

NOVELTIES IN *SECURIDACA* (POLYGALACEAE, POLYGALAEAE) FOR THE FLORAS OF COLOMBIA AND VENEZUELA

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Abstract. A new species and two new records of *Securidaca* were found during the preparation of an updated checklist of Polygalaceae for the *Nuevo Catálogo de la Flora de Venezuela* and *Catálogo de Plantas y Líquenes de Colombia*. *Securidaca aquae-nigrae* from the upper Rio Negro (northern/northwestern Amazon basin) and part of the adjacent southwestern Orinoco basins of Colombia and Venezuela, is described and illustrated, and its morphological relationships with an allied species are discussed. This new species is similar to *S. coriacea*, but it differs by its leaves, the size and shape of the outer and lateral enlarged sepals, the inflorescence and fruit size, and the keel petal without a well-developed apical crest. *Securidaca fragilis* and *S. leiocarpa*, two species previously known from Ecuador and Peru, are reported here as new country records for the flora of Colombia. A lectotypification of *Securidaca schlimii* is also proposed. In a geographical and taxonomical context, *Securidaca amazonica* is considered different from *S. rivinifolia* and *S. volubilis*, while *S. densiflora* is treated here as a synonym of *S. pubescens*, and *S. dasycarpa* as a synonym of *S. diversifolia*. An updated key to the Colombian and Venezuelan species of *Securidaca* is presented.

Keywords: Rio Negro basin, Flora of Colombia and Venezuela, *Securidaca*, Polygalaceae

Resumen. Una nueva especie y dos nuevos registros del género *Securidaca* se encontraron durante la actualización de las listas de la familia Polygalaceae para el *Nuevo Catálogo de la Flora de Venezuela* y el *Catálogo de Plantas y Líquenes de Colombia*. *Securidaca aquae-nigrae* de la región del alto río Negro (norte/noroeste de la cuenca Amazónica) y parte de sector suroeste de la cuenca del río Orinoco de Colombia and Venezuela, es descrita, ilustrada y sus relaciones morfológicas con su especie afín son discutidas. Esta nueva especie es similar a *S. coriacea*, sin embargo, difiere por poseer las hojas, los sépalos externos y laterales desiguales en tamaño y forma, las inflorescencias y frutos de tamaño diferentes y la quilla (el pétalo inferior) sin una cresta bien desarrollada. *S. fragilis* y *S. leiocarpa*, dos especies previamente conocidas para Ecuador y Perú, se registran para la flora de Colombia. Se propone la leptotipificación de *Securidaca schlimii*. En un contexto geográfico y taxonómico, *S. amazonica* es considerada como una especie diferente de *S. rivinifolia* y *S. volubilis*. Igualmente, *S. densiflora* es tratada como un sinónimo de *S. pubescens* y *S. dasycarpa* de *S. diversifolia*. Se presenta una clave actualizada para diferenciar las especies del género *Securidaca* presentes en Colombia y Venezuela.

Palabras clave: Cuenca del río Negro, Floras de Colombia y Venezuela, *Securidaca*, Polygalaceae

Securidaca L., *nom. cons.*, is a pantropical genus of Polygalaceae encompassing about 66 species. The largest diversity (ca. 59 species) is found in the Neotropics (Eriksen et al., 2000; Aymard et al., 2004; Persson, 2004); a few species are found in Africa and Southeast Asia. The genus is absent in Australia (World Checklist of Vascular Plants; kew.org). *Securidaca* includes woody lianas and herbaceous vines, rarely shrubs or small trees (Eriksen and Persson, 2007).

Securidaca in the Neotropics is most diverse throughout the Amazon (Marques, 1996) and Andes bioregions, where the species are found in lowland (“terra firme”) vegetation and montane forests. Several species are found on rocky slopes and oligotrophic soils derived from the Precambrian crystalline basement of the Guayana Shield (e.g., *S. cacumina* Wurdack, *S. marginata* Benth.), and drained by black water rivers (e.g., *S. savannarum* Wurdack) and on white sandy shrubby savannas and Caatinga forests (Aymard et al., 2004). The remaining species are found in more particular habitats, such as foothills in the low-

medium to high altitude (500–2500 m) mountains of the Andes (e.g., *S. leiocarpa* S.F. Blake, *S. planchoniana* Killip & Dugand), along the Pacific Coast of Colombia and Ecuador (e.g., *S. calophylla* (Poepp.) S.F. Blake) and dry forests (e.g., *S. scandens* Jacq.). Several species have wide geographic distributions (e.g., *S. divaricata* Nees & Mart., *S. diversifolia* (L.) S.F. Blake). Others are endemic to particular geographical areas, such as species found only on Caribbean islands (e.g., *S. lophosoma* Cheesman, *sensu* Ulloa Ulloa et al., 2018 Onwards), in Mesoamerica (e.g., *S. micheliana* Chodat, *sensu* Morales Quiros, 2014), or in Central to Southeast Brazil (e.g., *S. ovalifolia* A. St. Hil. & Moq., *S. tomentosa* A. St. Hil., *sensu* Marques, 1996).

Ethnobotanical information about neotropical species of *Securidaca* is not commonly found in the literature. The roots of several species of Polygalaceae are important sources of methyl salicylate (da Rocha et al., 2012), which is a compound used in traditional medicine, mainly as an anti-inflammatory, analgesic, expectorant or anti-rheumatic remedy (Effmert et al., 2005). This natural compound is

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widely used in flavoring for foods, candies, and beverages, and in the pharmaceutical industry for making topical ointments to treat muscle pains (Vitório et al., 2011). Aymard et al. (2004) reported that the bark and leaves of *Securidaca* ssp. (e.g., *S. pyramidalis* Sprague, *S. retusa* Benth) soaked in water produce a very good soap used in the upper Rio Orinoco basin and upper Rio Negro region of Colombia and Venezuela. These species are known locally as “Bejuco jabón”. The roots of “African Violet tree” (*S. longipedunculata* Fresen.), have been used as a remedy to treat more than 24 diseases in Africa (Abubakar et al., 2019). The combination of the extracts of the roots, stems, and leaves of this taxon with artemether and lumefantrine exhibited effective antiplasmodial activity against *Plasmodium falciparum* wch strains (Ochora et al., 2022).

Polygalaceae is monophyletic and is currently divided into four tribes: *Carpolobieae* B. Eriksen, *Diclidanthereae* Reveal, *Polygaleae* Chodat and *Xanthophylleae* Chodat (Pastore et al., 2017; Mota et al., 2019). *Securidaca* is included in the tribe *Polygaleae* and is characterized by a 3-merous corolla (rarely also with two rudimentary lateral petals) and a bicarpellate gynoecium with one ovule per fertile locule (Eriksen, 1993a,b; Eriksen and Persson, 2007). *Securidaca* is further distinguished by the keel with a crest well-developed or obsolete, a one-seeded samara, and an unappendaged seed (Aymard and Campbell, 2008).

Like the subfamily Papilionoideae of the Fabaceae (Leguminosae), the subfamily *Polygaleae* has keel flowers that consist of three parts or a 3-merous corolla, a standard, two wings and a keel (Westerkamp and Weber, 1999; Prenner, 2004). However, several differences exist between the groups. The standard consists of a single median petal in Fabaceae, but is composed of two lateral sepals in Polygalaceae. The wings are formed by two petals in Papilionoideae, but are formed by two petaloid lateral sepals in Polygalaceae (Westerkamp and Weber, 1999). The keel is outlined by one or two fused lower lateral petals in legumes, but it comprises one median petal in Polygalaceae. The keel flowers consist of five petals in Polygalaceae, only three of which are fully developed, and the abaxial one forms an asymmetric keel (Persson, 2001; Castro et al., 2008). According to Aygören Uluer et al. (2022a,b), keel flowers in the two families represent a superficial functional and morphological convergence rather than a homologous

similarity. Despite the fact that the flowers of these two Fabales lineages are not homologous, their similarity has led some authors to propose that this shared resemblance is more than convergence on a floral syndrome (Aygören Uluer et al. 2022a,b). These authors also noted that by the time keel flowers appeared in the Polygaleae (46.98–45.16 Ma), the subfamily, Papilionoideae, was already distributed almost globally.

Securidaca has never been monographed, and no formal infrageneric division has been proposed. Early contributions on this genus were made by De Candolle (1826), Sprengel (1826), Bennett (1874), Triana and Planchon (1862), Chodat (1895; 1896) and Wurdack (1957; 1972). Marques (1996) identified two taxonomically useful inflorescence characters that separate species: 1) flowers solitary or in short racemes 0.5–2.5 cm long, with 5–15(–20) flowers; and 2) inflorescences racemes or panicles, 2.5–45 cm long, with more than 15 flowers. Since the Wurdack (1972) and Marques (1996) publications, only four species have been described (Wallnöfer, 1998; Eriksen et al., 2000; Aymard and Campbell, 2007; Da Costa et al., 2013). In addition, the genus has been included in the Flora of Peru (Macbride, 1950), Flora of Panama (Woodson et al., 1969), Flora of Brazil (Marques, 1996), Flora of Ecuador (Eriksen et al., 2000), Flora of the Venezuelan Guayana (Aymard et al., 2004), and *Manual de Plantas de Costa Rica* (Morales Quiros, 2014).

While conducting herbarium research for an update of Polygalaceae in the *Nuevo Catálogo de la Flora de Venezuela* (Aymard and Campbell, 2008) and *Catálogo de Plantas y Líquenes de Colombia* (Aymard and Freire-Fierro, 2016), specimens of a morphologically distinct species of *Securidaca*, collected on the Upper Rio Negro southwestern Orinoco regions, were discovered. I have conducted floristic and phytogeographic studies in this area along the Colombian-Venezuelan border over the past four decades. This contribution increases to twenty-five the number of *Securidaca* species known from Colombia and twenty-seven from Venezuela. In a geographical and taxonomical context, *Securidaca amazonica* Chodat is treated here as distinct from *S. rivinifolia* A. St. Hil. and *S. volubilis* L., while *S. densiflora* Linden & Planchon is considered a synonym of *S. pubescens* DC., and *S. dasycarpa* Turcz. as a synonym of *S. diversifolia* (L.) S. F. Blake.

MATERIALS AND METHODS

This work is based on morphological and herbarium studies in COAH, COL, GH, HUA, MO, NY, PORT, US and VEN (herbarium codes after Thiers, 2019). A 1:1 combination of glycerin and physiological solution was used over three days to hydrate and soften the dried flowers taken from herbarium specimens. The world checklist of vascular plants (WCVP) was consulted, and historical taxonomic literature on *Securidaca* was examined (<http://www.biodiversitylibrary.org>), primarily Bennett (1874), Triana and Planchon (1862), Linden and Planchon's *Plantae Columbianae* (see Sprague, 1926), and Chodat (1895; 1896). Current bibliographies were also reviewed: Wurdack (1957; 1972), Flora of Brazil (Marques, 1996), Flora

of Ecuador (Eriksen et al., 2000), and the Flora of the Venezuelan Guayana (Aymard et al., 2004). The checklists *Nuevo Catálogo de la Flora de Venezuela* (Aymard and Campbell, 2008) and *Catálogo de Plantas y Líquenes de Colombia* (Aymard and Freire-Fierro, 2016) were also reviewed.

Type specimens of *Securidaca* species were examined using online images from JSTOR Global Plants (<https://plants.jstor.org/>). The International Plant Names Index (<https://www.ipni.org/>), the online botany collections of Smithsonian Natural Museum of Natural History (<https://naturalhistory.si.edu/research/botany>), and Tropicos (<http://legacy.tropicos.org/Home.aspx>) were consulted to update

the current nomenclature and geographical information.

The specific terminology for vegetative characters, vestiture description, inflorescences, flowers, and fruit morphology follow Font-Quer (2001), Harris and Harris (2006), and Endress (2010). To determine the conservation

status (according to IUCN categories and criteria; IUCN, 2017), the extent of occurrence (EOO) and area of occupancy (AOO) were calculated using the supporting Red List threat assessments with GeoCAT (Bachman et al., 2011), which is continually updated (<https://geocat.kew.org/>).

TAXONOMY

Securidaca aquae-nigrae Aymard, *sp. nov.* TYPE: VENEZUELA. Amazonas: Rio Guainía basin, along Pimichín-Yavita trail, ca. 1 km from Pimichín, aprox. 2°51'37"N, 67°32'8"W, 120–140 m, 10 October 1947 (fl), *B. Maguire, J. J. Wurdack & W. M. Keith 41787* (Holotype: VEN; Isotypes: COL, NY). (Fig. 1)

Securidaca aquae-nigrae is similar to *S. coriacea*, but morphologically it differs from the latter in having leaf blades on the main branches oblong to narrowly oblong or broadly ovate, chartaceous to subcoriaceous, puberulent to glabrous on the upper surface, short-pilose beneath, base rounded to slightly obtuse or acute, apex rounded, lateral veins 5–12, margins revolute, ciliate. Inflorescences 8–17 cm long; sepals of the outer whorl broadly oblong to slightly oblanceolate, adpressed pubescent at the middle outside, glabrous inside, margins ciliate, the outer sepals ca. 1.2 × ca. 1.0 mm, the inner sepal ca. 2 × ca. 1 mm, lateral enlarged sepals 5–6 × ca. 6 mm, broadly ovate with 14–16 major veins. The keel petal ca. 4 × 2.6–3 mm long, glabrous on both surfaces, without well-developed apical crest (ecristate), 0.25 mm long; fruit with spheroidal body ca. 5 × ca. 4 mm, dorsal secondary wing 0.4–0.5 mm long, oblong, primary wing 2.5–3 × 1–1.4 cm, sparsely pilose.

Liana or shrubby vine, lateral branches not forming sensitive hooks or looped tendrils. *Branches and branchlets* terete, dense short-pilose, sparsely pilose to glabrescent when mature, longitudinally striate, bark flaking off in small plates when mature; nodal glands at the base of the petioles, branchlets and pedicels conspicuous, circular, ca. 0.5–1.0 mm in diameter, glabrous, short-stalked at the middle. *Leaf blades* on main branches oblong to narrowly oblong or broadly ovate, 3–11 × 3–6 cm, shiny, puberulent to glabrous on the upper surface, short-pilose on the lower surface, more dense along the midvein and secondary veins, chartaceous to subcoriaceous; the base rounded to slightly obtuse or acute; the apex rounded, short mucronate; the margin entire, revolute, ciliate; the midvein canaliculate above, prominent beneath, venation brochidodromous, the secondary veins 5–12, very prominent on both surfaces, veinlets strongly reticulate forming a net nervation. *Petioles* 2–3 × ca. 1 mm, not canaliculate, densely short-pilose, transversely rugose when mature. *Leaf blades* on inflorescences broadly ovate, ca. 1.2 × ca. 1 cm, puberulent to glabrous on the upper surface, short-pilose on the lower surface, more dense along the midvein and secondary veins, subcoriaceous, the base and apex rounded, the margin entire, revolute, ciliate; venation brochidodromous, the midvein canaliculate above, prominent beneath, the secondary veins 5–6, very prominent on both surfaces, veinlets strongly reticulate forming a net nervation. *Racemes* terminal, unbranched or with 1 lateral branch, forming lax, paniculoid synflorescences, each raceme 8–17 cm long, with 10–25 flowers, rachis densely

short-pilose, sparsely pilose when mature, bract early caducous, lanceolate, ca. 2 × 1 mm long, adpressed pubescent on both sides, margins ciliate, bracteoles 2, inserted pairwise at the base of pedicels, linear, ca. 1 × 0.3 mm, adpressed pubescent on both sides, margins ciliate, pedicels 3–4 mm long, densely adpressed pubescent. *Sepals* of the outer whorl unequal, broadly oblong to slightly oblanceolate, adpressed pubescent at the middle outside, glabrous inside, margins ciliate, the outer sepals ca. 1.2 × ca. 1 mm, the inner sepal ca. 2 × ca. 1 mm, lateral enlarged sepals (petal-like) purple-pink, broadly ovate, 5–6 × ca. 5 mm, claw 1–1.5 mm long, glabrous on both surfaces, strongly reticulate-veined, with 14–16 major veins, emarginate at the apex. *Corolla* purple-pink; keel petal oblong, ca. 4 × 2.6–3 mm, claw ca. 1 mm long, glabrous on both surfaces, strongly reticulate-veined, with ca. 10 major veins, without well-developed apical crest (ecristate), 0.25 mm long; adaxial petals 5–6 × 1–2 mm, oblong, glabrous on both sides, strongly reticulate-veined, with ca. 7 major veins. *Filament sheath* ca. 4 mm × ca. 4 mm, glabrous, margins short-pilose, free filaments 8, ca. 3 mm long, those of peripheral stamens short-geniculate just below the anthers; anthers oblong, ca. 0.5 mm long. *Ovary* ca. 1 mm long, glabrous; style 6–6.5 mm long, distally arcuate, glabrous; stigma capitate; nectary inconspicuous. *Samara* 3–4 × ca. 1 cm, body spheroidal ca. 5 × ca. 4 mm, densely pilose, strongly reticulate, dorsal secondary wing, obsolete, oblong, 4–5 mm long, sparsely pilose, primary wing 2.5–3 × 1–1.4 cm, entire, 12–20 veins, sparsely pilose. *Seed*, ca. 3 × ca. 2 mm, brown, glabrous, striate.

Phenology: This new species has been collected in flower in February, March, and October and in fruit in February, May, and October.

Etymology: The epithet *aquae-nigrae* refers to this species' habitat through black water drained systems located in the Upper Rio Negro and middle Orinoco basins. This region in the northern/northwestern Amazon basin portion of the Amazonas basin of Brazil, Colombia and Venezuela is known for its biodiversity.

Vernacular name: “Bejuco de jabón” (*Clark and Gomes 8051*; see additional specimens examined below).

Distribution and ecology: Known from primary wet forests, granitic outcrops and the borders of white sand shrubby savannas between 100–300 m. The type and additional collections of *Securidaca aquae-nigrae*, are from the upper Rio Negro (northern/northwestern Amazon basin) and part of the adjacent southwestern Orinoco basins. This region comprises the southwest of the Amazonas state of Venezuela, the southeast of the Guainía and Vaupés departments of Colombia, and the Roraima and northwest portion of the Amazonas state of Brazil. The Rio Negro watershed is characterized predominantly by black water tributaries that originate from habitats encompassing large

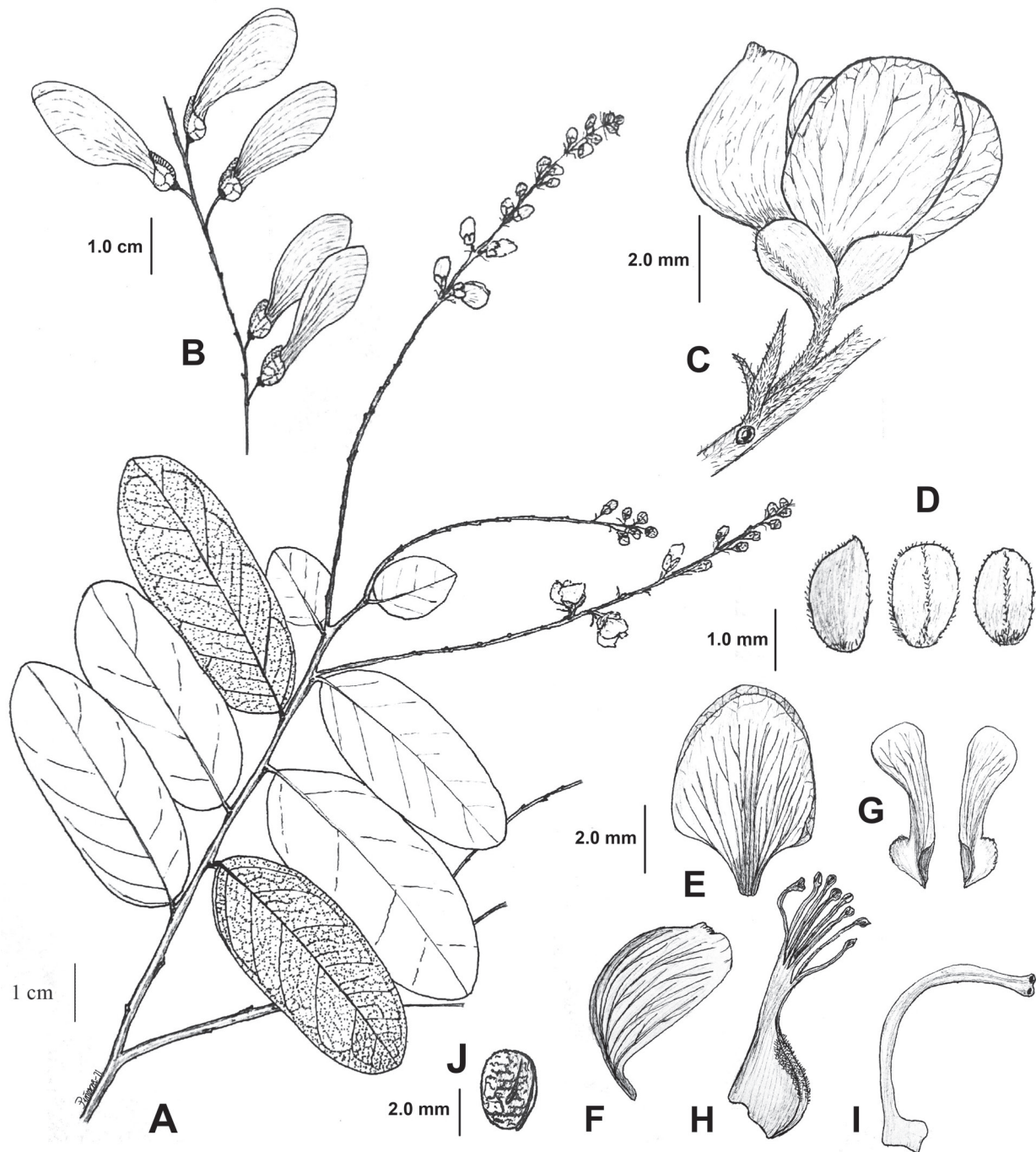


FIGURE 1. *Securidaca aquae-nigrae*. **A and B**, Branch showing the inflorescence and fruits; **C**, Lateral view of the flower showing the bract, bracteoles and the gland; **D**, Sepals of the outer whorl; **E**, Lateral enlarged sepals (petal-like); **F**, Keel petal without apical crest; **G**, Adaxial petals; **H**, filament-sheath; **I**, Gynoecium; **J**, Seed. A, C, D, E, F, G, H, and I from the holotype, *Maguire, Wurdack and Keith 41787*, COL; B, the fruit branch from *Clark and Gomes 8051*, COL.

areas covered by white sand soils (i.e., spodosols and quartzipsamments) formed from the erosion of Precambrian Guayana Shield sandstone rocks (Huber, 1995a). The middle Orinoco river basin does have a few minor black water tributaries, such as the Atabapo, Inírida (via the Guaviare), Ucata, and Sipapo rivers, among others, and a major one in its lower course, the Caroní river. These basins show considerable variation in floristic composition and

forest structure along local and regional environmental gradients (Aymard et al., 2009). The region also comprises a large, low-altitude peneplain of ca. 165,000 km², where hydromorphic spodosols and quartzipsamments are frequent (Dubroeuq and Volkoff, 1998). The peneplain landscape comprises a mosaic of unique vegetation types; in particular, sclerophyllous forests on oligotrophic and acid soils known as “caatinga Amazónica” (Colombia,

Venezuela), “caatinga Amazónica baja,” “bosques de arena blanca” (Colombia), “campinarana forestada,” “campina alta” (Brazil), “varillales” (Colombia), and “hamálíani” in Baniwa languages (Abraão et al. 2009). Additionally, these white sand forests are established across an ecological and floristic transition between terra firme forests commonly found on peneplain red-yellow clay soils and flooded forest communities on alluvial plains called “igapó” and “varzêa” (Aymard et al., 2009). The peneplain landscape also harbors unique extensive areas of savannas, shrubby savannas, and scrublands growing on white sand soils (Huber 1995b; Aymard et al., 2014).

Additional specimens examined: COLOMBIA. Guianía: Rio Inírida, Caranacoa, aprox. 3°50'N, 67°58'W, 03 March 1965 (fl), A. Fernández-Pérez y R. Jaramillo-M. 7067 (COL). VENEZUELA. Amazonas: Upper Rio Negro basin, San Carlos de Río Negro, ca. 20 km S of confluence of Rio Negro and brazo Casiquiare, aprox. 1°56'N, 67°03'W, 119 m, 18 May 1981 (fr), H. L. Clark & G. Gomes 8051 (COL, MO, NY, VEN). 1 km al sur de San Carlos de Río Negro, aprox. 1°49'N, 67°03'W, 119 m, 22 febrero 1989 (fl; fr), G. Aymard, K. Kubitzki & B. Stergios 7360 (PORT, US). Guianía river, lower caño San Miguel, caño El Pavón, aprox. 1°41'N, 67°31'W, 127 m, 26 March 1942 (fr), Ll. Williams 14909 (F, US, VEN). Río Pasimoni, Mamurividi, aprox. 1°32'N, 66°32'W, 125 m, 03 April 1984 (fl; fr), R. Liesner 17191 (MO, US, VEN). Casiquiare, Vasiva et Pasimoni, 1853–54 (fr), R. Spruce 1207 (US). Casiquiare canal, Chapazón, between Casiquiare mouth and Solano, aprox. 1°58'N, 67°03'W, 120 m, 09 November 1987 (fr), R. Liesner & G. Carnevali 22951 (MO, US, VEN). Yatua river, Piedra Catipán, aprox. 1°22'N, 66°22'W, 100–150 m, 30 November 1953 (fr), B. Maguire, J. J. Wurdack & G. Bunting 36492 (NY, US, VEN).

Conservation status: Currently, this species is only known from the type and paratypes, and it is reported here as a geographical local taxon from the upper Rio Negro (northern/northwestern Amazon basin) and part of the adjacent southwestern Orinoco basins. According to IUCN (2017) guidelines, nine localities are required data to determine the conservation status of a taxon. Nevertheless, this taxon should be regarded as Endangered (EN) based on the criterion B1ab(iii)+2ab(iii), due to the smaller estimated Area of Occupancy (AOO), with just 32,000 km². Its Vulnerable (VU) status was determined by its Extent of Occurrence (EOO) of 14,629.997 km² (IUCN, 2017) and the continual deforestation and degradation of the ecosystems of this región (e.g., “Cerro Yapacana”). These areas have been deforested and degraded over the past two decades because of the expansion of illegal mining (Fundarede, 2022). Conservation status assessments can still be carried out for species with such low numbers of collections (Rivers et al., 2011). It may, however, be difficult to determine whether an appearance of rarity in a species is due to the lack of data or to its actual rarity (Verspagen et al., 2022).

This new species is similar to *Securidaca coriacea* Bonpland with its leaves of two different sizes, the ones on the inflorescence rachis smaller than ones on main branches, the abaxial surface of leaves short-pilose or densely appressed-pubescent, the presence of nodal glands at the base of the petiole, branchlets and pedicels, and inflorescences racemes or panicles, 2.5–45 cm long with more than 15 flowers. Herbarium specimens of *Securidaca aquae-nigrae* have often been annotated as *Securidaca coriacea* (Orinoco variant) by J. J. Wurdack. However, *S. aquae-nigrae* differs from *S. coriacea* in the vegetative and reproductive characters discussed in the diagnosis (Table 1) and from the Colombian and Venezuelan taxa in the key presented on pages 151–153.

NEW RECORDS

Securidaca fragilis B. Ståhl & B. Eriksen, Flora of Ecuador 52: 122, 2000. TYPE. ECUADOR. Morona-Santiago: Mutintz and vicinity, about 15 km SW of Makuma, 700–800 m, 77°44'W, 02°12'S, 4 April 1996, B. Ståhl, H. Navarrete, B. Øllgaard & E. Ternéus 3558 (Holotype: AAU; Isotypes: GB, QCA). Fig. 2

Liana 4–5 m long; branchlets terete, minutely puberulous, nodal glands rather inconspicuous. *Leaves* petiolate, gradually diminishing in size toward branch tips; blade narrowly ovate or oblong, 3–11 × 1.5–5 cm, herbaceous, glabrous, base truncate, apex acuminate with acumen 0.5–1.5 cm long, margins entire, midvein prominent beneath, impressed above, lateral veins 4–6 per side, prominent on both sides, veinlets rather conspicuous; petiole 0.2–0.5 cm long, subcanaliculate, sparsely puberulous. *Racemes* axillary, 1–3 cm long, with 5–15 (–20) flowers; rachis very sparsely strigulose; bracts not seen, very early caducous; *pedicels* 6–7 mm long, very thin, glabrous. *Sepals* of the outer whorl glabrous, ciliate at margins, somewhat unequal, lower lobes ovate, ca. 2 × ca. 2 mm, upper lobe ovate, ca. 2.5 × ca. 1.5 mm; enlarged lateral sepals broadly oblong, ca. 8 × ca. 5 mm including claw, ca. 1 mm long, with ca. 6 major veins. *Corolla* purple to pink, yellowish

at base; carina ca. 6 mm long, ca. 1.5 mm deep, glabrous, without apical crest; lateral lobes oblong to subspathulate, ca. 5 × ca. 2 mm, glabrous. *Filament sheath* ca. 5 mm long, ciliate at margins, free filaments 0.5–1 mm long; *anthers* ca. 1 mm long. *Ovary* square, ca. 0.7 mm long, glabrous; *style* ca. 6 mm long, curved, glabrous; *stigma* truncate. *Fruit* glabrous, main body spheroidal, ca. 13 × ca. 8 mm, coarsely reticulate from prominent veins, dorsal lobe 3–4 mm wide, major wing 5–5.5 × 2–2.3 cm.

Colombian material studied: Antioquia. Anorí, 5 km al sur de la Estación Providencia, 500 m, 7°19'61"N, 75°03'407"W, 28 Marzo 1996 (fl), R. Fonnegra, R. Callejas. F. J. Roldán, C. López & A. Idarraga 5971 (HUA, MO), det. A. Freire-Fierro-2006. Caquetá. La Montañita. Corregimiento El Santuario, vereda Las Iglesias, reserva natural privada de La Hacienda El Ceilán, aprox. 1°15'N, 75°10'W, ca. 280 m, 27–30 Junio 2005(fl, fr), D. Giraldo-Cañas et al. 3938 (COL).

According to Eriksen et al. (2000), this species is distinguished by its thin leaves, short axillary inflorescences and thin, fragile pedicels. It was known from two collections made on the slopes of the “Cordillera de Cutucú” (Morona-Santiago). In Colombia, this species was

TABLE 1. Comparison of distinguishing characters of *Securidaca aquae-nigrae* and *S. coriacea*.

CHARACTER	<i>S. AQUAE-NIGRAE</i>	<i>S. CORIACEA</i>
Leaf blades on main branches	Oblong to narrowly oblong or broadly ovate, chartaceous to subcoriaceous, puberulent to glabrous above, short-pilose beneath, base rounded to slightly obtuse or acute; apex rounded, lateral veins 4–12, margins revolute, ciliate	Ovate to broadly ovate, coriaceous, sparsely pilulose to subglabrous above, densely pilose beneath, base cordate, truncate or short-attenuate at base, apex obtuse, lateral veins 4–6, margins somewhat revolute, not ciliate
Inflorescences	8–17 cm long	3–11(–13) cm long
Sepals of the outer whorl	Broadly oblong to slightly oblanceolate, adpressed pubescent at the middle outside, the outer sepals ca. 1.2 mm × ca. 1 mm, the inner sepal ca. 2 × ca 1 mm	Ovate, puberulent outside, the outer sepals ca. 2.5 × ca. 2 mm, the inner sepal ca. 3 × ca. 2.5 mm
Lateral enlarged sepals	Broadly orbicular, 5–6 × ca. 5 mm, with 14–16 major veins	Elliptic to ovate, ca. 7–11 × 6–8 mm, with 6–8 major veins
Keel petal	Ca. 4 × 2.6–3.0 mm, glabrous on both surfaces, without well-developed apical crest (ecristate), 0.25 mm long	7–8 × ca. 4 mm, densely tomentulose inside, with a well-developed apical crest, 10–12 mm long
Filament sheath	Ca. 4 mm long, glabrous on both sides, margins short-pilose, filament ca. 3 mm long	Ca. 6 mm long, pilulose on inside and along margins, filament 1–2 mm long
Fruit	Spheroidal body ca. 5 × ca. 4 mm, dorsal secondary wing 0.4–0.5 mm long, oblong, primary wing 2.5–3 × 1–1.4 cm, sparsely pilose	Spheroidal body 8–10 × 4–5 mm, dorsal secondary wing 1.2–1.4 cm long, acute, primary wing 3.5–4 × 1.2–1.4 cm, hirsute

collected in flower in March, and with flowers and fruits in June. It grows in wet forests located in the foothills on the east side of the Cordillera Central and Oriental at 280–500 m. The latter locality currently corresponds to the regional private conservation area known as “La Hacienda El Ceilán” in the La Montañita municipality in the department of Caquetá.

Securidaca leiocarpa S. F. Blake, Proc. Biol. Wash. 40: 52–53. (1927). TYPE: ECUADOR. El Oro: Vicinity of Portovelo, 6–15 October 1918, *J. N. Rose & G.* 23385 (Holotype: US; Isotypes: GH, NY). Fig. 3

Liana; branchlets terete, hirsute to pilose, stipular glands prominent. *Leaves* petiolate, gradually diminishing in size towards branch tips; blade ovate, 2–4 × 1.2–2.7 cm, coriaceous or subcoriaceous, lower surface sparsely to densely hirsute, at least on the midvein, upper surface distinctly darkened when dried, deep green when fresh, ± nitidous, sparsely hirsute to glabrous, base truncate or sometimes short-attenuate, apex retuse or obtuse-retuse, margins usually somewhat revolute, at least towards the base, midvein prominent beneath, impressed above, lateral veins 4–6 per side, veinlets inconspicuous; petioles 0.1–0.2 cm long, densely hirsute. *Racemes* terminal, usually on short, lateral branches, 1–3 cm long with 8–20 flowers;

rachis densely hirsute; *bracts* lanceolate, ca. 1 × 0.5 mm, early caducous; *bracteoles* not seen; *pedicels* 8–11 mm long, hirsute. *Sepals* of the outer whorl sparsely hirsute, unequal, lower lobes broadly ovate, ca. 4 × ca. 3.5 mm, upper lobe narrowly ovate, ca. 5 × ca. 3 mm; enlarged lateral sepals purple, almost circular, 9–10 mm long including claw 0.5–1 mm long, with 6–8 major veins. *Corolla* purple; *carina* 9–10 mm long, 4–5 mm deep, apically without, or with a poorly developed crest, margins somewhat puberulous; *lateral lobes* narrowly oblong, ca. 5 × ca. 3 mm. *Filament sheath* ca. 6 mm long, margins papillose-puberulous, *free filaments* ca. 3 mm long; *anthers* 0.8–1 mm long. *Ovary* ± square, ca. 1 mm long, glabrous; *style* 10–11 mm long, strongly curved; *stigma* subcapitate. *Fruit* glabrous, with central body ca. 5 × ca. 5 mm, dorsal lobe rounded, ca. 1 mm wide, major wing 25–30 × 12–15 mm.

Colombian material studied: Magdalena, Camino San Lorenzo-Sierra Nevada de Santa Marta, 2100 m, 14 Julio 1969 (fl, fr), *N. de López* 292 (COL); Municipio Santa Marta, base del Cerro Quemado y Cerro San Lorenzo, aprox. 10°35'N, 73°56'W, 2000–2300 m, 22 Abril 1959 (fl, fr), *R. Romero-Castañeda* 7844 (COL); Municipio Santa Marta, entre la Estación Forestal del INDERENA y el Cerro Quemado, 08 Agosto 1971 (fr), *R. Romero-Castañeda* y *S. Llinás* 11258 (COL).



FIGURE 2. Specimen of *Securidaca fragilis* from El Santuario, vereda Las Iglesias, Caquetá, Colombia (D. Giraldo Cañas et al. 3938 (COL 000217076)).



FIGURE 3. Specimen of *Securidaca leiocarpa* from Municipio Santa Marta, base del Cerro Quemado y Cerro San Lorenzo, Magdalena, Colombia (R. Romero-Castañeda 7844, COL.000245596).

According to Eriksen et al. (2000), *Securidaca leiocarpa* has been rarely collected in the montane forests of southern Ecuador (El Oro, Loja, Morona-Santiago, Zamora-Chinchipec) and adjacent Peru (Cajamarca). It is easily distinguished by the rather small leaves, the upper surfaces of which dry black-brown.

In Colombia, this species was collected in flower and fruit in April and July and in fruit in August. There it grows in montane wet forest located on the west side of “La Sierra Nevada de Santa Marta,” at 2000–2300 m, Magdalena department.

LECTOTYPIFICATION

Securidaca schlimii Planch. & Linden ex Triana & Planch. *Annales des Sciences Naturelles; Botanique, série 4, 17: 135. 1862. TYPE: COLOMBIA [Nouvelle-Grenade]. Agua Chica, prov. d’Ocaña (currently Norte de Santander department), 1624 m, 1846–1852, Louis J. Schlim 513 (Lectotype: [designated here], MPU [15937]); Isolectotypes: G [00440395], K [000012903], P [00733667], US [00109085].*

Jóse Jeromino Triana and Jules Émile Planchon cited a general locality (Triana and Planchon, 1862), but they did not specify any particular herbarium specimen. In the current study, it was found that only a single collection was made by Louis J. Schlim (No. 513) in the type locality region with five duplicates.

KEY TO THE SPECIES OF *SECURIDACA* OF COLOMBIA AND VENEZUELA

Modified from Aymard et al., 2004 and Aymard and Campbell, 2007;

(*) Species endemic to Colombia; (+) Species endemic to Venezuela

- 1a. Flowers solitary or in short racemes 0.5–2.5 cm long, with 5–15(–20) flowers 2
- 1b. Inflorescences racemes or panicles, 2.5–45 cm long, with more than 15 flowers 11
- 2a. Branchlets glabrous or minutely puberulous; samara wing glabrous 3
- 2b. Branchlets densely hirsute, pilose or sparsely strigulose to glabrescent when mature; samara wing pubescent, sparsely pilose to puberulent 7
- 3a. Leaves narrowly ovate to ovate, or oblong, inflorescences 5–15(–20)-flowered 4
- 3b. Leaves ovate to broadly-ovate or orbicular-ovate; flowers solitary or inflorescences with 2–6-flowered 5
- 4a. Branchlets glabrous; leaves 15–22 cm long; veinlets inconspicuous on both sides; flowers yellowish to green; enlarged lateral sepals subrotund, claw 2–3 mm long; pedicels 2–5 mm long; fruit with a broadly attached wing. *S. calophylla* (Colombia: Antioquia, Boyacá, Caquetá, Nariño; Brazil, Ecuador Perú)
- 4b. Branchlets minutely puberulous; leaves 3–11 cm long; veinlets forming a strongly reticulate net nervation; flowers pink-purple; enlarged lateral sepals broadly oblong, claw ca. 1 mm long; pedicels 6–8 mm long; fruit with a narrowly attached, lateral wing. *S. fragilis* (Colombia: Antioquia, Caquetá; Ecuador)
- 5a. Leaves ovate, 5–8 × 2–4.5 cm, puberulent on the abaxial surface, margins revolute, petiole 2–2.5 mm long; inflorescence with 1–3 flowers; keel petal without a crest. *S. uniflora* (Colombia: Caquetá; Venezuela: Amazonas; Brazil, Guianas)
- 5b. Leaves ovate to broadly-ovate or orbicular-ovate, 5–15 × 4–11 cm, glabrous on abaxial surface margins not revolute, petiole 4–7 mm long; inflorescence with 3–6 flowers; keel petal crested. 6
- 6a. Branchlets glabrous; leaves ovate to broadly-ovate, 5–15 × 4–11 cm; petiole 4–7 mm long, sparsely pilose, canaliculate; outer sepals ovate; main samara wing 7–8 cm long, secondary wing rhomboid, ca. 4 × 6–7 mm *S. fundacionensis* (Venezuela: Táchira+)
- 6b. Branchlets puberulous; leaves orbicular-ovate, 5–6 × 3–4 cm; petiole 3–4 mm long, glabrous, not canaliculate; outer sepals broad oblong; main samara wing ca. 4 cm long, secondary wing lanceolate, ca. 18 × ca. 2 mm *S. goudotiana* (Antioquia, Cundinamarca, Tolima, Valle*)
- 7a. Leaves ovate, 2–4 × 1–2 cm, drying black-brown on the upper surface, golden-green on the lower surface; major wing 2–3 cm long *S. leiocarpa* (Colombia: Magdalena; Ecuador, Perú)
- 7b. Leaves ovate-elliptic, elliptic, ovate-oblong or oblong-ovate, 5–11 × 3–6 cm, drying brown-green on the upper surface, light green on the lower surface; major wing longer than 5 cm. 8
- 8a. Branchlets, petioles and pedicels with white pubescence; leaves ovate-elliptic or elliptic; margins revolute; ovary sparsely strigulose to glabrescent. *S. savannarum* (Venezuela: Amazonas+; probably in Colombia: Guainía and Vaupés departments)
- 8b. Branchlets, petioles, and pedicels with golden pubescence; leaves ovate-oblong or oblong-ovate; margins not revolute; ovary glabrous. 9
- 9a. Branchlets sparsely strigulose to glabrescent when mature with trichomes 0.05 mm long; petiolar glands elevated; leaves coriaceous, base obtuse or rotund; lateral petals abaxially glabrous *S. fruticans* (Venezuela: Amazonas+)
- 9b. Branchlets densely hirtellous with trichomes ca. 1 mm long; petiolar glands sessile; leaves chartaceous or subcoriaceous; lateral petals abaxially sparsely ciliate 10
- 10a. Leaves elliptic to narrowly ovate, chartaceous, white-puberulent on the lower surface, base subcordate or truncate; inflorescences 0.5–1 cm long; outer sepals puberulent at the middle externally; flowers white-yellow or green, keel crest 8–14 mm long *S. prancei* (Venezuela: Amazonas, Bolívar; Brazil)
- 10b. Leaves ovate to broadly ovate or oblong, subcoriaceous, yellow-pubescent on the lower surface, base rounded to slightly obtuse; outer sepals glabrous or sparsely strigulose externally; inflorescences 2–2.5 cm long; flowers pink-purple, keel crest 4–6 mm long. *S. aff. S. purpurea* (Colombia: Norte de Santander; Venezuela: Mérida)
- 11a. Leaves completely glabrous on both surfaces 12
- 11b. Leaves sparsely hirtellous, strigulose, pilose, pilosulous, puberulent, or pubescent-hirsute to densely appressed-pubescent at least on one surface (more evident along the midrib and secondary veins) 16

KEY TO THE SPECIES OF *SECURIDACA* OF COLOMBIA AND VENEZUELA CONT.

Modified from Aymard et al., 2004 and Aymard and Campbell, 2007;

(*) Species endemic to Colombia; (+) Species endemic to Venezuela

- 12a. Inflorescences compound by 1-2-to several racemes, sometimes paniculate 13
- 12b. Inflorescences unbranched racemes 15
- 13a. Inflorescences compound by more than 3 lateral racemes (paniculate); major fruit wing ca. 1.5 cm long
S. paniculata s. l. (Colombia: Amazonas, Antioquia, Chocó, Putumayo, Vaupés;
 Venezuela: Amazonas, Bolívar, Delta Amacuro, Distrito Capital, Mérida; Brazil, Guianas, Perú)
- 13b. Inflorescences compound by 1 or 2 lateral racemes; major fruit wing longer than 2 cm long 14
- 14a. Leaf margins crenate and strongly thickened *S. marginata* (Venezuela: Bolívar, Monagas; Brazil, Guyana)
- 14b. Leaf margins entire and not thickened 15
- 15a. Leaves ovate to broadly ovate, shiny on the upper surface; racemes 3-5 cm long; pedicels 8-10 mm long; samara wings glabrous,
 secondary wing nearly fully confluent with the primary wing; deciduous dry forests *S. scandens*
 (Colombia: Antioquia, Bolívar, Cesar, Magdalena, Santander, Valle; widespread in north Venezuela)
- 15b. Leaves elliptic or ovate; racemes 4-12 cm long, dull on the upper surface; pedicels 5-6 mm long; samara wings basally puberulent,
 sometimes sparsely so; secondary wing noticeably cleft from primary wing, acute; wet forest *S. retusa*
 (Colombia: Amazonas, Vaupés; Venezuela: Amazonas, Bolívar; Brazil, French Guiana, Guyana)
- 16a. Secondary wing of the samara well-developed (samaras 2-winged) 17
- 16b. Secondary wing of the samara weakly developed or obsolete (samaras 1-winged) 20
- 17a. Racemes 10-30 cm long; samara wings ca. 1 cm long *S. pendula*
 (Colombia: Meta, Vichada; Venezuela: Amazonas, Anzoátegui, Apure, Bolívar, Guárico; Brazil, Guyana)
- 17b. Racemes 4-10 cm long; samara wings 1.5-3.5 cm long 18
- 18a. Leaves oblong, sometimes elliptic or obovate; inflorescences compound (panicle); flowers 5-7 cm long;
 ovary glabrous *S. paniculata* Rich. s. l. (Colombia: Amazonas, Antioquia, Chocó, Putumayo, Vaupés;
 Venezuela: Amazonas, Bolívar, Delta Amacuro, Distrito Capital, Mérida; Brazil, Guianas, Perú)
- 18b. Leaves ovate, lanceolate, or lanceolate-ovate; inflorescences unbranched racemes; flowers 8-16 cm long; ovary pubescent 19
- 19a. Leaves coriaceous; outer sepals symmetric, abaxially glabrescent; keel petal crest 1.2-2 mm long; samara 2-2.5 cm long,
 wings glabrescent *S. bialata*
 (Colombia: Amazonas, Guanía, Vichada; Venezuela: Amazonas, Bolívar, Delta Amacuro, Falcón, Guárico; Brazil)
- 19b. Leaves chartaceous to subcoriaceous; outer sepals asymmetric, abaxially pilose; keel petal crest 0.5-0.7 mm long; samara 1.5-1.8 cm long,
 wings densely strigulose *S. longifolia* (Colombia: Amazonas; Venezuela: Amazonas; Brazil, Guyana, Perú, Bolivia)
- 20a. Abaxial surface of the leaves puberulent, sparsely hirtellous, strigulose or pilosulous, more evident along the midrib and
 secondary veins 21
- 20b. Abaxial surface of leaves hirsute, shortly-pilose, densely appressed-pubescent or velutine, not pilosulous to glabrescent 27
- 21a. Keel petal without a crest or crest reduced, 0.5-4 mm long, not reflexed 21
- 21b. Keel petal crested well developed; crest 6-15 mm long, reflexed 25
- 22a. Leaves chartaceous or subcoriaceous, margins not revolute, pilosulous on the adaxial surface 23
- 22b. Leaves coriaceous, margins revolute, glabrous on the adaxial surface; outer sepals ovate-orbicular, 2-3.5 mm wide; keel petal ciliate on
 the margins 24
- 23a. Branches and branchlets densely hirsute; leaf blades oblong to narrowly elliptic or broadly oblong, 1-2(-3) cm wide, pilosule on both sides;
 inflorescences unbranched, keel petal glabrous on both sides; lateral wings glabrous *S. divaricata* (Colombia: Amazonas,
 Caquetá, Cundinamarca, Meta, Vaupés; Venezuela: Amazonas, Anzoátegui, Aragua, Miranda; Brazil, Guianas, Ecuador, Perú, Bolivia)
- 23a. Branches and branchlets sparsely strigulose; leaf blades ovate or oblong-ovate, sparsely strigulose on both sides; inflorescences with 2
 lateral racemes; keel petal sparsely fine- setulose outside; lateral wings covered by golden trichomes outside *S. schlimii*
 (Colombia: Bolívar, Norte de Santander*; probably in Venezuela: Táchira and Mérida states)
- 24a. Branchlets, petioles, rachis of inflorescence, and pedicels hirsute; petioles 5-7 mm long; basal cleft of samara
 well-developed *S. cacumina* (Venezuela: Amazonas, Bolívar+)
- 24b. Branchlets, petioles, rachis of inflorescence, and pedicels velutinous-pubescent; petioles 1-2 mm long; secondary wing of samara
 minute *S. warmingiana* (Colombia: Guanía, Vaupés; Venezuela: Amazonas, Mérida; Brazil, Guyana, Perú, Bolivia)
- 25a. Leaves all one size; outer sepals glabrous abaxially; samara wing 1-1.5 cm long. *S. paniculata* s. l. (Colombia: Amazonas,
 Antioquia, Chocó, Putumayo, Vaupés; Venezuela: Amazonas, Bolívar, Delta Amacuro, Distrito Capital, Mérida; Brazil, Guianas, Perú)
- 25b. Leaves two different sizes, the ones on inflorescence rachis smaller than the ones on main branches; outer sepals strigulose abaxially;
 samara wing 2-4 cm long 26
- 26a. Leaves elliptic-ovate, obtuse or subcordate at the base, sparsely hirtellous to glabrescent on the adaxial surface; inflorescences 8-45 cm
 long; keel petal 10-11 mm long *S. speciosa* (Colombia: Guanía; Amazonas, Bolívar)
- 26b. Leaves ovate-oblong, sometimes ovate, acute or short-attenuate at the base, strigulose on the abaxial surface; inflorescences 4-12 cm long;
 keel petal ca. 8 mm long *S. diversifolia* (widespread in Colombia and Venezuela: SE U.S.A. to Argentina)
- 27a. Young branchlets, petioles, inflorescences, and pedicels densely white-pubescent; petioles 10-15 mm long; ovary
 puberulent *S. maguirei* (Venezuela: Amazonas; Brazil)
- 27b. Young branchlets, petioles, inflorescences, and pedicels not white-pubescent; petioles 1-7 mm long; ovary glabrous or densely
 hirsute 28

KEY TO THE SPECIES OF *SECURIDACA* OF COLOMBIA AND VENEZUELA CONT.

Modified from Aymard et al., 2004 and Aymard and Campbell, 2007;

(*) Species endemic to Colombia; (+) Species endemic to Venezuela

- 28a. Leaves two different sizes, the ones on the inflorescence rachis smaller than ones on main branches, with long trichomes (0.7–1.5 mm long) on the abaxial surface 29
- 28b. Leaves all one size, trichomes ca. 0.5 mm long on the abaxial surface 30
- 29a. Leaf blades on main branches ovate to broadly ovate, coriaceous, sparsely pilulose to glabrous on the upper surface, lateral veins 4–6; enlarged lateral sepals ca. 8 × 6–8 mm, with 6–8 major veins; keel ca. 8 mm long, densely tomentose inside, with a well-developed apical crest, 8–14 mm long; samara primary wing 3.5–4 cm long, hirsute . . . *S. coriacea* (widespread in Colombia and Venezuela; Panamá, Brazil, Guyana, Surinam, Ecuador, Perú, Bolivia)
- 29b. Leaf blades on main branches oblong to narrowly oblong or broadly ovate, subcoriaceous, puberulent to glabrous on the upper surface, lateral veins 5–12; enlarged lateral sepals 5–6 × ca. 6 mm, with 14–16 major veins; keel 4–5 mm long, glabrous outside, without well developed apical crest (ecristate), 0.25 mm long; samara primary wing 2.5–3 cm long, sparsely pilose . . . *S. aquae-nigrae* (Colombia: Guianá; Venezuela: Amazonas)
- 30a. Leaves coriaceous; branches and branchlets furfuraceous-pilose *S. pyramidalis* (Venezuela: Amazonas, Bolívar; Guyana)
- 30b. Leaves chartaceous or subcoriaceous; branches and branchlets tomentose, densely pilose or densely pubescent. 31
- 31a. Leaves glabrescent, puberulent, short pilose or sparsely pilose on the adaxial surface 32
- 31b. Leaves dense pubescent or densely puberulent on the adaxial surface 34
- 32a. Leaves subcoriaceous; flowers 6–8 mm long; outer sepals densely pubescent *S. planchoniana* (Colombia: Antioquia, Boyacá, Cundinamarca, Guaviare, Magdalena, Norte de Santander, Putumayo, Valle; Venezuela: Carabobo, Lara, Mérida, Táchira, Zulia)
- 32b. Leaves herbaceous to chartaceous; flowers 9–12 mm long; outer sepals glabrous or puberulent 33
- 33a. Leaves ovate to broadly ovate or oblong, shiny on the upper surface, yellow-pubescent on the lower surface; outer sepals glabrous or sparsely strigose externally *S. purpurea* (Colombia: Antioquia, Cauca, Vaupés; Venezuela: Distrito Capital, Mérida, Miranda)
- 33b. Leaves elliptic or ovate-elliptic, dull on the upper surface, velutinous on the lower surface; outer sepals puberulent externally . . . *S. amazonica* (Colombia: Putumayo; Brazil, very probably in Ecuador and Perú)
- 34a. Leaves densely puberulent on the abaxial surface; petioles 5–9 mm long; ovary glabrous; samara wing ca. 4 cm long. *S. pubescens* (widespread in Colombia and Venezuela; Brazil, Guianas, Perú)
- 34b. Leaves densely pubescent or velvety-pilose on the abaxial surface, especially along the vein; petioles 2–4 mm long; ovary pubescent; samara wing 3–7 cm long 35
- 35a. Leaves ovate to broadly ovate or oblong-ovate, margins not revolute, sparsely pilose to glabrous on the adaxial surface. 36
- 35b. Leaves elliptic to ovate, margins revolute, densely pubescent or strigose on the adaxial surface 37
- 36a. Scandent shrubs or herbaceous vines; branchlets soft pilose, leaves oval, oblong-ovate or narrowly ovate, densely velvety-pilose on the abaxial surface; outer sepals densely pilose outside *S. tenuifolia* (Colombia: Antioquia, Bolívar, Cundinamarca, Magdalena; Venezuela: Aragua, Bolívar, Distrito Capital, Mérida, Miranda, Portuguesa, Táchira; Panamá, Trinidad and Tobago)
- 36b. Woody lianas, branchlets densely hirsute, leaves ovate to broadly ovate, pubescent on the abaxial surface; outer sepals sparsely puberulent to glabrous except the margin outside *S. trianae* (Colombia: Boyacá, Cundinamarca; Venezuela: Aragua, Carabobo, Distrito Capital, Falcón, Miranda, Táchira; Ecuador)
- 37a. Leaves densely pubescent on the adaxial surface; pedicel 4–6 mm long; outer sepals puberulous; keel petal spatulate-ovate, obtuse. *S. volubilis* (Colombia: Putumayo; Amazonas, Bolívar, Mérida, Zulia; Costa Rica, Panamá, Puerto Rico, Brazil, Guianas, Ecuador, Perú, Bolivia)
- 37b. Leaves strigose on the adaxial surface; pedicel 6–8 mm long; outer sepals densely pubescent; keel petal obovate, acute. *S. planchoniana* (Colombia: Antioquia, Boyacá, Cundinamarca, Guaviare, Magdalena, Norte de Santander, Putumayo, Valle; Venezuela: Carabobo, Lara, Mérida, Táchira, Zulia)

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