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# Eight New Species of *Mandevilla* Lindley (Apocynaceae, Apocynoideae) from Brazil

Margareth Ferreira de Sales,<sup>1,2</sup> Luiza Sumiko Kinoshita,<sup>3</sup> and André Olmos Simões<sup>1,4</sup>

<sup>1</sup>Programa de Pós Graduação em Biologia Vegetal, Universidade Estadual de Campinas, Cidade Universitária Zeferino Vaz, Caixa Postal 6109, CEP 13083-970, Campinas, São Paulo, Brazil

<sup>2</sup>Present address: Departamento de Botânica, Universidade Federal de Pernambuco, R. Dom Manuel de Medeiros, Dois Irmãos, CEP 50000-000, Recife, Pernambuco, Brazil. mfsales.2002@ig.com.br

<sup>3</sup>Departamento de Botânica, Universidade Estadual de Campinas, Cidade Universitária Zeferino Vaz, Caixa Postal 6109, CEP 13083-970, Campinas, São Paulo, Brazil. Author for correspondence: luizakin@unicamp.br

<sup>4</sup>Present address: Institute of Systematic Botany, University of Zürich, Zollikerstrasse 107, CH 8008, Zürich, Switzerland. simoes@systbot.unizh.ch

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**ABSTRACT.** Eight new species of *Mandevilla* Lindley are described and illustrated. The new species, six of them rare and endemic, occur in eastern Brazil. Three of the new species (*M. fistulosa*, *M. grazielae*, and *M. harleyi*) are shrubs growing on the upper slopes of granitic inselbergs in Minas Gerais and Espírito Santo in southeastern Brazil. Two species, *M. semirii* and *M. rubra*, are woody lianas growing on rock outcrops of quartzite in campo rupestre vegetation of Minas Gerais. *Mandevilla hatschbachii*, a distinctive shrub known only from three collections, occurs in the campo rupestre formations in eastern Brazil in Bahia. *Mandevilla guanabarica*, a suffrutescent liana generally misidentified as *M. funiformis* (Vellozo) K. Schumman, is found at the borders of the Atlantic rainforest in Espírito Santo and Rio de Janeiro. *Mandevilla dardanoi* is a small shrub endemic to Maciço da Borborema, in northeastern Brazil.

**RESUMO.** Oito novas espécies de *Mandevilla* são aqui descritas e ilustradas. Estas espécies, seis das quais raras e endêmicas, ocorrem no leste do Brasil. Três espécies (*M. fistulosa*, *M. grazielae* e *M. harleyi*) são arbustos que ocorrem em inselbergs graníticos em Minas Gerais e Espírito Santo, no sudeste brasileiro. *Mandevilla semirii* e *M. rubra* são lianas lenhosas que ocorrem em afloramentos quartzíticos nos campos rupestres de Minas Gerais. *Mandevilla hatschbachii*, uma espécie arbustiva bastante peculiar e conhecida por apenas três coleções, ocorre nas formações de

campo rupestre da Bahia. *Mandevilla guanabarica*, uma espécie de liana muitas vezes identificada erroneamente como *M. funiformis* (Vellozo) K. Schumman, ocorre nas bordas da Mata Atlântica do Espírito Santo e Rio de Janeiro. *Mandevilla dardanoi* é uma espécie arbustiva endêmica do Maciço da Borborema, no nordeste do Brasil.

**Key words:** Apocynaceae, Brazil, *Mandevilla*.

*Mandevilla* Lindley is one of the largest genera of Apocynaceae s. str. in the Neotropics and is characterized by the presence of colleters at the leaf base on the adaxial surface, racemose inflorescence, anthers with a slightly cordate to truncate base, and a style-head with five strongly projecting ribs (Simões et al., 2004). Variation in morphological aspects is diverse in the genus. Most species are vines, but shrubs, subshrubs, and even epiphytes are also known. The flower size and structure ranges from white, tubular flowers less than 1 cm long to brightly colored, infundibuliform flowers up to 9 cm long.

In the last monograph of the genus, Woodson (1933) recognized 108 species of *Mandevilla* distributed in two subgenera and five sections. Since then, a considerable number of species has been described, and the total number of species from the genus has now increased to about 140. Woodson (1933) cited 39 species for Brazil, and with the addition of other new species described since then (e.g., Woodson, 1936;



Markgraf, 1971a, 1971b) this number has increased by at least 10.

In order to investigate the diversity of *Mandevilla* in Brazil, a taxonomic revision of the Brazilian species of *Mandevilla* subg. *Mandevilla* Woodson, which corresponds to about one-third of the total species in the genus, was made (Sales, 1993). During this work, eight new species from southeastern and northern Brazil were found. Of these, all but *M. guanabara* are closely associated with rocky substrates. Three species (*M. hatschbachii*, *M. rubra*, and *M. semirii*) are restricted to the quartzite outcrops of campo rupestre vegetation and four (*M. dardanoi*, *M. fistulosa*, *M. grazieleae*, and *M. harleyi*) are narrow endemics endemic on inselbergs (large, isolated, dome-like granitic rock outcrops) of the Precambrian shields of Brazil, in Pernambuco in the northeast and Minas Gerais in the southeast. Both campo rupestre and even more so the inselbergs are inhospitable habitats characterized by thin, nutrient-poor soil and water scarcity combined with strong insolation from the exposed rock surface. Plants growing in these habitats usually have various adaptations to extreme conditions, including water-storing xylopods or stolons, fleshy stems, few leaves that are small and sclerophyllous or deciduous (Porembski & Barthlott, 2000; Löhne et al., 2004). Most of the species described herein exhibit one or more of these morphological adaptations.

**1. *Mandevilla dardanoi*** M. F. Sales, Kinoshita-Gouvêa & A. Simões, sp. nov. TYPE: Brazil. Pernambuco: Brejo da Madre de Deus, Prop. Bituri, 5 Feb. 1965 (fl. fr), D. Andrade-Lima 4290 (holotype, IPA). Figure 1.

*Mandevillae pohlianae* (Stadelmeyer) A. H. Gentry et *M. widgrenii* Ezcurra forma corollae similis sed habitu frutescente suberecto ad scandens ramis longis flexuosisque, foliis 3-4-verticillatis 1.2–3.3 × 1.3–3.4 cm, laminis orbicularibus ad oblatas apicibus brevi-cuspidatis et inflorescentia axillari differt.

Shrub, with well-developed tuberous roots, latex white; branches subdecumbent to somewhat clambering, terete to subquadrangular, flexuous, brownish red, with slender, longitudinal lines, glabrous or strigose with the older part becoming glabrous; internodes 0.5–4.5 cm long; nodes with the leaf scars evident; nodal colleters interpetiolar, 4 to 6 per node, narrowly conic, deciduous in the older parts. Leaves whorled, 3 or 4 at each node, subappressed, subsessile; petiole terete, velutinous to tomentose, 1–2 mm long; blade slightly conduplicate, orbicular to oblate, sometimes broadly elliptic or elliptic-obovate, base obtuse to rounded, sometimes slightly cordate,

apex very shortly cuspidate, slightly emarginate or emarginate-mucronate, subcoriaceous to coriaceous, 1.2–3.3 × 1.3–3.4 cm, adaxial surface glabrous to velutinous, midvein immersed and secondary veins 8 to 10, slightly immersed, abaxial surface glabrous to velutinous or velutinous-hirsute with the midvein salient and the secondary veins slightly salient; leaf colleters 2, located at the base of the midvein adaxially. Inflorescence racemose, axillary, 2- to 4-flowered, glabrous to glabrescent, 1.5–8.5 cm long; peduncle 1–1.5 cm long; bracts lanceolate, glabrous, margin ciliate in the upper half, 2–3 × 1–2 mm. Flowers showy, pedicellate; pedicel terete, slightly twisted, glabrous, 0.7–1.6 cm long; calyx deeply 5-parted, lobes ovate-lanceolate to lanceolate, apex acuminate, glabrous, margin ciliate in the upper half, 4–5 × 1.1–2 mm; calycine colleters numerous, forming a continuous ring at the base; corolla infundibuliform, pink to reddish, glabrous, 5.5–8 cm long, part below stamen insertion narrow, cylindrical, straight, 7–11 × 2–2.5 mm, expanded part above stamens narrowly conical, 33–44 × 10–15 mm, lobes suberect, obliquely obovate with one extremity rounded and the other acuminate, 14–22 × 12–21 mm; stamens subsessile; filaments ventrally woolly, ca. 1.5 mm long; anthers linear, apiculate, 6.5–6.8 mm long, base slightly cordate with the auricles 1 mm long; ovary oblong-ovoid, glabrous, 1.7–2 mm long; nectaries 2, alternate with the carpels, ca. 0.9 mm long; style terete, 10 mm long; style-head deltoid, 1.8–1.9 mm long, with 5 longitudinal ribs. Follicles 2, terete, glabrous, 9.5–14 cm long; seeds linear, ca. 4 mm long, comose; coma 13 mm long.

**Habitat and distribution.** This rare species is only known from a small region of Pernambuco, in northeastern Brazil, where it is endemic to the open grasslands and granitic inselbergs of the Maciço da Borborema, at altitudes above 400 m.

**Phenology.** Collected with flowers from November to February and with fruits in July and August.

*Mandevilla dardanoi* is easily recognized by the following set of characters: it is a small shrub with above-ground xylopods and stolons; it has long and slender branches bearing whorled, slightly conduplicate leaves; and it has a large, pink to reddish corolla, similar in form to that of *M. pohliana* (Stadelmeyer) A. H. Gentry. The leaves of *M. dardanoi* are somewhat similar to *M. moricandiana* (A. DC.) Woodson, being orbicular to oblate and slightly conduplicate, but *M. dardanoi* differs by its shrubby habit, striking above-ground xylopods and stolons (see Löhne et al., 2004, Fig. 1), and whorled phyllotaxis.



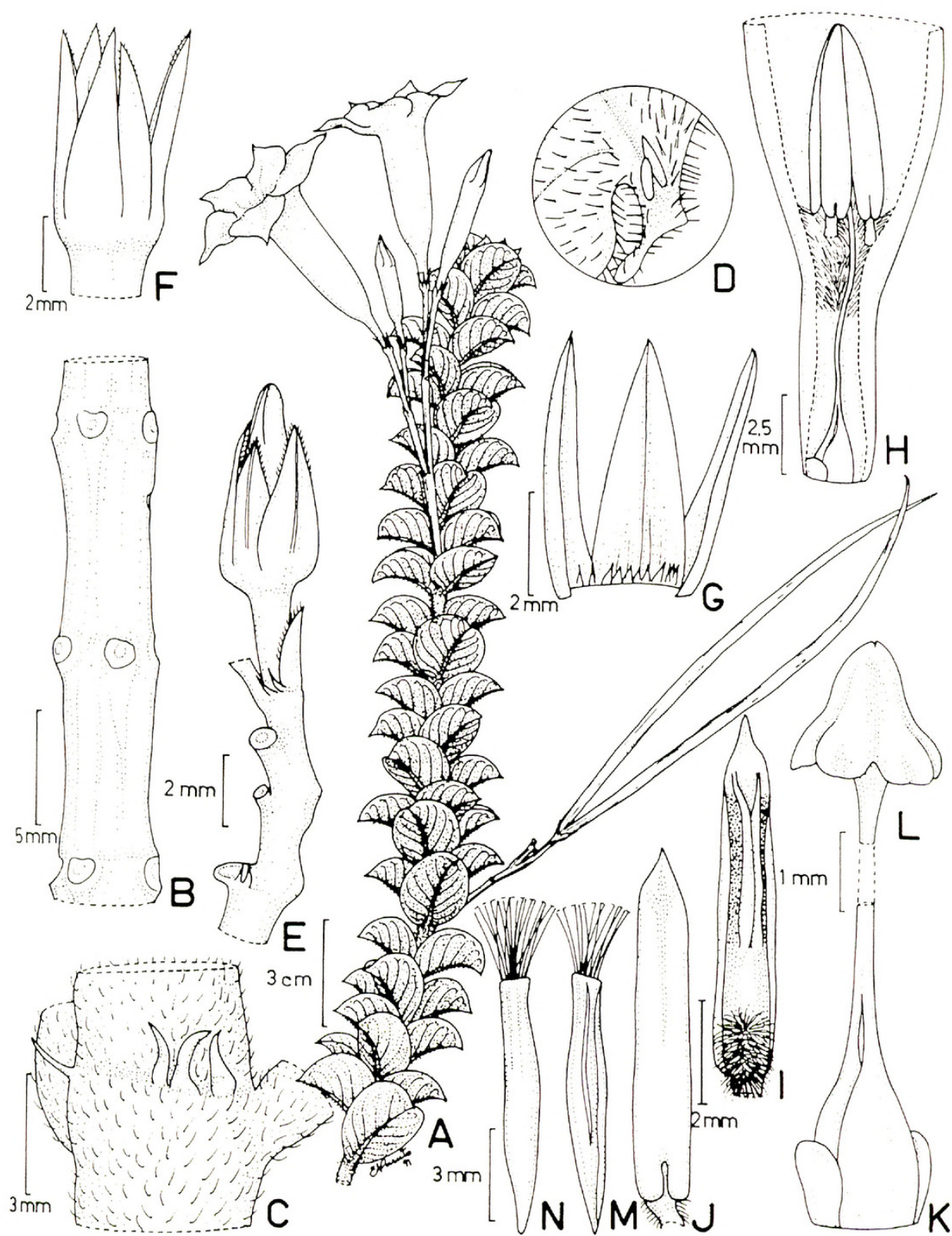


Figure 1. *Mandevilla dardanoi*. —A. Flowering branch. —B. Detail of a branch, showing leaf scars. —C. Nodal colleters. —D. Detail of adaxial surface of leaf blade with two colleters at base. —E. Inflorescence axis showing colleters, bract, and a flower bud. —F. Calyx. —G. Adaxial surface of calyx lobes with continuous colleters at base. —H. Longitudinal section of flower showing stamens and gynoecium. —I. Anther in ventral view. —J. Anther in dorsal view. —K. Ovary and nectaries. —L. Style head. —M. Seed in hylar view. —N. Seed in anti-hylar view. (A, *Hatschbach 45769*, UEC; B-D, *Andrade Lima 59-3344*, IPA, UEC; E-N, *Perruci 29*, IPA, UEC).



**Etymology.** This species is named in honor of Dardano de Andrade-Lima, a prominent botanist who has made significant contributions to the knowledge of the flora and biogeography of northeastern Brazil, and who is the collector of the type specimen.

**Paratypes.** BRAZIL. **Pernambuco:** Belo Jardim, Serra do Olho d'Água do Tatu, *D. Andrade-Lima* 61-4005 (IPA, UEC); Bezerros, Serra Negra, A. M. Miranda 2645 (HST, Universidade Federal Rural de Pernambuco, Brazil; UEC); Brejo da Madre de Deus, Faz. Nova, base da Pedra do Cachorro, *D. Andrade-Lima* 55-1999 (IPA); Faz. Nova, Pedra do Cachorro, *D. Andrade-Lima* 59-3344 (IPA, UEC); Prop. Bituri, Morro de Pedras, *D. Andrade-Lima* 66-4877 (IPA, UEC); Faz. Bituri, *D. Andrade-Lima* 73-7469 (IPA), *I. Pontual* 66-334 (PEUFR), A. M. Miranda 721 (PEUFR, UEC); Faz. Bituri, Campo de Faria, A. Perruci & M. A. Maio Filho 29 (IPA, UEC); Poção, B. Pickel 3520 (IPA); Buíque, A. M. Miranda 1762 (PEUFR, UEC); Quipapá, Usina Água Branca, Faz. Pelada, *D. Andrade-Lima* 50-599 (IPA, UEC); Engenho Pelado, C. G. Leal & O. A. Silva 232 (UEC); Maraial/Lagoa dos Gatos, A. M. Miranda 1590 (PEUFR, UEC).

**2. *Mandevilla fistulosa*** M. F. Sales, Kinoshita-Gouvêa & A. Simões, sp. nov. TYPE: Brazil. Espírito Santo: São João de Petrópolis, mata da E. A. F. S. T., 11 Dec. 1985 (fl, fr), *H. Q. Boudet-Fernandes* 1723 (holotype, MBML). Figure 2.

*Mandevilla fistulosa* (Vellozo) K. Schumann forma et corollae colore similis sed habitu frutescente erecto, 3 m alto ramis longis et fistulosis, petiolo brevi, 2–7 mm longo, foliis obovatis usque ad obovato-elliptica, alabastris apice longiacuminato et corolla 7–8 cm longa, tubo inferiore admodum cylindrico differt.

Erect shrub, up to 3 m high, latex white; branches terete, long, fistulose, glabrous; internodes 1–3 cm long; nodal collectors interpetiolar, triangular, fleshy, minute, 4 per node. Leaves decussate, subappressed, shortly petiolate; petiole terete, canaliculate, with trichomes along its entire length, 2–7 mm long; blade obovate to obovate-elliptic, rarely oblate, base obtuse to subcordate, apex emarginate-mucronulate, margin straight, membranous, 3.8–6.5 × 3–5.2 cm, adaxial surface glabrous, abaxial surface sometimes with trichomes at the base of the midvein; secondary veins 8 to 10, immersed on the adaxial surface and slightly salient on the abaxial surface; leaf collector 1, conical, sometimes with trichomes at the apex, located at the base of the midrib adaxially. Inflorescence racemose, short, axillary, up to 6-flowered, glabrous, 0.6–3 cm long; peduncle terete, glabrous, 1–4 mm long; bracts broadly triangular, glabrous, margin ciliate, 1–1.8 × 1 mm. Flower bud with a long-acuminate apex; flowers showy, pedicellate; pedicel terete, glabrous, 12–15 mm long; calyx very short, forming a tube 1 mm long, 5-parted, lobes erect, triangular, apex acute to acuminate, 1–1.9 × 1 mm; calycine

collecters opposite, 1 centered at the base of each lobe, deltoid, bi- or trifurcated at the apex; corolla infundibuliform, yellow, glabrous, 7–8 cm long, part below stamen insertion narrow, cylindrical, straight, 20–27 × 2–3 mm, expanded part above stamens campanulate, 20–25 × 17–20 mm, lobes somewhat reflexed, obliquely enlarged, ventrally tomentose, 20 mm long; anthers linear-oblong, 6–7.5 mm long, apiculate, base slightly cordate with auricles 0.5 mm long; ovary oblong, glabrous, 2.5 mm long; nectaries 5, completely fused and forming a ring surrounding the ovary, ca. 0.5 mm long; style terete, 20–25 mm long; style-head deltoid, 2–3 mm long, with 5 longitudinal ribs. Follicles 2, slightly moniliform, marked with longitudinal lines, glabrous, 15–25 cm long; seeds narrowly oblong, glabrous, 9–12 mm long and 1 mm wide, comose; coma 13 mm long.

**Habitat and distribution.** This rare and endemic species is known only from a narrow strip along the Atlantic Coast of Brazil in Espírito Santo and the extreme south of Bahia in Brazil, growing on rock outcrops of granitic inselbergs, in association with mat-forming Bromeliaceae at elevations of around 850 m.

**Phenology.** Collected with flowers and fruits from December to February.

*Mandevilla fistulosa* is closely related to a group of species (*M. funiformis*, *M. guanabarica*, and *M. harleyi*) that share a similar set of characters: large nodal collectors, sometimes similar to small stipules; leaf collectors flattened, bifurcate at the apex; inflorescence shortly racemose, with the peduncle very reduced (except in *M. funiformis*) and appearing corymbose; and with 5 calycine collectors opposite the calyx lobes. *Mandevilla fistulosa*, however, can be distinguished from *M. funiformis* and *M. guanabarica* by its shrubby habit and flower buds acuminate at the apex, and from *M. harleyi* by its short petioles and leaves obovate to obovate-elliptic with the apex emarginate-mucronate.

**Etymology.** The species epithet refers to its fistulose branches, which are characterized by having conspicuous longitudinal fissures.

**Paratypes.** BRAZIL. **Bahia:** Itamaraju, Faz. Pau-Brasil, M. Carvalho & G. P. Lewis 897 (CEPEC, UEC); Pedra do Oratório, R. S. Pinheiro 2038 (RB). **Espírito Santo:** Colatino, rod. Colatino–Vitória, R. P. Belém 3822 (MO, NY); Ibiracu, Morro da Vargem, 26 May 1990, E. C. Gomes 1138 (UEC); VIES, Universidade Federal do Espírito Santo, Brazil; Nova Venécia, Serra de Cima, A. P. Duarte 3999 (RB, UEC), A. P. Duarte 9008 (UEC), A. P. Duarte 14045 (RB); Pancas, J. G. Kuhlmann 6647 (RB); Santa Tereza, Pedra Alegre, H. Q. Boudet-Fernandes 2304 (MBML), H. Q. Boudet-Fernandes 2310 (MBML); Vitória, Serra do Maruípe, 20 Mar. 1934, J. G. Kuhlmann s.n. (RB).





Figure 2. *Mandevilla fistulosa*. —A. Flowering branch. —B. Detail of adaxial surface of leaf blade with one colletar at base. —C. Calyx and base of corolla. —D. Adaxial surface of calyx lobes with opposite colletars at base. —E. Longitudinal section of flower showing stamens and gynoecium. —F. Anther in ventral view. —G. Anther in dorsal view. —H. Ovary and nectaries. —I. Style head. —J. Seed in hylar view. (A, B, H, from the type Boudet-Fernandes 1723, MBML; C–G, I, J, Carvalho 897, CEPEC, UEC.)



3. ***Mandevilla grazielae*** M. F. Sales, Kinoshita-Gouvêa & A. Simões, sp. nov. TYPE: Brazil. Espírito Santo: Vale dos Pancas, ca. 60 km NO de Colatina, 100 m, 8 Sep. 1977 (fl, fr), G. J. Shepherd, J. Semir, J. B. Andrade & V. Leite 5869 (holotype, UEC; isotype, U). Figure 3.

Haec species *Mandevillae duartei* Markgraf habitu frutescente et corollae forma affinis sed ramis gracilibus et fragilibus foliis petiolatis, petiolo 4–11 mm longo, lamina oblongo-lanceolato apice acuminato et calycis lobis praecociter deciduis differt.

Branched shrub, 1.5 m high, latex white; branches terete to somewhat angled, slender, reddish brown, glabrous to puberulous; internodes 1–4 cm long; nodal collectors interpetiolar, caducous, ca. 10 at each node, subulate, less than 1 mm long. Leaves decussate, petiolate; petiole terete, canaliculate, glabrous to velutinous, 4–11 mm long; blade straight, oblong-lanceolate, base rounded to subcordate, apex acuminate, margin straight, membranous, 5.5–10 × 1.2–3 cm, adaxial surface glabrous or pubescent to velutinous with conspicuous reticulate venation, secondary veins 20 to 28, almost parallel and forming a right angle with the midvein, abaxial surface glabrous or pubescent to velutinous, midvein salient; leaf collectors conical, minute, ca. 20 distributed along the petiole and leaf base. Inflorescence racemose, axillary, up to 4-flowered, glabrous, 7–9 mm long; peduncle 4–10 mm long; bracts triangular, scarious, caducous, 2 × 1 mm. Flowers showy, pedicellate; pedicel terete, glabrous to pubescent, slightly twisted; calyx 5-merous, caducous, even in flower buds, leaving the ovary exposed after its abscission, lobes lanceolate, apex acuminate, glabrous to puberulent, 2–4 × 1.2–1.5 mm; calycine collectors 2 to 3, alternate at the base of each lobe; corolla infundibuliform, purplish with the base cream, glabrous, 3.5–5 cm long, part below stamen insertion narrow, cylindrical, straight, 11–16 × 1.1–1.4 mm, expanded part above stamens turbinate, 28–30 × 23–27 mm, lobes oblong-ovate, spreading, 12–20 × 9–18 mm; stamens inserted at the base of upper corolla tube, subsessile, surrounded by a ring of long, thick, and subappressed trichomes 5 mm long; filaments woolly ventrally, ca. 1 mm long; anthers narrowly lanceolate, apiculate, 5.5–6.7 mm long, base slightly cordate with the auricles 0.9–1 mm long; ovary ovoid, glabrous, 1 mm long; nectaries 2, alternate with the carpels, oblong, ca. 1.2 mm long; style terete, 13 mm long; style-head conical, 2–2.2 mm long, with 5 longitudinal ribs. Follicles 2, slightly moniliform, glabrous, marked with slender, longitudinal lines, 6–11 cm long; seeds linear, densely covered by short, white-ferruginous trichomes, 6.5–7.5 mm long, comose; coma 12–14 mm long.

*Habitat and distribution.* The species is known only from a restricted area in northern Espírito Santo, also reaching northeastern Minas Gerais in Brazil, where it occurs as a narrow edaphic endemic on rock outcrops of granitic inselbergs, sharing this similar habitat with other *Mandevilla* species, such as *M. duartei* Markgraf, *M. harleyi*, and *M. fistulosa*.

*Phenology.* Collected with flowers from July to March and with fruits from September to March.

The corolla structure and color of *Mandevilla grazielae* are very similar to that in *M. duartei*, but *M. grazielae* is easily recognized by its long, slender branches, leaves with the blade oblong-lanceolate and venation reticulate, and principally by the early caducous calyx lobes, even in flower buds.

*Etymology.* This species is named in honor of Graziela Maciel Barroso, one of the most prominent and active Brazilian botanists in the past four decades.

*Paratypes.* BRAZIL. **Espírito Santo:** Colatina, A. P. Duarte 8877 (RB); Rio Pancas, J. G. Kuhlmann 12 (RB), J. G. Kuhlmann 6646 (RB); Nova Venécia, Serra de Cima, A. P. Duarte 4003 (RB); Pancas, 1952, R. Burle Max s.n. (RB); sine loc., E. A. Bueno & L. Emygidio 90 (R), E. A. Bueno & L. Emygidio 91 (R); cultivada no Jardim Botânico, 1935, J. G. Kuhlmann s.n. (RB). **Minas Gerais:** Pedra Azul, A. P. Duarte 8783 (RB), G. Pabst & E. Pereira 9438 (R, RB); Teófilo Otoni, BR-418, G. Hatschbach, M. Hatschbach & J. M. Silva 52278 (MU).

4. ***Mandevilla guanabarica*** Casaretto ex M. F. Sales, Kinoshita-Gouvêa & A. Simões, sp. nov. TYPE: Brazil. Rio de Janeiro: “bahia do Rio de Janeiro,” 1857, G. Casaretto 1483 (holotype, G). Figure 4.

*Mandevillae funiformi* ramis subtilibus, foliis ovalibus et petiolis gracilibus, inflorescentiis corymbosis, floribus luteis, corolla tubo infero gibboso et tubo supero campanulato similis sed foliis trichomatibus tomentoso base venae centralis et parte petioli adaxialiter, inflorescentiis et floribus minoribus differt.

Suffrutescent vines, branched, latex white. Branches terete, twining, slender, glabrous, the younger ones sometimes tendril-like, brownish red, slightly striate; internodes 1.5–6.5 cm long; nodal collectors interpetiolar, 4 per node, broadly deltoid, minute. Leaves decussate, spreading, petiolate; petiole terete, slender, canaliculate, covered by a series of minute trichomes on the adaxial surface and by woolly-tomentose trichomes on the abaxial surface, 4–8 mm long; blade straight to slightly revolute, ovate, base subcordate to cordate, apex acuminate to long-acuminate, margin slightly revolute, membranous, 2.5–5.2 × 2–3.2(4.4) cm, adaxial surface glabrous,



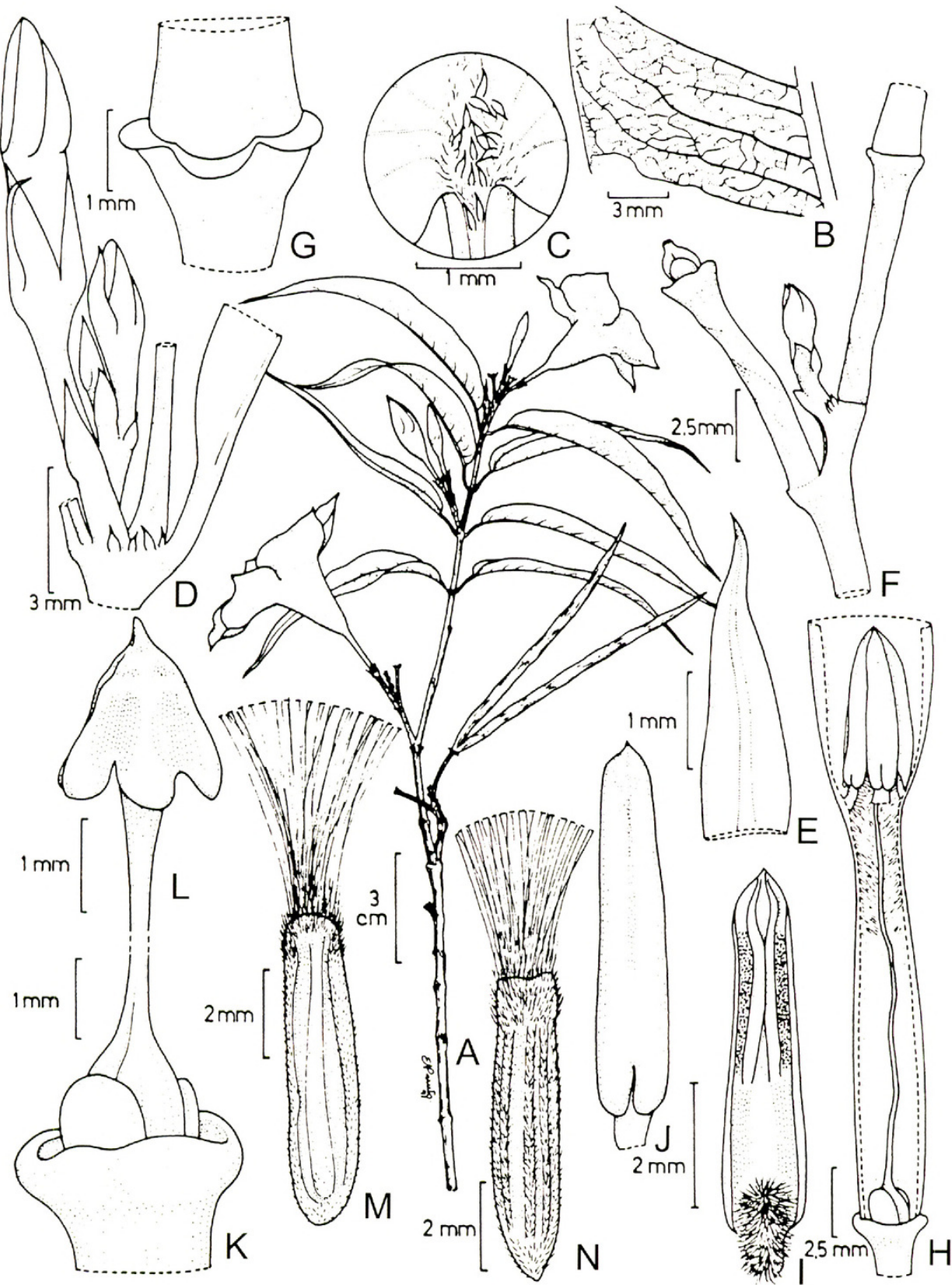


Figure 3. *Mandevilla grazielae*. —A. Flowering branch. —B. Detail of abaxial surface of leaf blade showing venation. —C. Detail of adaxial surface of leaf blade with many colleters at base. —D. Inflorescence axis showing bracts and flower buds. —E. Adaxial surface of calyx lobe. —F. Detail of inflorescence showing exposed nectaries and ovary after calyx lobes abscission. —G. Detail of the scars of the calyx lobes after abscission. —H. Longitudinal section of flower showing stamens and gynoecium. —I. Anther in ventral view. —J. Anther in dorsal view. —K. Ovary and nectaries. —L. Style head. —M. Seed in hylar view. —N. Seed in anti-hylar view. (A–E, from the type *Shepherd et al.* 5869, U, UEC; F–N, *Kuhlmann* 6646, RB.)



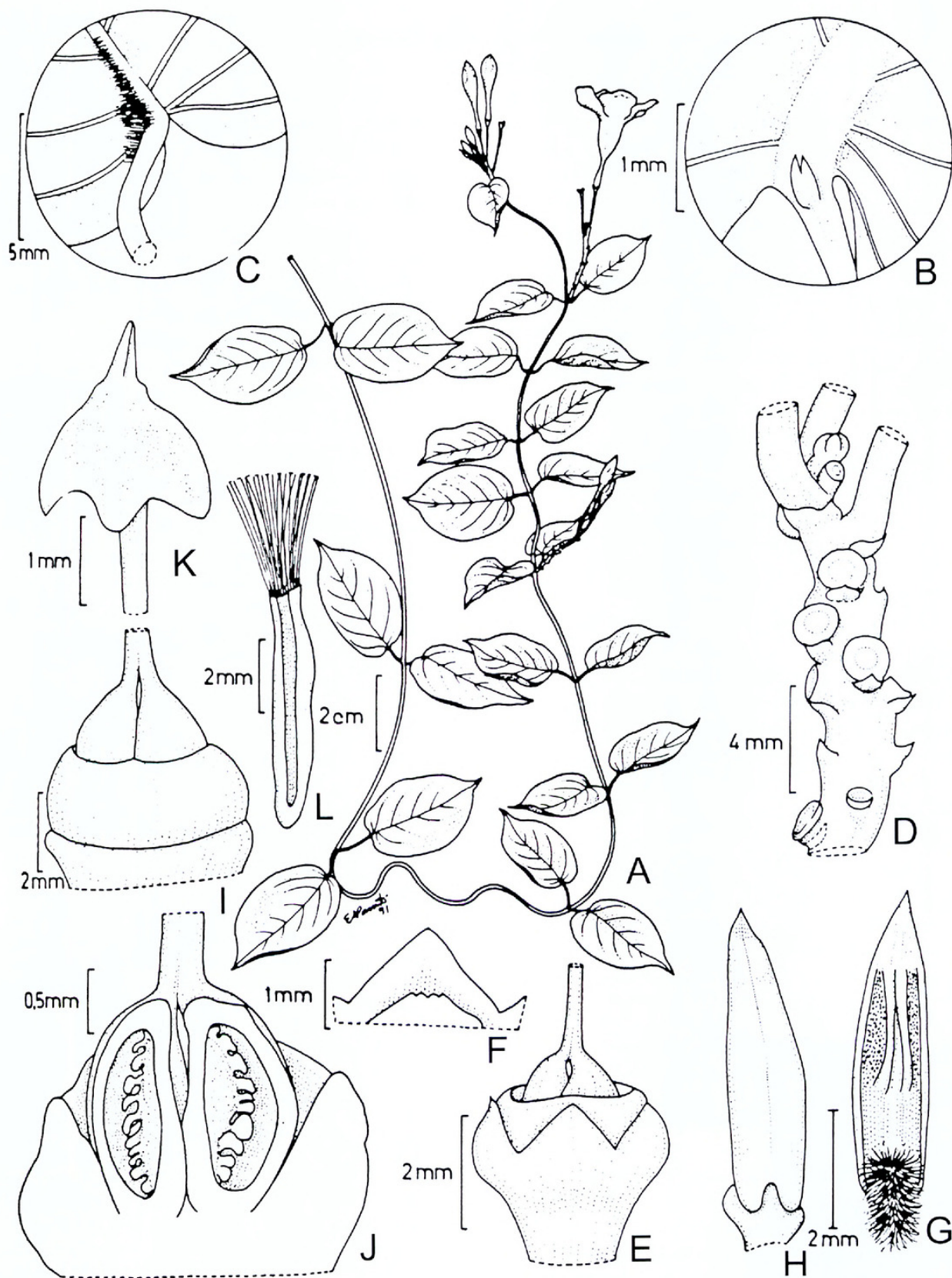


Figure 4. *Mandevilla guanabara*. —A. Flowering branch. —B. Detail of adaxial surface of leaf blade with one colletter at base. —C. Detail of abaxial surface of leaf blade with trichomes at base and at the petiole. —D. Detail of inflorescence axis showing bracts. —E. Calyx, ovary, and nectaries. —F. Adaxial surface of calyx lobe with opposite colletter at base. —G. Anther in ventral view. —H. Anther in dorsal view. —I. Ovary and nectaries. —J. Longitudinal section of ovary and nectary. —K. Style head. —L. Seed in hylar view. (A–L, Brade 16081, RB, UEC.)



abaxial surface glabrous except for trichomes disposed along the middle portion of the midvein, sometimes reaching the upper half of the petiole; secondary veins 7 to 9, adaxially immersed; leaf colleters 1, ovate with a bifurcate apex, flattened, located at the base of the midvein adaxially. Inflorescence corymbiform, axillary, subsessile, 3- to 6-flowered, 0.6–2.6 cm long; peduncle 0.1–8 mm long; bracts deltoid, glabrous,  $1 \times 1$  mm. Flowers showy, pedicellate; pedicel terete, glabrous, 0.9–1.2 cm long; calyx 5-parted, lobes deltoid, glabrous, margin ciliate,  $1\text{--}1.5 \times 1\text{--}1.5$  mm; calycine colleters opposite, 1, centered at the base of each lobe, deltoid, flattened, bi- or trifurcate at the apex; corolla infundibuliform, yellow, slightly zygomorphic, 3.5–5 cm long, part below stamen insertion gibbous, somewhat constricted at about the middle,  $10\text{--}15 \times 2\text{--}3$  mm, expanded part above stamens campanulate,  $13\text{--}20 \times 12\text{--}20$  mm, lobes obliquely obovate-orbicular,  $11\text{--}18 \times 11\text{--}21$  mm; stamens subsessile, inserted at the base of the upper corolla tube and surrounded by a tomentose ring of long, thick trichomes, 5 mm long; filaments laterally enlarged; anthers narrowly lanceolate, apiculate, 4.5–6 mm long, base slightly cordate, with the auricles 0.5 mm long; ovary oblong-ovoid, glabrous, 1.9–2 mm long; nectaries 5, forming a ring surrounding the ovary, 1 mm long; style terete, 10–12 mm long; style-head deltoid, 2–2.1 mm long, with 5 longitudinal ribs. Follicles 2, slightly torulose, slender, glabrous, 9–14 cm long; seeds linear-oblong, striate, 7–8 mm long, comose; coma 13–16 mm long.

**Habitat and distribution.** *Mandevilla guanabarica* is restricted to Rio de Janeiro and Espírito Santo, in southeastern Brazil. It occurs at the borders of shrubby or arborescent restinga formations, sometimes reaching the borders of the Atlantic rainforest.

**Phenology.** Collected with flowers from November to March and with fruits from April to August.

After a careful analysis of specimens identified as *Mandevilla funiformis*, we observed that some presented a distinct set of characters from this species and therefore should be segregated into a new species. We chose the epithet *guanabarica*, which was mentioned (Müller Argoviensis, 1860) for a specimen described as *Echites guanabarica* by Casaretto. The name *E. guanabarica* was written by Casaretto on one specimen at G, collected by him in 1857 in Rio de Janeiro. This collection, *Casaretto 1483*, possesses all the diagnostic characteristics of the new species. This ined. name and collection were later included under *Amblyanthera funiformis* var. *mycophylla* by Müller Argoviensis (1860). Although it was never validly published, we decided to maintain the epithet

*guanabarica* for the new species for two reasons: (1) it describes the location where the species occurs; and (2) because *Casaretto 1483* is well-preserved and has both flowers and fruits, making possible the examination of all diagnostic characters. Almost all specimens seen by us that have been identified as *M. funiformis* and were collected in the restinga and Atlantic rainforest formations of Rio de Janeiro are actually *M. guanabarica*. The two species are very similar, sharing the following set of characters: both are suffrutescent vines with slender, twining branches, sometimes tendril-like, having ovate leaves, yellow flowers disposed in axillary, corymbiform inflorescences and corolla with the expanded part above stamens campanulate. However, they can be distinguished by both morphological characters and geographic distribution: *Mandevilla guanabarica* occurs in the states of Rio de Janeiro and Espírito Santo in Brazil and has tomentose trichomes covering the abaxial surface of petiole and the leaf base, and shorter inflorescences, flowers, and stamens; *Mandevilla funiformis*, on the other hand, occurs more to the south (from southeastern to southern Brazil), is glabrous, and has longer inflorescences and flower parts.

**Etymology.** The species epithet refers to Guanabara, the official name of the Rio de Janeiro state in Brazil at the time when the holotype was collected (1857).

**Paratypes.** BRAZIL. **Espírito Santo:** Linhares, Res. Biol. de Comboios, O. J. Pereira & L. C. Fabris 814 (UEC, VIES); Res. de Linhares, D. Sucre 8383 (RB); Vitória, entre Vitória e Guarapari, A. P. Duarte 4176 (RB, UEC); sine loc., Serra de Cima, A. P. Duarte & E. C. Gomes 3926 (RB). **Rio de Janeiro:** Atafona, A. L. Peixoto 559 (RB, UEC); Casemiro de Abreu, Rio das Ostras, A. Souza, R. Esteves & V. Esteves 703 (R); Cabo Frio, Armação dos Búzios, P. P. Jowin 303 (RB); 1815, Pohl s.n. (BR); Praia do Pontal, Segadas-Viana 4137 (GH), D. Sucre 3829 (UEC); Cidade dos Meninos, Engenho do Rio Cambuabo, C. Carcerelli 23 (RB); Macaé, restinga de Cabriúnas, D. Araújo & N. C. Maciel 4277 (NY); Maricá, Lagoa do Padre, D. Araújo & A. L. Peixoto 662 (RB, UEC); Barra de Maricá, V. L. G. Klein 205 (RB, UEC), K. Rodrigues & D. Daly 1267 (MO); entre o oceano e a Lagoa de Maricá, L. R. Landrum 4182 (NY); Jacarepaguá, Pedra de Itaúna, D. Araújo & A. L. Peixoto 715 (B), H. C. Lima 1239 (RB, UEC), D. Sucre 5005 (SP), D. Sucre, G. M. Barroso & D. Dunn 6445 (RB, UEC), W. N. Vidal 281 (RB, UEC); Recreio dos Bandeirantes, Senambetiba, A. C. Brade 16081 (RB, UEC), J. A. Jesus 1298 (RB, UEC); entre a litorânea e a BR-6, km 16, A. B. Souza 69 (RB, UEC); Praia de Senambetiba,  $23^{\circ}00'S$ ,  $43^{\circ}20'W$ , L. B. Smith 6402 (NY), A. Glaziou 4088 (C); Tijuca, 12 Mar. 1945, D. O. Machado s.n. (RB, UEC); Copacabana, 1887, Schwaikie s.n. (R); Valença, 12 Aug. 1980, L. A. Mattos-Silva, A. M. V. Carvalho & J. L. Lage s.n. (CEPEC, RB, UEC); sine loc., s.d., A. Glaziou 9170 (C), Lund s.n. (C), Riedel s.n. (G), Riedel s.n. (A, W), Schott 5400 (W); Tocaya, 18422, Schott s.n. (BR).



**5. *Mandevilla harleyi*** M. F. Sales, Kinoshita-Gouvêa & A. Simões, sp. nov. TYPE: Brazil. Minas Gerais: Pedra Azul, estrada para Almenara, 16°08'S, 41°12'W, 800 m, 19 Oct. 1988 (fl), R. M. Harley, B. L. Stannard, D. J. N. Hind, C. Kameyama, J. Prado, P. Rudall, R. Simão, N. Taylor & D. Zappi 25194 (holotype, SPF; isotypes, K, UEC). Figure 5.

*Mandevillae fistulosae* habitu frutescente 1.2–3 m alto coepteris stipulis similibus in caule persistentibus similis; sed foliis ovatis ad late elliptica basim versus rotundatis ad subcordata, corolla tenui, tubo inferiore admodum cylindrico 22–25 mm, fauce aperta et lobis 30–40 mm longis, expansis differt.

Erect, woody shrubs, 1.2–3 m high, latex white; branches terete, glabrous; internodes 0.4–2.3 cm long; nodal colleters interpetiolar, 4 per node, stipule-like, persistent, triangular, subcarnose, margin ciliate, ca. 1.5 mm long. Leaves decussate, subpatent, petiolate; petiole terete, canaliculate, glabrous, 0.8–1 cm long; blade straight, ovate to widely elliptic, base rounded to subcordate, apex acuminate to long-acuminate, margin straight, membranous, glabrous, 5–5.5 × 2–3.5 cm, secondary veins 8 to 10, abaxial surface with the midvein slightly thickened and salient and the secondary veins immersed; leaf colleter 1, oblong-ovate with the apex bifid and pilose. Inflorescence shortly racemose, terminal or axillary, 5- to 7-flowered, glabrous, 1–2.5 cm long; peduncle 1–7 mm long; bracts broadly deltoid, margin ciliate, 1 × 1 mm. Flower bud with a long-acuminate apex; flowers showy, pedicellate; pedicel terete, glabrous, 1–1.2 cm long; calyx reduced, 5-parted, lobes triangular, margin ciliate, 1.5–2 × 1 mm; calycine colleters opposite, 1 at the base of each lobe, deltoid, apex ciliate, almost the same size as the calyx lobe; corolla infundibuliform, yellow, glabrous, 7–9 cm long, part below stamen insertion slightly narrow, gibbous, 22–25 × 2–2.5 mm, expanded part above stamens campanulate, 24–35 × 23–25 mm, lobes spreading, slightly recurved, orbicular-ovate with one extremity acuminate and the other rounded, 30–40 × 35–36 mm; stamens subsessile; filaments laterally enlarged, ca. 2 mm long; anthers linear-lanceolate, long-apiculate, 8.5 mm long, base slightly cordate with the auricles 0.5 mm long; ovary ovoid, glabrous, ca. 2 mm long; nectaries 5, fused and forming a 5-lobed ring surrounding the ovary, 1 mm long; style-head deltoid, 3 mm long, with 5 longitudinal ribs. Follicles 2, terete, woody, glabrous, 9–13 × 0.3–0.4 cm; seeds oblong-linear, 8–11 mm long, comose; coma 13–15 mm long.

*Habitat and distribution.* This beautiful species, with its showy yellow flowers, is one of the most rare

and poorly collected from the genus in Brazil and is strictly restricted to the rock outcrops of northeastern Minas Gerais in the vicinities of Pedra Azul and Medina, where it often appears to grow perched directly atop rocks. *Mandevilla harleyi* is only known from a few, isolated individuals on the upper slopes of granitic inselbergs.

*Phenology.* The flowering period seems to last for the whole year, and fruits can be found from December to August.

*Mandevilla harleyi* is a distinctive species, being closely related to a group of species (*M. fistulosa*, *M. funiformis*, and *M. guanabaria*) that share a suite of characters (as previously explained for *M. fistulosa*), but may be easily recognized by its longer petioles and flowers with the calyx disproportionately small in relation to the corolla size.

*Etymology.* This species is named in honor of Dr. R. M. Harley, a prominent botanist and collector who made significant contributions to the knowledge of the Brazilian flora, especially from its northeastern region, and who is the collector of the type specimen.

*Paratypes.* BRAZIL. **Minas Gerais:** Medina, Pedra da Onça, *Mendes Magalhães* 15648 (MO); Pedra Azul, Vale do Jequitinhonha, *R. Burle Max apoc.* 3 (SP), *A. O. Simões & R. B. Singer* 1303 (UEC).

**6. *Mandevilla hatschbachii*** M. F. Sales, Kinoshita-Gouvêa & A. Simões, sp. nov. TYPE: Brazil. Bahia: Seabra, rod. BR-342, 10 km E de Seabra, 13 Oct. 1981 (fl, fr), *G. Hatschbach* 44208 (holotype, MBM; isotypes, C, NY). Figure 6.

*Mandevillae pycnanthae* (Steudel) Woodson habitu frutescente corolla violacea hypocraterimorpha proxima sed ramis subcarnosis, foliis minoribus, 3–5.5 × 1.6–2.9 cm, coriaceis, revolutis, ellipticis ad anguste elliptica versus basim acutis ad obtusa et apicibus brevi-cuspidatis et floribus corollae tubo inferiore minus quam 11–13 mm differt.

Erect shrub, 1 m high, latex white; branches slightly angled, subcarnose, glabrous; internodes 0.7–3.5 cm long; nodal colleters interpetiolar, minute, deciduous in the older branches. Leaves decussate, subappressed, shortly petiolate; petiole terete, canaliculate, glabrous, 2–4 mm long; blade revolute, elliptic to narrowly elliptic, base acute to obtuse, apex shortly cuspidate, margin straight, coriaceous, glabrous, 3–5.5 × 1.6–2.9 cm; adaxial surface with the venation conspicuous, reticulate, midvein and secondary veins immersed, secondary veins 16 to 22, almost perpendicular and forming an angle close to 90° with the midvein, abaxial surface with the midvein salient and the secondary veins slightly raised; leaf colleters absent or sometimes 1 at the base



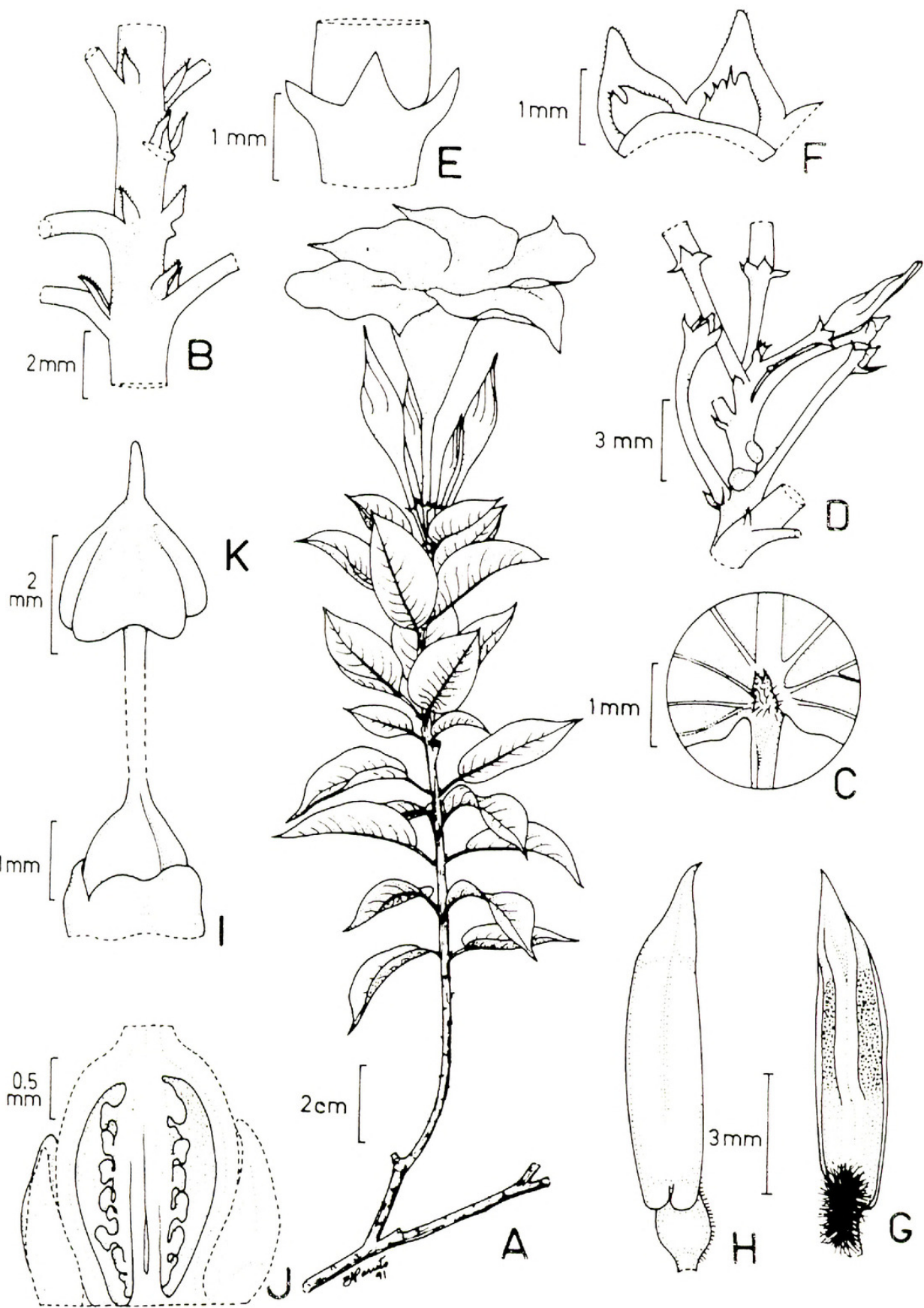


Figure 5. *Manderilla harleyi*. —A. Flowering branch. —B. Detail of a branch showing nodal colleters. —C. Detail of adaxial surface of leaf blade with one colleter at base. —D. Inflorescence axis, showing bracts and flower bud. —E. Calyx and base of corolla. —F. Adaxial surface of calyx lobes with opposite colleters at base. —G. Anther in ventral view. —H. Anther in dorsal view. —I. Ovary and nectaries. —J. Longitudinal section of ovary and nectaries. —K. Style head. (A–K, from the type *Harley et al.* 25194, K, SPF, UEC.)



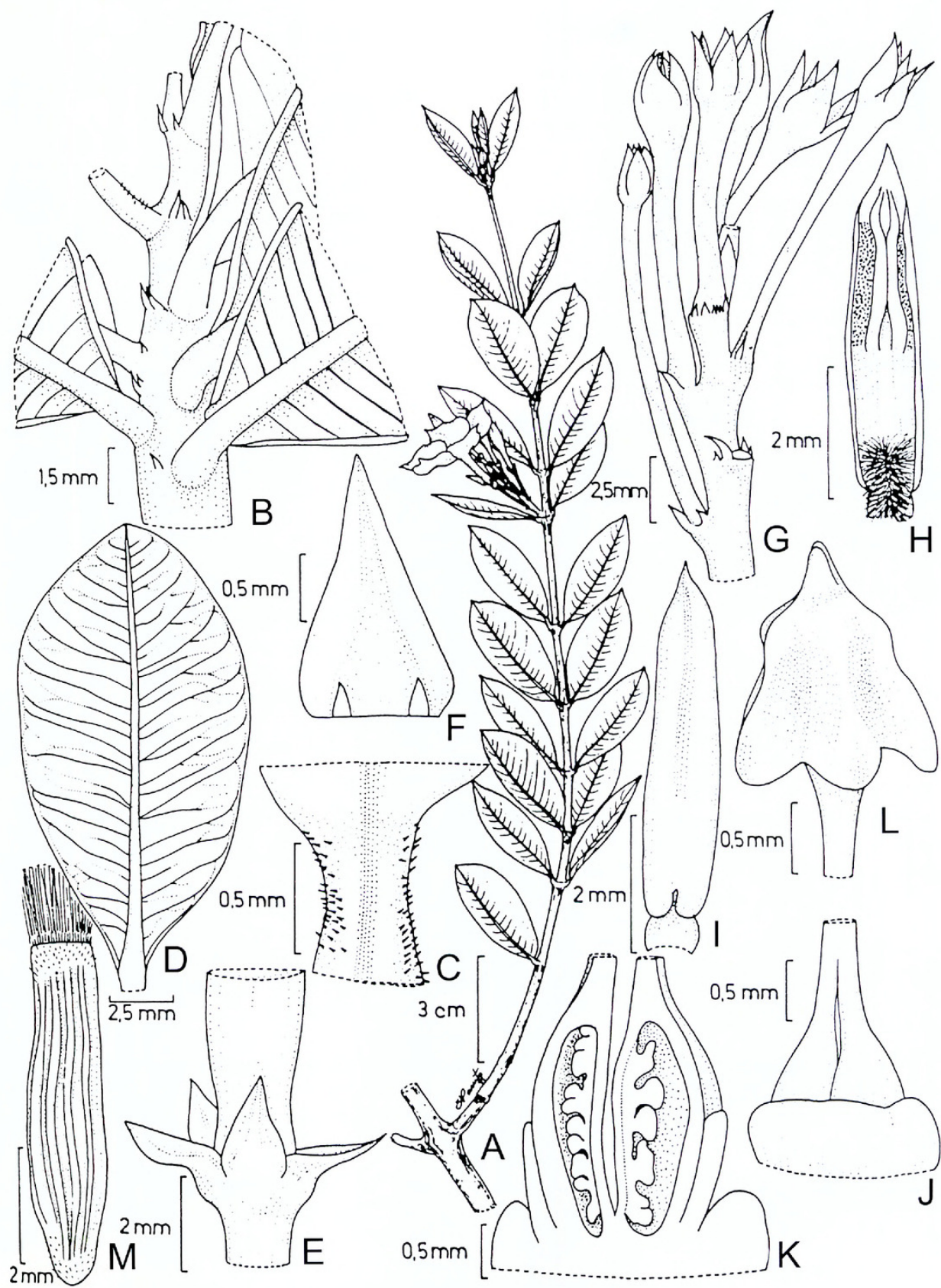


Figure 6. *Mandevilla hatschbachii*. —A. Flowering branch. —B. Detail of a branch, showing petioles and nodal colleters. —C. Detail of petiole with trichomes. —D. Adaxial surface of leaf blade. —E. Calyx and base of corolla. —F. Adaxial surface of calyx lobes with alternate colleters at base. —G. Inflorescence axis showing colleters, pedicels, and calyx. —H. Anther in ventral view. —I. Anther in dorsal view. —J. Ovary and nectary disc. —K. Ovary in longitudinal section. —L. Style head. —M. Seed in anti-hylar view. (A–M, from the type *Hatschbach 44208*, C, MBM, NY.)



midvein adaxially. Inflorescence racemose, axillary, 5-flowered, glabrous, 10–27 mm long; peduncle 1–8 mm long; bracts scarious, linear-lanceolate, glabrous, caducous, 1–1.5 × 0.5 mm. Flowers pedicellate; pedicel terete, glabrous, 7–11 mm long; calyx short, deeply 5-parted, lobes ovate with the apex acuminate, glabrous, membranous, 2–3 × 1.5–1.8 mm; calycine colleters 10, alternate, 2 at the base of each lobe; corolla salverform, glabrous, purple, 2.5–3 cm long, part below stamen insertion terete, 11–13 × 1.5–2 mm, expanded part above stamens narrowly tubular, 7–9 × 2.5–5 mm, lobes obovate, spreading, 8–12 × 9–12 mm; stamens subsessile; filaments ventrally woolly, 1 mm long; anthers linear, apiculate, 4.8–6 mm long, base slightly cordate with the auricles short, 0.4–0.5 mm long; ovary ovoid, glabrous, 1 mm long; nectaries 5, forming a 5-lobed ring surrounding the ovary, 0.5–0.6 mm long; style terete, ca. 14 mm long; style-head deltoid, 2 mm long, with 5 longitudinal ribs. Follicles 2, slightly moniliform, glabrous, 7–13.5 × 0.2 cm; seeds linear, covered by very short trichomes, 5–8 mm long, comose; coma 12–20 mm long.

**Habitat and distribution.** The species is endemic in Bahia, northeastern Brazil, in campo rupestre formations at altitudes above 1100 m.

**Phenology.** Collected with flowers in October and November and with fruits in October.

*Mandevilla hatschbachii* is easily recognized by its subcarnose branches and coriaceous leaves with the nearly parallel secondary veins forming a dense reticulation. The flower structure is similar to that of *M. pycnantha* (Steudel) Woodson, especially in terms of corolla size and number of nectaries (5), but the two species can be distinguished by the broadly elliptic to orbicular, rugose to slightly bullate leaves in *M. pycnantha*.

**Etymology.** The name of this species pays homage to Gert Hatschbach, one of the most prolific plant collectors in Brazil and collector of the type specimen.

**Paratypes.** BRAZIL. **Bahia:** Seabra, Serra do Bebedouro, 40 km de Seabra, G. C. P. Pinto 422/83 (HRB); sine loc., s.d., K. M. 1054 (RB).

**7. *Mandevilla rubra*** Markgraf ex M. F. Sales, Kinoshita-Gouvêa & A. Simões, sp. nov. TYPE: Brazil, Minas Gerais: km 118–119 da estrada Curvelo–Diamantina, 13 Dec. 1974 (fl), N. L. Menezes & E. Froelich CFCR 1195 (holotype, SPF; isotype, UEC). Figure 7.

Liana sat singularis. A *Mandevilla atrovioacea* (Stadler-meyer) Woodson foliis ramis brevibus lateralibus dispositis, appendicibus nodis conspicuis, foliis brevi-petiolatis 1–4 mm longis, laminis 4.3–7.7 × 1.4–2.8 cm, oblongis ad ellipticis, base obtusis ad rotundatis, flore roseo-violaceo ad rubrum differt.

Woody liana, latex white, copious; branches twining, terete to slightly angled, glabrous, slightly striate; axillary branches ascending, short and leafy; internodes 9–16 cm long in the twining branches and 1–4 mm long in the axillary branches; nodal colleters narrowly conic, many, from minute to well developed, forming a ring surrounding the node, reflexed in the older branches. Leaves decussate forming a 45° angle with the stem, slightly imbricate, short-petiolate; petiole terete, canaliculate, 1–4 mm long; blade revolute, oblong to elliptic, base obtuse to rounded, apex acute to acuminate, margin straight, glabrous, coriaceous, 4.3–7.7 × 1.4–2.8 cm, adaxial surface with the midvein immersed, secondary veins 10, rather inconspicuous, tertiary veins conspicuous, abaxial surface with the midvein raised; leaf colleters 3, at the base of the midvein adaxially. Inflorescence racemose, axillary, up to 4-flowered, glabrous, 2.1–5.4 cm long; peduncle 1.8–4.2 cm long; bracts scarious, narrowly oblong, glabrous, caducous, 3.5 × 1 mm. Flowers showy, pedicellate; pedicel terete, glabrous, 0.8–1.8 cm long; calyx 5-parted, somewhat reddish, lobes lanceolate, apex acuminate, glabrous, 6–9 × 1.5–2.8 mm; calycine colleters many, forming a continuous ring at base; corolla infundibuliform, pinkish-lilac to reddish, glabrous, 5.5–7.5 cm long, part below stamen insertion straight, 12–16 × 2.8–3 mm, expanded part above stamens narrowly conical, 27–35 × 13–20 mm, lobes suberect, oblong-ovate, 16–24 × 13–20 mm; stamens subsessile; filaments flattened, ventrally woolly-tomentose, 3 mm long; anthers narrowly oblong, apiculate, 8.5 mm long, base slightly cordate with the auricles 1.3 mm long; ovary oblong, glabrous, 2.5 mm long; nectaries 2, alternating with the carpels, broadly oblong, flattened, ca. 1.2 mm long; style terete, 12 mm long; style-head conical, 2.8 mm long, with 5 longitudinal ribs. Fruits and seeds unknown.

**Habitat and distribution.** The species is endemic to a small region in Minas Gerais, Brazil, in campo rupestre formations of the Serra do Espinhaço above 1200 m, where it is known from only two localities, Gouvea and Curvelo.

**Phenology.** Collected with flowers in December and February.

The name *Mandevilla rubra* was written by Markgraf on one specimen (Anderson, Stieber & Kirkbride 35397) at NY, but was never published by



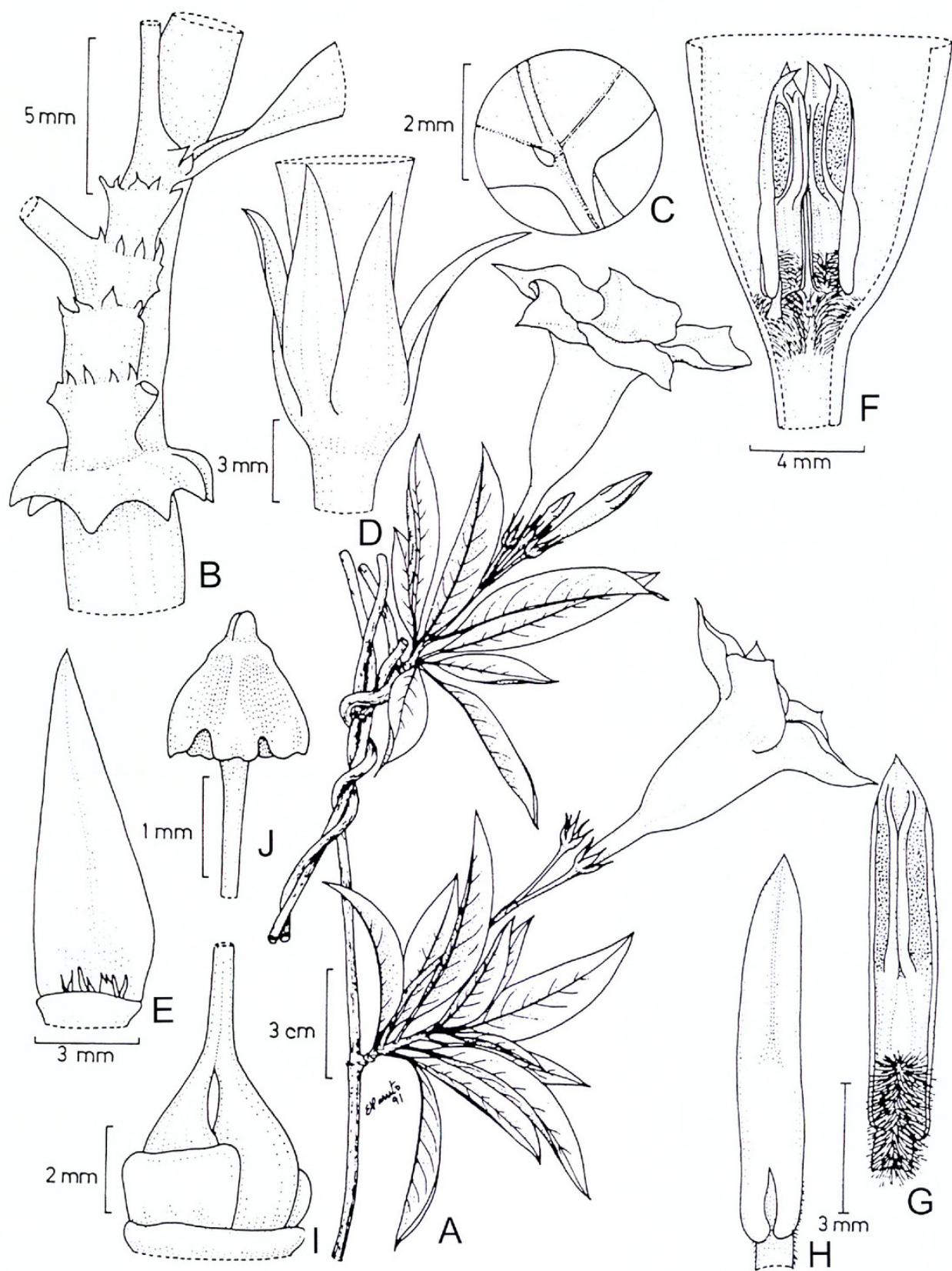


Figure 7. *Mandevilla rubra*. —A. Flowering branch. —B. Detail of branch showing nodal colleters. —C. Detail of adaxial surface of leaf blade with one colleter at base. —D. Calyx and base of corolla. —E. Adaxial surface of calyx lobe with continuous colleters at base. —F. Longitudinal section of flower showing stamens. —G. Anther in ventral view. —H. Anther in dorsal view. —I. Ovary and nectaries. —J. Style head. (A. Anderson 35397, NY; B–J, from the type Menezes & Froelich CFCR 1195, SPF, UEC.)



him. We agree with Markgraf's assessment, and an additional collection of this species (*Menezes & Froelich CFCR 1195*), at SPF and UEC, supports its recognition as a good species. *Mandevilla rubra* is an unusual species with two distinctive characters: it is a vine with the leaves on short lateral branches with very short internodes, and it has a narrowly conical upper corolla tube, similar to that of *M. pohliana*. Vegetatively, *M. rubra* is similar to *M. semirii* and *M. moricandiana*, but differs in that the tertiary veins are not conspicuously reticulate.

*Etymology.* The epithet *rubra* was originally attributed to this species by Markgraf (in sched.), and refers to the corolla color.

*Paratype.* BRAZIL. **Minas Gerais:** Gouvea, Serra do Espinhaço, ca. 8 km N de Gouvea na rod. para Diamantina, W. R. Anderson, M. Stieber & J. M. Kirkbride 35397 (NY).

**8. *Mandevilla semirii*** M. F. Sales, Kinoshita-Gouvêa & A. Simões, sp. nov. TYPE: Brazil. Minas Gerais: Grão Mogol, 900–1000 m, 25 Feb. 1986 (fl), J. Semir CFCR 9689 (holotype, SPF; isotype, UEC). Figure 8.

Species *Mandevillae moricandianae* magnitudine et forma foliorum proxima sed foliis basibus obtusis et rotundatis, corolla purpurea ad roseum, tubo inferiore brevior quam 8–10 mm, tubo superiore lato-conico, 16–20 mm longo et 14–20 mm diam. fauce et lobis expansis 20–31 mm longis differt.

Woody liana, latex white. Branches twining, thick, terete, glabrous to densely pubescent; lateral branches erect, subquadrangular with enlarged nodes and conspicuous leaf scars; internodes 2–7 mm long in the lateral branches; nodal colleters 10 to 12, continuous, conic, rigid, forming a ring surrounding the node, sometimes reaching 1.5 mm long. Leaves decussate, somewhat spreading, sometimes slightly conduplicate, subsessile; petiole terete, thick, canaliculate, glabrous to densely pubescent, 2–3 mm long; blade straight to slightly revolute, obovate-elliptic to obovate, sometimes oblong-obovate, base obtuse to rounded, apex shortly cuspidate to emarginate-mucronate, sometimes acuminate, coriaceous, glabrous to pubescent, 3–6.7 × 2.2–4 cm, adaxial surface with all veins slightly impressed, abaxial surface with the venation conspicuous, reticulate, secondary veins 7 to 13; leaf colleters 2 to 3, minute, conic, at the base of the midvein and sometimes reaching the petiole. Inflorescence racemose, axillary, lax, 8–22 cm long; peduncle 3.5–6.5 cm long; bracts scarious, lanceolate, caducous, 3 × 2 mm. Flowers showy, long-pedicellate; pedicel terete, slightly twisted, glabrous to pubescent, 1.3–2.5 cm long; calyx 5-

parted, reddish, lobes narrowly lanceolate, apex acuminate, covered by scattered trichomes abaxially, 6–8 × 2 mm; calycine colleters many, forming 10 groups of 3 to 4 colleters each, alternate with the calyx lobes; corolla infundibuliform, purple to pink, 5–6 cm long, part below stamen insertion straight, short, 8–10 × 1.5 mm, expanded part above stamens broadly conical, 16–20 × 14–20 mm, lobes obovate-orbicular, expanded, 20–31 × 21–32 mm; stamens subsessile; filaments ventrally woolly, ca. 2 mm long; anthers linear-oblong, apiculate, 6.5 mm long, base slightly cordate with the auricles 1 mm long; ovary ovoid, glabrous, 1 mm long; nectaries 2, broadly oblong, fleshy, alternating with the carpels, 1.2 mm long; style terete, 8 mm long; style-head deltoid, 2 mm long, with 5 longitudinal ribs. Follicles 2, terete, glabrous, 9–10.5 cm long; seeds fusiform, flattened, 5 mm long, comose; coma 17 mm long.

*Habitat and distribution.* *Mandevilla semirii* is strictly endemic to a small region in northern Minas Gerais in Brazil, where it occurs in the upper portions (above 900 m high) of campo rupestre formations surrounding the adjacent localities of Grão Mogol and Itacambira.

*Phenology.* Collected with flowers from November to April and with fruits in April.

Vegetatively, *Mandevilla semirii* is very similar to *M. moricandiana* and *M. rubra* because of its lateral branches with very short internodes. However, it can be distinguished from both of these by the structure of the corolla with the expanded part above stamens broadly conical and longer than the part below stamen insertion.

*Etymology.* The name of this species pays homage to João Semir, one of the most prominent botanists in Brazil and the collector of the type specimen.

*Paratypes.* BRAZIL. **Minas Gerais:** Grão Mogol, I. Cordeiro CFCR 845 (SPF), F. Markgraf, H. L. Mello-Barreto & A. C. Brade 3486 (RB), A. O. Simões, A. R. Barbosa, A. S. Flores, R. S. Rodrigues & R. Belinelo 1167 (UEC), A. O. Simões, A. R. Barbosa, A. S. Flores, R. S. Rodrigues & R. Belinelo 1174 (UEC); Serra do Pipiri, G. Hatschbach 42861 (B, UB), R. Mello Silva CFCR 9011 (SPF); Itacambira, M. L. Kawasaki CFCR 6595 (SPF, UEC)

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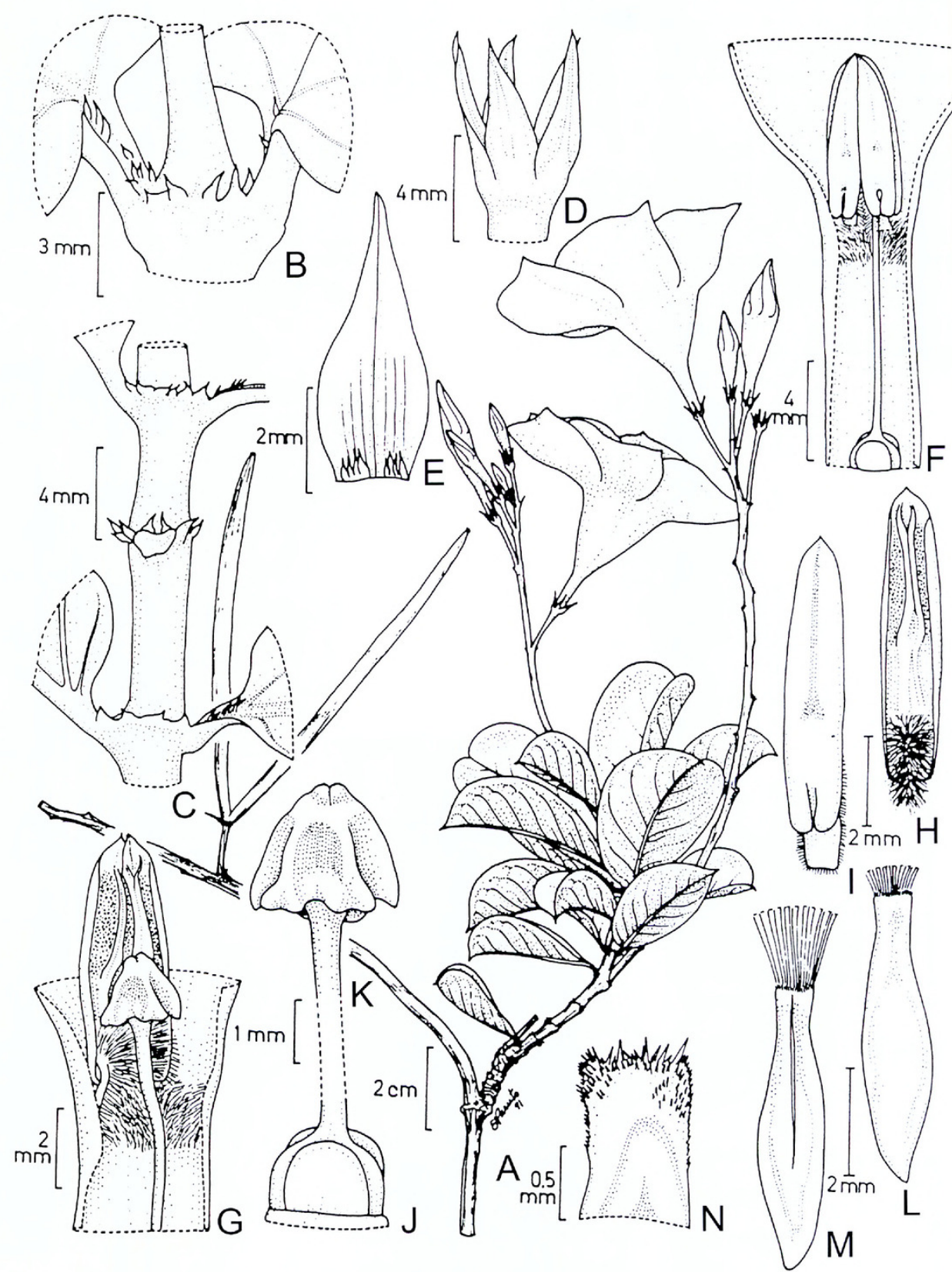


Figure 8. *Mandevilla semirii*. —A. Flowering branch. —B. Detail of a branch showing colleters at the node, petiole, and leaf blade. —C. Detail of a branch with nodal colleters. —D. Calyx. —E. Adaxial surface of calyx lobe with alternate colleters at base. —F. Longitudinal section of flower showing stamens and gynoecium. —G. Longitudinal section of flower showing stamens and style head. —H. Anther in ventral view. —I. Anther in dorsal view. —J. Ovary and nectaries. —K. Style head. —L. Seed in anti-hylar view. —M. Seed in hylar view. —N. Detail of seed apex with trichomes. (A, L–N, Hatschbach 42861, B, UB; B, C, from the type *Semir* CFCR 9689, SPF, UEC; D–K, Mello-Silva CFCR 9011, SPF.)



MBM, MBML, MO, MU, NY, PEUFR, R, RB, SP, SPF, U, UB, UEC, VIES (Universidade Federal do Espírito Santo, Brazil), and W for specimen loans as well as access to their collections.

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