

A NEW SPECIES OF *VOCHYSIA*
(VOCHYSIACEAE, SECTION *CILIANTHA*, SUBSECTION *FERRUGINEA*)
FROM THE COLOMBIAN AMAZON FOREST

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Abstract. A new species of *Vochysia*, *V. wilsonii* (section *Ciliantha*, subsection *Ferruginea*), is described, and its morphological relationships with other similar *Vochysia* species are discussed. *Vochysia wilsonii* is found in wet forests over sandstone tabletop outcrops ("Mesetas") and white sand soils in the Araracuara ("medio río Caquetá") and Chiribiquete areas, a megadiverse region in the Colombian Guayana Shield, Caquetá department. This new species is a tree up to 25 m tall, and shares features with four species (*Vochysia biloba*, *V. casiquiarensis*, *V. sabatieri*, and *V. vismifolia*). However, it differs in the size and shape of the leaves, stipules, inflorescence, cincinni, spur, spurred sepal, flower, central petal and stamen, as well as in its pubescence size and shape. An updated key of 45 Colombian species of *Vochysia* is provided.

Keywords: Wet forest, Sandstone outcrops, Araracuara, Medio Río Caquetá, *Vochysia*, Vochysiaceae

Resumen. Una nueva especie de *Vochysia*, *V. wilsonii* (sección *Ciliantha*, subsección *Ferruginea*) es descrita y sus relaciones morfológicas con sus especies afines son discutidas. *Vochysia wilsonii* se encuentra en los bosques sobre mesetas en los afloramientos de arenisca y en suelos de arenas blancas de Araracuara (medio río Caquetá) y Chiribiquete, una región megadiversa del escudo guayanés colombiano, en el departamento del Caquetá. Esta nueva especie es un árbol de hasta 25 m de altura, que presenta similitudes morfológicas con cuatro especies (*Vochysia biloba*, *V. casiquiarensis*, *V. sabatieri* and *V. vismifolia*). Sin embargo, esta difiere en la pubescencia, tamaño y forma de sus hojas, estípulas, inflorescencias, cincinos, espolón, cáliz espolonado, flores, el pétalo central y el estambre. Se incluye una clave actualizada de las 45 especies de *Vochysia* presentes en Colombia.

Palabras clave: Bosques húmedos, afloramientos de arenisca, Araracuara, Medio Río Caquetá, *Vochysia*, Vochysiaceae

Vochysia Aublet (Vochysiaceae) is a Neotropical genus found in southern Mexico (Chiapas, Oaxaca, Tabasco and Veracruz states) through Central America, Colombia, Venezuela, The Guianas, Ecuador, Perú, Brazil, Bolivia, and Paraguay (Marcano-Berti, 1998, 2005; Marcano-Berti and Aymard, 2021). The genus encompasses 146 species, including the new species described herein, and is the most diverse and most representative genus in *Vochysiaceae*, a pantropical family of eight genera and ca. 238 species (Kawasaki, 2007). *Vochysia* has its highest diversity in the Amazon and Orinoco river basins and the Guayana Shield region (ca. 86 species; Marcano-Berti, 2005, 2014). The genus is characterized by its opposite or verticillate leaves in whorls of 3, 4 or 5; stipules present, often deciduous; inflorescences thyrses or racemes, usually terminal; spurred calyx-lobe, persistent; petals usually 3, yellow, sometimes 1–2 or

absent; stamen in the plane of symmetry; stigma terminal or lateral; ovules 2 per locule; and seeds, 3, unilaterally winged (Stafleu, 1948; Marcano-Berti, 1998, 2005; Kawasaki, 2007).

Stafleu (1948) did a worldwide monograph of *Vochysia* and divided the genus into three sections (*Ciliantha* Stafleu, *Pachyantha* Stafleu and *Vochysiella* Stafleu) and 8 subsections, recognizing 97 species, and describing 14. Later, based on vegetative and flower features, Marcano-Berti (2014) established the section *Apopetala*, to which he also transferred nine species of section *Ciliantha* Stafleu.

The present contribution increases to 45 the number of *Vochysia* species known from Colombia. This new species was identified during research on Vochysiaceae conducted by the senior author in the herbarium COAH of Instituto Amazónico de Investigaciones Científicas (SINCHI) in Bogotá, Colombia.

MATERIALS AND METHODS

This work is based on morphological (using a dissecting stereomicroscope) and herbarium studies at COAH and COL (herbarium codes after Thiers, 2019). Additionally, all type specimens, as well as general collections, hosted by virtual herbaria, were consulted, including those maintained by the Field Museum (F; <http://emuweb.field>

museum.org/botany/taxonomic.php), Instituto Nacional de Pesquisas da Amazônia (INPA; <http://inst.florabrasil.net/en/>), JSTOR Global Plants (<http://plants.jstor.org>), Museum of Natural History, Paris (P; <http://www.mnhn.fr>), Rreflora Virtual Herbarium (<http://reflora.jbrj.gov.br/reflora/>), speciesLink (<https://specieslink.net/>), the Smithsonian

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Institution (US; <https://collections.si.edu/search/>), and the National Herbarium of The Netherlands (U; <https://www.nationaalherbarium.nl/>). A historical and current taxonomic literature review on *Vochysia* was done, mainly using Stafleu's *Vochysia* monograph (1948), the treatments of Vochysiaceae in *Flora of Guianas* (Marcano-Berti, 1998), *Flora of the Venezuelan Guayana* (Marcano-Berti, 2005), the updated key of the Colombian *Vochysia* species (Marcano-Berti and Aymard, 2021), "*Catálogo preliminar comentado de la flora del medio Caquetá – Amazonia colombiana*" (Sánchez, 1997), "*Catálogo de plantas y líquenes de Colombia*" (Marcano-Berti, 2016), and "*Catálogo de las plantas con flores de la Amazonia colombiana*" (Infante-Betancour and Rangel-Ch., 2018a). Type specimens of *Vochysia* species involved in this study were examined using online images from JSTOR Global Plants (<https://plants.jstor.org/>).

TAXONOMY

Vochysia wilsonii Marc.-Berti, J.M. Vélez. & Aymard, sp. nov. TYPE: COLOMBIA. Caquetá: Araracuara, sobre la mesa de arenisca cerca de la pista aérea, 0°37'S, 72°24'W. 200–300 m, 09 November 1991 (fl). Joost Duivenvoorden, Noé Matapí & Diego Restrepo 2723 (Holotype: COAH [4950]; Isotypes: COAH [4945]; COAH [4946]; COAH [75473]). Fig. 1.

Vochysia wilsonii resembles *V. biloba*, *V. casiquiarensis*, *V. sabatieri* and *V. vismiifolia*, but can be differentiated from these species by having leaves obovate to obovate-elliptic, 7.0–14.2 × 4.2–6.0 cm, apex emarginated, truncate to truncate-emarginate, short mucronate, base obtuse, lateral veins 24–29, at a 50°–60° angle with the midrib, stipules triangular, inflorescences 16–19 cm long, cincinni 3-flowered, rarely 2- or 4-flowered, spurred sepal 1.3–1.4 cm long, spur 6.5–7 mm long, subsigmoidal, and stamen glabrous dorsally, laxly pubescent on internal surface.

Trees up to 25 m tall and 60 cm DBH. Young and adult branchlets tetragonal, sulcate to flat, bark persistent, dark brown, densely ferruginous adpressed pubescent. Leaves opposite, obovate to obovate-elliptic, 7.0–14.2 × 4.2–6.0 cm, shiny, glabrous above, except the midrib, which is densely pubescent, covered with white and ferruginous trichomes; trichomes 2-branched (t-shaped), sessile, densely ferruginous below, with the same type of pubescence above, base obtuse, apex emarginate, truncate to truncate-emarginate, short mucronate 1–5 mm long; midrib impressed above, prominent below; main lateral veins 24–29 on each side, plain above, prominent below, not decurrent over the midrib, forming with an angle of 45°–55° (at least the veins located in the middle); minor lateral veins inconspicuous; veinlets inconspicuous, scalariform, submarginal vein ca 0.05 mm from margin; stipules triangular, persistent, 1.0–1.5 mm long, 2.5–3.0 mm at the base, densely adpressed ferruginous; petiole 1.0–1.8 × 0.20–0.25 cm, adaxially depressed, slightly striate abaxially, pubescence like the branchlets. Inflorescence paniculate, terminal, sometimes axillary, 16–19 cm long, axis tetragonal, slightly sulcate, ferruginous adpressed pubescent; cincinni 3-flowered, rarely 2- or 4-flowered, 1.5–2.7 cm long, peduncle of cincinni 4–6 mm long, pubescent; pedicel in mature flower 0.3–0.6 mm long; bracts and bracteoles early deciduous, lanceolate,

plants.jstor.org/). The specific terminology for vegetative characters, vestiture description, inflorescences, flowers, and fruit morphology follow Font-Quer (2001), Marcano-Berti (2005) and Harris and Harris (2006). To determine the conservation status (IUCN, 2022), the extent of occurrence (EOO) and area of occupancy (AOO) were calculated using the supporting Red List threat assessments with GeoCAT (Geospatial Conservation Assessment Tool; Bachman et al., 2011), which is continually updated (<https://geocat.kew.org/>). The GeoCAT is an open source, browser-based tool that performs rapid geospatial analysis for Red List assessment. The EOO is defined by the IUCN (2022) as the minimum convex polygon encompassing all known occurrences of a species. In addition, AOO is the area within the EOO, which is comprised of 2 × 2 km grid cells containing known occurrences records.

ca. 1.5 × ca. 1.0 mm, densely golden-ferruginous adpressed pubescent. Flower bud near anthesis, arcuate, ca. 2 mm wide near apical third, subrounded at apex; Spur sepal 1.3–1.4 cm long at anthesis, sparsely ferruginous pubescent; spur subsigmoidal, 6.5–7 mm long, 1.5–1.8 mm wide at the base, ca. 1 mm wide at the apex, at an angle of 10°–15° with the pedicel, smaller sepals 0.25–0.4 mm long, subequal; petals 3, central petal about 1/3 shorter than stamen, apex acute, densely adpressed pubescent dorsally; lateral petal about 1/3 shorter than central petal, pubescent near the base and at the margin of the apex; stamen subobtusate at the apex, glabrous dorsally, laxly pubescent adaxially, glabrous abaxially, tectae glabrous; anther ca. 10 times longer than the filament; staminodes pilose at the margin, trichomes larger than staminode; ovary glabrous; stigma terminal, punctiform. Fruit 2.5–2.8 × 1.0–1.2 cm, oblong to oblong-obovate, densely verruculose, brown; seed winged, wing ca. 1.8 × ca. 0.5 cm, glabrous, light brown.

Phenology: This new species was collected with flowers in November and with fruit in February.

Etymology: *Vochysia wilsonii* is named after Wilson Rodríguez, a most enthusiast Colombian botanist, with an extraordinary knowledge of the floras of the Amazon and Orinoco river basins, of neotropical ferns, and, more recently, of Vochysiaceae.

Common names: The name "Peraikz" (Uitoto) was recorded on the specimen Sastre & Raichel-Dolmatoff 4956.

Distribution and ecology: The new species is known to occur in the Araracuara and Chiribiquete regions, in wet forests on dissected and tabletop terrain over sandstone outcrops, in spodosols and quartzizaments soils, between 200–300 m elevation. The former is a region located in the middle Caquetá river, in the department of Caquetá. The first botanical samples for the Colombian Amazon were collected in Araracuara by Karl Friedrich Philipp von Martius in 1820 (Martius and Zucarini, 1824; Dugand, 1942). The most prolific Amazonian plant collector, W. A. Ducke, collected in the Caquetá river (Cerro de Cupati = Cerro de La Pedrera) in 1912 (Dugand, 1948); the relevant collections made by R. E. Schultes and H. García-Barriga also should be mentioned.



FIGURE 1. Holotype of *Vochysia wilsonii* Marc.-Berti, J.M. Vélez & Aymard (Duivenvoorden, Matapí & Restrepo 2723, COAH [4950]).

Sastre-Blanco and Reichel-Dolmatoff (1978) published the pioneer contribution to the flora of the Araracuara. The vegetation, soils, geology, and geomorphology of this area have also been studied (especially the sector from Araracuara to the mouth of the Cahuinari river) through the establishment of the Amazon herbarium in Araracuara in 1982 and the various research projects of the Tropenbos-Colombia Foundation, the Colombian Corporation for the Amazon “Araracuara” and “Universidad Nacional de Colombia” (Infante-Betancour and Rangel-Ch., 2018b). The Corporation subsequently formed the “Instituto Amazónico de Investigaciones Científicas” –SINCHI (Sánchez, 1997). Among the detailed studies in Araracuara and adjacent areas are those by Duivenvoorden et al. (1988), Urrego (1991, 1992), Álvarez (1993), Duivenvoorden (1994), Duivenvoorden and Cleef (1994), Duivenvoorden and Lips (1995), Londoño-V. et al. (1995), Sánchez (1997), Arbeláez and Callejas (1999), Duque et al. (2001), and Londoño-V. (2011). Based on floristic composition, these authors recognized 22 communities, of which 14 are forest. The area where *Vochysia wilsonii* is found is composed of sandstone outcrops of the Guayana shield, located on

isolated hills and on the “mesetas” on spodosols soils. This habitat has plant formations with several types of low forests with a high density of individuals (Sánchez, 1997; Arbeláez and Callejas, 1999), and it harbors the endemic genus *Araracuara* Fern. Alonso (Rhamnaceae; Fernández-Alonso and Arbeláez, 2008). Additionally, these forests are intermixed with shrubby communities and savannas over white sand soils. They harbor several species (e.g., *Brocchinia hechtoides* Mez, *B. paniculata* Schult.f. [Bromeliaceae], *Ocotea neblinae* C.K. Allen [Lauraceae], and *Xyris esmeraldae* Steyerf. [Xyridaceae]) that share affinities with the vegetation of Amazonian savannas and tepuis areas located in the Guayana shield in The Guianas, Brazil and Venezuela (Duivenvoorden and Cleef, 1994; Arbeláez and Callejas, 1999). Duivenvoorden and Cleef (1994) differentiated seven types of vegetation (one community and six associations) for the Araracuara region; the shrubby and savannas communities over white sand soils dominated by endemic species such as *Steyerbromelia garcia-barrigae* (L. B. Sm.) Aguirre-Santoro, Betancur & B. Holst. (Bromeliaceae), and *Schoenoccephalum martianum* Seub. (Rapataceae) are especially remarkable.

TABLE 1. Comparison of diagnostic morphological characters of *Vochysia wilsonii* and closely related species.

CHARACTER	<i>V. BILOBA</i>	<i>V. CASIQUIARENSIS</i>	<i>V. SABATIERI</i>	<i>V. VISMIIFOLIA</i>	<i>V. WILSONII</i>
Leaves	obovate or cuneate, 11–17 × 5–9 cm, apex deeply truncate-emarginate to bilobulate forming a two-lobed obcordate shape, base rounded, obtuse or cuneate	elliptic, 12–18 × 5.0–7.5 cm, apex obtuse to obtuse-retuse, base obtuse	elliptic to sub-elliptic, 17–21 × 5–6 cm; apex acuminate, acumen ca. 10 mm long, base obtuse	elliptic; 8–12 × 3–4 cm; apex acute, obtuse or short acuminate, base acute	obovate to obovate-elliptic, 7.0–14.2 × 4.2–6.0 cm, apex truncate to truncate-emarginate, short mucronate, base obtuse
Lateral nerves	16–19, 45°–60° angle to the midrib, strongly impressed above, sharply elevated below	16–20, 60°–70° angle to the midrib, inconspicuous above, slightly prominent below	30–35, ca. 50° angle to the midrib, inconspicuous above, slightly prominent below	15–18, 50°–60° angle to the midrib, inconspicuous above, slightly prominent below	24–29, 45°–55° angle to the midrib, inconspicuous above, slightly prominent below
Stipules	deltoid	triangular	triangular	deltoid	triangular
Inflorescence and cincinni	20–25 cm long; cincinni 3-to 5-flowered	ca. 15 cm long; cincinni 2 to 3-flowered	ca. 20 cm long; cincinni 2 to 3-flowered	9.0–11.5 cm long; cincinni 1 to 3-flowered	16–19 cm long; cincinni 3-flowered, rarely 2- or 4-flowered
Spur and spurred sepal (including the hypanthium or calyx tube) at anthesis	spurred sepal 12–15 mm long; spur 6–8 mm long, straight, at an angle of 0°–30° to the spurred sepal at anthesis	spurred sepal 6.5–7.5 mm long; spur 5.3–6.2 mm long, slightly incurved, at an angle of 60°–90° to the spurred sepal at anthesis	spurred sepal ca. 16 mm long; spur ca. 9 mm long, slightly curved, at an angle of ca. 120° to the spurred sepal at anthesis	spurred sepal 8–10 mm long; spur 5–7 mm long, incurved, at angle of 60°–90° to the spurred sepal at anthesis	spurred sepal 1.3–1.4 cm long; spur 6.5–7 mm long, subsigmoidal, at an angle of 70°–90° to the spurred sepal at anthesis
Anther	pubescent on both sides	glabrous abaxially, pubescent elsewhere	pubescent on both sides	glabrous abaxially, pubescent elsewhere	laxly pubescent adaxially, glabrous abaxially

Additional specimens examined: COLOMBIA. Amazonas, río Caquetá, Araracuara, aeropuerto, aprox. 0°36'03.70"S, 72°23'45.45"W. 22 December 1977(fl), *Claude H. L. Sastre & Gerardo Raichel-Dolmatoff 4956* (COL [249769], F [2310416], P [04776105]). Caquetá: Araracuara, sobre la mesa de arenisca cerca de la pista aérea, 0°25'S, 72°30'W, 250 m, 02 November 1991 (fl) *D. Restrepo & A. Matapí 423* (COAH [18063]). Solano. Araracuara, sector Chiribiquete, bosque medio en la base del tepui, 0°17'56"S, 72°22'54"W. 165 m, 15 November 2010 (fl), *F. Castro 10756* (COAH [79383]). Solano, Araracuara, ruta Araracuara-Pista-Cueva de Guácharos, bosque húmedo, 0°35'S, 74°24'W, 165 m, 14 November 1993 (fl), *D. Cárdenas-López, G. Gangi & G. Silvano 4019* (COAH [020990]). Solano, Araracuara-Río Yarí, bosque de sabanas, 0°13'51.7"S, 72°25'45"W, 236 m, 17 February 2011 (fr), *D. Caicedo 2843* (COAH [79728]).

Conservation status: Currently, *Vochysia wilsonii* is known from six collections; three from the type locality, one near the type locality (see the additional specimens), and the other two from the SE portion of "Parque Nacional Natural Serranía de Chiribiquete." Under IUCN (2022) guidelines, there are not sufficient data (DD) to accurately determine its conservation status. However, it should be regarded as Endangered (EN) according to our calculations that estimate its Area of Occupancy (AOO) to be 16,000 km²

and its Extent of Occurrence (EOO) to be 1,223,552 km² (following guidelines in IUCN, 2022). These guidelines estimate the EOO as the minimum convex polygon that includes all known occurrences of any taxon, and the AOO as the region inside the EOO that is occupied by the species (using a grid of 2 × 2 km). For threatened species, the AOO value recommended by IUCN is above 10,000 km² (IUCN, 2022). Although conservation status assessments can be made for species with such small numbers of collections (Rivers et al. 2011), it may be difficult to determine whether the appearance of rarity in a species is due to the lack of, or outdated, data, collection artifact, or to its actual rarity (Verspagen and Erkens, 2022).

Because of its opposite leaves, pubescent petals on the abaxial side, pubescent stamens, ciliate staminodes, and glabrous ovary, *Vochysia wilsonii* belongs in section *Ciliantha* Stafleu, and from the latter features, and the leaves below being densely ferruginous pubescent, this new species belongs to subsection *Ferruginea* Warm. (Stafleu, 1948).

This new species is morphologically related to four others taxa in section *Ciliantha*: *V. biloba* Ducke, *V. casiquiarensis* Stafleu, *V. sabatieri* Marc.-Berti, and *V. vismiifolia* Spruce ex Warm.

Nonetheless, *Vochysia wilsonii* differs from these four species in the characters discussed in the diagnosis, Table 1, and in the following key.

KEY TO THE COLOMBIAN SPECIES OF *VOCHYSIA*
Based on Marcano-Berti and Aymard (2021)

- 1a. Ovary pubescent 2
- 1b. Ovary glabrous 9
- 2a. Corolla present 3
- 2b. Corolla absent 7
- 3a. Cincinni 1-flowered, petals ciliate at the apex 4
- 3b. Cincinni (1)2- to 4-flowered; petals not ciliate at the apex 5
- 4a. Stigma terminal *V. expansa*
- 4b. Stigma lateral *V. diversa*
- 5a. Plants dried black in herbarium specimens; spurred sepal (including the hypanthium or calyx tube) 1.0–1.1 cm long at anthesis; inflorescence 1.6–1.8 cm long, cincinni 1- to 2-flowered; style glabrous; stigma (lateral part) 0.3 × 0.4–0.5 mm *V. obscura*
- 5b. Plants dried brown or green in herbarium specimens; spurred sepal (including the hypanthium or calyx tube) 1.2–1.6 cm long at anthesis; inflorescence 2.5–3.5 cm long, cincinni 2- to 4-flowered; style sparsely pubescent in the lower 1/3; stigma (lateral part) 1.0–1.2 × 0.8–1.0 mm 6
- 6a. Cincinni 2- to 3-flowered; spurred sepal (including the hypanthium or calyx tube) 1.2–1.3 cm long at anthesis; central petal slightly shorter than the stamen *V. lehmannii*
- 6b. Cincinni 3- to 4-flowered; spurred sepal (including the hypanthium or calyx tube) 1.4–1.6 cm long at anthesis; central petal one-half shorter to slightly shorter than the stamen *V. venezuelana*
- 7a. Lower surface of leaf blade densely appressed pubescent, with sessile or subsessile malpighiaceae trichomes *V. pinkusii*
- 7b. Lower surface of leaf blade pubescent on the veins with 2-branched trichomes, one branch, erect or suberect, larger than the other 8
- 8a. Leaves opposite, 7–12 × 3–6 cm; spurred sepal (including the hypanthium or calyx tube) ca. 1.8 cm long at anthesis *V. steyermarkiana*
- 8b. Leaves 3- to 4-verticillate, 23–27 × 11–13 cm; spurred sepal (including the hypanthium or calyx tube) 3.0–3.2 cm long at anthesis *V. pachyantha*
- 9a. Corolla absent 10
- 9b. Corolla present (1 or 3 petals) 11
- 10a. Leaf blades 14–18 cm long; glabrous on both sides, submarginal vein lacking and the lateral veins irregularly joined near margin forming a submarginal pseudovein *V. megalophylla*
- 10b. Leaf blades 6–12 cm long, sparsely to adpressed pubescent on the lower surface, trichomes 2-branched, sessile or subsessile; submarginal vein present *V. punctata*
- 11a. Petals 1 12
- 11b. Petals 3 16
- 12a. Lower surface of leaf blade densely ferruginous tomentose, mostly along the midrib and secondary veins, trichomes ca. 2 mm; spurred sepal (including the hypanthium or calyx tube) no longer than 12 mm at anthesis; petal 1/3 shorter than stamen *V. moskovitsiana*
- 12b. Lower surface of leaf blade glabrous, sparsely pilose to pilose, greyish-brownish, trichomes 0.5–1.0 mm long; spurred sepal (including the hypanthium or calyx tube) 15–24 mm long at anthesis; petal 2/3–4/5 shorter than stamen 13

KEY TO THE COLOMBIAN SPECIES OF *VOCHYSIA* CONT.

Based on Marcano-Berti and Aymard (2021)

- 13a. Petiole 2–3 mm long; petal 4/5 shorter than stamen *V. pacifica*
 13b. Petiole 12–27 mm long; petal 2/3–3/4 shorter than stamen 14
 14a. Apex of the leaf blade subrounded-retuse; inflorescence ca. 4 cm long; spurred sepal (including the hypanthium or calyx tube) ca. 16 mm long at anthesis *V. jefensis*
 14b. Apex of leaf blade acuminate or cuspidate. Inflorescence 9–30 cm long 15
 15a. Petiole 1.3–1.5 cm long; leaf blade 9.8–12.0 × 4.7–5.9 cm, apex acuminate, glabrous on the lower surface; inflorescence 9–13 cm long; staminal filament ca. 7 times shorter than anther; staminodes ciliate *V. gentryi*
 15b. Petiole 1.7–2.7 cm long; leaf blade 16.0–19.5 × 7.0–9.5 cm, elliptic oblong, apex cuspidate; sparsely adpressed pubescent on the entire lower surface; inflorescence 17–30 cm long, staminal filament ca. 5 times shorter than the anther; staminodes glabrous *V. antioquiensis*
 16a. Stamen glabrous 17
 16b. Stamen ciliate or pubescent on one or both sides 21
 17a. Leaves opposite, lower surface of leaf blade densely adpressed pubescent *V. calophylla*
 17b. Leaves 3- to 5-verticillate; lower surface of leaf blade glabrous, glabrescent on the midvein or sparsely patent pilose 18
 18a. Stigma lateral, 2-branched. *V. grandis* var. *uaupeensis*
 18b. Stigma terminal, not 2-branched 19
 19a. Apex of the leaf rounded to rounded-emarginate *V. catingae*
 19b. Apex of the leaf acute to acuminate 20
 20a. Leaf margin plain; no marginal vein present; spurred sepal at anthesis ca. 17 mm long *V. guatemalensis*
 20b. Leaf margin strongly revolute; marginal vein present; spurred sepal at anthesis ca. 7 mm long *V. parviflora*
 21a. Leaves opposite 22
 21b. Leaves 3- to 5-verticillate 38
 22a. Spurred sepal (including the hypanthium or calyx tube) 0.6–1.4 cm long at anthesis 23
 22b. Spurred sepal (including the hypanthium or calyx tube) 1.4–2.6 cm long at anthesis 33
 23a. Spur incurved-uncinate; leaf on the lower surface densely pubescent, mainly on the venation, with 2-branched trichomes, each with an erect or suberect end much longer than the other, nearly obsolete end; main lateral veins ca. 12 *V. ferruginea*
 23b. Spur straight or slightly curved; leaf on the lower surface glabrous or densely ferruginous adpressed pubescent, with 2-branched sessile to subsessile trichomes; main lateral veins 15–29 24
 24a. Leaf on the lower surface densely pubescent, with ferruginous trichomes 25
 24b. Leaf on the lower surface densely pubescent, with grey to pale golden trichomes 30
 25a. Apex of the leaf deeply truncate-emarginate to bilobulate forming a two-lobed obovate shape. *V. biloba*
 25b. Apex of the leaf short acuminate, obtuse to obtuse-retuse; emarginate, slightly truncate to truncate-emarginate, short mucronate 26
 26a. Petals glabrous; leaf blade with 2 submarginal veins *V. elegans*
 26b. Petals pubescent dorsally (at least the central one), leaf blade with one submarginal vein 27
 27a. Inflorescence 30–43 cm long; central petal cucullate, larger than the stamen and covering the apex of it *V. splendens*
 27b. Inflorescence 9–19 cm long; central petal one-quarter to one-half shorter than the stamen 28
 28a. Leaf blade obovate to obovate-elliptic, apex truncate to truncate-emarginate, short mucronate, lateral veins 24–29; inflorescences 16–19 cm long; spurred sepal 1.3–1.4 cm long; spur incurved; flowers 12–13 cm long *V. wilsonii*
 28b. Leaf blade elliptic, apex obtuse to obtuse-retuse, acute or short acuminate, lateral veins 8–20; inflorescences 5–15 cm long; spurred sepal 5–7.5 cm long; spur, slightly curved or recurved; flowers 7–9 cm 29
 29a. Leaf blade 8–12 cm long, apex acute, obtuse or shortly acuminate, lateral nerves 8–15, base acute; stipules deltoid; inflorescence 5–10 cm long *V. vismifolia*
 29b. Leaf blade 12–18 × 5.0–7.5 cm, apex obtuse to obtuse-retuse, lateral nerves 16–29, base obtuse; stipules triangular; inflorescence ca. 15 cm long *V. casiquiarensis*
 30a. Central petal 2/3 shorter than the stamen; lateral petals pubescent dorsally *V. carol-scottii*
 30b. Central petal as long as or 1/3 shorter than the stamen; lateral petals glabrous dorsally, sometimes ciliate at the margin 31
 31a. Apex of the leaf blade obtuse-retuse to rounded-retuse *V. angustifolia*
 31b. Apex of the leaf blade acute to acuminate 32
 32a. Apex of the leaf blade acute; central petal as long as the stamen, sparsely pubescent dorsally *V. artantha*
 32b. Apex of the leaf blade acuminate; central petal covers ca. 2/3 of the stamen, with a narrow strip of adpressed trichomes at the central portion dorsally, glabrous at the borders *V. calamana*
 33a. Leaf blade glabrous on both surfaces; main lateral veins 24–26 34
 33b. Leaf blade pubescent on lower surface; main lateral veins 13–18 35
 34a. Spurred sepal 2.4–2.6 cm long; central petal 4.7–5.8 mm long; staminodes ciliate at the base *V. garcia-barrigae*
 34b. Spurred sepal ca. 1.8 cm long; central petal ca. 3 mm long; staminodes glabrous *V. complicata*
 35a. Spur inflated, almost as long as wide *V. densiflora*
 35b. Spur not inflated, 4–7 times longer than wide 36
 36a. Leaf blade 14–21 × 4.5–9.0 cm; inflorescence 30–60 cm long *V. saccata*
 36b. Leaf blade 6.5–13 × 2.5–4.0 cm; inflorescence no longer than 26 cm 37

KEY TO THE COLOMBIAN SPECIES OF *VOCHYSIA* CONT.

Based on Marcano-Berti and Aymard (2021)

37a. Main lateral veins 10–15	<i>V. calamana</i>
37b. Main lateral veins 20–25	<i>V. allenii</i>
38a. Leaves 3-verticillate	39
38b. Leaves 4- to 5-verticillate	42
39a. Central petal glabrous, glabrous or ciliate dorsally, ciliate at the margin	40
39b. Central petal pubescent dorsally	41
40a. Leaf blade densely adpressed ferruginous pubescent on the entire lower surface	<i>V. elegans</i>
40b. Leaf blade sparsely gray pilose along the midrib on the lower surface	<i>V. macrophylla</i>
41a. Leaf blade 1–2 times longer than wide; central petal ca. 2/3 as long as the stamen	<i>V. braceliniae</i>
41b. Leaf blade 3–4 times longer than wide; central petal ca. 3/4 as long as the stamen	<i>V. magna</i>
42a. Staminalodes ciliate	43
42b. Staminalodes glabrous	46
43a. Spur strongly incurved	<i>V. spathiphylla</i>
43b. Spur straight to slightly recurved	44
44a. Leaf blade 1–2 times longer than wide; central petal ca. 2/3 as long as the stamen	<i>V. braceliniae</i>
44b. Leaf blade ca. 4 times longer than wide; central petal as long as the stamen	45
45a. Main lateral veins 20–25	<i>V. lomatoxylla</i>
45b. Main lateral veins not more than 16	<i>V. laxiflora</i>
46a. Cincinni 1- to 2-flowered; central petal cucullate	<i>V. aurantiaca</i>
46b. Cincinni 1-flowered; central petal not cucullate	47
47a. Young branchlets, stipules and leaves on both surfaces glabrous	<i>V. meridensis</i>
47b. Young branchlets and stipules pilose; leaves sparsely pilose on the lower surface, mainly on the venation	<i>V. duquei</i>

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