markings on lower lip and in throat, 13-21 mm long, externally pubescent with erect to flexuose to retrorse eglandular trichomes 0.2-0.3 mm long, tube funnellform, 11-13 mm long, distally  $\pm$  abruptly expanded into a throat, throat 4.5-7 mm long, limb subregular to bilabiate, 9-16 mm in diameter, upper lip 4.5-7 mm long, lobes 2.5-6 mm long, 2.3-4 mm wide, lower lip 5-8 mm long, lobes 4-7 mm long, 2.5-4.3 mm wide, all lobes apically obtuse to emarginate. Stamens didynamous and fused in pairs proximally, exserted, inserted at base

of throat, longer pair 6.5-8 mm long, shorter pair 5-6.3 mm long, filaments pubescent with eglandular trichomes, thecae 1.5-2.2 mm long (including a pointed basal awn), awns 0.3-0.5 mm long; pollen (Fig. 2) prolate, 3-colporate, intercolpal regions multi-striate with ca. 5-6 pseudocolpi of irregular lengths, exine minutely verrucate. Style exserted, 10-12 mm long, pubescent with upward-pointing eglandular trichomes, stigma unequally 2-lobed, 1 lobe 0.7-1.1 mm long, often recurved, other lobe rudimentary, 0.1-0.2 mm long. Capsule substipitate, 8-12 mm long, glabrous, stipe 2-4 mm long, head 8 mm long. Seeds 4, 3 mm long, 2 mm wide, covered with whitish appressed hygroscopic trichomes.

**TYPE. MEXICO: Nayarit:** along Hwy. 200 S of Tepic, 6.6 mi N of Compostela, 16 March 1982, *T. Daniel 2051* (holotype **CAS!**; isotypes **ASU!**, **ENCB!**, **IBUG!**, **MEXU!**, **MICH!**, **US!**).

**Paratypes. MEXICO: Durango:** Mpio. Tamazula, La Cumbre, 6 km N de Guadalupe de Los Reyes, ca. 24°19' N, 106°30' W, *P. Tenorio L. et al. 8399* (**CAS**). **Jalisco:** ca. 28 mi SSE of Puerto Vallarta, *F. Almeda 2538, 2547* (**CAS**); ca. 35 km E of Cabo Corrientes on road from Puerto Vallarta to El Tuito, *W. Anderson & C. Anderson 6088* (**MICH**); along Hwy. 200 S of Puerto Vallarta, 3.8 mi N of El Tuito, *T. Daniel 2066* (**ASU, CAS**); San Sebastian, Hacienda del Ottotal, Arroyo de Los Hornos, *Y. Mexia 1798* (**CAS, DS, MICH**). **Nayarit:** along Hwy. 200 S of Tepic, 6.7-7.4 mi N of jct. by-pass to Puerto Vallarta in Compostela, *T. Daniel & B. Bartholomew 4779* (**CAS, K, MEXU, MICH, MO**); 10 mi SE of Ahuacatlán on road to Barranca del Oro and Amatlán, *R. McVaugh & W. Koelz 803* (**MICH**); 10 km NE of Francisco I. Madero, camino a Pochotitán, 21°33' N, 104°48' W, *O. Téllez V. & G. Flores F.*



**Fig. 1.** *Dyschoriste novogaliciana*. a, habit (Daniel 2051); b, leaf (Anderson & Anderson 6088); c, inflorescence (Daniel & Bartholomew 4779); d, calyx (Daniel 2066); e, flower with calyx removed (Daniel 2051); f, distal portion of stamen with anther (Daniel & Bartholomew 4779); g, distal portion of style with stigma (Daniel & Bartholomew 4779); h, capsule (Mexia 1798). Drawn by Marni Fylling.

11778 (MEXU).

**Sinaloa:** Sierra Tacuichamona, Capadero, *H. Gentry* 5546 (DS, MICH).

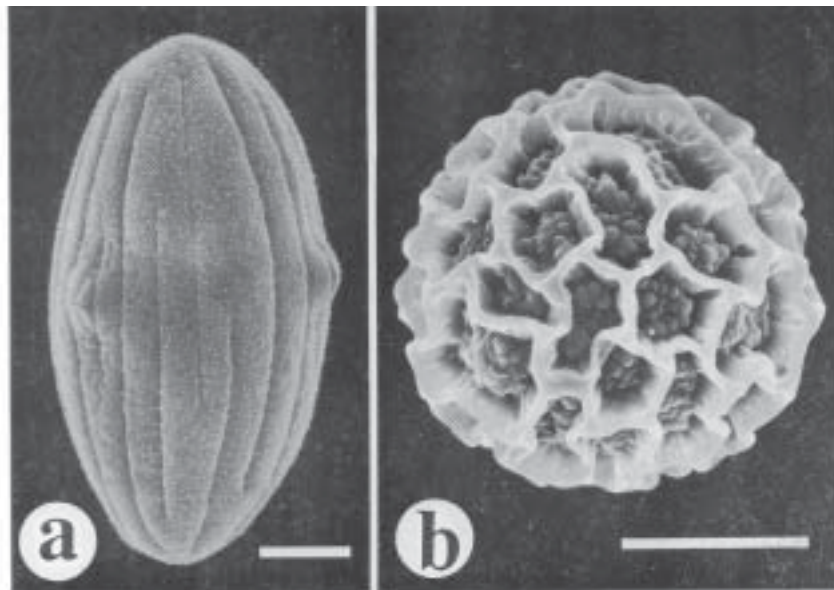
*Phenology.* Flowering: November-March; fruiting: March.

*Distribution and habitat.* Western Mexico (Durango, Jalisco, Nayarit and Sinaloa; Fig. 3). Plants occur in oak woodlands and forests, and in pine-oak forests at elevations from 450 to 1425 meters.

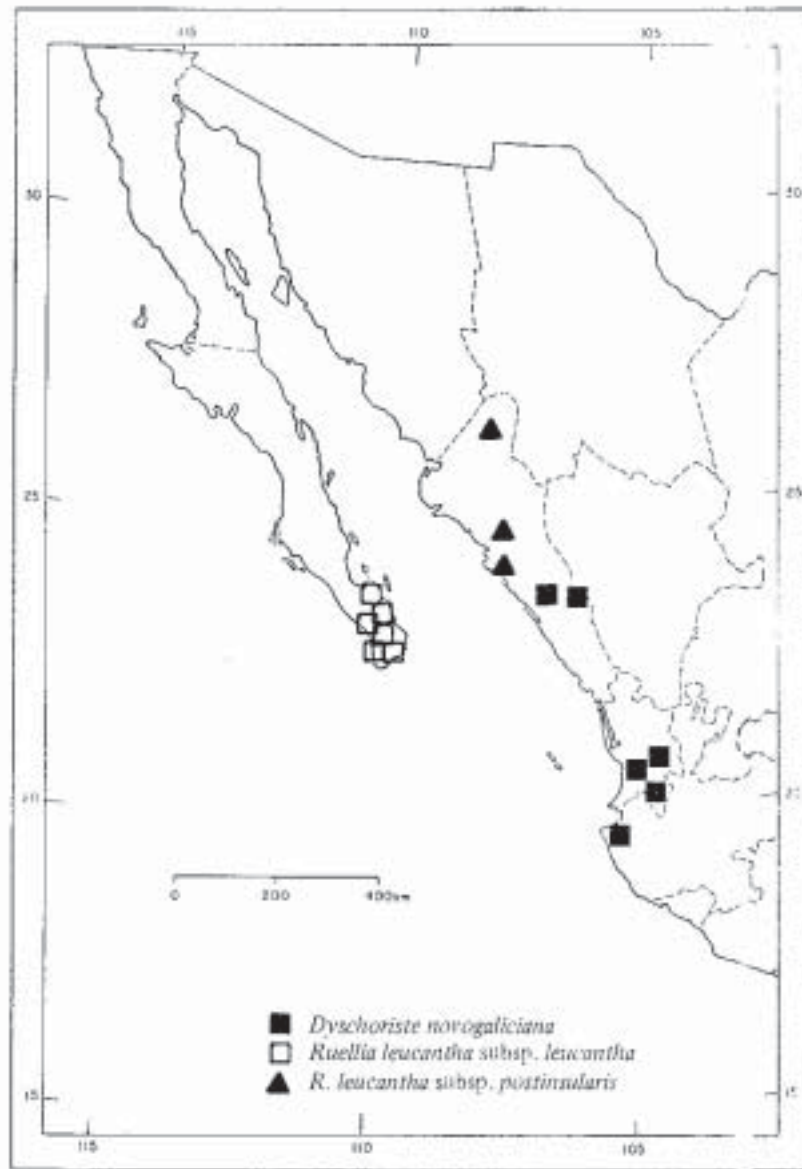
*Dyschoriste* is one of the taxonomically more difficult genera of Mexican Acanthaceae.

Kobuski (1928) recognized 21 species in the genus in México.

Additional species have been described subsequently from the country (Gentry 1948; Daniel 1990) and some species recognized by Kobuski have been treated as conspecific with others (Daniel 1993, 1995). Characters traditionally accorded prominence in distinguishing taxa in the genus include pubescence, leaf form, distribution of flowers, and corolla length. Study of a large series of specimens from western Mexico for the Flora Novogaliciana project revealed the collections here treated as *D. novogaliciana* to be distinct in the genus.



**Fig. 2.** Scanning electron micrographs of pollen. a, *Dyschoriste novogaliciana* (Daniel & Bartholomew 4779), scale = 10  $\mu\text{m}$ ; b, *Ruellia leucantha* subsp. *postinsularis* (Brandege *s.n.*, 10 oct 1904), scale = 30  $\mu\text{m}$ .



**Fig. 3.** Map of northwestern Mexico showing the distribution of *Dyschoriste novogaliciana* and *Ruellia leucantha*.

The species can be distinguished from others occurring in the Nueva Galicia region of western Mexico by the following key:

1. Corolla red, reddish brown, orange-red, or pinkish.
  2. Plants diminutive (up to 1 dm tall); leaves elliptic to obovate, 1.1-4 times longer than wide; corolla scarlet, 34-42 mm long, lobes of upper lip 4.5-6 mm long, 4.5-7 mm wide. *D. macvaughii* T.F. Daniel
  2. Plants robust (up to 1.5 m tall); leaves linear to lance-linear to narrowly elliptic to oblanceolate, (2.3-) 5-15 times longer than wide; corolla reddish brown, orange-red, or pinkish, 25-35 mm long, lobes of upper lip 2-4 mm long, 2.5-3.5 mm wide. . . . .  
. . . . . *D. angustifolia* (Hemsl.) Kuntze
1. Corolla blue or purplish.
  3. Calyx, external surface of lower lip of corolla, and base of style pubescent with glandular trichomes . . . . . *D. hirsutissima* (Nees) Kuntze
  3. Calyx, external surface of lower lip of corolla, and base of style lacking glandular trichomes.
    4. Plants often decumbent; corolla 13-21 mm long (sometimes up to 25 mm long in *D. decumbens*); thecae (including basal appendage) 0.8-2 mm long.
      5. Bracteoles 1.2-3 mm long, secondary bracteoles 1-1.5 mm long; calyx tube 1.3-1.6 times as long as calyx lobes; calyx lobes triangular-lanceolate. *D. saltuensis* Fernald
      5. Bracteoles 3-18 mm long, secondary bracteoles 3-12 mm long; calyx tube 0.4-1.2 times as long as calyx lobes; calyx lobes lance-subulate to subulate-setaceous.
        6. Leaves lanceolate to elliptic; dichasia usually crowded at or near shoot apex and appearing subcapitate; plants occurring in forests below 1500 m, primarily on the Pacific slope. . . . . *D. novogaliciana* T. F. Daniel
        6. Leaves obovate to oblanceolate (to elliptic); dichasia  $\pm$  evenly distributed along stems; plants occurring in grasslands above 1800 m, mostly on the Central Plateau. . . . . *D. decumbens* (A. Gray) Kuntze
    4. Plants erect to diffuse, usually not conspicuously decumbent; corolla 20-36 mm long; thecae (including basal appendage) 2-3 mm long.
      7. Leaves linear, 5.7-17 times longer than wide; thecal appendages 0.1-0.2 mm long . . . . . *D. jaliscensis* Kobuski
      7. Leaves elliptic to obovate to oblanceolate, 2.3-4.1 times longer than wide (or if linear-elliptic and up to 17 times longer than wide, then thecal appendages 0.5 - 0.7 mm long).
        8. Dichasia crowded at or near shoot apex and appearing capitate; young stems conspicuously flattened . . . . . *D. pringlei* Greenm.
        8. Dichasia  $\pm$  evenly distributed along most or much of shoot; young stems subquadrate to quadrate, not flattened . . . . . *D. xylopoda* Kobuski

The genus remains in need of considerable additional study. In the key above, *D. hirsutissima* includes plants with conspicuously glandular herbage and plants with glands restricted to the calyx, corolla, and style. *Dyschoriste xylopoda* includes plants



from Nayarit and adjacent western Jalisco with internodes glabrous or pubescent with flexuose to retrorse trichomes 0.2 to 0.5 mm long, calyces glabrous or with sparse trichomes up to 1 mm long, and thecal spurs 0.5 to 0.7 mm long as well as plants from Aguascalientes through central Jalisco to Autlán with internodes pubescent with flexuose trichomes 0.2 to 2 mm long, calyces pubescent with trichomes 0.5 to 2 mm long, and thecal spurs 0.2 to 0.3 mm long. The relationship of plants here treated as *D. xylopoda* with those from further south in Mexico, which are usually treated as *D. ovata* (Daniel 1995), remains to be resolved.

***Ruellia leucantha* subsp. *postinsularis*** Gentry) T. F. Daniel, stat. nov. *Ruellia leucantha* var. *postinsularis* Gentry, *Brittonia* 6:323. 1948. **TYPE: MEXICO: Sinaloa:** Cerro Tecomate, W of Pericos, 28 Feb 1940, *H. Gentry* 5739 (holotype) **MICH;** isotypes **ARIZ, DS!, GH, MEXU, MO, NA, NY, RSA!, UC!, US).** *Dyschoriste candida* Brandegee, *Zoe* 5:242. 1906. *Ruellia candida* (Brandegee) Kobuski, *Ann. Missouri Bot. Gard.* 15: 60. 1928. **TYPE: MEXICO: Sinaloa:** vicinity of Culiacán, YerbaBuena near Altata, 10 October 1904, T. Brandegee s.n. (holotype **UC!**; isotypes **GH!, US!**).

Shrubs to 8 dm tall. Young stems quadrate to quadrate-sulcate, evenly puberulent with retrorse eglandular trichomes 0.05-0.2 mm long and sessile patelliform glands (glandular punctate). Leaves petiolate, petioles to 7 mm long, blades ovate to elliptic, 22-57 mm long, 11-33 mm wide, 1.7-2.2 times longer than wide, rounded to acute at apex, rounded to subacuminate at base, surfaces glandular punctate and pubescent with mostly antrorse eglandular trichomes 0.1-0.5 mm long, margin ciliate with similar trichomes.

Inflorescence of axillary dichasia; dichasia sessile, 1 (-2) per axil, 1-flowered, alternate or opposite at vegetative nodes; flowers sessile to subsessile (i.e., borne on pedicels to 1 mm long). Bracteoles prominent to inconspicuous (to obsolete), sometimes caducous, petiolate and linear-elliptic to linear or sessile, and triangular to triangular-subulate, 0.2-23 mm long, 0.2-5 mm wide, pubescent like young stems. Calyx 5-lobed, (5-) 7-14 mm long, tube 1-2 mm long, lobes subulate to linear-subulate, subequal to unequal in length (i.e., 1 lobe up to 1 mm longer than others), (4-) 6.5-13 mm long, 4-8.3 times longer than tube, abaxially pubescent like young stems. Corolla white, 38-68 mm long, externally glandular punctate and pubescent with erect to flexuose to retrorse eglandular trichomes 0.1-0.3 mm long, tube funnellform, 43-52 mm long, 2.2-3 mm in diameter near midpoint, narrow proximal portion of tube 17-30 mm long, distally abruptly expanded into a throat 13-23 mm long, limb (22-) 37-40 mm in diameter, lobes 7-16 mm long, 8-15 mm wide. Stamens included to  $\pm$  exerted, didynamous, longer pair 12-18 mm long, shorter pair 10-16 mm long, filaments proximally pubescent with eglandular trichomes and glandular punctate, distally glabrous, thecae (3-) 4.5-5.5 mm long. Style (25-) 33-47 mm long, pubescent with erect to antrorse eglandular trichomes and glandular punctate; stigma unequally 2-lobed, 1 lobe 2-2.8 mm long, other lobe 0.2—0.4 mm long. Capsule substipitate, 8-12 mm long, externally glandular punctate and pubescent with retrorse eglandular trichomes to 0.2 mm long, stipe 2 mm long, head ellipsoid-subcircular, 8-9 mm long. Seeds 4 (-6), lenticular, 3.5-4.5 mm long, 3.2-4.5 mm wide, surface and margin covered with appressed hygroscopic eglandular trichomes to 0.3 mm long, margin  $\pm$  swollen.

*Phenology.* Flowering and fruiting: October, February, April.

*Distribution and habitat.* North-western Mexico (Sinaloa; Fig. 3); plants occur on rocky slopes in thorn forest at elevations from 30-150 meters.

*Additional specimens examined.* **MEXICO.** **Sinaloa:** Cerrito de Caymanero, 28 Apr 1944, Gentry 7024 (CAS, DS, RSA, UC); vicinity of Guadalupe, 18 Apr 1910, J. Rose *et al.* 14723 (GH).

*Typification.* In the protologue of *Dyschoriste candida* Brandegees (1906) noted that the species was collected near Altata, Sinaloa. An unnumbered Brandegees collection representing this species was taken at «Yerba Buena near Altata» in 1904. Duplicates of this collection have been seen at GH, UC, and US. All of these bear the name *D. candida* in Brandegees's handwriting and concur with the protologue. The specimen in the Brandegees herbarium at UC also bears a type designation in the same handwriting. It is considered to be the holotype of the name. According to Moran (1952), Yerba Buena was reportedly a house 10 miles from Altata.

*Ruellia leucantha* Brandegees was described from Baja California Sur (Brandegees, 1901). Somewhat similar plants from Sinaloa were subsequently described by Brandegees (1906) as *Dyschoriste candida*, and by Gentry (1948) as *R. leucantha* var. *postinsularis*. *Dyschoriste candida* was transferred to *Ruellia* by Kobuski (1928). Gentry (1948) noted that the mainland smaller, glabrate, and more resinous leaves; variety differs from the peninsular one by its the general lack of a dense white pubescence covering the

young stems, leaves, bracts, and calyces; and the greenish (vs. pallid) and sparsely strigillose (vs. long-flocculose) calyx lobes. Study of the type of *R. candida*, three collections of *R. leucantha* var. *postinsularis*, and a large series of *R. leucantha* from Baja California Sur confirms that *R. candida* and *R. leucantha* var. *postinsularis* represent the same taxon and that the differences between this taxon and *R. leucantha* in Baja California Sur are slight, mutually exclusive, and have a geographic basis (Fig. 3). For these reasons, the Sinaloan plants are here treated as a subspecies, in a manner consistent with that utilized for treating other subspecies of Acanthaceae in northwestern Mexico (Daniel, 1983). The subspecies of *R. leucantha* can be distinguished by the following couplet:

Cauline trichomes erect to retrorse, 0.05-0.2 mm long; capsules 8-12 mm long; Sinaloa . . . . . subsp. *postinsularis*  
Cauline trichomes erect to flexuose, 0.3-1.5 mm long; capsules 12-15 mm long; Baja California Sur . . . . . subsp. *leucantha*

*Ruellia candida* is treated as representing the same taxon as *R. leucantha* subsp. *postinsularis* for the first time. Examination of pollen from Brandegees *s.n.* 10 Oct 1904 (Fig. 2) clearly shows this species to be correctly treated in *Ruellia* (pollen spheroidal, 3-porate, exine coarsely reticulate) rather than *Dyschoriste* (pollen prolate, 3-colporate, mesocolpia multi-striate with pseudocolpi, exine minutely verrucate). Rose *et al.* 14723 differs from the other collections of this taxon by having marginal flexuose eglandular trichomes to 2 mm long on the leaves and bracteoles. It occurs about 200 kilometers to the N of the type and paratype collections. Gentry 5122 (Sinaloa:



Cerro Colorado at GH, MICH, UC, and US) resembles *R. leucantha* subsp. *postinsularis* in many characteristics but differs in others (e.g., cauline pubescence including an understory of retrorse trichomes, 0.2 to 0.3 mm long, and an overstory of flexuose trichomes 0.5 to 1 mm long, that are restricted to the angles of the stems; dichasia clustered near shoot apices). It lacks corollas and its identity remains in question.

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