

## *Serjania littoralis* (Sapindaceae), a new species from Brazil

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*Serjania littoralis* Somner & Ferrucci *sp. nova* (Sapindaceae) is described from Rio de Janeiro, Brazil. It belongs to *Serjania* sect. *Serjania*. The new species is illustrated and compared with its putative closest relatives *S. dentata* and *S. faveolata*. It is known only from restinga vegetation. In addition, the micromorphological characters of the pollen grains are described.

Key words: new species, restinga, Sapindaceae, *Serjania*, taxonomy

*Serjania* (Sapindaceae) is an American genus with about 230 species distributed in the tropical and subtropical areas (Ferrucci & Acevedo-Rodríguez 2005). The major center of diversity for *Serjania* is found in Brazil, with around 102 species distributed mainly in the Brazilian planalto. *Serjania* belongs to the largely neotropical tribe Paullinieae, together with the genera *Cardiospermum*, *Houssayanthus*, *Lophostigma*, *Paullinia*, *Urvillea* and *Thinouia* (Radlkofer 1931, Hunziker 1978). Within the Paullinieae, *Serjania* is recognized by its schizocarpic fruits, separated into three samaroid mericarps with a distal locule. It has the same pollen type as *Urvillea*, *Cardiospermum* and *Houssayanthus*. Although the pollen morphology in *Serjania* seems to be of limited taxonomic value, it is useful for differentiating *Serjania* from *Lophostigma* and *Paullinia* (Acevedo-Rodríguez 1993a, Ferrucci & Anzótegui 1993). In order to

provide a complete description of this new species, an analysis of pollen is included.

The species described here came into light during a revision of Sapindaceae for the flora of the state of Rio de Janeiro. It can be distinguished from the other 3-foliolate species such as *S. dentata* and *S. faveolata* by vegetative characters.

This study is based on the published literature, analysis of herbarium material, and fieldwork. Material from herbaria CTES, GUA, RB and RBR was studied. Pollen grains were obtained from anthers of one collection of the new species. Samples for light microscopy (LM) were acetolyzed according to the procedure of Erdtman (1966) and mounted in glycerine jelly. Permanent slides were deposited at the Palynological Laboratory of the Universidad Nacional del Nordeste, Corrientes, Argentina (PAL-CTES). The polar axis and equatorial diam-

eter were measured on 20 grains using a Leica DM LB2 microscope. The terminology used to describe pollen grains follows that of Erdtman (1966) and Punt *et al.* (1994). Scanning electron micrographs (SEM) were made on acetolyzed pollen grains, samples were coated with gold/palladium. The equipment used was a JEOL 5800 LV operating at 15 KV.

Voucher for the pollen grain study was Araujo *et al.* 10309 (CTES).

***Serjania littoralis* Somner & Ferrucci, sp. nova** (Figs. 1 and 2)

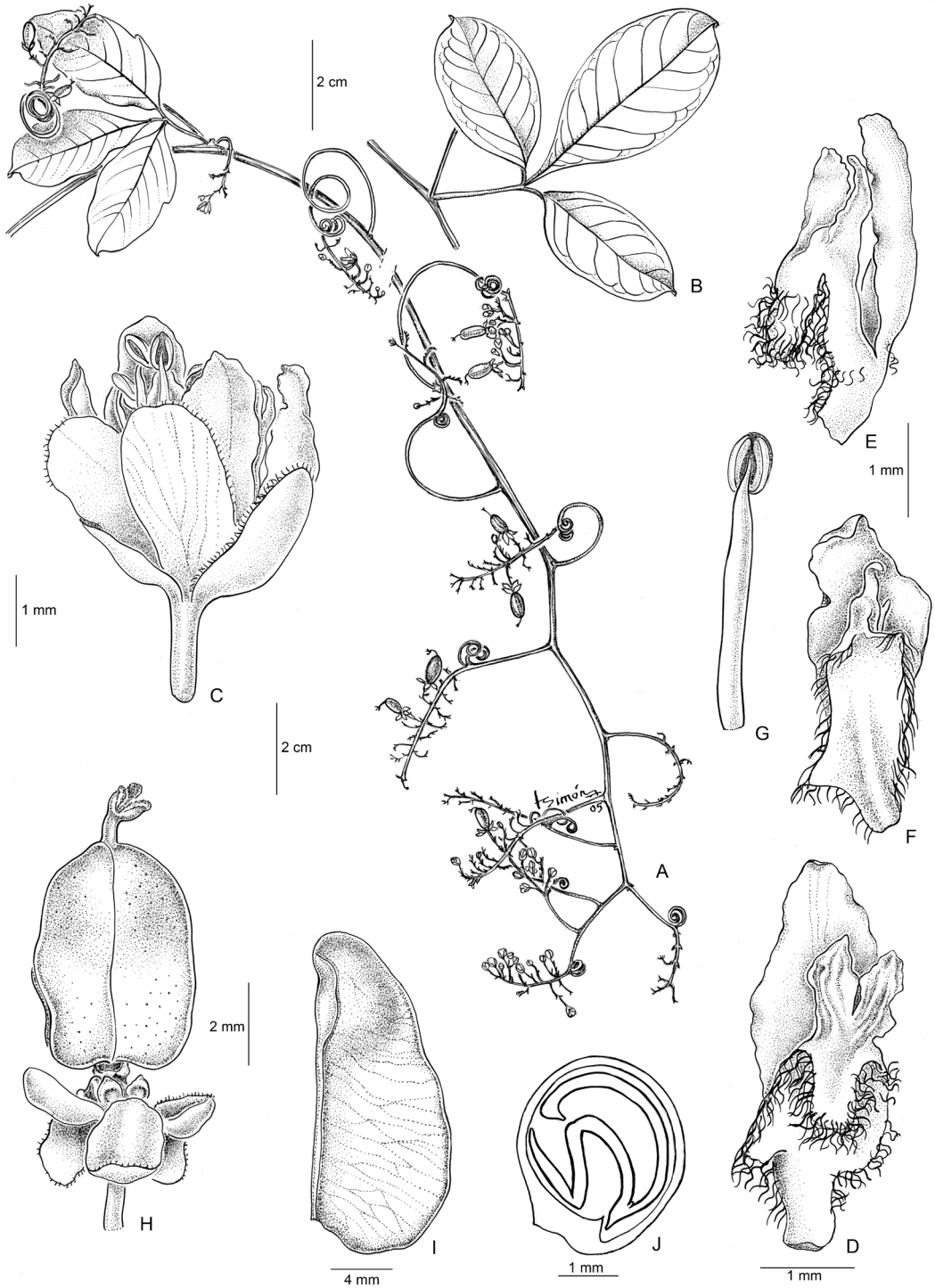
*Species nova S. dentatae et S. faveolatae affinis, sed stipulis deciduis, foliolis nervatione inconspicua et petalis intus sparsim glandulosis eisdem differt; a prima specie caule solido, petiolulis folioliorum terminalium majoribus differt; a secunda caulibus geniculatis, petiolulo folioli terminalis minor et basi folioli decurrenti differt.*

TYPE: Brazil. Rio de Janeiro: Municipio Armação de Búzios, restinga da praia de José Gonçalves, 25.VI.1999 (fr) *D. Fernandes 236* (holotype RB; isotype RBR).

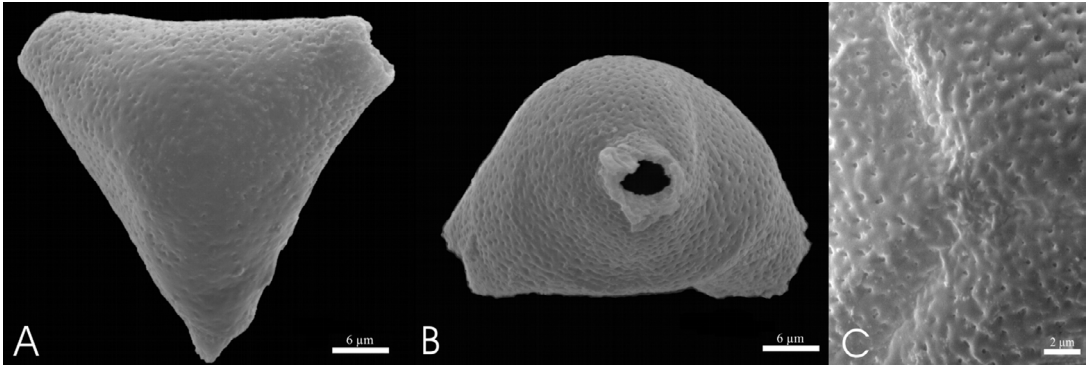
ETYMOLOGY: The specific epithet refers to the coastal region of Rio de Janeiro, where the species grows.

Semi-woody vine to 6 m long, not producing milky sap, stems slender (up to 2 mm in diameter), glabrescent. Young branches and inflorescence axes densely covered with short, curved and whitish hairs, intermixed with sparse, minute, curved, orange glandular trichomes. Flowering branchlets geniculate, yellowish green, with 6 rounded ribs, glabrous; cross section of stems with a single stele and solid medulla. Stipules triangular, caducous, 0.5–1 mm long, 0.5–1.4 mm wide, with few glandular hairs in the margins. Leaves trifoliolate; petiole subterete, furrowed along adaxial surface, 0.7–2.6 cm long, glabrous; petiolules up to 10 mm long on distal leaflet, 1–4.5 mm long on lateral ones; leaflets chartaceous, glabrous, oblong, broadly oblong, ovate, obovate or elliptic, 2.7–7.5 cm long, 1.3–3.8 cm wide, lateral leaflets asymmetric with a narrower acroscopic side; apex rounded or obtuse, narrowing onto an acuminate-mucronate, folded tip; base

decurent into petiolule; margins with yellowish cartilaginous line, usually entire, slightly undulate, less often with 1–2 obtuse glandular teeth, notable in basal 1/3, rarely with an obtuse lobe on external margin; upper surface drying yellowish green or brown, polished; lower surface yellowish green to greenish brown, dull; venation slightly marked, primary vein somewhat prominent on lower surface. Thyrses axillary, simple, subracemiform or double, panicle-like; axis quadrangular, 1.4–7 cm long, pubescent, rachis angular, striate, 1.2–4.5 cm long, with 2 delicate tendrils at base; cincinnus many-flowered, peduncle 1–3.5 mm long; pedicel 2–4 mm long, articulate near base; bracts triangular, persistent, 0.5–1.5 mm long, glabrous, minutely glandular at margins, bracteoles similar but smaller. Flowers whitish, 3.5–4 mm long; sepals 5, free, the outer two cucullate, ovate, 2–3 mm long, 1.5–2 mm wide, glabrous, ciliate, the inner obovate, 3–3.5 mm long, 2 mm wide, tomentose, ciliate; petals 4, broadly obovate, clawed, 3–4 mm long, 1.2–1.8 mm wide, apiculate, adaxially sparsely glandular, appendages of central petals with bifid crest, villous; nectary glands 4, glabrous, the central two ovoid, obtuse at the apex, the lateral 2 circular or elliptic in outline, smaller than the central ones; androgynophore glabrous. Staminate flowers with stamens 1–3 mm long; the filaments pilose; pistillode 0.8 mm long, with glandular hairs. Pollen grains heteropolar, hemitrisyncolporate, oblate, rarely peroblate, polar axis 22.5–(27)–32.5  $\mu\text{m}$ , equatorial diameter 45–(49.87)–55  $\mu\text{m}$ ; sexine entirely perforate, from psilate in the distal polar side to rugulate in the equator and in proximal polar side. Pistillate flowers with staminodia 2 mm long, flattened pilose filaments, anthers indehiscent; gynoecium 3 mm long, the ovary trigonous, ovoid in outline, glandular, the style straight or oblique, glabrous, 0.5 mm long, shorter than or as long as the stamens. Fruit ovate cordate in outline, chartaceous, light brown, 1.4–2.4 cm long, 1.3–2.5 cm wide, locules globose, dark brown, 0.9–1.4 cm wide, with dorsal crest, 1–1.5 mm wide, emarginate at apex, slightly or not constricted at junction with wing; epicarp glabrous, except for sparse glandular hairs on locules, endocarp glabrous, except for a few simple hairs on partitioning walls. Seeds subspherical, ca. 3.5 mm in diam-



**Fig. 1.** *Serjania littoralis* (A and C–H from Braga 4869, RB; B from Somner 609, CTES; I from Fernández 236, RB; J from Acevedo-Rodríguez *et al.* 1453, CTES). — A: Portion of a flowering branch. — B: Leaf. — C: Staminate flower. — D: Central petal, with adnate appendage. — E: Central petal, lateral view. — F: Lateral petal, with adnate appendage. — G: Stamen from staminate flower. — H: Young fruit. — I: Mericarp. — J: Seed, longitudinal section showing immature embryo.



**Fig. 2.** Scanning electron micrographs of pollen grains of *Serjania littoralis* (from Araujo *et al.* 10309, CTES). — **A:** Distal polar view. — **B:** Equatorial view. — **C:** Detail of proximal polar view, showing the syncolpate aperture with colpi reduced to colpoids.

eter, inserted somewhat below the middle of locule. Embryo with curved outer cotyledon and biplicate inner one. Flowering from May to June, fruiting in August.

**DISTRIBUTION AND HABITAT ECOLOGY.** Endemic to the state of Rio de Janeiro, in restinga vegetation (low forest to scrub on sandy formations by the sea shore), known from very narrow area in the eastern region, where it can be found either in beach thicket or ridge forest.

*Serjania littoralis* belongs to section *Serjania* (Acevedo-Rodríguez 1993b) characterized by globose locules, chartaceous pericarp and partitioning wall not projecting beyond locule walls. It seems to be closely related to the Brazilian species *S. dentata* and *S. faveolata*, however it can be distinguished from both by the following characters: stipules caducous, venation of folioles inconspicuous, only the primary vein somewhat prominent on lower surface, and the

adaxially sparsely glandular petals. A comparison of the main characters that distinguish the three species is presented in Table 1.

Eighteen species of *Serjania* are found in the restinga of the state of Rio de Janeiro. Among them five are endemic: *Serjania eucardia*, *S. fluminensis*, *S. littoralis*, *S. tenuis* and *S. truncata*. The region where *S. littoralis* is found is considered unique along the east coast, with many endemic species (Lacerda *et al.* 1993, Araujo 1997).

Although *S. littoralis* is sympatric with *S. dentata*, the phenology of these species is different; the former is flowering from May to June and is fruiting in August, while the latter is flowering from December to February and fruiting from March to April.

**ADDITIONAL SPECIMENS EXAMINED** (paratypes). **Brazil.** Rio de Janeiro: Mun. Armação de Búzios, praia das Carave-

**Table 1.** Comparison of the diagnostic morphological characters of *Serjania littoralis*, *S. dentata* and *S. faveolata*.

Characters	<i>S. littoralis</i>	<i>S. dentata</i>	<i>S. faveolata</i>
Stem	geniculate, solid	geniculate, fistulose	straight, solid
Petiolule of distal leaflet	to 10 mm long	to 2 mm long	to 22 mm long
Stipules	caducous	persistent	persistent
Venation of leaflets	inconspicuous	conspicuous	conspicuous
Leaflet base	decurrent	decurrent	rounded
Domatia	absent	absent	present
Adaxial face of petals	sparsely glandular	densely glandular	densely glandular
Distribution	Rio de Janeiro	Minas Gerais, Espírito Santo, Rio de Janeiro e São Paulo	Minas Gerais, Bahia

las, 10.VII.1996 *D. Araujo 10435* (GUA); estrada Cabo-Frio-Búzios, entre a serra das Emerenças e a praia de José Gonçalves, mata de José Gonçalves, 22°48'–22°49'S, 41°57'–41°58'W, 5.VI.1998 *J. M. A. Braga et al. 4869* (RB); restinga da praia da Tartaruga, 23.VI.1999 *D. Fernandes 225* (RB); restinga da praia de Tucuns, 28.V.2000 *D. Fernandes & A. Oliveira 527* (RB). Mun. Arraial do Cabo, Pontal do Atalaia, elevação 25–39 m, 10.VII.2004 *A. Oliveira & D. Oliveira 1087* (RB); Morro da Atalaia, 28.IX.1990 *G. V. Somner et al. 609* (CTES). Mun. Araruama, Praia do Hospício, 5.VIII.1987 *A. Vaz 462* (RB). Mun. Cabo Frio, perto da praia Rasa, na orla da estrada de terra para fazenda Junqueira, altitude 10 m, 14.VIII.1986 *Acevedo-Rodríguez et al. 1448* (CTES, NY, RB); praia de Fornos, 14.VIII.1986 *Acevedo-Rodríguez et al. 1453* (CTES, NY, RB); praia das Conchas, 3.VI.2003 *Z. M. C. Andrade s.n.* (GUA 47780); estrada antiga para Búzios, proximo Centrinho, 28.VI.1995 *D. Araujo et al. 10309* (CTES, GUA); condomínio Florestinha, 20.X.1995 *L. Emydio et al. 6125* (R); loteamento próximo ao condomínio Florestinha, 13.V.1999 *L. E. M. Filho et al. 6426* (R); mata do centrinho, Baía Formosa, estrada para lixeira, 22°50'S, 41°57'W, 25.VI.1995 *H. C. Lima et al. 4706* (RB).

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