

## ***PINOCHIA*, A NEW GENUS OF *APOCYNACEAE*, *APOCYNODEAE* FROM THE GREATER ANTILLES, MEXICO AND CENTRAL AMERICA**

M. E. ENDRESS<sup>1</sup> & B. F. HANSEN<sup>2</sup>

*Pinochia*, a new neotropical genus of *Apocynaceae*, subfamily *Apocynoideae*, is segregated from *Forsteronia*, described and illustrated. Four new combinations and a key to the species are provided.

*Keywords.* *Apocynaceae*, *Apocynoideae*, *Forsteronia*, new combination, *Pinochia*.

### INTRODUCTION

Among New World *Apocynoideae*, the genus *Forsteronia* G.Mey. has always been recognized by its small flowers with a very short corolla tube and exerted anthers in many-flowered inflorescences (e.g. Schumann, 1895; Woodson, 1933). The presence of colleters at the base of the leaf blade on the upper surface and domatia in the axils of the secondary veins on the lower surface were later added as important characters (Markgraf, 1968; Ezcurra, 1981; Hansen, 1985; Morillo & Carmona, 1995; Zarucchi, 1995; Williams, 1996; Simões & Kinoshita, 2002; Morales, 2005). In a phylogenetic study, Simões *et al.* (2004) provided molecular and morphological evidence that for the first time strongly supported the inclusion of *Forsteronia* in the neotropical tribe *Mesechiteae*. In their study, Simões *et al.* showed that the sampled species of *Forsteronia* share the four morphological synapomorphies that characterize the tribe: (1) leaf blades with colleters at the base adaxially, (2) anthers with blunt-cordate to truncate basal appendages, (3) retinacle strongly united with the style-head via cellular fusion, and (4) style-head with five strongly protruding longitudinal ribs.

It has long been known, however, that a small cluster of *Forsteronia* species distributed in Mexico, Central America and the Greater Antilles differs from the others in the lack of colleters at the base of the leaf blades, in the presence of anthers with acuminate basal appendages, and in possessing an ovoid style-head (Woodson, 1933). Pichon (1950) noted additional differences from *Forsteronia* s.str. such as the presence of a small annulus at the base of the style-head, a larger number of ovules, and seeds without longitudinal ribs. A recent phylogenetic study of *Apocynoideae* (Livshultz *et al.*, 2007) sampled for the first time *Forsteronia* subgenus *Pinochia*,

<sup>1</sup>Institute of Systematic Botany, University of Zürich, Zollikerstrasse 107, 8008 Zürich, Switzerland.  
E-mail: mendress@systbot.unizh.ch

<sup>2</sup>Department of Biology, University of South Florida, 4202 E Fowler Ave, Tampa, FL 33620, USA.  
E-mail: hansen@cas.usf.edu

described in an unpublished PhD thesis by the second author (Hansen, 1985), and suggested that it is not congeneric with *Forsteronia* subgenus *Forsteronia*. Rather, the sampled species, *Forsteronia corymbosa*, is strongly supported as sister to *Thyrsanthella* Pichon, a monotypic genus of the southeastern United States, which was included in the otherwise Asian genus *Trachelospermum* by Woodson (1935). Considering only Livshultz *et al.*'s (2007) phylogenetic results, *Forsteronia* subgenus *Pinochia* could be included in *Thyrsanthella*. However, the two taxa differ considerably in their gross morphology, as was already noted by Pichon (1948). In *Forsteronia* subgenus *Pinochia*, the leaves usually have domatia in the axils of the secondary veins on the lower surface, the flowers are rotate with a corolla tube only 3 mm long or less, the anthers have slender filaments and are exerted from the corolla, and the ovary is pubescent (versus leaves without domatia, flowers with a salverform corolla tube 5.5–6 mm long, anthers sessile and included in the corolla tube, and ovary glabrous in *Thyrsanthella*).

Here we follow through with the taxonomic consequences of the accumulated data that indicate that *Forsteronia* as currently delimited is not monophyletic, by placing the four aberrant species in the new genus *Pinochia*. The name of the genus is an anagram of the name Pichon, in honour of Marcel Pichon (1921–1954), the prolific and insightful monographer of *Apocynaceae*, who was the first to notice the critical differences in morphological characteristics that distinguish *Pinochia* from *Forsteronia*. Based on its affinity to *Thyrsanthella* (Livshultz *et al.*, 2007), we believe that *Pinochia* belongs in the tribe *Odontadenieae*, following the latest classification of the family (Endress *et al.*, 2007).

***Pinochia* M.E.Endress & B.F.Hansen, gen. nov.**

Frutices scandentes lactescentes. Folia opposita glabra eglanduligera. Inflorescentiae terminales corymbosae multiflorae. Corolla rotata, lobis contortis, dextrorsum obtegentibus. Stamina basi tubo inserta et inter se cohaerentia; antherae exsertae styli capiti adhaerentes, basi sagittatae acuminatae. Discus 5-lobatus. Ovario carpella 2 distincta, puberulenta vel pubescentia; styli caput ovatum ad basim annulo instructum. Fructus folliculis elongatis; semina elongata puberulenta vel strigosa, apice coma instructa. – Type species: *Pinochia corymbosa* (Jacq.) M.E.Endress & B.F.Hansen, *comb. nov.*

High climbing, woody lianas with white latex. *Leaves* opposite; with both a row of caducous interpetiolar colleters and clusters of persistent intrapetiolar colleters, petiolate; petioles canaliculate; blades membranaceous to coriaceous, elliptic to narrowly elliptic or ovate or obovate, lanceolate or oblanceolate, glabrous except for the often pubescent or ciliate domatia (when present) on the lower surface in the axils of the secondary veins. *Inflorescence* terminal, subcorymbose, 20–60-flowered; bracts scarious, lanceolate. *Flowers* 5-merous, actinomorphic, up to 3 × 3 mm; pedicels 1.5–5 mm. *Sepals* free; calycine colleters at the sepal margins, 1–4 per sepal. *Corolla* rotate to sub-rotate; tube cylindrical to obconical, 1.5–2 mm long; lobes spreading

and reflex-curved, 3–5 × 2 mm, oblong to lanceolate, dextrorsely convolute; stamens inserted near the base of the corolla tube, the filaments connate around the style; anthers adnate to the style-head, exerted, the apices acuminate and hyaline, the bases sagittate, fertile in the upper third, lower parts enlarged and lignified dorsally and laterally. *Disc* composed of five fleshy lobes that are about the same height as the ovary. *Ovary* superior, bicarpellate, apocarpous, puberulent to pubescent above the disc; ovules 20–40 per carpel; placentation marginal; style short, filiform; style-head ovate, with an annulus around the base. *Fruit* apocarpous, composed of two elongate, narrowly cylindrical follicles, dehiscent along the ventral suture. *Seeds* cymbiform, elongate to linear, puberulent to sericeous or strigose, with a single, broad ventral groove, and with a yellowish brown coma at the micropylar end.

*Key to the species of Pinochia*

- 1a. Secondary veins arcuate \_\_\_\_\_ 2  
 1b. Secondary veins straight \_\_\_\_\_ 3
- 2a. Corolla red; plants of Cuba, Hispaniola and Puerto Rico \_\_ **1. *P. corymbosa***  
 2b. Corolla white to yellowish; plants of Mexico, northern Guatemala and Belize  
 \_\_\_\_\_ **2. *P. peninsularis***
- 3a. Calyx lobes acute to acuminate; plants of southern Guatemala and Costa  
 Rica \_\_\_\_\_ **3. *P. monteverdensis***  
 3b. Calyx lobes obtuse to rounded; plants endemic to Jamaica \_\_\_\_\_  
 \_\_\_\_\_ **4. *P. floribunda***

**1. *Pinochia corymbosa*** (Jacq.) M.E.Endress & B.F.Hansen, **comb. nov.**

*Echites corymbosus* Jacq., Enum. Syst. Pl. 13 (1760), as ‘corymbosa’. – *Parsonsia corymbosa* (Jacq.) R.Br. ex Roem. & Schult., Syst. Veg. 4: 402 (1819). – *Forsteronia corymbosa* (Jacq.) G.Mey., Prim. Fl. Esseq. 133 (1818). – *Thyrsanthus corymbosus* (Jacq.) Miers, Apocyn. S. Amer. 97 (1878). – Type: Illustration in Jacq., Select. Stirp. Amer. Hist. 2: pl. 30 (1763) (lecto, designated here).

*Periploca umbellata* Aubl., Hist. Pl. Guiane 1: 273 (1775). – Type: Illustration in Plumier mss. 2: pl. 81 (holo P n.v.), possibly from Dominican Republic, without locality. This name was placed in synonymy by Urban (1920: 142), who identified Plumier’s original plates.

*Thyrsanthus pyriformis* Miers, Apocyn. S. Amer. 100 (1878). – Type: Cuba, without locality, *Sagra* 141 (holo BM; iso GOET, P, UC).

*Taxonomic remarks.* In his account of the American *Apocynoideae*, Woodson (1935) described *Forsteronia portoricensis* as a species closely related to *F. corymbosa*, but differing in its slightly longer and more slender, acuminate, reflexed-divaricate follicles and glabrous corolla lobes (versus relatively stout, blunt, sharply divaricate follicles and minutely and irregularly papillate corolla lobes in *F. corymbosa*).

Additional collections since Woodson's revision of the genus did not show a marked difference in the orientation or shape of the apex of the follicles between the two species. Thus, the Puerto Rican material differs from other Antillean *Pinochia corymbosa* only by its glabrous corolla lobes and tendency towards longer follicles. We consider the bright red flower colour that characterizes both taxa and distinguishes them immediately from other species of the genus, in which flower colour ranges from white to greenish white to yellow, to be a more meaningful character than slight differences in follicle length or pubescence of corolla lobes. We therefore here treat the Puerto Rican taxon as a subspecies of *P. corymbosa*. The recognition of this relatively weak taxon at subspecific rank reflects our opinion that incipient speciation via isolation is taking place here rather than a mere representation of genetic variability expressed as populations with particular morphologies.

*Key to the subspecies of P. corymbosa*

- 1a. Corolla lobes minutely papillate-puberulent; follicles mostly 8.5–14 cm long \_\_\_\_\_ **1A. subsp. corymbosa**  
 1b. Corolla lobes glabrous; follicles mostly 14–20 cm long **1B. subsp. portoricensis**

**1A. *Pinochia corymbosa* subsp. corymbosa**

**1B. *Pinochia corymbosa* subsp. portoricensis** (Woodson) M.E.Endress & B.F. Hansen, **comb. et stat. nov.**

*Forsteronia portoricensis* Woodson, Ann. Missouri Bot. Gard. 21: 618 (1934). – Type: Puerto Rico, Sierra de Luquillo, in monte Jimenes, 1885, *Sintenis* 1622 (neo US 1338940, designated here; iso B (destroyed), BM, F, G, MO, MSC, NY, US, W, Z). The neotype is here designated to replace Woodson's type, which was destroyed at B in 1945: Puerto Rico, "Prope Humacao in fruticetis litoralibus ad 'Candelero'" [fide Woodson, 1935], 29 ix 1886, *Sintenis* 5195 (holo B).

**2. *Pinochia peninsularis*** (Woodson) M.E.Endress & B.F.Hansen, **comb. nov.**

*Forsteronia peninsularis* Woodson, Ann. Missouri Bot. Gard. 22: 215 (1935). – Type: Belize, Northern River, Maskall, 16 vii 1934, *Gentle* 1281 (holo MO; iso K n.v., MICH, NY; photo of K isotype, USF).

**3. *Pinochia monteverdensis*** (J.F.Morales) M.E.Endress & B.F.Hansen, **comb. nov.**  
**Fig. 1.**

*Forsteronia monteverdensis* J.F.Morales, Phytologia 78: 195 (1995). – Type: Costa Rica, Alajuela, Cantón de San Ramón, Reserve Biológica Monteverde, Cordillera de Tilarán, bosque primario en la fila Cerros Centinela, 1600 m, 10°17'55"N, 84°47'23"W, 6 vi 1994, *Morales & Carnevali* 3349 (holo INB).

**4. *Pinochia floribunda*** (Sw.) M.E.Endress & B.F.Hansen, **comb. nov.**

*Echites floribundus* Sw., Prodr. 52 (1788), as 'floribunda'. – *Forsteronia floribunda* (Sw.) A.DC., Prodr. 8: 437 (1844). – *Parsonia floribunda* (Sw.) R.Br. ex Roem. &

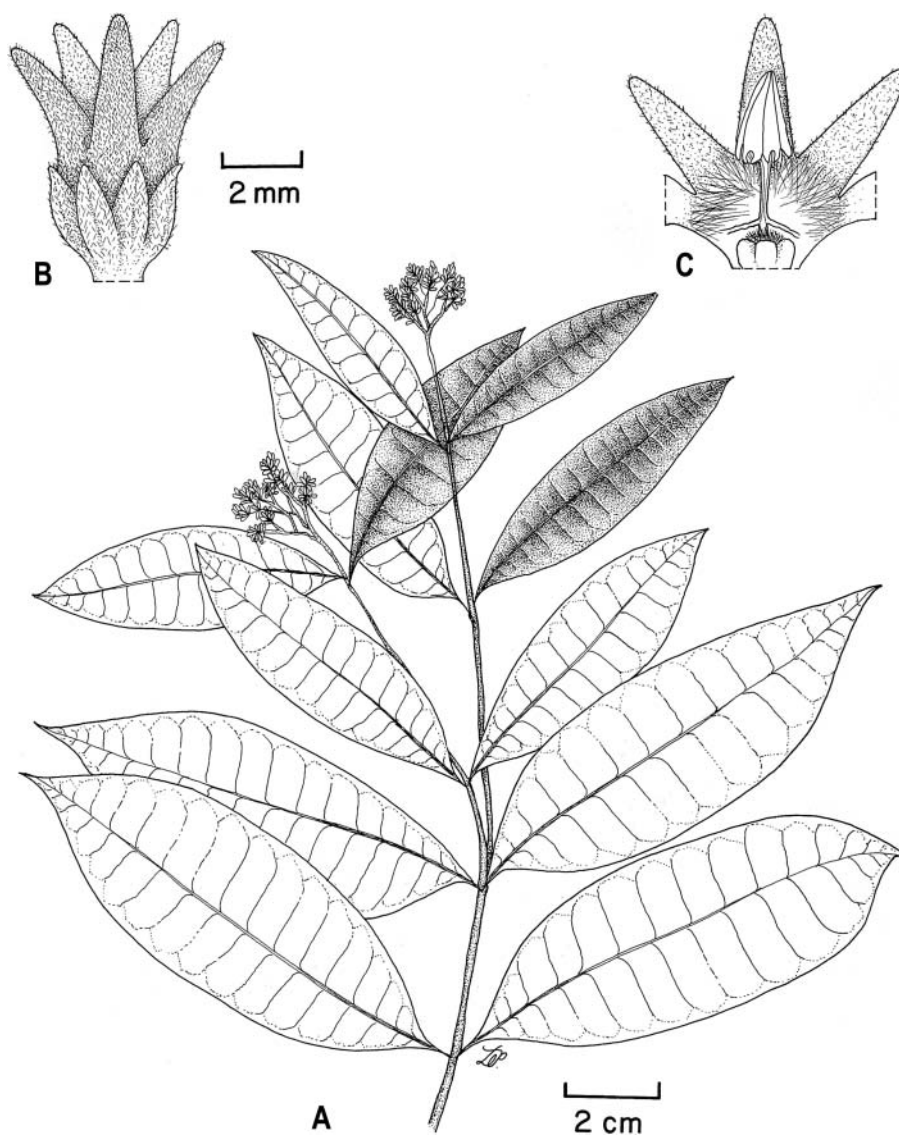


FIG. 1. *Pinochia monteverdensis* (J.F.Morales) M.E.Endress & B.F.Hansen. A, flowering branch; B, flower; C, flower, opened to show relationships of organs. All from *Haber 127* (MO).

Schult., *Syst. Veg.* 4: 402 (1819). – Type: Jamaica, without locality, *Swartz* s.n. (lecto S, designated by Woodson (1935: 215); probable iso AAU, C, G-DC n.v., GOET, M, S).

*Forsteronia alexanderi* Griseb., *Fl. Brit. W. I.* 412 (1862), as ‘*Alexandri*’. – Type: Jamaica, St. Ann, near Moneague, v 1850, *Prior [Alexander]* s.n. (lecto GOET,

designated here; iso B (destroyed), GOET, K n.v., NY; photo of K isotype, USF).  
Lectotype chosen against Grisebach's syntype: *Purdie* s.n. (K?).

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