
New Taxa in Lythraceae from Latin America

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ABSTRACT. Two new species, two new varieties, and two new combinations for Lythraceae from Bolivia, Brazil, Cuba, and Mexico are proposed. The new species are *Cuphea aquilana* from Mexico and *C. potamophila* from Brazil. The new varieties are *C. pulchra* var. *corollata* from Brazil and *Diplusodon virgatus* var. *occidentalis* from Brazil and Bolivia. *Cuphea sessilifolia* subsp. *bahiensis* is elevated to the rank of species. *Cuphea grisebachiana*, from Cuba, is reduced to varietal status as *C. parsonsia* var. *grisebachiana*, and the first report of its chromosome number is given. The range of *Cuphea xanthopetala*, previously known only from Mato Grosso, Brazil, is extended by discovery of the species in Amazonas, Brazil. Additional collections also expand the range of the recently described *Diplusodon bolivianus* in Santa Cruz, Bolivia, and Mato Grosso, Brazil.

RESUMO. Duas novas espécies, duas novas variedades e duas novas combinações para Lythraceae da Bolívia, Brasil, Cuba e México são propostas. As novas espécies são *Cuphea aquilana*, do México e *C. potamophila*, do Brasil. As novas variedades são *C. pulchra* var. *corollata*, do Brasil e *Diplusodon virgatus* var. *occidentalis*, do Brasil e Bolívia. *Cuphea sessilifolia* subsp. *bahiensis* é elevada ao estatus de espécie. *Cuphea grisebachiana* da Cuba é reduzida ao estatus varietal como *C. parsonsia* var. *grisebachiana* e o primeiro registro sobre o seu número cromossômico é fornecido. A amplitude de distribuição de *C. xanthopetala*, previamente conhecida apenas para o Mato Grosso, Brasil, é estendida pela descoberta da espécie na Amazônia, Brasil. Coleções adicionais do Mato Grosso, Brasil, expandem também a distribuição conhecida de *Diplusodon bolivianus*, recentemente descrita para Santa Cruz, Bolívia.

Key words: Bolivia, Brazil, chromosome number, Cuba, *Cuphea*, *Diplusodon*, Mexico.

Collaborative revisionary and monographic studies under way in the Lythraceae have led to the discovery of several novelties in the most speciose genera, *Cuphea* P. Browne and *Diplusodon* Pohl. We describe two new species, two new varieties, and make two new combinations for members of floras from Bolivia, Brazil, Cuba, and Mexico. We also report range extensions for two recently described species of *Cuphea* and *Diplusodon*.

1. *Cuphea aquilana* S. A. Graham & T. B. Cavalcanti, sp. nov. TYPE: Mexico. Michoacán: Aquila, en Las Brisas del Mirador, 24 km al S de El Ranchito, 20 Oct. 1985, J. C. Soto N. 11194 (holotype, MEXU; isotypes, MEXU, MO). Figure 1.

Herba annua delicatula, 30–35 cm alta. Folia petiolis 5–27 mm longis insidentia, 20–50 mm longa, 10–35 mm lata, ovata, cordata, supra sparse strigosa. Racemi simplices; pedicelli 2–5 mm longi, filiformes. Flores 1 in quoque nodo, 4–5 mm longi, sine calcare, dorsaliter remoti hispidi; lobus dorsalis quam ceterus amplior; petala 0; stamina inclusa, supra medium tubi inserta, tubo distincte breviora; ovula 2; discus nectarifer curvus super ovarium, crassus, ligulatus. Semina elliptica, 2.2–2.4 mm longa, margine arguta cincta.

Herbaceous annuals, or possibly suffrutescent, short-lived perennials, 30–35 cm tall, erect, stems slender to nearly filiform, much branched, the branches varying in length, some as long as the primary stem, bearing thin, weak, colorless or purple glandular trichomes of varying lengths to 0.5 mm long; internodes mostly shorter than the subtending leaves but internodes, leaves, and petioles highly variable in length. Leaves opposite, petioles 5–27 mm long; blades 20–50 × 10–35 mm, thinly membranous, ovate, base shallowly to deeply cordate, apex acute to acuminate, margin plane; blade surfaces sparsely strigose above, glabrous below except for minute trichomes on the veins; leaves gradually reduced in size toward the stem apex to form

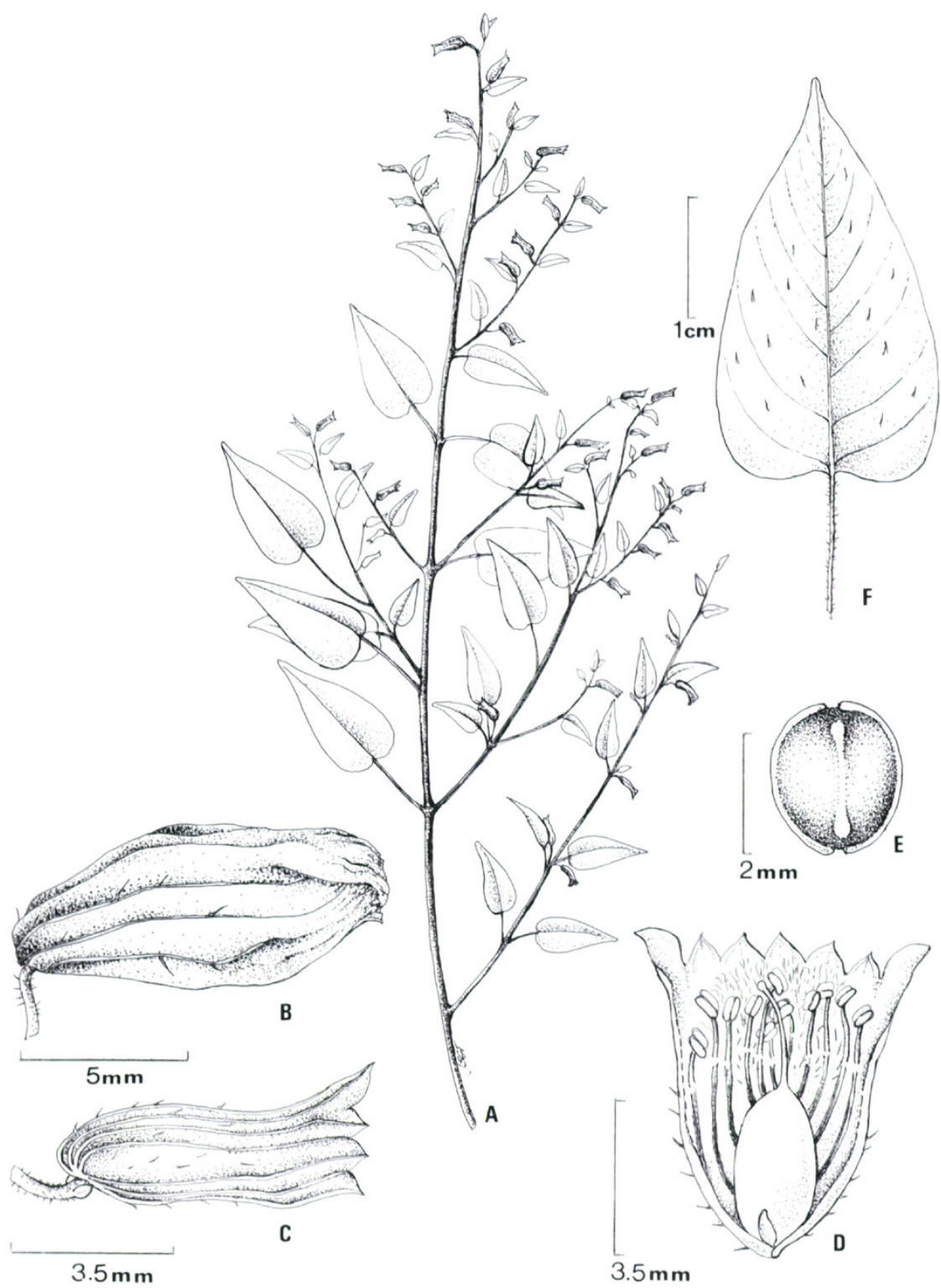


Figure 1. *Cuphea aquilana* S. A. Graham & T. B. Cavalcanti. —A. Habit. —B. Flower in late fruiting stage, lateral view. —C. Flower in early fruiting stage, lateral view. —D. Flower opened dorsally. —E. Seed. —F. Leaf, adaxial surface. (Soto Núñez 11194, MO.)

the bracts of the inflorescence; bracts paired, unequal, one strongly reduced or absent. Inflorescences leafy racemes; flowers solitary, interpetiolar, alternate; pedicels 2–5 mm long, filiform, the bracteoles (prophylls) represented by 3 to 5 glandular trichomes. Floral tubes 4–6 × 1.5–1.7 mm, the base rounded or the dorsalmost rib extended 0.2

mm at the base of the tube to form a minute dorsal spur, the neck of the floral tube not contracted at anthesis, the tube greatly distended in fruit becoming ovoid to suborbicular, the mouth tightly closed; outer surface completely green or dorsally flushed red-purple, glabrous or sparsely hispid toward the base, the trichomes 0.2 mm long, pale or reddish;

inner surface neither bialate nor vesiculate, lightly pilose above the stamens, glabrous below; calyx lobes strongly unequal, the dorsal calyx lobe $0.5\text{--}0.75 \times 2.0$ mm, semicircular, white, deflexed in fruit closing the mouth of the tube, the other 5 lobes $0.2\text{--}0.3$ mm, triangular, white; epicalyx appendages absent or represented by slight thickenings at each sinus between adjacent lobes; petals 0; stamens 11, included, all inserted at ca. $\frac{2}{3}$ the length of the tube, glabrous, the 2 dorsalmost stamens shortest, the antesealous longest; filaments glabrous; anthers not reaching the sinuses of the lobes; pollen oval-triangular in polar view, tricolporate, syncolpate, pores protruding, exine striate on the equator between the poles, the striae extending ca. $\frac{1}{2}$ the distance to the poles, $22.5\text{ }\mu\text{m}$ diam. in lactic acid; style included, glabrous; stigma capitate to punctiform, at the level of the anthers; ovules 2; nectariferous disc 1 mm long, 0.2 mm wide, ligulate, curved over the dorsal side of the ovary. Seeds 2, $2.2\text{--}2.4 \times 2.0$ mm, bilaterally compressed, elliptical to oval in outline, brown, with a narrow, rounded encircling margin, the margin thinned, 0.1 mm wide at the base of the seed flanking the hilum.

Phenology. Flowering and fruiting in September and October.

Distribution and ecology. On slopes of the Sierra Madre, coastal Michoacán, Mexico, just south of the Colima–Michoacán border; in low deciduous woods (selva baja caducifolia); 210 m.

Cuphea aquilana is one of several species with flowers 6 mm long or less that combine the key characters of sections *Brachyandra* Koehne (deeply inserted stamens) and *Heterodon* Koehne (enlarged dorsal calyx lobe; Koehne, 1903). The sections are polyphyletic and their defining characters have evolved multiple times (Graham, 1988, 1998). *Cuphea aquilana* is morphologically most similar to *C. trochilus* S. A. Graham in section *Heterodon* and for the present time is placed in that section. It shares with *C. trochilus* the same vegetative habit, having slender filiform stems and thinly membranous cordate leaves with petioles typically ca. 15 mm long. It differs by the absence of petals and by a rounded floral tube base that contrasts with the prominent conical, horizontal to ascending spur of *C. trochilus*. Seeds are 2 rather than 3 to 6 as in *C. trochilus*, and the nectariferous disc is erect and strap-shaped, rather than triangular and deflexed. Pollen viability of *C. aquilana* is approximately 100% based on a cotton-blue/lactic acid test (Kearns & Inouye, 1993). Position of the anthers and style at the same level deep in the floral tube suggests the species reproduces primarily by self-fertilization.

Paratype. MEXICO. **Michoacán:** Aquila, en El Mirador, a 3 km al W de la desviación a Aquila, carr. Tecmán, Colima–Playa Azul, Mich., 24 Sep. 1983, E. Martínez S. 4488 (MEXU, MO).

2. *Cuphea bahiensis* (Lourteig) T. B. Cavalcanti & S. A. Graham, comb. et stat. nov. Basionym: *Cuphea sessilifolia* Martius subsp. *bahiensis* Lourteig, Sellowia 39: 34. 1987. TYPE: Brazil. Bahia: Morro do Chapéu, Morrão, 15 Jan. 1977, G. Hatschbach 36428 [in the protologue erroneously cited as 306428] (holotype, P not seen; isotype, MBM). Figure 2.

Erect subshrubs, 0.60–1 m tall; branches pubescent, bearing abundant white, short, erect, glandular trichomes, 0.5–1 mm long; internodes typically 2–3 mm long, mostly ca. $\frac{1}{2}$ the length of the subtending leaves. Leaves opposite or rarely 3-vericillate, sessile, crowded and overlapping, $5\text{--}13 \times 3\text{--}9$ mm, coriaceous, ovate-lanceolate, base cordate to amplexicaul, apex acute, margin thickened, plane or subrevolute, ciliate with short glandular trichomes; blades bearing sparse glandular trichomes, the midvein and secondary veins prominent on the adaxial surface; leaves abruptly reduced in size toward the stem apex. Inflorescences bracteate racemes, 7–15 cm long, internodes of the inflorescence mostly 10–30 mm long; bracts paired, hypsophylloid, with glandular trichomes; flowers solitary, interpetiolar, alternating at the nodes, sometimes 1 to 3 alternate to nearly opposite on condensed axillary branchlets; pedicels 3.8–4.5 mm long, with the same indumentum as the branches, bibracteolate. Floral tubes $9\text{--}11 \times$ ca. 2 mm, including a straight to deflexed, rounded or truncate spur extending 1.5–2.1 mm beyond the pedicel; outer surface wine-red dorsally including the ribs and spur, green ventrally, hirsute, bearing erect, minute non-glandular trichomes and erect, pale glandular trichomes 0.5–0.7 mm long; inner surface not bialate or vesiculate, villose above the stamens, lightly pilose to glabrous below; petals 6, subequal, $4.5\text{--}6 \times 2.5\text{--}4$ mm, rose-violet to lilac, caducous; stamens 11, the 2 dorsalmost shortest, included, the others slightly exserted; filaments villos or glabrous; pollen suborbicular in polar view, tricolporate, syncolpate, pores not protruding, colpi bordered by narrow margo, exine psilate under light microscope, $25\text{--}27.5\text{ }\mu\text{m}$ diam.; style exserted beyond the anthers at maturity, glabrous, red; stigma punctiform; ovules 3; nectariferous disc broadly attached, deflexed, the apex curled under forming a concavity. Seeds 3, ca. 2×2 mm, bilaterally compressed, orbicular in outline, the margin thick, rounded.

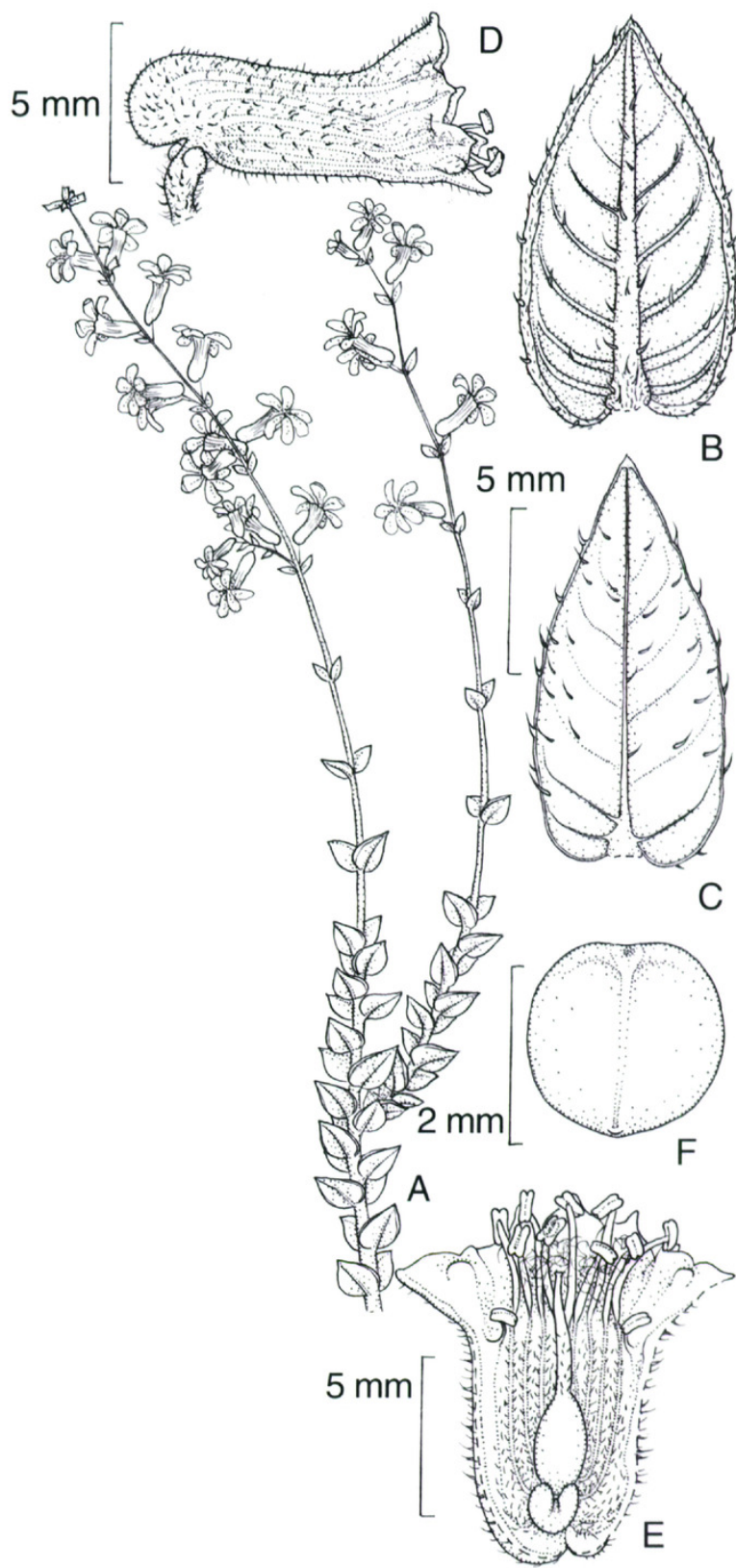


Figure 2. *Cuphea bahiensis* (Lourteig) T. B. Cavalcanti & S. A. Graham. —A. Habit. —B. Leaf, abaxial surface. —C. Leaf, adaxial surface. —D. Flower, lateral view. —E. Flower, opened dorsally, without petals. —F. Seed. (Cavalcanti et al. 2480, CEN.)

Phenology. Collected in flower and fruit from September to March.

Distribution and ecology. Known only from Bahia, Brazil, in the vicinity of Morro do Chapéu; forming extensive populations along the roadsides in the municipality; in dry sandy soils, campo rupestre; 870–1190 m.

Cuphea bahiensis is exceptional among the otherwise very similar species of section *Trispermum* for the terminal, highly floriferous inflorescence, which is well-differentiated from the vegetative stem. Other diagnostic features of *C. bahiensis* are the clasping, crowded overlapping leaves on extremely shortened internodes, and the large flowers (9–11 mm long vs. mostly less than 8 mm long in the other rose-flowered species of the section). In the most recent treatment of the section (Lourteig, 1987), *C. inaequalifolia* Koehne and *C. gracilis* HBK are also described with terminal inflorescences, but examination of numerous specimens, including those cited by Lourteig, reveals instead leafy indistinct racemes with flowers partially obscured by the leaves. Although *Cuphea sessilifolia* is vegetatively highly variable, it is unlike *C. bahiensis* except in the commonly held characters that define this taxonomically difficult section, i.e., 3-ovulate ovary, apex of the nectariferous disc curled under to form a concavity, and seeds orbicular with a rounded margin. The full description of *C. bahiensis* expands the original brief diagnosis of the variety.

Selected representative specimens. BRAZIL. Bahia: Morro do Chapéu, estrada p/o Morro da Torre de transmissão, ca. 10 km a partir da sede, Amorim, Carvalho, Silva & Jardim 1049 (MO); Morro do Chapéu–Bonito, km 12, 1 Mar. 1989, Cavalcanti, Pereira-Silva, Kirkbride Jr. & Roath 357 (CEN, MO); Morro da antena, entrada pela estrada para Wagner, Cavalcanti, Pereira-Silva, Kirkbride Jr. & Roath 360 (CEN, MO); Morro do Chapéu–Piritiba, km 8, Cavalcanti, Pereira-Silva, Kirkbride Jr. & Roath 366 (CEN, MO); estrada Utinga–Morro do Chapéu, ca. 10 km de Morro do Chapéu, 12 Jan. 1999, Cavalcanti, Giulietti, Silva & Harley 2480 (CEN, HUEFS, MO); Telebahia Tower, ca. 6 km S of Morro do Chapéu, Mori & Boom 14445 (MO, NY); 1–2 km S da cidade, na estrada para Utinga, 16 Nov. 1984, Noblick 3478 (CEN, HUEFS); estação retransmissora da Telebahia, ca. 6 km W da BA-046, Queiroz & Nascimento 4282 (HUEFS, NY); Utinga, 4 km de Morro do Chapéu, 25 Sep. 1985, Wanderley s.n. (CEN, SP).

3. *Cuphea parsonsia* var. *grisebachiana* (Koehne) S. A. Graham, comb. et stat. nov. Basionym: *Cuphea grisebachiana* Koehne, in Martius, Fl. Bras. 13: 225. 1877. *Parsonsia grisebachiana* (Koehne) Jennings, Ann. Carnegie Mus. 11: 199. 1917. TYPE: Cuba. Cuba occidental, 1863, C. Wright 2536(# 332) (lectotype, designated here, GOET; isotypes, BM, GH, K, MO).

Robust perennial herbs to 40 cm long with semi-woody stems erect to trailing, sparsely branched. Leaves with petioles 1–3 mm long, blades 10–25 × 5–10 mm, ovate-oblong, membranous, somewhat fleshy, glaucous, base rounded, apex acute. Floral tubes 6–7.5 mm long, glabrous; petals 4 mm long; stamens 11. Seeds 6, 2 × 1.75 mm, orbicular-oblong. Chromosome number: $n = 32 + 1-3$ B chromosomes (Graham 1125, HAC).

Phenology. Flowering throughout the year.
Distribution. Cuba, in Pinar del Rio, Isla de la Juventud, and western La Habana provinces; wet low places in savannas, disturbed grassy fields, muddy banks; 50–500 m.

Koehne distinguished *Cuphea grisebachiana* by quantitative differences that overlap those of the more widely distributed Antillean *C. parsonsia* (L.) R. Brown. *Cuphea grisebachiana* is judged insufficiently distinct morphologically from *C. parsonsia* to merit the rank of species in *Cuphea* and is here reduced to varietal rank.

- KEY TO THE VARIETIES OF *CUPHEA PARSONSIA* IN CUBA
- 1a. Floral tubes 4–6 mm long, flowers inconspicuous at the nodes; leaves elliptic to ovate, thinly membranous, petioles 0–1 mm long; stamens (1–)5–8(–11) var. *parsonsia*
 - 1b. Floral tubes 6–7.5 mm long, flowers conspicuous at the nodes; leaves ovate-oblong, somewhat fleshy, glaucous, petioles 1–3 mm long; stamens 11 var. *grisebachiana*

Plants of *Cuphea parsonsia* var. *grisebachiana* are more robust than those of variety *parsonsia* and consistently have larger flowers and the full complement of 11 stamens. Both varieties are self-fertilizing (Graham, 1998, and pers. obs.) and differ in chromosome number. First chromosome counts for the Cuban plants are as follows: *Cuphea parsonsia* var. *parsonsia*: $n = 16$. Cuba: Isla de la Juventud, betw. Nueva Gerona and La Fe, S. Graham 1122 (HAC); *Cuphea parsonsia* var. *grisebachiana*: $n = 32 + 1-3$ B chromosomes. Cuba: Pinar del Rio, ca. 3 km NE of Pinar del Rio city, swale E of the autopista, S. Graham 1125 (HAC). The counts suggest that variety *grisebachiana* originated as an autopolyploid of variety *parsonsia* through self-fertilization of unreduced gametes. None of the other species of *Cuphea* sect. *Brachyandra* in Cuba is sufficiently morphologically similar to imply a hybrid origin for variety *grisebachiana*. The range of variety *grisebachiana* is restricted to Cuba and lies within that of variety *parsonsia*, which is distributed throughout the Greater and Lesser Antilles (Graham, 2003).

Selected representative specimens. CUBA. C. Habana:

Lomas de la Pite, S. Miguel de Casanova, *Bro. Leon 71631* (NY). **Isla de la Juventud (Isla de Pinos):** near Nueva Gerona, *Curtiss 433* (BM, GH, K, MO, NY, US); savanna near Nueva Gerona, *Roig & Cremata 1754* (NY). **La Habana:** cerca de Artemisa, *Wilson 1729* (HAC, NY). **Pinar del Rio:** Rangel, Sierra del Rosario, *Bro. Alain 192* (GH, NY); vic. of Coloma, *Britton, Britton & Gager 7036* (NY); vic. of Herradura, *Britton & Earle 6567* (NY, US); ca. 3 km NE of Pinar del Rio city on the autopista, *Graham 1125* (HAC, MO); not far from Lagoon Maceriges, S of Los Palacios, *Bro. Leon 7354* (NY); vic. of Los Palacios, *Shafer 11666* (A, NY, US).

4. *Cuphea potamophila* T. B. Cavalcanti & S. A. Graham, sp. nov. TYPE: Brazil. Goiás: Cavalcante, margem direita do rio Macacão, 13 Dec. 2000, *G. Pereira-Silva & J. B. Pereira 4500* (holotype, CEN; isotypes, MO, SPF). Figure 3.

Fruticulus 80 cm altus, sine ramis, caules pilis malpighiaceis obsitis. Folia subsessilia, elliptica ad oblonga, 30–100 mm longa, 15–35 mm lata. Racemi simplices, frondosi. Flores 19–21 mm longi, virides apice sanguineo, calcar 2–3 mm longo, descendenti; lobus dorsalis haud productus; appendices lobis breviores; petala 6, subaequalia, 4–5 mm longa, sanguinea; ovula 6; discus nectarifer horizontalis, crassus.

Perennial subshrubs to 80 cm, stems erect, several from a woody rootstock, unbranched, reddish brown bark exfoliating in narrow thin strips at the base, distally bearing dense soft curled pubescence and abundant malpighiaceus, unequally bi-armed trichomes, the basal-directed arm shortest; internodes $\frac{1}{2}$ the length of the subtending leaves. Leaves opposite, petioles 2 mm long; blades 30–100 $\times$ 15–35 mm, thickly membranous, elliptical to lanceolate or oblong, spreading, base attenuate, apex acute or short-acuminate, margin plane; blade surfaces scabrous, the trichomes minute, appressed, the upper surface also with scattered minute bi-armed trichomes; leaves gradually reduced in size toward the stem apex. Inflorescences terminal leafy racemes, 6–10 cm long, sparsely flowered, interpetiolar flowers solitary, alternate, 1 to 3 additional flowers on axillary branchlets; pedicels 6–10 mm long, bibracteolate; bracteoles ovate, ca. 1 mm long. Floral tubes 19–21 $\times$ 4–5 mm, including a descending spur 2–3 mm long, the floral tube dorsally straight, the neck not contracted in fruit, the mouth blunt to slightly oblique by extension of the ventral side; outer surface green, becoming red distally and ventrally from the level of anther insertion to the margin of the tube, bearing minute bi-armed trichomes, the ribs with conspicuous red-purple setae to 2 mm long; inner surface lightly pilose above the stamens and on the vein below each short dorsal stamen; calyx lobes equal, 1 $\times$ 1.5 mm, broadly triangular; appendages ca. $\frac{1}{2}$ as

long as the calyx lobes, green, thick, the margin free, bearing 1 to 3 red-purple setae to 3 mm long; petals 6, subequal, 4–5 $\times$ 2–4 mm, clear bright red, oblong to slightly obovoid; stamens 11, the 2 dorsalmost shortest, inserted below the ventral 9, 5 antesealous stamens exserted, the others reaching the margin of the tube; filaments lightly villous; pollen oval-triangular in outline, tricolporate, syncolpate, the exine striate between the poles, 25 μ m diam.; style long-exserted, glabrous; stigma capitate to punctiform; ovary non-gibbous, glabrous; ovules 6; nectariferous disc 1.5 mm long, 2.5 mm wide, thick, rounded on the margin, in the same plane as the ovary. Seeds 3 $\times$ 2.7 mm, bilaterally compressed, suborbicular, dark greenish brown, the rounded margin paler in color.

Phenology. Known to flower and fruit in December and February.

Distribution and ecology. Brazil, in west-central Goiás; rare in an inundated area at the margin of rio Macacão in a gallery forest, and in a nearby humid field on the slope of the serra; 300–380 m.

Cuphea potamophila (Gr., “river-loving”) is most similar to *C. grandiflora* Koehne in section *Melvilla* subsect. *Pachycalyx*, differing principally by the green floral tube with red apex and red-purple setae. In *C. grandiflora*, the floral tube is red with a yellow apex and the indumentum is strigose or hirsute. The petals of *C. potamophila* are larger than those of *C. grandiflora* (4–5 mm long vs. 1.5–2.5 mm long) and clear bright red rather than deep wine-black. Vegetatively the species are very similar and both grow in riverine habitats in Goiás.

Paratypes. BRAZIL. **Goiás:** Cavalcante, estrada Vila Veneno–Serra Branca, km 3.6 (margem direita do rio Macacão), 20 Feb. 2000, *G. Pereira-Silva, J. B. Pereira, J. A. Jesus, M. C. Silva & S. dos Santos 5900* (CEN); Cavalcante, margem direita do rio Macacão, 29 Nov. 2001, *G. Pereira-Silva, J. B. Pereira, J. A. Jesus & J. F. B. Pastore 5765* (CEN, MO).

5. *Cuphea pulchra* Moricand var. **corollata** T. B. Cavalcanti & S. A. Graham, var. nov. TYPE: Brazil. Bahia: Piatã, estrada Piatã–Boninal, Tigüco, 1180 m, 12 Nov. 1996, *H. P. Bautista & N. Hind (PCD) 4226* (holotype, HUEFS; isotypes, ALCB, CEN [4], SPF). Figure 4.

A varietate typica 6 petalis conspicuis, sanguineis differt.

Shrubs 1–1.2 m tall, much branched distally, branches bearing abundant, short glandular trichomes; internodes 5–20 mm long. Leaves opposite, sessile, blades 10–23 $\times$ 5–18 mm, oval-lanceolate to ovate, chartaceous, base subcordate to

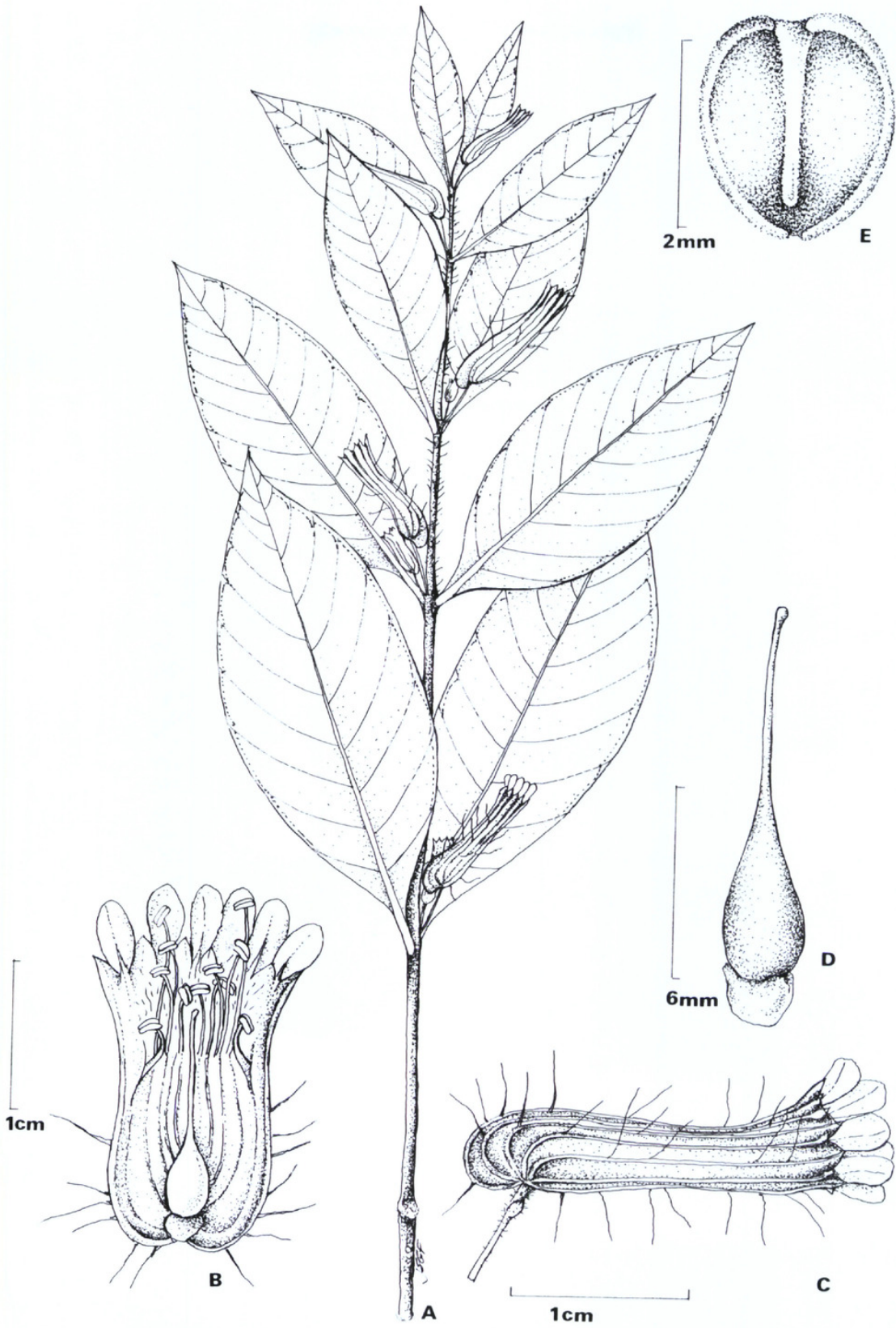


Figure 3. *Cuphea potamophila* T. B. Cavalcanti & S. A. Graham. —A. Habit. —B. Flower, opened dorsally. —C. Flower, lateral view. —D. Ovary with basal nectariferous disc (Pereira-Silva & Pereira 4500, CEN). —E. Seed (Pereira-Silva et al. 5900, CEN).

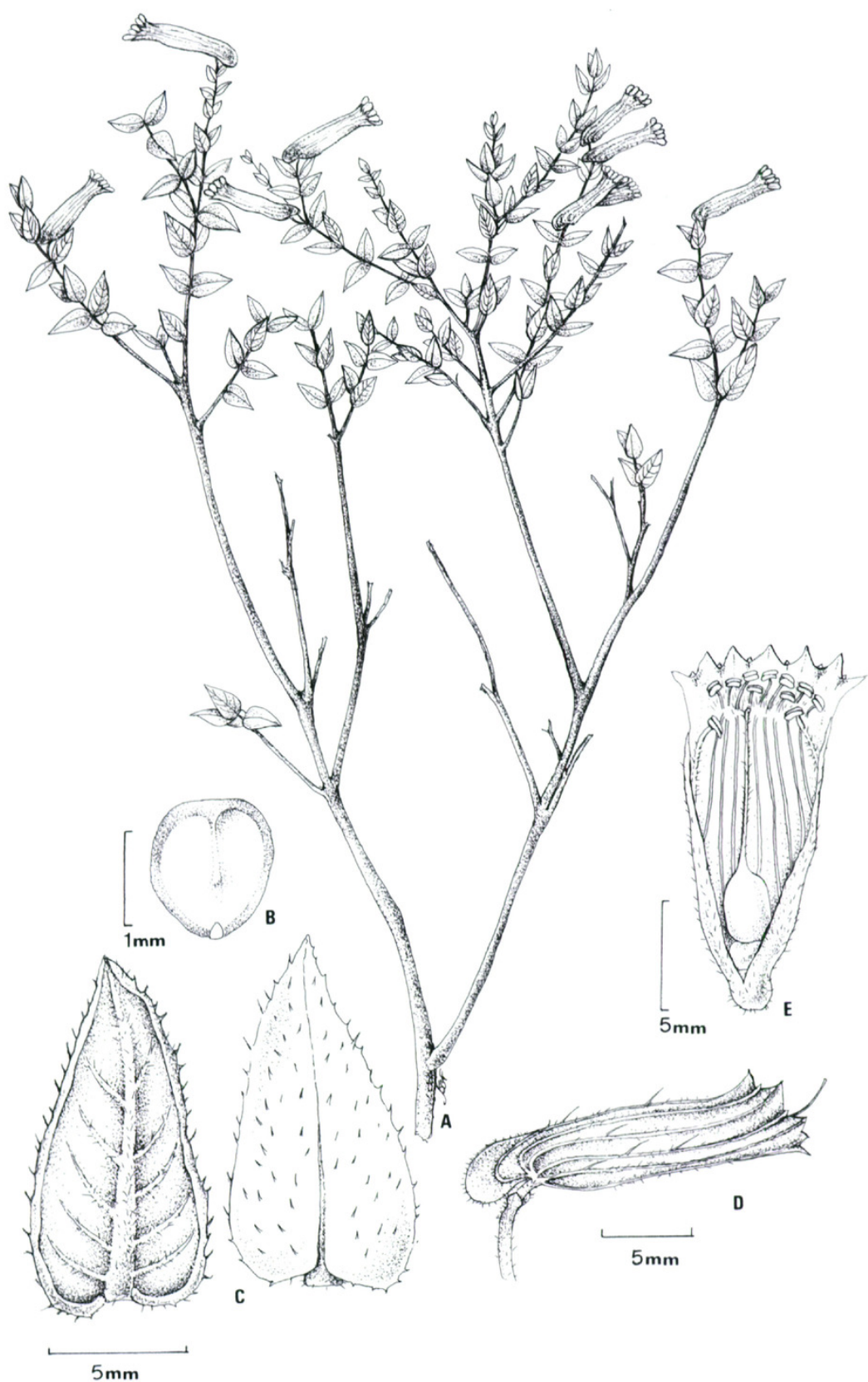


Figure 4. *Cuphea pulchra* var. *corollata* T. B. Cavalcanti & S. A. Graham. —A. Habit. —B. Seed. —C. Leaf, abaxial surface on left, adaxial surface on right. —D. Flower, lateral view. —E. Flower, opened dorsally, without petals. (Bautista & Hind 4226, CEN.)

cordate, apex obtuse to acute or sometimes acuminate, margin subrevolute, short ciliate with sparse glandular trichomes; blade surfaces scabrous, non-glandular trichomes minute and appressed, glandular trichomes short, sparse; leaves gradually reduced in size toward the stem apex. Inflorescences terminal leafy racemes of 2 or 3 flowers; pedicels 9–12 mm long, bibracteolate; bracteoles broadly ovate, 1–1.2 mm long. Floral tubes 12–20 × 4–5 mm, including a descending spur 4–4.5 mm long, the tube dorsally straight; outer surface red-orange with dark red veins, becoming yellow-red apically and ventrally, pubescent; inner surface glabrous or lightly pubescent especially around the base of the ovary, pilose above the stamens; calyx lobes equal, 0.5 mm long; epicalyx appendages 0.5–0.7 mm long, green, bearing minute glandular trichomes; petals 6, subequal, 3–3.5 mm long, 1.5–2.5 mm wide, deep red, oblong to obovoid; stamens 11, 5 antesealous exerted, the others reaching the margin of the tube; style lightly pilose; stigma punctiform; ovary glabrous; ovules 3 to 6; nectariferous disc 1.5 mm long, ca. 2 mm wide, thick, semi-circular in dorsal view. Seeds not seen.

Phenology. Flowers collected in November and April, immature fruits present in April.

Distribution and ecology. Brazil, in central Bahia, in campo rupestres and along margins of cerrado woodlands within the range of *Cuphea pulchra* Moricand var. *pulchra*; 1180 m.

KEY TO THE VARIETIES OF *CUPHEA PULCHRA* IN BAHIA, BRAZIL

- 1a. Petals 0; floral tubes pilose to villose within; inflorescences terminal racemes typically with ca. 8 to 17 flowers var. *pulchra*
- 1b. Petals 6, deep red; floral tubes glabrous to pilose within; inflorescences limited to 2 or 3 terminal flowers var. *corollata*

The presence of six deep red petals in *Cuphea pulchra* var. *corollata* easily separates it from apetalous *C. pulchra* var. *pulchra* Moricand. Plasticity of petal presence and reduction in petal number or size within a species is found in other species of *Cuphea* and in other genera of the Lythraceae, as for example in *Cuphea paucipetala* S. A. Graham (Graham, 1988) and *Ammannia latifolia* L. (Graham, 1985). Given that the flowers of variety *corollata* are otherwise very similar or identical to the non-petaled ones of variety *pulchra* and occur on plants within the larger range of variety *pulchra*, we choose to recognize this distinction at the varietal level.

Paratype. BRAZIL. **Bahia:** Jacobina, Serra da Ja-

queira, na subida da Fazenda do Japonês, 2 Apr. 1999, R. M. Harley & A. M. Giuliatti 53695 (CEN, HUEFS).

- 6. ***Diplusodon virgatus* var. *occidentalis*** T. B. Cavalcanti & S. A. Graham, var. nov. TYPE: Bolivia. Santa Cruz: Velasco, Par. Nac. Noel Kempff Mercado, Camp. Huanchaca I, cerrado, 650 m, 17 May 1994, L. Arroyo, B. Mostacedo, H. Gonzales, S. Cabrera & J. Surubi 684 (holotype, MO; isotype, USZ not seen).

Differt haec varietas a habitu robusto fruticulo foliis sessilibus basi cuneatis, floribus carnosioribus globosioribus.

Robust shrubs 0.7–2 m tall. Leaves sessile, 20–48 × 7–13 mm, subcoriaceous, ovate-lanceolate, the base cuneate, the apex obtuse to retuse, venation eucamptodromous. Inflorescences leafy, racemose, the accessory branches ascending; pedicels 2 mm long; bracteoles 5–6 × 2–3 mm, elliptic-lanceolate, reaching the sinuses of the calyx lobes or slightly below. Floral tubes 5–6 mm long from base to the sinuses of the calyx lobes, 4.5–5.5 mm wide, subglobose in fruit; calyx lobes 1.6–2 mm long, 1–1.3 mm wide; epicalyx segments 2.5–3 × 0.5–1 mm, exceeding the calyx lobes, linear-oblong, thick, partially deflexed in fruit; stamens 12; style 10 mm long; ovary glabrous; ovules 38.

Phenology. Flowering and fruiting in May, fruiting in June.

Distribution and ecology. Eastern Bolivia, western Mato Grosso, and Mato Grosso do Sul, Brazil, in woody savanna [cerrado]; 500–650 m.

KEY TO THE VARIETIES OF *DIPLUSODON VIRGATUS* IN BRAZIL AND BOLIVIA

- 1a. Leaves petiolate, long-attenuate; branches of the inflorescence diverging from the main stem var. *virgatus*
- 1b. Leaves sessile, cuneate at the base; branches of the inflorescence ascending var. *occidentalis*

Among the 60 or more species of *Diplusodon*, *D. virgatus* Pohl is unique in having white-petaled flowers and a small tree habit (4 m). The rest of the genus consists of subshrubs and shrubs (mostly 0.5–2.0 m) with rose to purple flowers. This new variety is also white-petaled but is a robust shrub with more coriaceous leaves and thicker epicalyx segments on the flowers than in variety *virgatus*. Of greatest diagnostic value are the sessile, narrowly cuneate leaves and short ascending branches of the inflorescence, which form a narrow angle with the stem. *Diplusodon virgatus* var. *virgatus* has slender, long-attenuate, petiolate leaves; the branches of the inflorescence typically form a wide angle with the stem.

An intermediate collection (BRAZIL. **Mato Grosso:** ca. 9 km NE of Barra do Garças, 6 Mai. 1973, *W. R. Anderson* 9795 [MO, NY, UB]), with subcoriaceous, sessile leaves and widely divergent inflorescence branches, is known from easternmost Mato Grosso near the border with Goiás in a geographically intermediate position between variety *occidentalis* and the widespread eastern Brazilian variety *virgatus*. *Diplusodon virgatus* var. *occidentalis* is the second *Diplusodon* to be discovered in Bolivia. *Diplusodon bolivianus* T. B. Cavalcanti & S. A. Graham is also from cerrado in Noel Kempff M. National Park, in an area south of the *D. virgatus* var. *occidentalis* locality (Cavalcanti & Graham, 1996). It is easily separated from *D. virgatus* var. *occidentalis* by the rose-petaled flowers, distinctly terminal inflorescences, and by the hirsute to sericeous yellowish indument that covers all parts of the plant.

Paratypes. BRAZIL. **Mato Grosso:** Juruena, Apr. 1909, *F. C. Hoehne* 1796, 1798 (R), May 1909, *F. C. Hoehne* 1846 (R); Nova Ubiratã, estr. rio Teles Pires, 1 May 1997, *A. G. Nave* 1415 (CEN); Diamantino, Faz. Pequeno Figueiredo, cerca de 4 km em linha reta de Diamantino, 22 May 1997, *V. C. Souza, A. R. Duarte, J. P. Souza & V. R. Scaloni* 16844 (CEN, ESA); Tapurah, estr. Capixaba, ca. 20 km de Tapurah, 12 June 1997, *V. C. Souza, A. R. Duarte, J. P. Souza & Miyagi* 17830 (CEN, ESA). **Mato Grosso do Sul:** Selúria, Faz. de Ensino e Pesquisa da UNESP, Campus Ilha Solteira, 22 Apr. 1991, *J. Santos* 370 (UB), 5 Apr. 1991, *O. Tiritan* 584 (UB), May 1991, *J. Santos* 413 (UB).

TAXONOMIC NOTES

Cuphea xanthopetala S. A. Graham & T. B. Cavalcanti was described from a single collection from Mato Grosso, Brazil (Graham & Cavalcanti, 1999). The following collection extends the range of the species to the state of Amazonas and confirms it as a species of white sand habitats. BRAZIL. **Amazonas:** rodovia do Estanho, margem da rodovia a 150 km de Humaita, campina, solo arenoso branco, 25 Sep. 1979, *G. Vieira, J. Zarucchi, A. Silva, C. Mota & O. Monteiro* 148 (INPA, MO, NY).

Diplusodon bolivianus T. B. Cavalcanti & S. A. Graham, previously known only from the type collection, is further represented by the following. BOLIVIA. **Santa Cruz:** Velasco Prov., Par. Nac.

Noel Kempff Mercado colecta general de Huanchaca 1, en la pampa cerca de la pista de Huanchaca, *A. Soto, Pamfil, Moore & Soliz* 365 (MO); colectado a 2 km de la pista, *Soto, Pamfil, Moore & Soliz* 427, 463 (MO). BRAZIL. **Mato Grosso:** BR 364, Vilhena-Comodoro, 84 km S de Vilhena, 25 June 1997, *Cavalcanti, Pereira-Silva, Baltazar & Graham* 2381 (CEN, NY); Tapurah, estr. Capixaba, ca. 20 km NE de Tapurah, 10 June 1997, *Souza, Duarte, Souza & Miyagi* 17617 (CEN, ESA), 12 June 1997, *Souza, Duarte, Souza & Miyagi* 17863 (CEN, ESA).

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