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NEW EUPHORBIACEAE FROM MEXICO

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ABSTRACT

This article contained descriptions of five new taxa of Mexican Euphorbiaceae. *Euphorbia* (subg. *Agaloma*) *nayarensis* is endemic to pine-oak woodland in the mountains of central Nayarit. It appears related to *E. soobyi* but differs by possessing linear to linear-ovate leaves. *Croton varelae* is also endemic to central Nayarit. A key was provided to distinguish this species, a member of sect. *Geiseleria*, from the seven other Mexican species of this section. *Croton ramillatus* var. *magniglandulifer* occurs in the states of Guerrero and Morelos. This new variety differs from var. *ramillatus* by the possession of larger petiolar glands. *Croton michaelii* occurs in Aguascalientes and Durango. It is uncertain to which section of *Croton* this species belongs. It resembles *Croton yecorensis* but is distinguished by possessing a lepidote indumentum and by lacking conspicuous stipitate glands. *Croton disjunctus* has been collected in Chihuahua and Aguascalientes, at localities separated by more than 600 km. This species appears to be most closely akin to *Croton fruticosus* Torr., from which it is separated by glabrous, evident (vs. pubescent, nearly obsolete) stipules and multifid (vs. bifid) styles.

INTRODUCTION

The Euphorbiaceae are one of the largest and most diverse Angiosperm families in Mexico. In terms of number of species, they probably rank fifth, behind only the Asteraceae, Fabaceae, Orchidaceae, and Poaceae. Although members of the family reach their greatest diversity in dry tropical regions, they are distributed throughout the country in nearly all types of vegetation, from near sea level to well over 3000 m. The family has a high incidence of narrowly restricted taxa, and scores of species are known from a single collection or locality. It is not surprising then, that as neglected areas are more thoroughly botanized, many new species continue to be found. In 1995 and 1996, while collecting in Morelos and the sierra of central Nayarit, I encountered by chance apparently undescribed taxa of *Croton* L. and *Euphorbia* L. Also, material of two other species of *Croton* was given to me by Michael F. Wilson, Drylands Institute, Tucson, Arizona, for study and identification. Because attempts to match these collections to any known taxa have proven unsuccessful, they are here described as new.

DESCRIPTIONS AND COMMENTS

Euphorbia nayarensis V. W. Steinm., sp. nov.

Perennis vel fortasse annua, erecta vel ascendens, 21–39 cm alta; stipulae glandiformes, fuscatae, 0.1–0.2 mm longae; folia inferna alterna, folia summa opposita; petioli graciles, 0.2–0.3 mm diametro, 2–7 mm longi; laminae lineares vel ovato-lineares, 1.5–4.5 cm longae, 1–5 mm latae, basi obtusae, apice acutae vel obtusae, supra plerumque glabra, infra strigosa, trichomata multicellularia, 0.2–0.5(–0.8) mm longa, costa prominens, nervi secundarii inconspicui pinnati, margine incrassato integro saepe revoluti; cyathia solitaria

axillaria; pedunculi 0.2–0.3 mm diametro, 1.2–2.8 mm longi; involucri campanulata, 0.8–1.2 mm longa (appendicibus exclusis), 0.9–1.4 mm lata ad glandulas; glandulae 5, oblongae vel reniformes, 0.15–0.3 mm longae (tangentialiter), 0.4–0.5 mm latae (radialiter) luteo-virides vel marroninae; appendices virides vel marroninae, 0.3–1.1 mm longae, 0.5–1.0 mm latae, in 2–5 dentes triangulatos irregulariter divisae; flores staminati ca. 15; ovarium subglobosum, glabrum, leniter 3-lobatum; styli 0.4–0.6 mm longi, bifidi; capsula depresso-globosa, 3-lobata, 2.5–2.8 mm longa, 3.1–3.4 mm lata; semina ovoidea, 1.8–2.0 mm longa, 1.2–1.4 mm diametro, ecarunculata, punctato-favosa et tuberculata.

Perennial herb from a slender root, flowering in the first year; stems erect or ascending, 1.0–1.4 mm in diameter at the base, 21–39 cm tall, little branched at the base, 2–3 times branched above, glabrous or strigulose, the internodes 0.5–4.0 cm long; stipules represented by dark, glandlike protuberances 0.1–0.2 mm long; leaves spreading or often deflexed, the lower alternate, the upper opposite and bearing cyathia in their axils; petioles slender, 0.2–0.3 mm in diameter, 2–7 mm long, often red-purple; blades linear to linear-ovate, 1.5–4.5 cm long, 1–5 mm wide, obtuse at the base, acute to obtuse and sometimes apiculate at the apex, with a prominent midvein and obscure pinnately arranged secondary veins, strigose below but mostly glabrous above, the trichomes multicellular, 0.2–0.5(–0.8) mm long; margin entire, usually red-purple, somewhat thickened and often revolute, decurrent over the petiole but not appearing subpeltate; cyathia solitary, borne in the axils of a pair of opposite upper leaves; peduncles 0.2–0.3 mm in diameter, 1.2–2.8 mm long; involucri campanulate, 0.8–1.2 mm long (excluding the appendages), 0.9–1.4 mm wide at the glands, strigose outside, glabrous or strigulose within; lobes 0.1–

0.2 mm long, triangular to elliptic, ciliate; glands 5, oblong to reniform, 0.15–0.3 mm long (tangentially), 0.4–0.5 mm wide (radially), yellow-green to red-purple; appendages green to red-purple, 0.3–1.1 mm long, 0.5–1.0 mm wide, irregularly divided into 2–5 triangular teeth, the divisions ranging from shallow to all the way to the base; staminate flowers ca. 15, androphores glabrous, the subtending bracteoles plumose at the apex; gynophore glabrous, 2.2–3.1 mm long in fruit; ovary subglobose, glabrous, gently 3-lobed; styles 0.4–0.6 mm long, bifid, slightly dilated at the apices; capsules depressed globose, 3-lobed, 2.5–2.8 mm long, 3.1–3.4 mm wide; seeds ovoid, light gray to tan, 1.8–2.0 mm long, 1.2–1.4 mm in diameter, ecarunculate, with numerous coarse tubercles interspersed with several regular to irregular longitudinal rows of isodiametric depressions the bottoms of which contain a minute, sharply punctiform pit.

Nayarit: Mpio. Nayar, along the road from Ruiz to Mesa del Nayar, 2.5 km (by road) northeast of El Maguey, 22°07'34"N, 104°48'14"W, ca. 1300 m, 13 Oct 1996, *Steinmann 1050* (holotype RSA; isotypes ARIZ, MEXU, MICH).

Pine-oak woodland in pockets of soil on a seasonally moist, west-facing rock face, known only from the type locality where the plants are locally common; with flowers and fruits in October.

Euphorbia nayarensis is a member of subgenus *Agaloma* (Raf.) House section *Cyttarospermum* Boiss. In habit, it superficially resembles *E. guadalajarana* S. Watson. However, that species possesses distinctly petalate leaves, long spreading trichomes on the involucre, filiform divisions of the involucreal appendages, and entire styles. The affinity of *E. nayarensis* appears to be with *E. soobyi* McVaugh, a narrow endemic known only from high elevations in the Sierra de Cuale, Jalisco, and the two species are nearly identical with respect to characters of the seeds and involucre. The leaves of *E. soobyi* are ovate to oblong-elliptic, and this characteristic serves to distinguish it from *E. nayarensis*.

***Croton varelae* V.W. Steinm., sp. nov.**

Fig. 1

Subfrutex vel herba perennis usque ad 20 cm alta, stellato-pubescentis; folia alterna, petioli 0.2–1.1 cm longi, laminae oblongae, ellipticae vel ovatae, 0.6–2.6 cm longae, 0.5–1.4 cm latae, e basi 3-nerviae, apice rotundatae vel subacutae, basi rotundatae vel obliquae, margo integer vel serrulatus, supra in facie stellato-villosae, olivaceae, subtus stellato-lanatae, albidae; inflorescentiae bisexuales, racemus axillaris vel terminalis, 0.7–2.5 cm longus, floribus pistillatis 1–4, floribus staminatis usque ad circa 25; calycum staminatorum lobi 5, deltoidei, acuti, 0.9–1.1 mm longi, florum staminatorum petala alba, ovalia vel oblonga, 1.2–1.7 mm longa; stamina 11, fila glabra, 0.6–1.7 mm longa, antherae ellipticae 0.4–0.6 mm longae; flores pistillati apetalii, calycum pistillatorum lobi 5–6, inaequales, subulati, anguste triangulares, lineares, obovati, vel spathulati,

0.8–6.7 mm longi; ovarium subglobosum, stellato-hispidum; styli 3, bipartiti, filiformes, ferruginei, minute papillati; capsula subglobose, 3.2–4.1 mm diametro; semina elliptica vel oblonga, 2.7–3.4 mm longa, 2.0–2.3 mm lata, complanata, foveolata, nitida, nigra et cinerea, carunculata; caruncula carnosa, reniformis, luteola, 0.3–0.7 mm longa, 1.2–1.5 mm lata.

Monoecious perennial herb to subshrub reaching 20 cm high, from a persistent taproot, woody branches reddish brown to gray brown, the whole plant covered with a stellate indumentum, the rays of the trichomes to 1.5 mm long but usually shorter; stipules reduced, often apparently absent, when present represented by ca. 2–5 minute, narrowly cylindrical, yellow to brown glands ca. 0.2 mm long; leaves alternate, with petioles 0.2–1.1 cm long, a pair of conical, cupuliform glands ca. 0.2 mm long and 0.2–0.3 mm wide usually present on the abaxial surface of the petioles just below its point of attachment with the lamina, the lamina oblong, elliptic, or ovate, 3-nerved from the base, 0.6–2.6 cm long, 0.5–1.4 cm wide, upper surface stellate-villous, olive green, lower surface stellate-lanate, whitish, rounded to oblique at the base, subacute to rounded at the apex, the margin entire to shallowly serrate with inconspicuous teeth to 0.3 mm long and spaced ca. 1 mm apart; inflorescences bisexual, axillary or terminal, 0.7–2.5 cm long, with 1–4 pistillate flowers at the base and up to ca. 25 staminate flowers distally; bracts subulate, 0.7–1.1 mm long, each side of the base subtended by a group of 2–5 glands similar to those of the stipules; staminate flowers on pedicels 1.3–3.1 mm long, calyx lobes 5, united towards the base, their free lobes deltoid, acute, 0.9–1.1 mm long, the petals 5, white, narrowly oval to oblong, 1.2–1.7 mm long, the receptacle densely villous, the stamens 11, filaments glabrous, 0.6–1.7 mm long, anthers elliptic, 0.4–0.6 mm long, basifixed; pistillate flowers subsessile or on stout pedicels to 0.5 mm long, calyx lobes 5–6, adaxial lobes reduced, subulate to narrowly triangular, acute, 0.8–2.1 mm long, abaxial lobes well developed, linear to obovate to spathulate, 2.6–6.7 mm long, subacute to rounded at the apex, petals absent, the ovary nearly globose, very shallowly 3-lobed, stellate-hispid, the longer rays of the trichomes to 1.5 mm long, the styles 3, united at the base, bipartite, the divisions filiform, rust brown, minutely papillate, 1.3–2.2 mm long, sometimes bearing scattered stellate trichomes; capsules 3.2–4.1 mm in diameter; seeds elliptic to oblong, 2.7–3.4 mm long, 2.0–2.3 mm wide, dorso-ventrally compressed, shallowly foveolate, shiny, mottled black-gray, with a fleshy, cream-yellow, reniform caruncle 0.3–0.7 mm long, 1.2–1.5 mm wide.

Nayarit: Mpio. de Nayar, ca. 1 km north of Mesa del Nayar along the trail to El Congrejo and just before Arroyo El Cañaveral, 104°38'45"W, 22°13'45"N, 1300 m, 14 Oct 1996, *Steinmann 1063* (holotype RSA; isotypes ARIZ, BM, DAV, FCME, IBUG, NY).

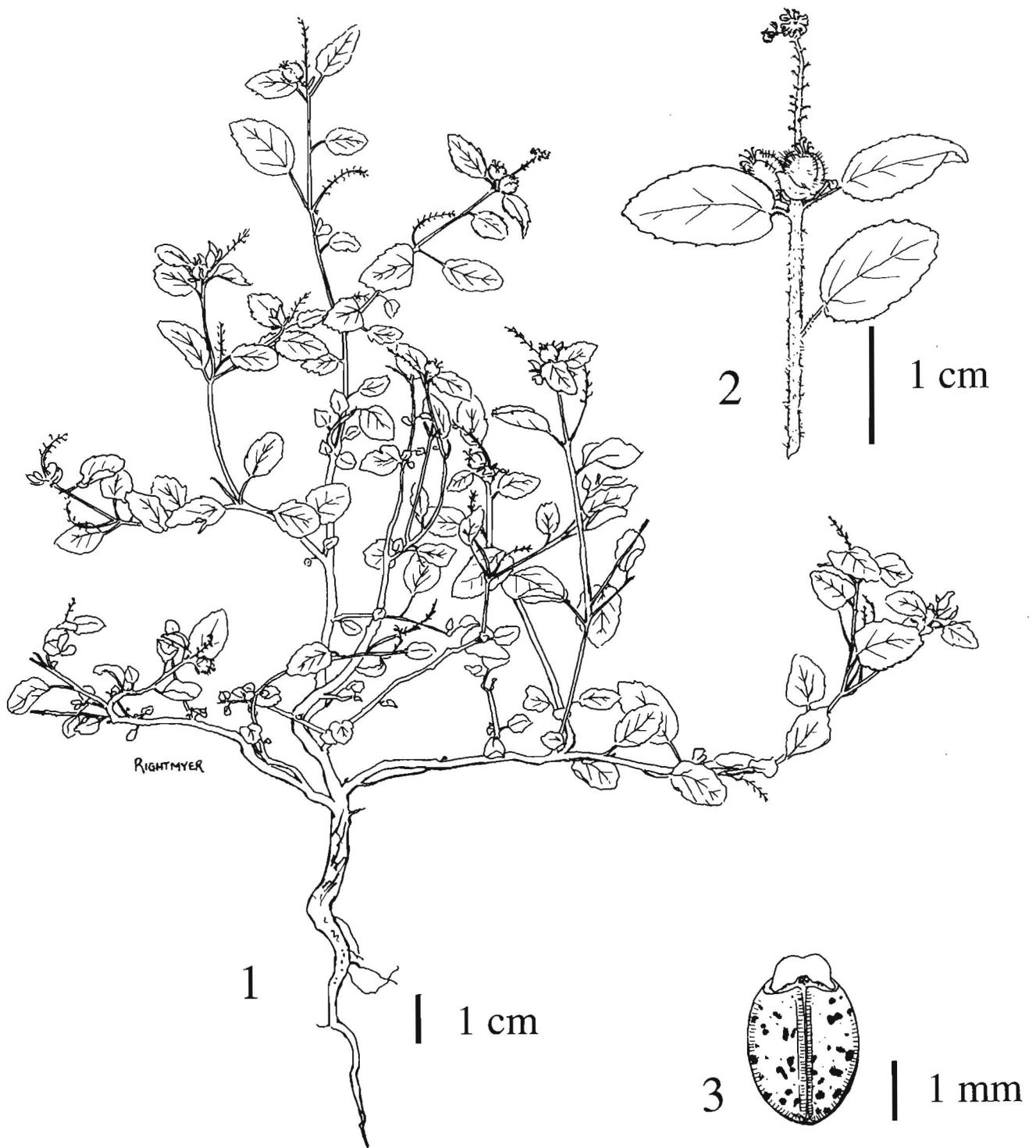


Fig. 1-3. *Croton varelae* (from the holotype).—1. Habit.—2. Inflorescence.—3. Seed.

Open oak scrub on red, coarse, rocky volcanic soil with *Croton pedicellatus* H.B.K. and *C. repens* Schldl.; known only from the type locality where the plants are common. The coarse red volcanic soil at the type locality is essentially the same soil on which I have observed the closely related *Croton martinianus* V.W. Steinm. in Sonora to be most common. The specific epithet honors Leonardo Varela Espinosa, a re-

searcher at the Centro de Ecología of the Universidad Nacional Autónoma de México in Hermosillo, Sonora, whose help with fieldwork in western Mexico I greatly appreciate.

Based on the serrate leaves with petiolar glands, clusters of bottle-shaped glands subtending the bracts, and unequal pistillate sepals, *Croton varelae* is assignable to section *Geiseleria* (Klotzsch) Baill. as defined

by Webster (1993, p. 812). There are about 15 species in this section, eight of which occur in Mexico. Four (*C. cupulifer* McVaugh, *C. martinianus*, *C. chamelensis* Lott, and *C. varelae*) are endemic to Western Mexico and collectively known from fewer than a dozen localities. One species, *Croton ramillatus* Croizat, consists of two varieties, both of which are uncommon and restricted to southern Mexico. The other three species (*C. glandulosus* L., *C. hirtus* L'Her., and *C. trinitatis* Millsp.) are widespread "weedy" taxa throughout the Neotropics.

The Mexican species of sect. *Geiseleria* can be distinguished as follows:

1. Glands subtending the bracts located at the ends of long slender stipules. *Croton hirtus*
- 1' Glands subtending the bracts sessile or absent.
 2. Ovaries and abaxial leaf surfaces lepidote.
. *Croton chamelensis*
 - 2' Ovaries and abaxial leaf surfaces stellate-pubescent.
 3. Stipules reduced, represented by ca. 2–5 minute glands ca. 0.2 mm long, often apparently absent.
. *Croton varelae*
 - 3' Stipules conspicuous, linear-subulate, 0.6–5.5 mm long.
 4. Styles 0.7–1.1 mm long; glands subtending the bracts absent; distal portion of the inflorescence essentially glabrous. *Croton trinitatis*
 - 4' Styles 1.5–2.1 mm long; glands subtending the bracts present; distal portion of the inflorescence conspicuously stellate-pubescent.
 5. Pistillate flowers in a tight cluster and appearing fasciculate; inflorescence generally less than 2 cm long and not exceeding the subtending leaves. *Croton glandulosus*
 - 5' Pistillate flowers moderately spaced and arranged in a raceme; inflorescence generally 3–10 cm long and exceeding the subtending leaves.
 6. Leaves elliptic to narrowly lanceolate, the margins denticulate to entire, attenuate to cuneate at the base. *Croton ramillatus*
 7. Petiolar glands conspicuous to the naked eye, 0.8–2.8 mm long, 0.7–1.6 mm in diameter.
. *Croton ramillatus* var. *magniglandulifer*
 - 7' Petiolar glands inconspicuous to the naked eye, 0.1–0.3 mm long, 0.2 mm in diameter. *Croton ramillatus* var. *ramillatus*
 - 6' Leaves ovate, the margins coarsely serrate to dentate, rounded to cordate at the base.
 8. Perennial herbs, sometimes appearing annual; staminate bracts 1.1–2.5 mm long; pubescence of the ovary stellate-villose, at least some of the rays of the stellae greater than 1 mm long.
. *Croton martinianus*
 - 8' Shrubs or less frequently perennial herbs; staminate bracts 0.6 mm long or less; pubescence of the ovary stellate-puberulent, the rays of the stellae less than 0.3 mm long.
. *Croton cupulifer*

CROTON RAMILLATUS Croizat var. **magniglandulifer** V.W. Steinm., var. nov.

A *C. ramillato* var. *ramillato* petiolo glandibus majoribus differt.

Morelos: Mpio. de Tlaquiltenango, Sierra de Huautla, ca. 1 km (by air) S of Huautla, 18°23'46"N, 99°04'02"W, ca. 1100 m, 23 Sep 1995, *Steinmann 798* (holotype RSA; isotypes ARIZ, DAV, FCME, HUMO, NY); zona núcleo de Amacuzac, Poblado de Huautla, 18°22'32.7"N, 99°03'11.9"W, 1260 m, 9 Aug 1995, *Cerros, Cano, Juárez, & Ramírez 1319* (RSA).

Variety *magniglandulifer* occurs in tropical deciduous forest in Morelos and Guerrero at elevations from 650 to ca. 1300 m; flowering and fruiting occur from June to October. A full description and illustration of this taxon (under the name var. *insignilobis* Croizat) is in Martínez (1995: 71–74).

As the name suggests, var. *magniglandulifer* differs from var. *ramillatus* by the much larger petiolar glands (0.8–2.8 mm long, 0.7–1.6 mm in diameter vs. 0.1–0.3 mm long, 0.2 mm in diameter). In addition to this difference, var. *magniglandulifer* tends to have longer stipules. In her thorough treatment of the genus *Croton* in the state of Guerrero, Mexico, Martínez (1995) treats this new variety as *C. ramillatus* var. *insignilobis* (Croizat 1945). Although I have examined only a limited amount of material, most of which is the same as that available to Croizat, I have doubts as to the validity of var. *insignilobis*. Croizat characterizes the pistillate flowers of var. *ramillatus* as having ca. 7 sepals vs. 5 sepals in var. *insignilobis*. He also mentions that the capsules of var. *insignilobis* appear to be slightly larger. However, many of the collections I have examined that were referred to as var. *ramillatus* by Croizat (including *Purpus 8450*, an isotype, UC) actually have five sepals, and the difference in capsule size is slight. There does appear to be a difference in sepal shape, those on the type of var. *insignilobis* are broader, but this variation does not appear significant.

Croton ramillatus has previously been placed in sect. *Cascarilla* Griseb., but the distinctly unequal sepals of the pistillate flowers and the clusters of small glands at the base of the bracts suggest that it is better accommodated in sect. *Geiseleria*.

Croton michaelii V.W. Steinm., sp. nov.

Subfrutex vel herba perennis 0.3–0.6 m alta; pubescentia lepidota; stipulae glandulosae conicae ca. 0.2 mm longa, 0.1 mm diametro; folia alterna, petioli 0.2–0.5 cm longi, laminae integrae, lineares vel anguste lanceolatae, 1.7–6.2 cm longae, 0.25–1.0 cm latae, apice acuto, basi attenuata; inflorescentiae bisexuales; racemi terminales vel pseudoaxillares, floribus pistillatis 1–3, floribus staminatis 6–20; bractae lineares vel subulatae, 1.1–2.8 mm longae; calycum staminatorum lobi 5, ovati, 1.5–2.1 mm longi, florum staminatorum petala 5, elliptica vel anguste ovata, 1.8–2.1 mm longa, 0.8–1.0 mm lata, ciliata; receptaculum villosum; stamina 11–15, fila filiformia, 1.8–2.6 mm longa, antherae ellipticae, 0.6–0.8 mm longae; flores

pistillati apetalii; calyculum pistillatorum lobi 5, aequales, valvati, subulati vel anguste lanceolati, 3.5–6.6 mm longi, acuti; ovarium subglobosum; styli 3, filiformes, bipartiti, 2.6–4.1 mm longi; capsula subglobosa, 4.8–5.9 mm diametro; semina elliptica, 2.9–4.0 mm longa, 2.5–2.8 mm lata, nitida, carunculata.

Monoecious sparingly branched perennial herb or subshrub 0.3–0.6 m tall, the branches diverging dichotomously and ascending at acute angles, pubescence lepidote with the scales 0.4–0.7 mm in diameter, bark gray, the young growth with a pale golden yellow to rust-brown cast; stipules represented by minute conical glandular protuberances ca. 0.2 mm long and 0.1 mm in diameter, these inconspicuous and obscured by the pubescence; leaves alternate, the petioles 0.2–0.5 cm long, ca. 0.1 cm in diameter and lacking paired basal glands, the lamina entire, linear to narrowly lanceolate, 1.7–6.2 cm long, 0.25–1.0 cm wide, attenuate at the base, acute at the apex, only the midvein conspicuous; inflorescence terminal, sometimes appearing axillary due to the elongation of nodes subtending the inflorescence, bisexual, racemose, 1.3–2.1 cm long, with 1–3 pistillate flowers at the base and ca. 6–20 staminate flowers distally; bracts 1.1–2.8 mm long, linear to subulate, acute, the basal margins often bearing 2–6 stipitate glands ca. 0.2–0.3 mm long; staminate flowers on slender pedicels 1.5–3.7 mm long and 0.2–0.4 mm in diameter, the calyx lobes 5, ovate, 1.5–2.1 mm long, the petals 5, elliptic to narrowly ovate, 1.8–2.1 mm long, 0.8–1.0 mm wide, ciliate especially towards the base; receptacle villous; stamens 11–15, the filaments filiform, 1.8–2.6 mm long, the anthers elliptic, 0.6–0.8 mm long, basifixed, glabrous or villous towards the base; pistillate flowers apetalous, subsessile or on stout pedicels to ca. 0.7 mm long; calyx lobes 5, equal, valvate, subulate to narrowly lanceolate, 3.5–6.6 mm long, acute, the margins with a few stipitate glands at the base (similar to those on the bracts); disk subcircular, essentially entire but with 5 linear glandlike projections 0.6–0.8 mm long and ca. 0.1 mm in diameter alternating with the sepals; ovary subglobose; styles 3, filiform, 2.6–4.1 mm long, dark rust-brown, with numerous stellate trichomes, biparted 2/3 to nearly completely; capsules dehiscent, subglobose, shallowly 3-lobed, 4.8–5.9 mm in diameter; seeds strongly dorso-ventrally compressed, broadly elliptic, 2.9–4.0 mm long, 2.5–2.8 mm wide, gray to gray mottled with black, shiny, rugulose, with a fleshy reniform caruncle 0.5–0.7 mm long and 1.2–1.6 mm wide.

Durango: Sierra de Cacaria, Arroyo de las Flores, ca. 5 km west of El Carmen, 24°16.022'N, 104°45.365'W, 2100 m, 18 July 1996, *Wilson 96-235* (ARIZ, MEXU); same locality and date, *Wilson 96-236* (holotype RSA; isotypes ARIZ, FCME, DAV). Aguascalientes: Mpio. Calvillo, 1 km al S de la presa El Capulín, 2100 m, 6 Sep 1986, *García R. 2717* (HUAA).

Oak grassland; dry, rocky, north-facing slope with white soils and *Arctostaphylos* Adans., *Bursera* Jacq. ex L., *Dodonaea* Mill., *Nolina* Michx., *Pinus* L., *Quercus* L., and *Selaginella* Beauv.; rhyolite peaks growing in fissures among thick mats of *Selaginella* with *Agave* L., *Arctostaphylos*, *Bursera*, *Comarostaphylis* Zucc., *Dodonaea*, *Echinofossulocactus* Lawr., *Erythrina* L., *Fraxinus* L., *Manihot* Mill., *Nolina*, and *Quercus* spp. Flowering and fruiting at least from July to September.

This species is very similar to *Croton yecorensis* V.W. Steinm. & Felger, a narrow endemic known only from the vicinity of Yécora, Sonora, and I believe that the two are closely related. They are identical in most features, and *C. michaelii* significantly differs only in possessing a lepidote indumentum and in lacking conspicuous stipitate glands, although minute stipitate glands can be present on the bracts and pistillate sepals. Aside from their putative relationship to each other, these species are taxonomically isolated and lack obvious affinities with other members of *Croton*. Even sectional placement is not clear at this time.

This species is named in honor of Michael F. Wilson, entomologist and botanist, who has made significant contributions to the knowledge of the biota of the southwestern United States and northwestern Mexico.

Croton disjunctus V.W. Steinm., sp. nov.

Frutex 1 m altus, stellato-tomentosus; stipulae glandulosae 0.1–0.3 mm diametro; folia alterna, petioli 0.3–1.3 cm longi, 0.5–0.7 mm diametro; laminae ovatae, 1.0–4.5 cm longae, 0.6–2.5 cm latae, integrae vel denticulatae, apice acutae, basi cordatae vel rotundatae; inflorescentiae bisexuales vel unisexuales; racemi ut videtur terminales, floribus pistillatis 1–4, floribus staminatis 4–7; bractee triangulares vel subulatae, 0.5–1.1 mm longae; calyculum staminatorum lobi 5, ovati, 1.5–2.6 mm longi, 1.0–1.6 mm lati, florum staminatorum petala 5, ovata vel elliptica vel obovata, 1.9–2.6 mm longa, 1.2–1.9 mm lata, ciliata; receptaculum villosum; stamina 12–15, fila filiformia, 1.9–3.1 mm longa, antherae ellipticae vel oblongae, 0.6–1.1 mm longae, 0.4–0.6 mm latae; flores pistillati apetalii; calyculum pistillatorum lobi 5, aequales, valvati, ovati vel triangulares, 1.3–2.4 mm longi; ovarium subglobosum; styli 3, filiformes, multifidi, 2.0–3.8 mm longi; capsula subglobosa, 4.9–6.2 mm diametro; semina oblonga, 4.6–5.5 mm longa, 3.3–4.0 mm lata, laevia vel rugulosa, nitida, carunculata.

Monoecious shrub 1 m tall, pubescence stellate-tomentose throughout, the rays of the stellae (0.1–)0.2–0.5 mm long, the young growth white to yellow, bark gray; stipules represented by one or two green-yellow to black, sessile to short-stalked globose glands 0.1–0.3 mm in diameter; leaves alternate, the petioles 0.3–1.3 cm long, 0.5–0.7 mm in diameter, stipitate paired petiolar glands to 1 mm long present or absent, the lamina ovate 1.0–4.5 cm long, 0.6–2.5 cm wide, the apex acute, the base cordate to rounded, margins entire or denticulate with stipitate glands to 0.3 mm long; inflorescence bisexual or unisexual, apparently termi-

nal, racemose, 0.9–3.8 mm long, pistillate flowers 1–4, staminate flowers 4–7; bracts triangular to subulate, 0.5–1.1 mm long, with stipitate glands ca. 0.3 mm long and 0.1 mm in diameter; staminate pedicels 2.1–6.3 mm long, 0.3–0.5 mm in diameter, calyx lobes 5, ovate, 1.5–2.6 mm long, 1.0–1.6 mm wide, the petals 5, ovate to elliptic to obovate, 1.9–2.6 mm long, 1.2–1.9 mm wide, ciliate especially at the base; receptacle villous; stamens 12–15, the filaments filiform, 1.9–3.1 mm long, glabrous, the anthers oblong to elliptic, 0.6–1.1 mm long, 0.4–0.6 mm wide, basifixed; pistillate flowers apetalous, subsessile or on stout pedicels less than 1 mm long, calyx lobes 5, valvate, equal, triangular to ovate, 1.3–2.4 mm long; disk entire, subcircular; ovary subglobose; styles 3, filiform, 2.0–3.8 mm long, twice divided, with numerous stellate trichomes especially towards the base; capsule subglobose, 4.9–6.2 mm in diameter; seeds oblong, 4.6–5.5 mm long, 3.3–4.0 mm wide, gray, shiny, smooth to minutely rugulose, rounded at the base and apex, with a fleshy reniform to semiorbicular caruncle 0.6–1.0 mm long, 1.3–1.9 mm wide.

Chihuahua: ca. 24 road miles W of the Durango state line on the hwy to Hidalgo del Parral and E of Río de Balleza Canyon, vicinity of 26°52.122'N, 106°16.299'W, ca. 1800 m, 15 July 1996, *Wilson 96-213* (holotype RSA; isotypes ARIZ, DAV, FCME). Aguascalientes: Mpio. de San José de Gracia, Barranca Serpiens, 2150 m, 7 Sep 1998, *García R. 4390* (RSA); mountains above Presa Calles, S of Rincón de Romos, ca. 22°02'N, 102°20'W, 7300 ft [2225 m], 30 Aug 1939, *Shreve 9263* (DAV, RSA).

Mountainous, open, grassy oak woodland dominated by scattered *Quercus* spp. 4–6 m tall, with *Acacia* Mill., *Aloysia* Jacq., *Dodonaea*, *Mandevilla* Lindl., *Opuntia* Mill., and *Tecoma* Juss., common on rocky soils; oak forest-subtropical scrub. Flowering and fruiting at least from July to September.

The known localities of *Croton disjunctus* are separated by more than 600 km, but this species possibly also occurs in intervening Durango and Zacatecas. Despite the geographic disjunction, the plants are strik-

ingly similar. The only variation that I have observed is that the leaves on the Chihuahuan plants possess petiolar glands, but these are lacking on the leaves of collections from Aguascalientes. The possession of petiolar glands is often a defining characteristic of sections within *Croton* (Webster 1993), and it is therefore interesting that this condition varies in *Croton disjunctus*. Due to the current paucity of material, however, I cannot determine how consistent this difference may be or its potential taxonomic significance.

This species appears to be most closely akin to *Croton fruticosus* Torr., a Chihuahuan Desert species ranging from Arizona to Texas and Tamaulipas. The known localities of *C. fruticosus* in Chihuahua are in the eastern part of the state while that of *C. disjunctus* is in the southern portion. *Croton disjunctus* is distinguished from *C. fruticosus* by its glabrous, evident (vs. pubescent, nearly obsolete) stipules and the multifid (vs. bifid) styles. In addition, *Croton fruticosus* apparently never possesses petiolar glands.

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