

A new species of *Securidaca* (Polygalaceae, Polygaleae) from Araracuara region, middle Caquetá river basin, Colombia

Una nueva especie de *Securidaca* (Polygalaceae, Polygaleae) de la región de Araracuara, cuenca media del Río Caquetá, Colombia

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ABSTRACT

Securidaca poeoesioehoeorum from Araracuara region, at the middle Caquetá River basin (northwestern Amazon basin), Caquetá department, Colombia, is described, illustrated, and its morphological relationships with an allied species are discussed. The new species is similar to *S. leiocarpa* but differs by the pubescence, shape, and size of its leaves, outer and lateral enlarged sepals, the inflorescence, the keel petal, stamens number and fruit shape and size. A complete description, an illustration, information about habitat, phenology, conservation status, the species name etymology and an abstract in Pøøsiøhø (Andoke) idiom are presented. A key

for identifying species of *Securidaca* to Colombia is also provided. *Securidaca poeoesioehoeorum* is remarkable for its four stamens, in an otherwise predominantly eight stamens genus. This new finding increases to 27 the number of species of the genus to Colombia flora. This new taxon is the first plant species name that honors the Pøøsiøhø nation.

Keywords: Araracuara, Caquetá River basin, secondary wet forests, *Securidaca*, Polygalaceae, Pøøsiøhø, Colombia

RESUMEN

Securidaca poeoesioehoeorum de la región de Araracuara, cuenca media

del Río Caquetá (noroeste de la cuenca Amazónica), departamento del Caquetá, Colombia, es descrita, ilustrada y sus relaciones morfológicas con su especie afín son discutidas. La nueva especie es similar a *S. leiocarpa* pero difiere en el tamaño, forma y pubescencia de las hojas, los sépalos externos y laterales, las inflorescencias, la quilla (el pétalo inferior), el número de estambres y en la forma y tamaño de los frutos. Se presenta una descripción, una ilustración, información acerca del hábitat, fenología, estado actual de conservación, etimología del nombre de la especie, un resumen en el idioma en Pøøsiøhø (Andoke) y una clave de las especies del género en Colombia. *Securidaca poeoesioehoeorum* es una especie notable por sus poseer cuatro estambres, en un género donde predominan ocho estambres. Este nuevo hallazgo eleva a 27 el número de especies del género para la flora de Colombia. Este nuevo taxon representa la primera especie de planta que hace honor a la nación Pøøsiøhø.

Palabras clave: Araracuara, bosques húmedos secundarios, cuenca del río Caquetá, Polygalaceae, Pøøsiøhø, *Securidaca*, Colombia

PØØSIØHØ Ka ñqifosí jsiakataj

Ka'se øø'defø, øøpøa føsi, meøtøseisiøhø fisi siøhø, ñ qifesi ø **ipeikø økasiøhø** bø (Cuenca del Río Caquetá en Araracuara). nø'i føsi **øati** jsiokapij siøhø KAÁdt cono siøhø **jsu** siøhø pañema j **øke** bø (Biodiversidad) aviøhø ye ej' okasiø bø ke'Á pøsiøhø

nie ka dozkoj siøka ø **ipøkø** bø ni+ ke j'i. høma ø'defø katpa øø høka. **øñe** bø ke'Á pøsiøhø ka'sofa'.

INTRODUCTION

Securidaca L., *nom. cons.* is a pantropical genus of Polygalaceae of about 67 species, of which ca. 61 (including the new species described herein) are found in the Neotropics (Eriksen *et al.* 2000, Aymard *et al.* 2004, Aymard 2022). A few species are found in Africa and Southeast Asia; the genus is absent in Australia (World Checklist of Vascular Plants; kew.org). In the Neotropics, *Securidaca* is most diverse throughout the Amazon (presumed centre of its diversification, *sensu* Anjos *et al.* 2024) and Orinoco River basins, the Guayana Shield (Marques, 1996, Aymard *et al.* 2004) and Andes bioregions.

Several species are found over 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 waters rivers (e.g., *S. aquae-nigrae* Aymard, *S. savannarum* Wurdack) on white sandy shrubby savannas and Caatinga forests (Aymard *et al.* 2004, Aymard 2022). Some species have wide geographic distributions (e.g., *S. divaricata* Nees & Mart., *S. diversifolia* (L.) S. F. Blake) in lowland “terra firme” (Anjos *et al.* 2024) and montane forests. The remaining species require more specific habitats, like 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 the dry forests (e.g., *S. scandens* Jacq.) as well. Others are endemic to particular geographical areas, such as some species found only in Caribbean islands (e.g., *S. lophosoma* Cheesman, *sensu* Ulloa Ulloa et al., 2018 Onwards), 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).

Polygalaceae are monophyletic, divided at present into four tribes: *Carpolobieae* B. Eriksen, *Diclidanthereae* Reveal, *Polygaleae* Chodat and *Xanthophylleae* Chodat (Pastore et al. 2017, Mota et al. 2019, 2023). *Securidaca* is included in the tribe *Polygaleae* characterized by its papilionaceous flowers, with the 5-merous corolla usually reduced to 3-merous (the keel formed by one petal and the wings are inner sepals), sometimes with a pair of rudimentary petals, and bicarpellate gynoecium with one ovule per fertile locule (Eriksen, 1993a,b; Eriksen & Persson, 2007, Mota et al. 2023). *Securidaca* is further distinguished by its habit-wise of woody lianas, herbaceous vines, rarely shrubs or small trees (Eriksen & Persson 2007), the keel with a crest, well developed or obsolete, a one-seeded samara, and an appendaged seed (Aymard and Campbell, 2007).

Securidaca has never been monographed, and no formal

infrageneric division has been proposed. 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. After Wurdack (1972) and Marques (1996) contributions, only seven species had been described (Wallnöfer 1998, Eriksen et al. 2000, Aymard and Campbell 2007, Da Costa et al. 2013, Aymard 2022, Anjos et al. 2024). In addition, the genus has been treated for 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 updating the checklists of Polygalaceae for the “Catálogo de plantas y Líquenes de Colombia” (Aymard and Freire-Fierro 2016) and “Catálogo de la flora del medio Río Caquetá y áreas adyacentes” (Sanchez 1997), a specimen of a morphologically distinct species of *Securidaca* were detected, collected in the Araracuara region, on the Middle Caquetá River basin. This biodiverse area in the Colombian Amazon basin has had a considerable number of studies on floristic, ecology, vegetation classification, soils, geomorphology, and phytogeographic for more than three decades (e.g., Duivenvoorden et al. 1988, Urrego 1991, Duivenvoorden

& Cleef 1994, Duivenvoorden & Lips 1995, Duivenvoorden 1996, Sánchez 1997, Londoño-V. y Álvarez 1997, Arbeláez y Callejas 1999, Duque *et al.* 2001, Hoyos-Gómez *et al.* 2023, Urrego *et al.* 2024). Besides this amount of field work and interesting results, new taxa still appear in this region and adjacent areas (e.g., Cortés-Ballén 2014, Daly & Melo 2017, Oliveira *et al.* 2020, Marcano-Berti *et al.* 2023, Da Silva *et al.* 2024), including the new species described here.

This contribution increases to 27 the number of *Securidaca* species known from Colombian flora, also four species of this genus are very probably to be found in Colombia (*S. maguirei* Wurdack, *S. prancei* Wurdack, *S. pyramidalis* Sprague & Sandwith and *S. savannarum*; see Aymard (2022) and the species key below). The name *poeoesioehoeorum* represents the first time that a plant, species honored the Pøøsiøhø (Andoke) nation.

MATERIALS AND METHODS

This work is based on morphological (using a dissecting stereomicroscope) and herbarium studies in COAH, COL, GH and HUA (herbarium codes after Thiers 2024). Current bibliography was scrutinized, essentially the Wurdack's contributions (1957, 1972), Flora of Brazil (Marques 1996), the Flora of Ecuador (Eriksen *et al.* 2000), the Flora of the Venezuelan Guayana (Aymard *et al.* 2004) and the Colombian and Venezuelan *Securidaca* species key included in Aymard (2022). Also,

the checklist: *Catálogo de plantas y Líquenes de Colombia* (Aymard and Freire-Fierro, 2016) was reviewed.

Type specimens of *Securidaca* species involved in this study were examined using on-line images from JSTOR Global Plants (<https://plants.jstor.org/>). In addition, 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 also 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 Eriksen & Persson (2007).

RESULTS

Securidaca poeoesioehoeorum Aymard, *sp. nov.* (Figure 1)

TYPE: COLOMBIA. Caquetá: Araracuara, Río Caquetá, bosques secundarios, aprox. 00° 36' 50''S; 72° 23' 03''W, 120 m, 05 Septiembre 1991, *Hans Vester & Bartolomé Castro 498* (holotype: COAH-04300!).

Diagnosis

Securidaca poeoesioehoeorum is similar to *S. leiocarpa*, but morphologically it differs from the latter in having oblong or obovate-oblong leaves (vs.

ovate), chartaceous (vs. coriaceous or subcoriaceous), black punctate, light-brown on the lower surface (vs. not punctate, golden-green), the base and apex rounded (vs. base truncate or sometimes short-attenuate, apex retuse or obtuse-retuse); the secondary veins 5–12, veinlets strongly reticulate (vs. 4–6, veinlets inconspicuous) and petioles 0.5–1 mm (vs. 1–2). Inflorescences axillary and along the branchlets, 2–5 mm long, with 1–3 flowers (vs. terminal, 10–30 mm long with 8–20 flowers), pedicels 0.5–1 mm long (vs. 8–11); sepals densely pilose pubescent outside (vs. sparsely hirsute), lateral enlarged sepal 5.5–6 mm long, claw ca. 0.2 mm long, broadly ovate (vs. 9–10 mm long, claw 0.5–1 mm long, almost circular), keel petal 4–5 mm long (vs. 9–10 mm long), adaxial (lateral) petals ca. 1.8×1 mm, oblong-lanceolate (vs. ca. 5×3 , oblong), stamens 4 (vs. 8) and samara with central spheroidal body ca. 8×5 mm, dorsal secondary wind 2–3 mm long, primary wing $3\text{--}3.5 \times 1\text{--}1.5$ cm, membranaceous, brown, adpressed pilose (vs. spheroidal body ca. 5×5 mm, dorsal secondary wind ca. 1 mm, primary wing $2.5\text{--}3 \times 1.2\text{--}1.5$ cm, coriaceous, yellowish, glabrescent).

Liana with flattened stems to subherbaceous vine, lateral branches not forming sensitive hooks or looped tendrils. Branches and branchlets terete, yellow patent-pubescent, sparsely pilose when mature, longitudinally striate, bark not flaking off when mature; with short stalked glands, ca. 0.2–0.5 mm long, glabrous, capitate in the top, located along the branchlets and

at the base of the inflorescences. Leaves gradually diminishing in size from the tip to below part of branch, $1.5\text{--}3.5 \times 1.5\text{--}3.5$ cm, oblong or obovate-oblong, chartaceous, shiny, glabrescent-punctate, black-brown on the upper surface, puberulent to glabrescent along midvein, black punctate, light-brown on the lower surface, erect pilose along the midvein and secondary veins; the base and apex rounded; the margin entire, revolute, ciliate; the midvein flat above, prominent beneath, venation brochidodromous, the secondary veins 5–12, very prominent on both surfaces, veinlets strongly reticulate forming a net nervation. Petioles $0.5\text{--}1 \times \text{ca. } 0.5$ mm, not canaliculate, densely yellow pilose. Inflorescences axillary and along the branchlets, unbranched, 2–5 mm long, with 1–3 flowers, rachis densely yellow pubescent, bracteoles at the base of pedicels, ovate-lanceolate, ca. $1 \times \text{ca. } 1$ mm, pilose outside, glabrescent inside, pedicels 0.5–1 mm long, densely yellow pubescent. Sepals of the outer whorl subequal, ca. $2 \times \text{ca. } 2$ mm, broadly ovate or ovate, densely pilose pubescent outside, glabrescent inside, margins ciliate, the outer sepals ca. $3.5 \times \text{ca. } 2$ mm, the inner sepal ca. $3.15 \times \text{ca. } 1.7$ mm, lateral enlarged sepal (petal-like) $5.5\text{--}6 \times 3\text{--}3.5$ mm, claw ca. 0.2 mm long white-purple, broadly ovate, glabrous on both sides, strongly reticulate-veined at the base, with 4–6 major veins, acute at the apex. Corolla white-purple; keel petal $4\text{--}5 \times 1.5\text{--}2$ mm, claw ca. 2 mm long, ovate, glabrous on both surfaces, strongly reticulate-veined, with 10–12 major veins, without apical crest (ecristate); adaxial (lateral) petals ca.

1.8 × 1 mm, oblong-lanceolate, glabrous on both sides; filament sheath ca. 2 mm long, glabrous on both surfaces, filaments 4, ca. 2.2 mm long, free; anthers oblong, ca. 0.5 mm long. Ovary ca. 2.5 mm long, glabrous. Samara 3.5–4 × 1–1.5 cm, body spheroidal ca. 8 × ca. 5 mm, white adpressed pubescent, strongly reticulate, dorsal secondary wind, obsolete, oblong, 2–3 mm long, sparsely pilose, primary wing 3–3.5 × 1–1.5 cm, membranaceous, black-brown, entire, strongly veined (35–40 veins), sparsely adpressed pilose.

Phenology: This new species has been collected with flowers and fruits in September.

Taxonomic relationship: This new species is remarkable by its four stamens, in an otherwise predominantly eight stamens genus, and it has some similarity with *Securidaca leiocarpa*, S. F. Blake. Both taxa belong to short racemes (0.5–2.5 cm long) informal group and have bicolored leaves: drying black-brown on the upper surface, light-brown (*S. poeoesioehoeorum*) and golden-green (*S. leiocarpa*) on the lower surface. Nonetheless, *S. poeoesioehoeorum* differs from *S. leiocarpa* in the vegetative and reproductive characters discussed in the diagnosis and in the following key of *Securidaca* species of Colombia.

Distribution: The new species is known to occur in the Araracuara region, in secondary wet forest over clays soils, between 100–200 m elevation. The former is a region located in the middle Caquetá River basin, in the

department of Caquetá. The vegetation, soils, geology, and geomorphology of this area have also been well studied (especially the sector from Araracuara to the mouth of the Cahuinari river; see the introduction). This research was done through the establishment of the Amazon herbarium in Araracuara in 1982 and various research projects conducted by the Tropenbos-Colombia Foundation, the Colombian Corporation for the Amazon “Araracuara” and “Universidad Nacional de Colombia” (Infante-Betancour and Rangel-Ch. 2018).

State of conservation: Currently, this new species is only known from the type collection, and it is reported here as rare species. However, under IUCN (2022) guidelines a single locality constitutes data deficient (DD) to determine its conservation status, the area of Occupancy (AOO) and the extent of Occurrence (EOO) as well (IUCN 2022). Nevertheless, the conservation of these wet forest of the middle Caquetá basin in Colombia is not at risk of deforestation and degradation.

The area where *S. poeoesioehoeorum* occurs is currently well protected by regional initiatives such as the three REDD+ projects named: “Aire de vida” (“Fivo Jaagava Komuya Jag+y+”) in “Monochoa”; “Nuestro Aire de Vida” (“Kai Komuya Jag+y+”) in “Puerto Zábalo y Los Monos” and “CRIMA-Predio Putumayo y Andoke de Aduche”. These three projects are efficiently managed by the Pøøsiøhø, Uitoto and Muinane nations, and

presently protect ca. 1,965.538 hectares of non-fragmented forests. The latter activities are remarkable in this region because Amazonian basin holds the world's largest structurally and diverse complex tropical rainforest, those are vital for earth's ecosystem dynamic processes (Laurance *et al.* 2018). Tropical forests are estimated to storage ca. 1/4 of total carbon pools within land ecosystems. The latter condition plays a fundamental role in combating climate change (Longo *et al.* 2016). In addition, Amazon rainforest has been subject to climate-related disturbances such as forest fires, droughts, and danger anthropogenic activities like deforestation, mineral extraction and logging in the past several decades with the second highest gross forest loss globally (Csillik *et al.* 2024).

Etymology: *Securidaca poeoesioehoeorum* is named to honor the Pøøsiøhø (Andoke) nation. According to Art. 60.7 of the current International Code of Nomenclature for algae, fungi, and plants (Turland *et al.* 2018), a botanical name must not have diacritical sign (i.e., “ø”), therefore, here, the letter “ø” was changed to “oe”. The Pøøsiøhø people are also known as “Paasi-ahá” or “Andoke” in their own language, meaning “Gente de hacha” in Spanish, the “axe-people” in English (Landaburu 1976). The connotation or word “Andoke” comes from the Uitoto language, which means people who live in the hills (Nelson “Requi” Andoque, pers. comm, Jan. 2025). This Amazonian nation was a pre-European Amazonian people characterized

by its complex cultural heritage, multifaceted regional societies, locally dense populations, ancestral cultivation techniques and the extensive use forest resources (Espinosa-Arango 1995, Estrada-Añokazi 2017). Also, Pøøsiøhø people were known by their neighbors as suppliers of quality stone axes, since they knew and managed the site where the hardest stones (suitable for their manufacture), were found (Whiffen 1915, Pineda-Camacho 1975). This nation and other people located in the middle Caquetá River are known as “People of the Centre”, as the Pøøsiøhø think of themselves. They are composed by seven ethnolinguistic groups of the Pøøsiøhø, Boran and Uitotoan linguistic stocks, which share territory, a number of cultural traits and have a common social and ceremonial organization in spite of their spatial dispersion and linguistic heterogeneity (Echeverry & Román-Jitdutjaaño 2013, Heckenberger 2013). These people are experts in ecological knowledge, including advanced systems of river and forest resource use including agroforestry (Denevan & Padoch 1988). However, “People of the Centre” were subjected to a brutal slavery system (mainly debt peonage and forced labor) that forced most native workers of middle Caquetá and Putumayo Rivers to gather the latex of *Hevea* spp. (Euphorbiaceae) during the Amazon Rubber Boom perpetrated by Peruvian Amazon Company or Casa Arana, from 1885 to 1930 (Hardenburg 1921). Few if any native households in Northwestern Amazon basin escaped from this “commerce” (Wasserstrom 2017). Once, the Rubber Boom receded,

the “People of the Centre” were again exposed to colonization and invasion of their territories though the Araracuara Agricultural Penal Colony (which operated from 1938 to 1971), the coca plantations, fur trappers, armed conflict, and gold mining (Useche-Losada 1994, Estrada-Añokazi 2017). Despite all these difficulties, the survivors grouped and reconstructed their ethnic identities as we see them today (Estrada-Añokazi 2017). Currently, their ancestral territory spans the area between the Caquetá and Putumayo Rivers in south-eastern Colombia, along the border with Peru (*sensu* Cayón and Chacón 2022). The specific epithet name (*poeoesioehoeorum*) represents the first time that a plant species honors the Amazonian Pøøsiøhø nation.

Key to the species of *Securidaca* of Colombia

(Amended and modified from Aymard 2022)

Species endemic to Colombia[#]

1. Flowers solitary or in short racemes 0.5–2.5 cm long, with 1–15(-20) flowers ... 2

1. Inflorescences racemes or panicles, 2.5–45 cm long, with more than 15 flowers ... 10

2. Branchlets glabrous or minutely puberulous; samara wing always glabrous ... 3

2. Branchlets densely hirsute, pilose pubescent or sparsely strigulose to glabrescent when mature; samara wing

pubescent, sparsely pilose, puberulent or glabrescent ... 6

3. Leaves narrowly ovate to ovate, or oblong, inflorescences 5–15(-20)-flowered ... 4

3. Leaves ovate to broadly-ovate or orbicular-ovate; flowers solitary or inflorescences with 2–6-flowered ... 5

4. Branchlets glabrous; leaves 15–22 cm long, coriaceous or subcoriaceous, 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 wing ... ***S. calophylla*** (Colombia: Antioquia, Boyacá, Caquetá, Nariño; Brazil, Ecuador, Perú)

4. Branchlets minutely puberulous; leaves 3–11 cm long; herbaceous to chartaceous, veinlets forming a strongly reticulate net nervation; flowers pink or purple; enlarged lateral sepals broadly oblong, claw ca. 1 mm long; pedicels 6–8 mm long; fruit with a narrowly, lateral wing ... ***S. fragilis*** (Colombia: Antioquia, Caquetá; Ecuador)

5. 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, Brazil, Guianas)

5. 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 ... *S. goudotiana*[#]
(Colombia: Antioquia, Cundinamarca,
Tolima, Valle)

6. 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 ... 7

6. 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

7. Leaves ovate, golden-green on
the lower surface, base truncate or
sometimes short-attenuate, apex retuse
or obtuse-retuse; inflorescence terminal,
10–30 mm long (with 8–20 flowers),
pedicels 8–11 mm long; stamens 8;
primary wing of fruit 2.5–3 × 1.2–1.5
cm, coriaceous, yellowish, glabrous ...
S. leiocarpa (Colombia: Magdalena;
Ecuador)

7. Leaves oblong or obovate-oblong,
light-brown on the lower surface, the
base and apex rounded; inflorescence
2–5 mm long, axillary and along the
branchlets, with 1–3 flowers, pedicels
0.5–1 mm long, stamens 4; primary
wing of fruit 3–3.5 × 1–1.5 cm,
membranaceous, brown, adpressed
pilose ... *S. poeoesiohoeorum*[#]
(Colombia: Amazonas, Caquetá)

8. Branchlets, petioles and pedicels with
white pubescence; leaves ovate-elliptic
or elliptic; margins revolute; ovary
sparsely strigulose to glabrescent ... *S.*
savannarum (Colombia: very probably
in Guainía and Vaupés departments;
Venezuela)

8. Branchlets, petioles, and pedicels
with golden pubescence; leaves elliptic
to narrowly ovate, ovate to broadly
ovate or oblong-ovate; margins not
revolute; ovary glabrous ... 9

9. 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* (Colombia: very
probably in Amazonas, Guainía and
Vaupés departments; Venezuela, Brazil,
Bolivia)

9. Leaves ovate to broadly ovate
or oblong, subcoriaceous, yellow-
pubescent on the lower surface, base
rounded to slight obtuse; inflorescences
2–2.5 cm long, outer sepals glabrous
or sparsely strigose externally; flowers
pink-purple, keel crest 4–6 mm long
... *S. aff. S. purpurea* (Colombia:
Antioquia, Norte de Santander, Valle;
Venezuela)

10. Leaves completely glabrous on both
surfaces ... 11

10. Leaves sparsely hirtellous, strigulose,
pilose, pilosulous, puberulent, or
pubescent-hirsute to densely adpressed-
pubescent at least on one surface (more
evident along the midrib and secondary
veins) ... 13

11. Inflorescences compound by more
than 3 lateral racemes (paniculate);
major fruit wing 1–1.5 cm long ... *S.*
paniculata s. l. (Colombia: Amazonas,

Antioquia, Chocó, Putumayo, Vaupés; Venezuela, Brazil, Guianas, Perú)

11. Inflorescences compound by 1 or 2 lateral racemes; major fruit wing longer than 2 cm long ... 12

12. 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; Venezuela)

12. 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, Brazil, Guyana, French Guiana)

13. Secondary wing of the samara well developed (samaras 2-winged) ... 14

13. Secondary wing of the samara weakly developed or obsolete (samaras 1-winged) ... 17

14. Racemes 10–30 cm long; samara wings ca. 1 cm long ... *S. pendula* (Colombia: Meta, Vichada; Venezuela, Brazil, Guyana)

14. Racemes 4–10 cm long; samara wings 1.5–3.5 cm long ... 15

15. Leaves oblong, sometimes elliptic or obovate; inflorescences compound (panicle); flowers 5–7 cm long;

ovary glabrous ... *S. paniculata* s. l. (Colombia: Amazonas, Antioquia, Chocó, Putumayo, Vaupés; Venezuela; Brazil, Guianas, Perú)

15. Leaves ovate, lanceolate, or lanceolate-ovate; inflorescences unbranched racemes; flowers 8–16 cm long; ovary pubescent 16

16. 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, Guianá, Vichada; Venezuela, Brazil)

16. 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, Brazil, Guyana, Perú, Bolivia)

17. Abaxial surface of the leaves puberulent, sparsely hirtellous, strigulose, or pilosulous, more evident along the midrib and secondary veins ... 18

17. Abaxial surface of leaves hirsute, shortly-pilose, densely appressed-pubescent or velutine, not pilosulous to glabrescent ... 23

18. Keel petal without a crest or crest reduced, 0.5–4 mm long, not reflexed 19

18. Keel petal crested well developed; crest 6–15 mm long, reflexed 21

19. Leaves coriaceous, margins revolute,

glabrous on the adaxial surface; keel petal ciliate on the margins ... *S. warmingiana* (Colombia: Guanía, Vaupés; Venezuela, Brazil, Guyana, Perú, Bolivia)

19. Leaves chartaceous or subcoriaceous, margins not revolute, pilosulous on the adaxial surface: Keel petal not ciliate on the margins ... 20

20. 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, Brazil, Guianas, Ecuador, Perú, Bolivia)

20. 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; most likely found in Venezuela)

21. 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, Brazil, Guianas, Perú)

21. Leaves two different sizes, the ones on inflorescence rachis smaller than ones on main branches; outer sepals strigulose abaxially; samara wing 2–4

cm long 22

22. 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; Venezuela)

22. 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, SE-USA to Argentina)

23. Young branchlets, petioles, inflorescences, and pedicels densely white-pubescent; petioles 10–15 mm long; ovary puberulent ... *S. maguirei* (Colombia: very probably in Guanía and Vaupés departments; Venezuela, Brazil, Perú)

23. Young branchlets, petioles, inflorescences, and pedicels not white-pubescent; petioles 1–7 mm long; ovary glabrous or densely hirsute ... 24

24. 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 ... 25

24. Leaves all one size, trichomes ca. 0.5 mm long on the abaxial surface ... 26

25. 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; Panamá, Venezuela, Brazil, Guyana, Surinam, Ecuador, Perú, Bolivia)

25. 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 $\times$ ca. 6 mm, with 14–16 major veins; keel 4–5 mm long, glabrous outside, without well-developed apical crest (ecristate), ca. 0.25 mm long; samara primary wing 2.5–3 cm long, sparsely pilose ... *S. aquae-nigrae* (Colombia: Guainía, Venezuela)

26. Leaves coriaceous; branches and branchlets furfuraceous-pilose ... *S. pyramidalis* (Colombia: very probably in Amazonas, Caquetá, Guainía and Vaupés departments, Venezuela, Guyana, Bolivia?)

26. Leaves chartaceous or subcoriaceous; branches and branchlets tomentose, densely pilose or densely pubescent ... 27

27. Leaves glabrescent, puberulent, shortly pilose or sparsely pilose on the adaxial surface ... 28

27. Leaves dense pubescent or densely puberulent on the adaxial surface ... 29

28. 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)

28. Leaves herbaceous to chartaceous; flowers 9–12 mm long; outer sepals glabrous or puberulent ... 30

29. 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; Venezuela)

29. Leaves elliptic or ovate-elliptic, dull on the upper surface, velutinous on the lower surface; outer sepals puberulent externally ... *S. amazonica*# (Colombia: Putumayo; most likely found in Brazil, Ecuador and Perú)

30. 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; Venezuela; Brazil, Guianas, Perú)

30. 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 ... 31

31. Leaves ovate to broadly ovate or oblong-ovate, margins not revolute, sparsely pilose to glabrous on the adaxial surface ... 32

31. Leaves elliptic to ovate, margins revolute, densely pubescent or strigose on the adaxial surface ... 33

32. Scandent shrubs or herbaceous

vines; branchlets softly 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, Panamá; Trinidad and Tobago)

32. 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, Ecuador)

33. Leaves densely pubescent on the adaxial surface; pedicel 4–6 mm long; outer sepals puberulous; keel petal spatulate-ovate, obtuse ... *S. volubilis* (Colombia: Putumayo; Costa Rica, Panamá, Puerto Rico, Venezuela, Brazil, Guianas, Ecuador, Perú, Bolivia)

33. 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)

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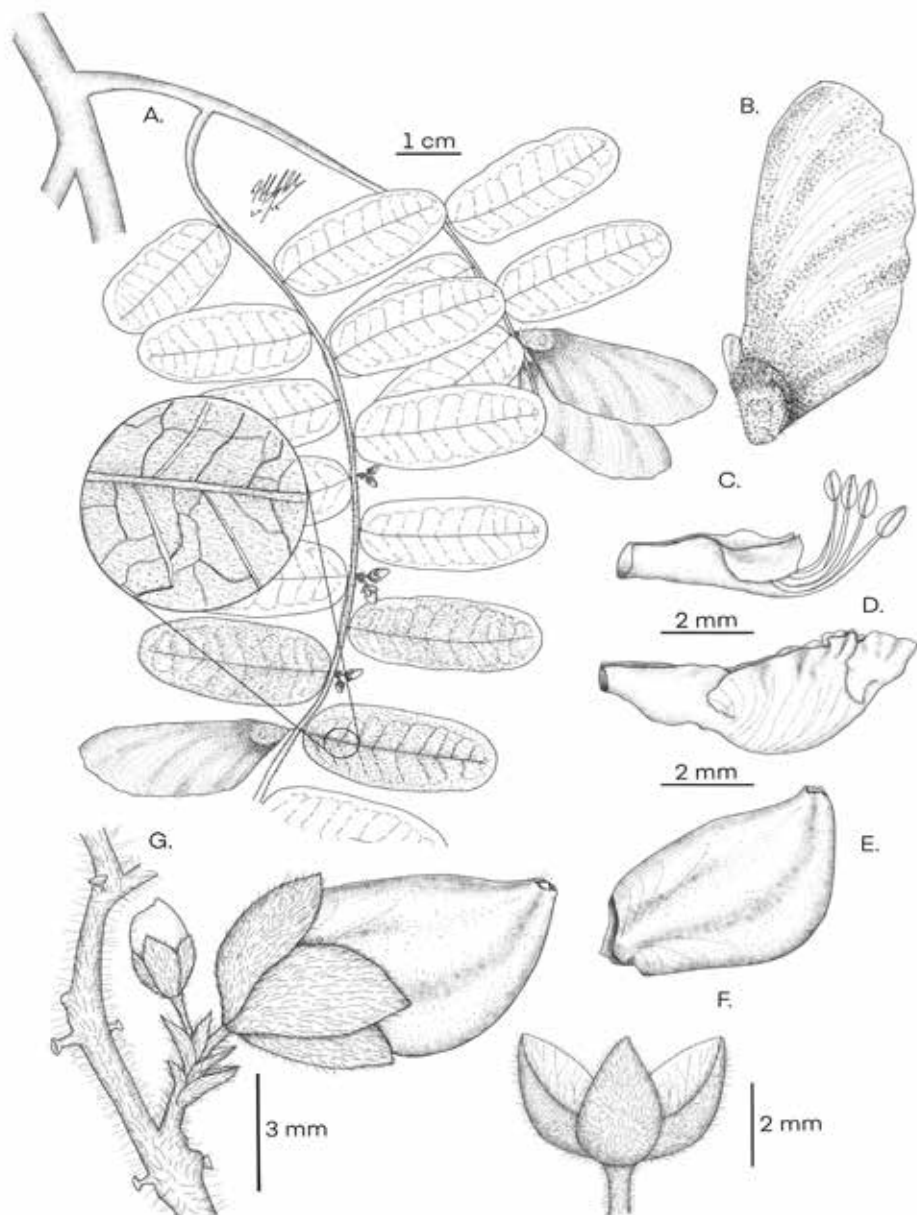


Figure 1. *Securidaca poeoesioehoeorum*. **A.** Habit showing the adaxial leaf surface with the appressed pubescence, inflorescence and fruits. **B.** Fruit. **C.** Filament-sheath, lateral petals and the four stamens in lateral view. **D.** Keel crest in lateral view. **E.** Enlarged sepal (petal-like) in lateral view. **F.** Sepals. **G.** Branchlet and inflorescence showing the clavate glands, the bracteoles and the flower in lateral view. Illustration based on the type collection (Vester & Castro 498).

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