

Begonia jaguarensis L. Kollmann, R. S. Lopes & Peixoto (Begoniaceae), a new species from North of Espírito Santo State, Brazil

Ludovic Jean Charles Kollmann, Robson da Silva Lopes & Ariane Luna Peixoto

Abstract

KOLLMANN, L. J.-C., R. DA SILVA LOPES & A. LUNA PEIXOTO (2015) *Begonia jaguarensis* L. Kollmann, R. S. Lopes & Peixoto (Begoniaceae), a new species from North of Espírito Santo State, Brazil. *Candollea* 70: 43-48. In English, English abstract. DOI: <http://dx.doi.org/10.15553/c2015v701a4>

Begonia jaguarensis L. Kollmann, R. S. Lopes & Peixoto (*Begoniaceae*), a new species from North of Espírito Santo state, Brazil, is described and illustrated. This new species is related to *Begonia thelmae* L. B. Sm. & Wassh. with which it is compared. Diagnosis, description, conservation status, pictures, map and comments about geographic distribution are also provided.

Keywords

BEGONIACEAE – *Begonia* – Espírito Santo – Atlantic Forest – Taxonomy

Addresses of the authors:

LJCK: Associate searcher of Museu de Biologia Prof. Mello Leitão (MBML), Av. José Ruschi, 4, 29650-000 Santa Teresa, ES, Brazil.

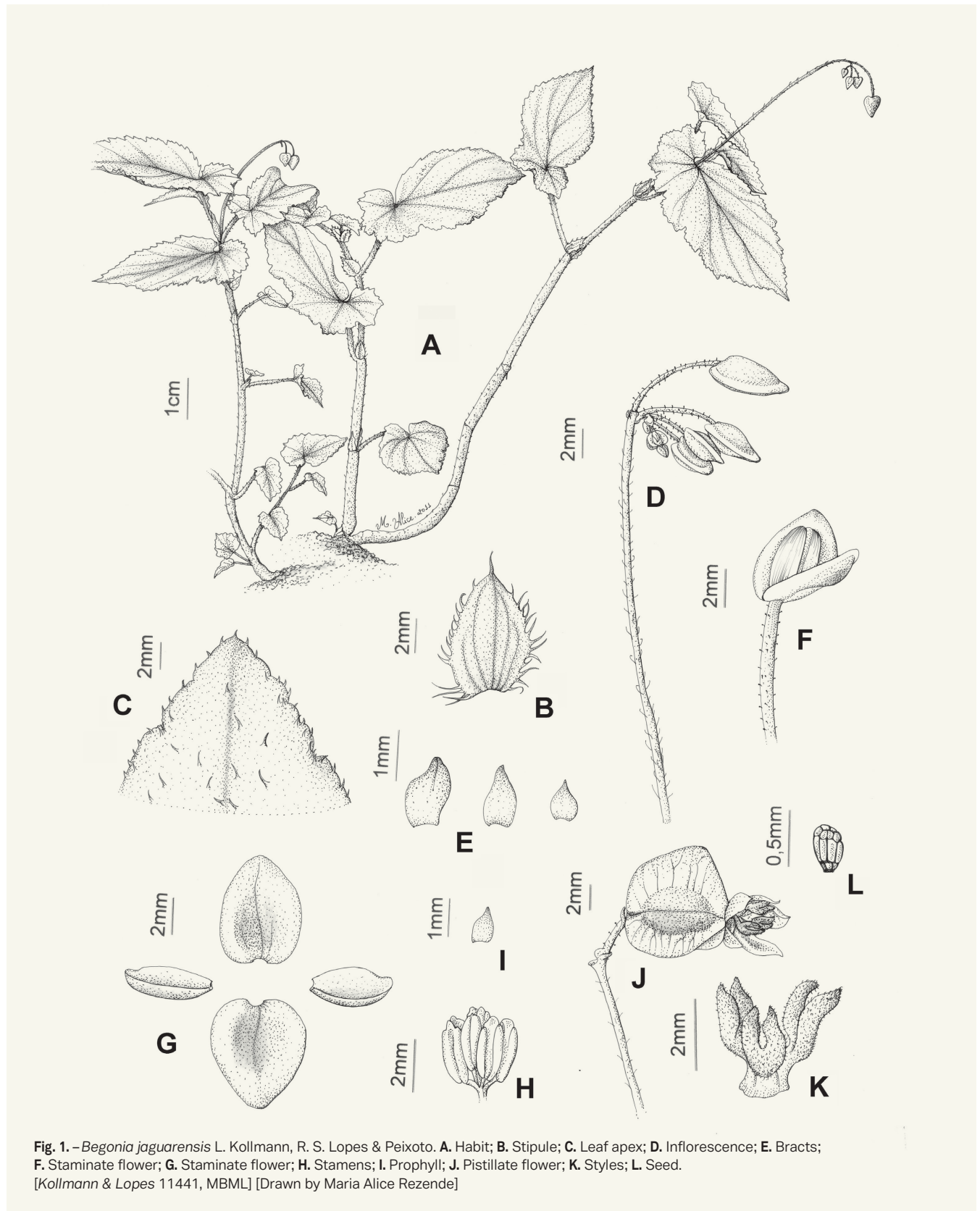
E-mail: ludokoll@yahoo.com.br

RSL: Superintendência Estadual Regional de Educação, rua 31 de Março 88, Centro, São Mateus, ES, Cep: 29939-000, Brazil.

ALP: Associate searcher of Rio de Janeiro Botanical Garden, rua Pacheco Leão 915, Horto, 22460-038, Rio de Janeiro, RJ, Brazil.

Submitted on January 20, 2015. Accepted on February 24, 2015.

Edited by P. Bungener



Introduction

About 230 species of *Begonia* L. (*Begoniaceae*) are recorded from Brazil (SMITH et al., 1986; DOORENBOS et al., 1998; GOLDING & WASSHAUSEN, 2002), most being found in the Atlantic Forest (DUARTE, 1961). Recent studies demonstrated the occurrence of 208 species (JACQUES, 2014), with approximately 180 species in the Atlantic Forest, and about 177 restricted to this domain (JACQUES, 2009). Field work in north Espírito Santo state, Brazil, provided new species of different plant family (KOLLMANN, 2008; LEME et al., 2008; LEME & KOLLMANN, 2009; LEME et al., 2010; VERSIEUX & WANDERLEY, 2010), showing how this area is rich in endemics species.

While undertaking fieldwork in northern Espírito Santo, in the Central Corridor of the Atlantic Forest Domain, we collected a species of *Begonia* that we describe here as new.

Begonia jaguarensis L. Kollmann, R. S. Lopes & Peixoto, **spec. nova** (Fig. 1).

Typus: BRAZIL. Espírito Santo: Jaguaré county, Giral, 80 m, 18°49'33.9"S 40°03'32.8"W, 17.I.2009, fl. fr., L. Kollmann & R. S. Lopes 11441 (holo-: MBML!; iso-: CEPEC!, MBM!, P!, RB!, SP!, U!, US!, VIES!).

Begonia jaguarensis is very similar to *B. thelmae* L. B. Sm. & Wash., but can be distinguished by longer internodes, ovate to elliptic leaves, smaller stipules with a base deeply and laterally cordate as well as overlapping lobes appearing peltate, smaller sepals and petals in the staminate flower.

Herb terrestrial or epiphytic, sub-erect to repent, 2-16 cm tall, with glands and simple trichomes. *Stems* 3-5 mm diam., green to brownish, glabrescent, without lenticels, internodes (1-)2.2-4 cm long. *Stipules* 6-9 × 3-4 mm, greenish, persistent, glabrous on both faces, ovate, apex acute, base asymmetric, oblique, margins fimbriate to ciliate. *Petioles* 0.6-2 cm, whitish, pilose, trichomes red; lamina (2.6-)4-7.5 × (0.9-)1.5-2.7 cm, adaxial face glossy, green to green with pale veins, abaxial face green to red, when red margins green, simple, asymmetrical, ovate to elliptical, glabrous to hispid, apex acute, base cordate, margins serrate to serrulate, ciliate, venation actinodromous, the mid-nerve following the petiole axis, veins 6-7 at base, adaxial face with hispid central vein, abaxial face lightly hispid on vein, stomata clustered. *Inflorescences* 3-6 cm long, axillary, monochasial, rarely dichasial, glandular to pilose, monochasial inflorescences 1-few-flowered, (3-)5 staminate flowers, 1 pistillate flower, dichasial inflorescences 2-few-flowered, 7-11 staminate flowers, 2 pistillate flowers, peduncles 2-2.5 cm long, white, bracts 0.5-1.4 × 0.25-0.8 mm, green-whitish, apex reddish, translucent, persistent, ovate to lanceolate, apex acute to acuminate, flower scars prominent in dry material. *Staminate flowers:* pedicels 6-12 mm long, white, glandular to pilose, sepals 2, 4.5-6 × 3-4.5 mm, white, ovate, apex obtuse, petals 2, 4-6 × 2.1-2.3 mm, white, elliptic to obovate, apex obtuse, lightly concave; stamens 6-8, yellow, on a short column,

filaments ca. 0.5 mm long, anthers ca. 2.9 × 0.8 mm, oblong, rimose, extrorse, the connective projecting beyond the anthers, apex obtuse. *Pistillate flowers:* pedicels 2.5-4 mm long, white, glandular; prophylls 2, 0.8-1.5 × 0.3-0.7 mm, green, translucent, ovate to oblong, apex acute, red; sepals 2, 4-4.8 × 2-2.1 mm, white, elliptical, apex acute, petals 3(-4), 3.8-5.2 × 1.2-2.7 mm, white, ovate, apex obtuse to acute; styles 3, ca. 2 mm long, yellow, bifid, united at base, stigma lightly spirally twisted, covered by stigmatic papilla; ovary 3-locular, placentation axile, one placenta per locule, ovules on both sides of placentae. *Capsules* 0.7-1 × 0.5-0.6 mm, white, glabrous, basally dehiscent; wings 3, 0.8-1.5 × 0.2-0.55 cm, glandular, sub-equal, rounded to angular, stigma persistent in dry fruit. *Seeds* 0.27-0.3 × 0.15-0.2 mm, cylindrical, oblong.

Taxonomy. – SMITH & WASSHAUSEN (1981) placed *B. thelmae* in *Begonia* sect. *Begonia* because one of the three placentae is bifid. DOORENBOS et al. (1998) did not include it in any section, indicating that it could belong to a new section. *Begonia jaguarensis* and *B. thelmae* appear more closely related to sect. *Pritzelia* (Klotzsch) A. DC. due to the presence of a single placenta per locule with ovules on both sides of the placenta and extended anther connectives, but the two species appear related also to sect. *Doratometra* (Klotzsch) A. DC. by the small inflorescence, dichasial to monochasial, few-flowered, with persistent bracts, stamens on a short column, and pistillate flower with prophylls.

Relationships. – *Begonia jaguarensis* resembles *B. thelmae* from northern Espírito Santo, in its creeping habit, fimbriate and persistent stipules, axillary inflorescences that are erect, monochasial, exceptionally dichasial, and few-flowered, and male flowers with few stamens. It can be distinguished from *B. thelmae* by its longer internodes 2.2-4 (vs. 1-2) cm, ovate to elliptic leaves (vs. elliptic to obovate), apex acute (vs. obtuse), smaller stipules (0.65-0.8 vs. 1-1.5 cm long), a stipule base deeply and laterally cordate with overlapping lobes appearing peltate (vs. asymmetric base, not cordate and not appearing peltate), staminate flower with smaller sepals and petals (4-6 vs. 7-9 mm long), and 2 prophylls (vs. 1) (Table 1).

Table 1. – Morphological comparison of *Begonia jaguarensis* L. Kollmann, R. S. Lopes & Peixoto and *B. thelmae* L. B. Sm. & Wash.

	<i>B. jaguarensis</i>	<i>B. thelmae</i>
Habit	erect to repent	repent
Internodes size [cm]	2.2-4	1-2
Lamina form	ovate to elliptic	elliptic to obovate
Lamina apex	acute	obtuse
Stipules size [cm]	0.65-0.8	1-1.5
Stipules base	asymmetric, not cordate and not appearing peltate	deeply and laterally cordate with overlapping lobes appearing peltate
Tepals of staminate flower [mm]	4-6	7-9

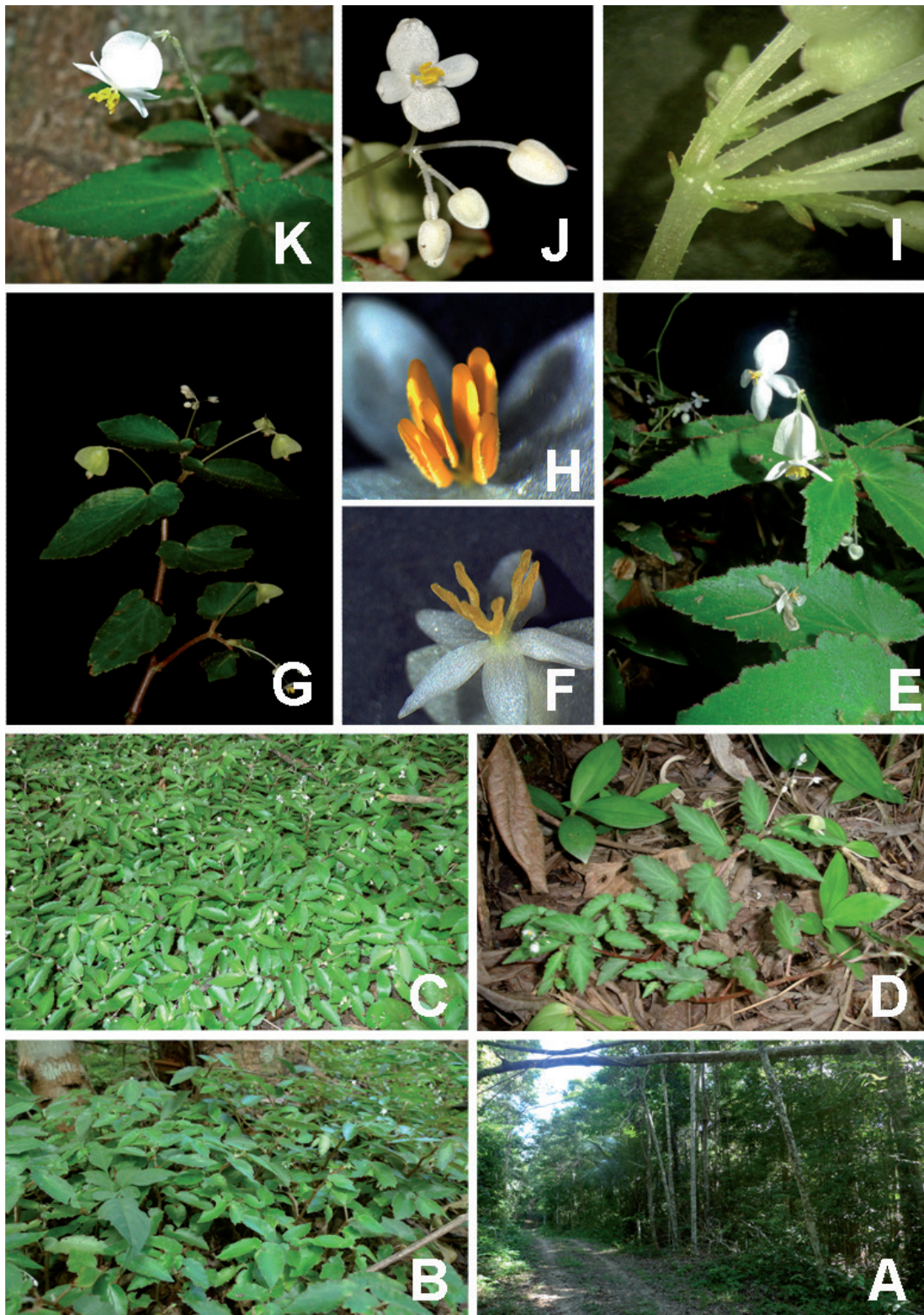


Fig. 2. – *Begonia jaguarensis* L. Kollmann, R. S. Lopes & Peixoto. **A.** Habitat; **B, C.** Habit (Kollmann 11441); **D.** Habit (Kollmann 11418); **E.** Habit with staminate and pistillate flowers; **F.** Pistil; **G.** Habit with staminate and pistillate flowers; **H.** Stamens; **I.** Monochasial inflorescence with open staminate flower; **J.** Dichasial inflorescence; **K.** Pistillate flowers. [Photo: L. J.-C. Kollmann]

Observations. – The original description of *Begonia thelmae* by SMITH & WASSHAUSEN (1981) stated that the ovary had two simple placentae and one bifurcate placenta with ovules on both side. TEBBITT (2005), however, wrote that the three placentae are entire. Studies of live plant from the “Conservatoire du Begonia, Rochefort, France”, and from the United States of America, showed three entire placentae (L. Kollmann, unpubl. data). It is possible that a variation of placentation occurs in some cultivated plant of the USA, a phenomenon that is not rare in *Begonia*. The authors of *B. thelmae* wrote “deciduous bracts on swollen persistent bases”, but when studying the plant, we observed persistent bracts and what appeared as swollen persistent bases were the bases of staminate flowers and not of bracts, as reported in the description. *Begonia thelmae* was introduced into the USA in 1974 by Gil Daniels from the collection of Burle Marx, Rio de Janeiro, Brazil and published as a new species by SMITH & WASSHAUSEN (1981) (holotype US-2639955).

In the Rio de Janeiro Botanical Garden Herbarium (RB) a voucher of *B. thelmae* exists, collected by A. P. Duarte (in 1979) at the locality Serra de Cima, Nova Venécia county, north of Espírito Santo State, Brazil.

Etymology. – The specific epithet alludes to the Jaguaré county, where the holotype of the new species was first found.

Distribution and ecology. – *Begonia jaguarensis* was found growing in leaf litter in “muçununga” forest of “tabuleiro” (tableland), in northern Espírito Santo state, between 30–150 m (Fig. 2, 3), within the Central Corridor of the Atlantic Forest domain. PEIXOTO & SILVA (1997) included the “tabuleiro” forests of northern Espírito Santo as one of Brazil’s 14 centers of plant diversity. The “muçununga” forest is characterized by humid, sandy porous soils. The trees in the upper stratum vary in height between 7–10 m (SIMONELLI et al., 2008), with herbaceous plants like *Calathea* sp. (*Marantaceae*), *Dichorisandra thyrsiflora* J. C. Mikan (*Commelinaceae*), *Anthurium* sp. (*Araceae*), *Sinningia richii* Clayberg (*Gesneriaceae*), *Bromelia antiacantha* Bertol., and *Cryptanthus beuckeri* E. Morren (*Bromeliaceae*). *Begonia jaguarensis* is a very distinctive species in its creeping habit. Its forms “carpet” that can reach about 3 square meter; the stems are creeping, densely jointed, covering the entire floor, and readily rooting on contact with the soil, in semi shaded place (Kollmann 11441) (Fig. 2B, C). The paratype (Kollmann 11418) (Fig. 2D), was found growing in a sunlit, disturbed habitat of a little waterfall, the plants being small with a few bicolor leaves. The others paratypes were found growing in the Sooretama Biological Reserve and Vale Natural Reserve, 20 to 30 kilometers from the holotype. Flowers have been collected between January and June and fruits from January to August.

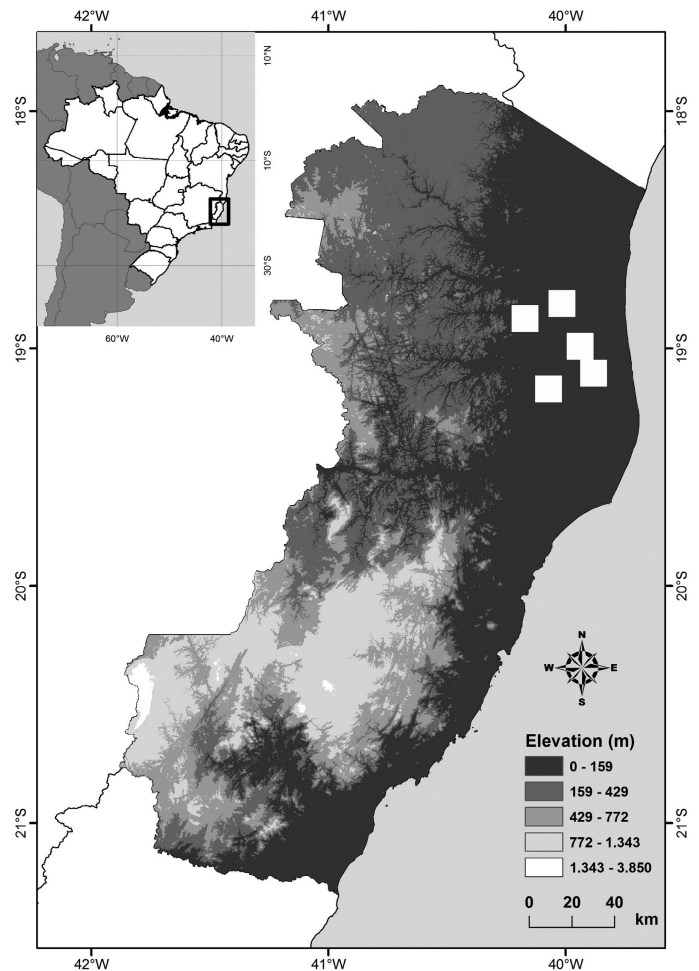


Fig. 3. – Distribution of *Begonia jaguarensis* L. Kollmann, R. S. Lopes & Peixoto (square) in Espírito Santo state, Brazil.

Conservation status. – Given the distribution of *B. jaguarensis*, with an extent of occurrence estimated to be less than 100 km² and continuing decline of area, extent and quality of habitat and growing in two Conservation Units (Fig. 3), it seems appropriate to include this species in the Critically Endangered Category [CR B1+B2b(iii)] according to the IUCN red list criteria (IUCN, 2001).

Paratypes. – **BRAZIL. Espírito Santo:** Jaguaré, Reserva Biológica de Sooretama, Lagoa do Macaco, 30 m, 15.V.1977, fl., fr., *Martinelli et al.* 2212 (RB!); *ibid. loc.*, Lagoa do Macaco, 30 m, 15.V.1977, fl., fr., *Martinelli et al.* 2139 (RB!); Giral, 16.I.2009, fl., fr., *L. Kollmann & R. Lopes* 11418 (MBML!); Linhares, Reserva Natural Vale, estrada Aderne, 24.III.2004, fl., fr., *D. A. Folli* 4780 (CVRD!, MBML!); *ibid. loc.*, Estrada Gávea, 5.IV.2002, fl., fr., *D. A. Folli* 4227 (CVRD!, MBML!); *ibid. loc.*, Estrada da Gávea, km 23.4, 30.III.2011, fl., fr., *L. Kollmann et al.* 12233 (MBML!, CVRD!); Sooretama, Reserva Biológica de Sooretama, mata de tabuleiro do Macuco, 17.VII.1969, fr., *D. Sucre* 5708 (RB!); *ibid. loc.*, matas de Quirino, 60–100 m, 12.V.1985, fl., fr., *G. Martinelli et al.* 10968 (RB!, INPA!, NY!).

Acknowledgments

We acknowledge the staff of the Mello Leitão Biological Museum (MBML) and Federal University of Norte of Espírito Santo State (UFES/CEUNES) for their cooperation, Maria Alice Rezende for the drawings, and CAPES for financial support.

References

- DOORENBOS, J., M. S. M. SOSEF & J. J. F. E. de WILDE (1998). The sections of *Begonia* including descriptions, keys and species lists. *Studies in Begoniaceae VI. Wageningen Agric. Univ. Pap.* 98(2).
- DUARTE, A. P. (1961). Considerações acerca do comportamento e dispersão de algumas espécies de Begônias do Estado da Guanabara. *Arch. Jard. Bot. Rio de Janeiro* 17: 57-105.
- GOLDING, J. & D. C. WASSHAUSEN (2002). Begoniaceae, Edition 2. Part I: Annotated Species List. Part II Illustrated Key, Abrigment and Supplement. *Contr. U.S. Natl. Herb.* 43.
- IUCN (2001). *IUCN Red List Categories and Criteria: Version 3.1*. IUCN Species Survival Commission, Gland & Cambridge.
- JACQUES, E. L. (2009). Begoniaceae. In: RENATO STEHMANN, J. (ed.), *Plantas da Floresta Atlântica*. Jardim Botânico do Rio de Janeiro.
- JACQUES, E. L. (2014). *Lista de Espécies da Flora do Brasil. Begoniaceae C. Agardb.* [http://floradobrasil.jbrj.gov.br/jabot/floradobrasil/FB59].
- KOLLMANN, L. J. C. (2008). Duas novas espécies de *Begonia* (Begoniaceae), do Espírito Santo, Brasil. *Rodriguésia* 59: 155-160.
- FRAGA, C. N. & L. J. C. KOLLMANN (2010). Three new species of *Pabstiella* Lindl. (Pleurothallidinae, Orchidaceae) from Brazilian Atlantic Forest. *Harvard Pap. Bot.* 15: 171-178.
- LEME, E. M. C., C. N. FRAGA, L. J. C. KOLLMANN & A. P. FONTANA (2008). Three new *Alcantarea* species from Espírito Santo and Mina Gerais, Brazil. *J. Bromeliad Soc.* 58: 205-217.
- LEME, E. M. C., C. N. FRAGA, L. J. C. KOLLMANN, G. K. BROWN, W. TILL, O. B. RIBEIRO, M. C. MACHADO, F. J. S. MONTEIRO & A. P. FONTANA (2010). Miscellaneous New species in the Brazilian Bromeliaceae. *Rodriguésia* 61: 21-67.
- LEME, E. M. C. & L. J. C. KOLLMANN (2009). Two new giant Bromelioids from the Atlantic Forest of Espírito Santo, Brazil. *J. Bromeliad Soc.* 59: 55-65.
- PEIXOTO, A. L. & I. M. SILVA (1997). Tabuleiro forests of northern Espírito Santo, southeastern Brazil. In: DAVIS, S. D., V. H. HEYWOOD & A. C. HAMILTON (ed.), *Centers of plant diversity. A guide and strategy for their conservation* 3: 369-372. The Americas WWF/International Union for the Conservation of Nature, Cambridge.
- SIMONELLI, M., A. L. SOUZA, A. L. PEIXOTO & A. F. SILVA (2008). Floristic composition and structure of the tree component of a Muçununga forest in the Linhares Forest Reserve, Espírito Santo, Brazil. In: THOMAS, W. W. (ed.), *The Atlantic Coastal Forest of Northeastern Brazil. Mem. New York Bot. Gard.* 100: 351-370.
- SMITH, L. B. & D. C. WASSHAUSEN (1981). Creeping species from Brazil now *B. thelmae*. *Begonian* 49: 114-115.
- SMITH, L. B., D. C. WASSHAUSEN, J. GOLDING & C. E. KAEREGEANNES (1986). Begoniaceae. Part I: Illustrated key. Part II: Annotated Species List. *Smithsonian Contr. Bot.* 60.
- TEBBITT, M. C. (2005). *Begonias: cultivation, identification, and natural history*. Timber Press.
- VERSIEUX, L. M. & M. G. L. WANDERLEY (2010). Delineation of the *Alcantarea extensa* complex (Bromeliaceae) and a new species from Espírito Santo, Brazil. *Rodriguésia* 61: 421-429.