A New Mexican Species of Croton Section Eluteria (Euphorbiaceae)

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A NEW MEXICAN SPECIES OF CROTON SECTION 
ELUTERIA (EUPHORBIACEAE) 

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Abstract: A new species of Croton sect. Eluteria from Estado de Veracruz, Mexico, Croton gomezii, is described and illustrated. The species appears most closely related to Croton arboreus on the basis of its indumentum, but has been generally confused with Croton reflexifolius. A key is provided to aid in distinguishing Croton gomezii from related Mexican species of section Eluteria. 

Keywords: Croton, Eluteria, Euphorbiaceae, Veracruz, Mexico. 

Among the many taxa of the large genus Croton L., section Eluteria Griseb. is distinctive in its inflorescences that are axillary (or terminal on lateral shoots), petaliferous pistillate flowers, and eglandular exstipulate leaves with lepidote indumentum. In the 19th century, there were many publications on a number of species in the section that were used medicinally as "Cascarilla Bark" or "Copalchi" to substitute for quinine in the treatment of malaria (Lindley, 1838; Bennett, 1859; Del Amo, 1979). In the circumscriptio of Webster (1993), section Eluteria is an entirely neotropical group of about a dozen species centered in Mesoamerica and the West Indies. There has been much confusion in the delimitation and typification of the species since the treatment of Müller (1866). Although there is no recent comprehensive systematic study of the cascarilla bark species, a key and synopsis of the species in western Mexico is provided by Webster (2001).

In his perceptive study of Croton species from the Misantla area in Veracruz, Mexico, Gomez-Pompa (1966) cited a distinctive species with long-acuminate leaf tips as C. sylvaticus Schltdl. However, the name of Schlechtendal is illegitimate because of the earlier African species C. sylvaticus Hochst., published in 1845. Although Govaerts et al. (2000) list C. sylvaticus Schltdl. as a synonym of C. reflexifolius Kunth in H.B.K., this is incorrect, because the plant of Veracruz studied by Schlechtendal and Gomez-Pompa is a distinct species that up until now has lacked a valid name. The relationships of C. gomezii with the other Mexican taxa of sect. Eluteria are indicated by the following key. Terminology of trichomes is based on the descriptions of Webster et al. (1996). 

KEY TO THE MEXICAN SPECIES OF SECT. ELUTERIA 

1. Leaves palmately veined or triplinerved.
2. Ovary stellate-tomentose.
3. Stamens 13–16, filaments glabrous except at base; trichomes of ovary whitish; capsules subglobose; abaxial foliar lepidote scales often porrect ............ C. niveus 
3. Stamens 10, filaments pilose; trichomes of ovary yellowish; capsules prolate; abaxial foliar lepidote scales not porrect ............ C. souzae 

2. Ovary lepidote.
4. Scales of ovary deeply divided (stellate-lepidote); capsules ± verrucate.
5. Leaf blades bluntly acuminate or cuspidate, mostly 5-veined and rounded to distinctly cordate at base, usually densely lepidote abaxially; capsular verrucae dense, blunt, ± covered on the sides with lepidote scales ............ C. arboreus 
5. Leaf blades caudate-acuminate, mostly 3-veined and obtuse to truncate, rounded or subcordate
(rarely cordate) at base, sparsely lepidote to glabrescent abaxially; capsular verrucae scattered, slender and tapering distally, glabrous except for a terminal stellate-lepidote scale. C. gomezii

4. Scales of ovary denticulate (radii mostly fused almost to tips); capsules smooth or nearly so.

6. Inflorescences mostly 1–2 cm long, floral buds overlapping.

7. Scales of ovary 0.3–0.6 mm in diameter; stamens 12–16; leaf blades basally cordate, densely lepidote abaxially. C. fantzianus

7. Scales of ovary 0.7–1 mm in diameter; stamens 9–11; leaf blades basally cuneate to truncate, glabrescent abaxially. C. pseudoniveus

6. Inflorescences mostly exceeding 2 cm, floral buds scarcely overlapping.

8. Fruiting pedicels mostly 9–17 mm long (or more), 0.6–1 mm thick; seeds 4.5–6.5 mm long; inflorescences 2–6 cm long. C. reflexifolius

8. Fruiting pedicels 7–20 mm long, 1–1.5 mm thick; seeds 10–16 mm long; inflorescences 8–22 cm long. C. guatemalensis

1. Leaf blades pinnately veined.

9. Fruiting pedicels 10–30 mm long, slender (< 1 mm thick); stamens (12-) 15–17 (-20), filaments glabrous or sparsely hirsutulous; seeds 6–8 mm long. C. schiedeanus

9. Fruiting pedicels 1.5–8.5 mm long, stouter (at least 1 mm thick); stamens (9) 10–12, filaments usually copiously hirsutulous; seeds 4.5–6.2 mm long. C. nitens

**Croton gomezii** G. L. Webster, sp. nov. (Fig. 1).

**TYPE:** MEXICO. VERACRUZ. Mpio. Tepe­zintla, 3 km SW of Tepezintla, 18 Mar. 1971, F. Chiang 360 (HOLOTYPE, GH!).


Arbuscula monoica foliis palmatinervis caudato­acuminatis, trichomatibus lepidotis; inflorescen­tis 2.5–8 cm longis; staminibus 9–12; pedicello fructificante 5–7.5 mm longo; lepidis ovarii 8–15­radiatis, stylos multifidis.

**MONOECIOUS SHRUB** 2–4 m high; twigs sparsely to copiously lepidote. **LEAF BLADES** chartaceous, ovate to ovate-lanceolate, mostly 5–9 cm long, 2–5 cm broad, cuspidate-acuminate (acumen 1–2 cm long), obtuse or rounded to truncate or subcordate (rarely cordate) at base, mostly triplinerved, adaxially sparsely lepidote, abaxially sparsely lepidote to glabrescent; petioles sparsely to copiously lepidote, 1–5 cm long; stipules 1.5 mm long or less, caducous. **INFLORESCENCES** terminal on main and lateral axes, 2.5–8 cm long, rachis 0.5–0.8 mm thick, mostly bisexual with 1–3 basal pistillate flowers, sometimes staminate. **STAMINATE FLOWERS** 1 per bract; pedicel lepidote, 2.5–4 mm long; petals elliptic or obovate, 2.0–2.5 mm long, adaxially hirsutulous, abaxially glabrous or sparsely lepidote; stamens 9–12, filaments 2–3 mm long, basally hirsutulous; anthers 0.8–1.2 mm long. **PISTILLATE FLOWERS** 1 per bract, pedicel in fruit 4–5 (-9) mm long, 0.6–1 mm in diameter, copiously lepidote; sepals deltate, 2.5–3.5 mm long, villose adaxially, densely lepidote abaxially; petals elliptic, 2.5–3.2 mm long, villose adaxially, glabrous or lepidote abaxially; ovary stellate-lepidote, the scales 0.6–1.2 mm broad, deeply divided into 8–20 radii; styles 4–8-fid, 2.5–3.5 mm long, glabrous. **CAPSULE** 8–10 mm broad, verrucate; verrucae scattered, tapering to a point, 1–2 mm long, glabrous except for a stellate-lepidote scale at the apex; columella 8 mm long; seeds ellipsoidal, acute, smooth, 5.5–9.5 mm long; caruncle subterminal, c. 0.7–1 mm broad. (Fig. 1)

**DISTRIBUTION AND ECOLOGY.** Semi-ev­ergreen and evergreen lowland rain forests, Caribbean region of eastern Mexico from southern Tamaulipas to Veracruz and Tabasco, sea level to 500 m.

**PHENOLOGY.** Flowering and fruiting mainly from March to May.
VERNACULAR NAMES. Caobilla, copal-chi, palo blanco (Del Amo, 1979).

ETYMOLOGY. The species epithet appropriately honors Dr. Arturo Gómez-Pompa, distinguished student of the systematics and ecology of Mexican flora and vegetation, and author of a critical study of the taxa of \textit{Eluteria} in the Misantla area of Veracruz.

NOMENCLATURE. In his study of the species of \textit{Croton} in the Misantla region, Gómez-Pompa (1966) cited specimens of

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**Fig. 1.** \textit{Croton gomezii}. A. Branch with leaves and inflorescences. B. Abaxial leaf surface, with one lepidote scale enlarged. C. Pistillate flower. D. Capsule with verrucae. E. Enlarged single verruca with terminal scale, from capsule. F. Staminate flower. (A from Harriman & Jansen 12332; B–E from Ventura 1247; F from Dorr 2657). Illustration by Sarah Thrasher.
C. gomezii as C. sylvaticus Schtdl., an illegitimate name. However, he later labelled specimens from the Misantla area with an unpublished epithet based on the locality of Schiede’s original collection. As pointed out by Gómez-Pompa, his Misantla Croton had been confused with C. reflexifolius H.B.K. by Schlechtendal and other authors. Because of the relatively scanty reproductive condition of the type of C. sylvaticus Schtdl., it has seemed preferable to describe C. gomezii as a new species based on an unequivocal type specimen.

RELATIONSHIPS. It seems clear that Schlechtendal and Gómez-Pompa were correct in recognizing as a distinct species the plant here named Croton gomezii, which is readily distinguished by its caudate-acuminate leaf blades and verrucate fruits. However, its closest relationship appears to be not with C. reflexifolius H.B.K., but rather with C. arboresus Millsp. The latter species, with deeply divided lepideae and verrucate capsules, seems much closer to C. gomezii. The recently described species from Vercruz, Croton souzae (Martinez-Gordillo & R. Cruz, 2002) differs from C. gomezii in its stalked-fasciculate yellowish ovarian trichomes, and appears most closely related to C. niveus Jacq.

ADDITIONAL SPECIMENS EXAMINED. MEXICO. HIDALGO. Mpio. Huejutla de Reyes, Huejutla, 1842–43, Ghiesbrecht 37 (P). OAXACA: Mpio. Acatlan, Rincon del Tigre, 100 m, 19 May 1986, Cortés et al. 294 (DAV); Mpio. Temascal, Temascal, 27 m, 26 May 1964, Jansen 10487 (MO); 5 mi E of Temascal, 15 m, 27 May 1964, Jansen s.n. (UC 303445); Mpio. Tuxtepec, Chilitepec, 1940–41, Martínez-Calderón 324 (A, LL); Encinal de Tuxtepec, 20 m, 16 Mar. 1967, Martínez-Calderón 1334 (MO). PUEBLA. Mpio. Hueyatmalco, Pacta, 300 m, 25 Feb. 1980, Ventura 16891 (CAS, MO). SAN LUIS POTOSÍ. Mpio. Antonio Santos, 31 mi S of Valles, 22 Mar. 1967, Wilson 12437 (TEX); Aquismón, 250 m, 18 Mar. 1962, Rzedowski 15563 (MICH, TEX); 16.4 mi SE of Aquismón, Dor et al. 2657 (MO); Tacanhuizt, Nelson 4364 (GH), 300 m, 16 Apr. 1956, Rzedowski 7483 (MICH); Mpio. Tamazunchale, Clasquapa, Edwards 657 (MO, TEX), Tamazunchale, Kenoyer s.n., 3 mi N of Tamazunchale, 7 Apr. 1976, Harriman & Jansen 12288 (DAV); 5 mi N of Tamazunchale, 120 m, 25 Mar. 1964, Ahshapanek 302 (TEX); Palilita, 13 July 1943, Lundell 12228 (LL, MICH); Taman, 15 km SW of Tamazunchale, 14 Apr. 1944, Hernández X. 160 (LUND); Mpio. Terrazas, Arroyo Seco, 10 km NE of Picholco, Hernández & Tenorio 7008 (CAS); Mpio. Xilitla, 1 mi N of Xilitla, 8 Apr. 1976, Harriman & Jansen 12332 (DAV), 7–12 mi NE of Xilitla, 27 Mar. 1961, King 4317 (MICH, TEX, UC), 29 Mar. 1961, 4363 (MICH, UC); Mpio. Valles, S of El Pujal, 14 July 1943, Lundell 12246 (LL, MICH). TABASCO. Mpio. Tenosique, Ejido La Palma, 100 m, 11 Mar. 1976, Calsada & Arellana 2213 (DAV). TAMAULIPAS. Horcaditas a Tamancito [locality uncertain], Berlandier 2164 (GH). VE-RACRUZ. Mpio. Actopan, inter Lagune Verde et Actopan, Dec. 1828, Mar. 1829, Schiede (HAL 48440, 48441, 48879); Mpio. Alto Lucero, Cerro Metates, 300 m, 27 May 1977, Calsada 3210 (DAV); Mpio. Atoyac, Matuda S-10 (MICH); Mpio. Atzalán, San Javier, 100 m, 6 June 1970, Ventura 1247 (LL, MICH, MO, TEX); Mpio. Coixquihi, Cerro Acsmaxni, 170–270 m, 10 Apr. 1985, Tenorio et al. 8553, 8563 (TEX); Mpio. Medellín, 15 Aug.1866, Hahn s.n. (P); Montepío, Río Máquina, 1 m, 20 Mar. 1966, Cruz 139 (MICH); Mpio. Papantla, Papantla, 1841, Liebmann s.n. (GH), 1 km from Los Mangos towards Juan Diaz Covarrubias, 250 m, Gómez Pompa 4445 (GH); Mpio. Paso del Macho, 1 km NE of Atoyac, 500 m, Nee & Taylor 28950 (DAV); Mpio. Tantoyuca, Wartenberg, 1857–58, Ervendberg 153 (P), 199, 243 (GH); Mpio. Tepatlaxco, Atoyac to Tepatlaxco, Velázquez 280 (DAV); Mpio. Tepetzingo, Tepetzingo, 100 m, Ventura 1247 (TEX), 18 Mar 1971, Chiang 344 (GH), 2.7 km SE of Tepetzingo, 300 m, Nee 22398 (DAV); Mpio. Zongolica, El Palmar, 14 Mar 1944, Santos 2873 (MICH, TEX), 3034 (MICH).

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The illustrations were drawn by Sarah Thrasher.

LITERATURE CITED


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