

Two new species of *Smallanthus* (Asteraceae: Heliantheae) from Brazil

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Abstract

Recent efforts to survey the species of the tribe Heliantheae (Asteraceae) in State of Rio Grande do Sul, Brazil, have resulted in the recognition of two new species of *Smallanthus*, here described as *S. riograndensis* C. MONDIN and *S. araucariophilus* C. MONDIN. Both species are known only from Rio Grande do Sul.

Introduction

The genus *Smallanthus* MACK. contains about 20 species that occur from sea level to ca. 3000 m in elevation from Mexico to Central and South America, and for the most part are restricted to temperate regions. Members of the genus are erect herbs, shrubs, or trees to more than 12 m tall. According to WELLS (1965), ROBINSON (1978) and BREMER (1994), the morphological features that characterize *Smallanthus* are: stems terete, angular or canaliculate, to 20 cm thick; leaves simple or lobed, generally opposite, less commonly alternate, sessile or petiolate, the petiole sometimes winged; capitula solitary, paniculate or corymbose, radiate; involucral bracts in two to three rows, dimorphic: outer spreading, foliaceous; inner usually concave, the tip sometimes acuminate, enfolding the ray cypsela; ray florets carpellate, in one or rarely two series, yellow, white or orange-red; disk florets functionally staminate, corolla tubular, yellow or purplish; ray cypselas brown, purplish-black, or black, obovoid or spherical and slightly flattened laterally, or 3–5 angled, the angles sometimes winged; pappus absent.

Revisionary study of the South Brazilian species of Heliantheae, now in progress, has led to the recognition of two new species of *Smallanthus*. Both are endemic to northeastern Rio Grande do Sul State, Southern Brazil.

Description

Smallanthus riograndensis C. MONDIN, sp. nov.

Type: Brazil. Rio Grande do Sul: Serra do Pinto, Mun. São Francisco de Paula, Tainhas, Aratinga, 27 Apr 2002, MONDIN & IOB 2653 (holotype ICN, isotypes HASU, PACA). Figs. 1, 3.

Herba annua erecta robusta usque 3 m alta; caules teretes, glabri vel puberuli. Folia opposita petiolata membranacea trinervata, adaxiali facie scabra, dorso puberula et glandulo-punctata; folia superiora ovata, serrata vel dentata, petiolo saepe alato, inferiora deltoidea lobato-dentata acuminata, base truncata, usque ad 35 cm longa et 20 cm lata. Inflorescentia terminalis et axillis foliorum, laxe cymosa; pedunculi 1–4 cm longi pilosi. Involucri bracteae 3-seriatae; exteriores 5–6, foliaceae, ovatae vel obovatae usque lanceolatae vel oblanceolatae, apice acuto vel obtuso, 7–15 mm longae, 3–7 mm latae; interiores 23–29, concavae, cypselas applicatae, lanceolatae, dorso glandulosae apice pilosae, 5–7 mm longae, 1.5–2.5 mm latae, acuminatae; receptaculum planum pilosum, paleis membranaceis lanceolatis, 5–7 mm longis, 1–2 mm latis, acuminatis, margine pilosis. Flores radii ca. 23–29, biseriatii feminei; corolla 3–6 mm longa, pallide flava, tubus 1–2 mm longus, glanduloso-pilosus, ligula 3–5-nervata, 2–4.5 mm longa, 0.8–1.5 mm lata, bidentata vel integra, dorso glandulosa et puberula; stylus 3–4 mm longus, rami ca. 1.2 mm longi glabri; flores disci ca. 42–56 submasculi; corolla tubulosa 4.5–5 mm longa flava puberula et glandulosa, tubus 1.7–2 mm longus 5-lobatus, lobis deltoideis glandulosis 0.5–0.8 mm longis; antherae nigrescentes 1.2–1.5 mm longae, appendice antherarum deltoideo; stylus brevis 2-lobatus, apice piloso, 4–5 mm longus. Cypselae nigrae obovoideae striatae glabrae ca. 3 mm longae et 2 mm latae. Pappus nullus.

Erect herb 3 m tall; stems terete, canaliculate, hollow, glabrous or puberulent. Leaves opposite, petiolate, membranaceous, triplinerved, adaxial surface scabrous, abaxial surface sparsely puberulent and glandular-punctate chiefly on veins; upper leaves ovate, serrate or dentate, the petiole sometimes winged; lower leaves triangular, lobate dentate, acuminate, the base truncate, abruptly tapering to the lower winged lobate portion, to 35 cm long and 20 cm wide. Inflorescence terminal and also axillary from distal nodes, cymose, 2–9-headed; peduncles ca. 1–4 cm long, pilose. Involucral bracts in three rows, dimorphic: outer 5–6, spreading, foliaceous, ovate or obovate to lanceolate or oblanceolate, apically acute or obtuse, 7–15 mm long, 3–7 mm wide, with ca. 5–7 parallel nerves, glabrous, the margins pilose; inner 23–29, concave, enfolding the ray cypselas, lanceolate, abaxially glandular and pilose above, 5–7 mm long, 1.5–2.5 mm wide, acuminate to long-acuminate; receptacle flattened, pilose, paleaceous, the paleae membranaceous, lanceolate, 5–7 mm long, 1–2 mm wide, apically acuminate, the margins pilose. Ray florets ca. 23–29 in 2 series, carpellate; corolla 3–6 mm long, pale yellow, the tube 1–2 mm long, glandular-pilose, the ligule 3–5-nerved, 2–4.5 mm

long, 0.8–1.5 mm wide, bidentate or entire, abaxially glandular-punctate and puberulent; style 3–4 mm long, branches ca. 1.2 mm long, glabrous; disk florets ca. 42–56, functionally male; corolla tubular, 4.5–5 mm long, yellow, puberulent and glandular-punctate, tube 1.7–2 mm long, limb well wider than tube, throat 2.2–2.5 mm long, lobes 5, triangular, 0.5–0.8 mm long; anthers black, 1.2–1.5 mm long, apical appendage deltoid; style shortly 2-lobed and pilose apically, 4–5 mm long. Cypselas black, compressed-obovoid, striate, glabrous, ca. 3 mm long and 2 mm wide. Pappus absent.

Paratypes: Brazil. Rio Grande do Sul: Marcelino Ramos, mata na barranca do rio Uruguai, 2 Mar 1989, JARENKOW 1260 (PEL); Serra do Pinto, Mun. São Francisco de Paula, Tainhas, Aratinga, 11 Apr 2002, IOB, SILVEIRA & ESTRADA 234 (HASU); Serra do Pinto, Mun. São Francisco de Paula, Tainhas, Aratinga, 27 Apr 2002, MONDIN & IOB 2654 (HASU, ICN); Serra do Pinto, Mun. São Francisco de Paula, Tainhas, Aratinga, a 8 km da vila, em direção à Terra de Areia, 31 Jan 2003, MONDIN 2922 (HASU).

Distribution and ecology: This species is known from the Atlantic and Subtropical Rain Forests in the northeastern Rio Grande do Sul, Brazil. It occurs from 300 to 500 m in elevation and has been collected in flower in January, March and April.

Both *Smallanthus riograndensis* and the following *S. araucariophilus* initially seem close to *S. connatus* (SPRENG.) H. ROB., also of Southern Brazil, because of the leaf shape, size and the biseriate ray florets. The latter species differs, however, by the basally connate leaves and dark purple disk florets. The two new species seem morphologically very close, but they are notably distinct in the tips, colour and size of the rays and in the indumentum of the leaves.

***Smallanthus araucariophilus* C. MONDIN, sp. nov.**

Type: Brazil. Rio Grande do Sul: Cambará do Sul, na estrada para São José dos Ausentes, 13 Feb 2002, MONDIN & IOB 2553 (holotype ICN, isotypes HASU, PACA). Figs. 2, 3.

Herba annua erecta robusta usque 3 m alta; caules teretes pilosi. Folia opposita petiolata membranacea trinervata, facie adaxiali puberula, dorso puberula usque pilosa et distincte glandulo-punctata; petiolo alato lobato, folia superiora ovata dentata, inferiora deltoidea lobato-dentata acuminata, base truncata, usque ad 35 cm longa et 26 cm lata. Inflorescentia terminalis et axillis foliorum, laxe cymosa; pedunculi 1–7 cm longi glanduloso-pilosi. Involucri bracteae 2–3-seriatae: exteriores 5, foliaceae, ovatae usque lanceolatae, apice acuto vel acuminato, 6–12 mm longae, 3–7 mm latae; interiores 17–26, concavae, cypselas applicatae, ovatae usque lanceolatae, dorso glandulosae, dense pilosae, 5–9 mm longae, 2–3 mm latae, acuminatae; receptaculum planum, paleis membranaceis lanceolatis, 5–6 mm longis, 1–2 mm latis, acuminatis, margine pilosis. Flores radii ca. 17–26, 1–2-seriati feminei; corolla 7–10 mm longa, flava; tubus 1.5–2.5 mm longus glanduloso-pilosus, ligula 5–8-nervata, 5.5–8 mm

longa, 1–2 mm lata, tridentata, dorso glandulosa et puberula; stylus 4–6 mm longus, rami 0.7–1 mm longi glabri; flores disci ca. 30–56 submasculi; corolla tubulosa, 5–6 mm longa flava, puberula et glandulo-punctata, tubus ca. 1.5 mm longus glanduloso-pilosus 5-lobatus, lobis deltoideis pilosis ca. 0.8 mm longis; antherae nigrescentes 1.5–2 mm longae, appendice antherarum ovato; stylus brevis 2-lobatus, apice piloso, ca. 6 mm longus. Cypselae nigrae obovoideae striatae glabrae, ca. 3 mm longae et 2–2.5 mm latae. Pappus nullus.

Erect herb to 3 m tall; stems terete, canaliculate, hollow, pilose. Leaves opposite, petiolate, membranaceous, triplinerved, adaxial surface puberulous chiefly on veins, abaxial surface puberulent to pilose chiefly on veins, glandular-punctate; upper leaves ovate, dentate, the petiole winged lobate; lower leaves triangular, lobate dentate, acuminate, the base truncate, abruptly tapering to the lower winged portion, to 35 cm long and 26 cm wide. Inflorescence terminal and also axillary from distal nodes, cymose, 2–4-headed; peduncles ca. 1–7 cm long, glandular-pilose. Involucral bracts in 2–3 rows, dimorphic: outer 5, spreading, foliaceous, ovate to lanceolate, apically acute to acuminate, 6–12 mm long, 3–7 mm wide, with ca. 5–14 parallel nerves, pilose, the margin glandular-pilose; inner 17–26, concave, enfolding the ray cypselas, ovate to lanceolate, abaxially glandular and densely pilose, 5–9 mm long, 2–3 mm wide, acuminate to long-acuminate; receptacle flattened, paleaceous, the paleae membranaceous, lanceolate, 5–6 mm long, 1–2 mm wide, acuminate, the margin pilose above. Ray florets 17–26 in 1–2 series, carpellate: corolla 7–10 mm long, yellow, the tube 1.5–2.5 mm long, glandular-pilose, the ligule 5–8-nerved, 5.5–8 mm long, 1–2 mm wide, 3-dentate, abaxially glandular-punctate and puberulent; style 4–6 mm long, branches 0.7–1 mm long, glabrous; disk florets 30–56, functionally male; corolla tubular, 5–6 mm long, yellow, tube 1.5 mm long, glandular-pilose, throat 3–4 mm long, glandular-punctate and puberulent, lobes 5, triangular, pilose, 0.8 mm long; anthers black, 1.5–2 mm long, apical appendage ovate; style shortly 2-lobed and pilose apically, 6 mm long. Cypselas black, compressed-obovoid, striate, glabrous, ca. 3 mm long and 2–2.5 mm wide. Pappus absent.

Paratypes: Brazil. Rio Grande do Sul: Cambará do Sul, Ouro Verde, ca. 2 km da Celulose Cambará, 31 Jan 2003, MONDIN 2920 (HASU, ICN); Cambará do Sul, ca. 1 km de Ouro Verde, 31 Jan 2003, MONDIN 2921 (HASU).

Distribution and ecology: This species is known only from wet areas of the Araucaria Forest in the region of Campos de Cima da Serra, Cambará do Sul, Rio Grande do Sul, Brazil. It occurs at about 1000 m in elevation and has been collected in flower in January and February.

For the distinction of the species see the discussion under *S. riograndensis*.

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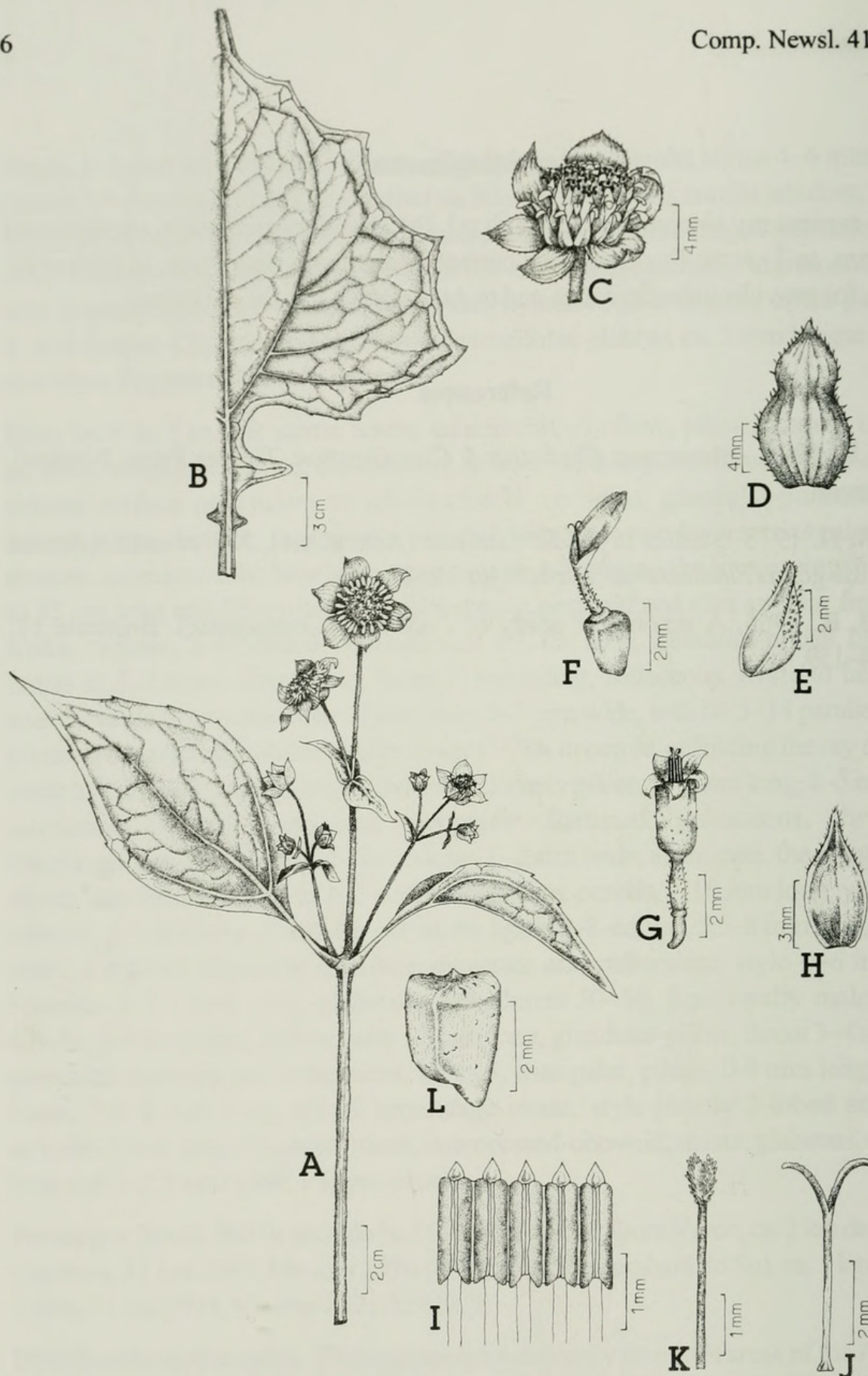


Fig. 1. *Smallanthus riograndensis* C. MONDIN. A. Flowering branch. B. Lower leaf. C. Head. D. Outer involucre bract. E. Inner involucre bract. F. Ray floret. G. Disk floret. H. Palea. I. Anther cylinder (and filaments) opened longitudinally. J. Ray floret style. K. Disk floret style. L. Cypsela. (From MONDIN & IOB 2653).

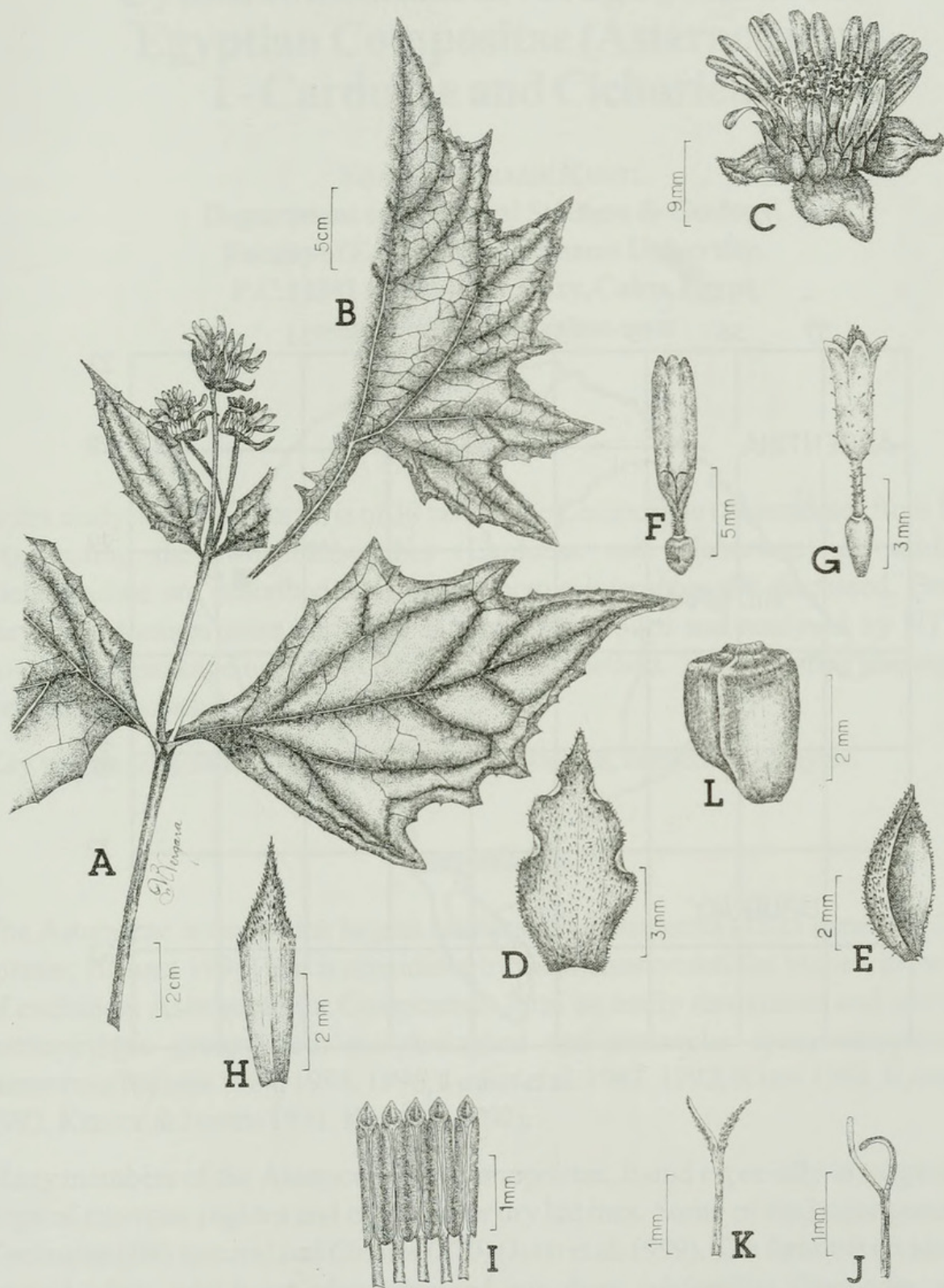


Fig. 2. *Smallanthus araucariophilus* C. MONDIN. **A.** Flowering branch. **B.** Lower leaf. **C.** Head. **D.** Outer involucral bract. **E.** Inner involucral bract. **F.** Ray floret. **G.** Disk floret. **H.** Palea. **I.** Anther cylinder (and filaments) opened longitudinally. **J.** Ray floret style. **K.** Disk floret style. **L.** Cypsel. (From MONDIN 2920).

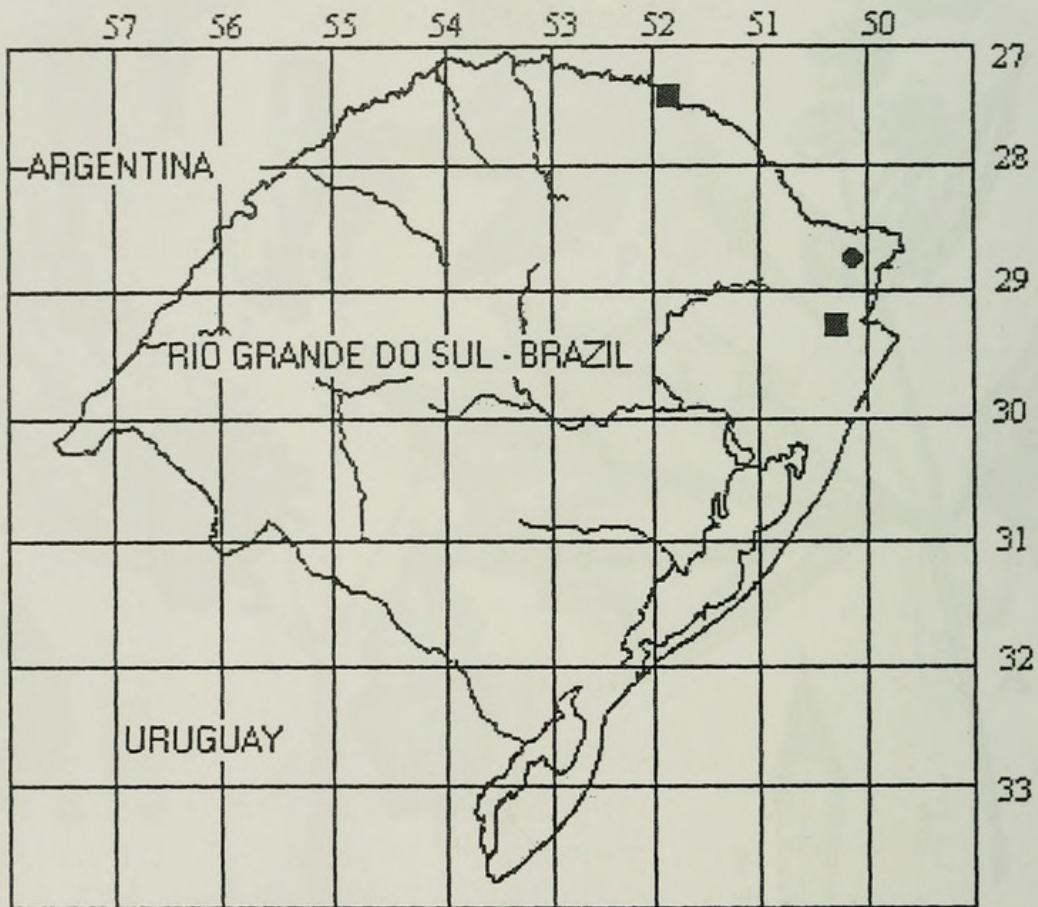


Fig. 3. Distribution map. Square, *Smallanthus riograndensis* C. MONDIN.
Dot, *Smallanthus araucariophilus* C. MONDIN.



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