



## A new record in Argentina and lectotypification of *Stromanthe boliviana* K. Schum. (Marantaceae)

CHRISTIAN A. ZANOTTI<sup>1\*</sup>, JUAN C. OSPINA<sup>1</sup> & CLAUDIA M. MARTÍN<sup>2</sup>

<sup>1</sup>Instituto de Botánica Darwinion, Casilla de Correo 22, B1642HYD San Isidro, Buenos Aires, Argentina

<sup>2</sup>Unidad Ejecutora Lillo-CONICET, Miguel Lillo 251, 4000 S.M. de Tucumán, Argentina

\*Corresponding author: [czanotti@darwin.edu.ar](mailto:czanotti@darwin.edu.ar)

### Abstract

*Stromanthe boliviana* is recorded for the first time in northwestern Argentina. This species is lectotypified, and a complete morphological description, illustration, and pictures are provided.

**Keywords:** Bolivia, typification, Yungas

### Introduction

*Stromanthe* Sonder (1849: 225) (Marantaceae) is a Neotropical genus with approximately 15 species, which occur in humid forests from southern México to Bolivia, with centres of diversity in Central America and eastern Brazil (Andersson 1988, 1998, Castillo-Campos *et al.* 1998, Yoshida-Arns *et al.* 2002, 2011, 2012, Vieira *et al.* 2012).

The circumscription of *Stromanthe* has been discussed historically and is still a subject of controversy (Yoshida-Arns *et al.* 2011). This genus was included in the *Myrosma* group (one of five informal groups in Marantaceae) on the basis of morphological characters (Andersson 1981) and phylogenetic analyses of molecular data (Andersson & Chase 2001). However, the morphological characteristics used to separate the genera of this group are not informative enough, and it has been suggested that *Stromanthe* should be revised (Andersson 1981). More recently, molecular phylogenetic studies carried out by Prince & Kress (2006) and Suksathan *et al.* (2009) indicate that *Stromanthe* and most of the genera included by Andersson (1981) and Andersson & Chase (2001) in the informal groups *Myrosma* and *Maranta* are closely related, but with unclear delimitations (Braga & Vieira 2011, Yoshida-Arns *et al.* 2012). However, *Stromanthe* has been circumscribed by the combination of morphological characters: caulescent herbs with a richly branched aerial shoot system with clustered and antitropic leaves, diffuse and richly branched inflorescence with deciduous and often colored spathes, flowers pairs clustered in dolichoblastic cymule with absence of interphylls and bracteoles (sometimes the bracteoles are rudimentary), flowers with a short corolla tube, firm and fleshy callose staminode, corolla and inner staminodes that are often concealed by large fibrous sepals, and one-seeded fruits (Andersson 1981, 1998, Yoshida-Arns *et al.* 2011, 2012).

During our studies on Marantaceae to the Argentinian flora, a new record, *Stromanthe boliviana* Schumann (1902: 151), was recognized based on collections from the Yungas of the provinces of Jujuy and Salta (Argentina). This species was only known to the flora of Bolivia (Kennedy 2014), and in Argentina has been confused with *Maranta sobolifera* Andersson (1986: 742) by Zuloaga *et al.* (2008). In addition, a lectotype for this name was designated, a first complete morphological description, illustrations and pictures of living material growing at the garden of the Darwinion Botany Institute (IBODA-CONICET) collected from National Park Calilegua (Jujuy, Argentina) are provided.

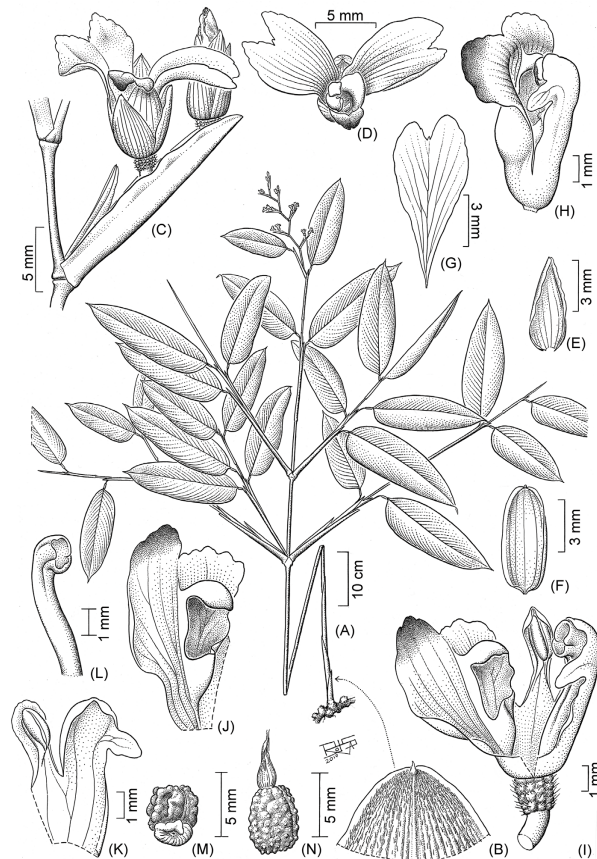
## Material and methods

Flowers of living plants grown at the Darwinion Botany Institute (IBODA-CONICET) from Calilegua National Park [Jujuy, Argentina, *Morrone et al.* 2817 (SI)] were fixed in formalin-acetic acid-alcohol (FAA, Ruzin, 1999) to make the illustration and the morphological description. Others morphological characteristics were studied in the cultivated specimen and in the herbarium specimens. Fresh structures were photographed on cultivated plants.

We examined specimens from the herbaria BA, JUA, LIL and SI. Digital images of the type material are available at JSTOR (<http://plants.jstor.org>) and TROPICOS (<http://www.tropicos.org>).

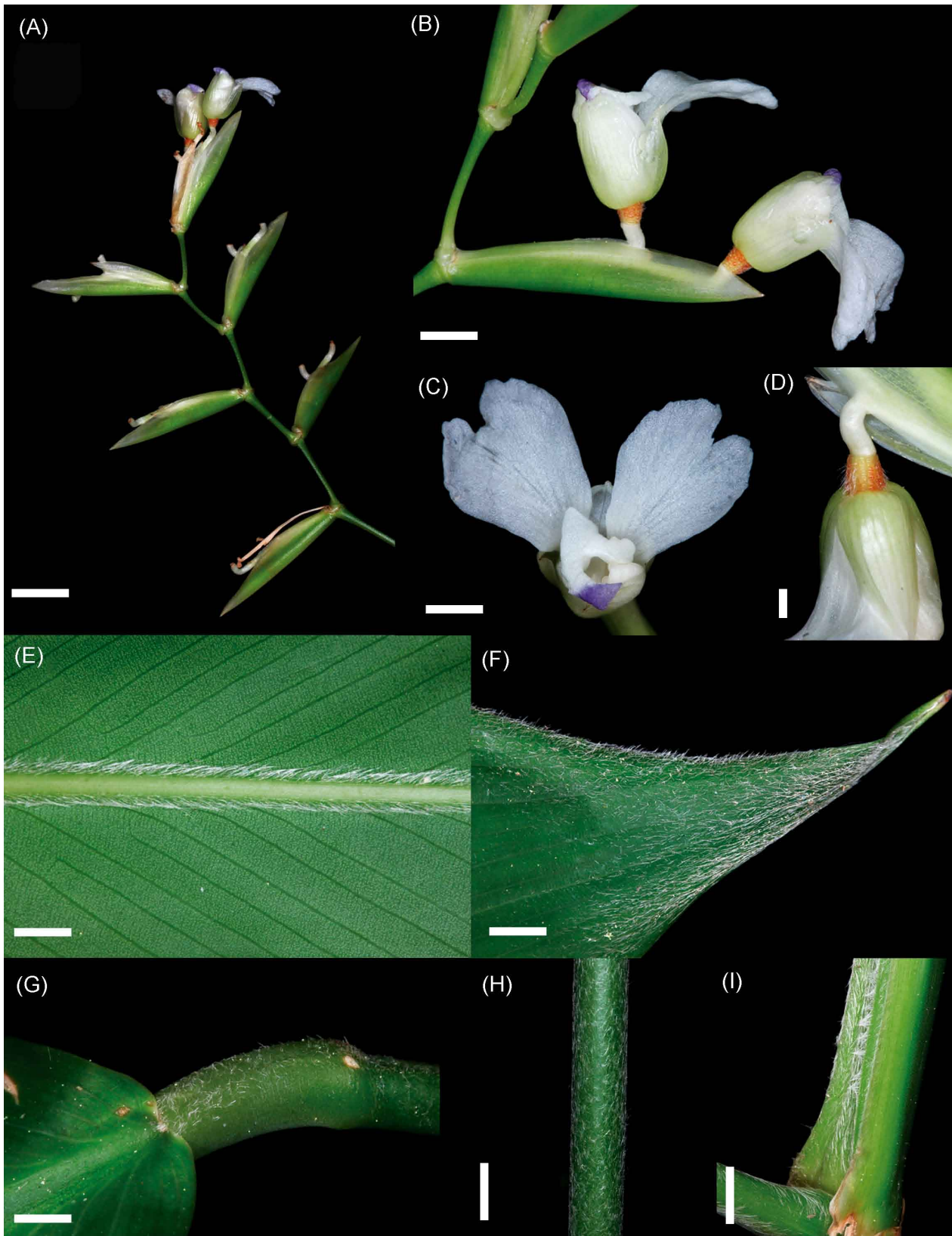
## Taxonomic treatment

**1. *Stromanthe boliviana* Schumann (1902: 151). Fig. 1 and 2. **Lectotype (herein designated):**—BOLIVIA. Dept. La Paz. Yungas, 1890, *M. Bang* 513 [543 in the protologue] (NY 00320424, photo seen; islectotypes: BM 000923858, photo seen, G 00098950, photo seen, GH 00030740, photo seen, K 000586916, photo seen, MO 2309167, photo seen, NY 00320423, photo seen, NY 00320425, photo seen, US 00733356, photo seen, US 00093219, photo seen).**



**FIGURE 1.** *Stromanthe boliviana*. (A) habit; (B) cataphyll apex; (C) cymule; (D) flower in frontal view; (E) sepal; (F) corolla lobe; (G) outer staminode; (H) inner staminodes; (I) ovary; callose staminode; fertile stamen with petaloid filament; cucullate staminode, and style; (J) callose staminode; (K) cucullate staminode with anther and petaloid filament; (L) curved style and stigma; (M) seed with aril; (N) fruit with persistent sepals. Drawn from cultivated individual of *Morrone et al.* 2817.

**Description:**—Caulescent herb 0.6–2 m tall, with palm-like aerial shoot system. Cataphyll 15–35 cm long, linear-lanceolate, apex mucronate, sparsely sericeous on exterior surface, inner surface glabrous, herbaceous to chartaceous with membranous margin, greenish-yellow. First aerial internode 40–100 cm long, sericeous-aracnoid. Internodes bracts 14–20 cm long, with shape, consistency and pilosity similar to the cataphylls. Bracts of the branches 9–14 cm long, rigid, with the dorsal face canaliculate with the edges densely hispid, ventral face glabrous. Leaf sheath 8–15 cm long, dorsal surface glabrous towards the base and hispid towards the apex, auriculate at apex; petiole usually



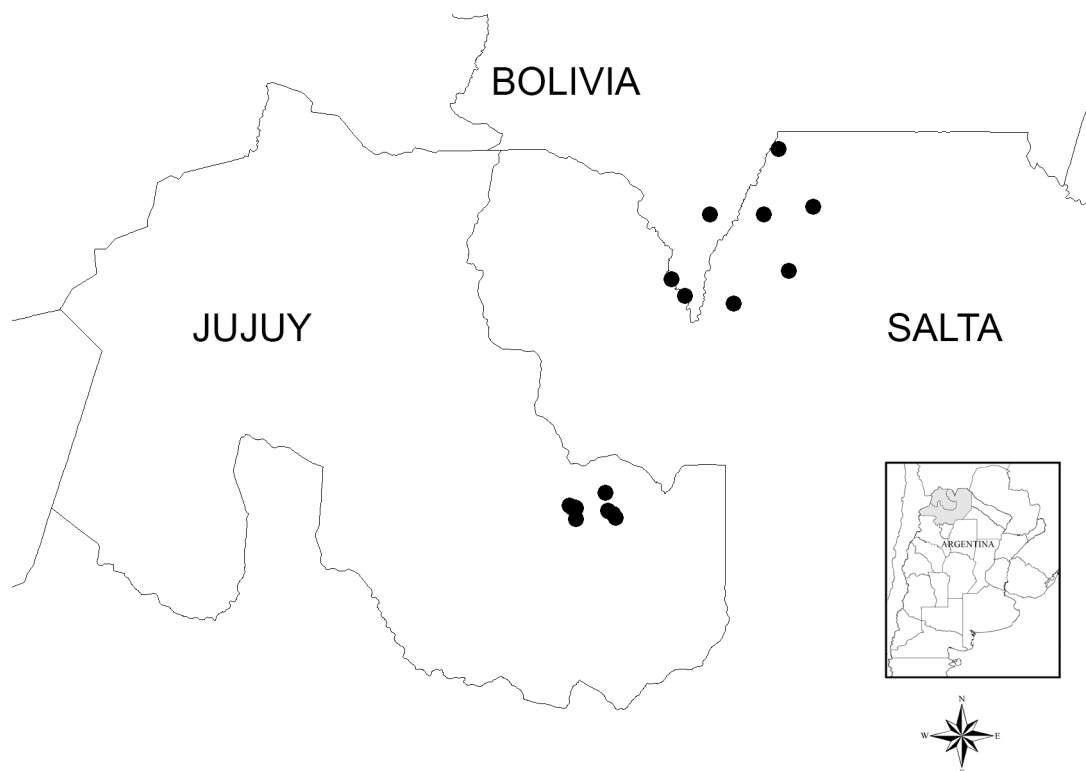
**FIGURE 2.** *Stromanthe boliviana*. (A) inflorescence, scale bar = 1 cm; (B) cymule, scale bar = 3 mm; (C) flower, scale bar = 2 mm; (D) ovary, scale bar = 1 mm; (E) abaxial surface of leaf blade, scale bar = 2 mm; (F) apex of leaf blade, scale bar = 0,15 cm; (G) pulvinus, scale bar = 8 mm; (H) pubescens of first aerial internode, scale bar = 0,5 cm; (I) branch bract, scale bar = 0,5 cm. Pictures from cultivated individual of *Morrone et al. 2817*.

absent, but when present 0.3–2 cm long, hispid on upper surface; pulvinus 0.5–1.1 cm long, hispid on upper surface; leaf blade antitropic, 13–25 × 5–10 cm, lanceolate to oblong, acute to obtuse at base, acuminate at the apex, adaxial surface glabrous, except the upper third that is hispid and ciliate, abaxial surface glabrous but densely hispid at the sides of the midrib with the hairs oriented towards the apex, chartaceous. Inflorescence terminal, 7–15(–20) cm long with 1–3 floriferous branches, simple or rarely branched, peduncle hispid at base, each branch with 5–7 florescences subtended by a basal bract 1.9–2.1 cm long, elliptic-lanceolate, naviculate, with membranous margin, glabrous or sometimes hispid at base, greenish, each florescence has up to 6 paired cymules in development and only one pair is visible; prophyll 9–12 × 2.5–3 mm, bicarinate, navicular, apex mucronate, hyaline, membranaceous, glabrous, prophyll scars 2.5–4.5 mm long, glabrous. Flower with the cymule axes 5–10 mm long, glabrous; pedicels 0.5–2.5 mm and 4–6 mm long, respectively, glabrous; flower 0.8–1 cm long; sepals 6–7 × 3.5–4.5 mm, ovate to lanceolate, apex acute to mucronate, glabrous, greenish; corolla tube 0.5–1 mm long, glabrous, white; corolla lobes 5–6.5 × 2–3 mm, narrowly elliptic to obtuse, glabrous, white; outer staminodes two, 10–13 × 4–8 mm, spatulate with lobed margin, apex emarginate, glabrous, white; callose staminode 6–9 × 5–6 mm, spatulate–rhomboidal, apex obtuse, with a conch-shaped callus located in its basal region, white with violet apex, glabrous; cucullate staminode 5–7 × 1.5–2, with a 1 mm appendix, wrapping back of style, white; fertile stamen with broadened base and a petaloid filament 5–6 mm long, spatulate, cucullate and wrapping the stamen, white, anther 1–1.5 mm long; ovary 1–3 × 1–2 mm, tuberculate to muriform, glabrescent to densely hirsute with different degrees or at least pilose in the upper third, brownish; style 6–7 mm long, curved, white, glabrous. Capsules 5–7 × 3–4.5 with persistent fibrous sepals, tuberculate, usually glabrescent but sometimes densely sericeous, greenish. Seeds 4.5–5 × 3.5–4 mm, rugose, aril white.

**Vernacular name:**—“Cañuela” [R. Schreiter 3613, LIL].

**Phenology:**—Flowering and fruiting occur from September to March.

**Distribution and habitat:**—In Bolivia, this species occurs in the departments of Chuquisaca, Cochabamba, La Paz, Santa Cruz, and Tarija, growing in forested flood plains, humid forests, and dry valleys at 500–2000 m (Kennedy 2014). In Argentina it occurs in the Yungas of the provinces of Jujuy (dept. Ledesma, Calilegua National Park) and Salta (depts. General José de San Martín, Orán, and Rivadavia). It grows in foothills, bordering streams, and roadsides at 300–1400 m (Fig. 3).



**FIGURE 3.** Distribution map of *Stromanthe boliviana*.

**Lectotypification:**—In the protologue of *Stromanthe boliviana*, Schumann (1902: 151) cited “Bolivien: Provinz Yungas (Miguel Bang n. 543)”. The large sets of Bang’s collections were deposited in NY and US, and a series of “Plantae Bolivianae a Miguel Bang lectae” was distributed by Britton and Rusby to several herbaria (Stafleu & Cowan

1976). Schumann, at the time of describing *S. boliviana*, was curator at the Botanical Museum in Berlin (Stafleu & Cowan 1985), and for this reason it is assumed that the original material was deposited in B and destroyed in the Second World War (Dr. R. Voyg, pers. comm.).

We clarify that the type collection of *S. boliviana* is *Bang 513* and not *Bang 543*. Rusby (1895: 266) cited *S. spectabilis* Lemaire (1854: 63). based on *Bang 513*. Latterly, Schumann (1902: 151) describes *S. boliviana* with reference to Rusby's contribution '—*S. spectabilis* Britt. et Rusby in Pl. Bang. n. 543, non Lem.'. Therefore, we consider that Schumann made a mistake when he cited the collection *Bang 543* (vs. *Bang 513*, by Rusby). In addition, the specimens corresponding to the collection *Bang 513* (NY, BM, G, GH, K, MO, NY, US) were found under *S. spectabilis*, which match with the original description of *S. boliviana*. For these reason, we choose the specimen *Bang 513* housed in NY numbered 00320424 as a lectotype of *S. boliviana*.

**Specimens Examined:**—ARGENTINA. Jujuy: Ledesma, RP. 83, PN Calilegua, 8 km del Río Agua Negra camino a San Francisco, 960 m, 20 Feb 1998, *O. Morrone et al. 2817* (SI); PN Calilegua, 30 Sept 1994, *O. Ahumada 7153* (JUA); RP 83, 26 km del desvío de la RN 34 camino a Valle Grande, PN Calilegua, Sevenguillar, 1400 m, 17 Dec 1998, *O. Morrone et al. 3533* (SI); Camino al Arroyo Cafetal, 860 m, 04 Nov 1998, *O. Ahumada & J. Agüero 8622* (SI); PN Calilegua, RP 83, camino de Libertador General San Martín a Valle Grande, 960 m, 11 Nov 2002, *F.O. Zuloaga et al. 7465* (SI); 20 km de Calilegua hacia Valle Grande, a 0,9 km de la casa del guardaparque abajo, 1180 m, 24 Jan 1994, *J.H. Hunziker et al. 12795* (SI); Calilegua, Los Cafetales, 23 Oct 1979, *A.L. Cabrera 30971* (SI); Calilegua, camino a Los Cafetales, 20 Nov 1980, *A.L. Cabrera et al. 32171* (SI); Barranca de Las Peñas. Río Zora (límite PN Calilegua), 300–400 m, 16 Mar 1999, *E.A. Ulibarri & L. Vallejos 1813a* (SI); PN Calilegua, ca. 12 km de la entrada al parque, Arroyo Tres Cruces, 1000 m, 21 Mar 1994, *M.E. Múlgura et al. 1426* (SI); Calilegua, 5 km along road to Cafetales, 800 m, 15 Nov. 1978, *S.A. Renvoize 3492* (SI); Toma de agua del Río Zora, 27 Dec 1977, *R. Kiesling et al. 1715* (SI). Salta: General José de San Martín, 20 km de Piquirenda camino a San Pedrito, 10 km del Charrito, Sa. de Tartagal, 25 Nov 2001, *O. Morrone et al. 4085* (SI); Sierra del Alto de Río Seco 1000 m, 12 Mar 1987, *A.L. Cabrera et al. 34442* (SI); Piquirenda, Feb 1923, *L.L. Hauman s.n.* (BA-17210); Sierra de Aguaraquí, Quebrada de Iquirá, 700 m, 12 Jan 1957, *E.R. de la Sota 1227* (LIL). Orán: RP. 19, 16 km del Puente Internacional Argentina-Bolivia camino a la Finca Yacúlica, 14 Dec 1998, *O. Morrone et al. 3379* (SI); Entre Agua Blanca y Angosto del Pescado. RP 19, Finca Yakúlica, 18 Sept 1991, *E.R. Guaglianone et al. 2719* (SI); Quebrada de la Zanja Honda, 700 m, 20 Feb 1925, *R. Schreiter 3613* (LIL). Rivadavia: Aguaraquí, Camino hacia Acambuco y a Campo Largo, 1031 m, 17 Jan 2012, *H.A. Sato et al 165* (CTES, SI). BOLIVIA. Tarija: Sierra de San Telmo, estrada de Bermejo a Tarija, 900 m, 04 Dec 2007, *L.P. Queiroz 13385* (SI); Aniceto Arce, 9 km de La Mamora hacia Bermejo, 21 Nov 2001, *O. Morrone et al. 3919* (SI).

## Discussion

This species belongs to the section *Trachycapsa* Schumann (1902: 151), because the surface of the ovary and fruit is tuberculated. This characteristic within the family has also been found in *Maranta tuberculata* Andersson (1986: 754), *M. ruiziana* Körnicke (1862: 45), *Thymocarpus cannoides* Nicolson, Steyermark & Sivadasan (1981: 24), and in species related to the genus *Calathea* G. Meyer (1818: 6) (Andersson 1986).

*Stromanthe* is morphologically similar to the genus *Maranta* Linnaeus (1753: 2) (Andersson 1981), and for this reason *Stromanthe boliviana* has been confused with *Maranta sobolifera* in Argentina. *Stromanthe boliviana* differs mainly from *M. sobolifera* by its tuberculate ovary and fruit, densely hispid midrib sides, and for its distribution in the Argentinean Yungas, whereas *M. sobolifera* has smooth ovary and fruit, glabrous midrib (at least in the Argentinean specimens), and is distributed in the Litoral region.

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