

# **Begonia bullatifolia L. Kollmann and Begonia leopoldinensis L. Kollmann (Begoniaceae) : two new species from the Atlantic Forest in the State of Espírito Santo, Brazil**

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# Begonia bullatifolia L. Kollmann and Begonia leopoldinensis L. Kollmann (Begoniaceae), two new species from the Atlantic Forest in the State of Espírito Santo, Brazil

Ludovic Jean Charles Kollmann

## Abstract

KOLLMANN, L. J. C. (2009). *Begonia bullatifolia* L. Kollmann and *Begonia leopoldinensis* L. Kollmann (Begoniaceae), two new species from the Atlantic Forest in the State of Espírito Santo, Brazil. *Candollea* 64: 117-122. In English, English and French abstracts.

This paper presents a contribution to the knowledge of the Brazilian *Begoniaceae*. Two new species, *Begonia bullatifolia* L. Kollmann and *Begonia leopoldinensis* L. Kollmann, are described and illustrated. Both are related to *Begonia santos-limae* Brade.

## Key-words

BEGONIACEAE – *Begonia* – Brazil – State of Espírito Santo – Atlantic Forest – Taxonomy

## Résumé

KOLLMANN, L. J. C. (2009). *Begonia bullatifolia* L. Kollmann et *Begonia leopoldinensis* L. Kollmann (Begoniaceae), deux nouvelles espèces de la Forêt Atlantique de l'Etat d'Espírito Santo, Brésil. *Candollea* 64: 117-122. En anglais, résumés anglais et français.

Ce travail présente une contribution à la connaissance des *Begoniaceae* brésiliennes. Deux nouvelles espèces, *Begonia bullatifolia* L. Kollmann et *Begonia leopoldinensis* L. Kollmann, sont décrites et illustrées. Les deux espèces sont proches de *Begonia santos-limae* Brade.

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The genus *Begonia* L. is pantropical and comprises about 1400 species divided among 63 sections. More than 240 species, distributed in 13 sections, occur in Brazil (SMITH & al., 1986; DOORENBOS & al., 1998), mostly native to the Atlantic Forest (DUARTE, 1961). The Atlantic Forest is one of the most important World Hotspots (MITTERMEIER & al., 1999; SIMÕES & al., 2002) and estimated that is home to approximately 8000 endemic species of plants (MYERS & al., 2000).

Recent field works in the state of Espírito Santo contributed to the discovery of new species of *Begonia* (KOLLMANN, 2003, 2006, 2007, 2008; JACQUES & MAMEDE, 2004), illustrating the high biodiversity and the number of endemic species of this state.

Following fieldwork in the mountainous region of central Espírito Santo State, two species of *Begonia* were collected and described here as new species. These two species are part of sect. *Knesebeckia* (Klotzsch) A. DC. characterized by their rhizomatous habit, persistent stipules, stellate trichomes, a connective not extending beyond the anther, bifurcate placental branches, and ovules present on both faces of the placental branches.

**1. *Begonia bullatifolia* L. Kollmann, spec. nova** (Fig. 1)

**Typus:** BRAZIL. Edo Espírito Santo: Domingos Martins, R. Kautsky forest, 15.X.2006, Kollmann, L. 11058 (fl. fr.) [flower in cultivation 15.VII.2007] (holo-: MBML; iso-: RB).

*Species haec Begoniae santoslimae Brade affinis, sed lamina bullatis nec peltatus, bracteis persistentibus et floribus pistillatis 6-tepalis differt.*

*Rhizomatous* herb 10-15 cm tall (excluding inflorescence), sub-erect, hairy, with glandular trichomes, stellate trichomes erect and flattened stellate trichomes on abaxial face. *Stems* 0.8-1.2 cm diam., green-brown, with lenticels, internodes 0.4-0.7 × 0.8-1 cm, stellate trichomes red. *Stipules* persistent, 1.35-2 × 0.8-1.2 cm, ovate to oblong, papyraceous when dry, translucent, greenish, base red, nerves reddish, carinate near the apex, mucronate, adaxial face glabrate, abaxial face with stellate trichomes. *Petioles* 5.5-12.5 × 0.3-0.6 cm, cylindrical, with lenticels, stellate trichomes red. *Leaf blades* 7.5-10 × 9-13 cm, green, asymmetric, reniform to orbiculate, base cordate, adaxial face bullate, white when young due to the trichomes, adaxial face with white flattened stellate trichomes, abaxial face with red erect stellate trichomes; margins entire to repand, with hydathode; venation actinodromous, 7-9-veined, pilose, stomates single. *Inflorescence* 21-35 cm long, red-brown, thyriform, with lenticels, first internode 18.5-24 cm, second 3.5-4.5 cm, third 2 cm. *Bracts* of first node leaf like, 1.9-2.5 × 2.1-3.1 cm, all others 0.8-1.5 × 1-1.5 cm,

persistent, green, veins pinkish, papyraceous and brown when dry, obovate to orbiculate, apex retuse and lightly mucronate, both faces with glandular trichomes when young, abaxial face with stellate trichomes. *Staminate flowers* peduncles 0.8-1.4 cm long, white-pinkish, glandular trichomes; sepals 2 (outer tepals), 1.6-2.2 × 0.9-1.2 cm, white-pinkish, ovate, apex obtuse, adaxial face with glandular trichome; petals 2 (inner tepals), 1.2-1.5(-1.9) × 0.57-0.85 cm, white, obovate to espatulate, base cuneate, apex obtuse; stamens 26-37, yellow, filaments unequal, fused below into a column, glandular trichomes, anthers, obovate, rimose, connective shorter than the anthers. *Pistillate flowers* pedicels 1.5-2.2 cm long, pinkish; sepals 3, 1.3-2.2 × 0.6-1.2 cm, pinkish-white, ovate to obovate, apex obtuse, abaxial face with glandular trichomes, petals 3, 0.9-1.55 × 0.55-0.8 cm, white, obovate, apex obtuse; styles 3, greenish-yellow, united at base, bifurcate, spirally twisted, with bands of stigmatic papillae on the branches; ovary 3-locular, placentation axile, one placenta bifurcate per locule, ovules on both sides of placentae. *Capsules* 0.9-1.2 × 0.9 cm, glandular trichomes, basally dehiscent, wings 3, larger one 1-1.8 × 1.1-1.7 cm, smaller 0.7-1.6 × 0.6-1 mm, glandular trichomes. *Seeds* ca. 0.45 × 0.25 mm, cylindrical, oblong.

*Paratypus.* – BRAZIL. Edo Espírito Santo: Domingos Martins, R. Kautsky forest, 16.I.1995, Cintia Chamas 59 (fl.) (MBML).

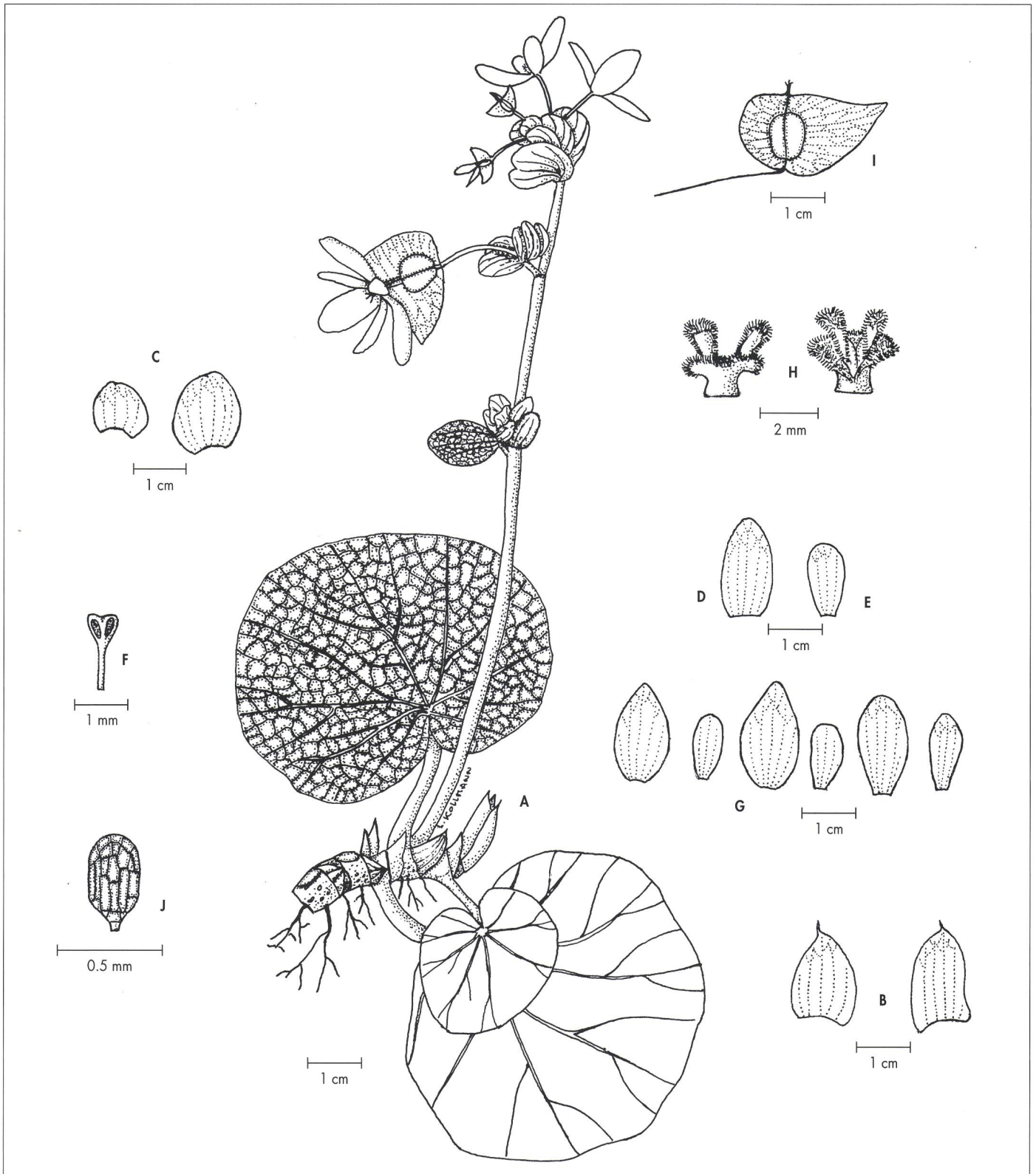
*Etymology.* – The epithet refers to the bullate leaf blades.

*Distribution and ecology.* – *Begonia bullatifolia* grows in leaf litter and humus of the central mountains of the Atlantic Forest of Espírito Santo state, Brazil, at 750 m, in the Roberto Kautsky forest, Domingos Martins municipality. It is possible that this species came from another locality and was introduced to the Kautsky forest. Indeed, Roberto Kautsky often transplant species from the state of Espírito Santo.

Due to the apparent endemic distribution of *B. bullatifolia*, with an extent of occurrence estimated to be less than 10 km<sup>2</sup>, it would seem prudent to include this species on the list of Critically Endangered species (CR) [B2ab(iii)] according to the IUCN (2001) criteria.

*Relationships.* – *Begonia bullatifolia* resembles *B. santoslimae* Brade, due to its rhizomatous stem, stipules persistent, stellate trichomes, thyriform inflorescence. The new species can be separated from it by the non peltate (vs. peltate) leaves with a bullate adaxial face (vs. flat), persistent inflorescence bracts (vs. caducous), and pistillate flower perianth of 6 tepals (vs. 5).





**Fig. 1.** – *Begonia bullatifolia* L. Kollmann. **A.** Habit; **B.** Stipule; **C.** Bracts; **D.** Sepal male flower; **E.** Petal male flower; **F.** Stamen; **G.** Sepals and petals female flower; **H.** Stigma, dorsal face (left), ventral face (right); **I.** Fruit; **J.** Seed.

[Kollmann 11058, MBML] [Drawn by the author]

2. *Begonia leopoldinensis* L. Kollmann, *spec. nova* (Fig. 2)

**Typus:** BRASIL. Edo Espírito Santo: Santa Leopoldina, Colina Verde (Morro do Agudo), Prop. Israel Elias Ramos, 300-500 m, 20°05'50''S 40°26'16''W, 29.VI.2006, *Demuner, V. & al. 2511* (fr. fl.) (holo-: MBML; iso-: RB).

*Species nova Begonia santoslimae Brade affinis, sed habitu minori, lamini late ovatis vel rotundatus-apicisque differt.*

*Rhizomatous* herb, 15-34 cm tall (excluding inflorescence), prostrate to erect, hairy, glandulate trichomes and stellate trichomes erect. Stems 1-2 cm diam., brown, internodes 4.5-7.5 cm long. *Stipules* 1.7-2 × 1.4-1.8 cm, persistent, papyraceous when dry, ovate, apex obtuse to retuse, mucronate, adaxial face glabrate, abaxial face lightly crenate, pilose. *Petioles* 8-19 × 5.5-6 mm, red, cylindrical, pilose, stellate trichomes purple when young. *Leaf blades* 7.5-17.5 × 9-15 cm, peltate, asymmetric, widely ovate to orbiculate, base and apex rounded, adaxial face green, abaxial face green to purple, trichomes purplish, young leaf purplish due to the trichomes, margins entire with hydathodes; venation actinodromous, veins 8. *Inflorescence* reddish, thyriform, 40-54 cm long, with 3-10 nodes, stellate trichomes. *Bracts* 1.2-2 × 0.9-1.6 cm, of first node leaf-like, all others, deciduous, white with pinkish apex, ovate, apex carinate abaxially, mucronate, margins with glandulate trichomes. *Bracteoles* 0.4-1 × 0.4-0.5 cm, white with pinkish apex, deciduous, ovate to orbiculate, apex acute, mucronate, margins with glandulate trichome. *Staminate flowers* peduncles 1.1-1.5 cm long, glandulate trichomes; sepals 2 (outer tepals), 1.25-1.7 × 1.2-1.5 cm, pinkish-white, widely ovate, apex obtuse; petals 2 (inner tepals), pinkish-white, 1-1.15 × 0.6-0.75 cm, obovate, base cuneate, apex obtuse, stamens 21-27, yellow, filament 0.5-1 mm long, unequal, fused below into a column, anthers obovate, rimose, connective shorter than the anthers. *Pistillate flowers* pedicels ca. 1.7 cm long, pinkish, pilose, glandulate trichomes; tepals 5(-6), pinkish-white, 1-1.5 × 0.5-1.2 cm, unequal, ovate to obovate, apex obtuse, margins with glandulate trichome, styles 3, yellow, united at base, bifurcate, spirally twisted, with bands of filamentose stigmatic papillae on the branches; ovary 3-locular, placentation axile, one placenta per locule bifurcate, ovules on both sides of placentae. *Capsules* 0.8-1.2 × 0.75-1.1 cm, basally dehiscent, glandulate trichomes; *wings* 3, unequal, papyraceous, glandulate trichomes when young, larger 1.7-2.3 × 1-2 cm, lightly ascending, smaller, 1.5-1.9 × 0.5-0.9 cm. *Seeds* ca. 0.5 mm long, oblong, cylindrical.

*Paratypes.* – BRASIL. Edo Espírito Santo: Santa Leopoldina, Colina Verde (Morro do Agudo), Prop. Israel Elias Ramos, 300-500 m, 20°05'50''S 40°26'16''W, 16.V.2006 (fr.), *Magnago, L. F. S. & al. 971* (MBML); 12.IX.2006 (fr.), *Demuner, V. & al. 2821* (MBML); 13.III.2007 (fl.), *Demuner, V. & al. 3142* (MBML); 14.III.2007 (fl. fr.), *Demuner, V. & al. 3174* (MBML); 30.V.2007 (fl.), *Demuner, V. & al. 4111* (MBML).

*Etymology.* – The specific epithet alludes to the type municipality, Santa Leopoldina, where the new species was found.

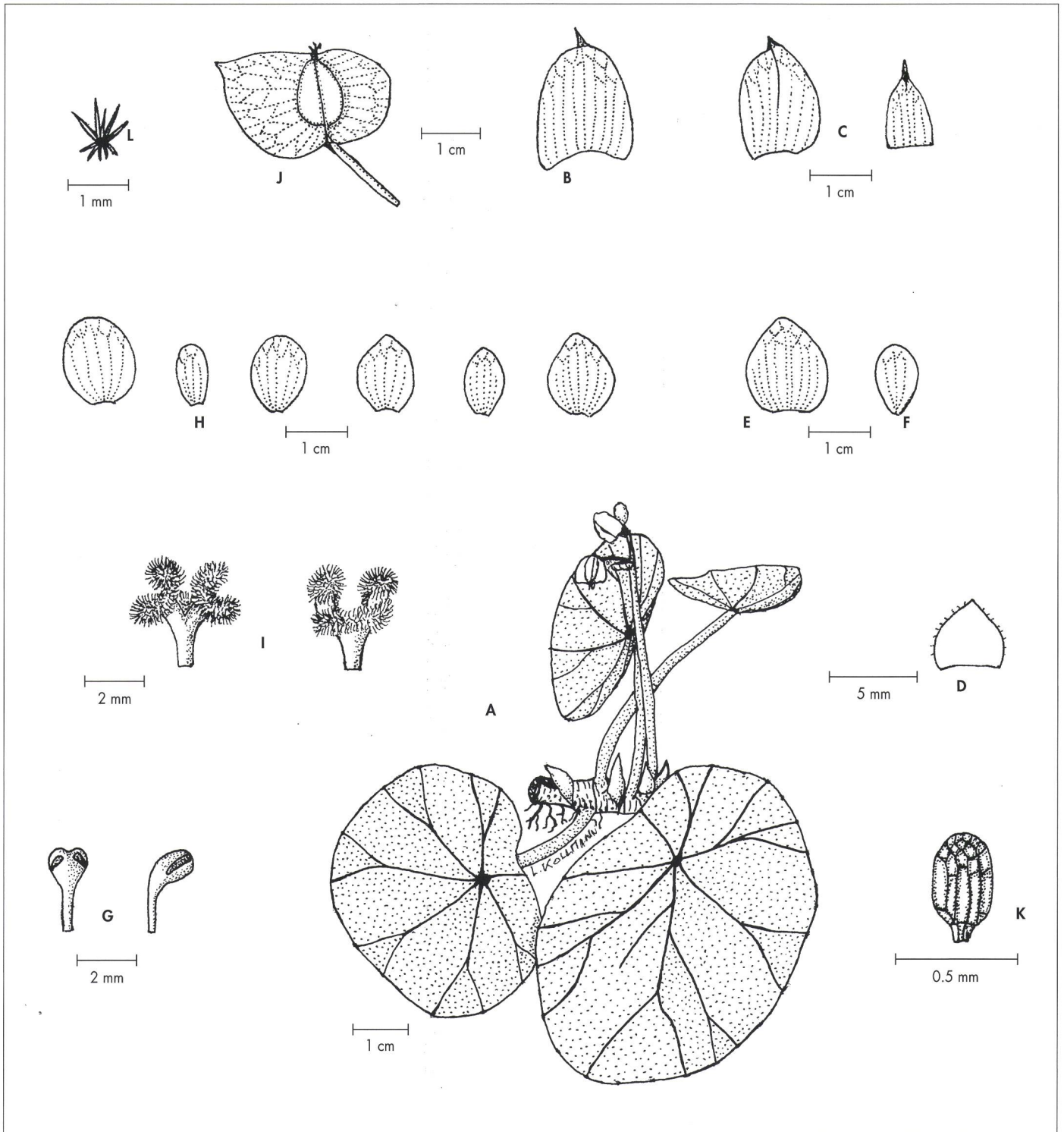
*Distribution and ecology.* – *Begonia leopoldinensis* was found growing in shaded places, in rock cracks, of rocky outcrops, in the dry Atlantic Forest at 300-500 m above sea level. In nature, this species is prostrate on rock but in cultivation the leaves are erect.

Due to the apparent endemic distribution of *B. leopoldinensis*, with an extent of occurrence estimated to be less than 10 km<sup>2</sup>, it would appear prudent to include this species on the Critically Endangered species list (CR) [B2ab(iii)] according to the IUCN (2001) criteria.

*Relationships.* – *Begonia leopoldinensis* is similar to *B. santos-limae* Brade, in its rhizomatous stem, stellate trichomes, peltate leaf, and thyriform inflorescence. It can be distinguished from it by its smaller size, ca. 20 cm tall (vs. ca. 50 cm), petioles, 8-15 cm long (vs. 20-40 cm), large ovate to orbiculate leaf (vs. ovate), with a rounded apex (vs. obtuse).

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**Fig. 2.** – *Begonia leopoldinensis* L. Kollmann. **A.** Habit; **B.** Stipule; **C.** Bracts; **D.** Bracteole; **E.** Sepal male flower; **F.** Petal male flower; **G.** Stamen; **H.** Tepals female flower; **I.** Stigma, ventral face (left), dorsal face (right); **J.** Fruit; **K.** Seed; **L.** Stellate trichome.

[Demuner, V. & al. 2511, MBML] [Drawn by the author]



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