

## NEW TAXA IN *BEGONIA* (BEGONIACEAE) FROM BRAZIL

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**ABSTRACT.** Ten new Brazilian taxa of *Begonia*: *B. cacaucicola*, *B. euryphylla*, *B. matogrossensis*, *B. mattos-silvae*, *B. pinheironis*, *B. pluvialis*, *B. polygonifolia* A. DC. var. *differens*, *B. russelliana*, *B. serranegrae*, and *B. windischii* are described, illustrated, and compared to neighboring taxa from an unpublished key of Brazilian *Begonia*. *Begonia oxyphylla* A. DC. is made a variety of *B. arborescens* Raddi.

**Key words:** *Begonia*, Begoniaceae, Brazil

### INTRODUCTION

While preparing Begoniaceae, Part I: Illustrated Key (L.B. Smith et al. 1986), Lyman Smith discovered a number of undescribed species of *Begonia* in Brazil. The following places these novelties on record for the convenience of other taxonomists prior to publication of a complete treatment of the genus for Brazil. In addition, *Begonia oxyphylla* A. DC. is made a variety of *B. arborescens* Raddi.

### NEW TAXA

***Begonia cacaucicola*** L.B. Sm. ex S.F. Sm. & Wassh., sp. nov. TYPE: Brazil. Bahia: Una, Fazenda São Bento, mata úmida, plantação de cacau, 18 May 1965, R.P. Belém & M. Magalhaes 1002 (Holotype: US; Isotype: CEPEC).

FIGURE 1.

*A. B. sylvatica* Meissn. ex A. DC. cui affinis, foliorum laminis ellipticis, inflorescentia 2-dichotomica differt, et proxima *B. alchemilloides* Meissn. ex A. DC. praeter quad petiolis longioris, bracteis longioris, angustatis, glabris et asymmetrice foliorum laminis apiculatis.

**Plant** herbaceous, delicate, membranaceous, glabrous, 40 cm tall. **Stem** erect, >10 cm, 6–8 mm in greatest width, red (as are roots), only 2–3 leaved (in type); internodes 1.5 cm between extant leaves, 2.5 cm further down stem between leaf scars. **Stipules** ovate, 10–15 × 6 mm, membranaceous, reddish-green with darker midvein. **Petioles** 8–11 cm long, red. **Blades** alternate, green, thin, membranaceous, elliptic, with main vein at an angle with petiole, apiculate at tip of 5–9 cm main vein, shallowly cordate at base, 9–13 cm wide, evenly and sparsely vestite throughout with minute dark red glands, with finely duplicate-dentate margin. **Peduncles** 11–13 cm long, 1 and 3 mm in diameter. **Inflorescences**

few-flowered, 2-dichotomous, 2 (in type): 1) younger, broad-peduncled one 2 cm long distal to basal bifurcation, 2) older, thin-peduncled one possibly 4 cm long distal to scar(?) of basal bifurcation; bracts at base of inflorescence paired, opposite, ovate, 7–8 × 4 mm, membranaceous, absent (deciduous?) in older inflorescence. **Staminate** pedicel 5 mm; tepals 4, white, the outer suborbicular, 9–8 × 7–6 mm, apiculate, the inner narrow 6 × 1 mm; stamens ca. 15, yellow, on a low torus; anthers oblong; connective tissue exerted in an oblong obtuse blade. **Pistillate** pedicel 2 mm; bracteoles persistent, 3–5 mm long; tepals white, 4 mm; style and stigma not seen. **Capsules** young 5 × 2 mm, covered with tiny simple strigose white hairs; wings similarly haired, 3: 1 major, 3 mm wide of capsule axis; 2 minor, 2 mm wide.

***Begonia euryphylla*** L.B. Sm. ex S.F. Sm. & Wassh., sp. nov. TYPE: Brazil. Bahia: Itapebí, Fazenda Ventania, 16 Aug. 1971, T.S. dos Santos 1842 (Holotype: US; Isotype: CEPEC).

FIGURE 2.

*A. B. neocomensium* A. DC. cui affinis, caulis foliorum laminis foliorum stipulis petiolis et pedunculo grosse plus robustis, foliorum laminis plus acutus quam rotundatus et internodia brevis differt.

**Plant** herbaceous, perennial, rhizomatous? 30 cm tall, tan-brown strigose except on the flowers. **Stem** short, erect; internodes 1 cm. **Stipules** imbricate, persistent, firm, elliptic, 2–3 cm long, glabrous on distal side, strigose on proximal side, in age twisted, tubular with distal, glabrous side external (curled retrorsely). **Petioles** fasciculate from the top of the stem, 2 (in holotype) 16 and 10.5 cm long, densely strigose. **Blades** deeply cordate with overlapping lobes, chartaceous, nearly membranaceous, suborbicular, 28 cm wide, 25 cm basal lobe to top, sinuate-lobate with acute projections on all sides, serrulate, the surface slightly bullate with reticulate veins and veinlets forming cells, the “cells” raised below with longer hairs arising prominently from vein-

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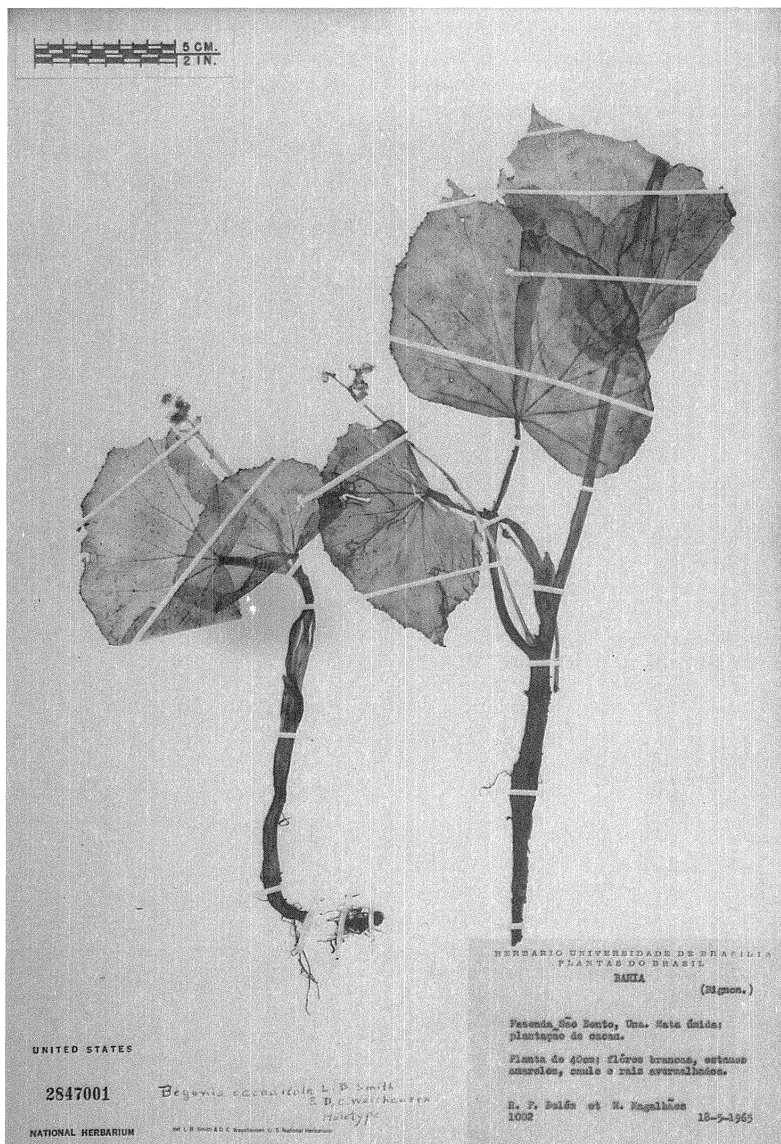


FIGURE 1. Holotype of *Begonia cacaucicola* L.B. Sm. ex S.F. Sm. & Wassh. (Belém & Magalhães 1002, US).

lets, hardly raised above with shorter hairs largely arising from within the "cells." **Peduncle** 40 cm long, exceeding the leaves, less strigose than the petioles. **Inflorescence** laxly 4–5 times dichotomous, many-flowered, staminate and pistillate flowers contemporaneous; bracts at basal dichotomy membranaceous, sparingly strigose, possibly deciduous; bracteoles 2 mm, hardly evident, narrow, possibly deciduous. **Staminate** pedicels slender, up to 10 mm long; tepals white, 4, the outer pair suborbicular (4–5 × 4 mm), the inner narrowly elliptic (2–3 × 1 mm); stamens few (ca. 25), oblong; anthers yellow, connective

tissue exerted, rounded. **Pistillate** flowers small, 3.5 mm long with capsule, usually located at the base of 1 or 2 staminate flowers; pedicel 1 mm long; tepals 1.5 mm long. **Capsule** with a single flabellate wing: 6 mm deep × 5 mm wide (probably not fully grown).

***Begonia matogrossensis*** L.B. Sm. ex S.F. Sm. & Wassh., sp. nov. TYPE: Brazil. Mato Grosso: Rio Jurena, Cachoeira São Lorenço, plantas sobre rochas secas entre fendas de pedras, 22 May 1977, N.A. Rosa & M.R. Santos 1984 (Holotype: NY; Isotype: MG). (Section *Ruizpavonia*? ). FIGURE 3.

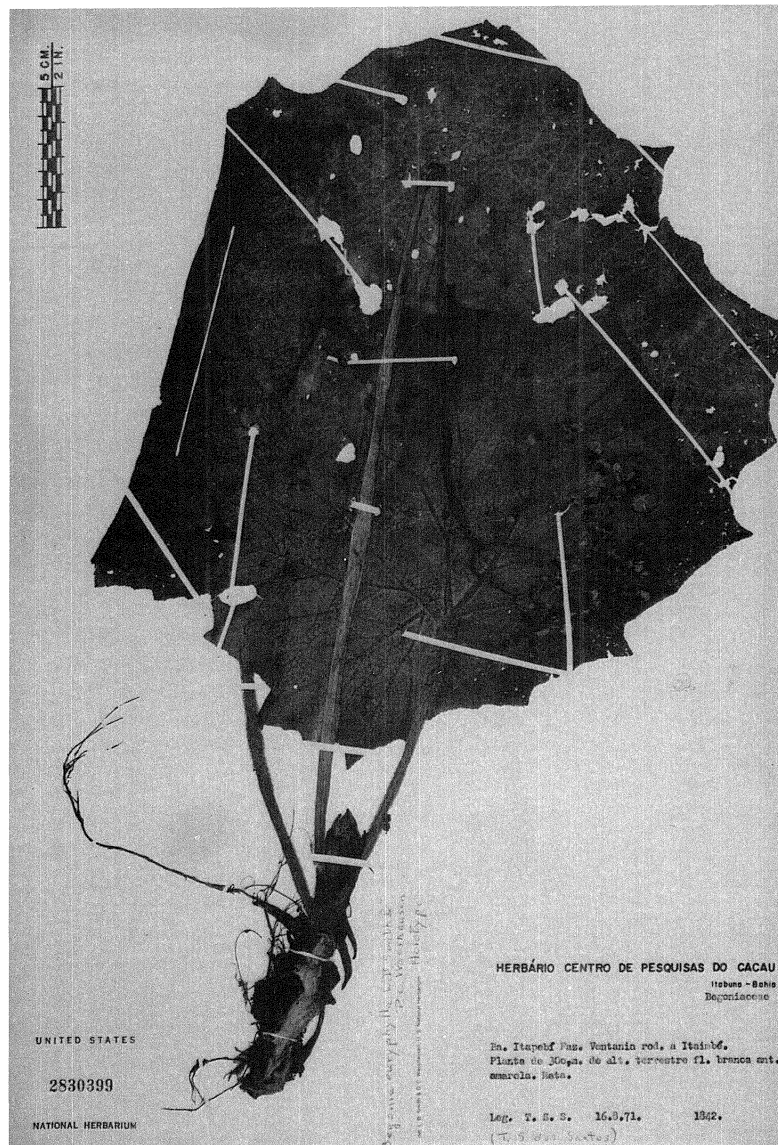


FIGURE 2. Holotype of *Begonia euryphylla* L.B. Sm. ex S.F. Sm. & Wassh. (*dos Santos* 1842, US).

*A. B. holtonis* A. DC. cui affinis, sed inflorescentia bis dichotoma, foliorum lamina suboblongis, stipulis persistentibus differt.

**Plant** 1 m high, saxicolous, in rock fissures. **Stem** slender, < 5 mm wide for upper 40 cm, glabrous, red (dry); internode distance 3 cm narrowing to 2 cm distally. **Stipules** persistent, glabrous, ovate, 10–12 mm long, 5–6 mm wide, thin, with midvein darkest in color, with soft cuspidate tip. **Petioles** short, 3–10 mm long. **Blades** subcoriaceous, 8–9.5 cm long, 2.5–3.5 cm wide, broadly rounded and apiculate distally,

often dimidiate basally (offset 2–6 mm), ciliate-serrulate along margin, elsewhere glabrous, upper surface microscopically covered in ridges and pits, subsurface tiled with flat circular light-colored idioblasts (cystotyles & cystospheres—swellings on surface of cells), both surfaces with large wartlike (raised, usually circular, often open centrally especially on ventrum) spots on holotype due to fungus or mechanical injury. **Peduncle** 1, apparently terminal, 2 cm long from distalmost leaf scar to basal bifurcation. **Inflorescence** twice dichotomous, 4 cm high from tip

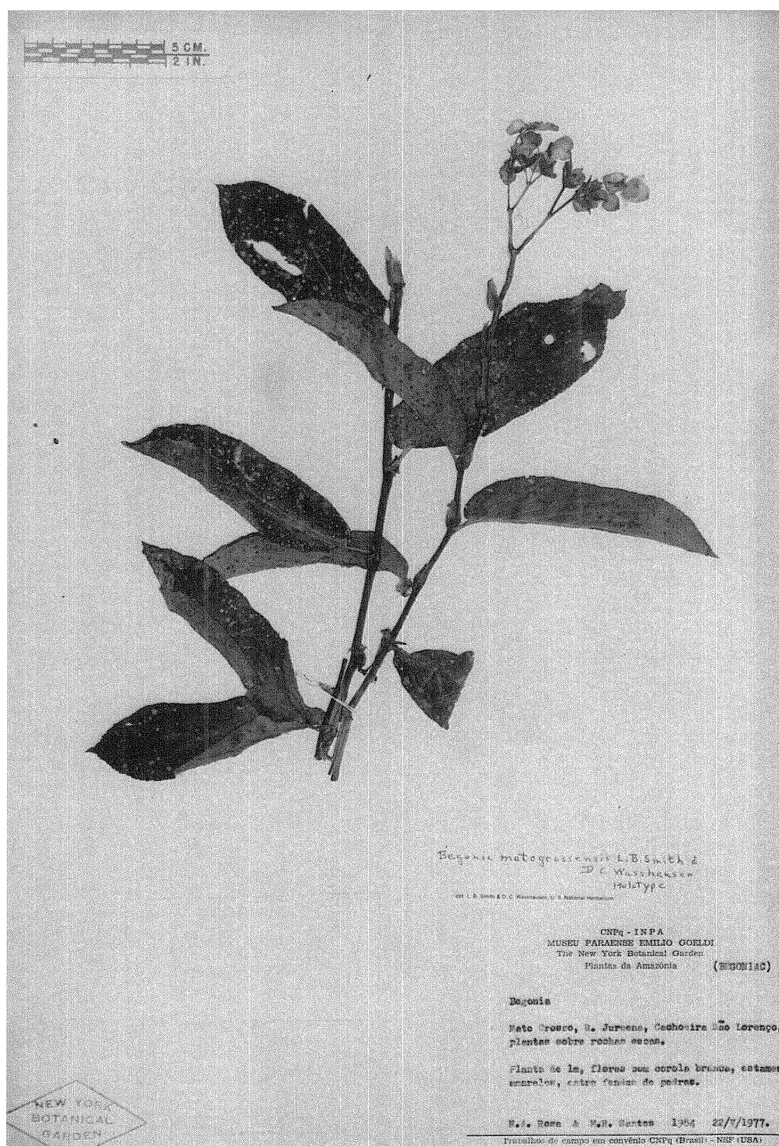


FIGURE 3. Holotype of *Begonia matogrossensis* L.B. Sm. ex S.F. Sm. & Wassh. (Rosa & Santos 1984, NY).

to basal bifurcation and 5.5 cm wide, glabrous; bracts deciduous, the upper bracteoles elliptic, setose-apiculate, entire, 8 mm long, up to 4 mm wide. **Staminate** pedicels 8 mm long; tepals 4, the outer very broadly ovate with a blunt acuminate, 10 mm  $\times$  8 mm, cordate at base, white, the inner, narrow 8  $\times$  3 mm; stamens yellow, numerous (>25); filaments very long and slender; anthers short, obovoid. **Pistillate** flowers and capsules absent.

***Begonia mattos-silvae*** L.B. Sm. ex S.F. Sm. & Wassh., sp. nov. TYPE: Brazil. Bahia: Ita-

marajú, Fazenda Pau-brasil, ca. 5 km ao NW de Itamarajú, 17°1'S, 39°33'W, região de mata higrófila Sul Baiana, plantação de cacau, afloramento de rochas na área, 30 Oct. 1979, L.A. Mattos Silva & H.S. Brito 660 (Holotype: US; Isotype: CEPEC).

FIGURE 4.

A *B. sylvatica* Meissn., cui affinis, sed foliorum lamina latissime elliptica imbricato-cordata, capsulae alia majore latiore quam alta differt.

**Plant** herbaceous, perennial, 60 cm high, glabrous except for the upper side of the leaf-blade.

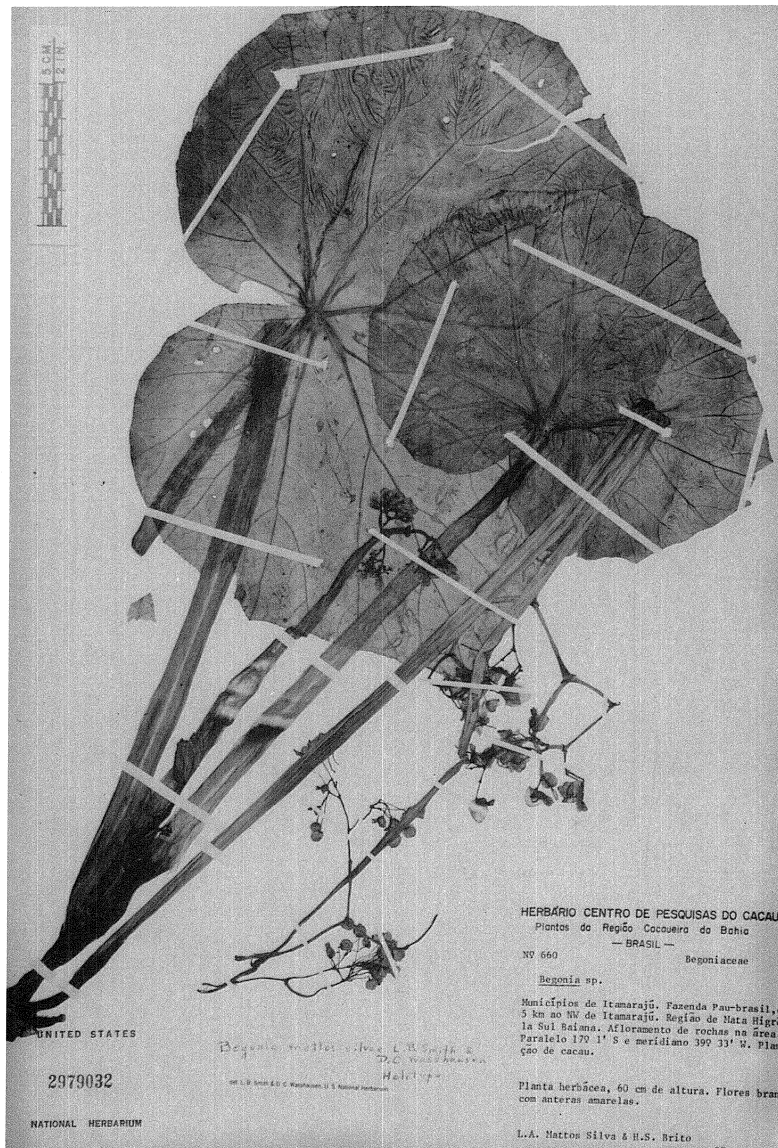


FIGURE 4. Holotype of *Begonia mattos-silvae* L.B. Sm. ex S.F. Sm. & Wassh. (Mattos Silva & Brito 660, US)

**Stem** with distinct internodes 2–4 cm between mature leaves. **Stipules** ovate, apparently deciduous, 1.75–2.5 cm long, membranaceous, with long tapered tip. **Petioles** 20–40 cm long, 7–12 mm at widest point. **Blades** alternate, green, membranous, transverse, very broadly elliptic, acuminate at the side (10–15 cm from petiole to tip in larger leaves), imbricate-cordate with the lobes overlapping, 16–25 cm across and 11–16 cm from leaf top to bottom of lobes in large leaves, very sparsely setulose with widely scattered white hairs above, glabrous below, mar-

gins entire with shallow lobes. **Peduncle** 25–40 cm long. **Inflorescence** 5–6 dichotomous, lax; bracts dark, membranous, small,  $1 \times 0.25$  mm, but moderately persistent, at least at basal fork of inflorescence. **Staminate** pedicels up to 13 mm long; tepals white, 4, the outer suborbicular 5–7  $\times$  4–5 mm, the inner narrow 5  $\times$  1.5 mm; stamens yellow, > 30; anthers narrowly oblong; connective slightly produced, broadly rounded. **Pistillate** pedicels 5–7 mm long, tepals 5, 4 mm long, white?; styles 3, 1 mm long, connate at very base; stigmas bifid; stigma horns twice

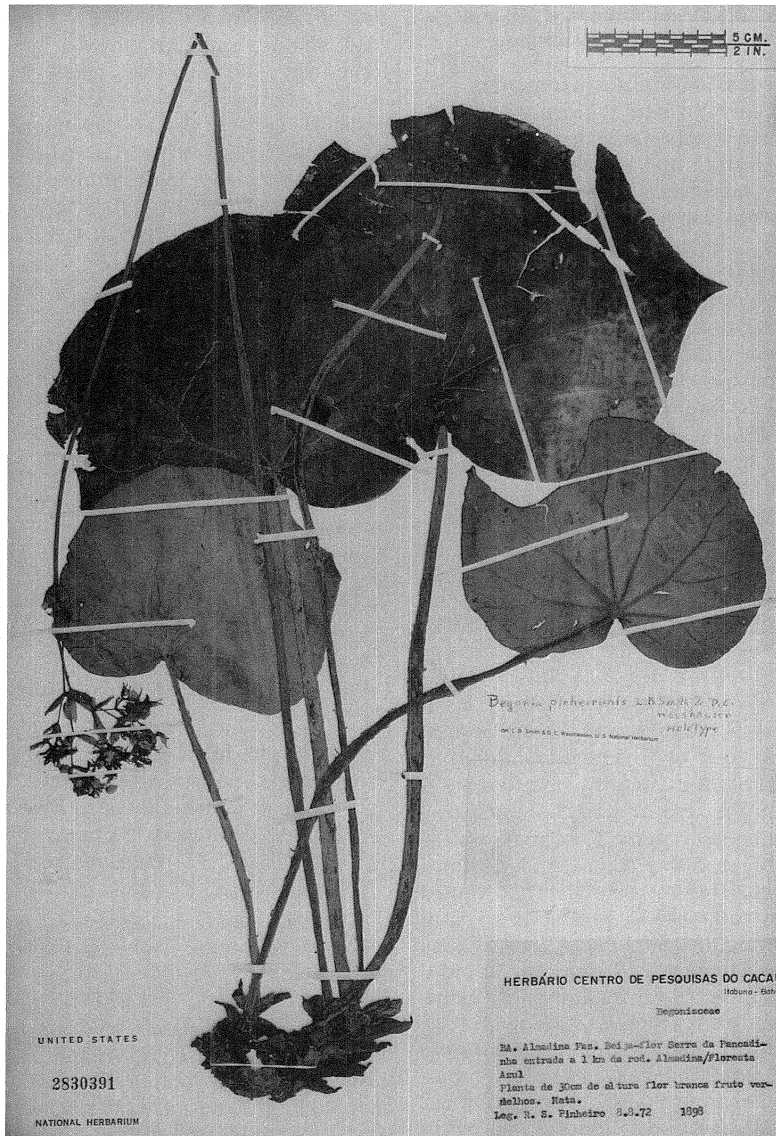


FIGURE 5. Isotype of *Begonia pinheironis* L.B. Sm. ex S.F. Sm. & Wassh. (Pinheiro 1898, US).

openly coiled, 2 mm, covered with rufous papillae. **Capsule** ellipsoid, 5–5.5 × 2–3.2 mm; wings quite unequal, major wing: 1) in holotype, immature, more opaque, uniform, tepal-like, 9–7 mm wide × 7 mm deep; or 2) in paratype, mature, more transparent through a celled matrix surface, 8–10 mm wide × 6–7 mm deep; minor wings (beyond capsule) 1 mm wide in holotype, up to 2 or 3 mm wide in paratype; placentas simple.

PARATYPE: BRAZIL. Bahia: Rodovia BA-265, trecho Caatiba a Barra do Choça a 6 km a W de

Caatiba, região da mata mesofila Sul Baiana, mata parcialmente perturbada, 1000 m alt., 15 Mar. 1979, S.A. Mori & T.S. dos Santos 11585 (CEPEC, US).

***Begonia pinheironis*** L.B. Sm. ex S.F. Sm. & Wassh., sp. nov. TYPE: Brazil. Bahia: Almada, Fazenda Beija-flor, Serra da Pancadina entrada a 1 km da rodagem Almada a Floresta Azul, mata, 8 Aug. 1972, R.S. Pinheiro 1898 (Holotype: CEPEC, H.N. 8706; Isotype: US, #2830391).

FIGURE 5.

A *B. fluminensis* Brade, cui affinis, sed foliorum petiolis squamuligeris, laminis apiculatis differt.

**Plant** herbaceous, perennial, rhizomatous?, 30 cm tall, vegetatively covered in closely and finely lanate, soft, tan scales absent only from mature upper leaf surface and mature stipules (except midvein). **Stem** erect or ascending, stout, covered with persistent, densely imbricate stipules; internodes 1 cm long. **Stipules** persistent, ovate, 25–35 mm long, chartaceous, entire, soon glabrous except along proximal midvein surface, dark brown, reticulate nerved. **Petioles** 19–24 cm long, 5–8 mm wide at maturity, the clothing scales quite persistent, though peeling to reveal darker red-brown under stem-like surface in some places. **Blades** at maturity transverse, broadly elliptic, apiculate on one side, otherwise entire, cordate, 14–19 cm wide, 9–11 cm from base to top, glabrous or with sparse whitish hairs above, lanate beneath. **Peduncles** 34–82 cm long, 3.5–7 mm in diameter, peeling more rapidly than petioles. **Inflorescence**, when young, spheroid, composed of dense composite-like bracts, 15 mm tall, 15–18 mm across; at intermediate maturity with 2 dense cymes of staminate flowers atop 1.5 cm branches above basal dichotomy, heads 2 cm high and 2.5 cm across; when mature up to 5 or 6 times dichotomous, 7.5 cm tall from basal dichotomy, the two basal branches 3.5 cm, the next distal 1.5–2 cm, flowers displayed in an open cyme 5.5 cm across (as pressed on isotype) above the second dichotomies; in fruit expanded to somewhat flat-topped cyme, 10.5 cm tall, 14–15 cm across, basal branch 4.5 cm long, the next distal 2 cm; bracts persistent, ovate, attenuate, 17 mm long at basal fork, 10 mm at more distal dichotomies, membranaceous, glabrous; bracteoles narrow, 6 × 1 mm including 2 mm filamentous tip. **Staminate** pedicels 4 mm; tepals 4, white, the outer orbicular, 5 × 5 mm; stamens 30–40; anthers oblong; connective tissue slightly exerted broadly rounded; (the holotype centrally includes an extraneous partial inflorescence of staminate flowers lacking bracts and bracteoles and with larger pedicels that must be from a different species). **Pistillate** pedicel 1 mm; flowers immature, 0.5–2.5 mm long from capsule base to tip of perianth, dark red or purple, subtended by bracteoles longer than the capsule and perianth by 1.5 mm, covered with tiny white scales or idioblasts on tepals, capsule and wings; tepals when immature forming a hard pyramid atop capsule, 0.75–1 mm long, when mature 2 mm and more petaloid in appearance; style 1 mm long, not connate, covered with white tomentum; stigma with white tomentum, bifid; stigma horns 1 mm, straight (not coiled). **Capsule** evident in young

flowers, ovary less than 1 mm tall in the most mature immature flower, wings unequal, large wing 1 mm wide, small wings 0.5 mm wide; mature fruit purple, glabrous, with 6 mm pedicels; capsule 8 × 4 mm, purple; wings unequal, markedly veined, transparent, purple at least peripherally, major wing 10 mm in height, ± triangular, 10 mm across top, 13 mm tip to capsule base, minor wings 6 × 2 mm and of uniform width.

A second collection strongly approaches this taxon: Brazil. Bahia: Município de Camacã, Ramal que liga Biscó (lugarejo) ao povoado de São Joao do Panelinha, km 4, plantação de cacau, 14 Jul. 1978, T.S. dos Santos & L.A. Mattos Silva 3302 (US).

This collection resembles the type at the inflorescence of intermediate maturity stage. It has petioles, scales, leaves, peduncles, and bracteoles that strongly match the type. Unlike the type, it has long internodes (3.5 cm and more) and lacks bracts (deciduous?) in the inflorescence. The authors hesitate to make this a paratype as it conceivably could be another taxon. The label habit translates: 40 cm tall herbaceous plant with inflorescence reaching 80 cm and white flowers.

**Begonia pluvialis** L.B. Sm. ex S.F. Sm. & Wassh., sp. nov. TYPE: Brazil. Paraná: Morretes, Colonia Floresta, dos matacões de granito de angusta de morro, 50–100 m, 11 Apr. 1968, G. Hatschbach 21328 (Holotype: MBM; Isotypes: (3) US). FIGURE 6.

A *B. fernandoi-costae* Irmscher, cui affinis, sed tepalis masculinis orbicularibus et 10 mm longis differt. In *B. fernandoi-costae* Irmscher, tepalis masculinis longitriangularibus et 15 mm longis.

**Plant** suffrutescent, saxicolous, somewhat fleshy, reddish in color, hispid except in inflorescence. **Stem** stout, 5–15 mm wide, sulcate, hispid like petioles, usually retrorse strigose with age; internodes 2.5–6 cm, longer proximally down stem. **Stipules** along stem, persistent, 10–20 × 10–15 mm, ovate, acute, thick, firm, covered with long hairs. **Epipetiolar stipules** 2–4 cm distal from petiole base, present on some (all?) leaves, ovate, 10 × 10 mm, probable sources at which epipetiolar leaf and inflorescence buds arise and the proximal 2–4 cm of former petiole then becoming stem and yielding apparently opposite leaves at the old epipetiolar stipule (node). **Petioles** erect, 10–25 cm long, hispid, with long, ferruginous, often wide, often fringed hairs, velutinous to retrorse strigose. **Blades** “opposite,” suborbicular, oblique, acute or acuminate, 7–13 cm from petiole to drip tip, 10–18 cm long, 7–15 cm wide, 2–4 cm deeply and narrowly cordate at base with the lobes

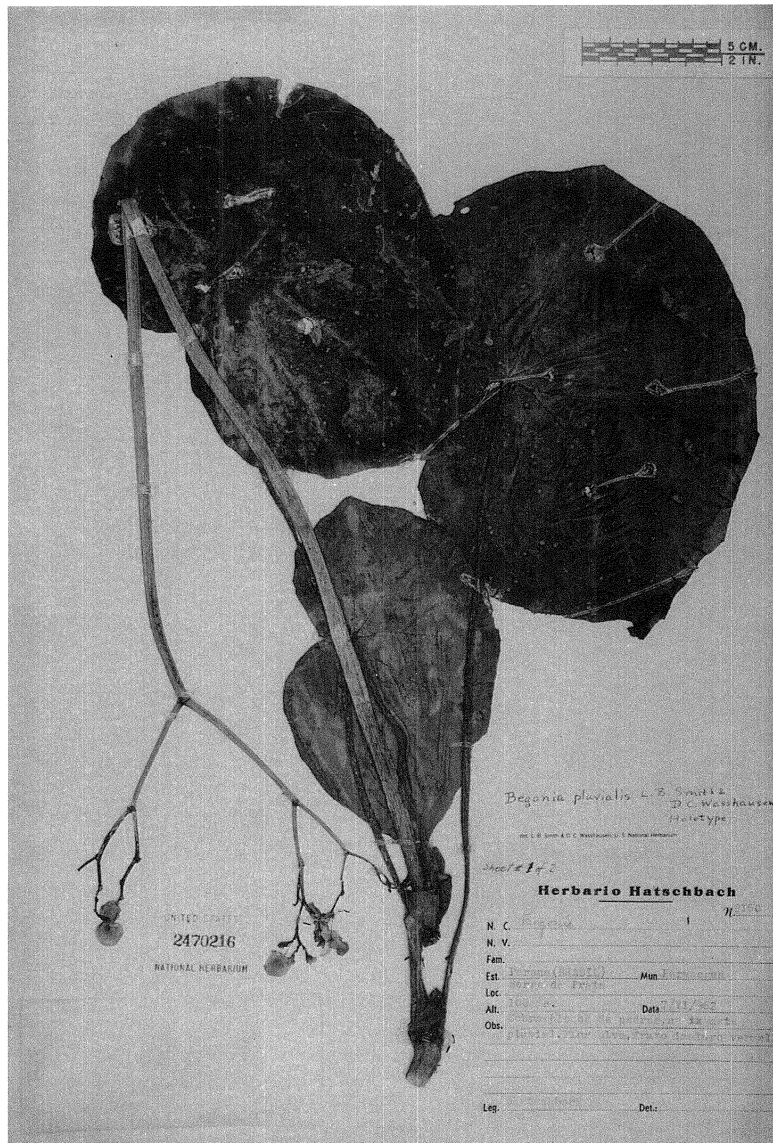


FIGURE 6. Paratype of *Begonia pluvialis* L.B. Sm. ex S.F. Sm. & Wassh. (Hatschbach 9160, US).

sometimes overlapping, strigose above and below with simple hairs, on subveins hairs denser, whorled or wide and fringed, lower surface tiled in tiny whitish idioblasts (cystotyles or cystospheres—swellings on surface of cells). **Peduncles** 30–60 cm long, sparsely hispid on lower half, mostly glabrous on upper half, up to 9 mm thick. **Inflorescence** terminal or lateral, subtended by a pair of leaf petioles, 4–5 times dichotomous, 10–14 cm long, glabrescent. **Bracts** quickly deciduous; bracteoles membranaceous, lanceolate, 2–3 mm long, attenuate. **Staminate**

pedicels 6–7 mm long; tepals 4, whitish, the outer suborbicular, 9–10 mm long, the inner elliptic, 8 × 5 mm; stamens 20–25; anthers subsessile, linear; connective tissue exerted, obtuse. **Pistillate** pedicels 6 mm long when petals open, 15 mm long in fruit; tepals whitish, 7 × 4 mm; styles 3, fat (1 × 1 mm), connate at base; stigmas minutely rufous papillose, normally all 3 bifid with 1 mm long slightly curved horns, in holotype one flower with one unbranched stigma (and 2 branched), obtuse at apex or horn tip. **Fruit**, young, green; capsule ellipsoid, 13–15 × 6–7 mm; wings 3, unequal; major wing ovate, spreading, at maturity with mostly horizontal





FIGURE 7. Holotype of *Begonia polygonifolia* A. DC. var. *differens* L.B. Sm. ex S.F. Sm. & Wassh. (dos Santos, Mattos Silva & Thompson 3383, US).

raised veins, 12–14 × 15 mm, minor wings 2, narrowly crescentiform, 2–3 mm wide; placentas simple.

PARATYPE: BRAZIL. Paraná: Paranaguá, Serra da Prata, sobre blocos de pedras, na mata pluvial, 100 m, 7 Jun. 1962, *G. Hatschbach* 9160 (US (2); MBM).

***Begonia polygonifolia* A. DC. var. *differens***  
L.B. Sm. ex S.F. Sm. & Wassh., var. nov.  
TYPE: Brazil. Bahía: Almadina, Fazenda

Beija-Flor, ramal ca. entrada no km 3 da rodovia Almadina a Floresta Azul, final do ramal, plantação de cacau, sobre pedras, 9 Nov. 1978, *T.S. dos Santos, L.A. Mattos Silva & C.B. Thompson* 3383 (Holotype: US; Isotype: CEPEC). (Section: *Wageneria*).

FIGURE 7.

A *B. polygonifolia* A. DC. cui affinis, foliorum laminis petiolatis differt et prope *B. fagifolia* Fisch. sed planta glabra.

**Plant** herbaceous, epiphytic, saxicolous or ar-

boreal, perennial. *Stem* repent, a climbing vine with adventitious roots at the nodes, sulcate, red, 4 mm wide; internodes 3.5–10 cm long. *Stipules* persistent, ovate, apiculate, 15 × 7–11 or more mm, membranaceous, red. *Petioles* 1.5 cm or more long in mature leaves. *Blades* elliptic, with petiole and midvein colinear, short (type) or long apiculate, 8–11 × 3–4 cm, entire, slightly darker above, ventrum tiled with tiny white idioblasts (cystotyles or cystospheres—swellings on surface of cells). *Peduncles* erect, probably up to 10 cm long. *Inflorescences* strongly protandrous (seemingly unisexual in holotype as pistillate flowers only buds, each at base of a male pedicel in the “male” inflorescence), laxly 5–6 dichotomous; *bracts* persistent, minute, < 1 mm. *Staminate* pedicels 6 mm at maturity, subtended by small (1 mm) narrow persistent bracteole; flowers white, in distal umbels of 2 or 3; tepals 4, dark glanduliferous, subequal, the outer suborbicular, 3 mm long, the inner nearly as wide; stamens 25, yellow, free; anthers oblong; connective tissue slightly exerted, broadly rounded. *Pistillate* pedicels 9–10 mm in open flower; flowers in distalmost pairs (or in 5's with a flower at the penultimate bifurcation); styles 3, free, 1 mm long; stigmas bifid; stigma horns 2 mm, with tiny white tomentum, 1½ turns outwardly spirally flexed distally; tepals 5, dark glanduliferous. *Capsule* narrowly ellipsoid, young, greenish, 7 mm tall; major wing 20 mm wide at maturity, dwarfing the hardly expressed minor wings; placentas simple.

PARATYPE: BRAZIL. Bahía: Rio Belmonte, 20 ft “alta in sylvis super arbores minores,” Aug. 1816–1817, *Prinz Maximilian A.P. zu Wied-Neuwied s.n.* (photo at US from NY?).

***Begonia russelliana*** L.B. Sm. ex S.F. Sm. & Wassh., sp. nov. TYPE: Brazil. Grown in US research greenhouse from seed collected in Bahía, Rio Piau, west of Valença, by Fazenda Floresta, adjacent to small waterfall, in sandy loam in the shade of the river forest, 50 m, 24 Apr. 1976, *G. F. Russell s.n.* (Holotype, US; Isotype, US). FIGURE 8.

*A. B. saxifraga* A. DC., cui affinis, sed foliorum stipulis, pedunculo et inflorescentias plus glabris quam ciliatis et flores fasciculatus non apertus et sejunctus in inflorescentia differt.

*Plant* herbaceous, perennial. *Stem* rhizomatous(?)—prostrate but sending up flowering branches, internodes ca. 5 mm long, short and stout but distinct. *Stipules* persistent, imbricate, ovate, attenuate to a soft-setose apex, 15 mm long, different in color (red or brown?) from leaves, membranaceous, apparently glabrous. *Petioles* slender, 2–7 cm long, persistently ves-

tite with long, soft, simple, ferruginous trichomes. *Blades* green, transverse, broadly elliptic, usually shortly apiculate, shallowly cordate, 10–15 cm wide at maturity, 1–4 cm wide and most membranaceous when young, undulate-dentate, evenly and very sparsely vestite above with short simple trichomes, beneath pale along the nerves and vestite with longer (petiolar-like) trichomes, with minute white idioblasts scattered on both surfaces. *Peduncles* erect, 6.5–13.5 cm long, very sparsely vestite with minute dark glands or, on shortest peduncle, with sparse long trichomes near distal tip. *Inflorescence* bisexual, laxly twice dichotomous with flowers densely massed at the ends of the branches, dark-glandular like the peduncles; bracts persistent, glabrous, membranaceous, ovate, narrow, 2–4 × 1–2 mm; bracteoles similar, a bit smaller. *Staminate* pedicels 5 mm at anthesis; tepals 4, white, the outer suborbicular, 4–6 mm long, the inner elliptic, shorter; stamens few; anthers oblong; connective slightly produced, broadly rounded. *Pistillate* pedicels reaching 2 mm long in fruit; tepals 5.6 × 2 mm, unequal—some shorter (4 × 1.5 mm); styles 3, 0.5 mm long; stigmas bifid, horns 1.5 mm, coiled openly twice. *Capsule* ellipsoid, 6 × 2 mm; wings ovate, slightly unequal, major wing 7 mm wide, 9 mm deep about capsule; minor wing 4 mm wide; placentas simple.

***Begonia serranegrae*** L.B. Sm. ex S.F. Sm. & Wassh., sp. nov. TYPE: Brazil. Paraná: Guaraqueçaba: Mata pluvial sombria, depressões úmidas, 100 m, 10 Dec. 1970, *G. Hatschbach 25785* (Holotype US; Isotype MBM). FIGURE 9.

*A. B. gardneri* A. DC., sui affinis, sed pedunculo multo brevior, foliorum lamina inflorescentias occultantibus, stipulis persistentibus, petiolis dense pubescentibus differt.

*Plant* herbaceous, perennial, 1.5 m high, densely appressed ferruginous-pubescent. *Stem* flexuous fleshy, losing pubescence with age; internodes variable, 1–1.5 cm on one sterile 10-noded sprig, 2–7+ cm on two fertile sprigs, decreasing in size distally. *Stipules* persistent, ovate, up to 11 mm long, likewise pubescent, with raised (keeled) proximal midvein. *Petioles* 4–9.5 cm long, usually densely pubescent. *Blades* digitate, 15 cm wide, unequally 3–4-lobed; the longest lobe oblique or transverse to the petiole, ovate, acuminate, 5–9 cm long, 9–15 cm from leaf base, cut more or less half way to the base; the other lobes descending in size across the top of the leaf, the top usually the second largest lobe, loosely ferruginous-stellate lanose above in young leaves becoming rapidly very sparsely whitish pubescent with age, be-

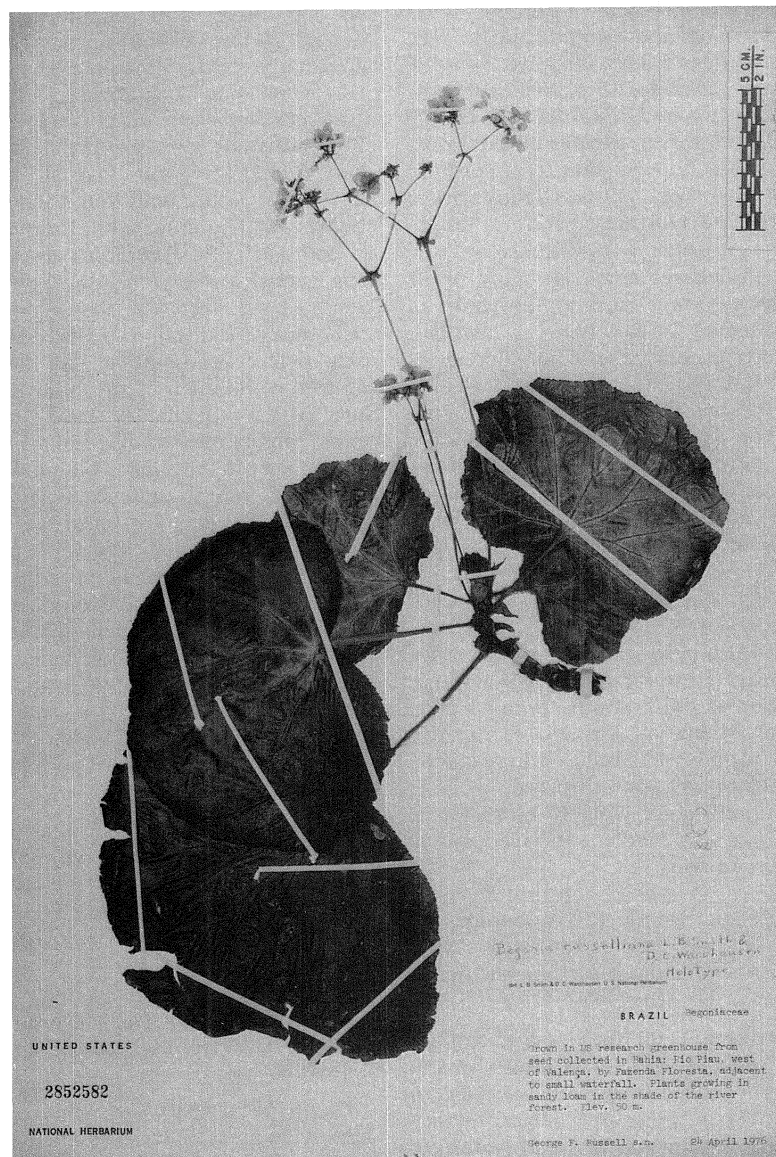


FIGURE 8. Holotype of *Begonia russelliana* L.B. Sm. ex S.F. Sm. & Wassh. (Russell s.n., US).

neath densely ferruginous on young leaves, sparser in age but more persistent (also in color) than on upper blade, especially on the nerves, flat light tiny scales dense and persistent on lower surface. **Peduncles** densely ferruginous-pubescent, 3–5 cm long. **Inflorescence** seemingly unisexual although probably strongly protandrous, 4-dichotomous, densely pubescent; bracts persistent, narrow, 10–11 mm long at base of female inflorescences, 6 mm at base of male inflorescence, becoming shorter distally, 3–6 mm, as they turn to bracteoles, densely ferruginous-

pubescent on proximal surface, glabrate within (distally). **Flowers** white. **Staminate** pedicels 4–5 mm; tepals 4, the outer suborbicular,  $8 \times 7$  mm, the inner narrowly obovate  $5-6 \times 2.5-3$  mm; stamens ca. 25; filaments free, very short; anthers oblong, connective tissue exerted, obtuse. **Pistillate** pedicels 8 mm in late flower, 20 mm in fruit; tepals 5, obovate 4–5 mm long; styles 3, half-connate,  $1 \times 1$  mm; stigmas bifid, horns somewhat tightly  $1\frac{1}{2}$  times coiled. **Ovary** ellipsoid, capsule  $9 \times 6$  mm in mature fruit, completely surrounded by the unequal ovate

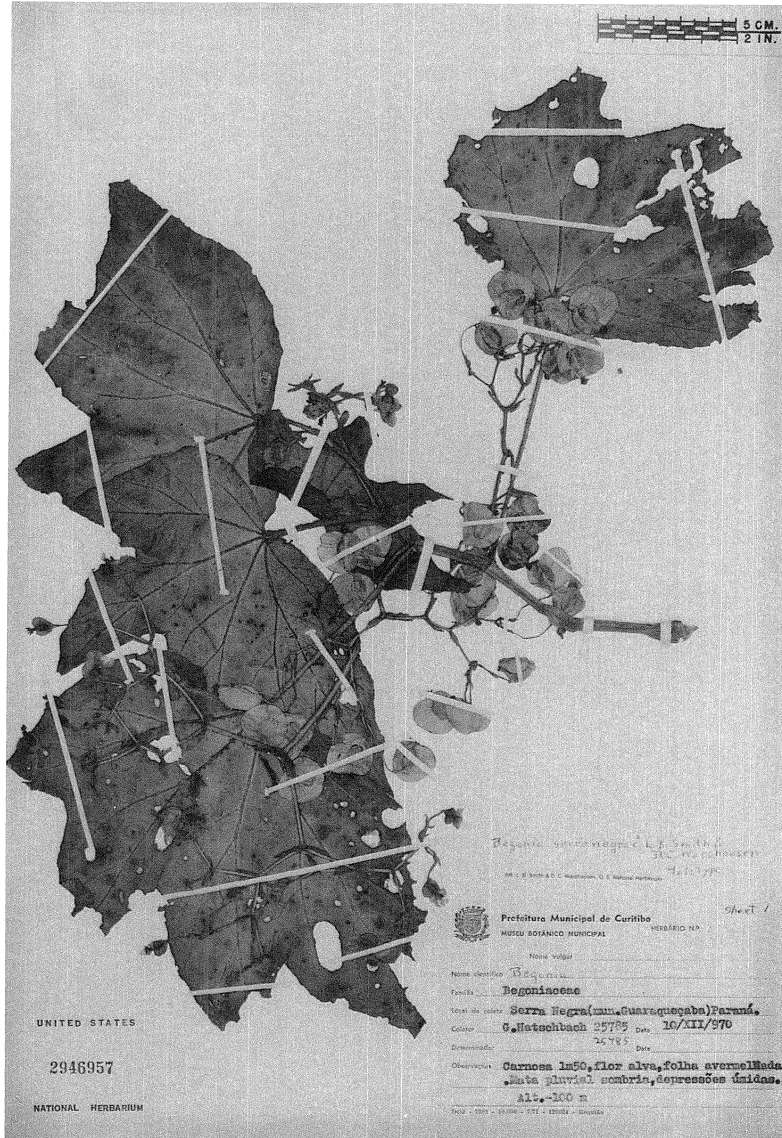


FIGURE 9. Holotype of *Begonia serranegrae* L.B. Sm. ex S.F. Sm. & Wassh. (Hatschbach 25785, US).

wings; major wing at maturity 10 mm wide and 14 mm deep; minor wing 6.5–7.5 mm wide; placentas simple.

***Begonia windischii*** L.B. Sm. ex S.F. Sm. & Wass., sp. nov. TYPE: Brazil. São Paulo: São Sebastião, Praia de Santiago, ca. 25 km SW of São Sebastião, 30 m, Dec. 1973, *P. Windisch* 263 (holotype US). FIGURE 10.

A *B. dichroa* Sprague, cui affinis, sed stipulis magis persistentibus, inflorescentia femineorum fasciculata non dichotomica et ala magna dominans aliquantum subaequalibus diversus differt.

**Plant** herbaceous, perennial, known only from a terminal fragment but probably a meter or more high. **Stem** (dry) 5 mm thick, deeply sulcate, dark red, glabrous; internodes 2.5, 4 and 7 cm long, moving proximally. **Stipules** ovate, 2–3 cm long, 1–(2?) cm wide, membranaceous, long persistent even after leaves, most glabrous but young ones at tip of type with long ferruginous hairs on proximal surface. **Petioles** 5.5–9 cm long, glabrous, sulcate. **Blades** (incomplete) transverse, ovate, ca. 18 cm wide, 10 cm deep, shallowly cordate, entire, glabrous, probably carnose, with dense tiny light-colored idi-

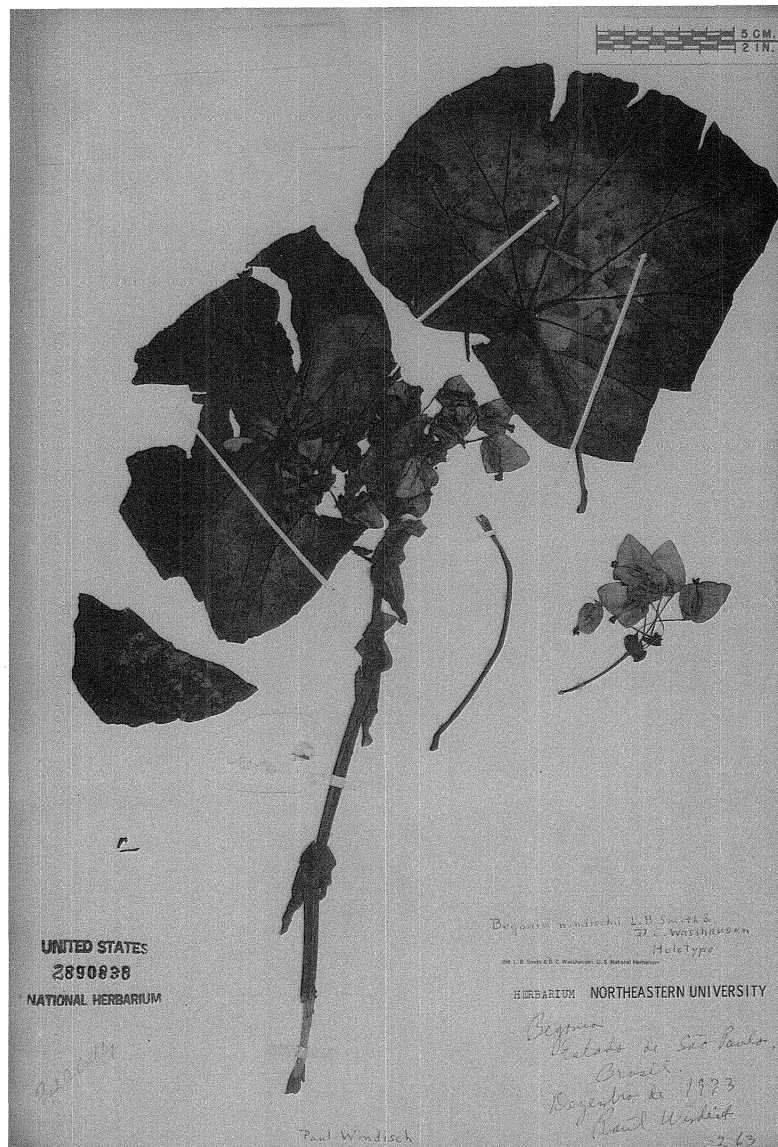


FIGURE 10. Holotype of *Begonia windischii* L.B. Sm. ex S.F. Sm. & Wassh. (Windisch 263, US).

oblasts (cystotyles or cystospheres—swellings on the surface of cells) on both surfaces. **Peduncles** axillary, in fruit 3 cm long, slender, sulcate. **Inflorescence** nearly covered in flower by stipules along stem; in fruit of fascicled flowers; bracts fasciculate, persistent, suborbicular,  $6 \times 3$  mm, entire. **Staminate** pedicels 14 mm; tepals 2(?), ovate,  $10 \times 6$  mm, slightly apiculate, externally covered with 1 mm simple trichomes; stamens ca. 20; anthers  $0.5 \times 2$  mm; filament 1 mm long. **Pistillate** pedicels 1 mm; flowers young; tepals 3 mm long; styles 3, free; stigma bifid, horns not coiled?. **Fruit** pedicels 25 mm

long, slender, sulcate and flattened; capsule narrowly ovoid,  $10 \times 4$  mm; major wing 13 mm wide, 15 mm deep; minor wing 7–5 mm wide; placentas simple.

#### NEW VARIETY OF *BEGONIA ARBORESCENS*

*Begonia arborescens* Raddi var. **oxyphylla** (A. DC.) S.F. Smith, stat. nov. BASIONYM: *Begonia oxyphylla* A. DC., Ann. Sci. Nat. Bot. Ser. IV, 11: 140. 1859.

No type is cited by Decandolle in the original

publication although two potential syntypes are cited by him in his treatment in Martius, Fl. Brasil. 4(1): 379. 1861. These are *Pohl s.n.* from M. Serra d'Itaguahi (n.v.) and *Schott s.n.* from Serra de Macacu in Rio de Janeiro or Guanabara, the latter has a type photograph from Berlin (Field Mus. #20910). In his treatment in DC. Prodrumus 15(1): 377. 1864, he cites only two (n.v.) different *Pohl s.n.* collections: 1) Serra de Mocado and 2) in umbrosis ad rivos Basso di Serra. The microfiche of the Candolle herbarium shows only a scrappy specimen of *B. oxyphylla* from the Vienna Herbarium with a partial inflorescence in fruit and three young, not fully fleshed-out leaves.

*Begonia oxyphylla* is a linear-leaved form of the normally obovate *B. arborescens*. There seems little material since the era of the types,

although *B. oxyphylla* is pictured in cultivation (Graf 1982: 463; Thompson & Thompson 1981: 94). There is material from a type locality (?) Cachoeiras de Macacu (*Araujo 2033*) that is typical *B. arborescens*, a wide spread and often collected species of Guanabara. It seems best to maintain the distinctive leaf form as a variety.

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