



## Nomenclature issues into southern of South American species of *Begonia* (Begoniaceae)

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### Abstract

This paper clarifies the typification of nine species of *Begonia* from South America. Lectotypes were designated for the names *Begonia balansae*, *B. argentinensis* [= *B. boliviensis*], *B. boliviensis* var. *latipetala*, *B. subcucullata* and *B. cucullata* var. *arenosicola* [= *B. cucullata*], *B. fiebrigii*, *B. micranthera*, *B. hieronymi* [= *B. micranthera* var. *hieronymi*] and *B. subvillosa*. Finally, we propose *B. subcucullata* and *B. cucullata* var. *arenosicola* as a new synonyms under *B. cucullata*.

**Key words:** Lectotypes, Nomenclature, South America, Taxonomy

### Introduction

*Begonia* Linnaeus (1753: 1056) (Begoniaceae) is one of the largest genera of vascular plants with about 1,500 species distributed in tropical and subtropical areas (Doorenbos *et al.* 1998, Shui *et al.* 2002, Forrest & Hollingsworth 2003, de Wilde & Plana 2003, Neale 2006, de Wilde 2011). However, the greatest diversity of this genus is observed in the Neotropical region with ca. 690 species (Tebbit 2005, Burt-Utley 2012, Moonlight *et al.* 2015).

During a taxonomic revision of the genus *Begonia* for Argentina, we noticed that some species names were not properly typified. Therefore, here we select lectotypes for the following names: *Begonia balansae* De Candolle (1903: 403), *B. argentinensis* Spegazzini (1898: 53) [= *B. boliviensis* De Candolle (1859: 122)], *B. boliviensis* var. *latipetala* Irmscher (1949: 617), *B. subcucullata* De Candolle (1903: 404) and *B. cucullata* var. *arenosicola* (C. DC.) Smith & Schubert (1941: 106) [= *B. cucullata* Willdenow (1805: 414)], *B. fiebrigii* De Candolle (1914: 123), *B. micranthera* Grisebach (1874: 148), *B. hieronymi* Lindau (1895: 14) [= *B. micranthera* var. *hieronymi* (Lindau) Smith & Schubert (1941: 96)], and *B. subvillosa* Klotzsch (1854: 152). Finally, we propose *B. subcucullata* and *B. cucullata* var. *arenosicola* as new synonyms of *B. cucullata*.

### Material and Methods

Type specimens were examined from BAA, B, BM, CORD, F, LP, LIL, G, GH, GOET, K, MICH, NY, P, S, SI, UC, and US (Thiers 2017), and digital images were observed where available (e.g. JSTOR <http://plants.jstor.org>). The original publications of the names were consulted using online databases (e.g. Botanicus <http://www.botanicus.org/>, and BHL <http://www.biodiversitylibrary.org/>).

Nine lectotypes were designated following the International Code of Nomenclature for algae, fungi, and plants (Melbourne Code) (McNeill *et al.* 2012), and the suggestions published by McNeill (2014), Prado *et al.* (2015) and Gautier *et al.* (2016). Details about the selected lectotype materials are included as taxonomic notes under the name of the species. Accepted names are in boldface and synonyms are in italics.

## Lectotypifications

### *Begonia balansae* De Candolle (1903: 403).

Lectotype:—PARAGUAY. [Cordillera]: ‘Tobaty, loco Sept.’, *E. Hassler 6441* (lectotype G 00085101 [two sheet]! **designated here**, isolectotypes B 100247907!, F 0BN020917 (photo)!, G 00085102!, G 00076982!, G 00076983!, G 00076984!, GH 00068214!, K 000323039!, MICH 1210022!, NY 01842802!, P 00546752!, P 01900764!, S 1217548!, SI 001115!, UC 941385!).

**Taxonomic notes:**—Several syntypes were cited by De Candolle for *Begonia balansae*: ‘In declivate rupestri collis Santo Tomas, Sept., n. 1008; inter rupescollis Tobaty, Mart., n. 3968; eod. loco, Apr., n. 4073; in rupibus verticalibus eod. loco Sept., n. 6441; in rupibus verticalibus Cerro Pelado, pr. Villa Rica, Apr. (Balansa, n. 2048 in h. Cand.); Cerro Santo Tomas ad saxa (Balansa, n. 3281 in h. Cand.)’. We found several specimens which correspond to the six syntypes cited therein: *Hassler 1008* (G!), *3968* (G!, B!, P!), *4073* (G!, NY!), *6441* (B!, F!, G!, GH!, K!, MICH!, NY!, P!, S!, SI!, UC!); *Balansa 2048* (G!, P!), *3281* (F!, G!, P!). The specimen *Hassler 6441* [G 00085101 (two sheet)!] is designated as a lectotype for *B. balansae*, because this collection presents a higher number of duplicates in different herbaria, it is a complete specimen, and bear the original label with the name of the species with De Candolle’s handwriting in 1903. The specimen designated as a lectotype (G 00085101) was mounted on two sheets and represents a unique specimen of this collection (Gautier *et al.* 2016).

### *Begonia boliviensis* De Candolle (1859: 122).

Type:—BOLIVIA. Acero: no locality, November 1845, *H.A. Weddell 3632* (holotype P 01900760!; isotypes F 0077407F!, P 01900761!). *Begonia argentinensis* Spegazzini (1898: 53). Lectotype:—ARGENTINA. Salta: [Department of Guachipas], ‘Pampa Grande’, January 1897, *C.L. Spegazzini s.n.* (lectotype, LP 058687! **designated here**, isolectotypes LP 058688!, LP 058689!).

**Taxonomic notes:**—Spegazzini (1898) cited ‘In umbrosis alpinis Cuesta de San Antonio (2800 m alt.), prope Pampa Grande, in Prov. Salta, January 1897’ in the protologue of *Begonia argentinensis*. Three specimens that belongs to Spegazzini’s collection were found in LP; two of them bearing a label with the locality ‘Pampa Grande, Salta, Enr., 1897’ (LP 058687!, LP 058689!), and another one ‘Cuesta de San Antonio, Pampa Grande, no date’ (LP058688!). We chose the specimen LP 058687!, because this is a complete specimen with female and male flowers (see Figure 1).

### *Begonia boliviensis* var. *latipetala* Irmscher (1949: 617).

Lectotype:—ARGENTINA. Jujuy [Salta]: ‘Departamento of Poma, F. C. a Socompa’, 3000 m. s. n. m., 3 January 1930, *S. Venturi 10053* (lectotype US 00115257! **designated here**).

**Taxonomic notes:**—In the protologue of *Begonia boliviensis* var. *latipetala*, Irmscher cited two syntypes: ‘ARGENTINIEN: Prov. Jujuy. Dept. Poma, F. C. a Socompa, 3000 m, debajo de una peña, 0,15-0,20 m (*Venturi n. 10053*, 3. Jan. 1930-Herb. Washington)’ and ‘Prov. Jujuy, ohne nähere Angabe (*Stumpf s.n.* 1874-Herb. Berlin)’. The specimen that corresponds to *Stumpf s.n.* deposited in B (B 100186684!) includes drawings and descriptions made by O. Warburg, who determined this specimen as *B. boliviensis*. Therefore, we chose the specimen *Venturi 10053* (US 00115257!) as lectotype for *B. boliviensis* var. *latipetala*, because it is the more complete specimen and bears a label determined as *B. boliviensis* var. *latipetala* by the author of the variety in 1949.

### *Begonia cucullata* Willdenow (1805: 414).

Type:—BRAZIL. Habitat in Brasilia, s. coll, s.n. (holotype? B-W 17567!).

*Begonia subcucullata* De Candolle (1903: 404). Type:—PARAGUAY. ‘Prope Tobaty, in silva’, September 1900, *E. Hassler 6130* (lectotype G 00077043! **designated here**, isolectotypes G 000858173!, G 00077044!, G 00085172!, NY 01842799!, K 000323040!, UC 941383!, MICH 1210021!, GH 00068282!, B 100247922!, BM 000548895!, S 12-17545!). **Syn. nov.**

*Begonia cucullata* var. *arenosicola* (C. DC.) Smith & Schubert (1941: 106). Basonym: *Begonia subcucullata* var. *arenosicola* De Candolle (1903: 404). Lectotype:—PARAGUAY. [Itapúa]: Bellavista, (Apa), 1901–1902, *E. Hassler 7884* (lectotype G 00077046 [two sheets]! **designated here**, isolectotypes B 10 0247923!, G 00077041!, G 00085174!, G 00085175!, GH 00068284!, NY 01842798!, UC 941384!). **Syn. nov.**



FIGURE 1. Lectotype of *Begonia argentinensis* [= *B. boliviensis*] (C. L. Spegazzini s.n., LP 058687!).

**Taxonomic notes:**—De Candolle cited two syntypes in the protologue of *B. subcucullata*, (In rivulis et stagnis pr. Altos, Jan., n. 1771; in locis humidis in silva in colle Tobaty, Sept., n. 6130). We chose the specimen *Hassler 6130* (G 00077043!) as lectotype for *B. subcucullata*, because it presents a higher number of duplicates in different herbaria and bears the original label with De Candolle's handwriting in 1903. This specimen was mounted on two sheets and represents a unique specimen of this collection (Gautier *et al.* 2016).

The original description of *B. subcucullata* var. *arenosicola* reads 'Herba 0.5–0.8 m. alt., petala dilute rosea, in arenosis salsis pr. Bellavista (Apa), Nov., n. 7884'. Four specimens corresponding to *Hassler 7884* were found in G. We chose the specimen G 00077046 as a lectotype for *B. subcucullata* var. *arenosicola*, because it shows a plant that has a 12 mm thick stem (diagnostic character used to propose this new variety), it is the most complete specimen, and bears the original label with and De Candolle's handwriting in 1903. Among the specimens corresponding to *Hassler 7884*, we note that the sheet G00077041 is labeled by G. Marin Ojeda 'treating this specimen as the type', but this nomenclatural action was not made effectively.

*B. subcucullata* var. *arenosicola* was proposed by De Candolle (1903) based on the thickness of the stem (12 mm in dry material), and the shape of the tepals (rounded) of the female flowers. The thickness of the stem is not a constant character among the type specimens, because this feature is extremely variable, ranging from 5–6 mm wide in the isolectotypes and 12 mm in the lectotype. In addition, the thickness of the stem agrees with the protologues of *B. subcucullata*, and the shape of the tepals of the female flower is similar to the typical variety. However, the characters described for *B. subcucullata* var. *arenosicola* and *B. subcucullata* correspond to the original description and type specimen of *B. cucullata*. For these reasons, we propose *B. subcucullata* and *B. subcucullata* var. *arenosicola* as new synonyms of *B. cucullata*.

***Begonia fiebrigii*** De Candolle (1914:123).

Lectotype:—PARAGUAY. 'In regione fluminis Alto Paraná', 1910, *K.A.G. Fiebrig 6313* (lectotype G 00077059 (four sheets)! **designated here**, isolectotypes G 00085119!, G 00077060 (drawing)!, SI 001119!, B 100247909!, B 100247910!, GH 00068232!, US 00115309!).

**Taxonomic notes:**—De Candolle cited in the protologue of *B. fiebrigii* 'Alto Parana: K. Fiebrig n. 6313'. Two specimens and an illustration corresponding to *Fiebrig 6313* were found in G. Then, we considering the lectotypification proposals by Prado *et al.* (2015) for this case, because they indicate the fact that the types of many older names are syntypes (see Art. 9.5) not holotypes, and we chose the specimen G 00077059 as a lectotype for *B. fiebrigii*, because it is a complete specimen and coincides with the illustration accompanying the protologue. In addition, it bears the original label with the name of the species by De Candolle's handwriting in 1913. The specimen chose as a lectotype (G 00077059) was mounted on four sheets and represents a unique specimen of this collection (Gautier *et al.* 2016).

***Begonia micranthera*** Grisebach (1874: 148).

Type:—ARGENTINA. 'Tucumán. Siambon', March 1872, *P.G. Lorentz 281* (lectotype GOET 000317! **designated here**).

**Taxonomic notes:**—In the protologue of *B. micranthera*, Grisebach (1874) cited "Tucumán in silvis umbrosis reg. Subtropic. Pr. Siambon". This author did not indicate any specimen for this taxon, but the plants described in this work were collected by P.G. Lorentz between 1871 and 1872 (see, Grisebach 1874: 49). Three collections corresponding to the type locality were found [G.H.E.W. Hieronymus & P.G. Lorentz 901 (B 10 0186655! and a photo of Field Museum F0BN020864!); P.G. Lorentz & G.H.E.W. Hieronymus 1051 (NY 00118631!, US 00115391!); P.G. Lorentz 281 (GOET 000317!)]. We consider that these collections correspond to the original material studied by Grisebach in 1874, and therefore can be considered syntypes (Art. 9.5, ICN 2012). For these reason, we chose the specimen GOET 000317! as a lectotype of *B. micranthera*, because it corresponds to the description and locality included in the protologues, as well as the date specified in the introduction by Grisebach (1874: 49). Finally, this collection is housed in GOET that was Grisebach's workplace (Stafleu & Cowan 1979).

***Begonia micranthera* var. *hieronymi*** (Lindau) Smith & Schubert (1941: 96).

Basionym: *Begonia hieronymi* Lindau (1895: 14). Lectotype:—ARGENTINA. Tucumán: [Department of Tafí del Valle], La Ciénaga, Sierra de Tucumán, 10–17 January 1874, *G.H.E.W. Hieronymus & P.G. Lorentz 644* (lectotype B 10 0186668! **designated here**, isolectotypes B 10 0186669!, B 10 0186670!, CORD 00003573!, CORD 00003574!, F0BN020863 (photo)!, GOET 000315!, GOET 000316!).



**Taxonomic notes:**—In the protologue of *B. hieronymi*, Lindau cited two syntypes [TUCUMAN: Prope La Ciénaga, Sierra de Tucuman (L. et H. N. 644, 724)]. We chose the specimen *G.H.E.W. Hieronymus & P.G. Lorentz 644* (B 10 0186668!) as a lectotype, because it is more widely represented in different herbaria, it is the more complete specimen and bears the original label with the name of the species by Lindau's handwriting.

***Begonia subvillosa*** Klotzsch (1854: 152)

Lectotype:—BRASIL. Without locality, *F. Sellow s.n.* [lectotype B 10 0247925! **designated here**, isoelectotypes B 10 0247926!, B 10 0247924!, F0BN020903 (photo)!].

**Taxonomic notes:**—Three specimens were found in B that correspond to Sellow's collection cited by Klotzsch (1854) in the protologue, 'Von Sello in Brasilien entdeckt'. The specimens B 10 0247925! was chosen as a lectotype, because it is the most complete specimen.

## Acknowledgements

We thank Dra. Laura Iharlegui curator of the herbarium LP (La Plata-Argentina) for providing the image of the specimen designated as lectotype of the name *B. argentinensis* Spegazzini [= *B. boliviensis*], and the two anonymous reviewers who helped to improve the manuscript with their comments.

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