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A NEW SPECIES OF *PHILIBERTIA* (APOCYNACEAE) FROM BOLIVIAHéctor A. Keller¹  & David J. Goyder² 

¹ Instituto de Botánica del Nordeste, CC 209, 3400 Corrientes, Argentina; Facultad de Ciencias Forestales, Universidad Nacional de Misiones, Misiones, Argentina; ibone@agr.unne.edu.ar (author for correspondence).

² Royal Botanic Gardens, Kew, Richmond, Surrey, TW9 3AE, UK.

Abstract. Keller, H. A. & D. J. Goyder. 2021. A new species of *Philibertia* (Apocynaceae) from Bolivia. *Darwiniana*, nueva serie 9(2): 293-298.

Based on herbarium material collected in Bolivia, a species new to science, *Philibertia woodii* H.A. Keller & Goyder is described and illustrated here. The species is similar in its vegetative and floral morphology to *Philibertia latiflora* (Griseb.) Goyder, *P. longistyla* Goyder and *P. speciosa* (Malme) Goyder. The new species allows the list of taxa of the genus to be increased to 45.

Keywords. Asclepiadoideae; new taxon; Oxypetalinae; taxonomy.

Resumen. Keller, H. A. & D. J. Goyder. 2021. Una nueva especie de *Philibertia* (Apocynaceae) de Bolivia. *Darwiniana*, nueva serie 9(2): 293-298.

Sobre la base de muestras recolectadas en Bolivia, se describe e ilustra *Philibertia woodii* H.A. Keller & Goyder, una especie nueva para la ciencia. La especie es similar en su morfología vegetativa y floral a *Philibertia latiflora* (Griseb.) Goyder, *P. longistyla* Goyder y *P. speciosa* (Malme) Goyder. La nueva especie permite elevar a 45 la lista de taxones del género.

Palabras clave. Asclepiadoideae; nuevo taxón; Oxypetalinae; taxonomía.

INTRODUCTION

Philibertia Kunth, with 44 documented species, is the second richest genus of the subtribe Oxypetalinae (Goyder, 2004, 2008a, b; Keller et al., 2019). It includes generally climbing plants that are mainly distributed in the inter-Andean valleys of Bolivia and Argentina, reaching altitudes above 4000 m. The leaves usually present dense pubescence on the abaxial face and most species have blades with a deeply cordate base; the flowers generally have a tubular or campanulate corolla, but other floral organs are highly variable. Unlike most genera of the Oxypetalinae subtribe, many species of

Philibertia lack a corona or this is very reduced, which has caused problems in their classification, these being previously assigned to other genera (Goyder, 2008b). Of the *Philibertia* species that are completely devoid of a corona, a few have a stylar head appendage that rises above the level of the anthers, and within this subgroup, only three species, *Philibertia latiflora* (Griseb.) Goyder, *P. longistyla* Goyder and *P. speciosa* (Malme) Goyder, are represented by robust lianas with yellow or white flowers over 15 mm long (Goyder, 2004). A review of herbarium material and photographs for the Apocynaceae account for the Flora of Argentina (Keller in prep.) revealed differences between the material

determined as *P. latiflora* in Argentina (country of type material) with respect to material determined under the same name from Bolivia. A detailed re-evaluation of Bolivian material of *P. latiflora* sensu Goyder (2004) suggests the need to describe a new species, which is the object of this contribution.

MATERIALS AND METHODS

A single collection initially identified as distinct from *Philibertia latiflora* was obtained on loan from SI by one of us (HAK). Additional material of Bolivian material identified as *P. latiflora* sensu Goyder (2004) was critically re-examined by DJG, principally from the collections at K. Samples of related species from CTES, CORD, GOET, K, LIL, LPB, MO, NY, S, SI, US, USZ were examined (herbarium abbreviations according to Thiers (continually updated)), including type material of *Philibertia latiflora*, *P. longistyla* and *P. speciosa*. Fresh material of the three related species obtained by the authors through fieldwork was also studied. A high-resolution photographic camera and a stereoscopic microscope were used to obtain images used to study the material and to make the illustrations corresponding to the species described here. The indumentum and the pollinaria were examined with an optical microscope with a built-in photographic camera. To extract the pollinaria and study the reproductive characteristics, the flowers were softened by decoction in water at 100°C, therefore the dimensions described correspond to the rehydrated material.

The botanical terminology used follows the work of Font Quer (1993). The diagnosis was written in Latin, expressing in the smallest possible space the differential characteristics of the species (Stearn, 2006).

RESULTS

Philibertia woodii H.A. Keller & Goyder **spec. nov.** (Fig. 1 y 2) TYPE: **Cochabamba**: Prov. Mizque, c. 25 km S of Totora towards Río Mizque, fl. 19/01/1997, *J.R.I. Wood 11682* (holotype K.; isotypes BOLV, LPB).

Philibertia speciosa (Malme) Goyder *affinis sed corolae tubo et retinaculo brevioris; affinis P. latiflora sed corolae tubo intus glabris.*

Scrambling plant, stems several meters long, latex white, stems tomentose to glabrescent, with simple eglandular white or yellowish trichomes, 0.1-1 mm long, uniseriate, multiseptate, the longest patent, the shortest curved; robust floriferous branches, 3-5 mm in diameter, with dense yellowish pubescence, internodes 4-22 cm long. Leaves opposite; petiole 1-7 cm, with pubescence similar to that of the branches; lamina ovate to ovate-lanceolate, 5-11(-20) x 2-6(-11) cm, discolorous, adaxial surface pubescent, with trichomes simple, appressed, antrorse; abaxial surface lanate; margin entire, apex acuminate, base cordate to auriculate, with 3-5 finger-like colleters on the adaxial face, hidden under the trichomes, venation brochidodromous with 7-11 pairs of secondary veins. Inflorescences extra-axillary corymbiform, alternate, with 2-6(-8) flowers; peduncles 2-5.5 cm long, lanate, trichomes yellowish; bracts filiform to oblong-lanceolate, pubescent, 3-3.5 x 0.2-0.5 mm; pedicels 0.8-1.5-6 cm long; calyx divided to near base; tube 0.3-0.35 mm high; lobes lanceolate, 5-8 x 1.5-2 mm, acute, pubescent on both sides, with 3-5 conical colleters in the sinus 0.05-0.15 mm long; corolla with urceolate or campanulate tube, 0.6-1 x 0.5-0.6 cm, somewhat inflated at the base or not, external surface densely pubescent, internal surface glabrous, lobes yellow, cream or white, sometimes white with a yellow tube, lobes lanceolate 1-1.8 x 0.5-0.7 cm, twisted, densely pubescent below, glabrous above; gynostegial and corolline corona lobes absent; gynostegium subsessile 0.6 x 0.3 cm; anthers rectangular 4 x 2 mm, anther wings 3-3.5 mm long, apical membrane oblong-ovate, 1.7-2.2 x 1.1-1.2 mm; stylar head appendage conical to filiform, extending beyond the membranous anther appendage for (1.5-)2.5-3.5(-6) mm, apically bifurcated into two segments 0.1-0.2(-1) mm long; corpusculum oblong-lanceolate, 1.4-2 x 0.25-0.35 mm, apex acute, caudicles horizontal 0.30-0.35 mm long, reddish, widened near the insertion of pollinia, pollinia oblong in outline 1.05-1.15 x 0.25-0.60 mm; ovary ca. 4 x 1.6 mm, with trichomes at the apex of the carpels. Follicles (immature) ovoid, smooth, lanate. Seeds unknown.

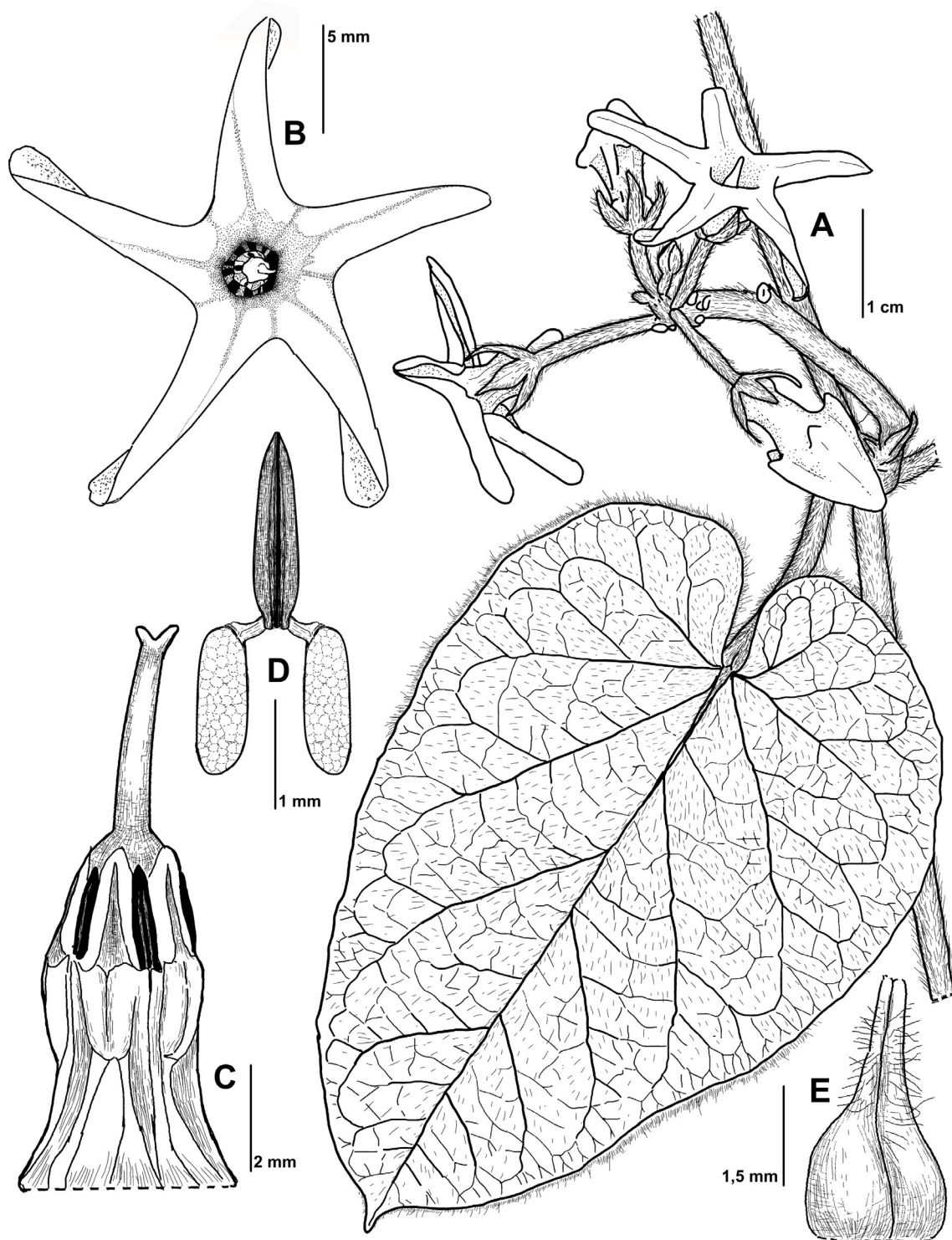


Fig. 1. *Philibertia woodii*. **A**, floriferous node. **B**, flower in superior view. **C**, gynostegium. **D**, pollinarium. **E**, ovary. (Drawings by Héctor A. Keller, from Zuloaga *et al.* 10407).



Fig. 2. A, *Philibertia woodii*. B, *P. speciosa*. C, *P. longistyla*. D, *P. latiflora*. (Photos A, D: F. O. Zuloaga; B: Gustavo Hilt, C: D. Goyder). Color version at <http://www.ojs.darwin.edu.ar/index.php/darwiniana/article/view/963/1228>

Etymology. Species dedicated to John R. I. Wood, prominent collector of the Bolivian flora, who collected the largest number of specimens of the species.

Distribution and Habitat. *Philibertia woodii* is known at present from the inter-Andean dry valleys of Bolivia in Cochabamba, Chuquisaca and Tarija, where it grows in scrub on bare rock slopes, in river canyons, or at the margins of moist Tucumán-Bolivian forest. The populations in Cochabamba appear to be in drier scrub vegetation than those encountered in Chuquisaca and Tarija. Altitude 1300-2800 m.

Phenology. Found with flowers and immature fruits from December to March.

Taxonomic observations. Of the four species in the genus with large flowers with a well-developed stylar head appendage and lacking a corona, the new species is most similar to *P. speciosa* in various vegetative as well as floral characters. Both are lianas that reach several meters in length, with robust lanuginous branches, long petiolate leaves, with large discolored blades; in both the flowers have a yellow or white corolla with a well-developed tube (Fig. 2A and B) which is more or less urceolate or inflated at the base and pubescent only on the external face, the stylar head appendage is generally shorter than the gynostegium, the corpusculum is oblong-lanceolate more than 1 mm long, the caudicles are horizontal and the pollinia are oblong. On the other hand, *P. longistyla* has a homogeneous whitish to cream corolla (Fig. 2C), while in *P. latiflora* it is white with a yellow tube and throat, coloration that sometimes extends towards the central strip of the lobes (Fig. 2D). A single collection of the new species from the Totorá region of Cochabamba has a cream or white corolla with a yellow throat. In addition, in these two last species (*P. longistyla* and *P. latiflora* s. str.) the interior of the corolla tube is pubescent, the stylar head appendage exceeds the gynostegium in length, the retinaculum is shorter than 1 mm and the pollinia are not oblong.

P. woodii differs from *P. speciosa* by the corolla tube that is shorter; the stylar head appendages a little longer, exerted from the throat of the corolla, and the retinaculum much shorter.

The only Bolivian collection of *P. latiflora* s. str. that we have encountered is from the Narvaez valley on the decent from Tarija towards Entre Ríos (*J.R.I. Wood & Goyder 15845* (K, LPB)), not far from where *Zuloaga et al. 10407* (SI) was collected. However, although it has a pubescent interior to the corolla tube, the length of the corpusculum (1.3 mm) is intermediate between that of typical *P. latiflora* and *P. woodii*, suggesting a possible hybrid zone in this area.

Specimens examined

Paratypes. Bolivia, **Cochabamba:** Prov. Mizque, c. 1 km below small church on ascent from Río Mizque to Totorá, fl. 21-II-1998, *J.R.I. Wood 13024* (BOLV, K, LPB); 6 km above Mizque on road to Arani, fl. 9-III-1997, *J.R.I. Wood 11850* (K, LPB); First canyon c. 10-15 km NW of Mizque on road to Arani, fl. 25-II-2001, *J.R.I. Wood 17149* (K, LPB); Mizque, outside E of town, fl. 27-XII-2002, *Rico & Windsor-Shaw 1173* (K, LPB); Prov. Campero, c. 36 km from Pasorapa and 3-4 km before Buena Vista, fl. & fr. 24-III-2003, *J.R.I. Wood et al. 19473* (K, LPB, USZ); Prov. Carrasco, on road from Totorá to Omereque, fl. 26-XII-2004, *J.R.I. Wood et al. 21228* (BOLV, K, LPB); 190 km from Sucre towards Aiquile, fl. 12-III-1965, *Badcock 617* (K); km 195 from Sucre to Cochabamba, fl. IV-1963, *Cardenas 6081* (K, US). **Chuquisaca:** Prov. Tomina, c. 15 km E of Zudáñez towards Villa Tomina, fl. 31-XII-1994, *J.R.I. Wood 9055* (K, LPB); Tomina, 3 km S of San Pedro on road to Azurduy, fl. 13-II-1999, *J.R.I. Wood & Serrano 14442* (HSB, K, LPB); Prov. Azurduy, c. 25 km S of San Pedro on road to Azurduy, fl. & fr. 6-XII-1999, *J.R.I. Wood, Goyder & Serrano 15342* (HSB, K, LPB, NY); Prov. Zudáñez, bajando a la comunidad de Jacha Pampa del cerro, al este de Mojocoya, fl. 30-I-2005, *J.R.I. Wood & Huaylla 21555* (HSB, K, LPB); Prov. H. Siles, Serranía los Milagros, fl. 6-III-1995, *Muñoz 123Z* (K, LPB). **Tarija:** Prov. O'Connor, on first pass c. 10 km NE of Entre Ríos on road to Palos Blancos, fl. 17-I-2001, *J.R.I. Wood & Goyder 16804* (K, LPB); at beginning of ascent through forest by old road to Tarija, fl. 29-II-2016, *J.R.I. Wood et al. 28045* (K, LPB, USZ), Ruta 11 entre Narvaez y Entre Ríos, 1 km de Narvaez; 21° 25' 52" S, 64° 16' 28" W. 24-II-2008, fl. *Zuloaga et al. 10407* (SI).

The four known species of *Philibertia* that lack a corona, with a stylar head that rises above the anthers, and with flowers over 1.5 cm long can be differentiated using the following key.

- 1. Corolla tube internally pubescent 2
- 1. Corolla tube internally glabrous 3
- 2(1). Corolla lobes held more or less erect; flowers nodding *P. longistyla*
- 2. Corolla lobes spreading; flowers not nodding *P. latiflora*
- 3(1). Corolla tube 25-30 mm long; stylar head appendage included within the corolla tube; corpusculum at least 2.5 mm long *P. speciosa*
- 3. Corolla tube less than 15 mm long; stylar head appendage generally exerted from the mouth of the corolla; corpusculum 1.4-2 mm long *P. woodii*

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