

# STUDIES IN THE Capparidaceae - XVI. *Podandroyne* A NEW SPECIES AND THREE NEW COMBINATIONS

by

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## Resumen

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Se describe *Podandroyne colombiana* especie con flores púrpura oscuro y semillas grandes, poco numerosas y se proponen las siguientes nuevas combinaciones: *Podandroyne densiflora* (Benth.) Iltis & Cochrane, *P. densiflora* fma. *pallens* (Tr. & Pl.) Iltis & Cochrane y *P. trichopus* (Benth.) Iltis & Cochrane.

## Abstract

*Podandroyne colombiana*. Iltis & Cochrane, a dark purple-flowered species with few large seeds, is described. The following new combinations are made: *P. densiflora* (Benth.) Iltis & Cochrane (*Gynandropsis densiflora* Benth.), *P. densiflora* forma *pallens* (Tr. & Pl.) Iltis & Cochrane (*Cleome densiflora* var. *pallens* Tr. & Pl.) and *P. trichopus* (Benth.) Iltis & Cochrane (*G. trichopus* Benth.).

*Podandroyne* Ducke, a natural genus of slender to usually robust, sometimes woody herbs of the American tropics, consists of about 26 species distributed from Honduras and Guatemala to Bolivia, with the greatest number, including the most primitive, occurring in the Colombian and Venezuelan Andes. *Podandroyne* is intimately related to *Cleome* subgenus *Andinocleome* Iltis, nom. provis. (inter alia, incl. *C. anomala* H.B.K., *C. glandulosa* R. & P., *C. pilosa* Benth., *C. chilensis* Dombey ex DC. and *C. stylosa* Eichl.), but may be segregated with relative ease on the basis of four correlated morphological differences: 1) a short to elongate androgynophore; 2) unisexual flowers in monoecious inflorescences; 3) arillate seeds; 4) and peculiar silique dehiscence, the latter stressed by Ducke (1) as the primary character of his new genus. The old unnatural genus *Gynandropsis*, established by De Candolle (2) on the basis of a single character, a relatively long androgynophore ("torus elongatus"),

was comprised of a diverse assemblage of several unrelated species of *Cleome* and all species of *Podandroyne* then known. In the strictest sense, since *Gynandropsis* is typified by and includes only the peculiar, pantropically weedy, Old World species *Cleome gynandra* (L.) L, it has to be rejected for the New World taxa Woodson (3); Iltis (4); Cochrane, unpubl.).

To date, the only comprehensive investigation of *Podandroyne* is a generic synopsis published by Woodson (3), who added to Ducke's original species (*P. glabra* Ducke) not only two new South American species of his own but also transferred to it six species of *Gynandropsis* or *Cleome*. Finally, Cochrane (5), (6), recently described two additional species. *Podandroyne colombiana*, here newly described, is founded upon several collections that had been accumulating in herbaria over the past few decades. In addition, two new combinations are made, one for a Colombian-Venezuelan species apparently closely related to our new species, the other for a little-known Ecuadorian endemic.

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It is a pleasure to present these notes in honor of Dr. José Cuatrecasas, Research Associate at the United States National Herbarium and specialist in the Colombian flora, who has been to the first author a friend and inspiration for now exactly 40 years, and to both authors a shining example of what botanical excellence and dedication should be.

Furthermore, we dedicate this new species to his adopted second home, Colombia, which, by generously giving Dr. Cuatrecasas shelter in his flight from fascism and war in his native Spain, helped give neotropical botany one of its finest collectors and systematists. Although never having studied Cappariaceae himself, he has procured many exceptionally interesting collections for those of us working in this fascinating family, so richly represented in Colombia. All in all, during the 1940's, he collected at least fifteen numbers of Colombian *Podandrogynae*, all from the Departamentos del Cauca and Valle del Cauca, Intendencia del Cauquetá, and Comisaría del Putumayo, materially contributing to our knowledge of its many neglected and locally highly endemic species, this at a time when, apart from the U.S. Foreign Economic Administration Cinchona Mission collections, scarcely any well prepared, adequately labelled specimens existed. To this day, several rare species are known mostly, or in the case of *P. polychroma*, only, from the excellent collections of the honoree.

*Podandrogynae colombiana* Iltis & Cochrane, sp. nov.  
Figs.: 1, 2 & 3 Map. 1.

Herba 1-2 m alta, subglabra vel densiuscule glanduloso-hirsuta. Folia plerumque 5-foliolata, foliolis oblanceolato-ellipticis, illis foliolorum mediorum 6-20 x 2-7 cm. Flores parvi, in racemum subcorymbosum densum multiflorum dispositi e rhachi gracili ad 48 cm longa prodeuntes, pedicellis 26-50 mm longis; bractee paucae vel nullae. Sepala lanceolata vel oblongo-lanceolata, 3-5 mm longa. Petala vinosa ovato-oblonga usque anguste elliptica, (2-) 4-8 mm longa. Flores ♂ filamentis 12-26 mm longis, fere ad apicem nectarii affixa, androgynophoro subnullo. Flores ♀ ovario glanduloso 3-4 mm longo, in stylum eo fere aequilonga constrictus, stigmatibus didymo. Fructus oblongus, (1-) 3-5 (-7) cm longus, manifeste compressi, gynophoro cum androgynophoro 6-11 mm longo stipitati, apice in stylum (3-) 5-8 cm longo abeuntes. Semina ca. 4-6 mm longa et 3-4 mm lata.

Herbs 1-2 m tall, the stem usually suffrutescent, to 4 cm in diameter, subglabrous to rather copiously glandular-hirsute, especially on the leaves and petioles. Leaves (4-) 5- to 7- foliolate; petioles 6-22 cm long; leaflets oblanceolate-elliptic, almost caudate-acuminate at apex, cuneate and with a short to long (1-14 mm) petiolule, the blade of mature major (middle) leaflets 6-20 cm long, 2-7 cm wide, entire, the main lateral nerves 15-21 on each side.

Racemes subcorymbose, many-flowered, very dense, ebracteate, or the lowest 3 to 9 flowers subtended by small oblong subsessile bracts (these in turn grading into 2 or 3 small 1- to 3-foliolate short-petiolate leaves); inflorescence rachis very slender, with age to 48 cm long, with 15-25 open flowers and up to 100 buds congested at its end at any one time; peduncle 8-14 cm long. Earliest flowers pistillate with minute abortive stamens, with continuing growth of the raceme the staminate and pistillate in alternating cycles, with the flowers at any one time all of one sex. Pedicels slender, 26-50 mm long, strongly ascending.

Sepals lanceolate to oblong-lanceolate, 2.5-4.5 mm long, 0.5-1.5 wide, ascending, free, green. Petals mostly ovate-oblong to elliptic, small, (2-) 4-8 mm long, (1-) 2-3 mm wide, deep dark red-violet, laterally adnate to each other to form an erect adaxial "petal-shield" in the staminate flowers, but free in the pistillate flowers. Receptacular gland adaxial, pronouncedly enlarged.

Staminate flowers: stamens long-exserted, the filaments mostly 21-27 mm long; anthers ca. 3 mm long; androgynophore extremely short, 1 mm or less long (or obsolete?).

Pistillate flowers: ovary compressed-ellipsoid, 3-4 mm long, 1-2 mm wide; style 1-3 mm long, the stigma deeply bilobed, therefore appearing almost bifid, ca. 1-2 mm in diameter; androgynophore 0.2-0.6 mm long.

Mature siliques 1-8 per raceme, oblong, acute at both ends, strongly flattened, variable in size, (1.5-) 3-5 (-7) cm long, 7-13 mm wide, 3-4 mm thick, glandular-pubescent; style (3-) 5-8 mm long, strongly capitate; gynophore 6-10 mm long; androgynophore minute (barely 0.6 mm long or less); pedicel 32-48 mm long, ascending to deflexed, with the gynophore and capsule ± refracted on it; adaxial gland in fruit conspicuous, to 2 mm long.

Seeds 3-12 in each silique (though ovules to 25 per ovary), suborbicular, relatively large, 4.2-6.2 mm (3.1-4.0, not including aril) in diameter, 2.4-3.0 mm thick; testa smooth, brown, the caruncular aril large and conspicuous.

A very local endemic of humid, subtropical or lower montane forests in the Departamento of Valle del Cauca of west-central Colombia from ca. 900-2,000 m; flowering and fruiting throughout the year. All information supplied with the six available collections is given below.

Type: COLOMBIA. Dept. Valle del Cauca: San Antonio, W of Cali, near summit of Cord. Occidental, alt. 1,900-2,350 m, "Herb, about 2 m high; fls. purplish. Dense forest". 26 Feb. 2 Mar. 1939 (fl. fr), *E. Killip & H. García 33917* HOLOTYPE: US; ISOTYPE: COL.; photograph of holotype, AAU, MO, WIS, fragment of holotype, WIS).



FIGURA No. 1

*Podandrogyné colombiana*. Habit, showing pistillate flowers, with insets (left of inflorescence) of immature fruit, stinate flower, and pistillate flower and (right of inflorescence) comparatively broad fruit and seed. (Killip & Garcia 33917, holotype, except long capsule and staminate flower from Killip 34848, US-sheet 1.) Centimeter scale on top totals 15.5 cm.

PARATYPES: COLOMBIA. Dept. Valle del Cauca: Bosques, Piedra de Moler, hoyá del Río Digua, W side of Cord. Occidental, alt. 900-1.180 m, "Frútex 2 m. Ramas péndulas. Hoja verde oscura haz, clara envés". 19-28 Aug. 1943 (fl, fr), *Cuatrecasas* 15133 (F-2 sheets, MO); between Puente de los Carpatos and La Margarita, hoyá del Río Cali, E side of Cord. Occidental, alt. ca 2.000 m. "Varas 2 m long. Hojas verde haz, verde claras envés, con sombras violáceas. Pedunculos rosados. Cáliz verdoso. Corola pardo rojiza. Fruto bivalvo. Semilla parda, con grueso hilo anaranjado" 2 Nov. 1944 (fl, fr), *Cuatrecasas* 18477 (COL); cuenca del Río Cali, cercanías de Peñas Blancas, Cord. Occidental, "Selva húmeda". 10-11 Jan 1963 (fl, fr), *Figueiras* 8123 (US); dense forest along Río Enpaña, Río Digua Valley, at. ca 675 m, "Stem suffrutescent, 1-1.5 m high, about 4 cm diam., erect; pedicels pink; petals deep red". 2, 4 Apr. 1939 (fl, fr), *Killip* 34848 (BM, COL. -2 sheets MO. US-2 sheets photograph of US-sheet 1, F, HUA, WIS, fragment ex US-sheet 1, WIS); Río Bravo, NW of Darien, alt.

1450 m (as 4700 ft), shrub 15 ft tall, flowers purple and yellow (sic), capsules green, 26 Jul. 1962 (fl), *Robinson* 113 (K).

Diagnostic characters of this strikingly distinct if small flowered species include: dense, corymbiform inflorescences with extremely long axes, when mature to 60 cm or so; very small, dark purple petals; unusually short androgynophore; long style and large, bilobed stigma; strongly flattened, oblong siliques on relatively short gynophores; and seeds unusually large for the genus. In the occasional presence of small bracts at the base of the elongate inflorescence the new species resembles *P. brachycarpa*, sensu lato, and especially *P. densiflora*, and it seems likely that these three species are related despite their floral differences. The bract character, the large bilobed stigma, and the multifoliolate leaves, as well as the presence of pubescence, place *P. colombiana* among the more primitive species of the genus, while the reduced petals, compressed siliques and few seeds are specialized, derived features.



FIGURA No. 2

*Podandroyne colombiana*. Upper portion of plant, showing inflorescence in pistillate phase. (Enlargement of Figure 1).

***Podandroyne densiflora* (Benth.) Iltis & Cochrane, comb. nov.**

Based on *Gynandropsis densiflora* Benth. Pl. Hartw. 160. 1845. T.: (COLOMBIA) Hacienda de Palmar, near Guaduas, *Hartweg 888\** (HOLOTYPE: not traced; ISOTYPES: BREM, L.D. photographs of BREM isotype, WIS).

*Gynandropsis phoenicea* Turcz., Bull. Soc. Nat. Mosc. 272: 316. 1854.

*Cleome densiflora* Benth. ex Tr. & Pl. Prodr. Fl. Novo Gran. 72. 1862.

*C. macrothyrsus* Tr. & Pl. *Ibíd.* 72, 1862.

*C. macrothyrsus* (Tr. & Pl.) Macbr., Field Mus. Publ. Bot. 11: 22. 1931.

***Podandroyne densiflora* forma *pallens* (Tr. & Pl.) Iltis & Cochrane, comb. et stat. nov.**

Based on *Cleome densiflora* var. *β pallens* Pl. & Lind. ex Tr. & Pl. Prodr. Fl. Novo Gran. 72. 1862. T. here designated: COLOMBIA (Tolima): plagas del Río Comboyima (= Combeima), *Goudot s. n.* in 1844. (LECTOTYPE: P.; photographs, COL. US.).

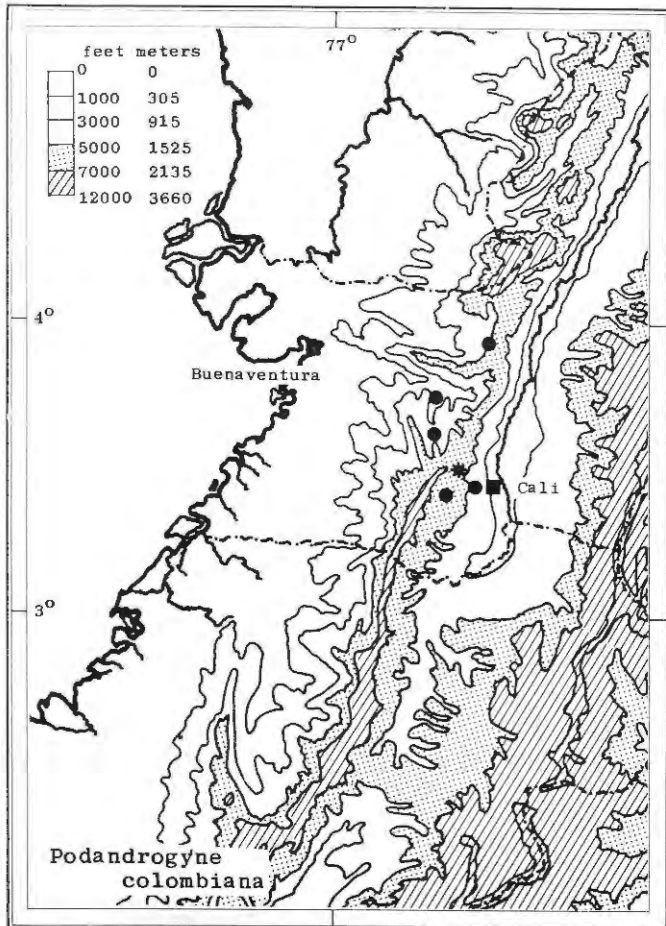
Despite the fact that it does not occupy a particularly extensive range (it has been collected most often in Colombia at Tena, Ocaña and Bucaramanga, and in Venezuela at several cloud forest localities in Lara and Mérida states), *Podandroyne densiflora* is very variable in flower size and color, vestiture, and fruit size and shape. It shares many features with the primitive *P. brachycarpa* complex, out of which it undoubtedly arose, but it can be distinguished from this polymorphic widespread species and its nearest allies by its robust suffrutescent growth habit, longer inflorescences (to 8 dm when well developed) with more numerous flowers, dark rose to dark reddish-purple or less often blood red petals (whitish in an albino form), and often rather large, sometimes fusiform fruits.

Newer collections indicate that the *Podandroyne brachycarpa* complex is even more polymorphic than supposed by Woodson (3), and to this day many South American specimens of *Podandroyne* cannot be named with any high degree of confidence. Our studies have let us to conclude, however, that, while problematic taxa remain hidden among the large quantity of herbarium specimens that are included in the overly broad concept of *P. brachycarpa*, others, either new to science or lan-



FIGURA No. 3

*Podandroyne colombiana*. Portion of stem and leaves plus an inflorescence bearing staminate flowers toward the tip and immature fruits toward the base. (Killip 34848, US-sheet 1.)



MAPA No. 1

Distribution of *Podandroyne colombiana*. The star, center, designates the type locality. All stations are in the Depto. del Valle del Cauca, Colombia.

guishing as synonymized species, deserve taxonomic recognition. *Podandrogynne densiflora* is one species that clearly requires resurrection.

*Podandrogynne trichopus* (Benth.) Iltis & Cochrane, comb. nov.

Based on *Gynandropsis trichopus* Benth. Bot. Voy. Sulphur 64. 1844. T. here designated: ECUADOR: "open habitations in the woods of Selango Colombia", *Barclay* 637 (LECTOTYPE: BM-sheet 1; ISOLECTOTYPE: BM-sheet 2; photograph of lectotype, WIS).

This Ecuadorian plant is now represented by six different collections, only one of which is recent. They are quite homogeneous (*Hinds s. n.* has more numerous bracts), and a few sheets were correctly determined years ago by E. C. Leonard and A.C. Smith as *Gynandropsis trichous* (= *P. trichopus*). This plant is similar to *P. brachycarpa*, sensu lato, and its allies, especially vegetatively, because of its leafiness, pubescence, bracteate inflorescence, and small flowers. It differs from all members of that species group, however, in its conspicuously elongated (cylindric to slenderly cylindric, mostly 7-10

cm long) siliques. *Podandrogynne trichopus* is apparently confined to western and southern Ecuador between Jipijapa and the Peruvian border, where it occurs in seasonal evergreen forests from near sea level to 1.000 meter elevation.

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