



Three New Species of *Bomarea* (Alstroemeriaceae) from the  
Andean Region of Colombia

Fernando Alzate Guarín

Posgrado de Biología, Universidad de Antioquia, Apartado Aéreo 1226, Medellín,  
Antioquia, Colombia. fernando\_alzate@hotmail.com

**ABSTRACT.** Three new species of *Bomarea* (Alstroemeriaceae), *B. caucana*, *B. euryantha*, and *B. straminea*, found during a revision of the genus for the *Flora of Colombia*, are described and illustrated and their relationships discussed.

**RESUMEN.** Se describen e ilustran tres nuevas especies de *Bomarea* (Alstroemeriaceae), *B. caucana*, *B. euryantha* y *B. straminea*, encontradas durante la revisión del género para la *Flora de Colombia*, y se discuten sus relaciones.

**Key words:** Alstroemeriaceae, *Bomarea*, Colombia.

The genus *Bomarea* (Mirbel, 1804; Alstroemeriaceae) mostly inhabits Andean forests between 1500 and 3000 m, with a few species occurring elsewhere both at lower elevations and at higher elevations on forest edges and in páramo formations. *Bomarea* is a monophyletic group closely related to *Alstroemeria* L. (Aagesen & Sanso, 2003; Sanso & Xifreda, 2001); Dahlgren et al. (1985) placed both genera in the family Alstroemeriaceae.

In the last taxonomic revision of *Bomarea*, Baker (1888) recognized 75 species; since then nearly 150 species have been described, especially from the northern Andean region of Colombia, Peru, and Ecuador (Sodiño, 1908; Killip, 1936a).

Within *Bomarea* three subgenera are currently recognized (Baker, 1878, 1882, 1888; Pax & Hoffmann, 1930; Killip, 1936b; Smith & Gereau, 1991): *Bomarea* subg. *Bomarea*, distinguished by flowers with completely inferior ovaries, dehiscent (capsular) fruits, resupinate leaves, and a usually

elongate, climbing habit; *Bomarea* subg. *Sphaerine* (Herbert) Baker, characterized by a completely inferior ovary, indehiscent (berry-like) fruits, usually resupinate leaves often crowded on the distal portion of the stem, and erect to decumbent (never climbing) stems; and *Bomarea* subg. *Wichuraea* (M. Roemer) Baker, characterized by a partly inferior ovary, dehiscent (capsular) fruits, non-resupinate linear leaves with revolute margins, and stiffly erect stems with decurved stem apices. Notes regarding subgeneric placement are included in the discussion of each new species.

During preparation of a revision of *Bomarea* for the *Flora of Colombia*, I found several collections belonging to three undescribed species.

**1. *Bomarea caucana*** F. Alzate, sp. nov. TYPE: Colombia. Cauca: Mun. El Tambo, Reserva Natural El Tambito, selva de niebla, 1600 m, 4 Dec. 1998, R. A. Serna, N. Gómez, O. Casañas, L. Ordoñez, M. Burbano & C. Gonzales 785 (holotype, CAUP). Figure 1.

Herba sarmentosa; caule glabro glabrescente. Lamina ovata usque ovato-lanceolata, 6–14 × 2.2–8.0 cm, infera folia glabra, nervis pilosis. Inflorescentia composita; bracteis foliaceis, 1.5–5.5 × 0.3–0.8 cm; bracteolis lanceolato-linearibus; radiis 2 ad 4, 2- ad 4-ramosis; pedicellis glabris pubescentibusve. Flores penduli; sepalis rubris, 2.0–2.6 cm longis; petalis rubris, 12–20 mm longis.

Sarmentose herb; roots not seen; stem 2–4 mm diam., glabrous to glabrescent when young; internodes 5–10 cm long. Leaves pseudopetiolate, resupinate; pseudopetiole 9–17 mm long, pilose; blade 6–14 × 2.2–8.0 cm, ovate to ovate-lanceo-

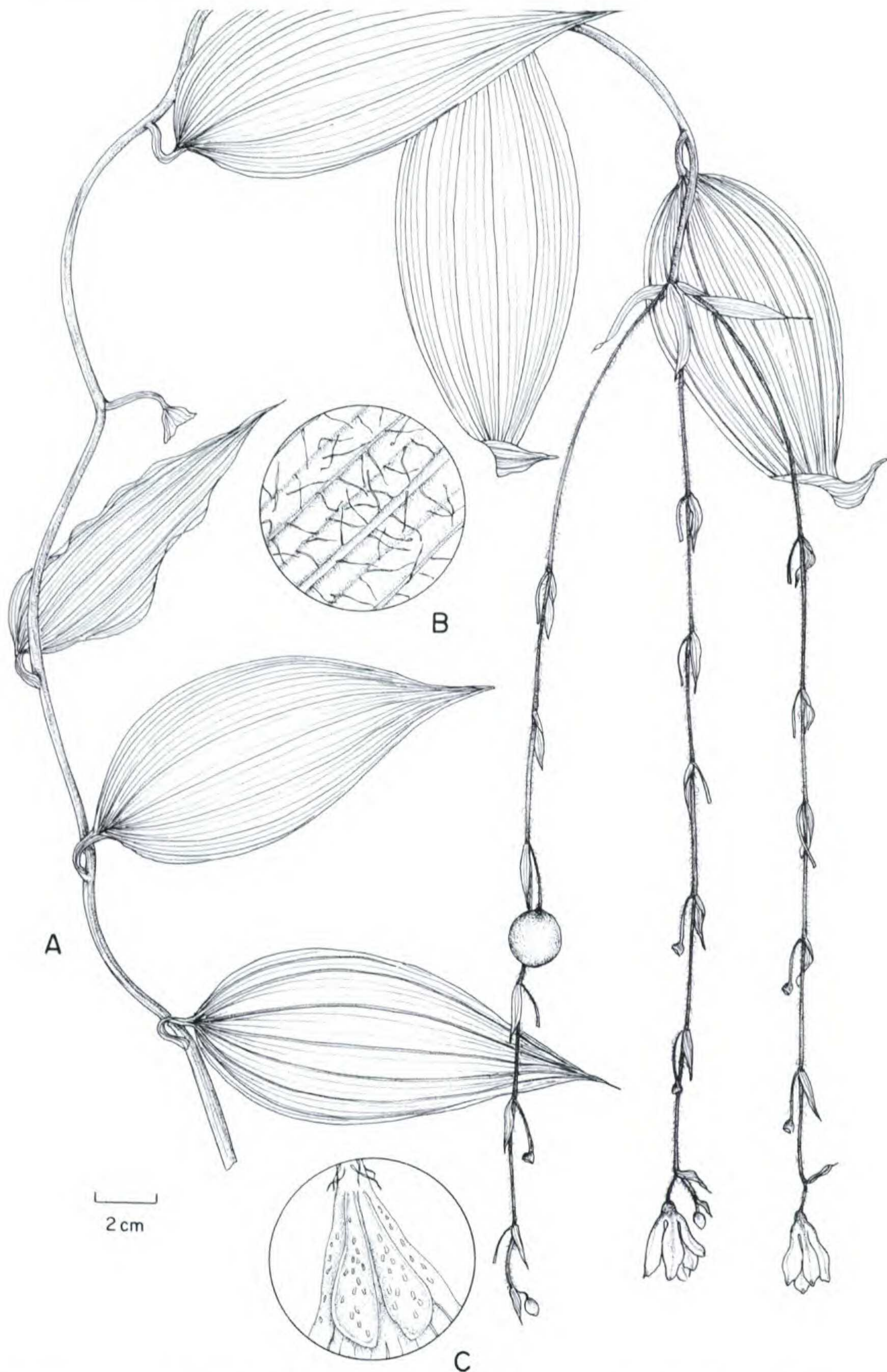


Figure 1. *Bomarea caucana* F. Alzate. —A. Plant. —B. Leaf pubescence, abaxial surface. —C. Ovary, external view. Drawn from R. A. Serna *et al.* 785 (CAUP).

late, glabrous above, nerves pilose beneath, the internerves pustulate or reticulate, thinly papyraceous to chartaceous when dry, base acute, apex acuminate to cuspidate, margin revolute. Inflorescence compound, pendulous; bracts leaflike, pseudopetiolate to sessile,  $1.5\text{--}5.5 \times 0.3\text{--}0.8$  cm, linear to lanceolate, acute at base, acuminate at apex, the

margin revolute; bracteoles sessile,  $1.0\text{--}2.5 \times 0.3\text{--}0.9$  cm, linear to lanceolate, lanulose or pustulate beneath, acuminate at apex; rays 2 to 4, 10–30 cm long, 2- to 4-branched, pilose to glabrescent; pedicels 1.0–2.5 cm long, glabrous to pubescent. Flowers pendulous; inner perianth segments longer than the outer; outer tepals 2.0–2.6 cm long, ovate, gla-

brous, red, obtuse at apex, the claw 1 mm long; inner tepals 1.2–2.0 cm long, oblanceolate, glabrous, red with yellow spots and purple costa, obtuse at apex; filaments 14–18 mm long, glabrous; anthers 3–4 mm long; ovary inferior, pubescent to glabrous, rugose to pustulate; style 22–24 mm long, glabrous; stigma trifurcate, decurrent, strigose. Capsule turbinate, 1.5–2.0 cm diam.; seeds 3–4 mm diam., spheroid to obloid, the sarcotesta yellow-red.

*Distribution and habitat.* *Bomarea caucana* is known from Cauca and Putumayo Departments in Colombia, where it is found in disturbed areas of premontane and montane wet forests (Holdridge, 1978) at altitudes of 1600–2910 m.

*Phenology.* This species presents two flowering and fruiting periods during the year; the first is February to April and the second July to September.

*Etymology.* The specific epithet makes reference to the department of Cauca, Colombia, where the largest population of this species is found.

*Taxonomic relationships.* This species is related to *Bomarea edulis* (Tussac) Herbert, sharing such features in common as a compound inflorescence and foliar indument and habit; *Bomarea caucana* is distinguished by its papyraceous leaf blades, which are pilose beneath only in the nerves, and its linear to lanceolate bracts. Because of its sarmentose stems, resupinate leaves, inferior ovary, and capsular fruit, *B. caucana* belongs to *Bomarea* subg. *Bomarea*.

*Paratypes.* COLOMBIA. **Cauca:** Mun. El Tambo, Par. Nac. Nat. Munchique, *T. Croat & J. Gaskin 80040* (AFP, CAUP, MO); Carr. 20 de Julio, carr. abandonada cerca de 2 km de la cabaña del Inderena, *R. Ruíz et al. 1180* (CAUP, COL, MO); vertiente occidental del río Munchique, *H. García-Barriga et al. 12947* (COL); Mun. Timbio, Km 54 of road from Timbio to 20 de Julio, *P. Maas & T. Plowman 2144* (COL, F). **Putumayo:** Mun. San Francisco, carr. hacia El Mirador, *R. Guarín 792* (PSO).

**2. *Bomarea euryantha*** F. Alzate, sp. nov. TYPE: Colombia. Cundinamarca: Mun. Albán, 2300 m, 17 Apr. 1950, *J. Idrobo 300* (holotype, COL). Figure 2.

Herba sarmentosa; caule glabro. Lamina ovata, glabra. Inflorescentia simplex; bracteis foliaceis, 5.5–10.0 × 2.0–4.5 cm; bracteolis foliaceis, 5–7 × 2–4 mm. Flores campanuli, segmentis perianthii aequalibus; sepalis 5.0–5.5 cm, brunneo-guttatis; petalis viridibus, roseo-maculatis; ovario glabro.

Sarmentose herb; roots not seen; stem 3–5 mm diam., terete, glabrous, pendent at apex; internodes 5.0–6.5 cm. Leaves pseudopetiolate, resupinate;

pseudopetiole 8–15 mm long, glabrous; blade 10.5–15.0 × 4.5–6.5 cm, ovate, glabrous, granular above, pustulate beneath between major veins, cartilaginous when dry, the base obtuse to rounded, the apex acuminate, the margin distinctly revolute. Inflorescence simple; bracts leaflike, petiolate, 5.5–10.0 × 2.0–4.5 cm, ovate, glabrous, obtuse at base, acuminate at apex, the margin entire; bracteoles leaflike, sessile, 5–7 × 2–4 mm, linear to lanceolate, glabrous, acute to acuminate at apex, the margin entire; rays 3, 7.0–8.5 cm long. Flowers with perianth widely campanulate, the segments equal in length; outer tepals 5.0–5.5 cm long, ovate, pink with brown spots, glabrous, obtuse at apex, the claw 3–4 mm long; inner tepals 5.0–5.5 cm long, oblanceolate, green with pink spots and purple costa, glabrous, rounded to obtuse at apex, the claw 2–3 mm long; filaments 30–44 mm long, glabrous; anthers 5–8 mm long; ovary fully inferior, turbinate, rugose; style 40–48 mm long, glabrous. Fruit and seeds not seen.

*Distribution and habitat.* Known only from two collections, in the central region of the Cordillera Oriental of Colombia, at elevations between 2000 and 2400 m. The habitat of the type collection was not described by the collector, but to judge by the geographical data, it inhabits wet montane forests (Holdridge, 1978).

*Phenology.* Flowering in April and August.

*Etymology.* The epithet makes reference to the perianth amplitude, observed in the large flowers of this species.

*Taxonomic relationships.* This species is related to *Bomarea andreana* Baker in having large flowers (5.0–5.5 cm long) and a simple inflorescence type. However, it differs by its low number of flowers (3) with a very wide perianth, which is a diagnostic character of this species. *Bomarea euryantha* is included in *Bomarea* subg. *Bomarea* because of its elongated, sarmentose stems, resupinate leaves, and fully inferior ovary. Definite subgeneric placement is not possible without knowledge of the fruit.

*Paratype.* COLOMBIA. **Cundinamarca:** Mun. Albán, vereda La Maria, Granjas del Padre Luna, *M. Amaya & J. Granados 737* (COL).

**3. *Bomarea straminea*** Killip ex F. Alzate, sp. nov. TYPE: Colombia. Valle del Cauca: Mun. Cali, Los Farallones, extremo N, vertiente oriental, entre Alto del Buey y Las Cascadas, bosques, 3250–3050 m, 13 Oct. 1944, *J. Cuatrecasas 18102* (holotype, VALLE; isotype, US). Figure 3.

Herba suberecta; caule glabro. Lamina lanceolata, 5.5–

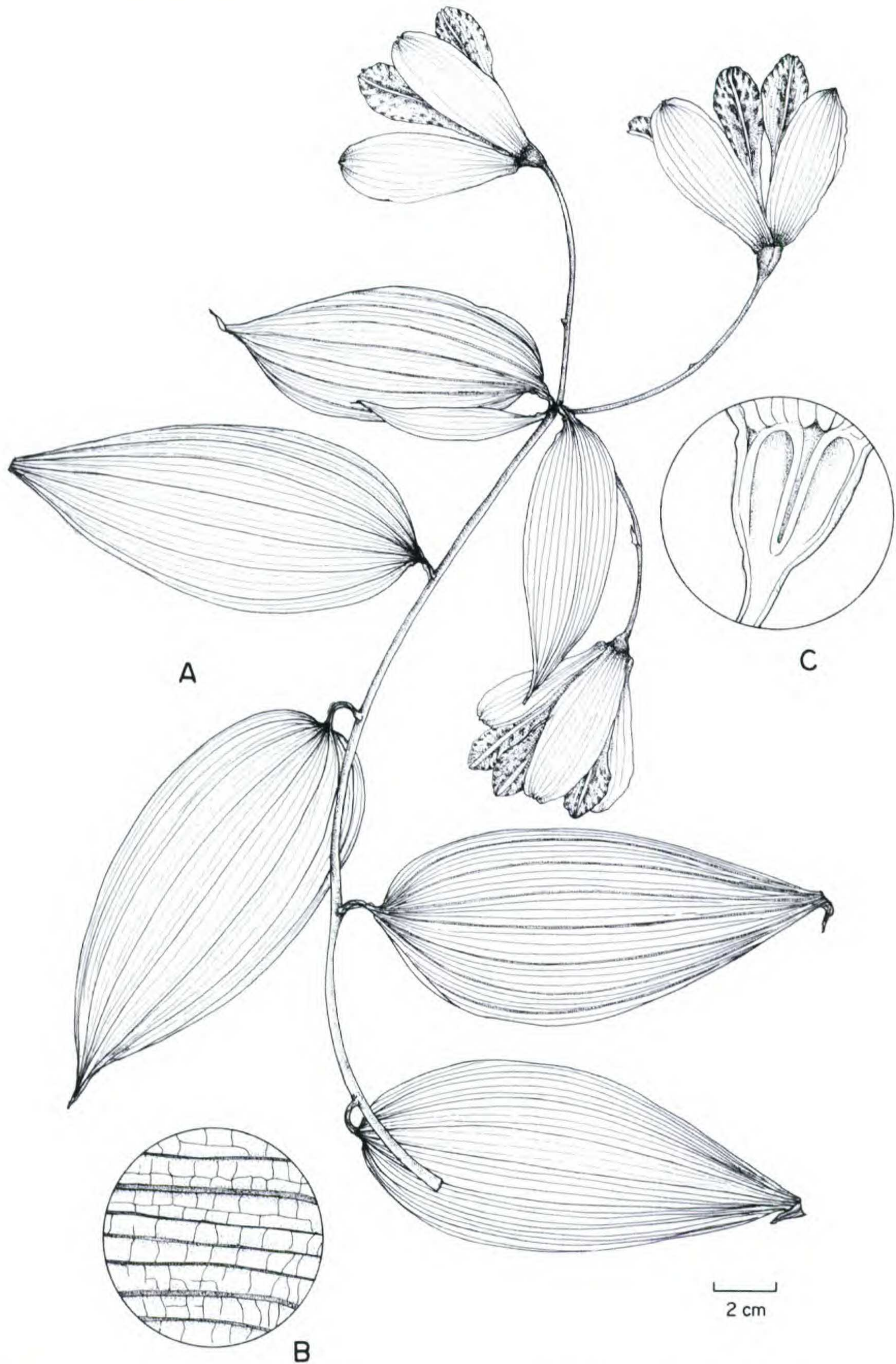


Figure 2. *Bomarea euryantha* F. Alzate. —A. Plant. —B. Lower surface of leaf. —C. Ovary, external view. Drawn from *J. Idrobo 300* (COL).

8.0 × 1.0–1.6 cm, inféra folia glabra, nervis sparse pubescentibus. Inflorescentia composita; bracteis foliaceis; bracteolis foliaceis, pubescentibus; radiis 3 ad 5, 2- vel 3-ramosis, glabris, glabrescentibusve. Flores penduli, campanulati; sepalis aurantiaco-rubris, apice viride; petalis aurantiaco-rubris, purpureo-maculatis; ovario pubescente.

Suberect herb; roots not seen; stem 3–5 mm diam., glabrous; internodes 0.5–2.2 cm long.

Leaves pseudopetiolate, resupinate; pseudopetiole 3–5 mm long, sparsely pubescent; blade 5.5–8.0 × 1.0–1.6 cm, lanceolate, glabrous above, the nerves glabrous to sparsely pubescent beneath, the internerves papillose or reticulate, coriaceous when dry, the base acute to attenuate, the apex acute to acuminate, the margin entire, revolute. Inflorescence compound; bracts leaflike, pseudopetiolate, 3.5–7.5

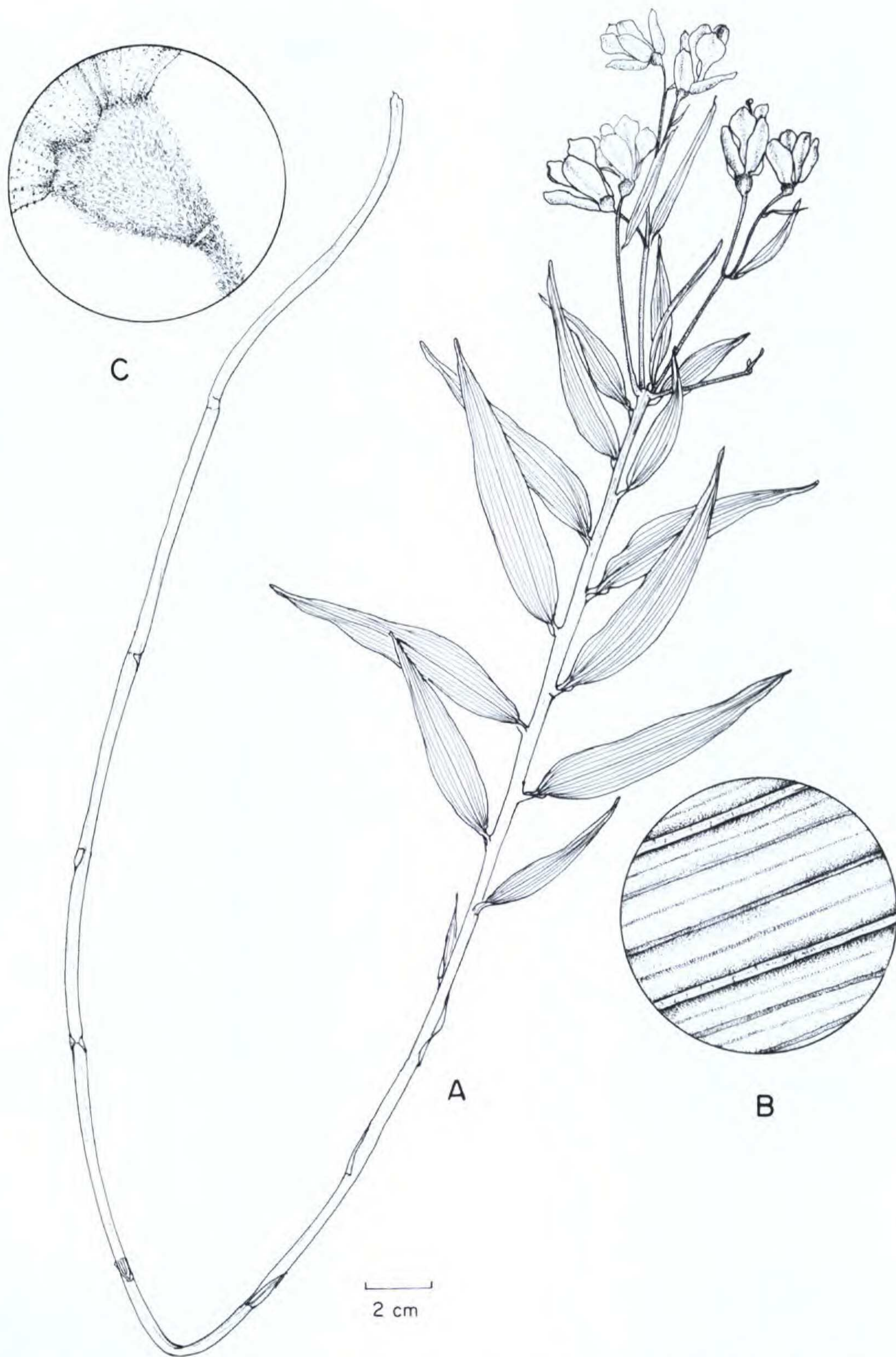


Figure 3. *Bomarea straminea* Killip ex F. Alzate. —A. Plant. —B. Lower surface of leaf. —C. Ovary, external view. Drawn from *J. Cuatrecasas 18102* (VALLE).

× 0.6–1.2 cm, lanceolate, glabrous to glabrescent, acute at base and apex, the margin moderately revolute; bracteoles leaflike, sessile, 3.0–4.0 × 0.3–0.8 cm, lanceolate, pubescent, acuminate at apex, the margin revolute; rays 3 to 5, 7–12 cm long, 2- or 3-branched, glabrous to glabrescent; pedicels 1.5–3.5 cm, glabrous. Flowers pendulous campanulate; outer tepals 1.6–2.0 cm long, ovate, orange-red, green at apex, acute at apex, strigose to glabrous, the claw 1 mm long; inner tepals 1.6–2.0 cm long, orange-red with purple spots and pink costa,

oblanceolate to spatulate, mucronate at apex, strigose; filaments 15–22 mm long, glabrous; anthers 3–4 mm long; ovary inferior, papillose, rugose to strigose; style 18–24 mm long, pubescent. Capsule turbinate, 1.8–2.5 cm diam.; seeds 2–3 mm diam., obloid, the sarcotesta bright orange.

*Distribution and habitat.* *Bomarea straminea* is known from two disjunct localities in Colombia, one from the Eastern Cordillera in the department of Norte de Santander, and a second from the Western

Cordillera in Valle del Cauca where the species grows in montane forests and páramo borders at elevations of 2800–3250 m.

*Phenology.* This species has been observed in flower and fruit during February, July, and October.

*Etymology.* The specific epithet is a reference to the purple stems, observed principally in the young apex. The name of this species was suggested by Ellsworth P. Killip in several specimens in major Colombian herbaria, but it was never published.

*Taxonomic relationships.* *Bomarea straminea* seems to be related to *B. lehmanni* Baker because of its similar habit, compound umbels, and coriaceous leaf texture. However, *Bomarea straminea* is easily distinguished from this species by the number of flowers per inflorescence ray (2 or 3) and its larger flowers (1.6–2.0 cm long).

*Paratypes.* COLOMBIA. **Norte de Santander:** Mun. Pamplona, vertiente oriental, cerro al NE, páramo, *J. Cuatrecasas* & *H. García-Barriga* 10203 (COL). **Valle del Cauca:** Mun. Cali, Cordillera Occidental, Los Farallones, vertiente NW, quebrada de Ramos, *J. Cuatrecasas* 21848 (VALLE).

*Acknowledgments.* My thanks in particular to Ricardo Callejas (HUA) for his teaching and help in my studies, R. E. Gereau (MO) for useful comments on the manuscript, and Francisco Morales (INBio) for reading the manuscript. I am thankful to the staff of CAUP, COL, CUVC, F, HUA, MO, PSO, NY, and VALLE for the loan of herbarium specimens and collaboration during visits. The ex-

cellent drawings were made by Gloria Mora (HUA). Financial support was received from the Universidad de Antioquia and the Missouri Botanical Garden.

#### Literature Cited

- Aagesen, L. & A. Sanso. 2003. The phylogeny of the Alstroemeriaceae, based on morphology, *rps16* intron, and *rbcL* sequence data. *Syst. Bot.* 28: 47–69.
- Baker, J. G. 1878. A new key to the genera of Amaryllidaceae. *J. Bot.* 16: 161–169.
- . 1882. On a collection of Bomares made by M. E. André in New Granada and Ecuador. *J. Bot.* 20: 201–206.
- . 1888. Handbook of the Amaryllideae. George Bell & Sons, London.
- Dalhgren, R., H. Clifford & P. Yeo. 1985. The Families of the Monocotyledons. Springer-Verlag, Berlin.
- Holdridge, L. R. 1978. Ecología Basada en Zonas de Vida. Instituto Interamericano de Ciencias Agrícolas, San José, Costa Rica.
- Killip, E. P. 1936a. *Bomarea* Mirb. In: J. F. Macbride, Flora of Peru. Publ. Field Mus. Nat. Hist., Bot. Ser. 13(1): 640–660.
- . 1936b. *Bomarea*, a genus of showy Andean plants. *Natl. Hort. Mag.* 15: 115–128.
- Mirbel, C. F. B. 1804. *Bomarea*. Histoire Naturelle, Générale et Particulière, des Plantes 9: 71.
- Pax, F. & K. Hoffmann. 1930. Amaryllidaceae. In: A. Engler, Nat. Pflanzenfam. (Auffl. 2) 15a: 391–430.
- Sanso, A. & C. Xifreda. 2001. Generic delimitation between *Alstroemeria* and *Bomarea* (Alstroemeriaceae). *Ann. Bot. (London)* 88: 1057–1069.
- Smith, D. N. & R. E. Gereau. 1991. *Bomarea albimontana* (Alstroemeriaceae), a new species from high Andean Peru. *Candollea* 46: 503–508.
- Sodiño, A. 1908. Sertulae Florae Ecuadorensis 2. Quito, Ecuador.