

## A new species of *Exostyles* (Leguminosae, Papilionoideae, Swartzieae s.l.), from Paraná State, Brazil

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A new species *Exostyles godoyensis* Soares-Silva & Mansano (Leguminosae, Papilionoideae, Swartzieae), endemic to Paraná state in southern Brazil, is described and illustrated. The new species is distinct from all the other species of *Exostyles* in having a leaf with up to five leaflets, while the other species have at least seven leaflets per leaf. The new species is distinct from *Exostyles amazonica* Yakovlev in its longer stamen filaments and ovary stipe and from *E. glabra* Vogel and *E. venusta* Schott by its shorter anthers. In addition to these morphological characters *E. godoyensis* has a disjunct geographical distribution. © 2004 The Linnean Society of London, *Botanical Journal of the Linnean Society*, 2004, 146, 103–106.

ADDITIONAL KEYWORDS: geographical distribution – southern Brazil – taxonomy.

### INTRODUCTION

*Exostyles* Schott is a genus of four species occurring mainly in Brazil. Two species occur from south-eastern to eastern coastal Brazil, one is in the Amazonian region, extending to Surinam, and the new species is endemic to Paraná state in southern Brazil (Mansano, 1997; Mansano & Tozzi, 1999). *Exostyles* is a member of the so-called *Lecointea* clade sensu Herendeen (1995) in the tribe Swartzieae sensu lato of subfamily Papilionoideae. Recent molecular studies show the Swartzieae s.l. to be an unresolved polyphyletic group at the base of the Papilionoideae (Herendeen, 1995; Doyle et al., 1997; Ireland et al., 2000; Pennington et al., 2000, 2001). According to Ireland et al. (2000) and Pennington et al. (2000, 2001), *Exostyles* is closely related to *Harleyodendron*, a monospecific genus from southern Bahia, in Brazil. Cladistic analysis (Mansano, 2002) and ontogenetic studies (Mansano et al., 2002) have demonstrated that *Exostyles* is also closely related to the other genera of the *Lecointea* clade including *Zollernia*, *Holocalyx* and *Lecointea*.

Schott (1827) described *Exostyles* based on *Exostyles venusta* Schott, the only species recognized by him.

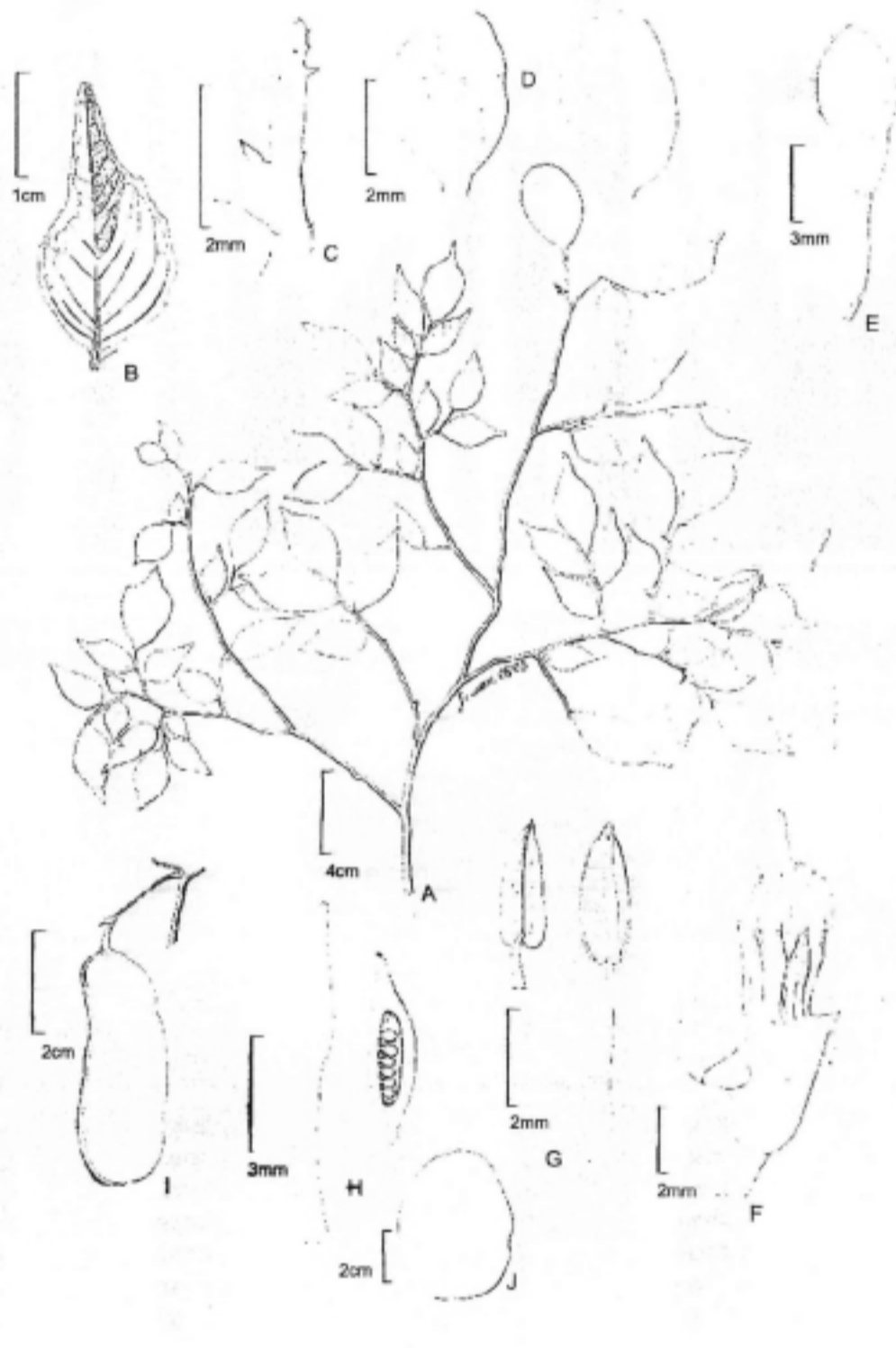
Vogel (1837) described a second species in the genus, *Exostyles glabra* Vogel. *Exostyles glabra* and *E. venusta* are components of the Atlantic Rain Forest from coastal south-eastern to eastern Brazil. Yakovlev (1979) described *E. amazonica* from the state of Amazonas, which is also a kind of moist and dense forest, but the vegetation is different and there is a geographical disjunction between the area of occurrence of this species and that of occurrence of the others species of *Exostyles*. Silva (1990) first discovered the new species, described below, in the state of Paraná. There is a geographical disjunction between the area of occurrence of *Exostyles venusta*, the most southern species of *Exostyles* prior to the discovery of the new species, and that of the occurrence of the new species. In addition, the species proposed here has morphological and ecological characteristics rendering it distinctive both in form and in habitat preference.

### DESCRIPTION

*EXOSTYLES GODOYENSIS* SOARES-SILVA & MANSANO SP. NOV. (FIG. 1)

Type: BRAZIL, Paraná, Londrina: Parque Estadual Mata dos Godoy, 9.vi.1989, L.H. Soares-Silva & F.C. Silva 208 (holotype: UB; isotypes: FUEL, RB).

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**Figure 1.** *Exostyles godoyensis* Soares-Silva & Mansano sp. nov. A, habit; B, leaf with venation detail (abaxial face); C, stipule; D, petals – ventral view (right) and dorsal view (left); E, flower bud; F, flower with petals removed; G, stamens with anthers shown front and back; H, gynoecium including LS of ovary; I, fruit; J, seed. A, B, F–H: Soares-Silva & F. C. Silva 208 (FUEL, UB); C, I–J: Soares-Silva 1110 (FUEL, UB); D, E: E.M. Francisco & M.C. Dias (FUEL 30916). Artist: Simone Carolina Souza e Silva.

**Paratypes:** BRAZIL, Paraná: Conselheiro Mairinck, Fazenda Rancho Alegre, *J. Carneiro* 760, 20.x.1999 (fr) (K, MBM); Londrina, Parque Estadual Mata dos Godoy, L.H. Soares-Silva & F.C. Silva 192, 17.ii.1989 (fr) (FUEL, UB); L.H. Soares-Silva 222, 21.vii.1989 (fr) (FUEL); L.H. Soares-Silva & F.C. Silva 226, 4.viii.1989 (fr, fr) (FUEL); L.H. Soares-Silva 228, 30.viii.1989 (fr, fr) (FUEL, UB); L.H. Soares-Silva & F.C. Silva 260, 22.ix.1989 (fr) (FUEL); J.M. Torezan & M. Silveira s.n., 22.ix.1992 (fr) (FUEL 9597); E.M. Francisco & M.C. Dias s.n., 6.vi.2000 (fr) (FUEL 30916); L.H. Soares-Silva 1110, 9.ix.2001 (fr) (FUEL, UB); V.F. Mansano 224, 12.iv.2003 (fr) (FUEL, RB).

**Diagnosis:** Ab omnibus speciebus *Exostylidi* foliolis 5–(6) (neque minime 7 foliolis) distincta. Ian antheris 2–2.5 mm longis *E. glabra* (c. 9.5 mm) et *E. venusta* (3–3.5 mm) distincta et ab *E. amazonica* filamentis c. 2–3.5 mm longis et stipitibus c. 2.5 mm longis (neque filamentis c. 7.8 mm longis et stipitibus c. 9.3 mm longis) statim recognoscitur.

**Description:** Tree 10–20 m. Bark peeling off in plates, these with margins involute, cortex cream. STIPULES 1.5–3.5 × 0.2–0.5 mm, oblong, pubescent; LEAVES imparipinnately 5–(6)-foliolate; petiole 2–7 mm long, canaliculate, pubescent; rachis 1.9–4.2 cm long, canaliculate, pubescent; stipels 1–3 × 0.1–0.4 mm, oblong, persistent after leaflet drop; petiolules 1–1.5 mm long, pubescent; leaflets 1.5–5.1 × 0.5–2.6 cm, elliptic, the terminal one larger than the others, midvein pubescent on both surfaces, abaxially prominent, margin dentate, base oblique, apex acuminate. RACEME 1.5–4 cm long, axillary, axis tomentose; bracts 1–2.2 × 0.8–1 mm, lanceolate, ciliate; bracteoles c. 1 × 0.3 mm, lanceolate, ciliate, attached to the lower half of the pedicel; pedicel c. 0.8–1.6 cm long, sparsely tomentose; buds c. 4–6.3 × 2–2.6 mm, sparsely tomentulose. FLOWERS with hypanthium c. 3–4 mm deep; calyx 3-lobed, brownish, glabrous internally; petals 5, white, the claws 0.5–0.8 × 0.3 mm, blades 3.6–4.5 × 1.8–2.5 mm, oblong, glabrous, apex retuse; stamens 10, filaments c. 2–3.5 × 0.3–0.5 mm, white, glabrous, anthers 2–2.5 × 0.4–0.7 mm, linear-lanceolate, glabrous; stipe c. 2.5 mm long, glabrous, ovary 3–4 × 0.9–1.5 mm, oblong, glabrous, c. 6–8 ovules per ovary, style 1–1.5 mm long, straight, terminal, glabrous; stigma punctiform. FRUIT 4–6 cm long, 2–2.5 cm wide, and 1.2–2 cm thick, indehiscent, pale yellow in the

field, brown to black when dried, glabrous externally, pulp slightly sweet; SEEDS 3–4 per fruit, reniform, c. 1.5 × 1.2 cm, testa thin, whitish; embryo whitish, with cotyledons fused.

**Distribution and ecology:** This species is geographically disjunct from all the other species in the genus. While *E. glabra* and *E. venusta* occur along the coast from Bahia southwards to Rio de Janeiro and *E. amazonica* occurs in the Amazon forest, the new species shows a distinct geographical distribution and is found in the state of Paraná in subtropical semideciduous forest sensu Oliveira-Filho & Ratter (1995), at an altitude of approximately 500 m a.s.l.

**Etymology:** The species is named after the locality where it was first collected, the 'Mata dos Godoy'.

**Phenology:** In flower from February to July and in fruit from July to October.

**Conservation status:** Known only from the type locality; requires classification as Critically Endangered (CR) according to the IUCN (2001) categorization.

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