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Chimaeras and ghosts: solving a chimaeric specimen and two neglected orchid names

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Abstract: We present nomenclatural and taxonomic studies of selected species and names of Neotropical *Orchidaceae* currently placed in *Bifrenaria*, *Cleistes*, and *Pleurothallis*, but once classified in ten different genera. Several nomenclatural and taxonomic actions are proposed, including changes in nomenclatural status, typifications, and taxonomic rearrangements by indication of the correct name to be used, re-evaluation of previously proposed synonyms, and new synonyms. The accepted names remaining after the study are: *Cleistes rosea* Lindl. f. *rosea* (relevant synonyms: *C. angeliana* Campacci, *C. castaneoides* Hoehne, and *Epistephium monanthum* Poepp. & Endl.); *Cleistes rosea* f. *augusta* (Hoehne) Meneguzzo & Van den Berg, comb. nov. (for *Pogonia rosea* var. *augusta* Hoehne); *Cleistes speciosa* Gardner [relevant synonyms: *C. caloptera* Rchb. f. & Warm., *C. metallina* (Barb. Rodr.) Schltr., and *C. monantha* (Barb. Rodr.) Schltr.]; *Bifrenaria harrisoniae* (Hook.) Rchb. f. (for *Maxillaria spathacea* Lindl.); and *Pleurothallis quadrifida* (Lex.) Lindl. [for the homotypic pair *Gomesa stricta* Spreng. and *Rodriguezia stricta* (Spreng.) Steud.].

Key words: *Bifrenaria*, biodiversity, botanical literature, *Cleistes*, Neotropics, nomenclature, *Orchidaceae*, orchids, *Pleurothallis*, typification

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Introduction

The investigation of taxonomic and nomenclatural issues may take considerable time, not only for the researcher to feel confident about its results, but also to get acquainted with the extensive existing botanical literature and the intricate rules that govern botanical nomenclature. To obtain reasonable expertise on the biology of the study group itself, to understand its diversity and variability, is also time consuming. How former botanists found and interpreted the organisms, what their working and publishing methods were, and to what extent subsequent researchers and users perpetuated or rejected such re-

sults is almost a study in itself. It is not rare to find taxonomic and nomenclatural problems that have persisted for several years before being satisfactorily investigated and resolved. The degree of complexity of some cases directly reflects the availability of original literature and herbarium specimens, which until recently were accessible only through personal visits to scattered collections distant from home institutions, but which are now gradually becoming available on the internet.

Over the course of our research for the REFLORA project (a digitizing programme for specimens of Brazilian plants at the Royal Botanical Gardens, Kew and Muséum national d’Histoire Naturelle, Paris, from 2012

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to 2014) we found some complex taxonomic and nomenclatural issues that deserved attention. Here we present our results in three cases concerning names and species currently classified in *Bifrenaria* Lindl., *Cleisthes* Rich. ex Lindl., and *Pleurothallis* R. Br. These names were once described or combined in ten different genera, as follows: *Cattleya* Lindl., *Epistephium* Kunth, *Gomesa* R. Br., *Humboltia* Ruiz & Pav., nom. rej. (non *Humboldtia* Vahl, nom. cons.), *Lalexia* Luer, *Loddigesia* Luer, nom. illeg. (non Sims), *Pogonia* Juss., *Rodriguezia* Ruiz & Pav., *Specklinia* Lindl., and *Stelis* Sw.

Material and methods

This study follows standard methods for alpha taxonomy. It is based on material examined since 2008 from 98 collections in 86 herbaria, as follows (herbarium codes are according to Thiers 2020+; italics indicate herbaria personally visited): A (includes AMES, GH), AAU, *ALCB*, ARIZ, B, *BHCB*, *BM*, *BR*, BRIT, C, *CEN*, *CEPEC*, *CESJ*, COAH, COL, CR, CRI, CTES, CUZ, CVRD, E, ESA, F, FUEL, G (includes *G-DC*), *GENT*, GOET, HAL, *HB*, *HBG*, *HBR*, *HEPH*, *HERBAM*, *HJ*, HPUJ, HRB, HTO, HUA, *HUEFS*, HUEM, HUFU, HUTU, *IAN*, *IBGE*, ICN, *INPA*, JAUM, *K* (includes *K-L*), *L* (includes *U*, WAG), LE, LPB, M, *MBM*, *MBML*, MEXU, *MG*, MPU, MO, MOL, NDG, NY, *OXF*, P, PACA, PH, R, *RB* (includes *GFJP*, *GUA*, *ITA*, *RUSU*), RENZ, S, SBT, SEL, *SP*, *SPF*, TO, *UB*, *UEC*, *UFMT*, UFP, *UPCB*, UPS (includes UPS-THUNB), US, USM, VEN, VIES, *W* (includes *W-R*), and *WU*. Nomenclature follows Turland & al. (2018). Lectotype or neotype designations are made whenever necessary, especially in cases when we found no internal or external evidence of an element among the original material that could be the holotype (McNeill 2014; Turland & al. 2018: Rec. 9A.1). Specimens are cited with the herbarium code (e.g. *K*) followed by the barcode where available (e.g. K000079712); a character string following a herbarium code is a barcode unless indicated otherwise (e.g. “accession no.”).

Epistephium monanthum and Barbosa Rodrigues’s and Schlechter’s *Pogonia monantha* homonyms

Cleisthes rosea Lindl., Gen. Sp. Orchid. Pl.: 410. 1840 [f. *rosea*] ≡ *Pogonia rosea* (Lindl.) Rchb. f., Xenia Orchid. 2: 89. 1865 ≡ *Pogonia rosea* (Lindl.) Hemsl., Biol. Centr.-Amer., Bot. 3: 304. 1884, later isonym. – **Lectotype (designated here)**: Guyana, “Savannahs adjacent to the lake Capooey, Arabisee Coast of Essequibo” [from protologue], 1836–1837 [see Romero-González 2005: 239], *R. H. Schomburgk s.n.* (K K000079712!; isolectotype: P P00367101!)

= *Epistephium monanthum* Poepp. & Endl., Nov. Gen. Sp. Pl. 1: 53. 1836 ≡ *Pogonia monantha* (Poepp. & Endl.) Schltr. in Repert. Spec. Nov. Regni Veg. Beih.

9: 121. 1921, nom. illeg. [non *Pogonia monantha* Barb. Rodr., Gen. Spec. Orchid. 1: 167. 1877]. – **Lectotype (designated here)**: Peru, Loreto, Huánuco, between Cuchero and Chihuamecala, Dec 1829, *E. F. Poeppig 1601 B* (W accession no. 7715!).

- = *Pogonia venusta* Schltr. in Repert. Spec. Nov. Regni Veg. Beih. 7: 42. 1920 ≡ *Cleisthes venusta* (Schltr.) Schltr. in Arch. Bot. São Paulo 1: 180. 1926. – Holotype: Cauca, c. 1500 m, s.d., *M. Madero s.n.* (B destroyed). – **Neotype (designated here)**: Colombia, Valle del Cauca, near Buenaventura, 24 May 1939, *A. H. G. Alston 8620* (P P00441796!).
- = *Cleisthes castaneoides* Hoehne in Arq. Bot. Estado São Paulo 1: 42. 1939. – **Lectotype (designated here)**: Brazil, São Paulo, São Paulo, Indianópolis, ao lado da estrada para Santo Amaro, 14 Jan 1932, *F. C. Hoehne s.n.* (SP SP001994 [accession no. 28697]!; isolectotypes: GH 00056707 [AMES accession no. 17832]!, NY 00414849!, US 00093314 [accession no. 2790601]!). – Syntype: Brazil, São Paulo, São Paulo, Ipiranga [“Ypiranga”], 27 Jan 1908, *H. Luederwaldt s.n.* (SP SP001995 [accession no. 28995]!).
- = *Cleisthes latiglossa* Hoehne in Arq. Bot. Estado São Paulo 1: 42. 1939 ≡ *Cleisthes latiplumis* Hoehne in Orquídea (Rio de Janeiro) 2: 113. 1940, as “*latiplume*”, nom. illeg. superfl. – **Lectotype (designated here)**: Brazil, Mato Grosso, Salto Augusto, River Juruena, Feb 1912, *F. C. Hoehne* sub *Comissão Rondon 5328* (SP SP001999 [accession no. 29001]!). – Syntype: ibidem, *F. C. Hoehne* sub *Comissão Rondon 5329* (R accession no. 3220!).
- = *Cleisthes rosea* f. *pallida* Carnevali & I. Ramírez in Ann. Missouri Bot. Gard. 77: 551. 1990. – Holotype: Venezuela, Amazonas, Átures, palm bog 1–2 km E of Piedra Tortuga, 8 km S of Puerto Ayaruchó, 30 Jun 1988, *G. Carnevali*, *I. Ramírez* & *G. A. Romero 2661* (VEN accession no. 231152!; isotypes: AMES not found, INPA not found, MO not found, MY not found, PORT accession no. 30669!, TFAV not found).
- = *Cleisthes angeliana* Campacci, Colet. Orquídeas Brasil. 9: 324. 2011, **syn. nov.** – Holotype: Brazil, Minas Gerais, Diamantina, Prata River, Jan 2010, *E. Meneses EM-001* (ESA accession no. 114454!).

Remarks — The tribe *Pogonieae* contains five well-defined genera according to both morphological and molecular characters (Chase & al. 2015). Historically, names in *Cleisthes*, *Epistephium*, and *Pogonia* were often recombined in these genera. *Cleisthes* was considered a section of *Pogonia* by Ames (1922). Schlechter (in Schlechter & Hoehne 1926) re-established *Cleisthes* as an autonomous genus. A treatment of names in both *Cleisthes* and *Pogonia* is necessary in any taxonomic revision of this group, as it is crucial to establish which names belong in which genus.

The initial motivation for investigating this nomenclatural imbroglio started in late 2012 while we studied the collections at the Naturhistorisches Museum

Wien (herbarium W), and found the original specimen of *Epistephium monanthum* collected in Peru by Eduard Friedrich Poeppig, and described by Poeppig & Endlicher (1836: 53). It immediately reminded us of a comment by Hoehne (1945) in the revision of Brazilian species of *Epistephium* that he did not have the opportunity to study this specimen. On revising *E. monanthum*, we concluded that it is an earlier heterotypic name for *Cleistes rosea*, along with other synonyms. And on revising *Pogonia monantha* Barb. Rodr., we established that it is a new synonym of *C. speciosa* Gardner together with several other names.

The clarification of the taxonomy of *Epistephium monanthum* was probably hindered by the fact that most botanists did not have the opportunity to study its original specimen. Lindley (1840) kept the name for an accepted species as originally proposed. Reichenbach (1861–1864) neglected it in the treatment for *Cleistes*, *Epistephium*, and *Pogonia*. Shortly after, when he summarized and commented on *Pogonia* species (Reichenbach 1865), he made no mention of *E. monanthum*. Cogniaux (1893) presented some progress by expressing doubt on its classification, and suggesting it belonged to *Pogonia*. Latter, Hoehne (1945) kept the same doubt because he was not able to draw any conclusion on its taxonomic status in relation to the Brazilian species, solely analysing the protologue, which contained only a crude illustration. Despite this, he pointed out that the name would correspond instead to a species in *Cleistes*. Schweinfurth (1958) simply treated it as an *Epistephium*. Finally, Garay (1978) studied the original specimen and published his finding that *E. monanthum* was a synonym of *C. rosea*. Garay (1978) additionally cited two synonyms: *P. lenheirensis* Barb. Rodr. and *P. venusta*. We checked the matter in Pansarin's (2005) unpublished PhD thesis (widely available on the internet) on the systematics of *Cleistes*. Surprisingly, neither *E. monanthum* nor its combination *P. monantha* (Poepp. & Endl.) Schltr. was cited in it. Additionally, we found a combination by Schlechter that is a later homonym of a new species name published by Barbosa Rodrigues 44 years earlier. The names we are dealing with here have been omitted in Pansarin's work (Pansarin 2005).

Regarding Garay's (1978) list of synonyms, we agree that *Epistephium monanthum* and *Pogonia venusta* are heterotypic synonyms of *Cleistes rosea*. These two names were not cited by Pansarin (2005). On the other hand, we disagree that *P. lenheirensis* is conspecific with *C. rosea*. We concur with Pansarin (2005) that *P. lenheirensis* is conspecific with *C. metallina*, but in the present study the latter name is proposed as a new synonym of *C. speciosa* Gardner. Pansarin (2005) pointed out that *C. speciosa* (as *C. metallina*) and *C. rosea* share similarities, but can easily be distinguished because the distal leaf is smaller and the lip slightly trilobed on the former, whereas the distal leaf is considerable larger and the lip entire in the latter. The conspecificity of *C. rosea* with *C. castaneoides*, *C.*

latiglossa, and *C. rosea* f. *pallida*, synonyms proposed by Pansarin (2005), is followed here. To this synonymy we add *C. angeliana*, which was not compared with other species in its protologue, but our study of the protologue and the holotype showed that it does not differ from *C. rosea*.

Pogonia monantha (Poepp. & Endl.) Schltr. is an illegitimate name because it is a later homonym of *P. monantha* Barb. Rodr. (Turland & al. 2018: Art. 53.1), and *P. rosea* (Lindl.) Hemsl. may be disregarded because it is a latter isonym of *P. rosea* (Lindl.) Rchb. f. (Art. 6 Note 2). A neotype for *P. venusta* is designated here because the type at the herbarium B was destroyed in 1943. An illustration of the name was posthumously published by Schlechter (1929: t. 10, fig. 38). However, in that publication there was no indication that it is part of the original material that could potentially be designated as the lectotype (problem extensively discussed by Meneguzzo & al. 2013). In this case we designate as the neotype a complete specimen instead of an illustration solely consisting of a dissected flower. *Cleistes latiplumis* is an illegitimate superfluous name of *C. latiglossa* because the same type specimen is cited in protologue of both names (Art. 51.1 and 51.2). *Cleistes castaneoides* has been most frequently cited in the literature in its misspelled form "*C. castanoides*". The protologue of *C. latiglossa* cited *P. rosea* var. *augusta* as a synonym, but because a name has no priority outside its published rank (Art. 11.2), the former name is not made superfluous and illegitimate by that synonymy.

Finally, even though the name *Epistephium monanthum* is conspecific with *Cleistes rosea* and was published four years earlier than the latter, it cannot be used in the genus *Cleistes* because the specific epithet is already occupied by the heterotypic name *C. monantha* (Barb. Rodr.) Schltr., which is hereafter synonymized under *C. speciosa*.

Additional specimens examined — BRAZIL: Distrito Federal: Poço Azul, 23 Dec 2008, T. E. C. Meneguzzo & al. 44 (UB). Goiás: Serra Dourada, 29 Jan 1966, E. P. Heringer 10938 (HB, K, UB). Mato Grosso: Ribeirão Cascalheira, 10 Jan 1968, D. Philcox & A. Ferreira 3957 (K, UB). Minas Gerais: Uberlândia, 6 Dec 2004, A. A. Barbosa s.n. (HUFU). Pará: Cachimbo Range, 12 Dec 1956, J. M. Pires & al. 6084 (IAN, NY). — COLOMBIA: Camana, 1843, N. Funk s.n. (P). — FRENCH GUYANA: Road to Kaw, 5 Mar 2002, M. Pignal & N. Charrier-Arighi 1968 (P, RB). — VENEZUELA: Orinoco River, Jun 1854, R. Spruce 3603 (K, P).

Cleistes rosea f. *augusta* (Hoehne) Meneguzzo & Van den Berg, **comb. & stat. nov.** ≡ *Pogonia rosea* var. *augusta* Hoehne, Com. Lin. Telegr., Bot. 4: 9. 1912 ≡ *Cleistes latiglossa* var. *alba* Hoehne, Fl. Bras. 12(1): 219. 1940, nom. illeg. superfl. — **Lectotype (designated here):** Brazil, Mato Grosso, Augusto Fall, River Juruena, Feb 1912, F. C. Hoehne sub *Comissão Rondon* 5353

(R R000002498!). – Syntype: ibidem, *F. C. Hoehne* sub *Comissão Rondon 5352* (R accession no. 44784!).

Remarks — *Pogonia rosea* var. *augusta* was included in the revision of *Cleistes* for Brazil by Hoehne (1940), but neither this name nor *C. latiglossa* var. *alba* was cited by Pansarin (2005). The name *C. latiglossa* var. *alba* is an illegitimate superfluous name for *P. rosea* var. *augusta* because the protologue of both names cited the same type specimen, hence the earlier legitimate name should have been used for eventual combinations (Turland & al. 2018: Art. 11.4 and Art. 52.1). Therefore, its proper combination is made here in *Cleistes*, but instead of a variety we choose the rank of form, as we have been adopting for infraspecific taxa in which the only morphological difference is a sporadic mutation in flower colour (as discussed and used by Meneguzzo & al. 2015). *Cleistes rosea* f. *augusta* differs from *C. rosea* f. *rosea* by possessing dull white sepals and petals and a white labellum with a pinkish veined interior.

Additional specimen examined — BRAZIL: Mato Grosso: Salto Augusto, River Juruena, Feb 1912, *F. C. Hoehne* sub *Comissão Rondon 5584* (R).

Cleistes speciosa Gardner in Hooker's Icon. Pl. 5: t. 473–474. 1842 ≡ *Pogonia speciosa* (Gardner) Rchb. f., *Xenia* Orchid. 2: 90. 1865. – **Lectotype (designated here):** Brazil, Tocantins [“Goyaz”], Natividade, between Natividade and Arraias [“Arrayas”], Feb 1840, *G. Gardner 4003* (K K000463766!; isolectotypes: F F0046279F [accession no. 1025428]!, GH 00056702 [AMES accession no. 70959 & GH accession no. 8037]!, K K000463767!, NY 00009270!, NY 00547506!, P P00367096!, P P00367097!, SP SP003575 [accession no. 114345]!).

= *Pogonia monantha* Barb. Rodr., Gen. Spec. Orchid. 1: 167. 1877 ≡ *Cleistes monantha* (Barb. Rodr.) Schltr. in Arch. Bot. São Paulo 1: 179. 1926. – **Lectotype (designated here):** Brazil, São Paulo, Cajurú, Serra das Lajes, 14 Mar 1849, *A. F. Regnell III.1158* (S 07-7195!; isolectotypes: S 07-7196!, P P00367126!, P P00367127!), **syn. nov.**

= *Cleistes caloptera* Rchb. f. & Warm., Otia Bot. Hamburg. 2: 82. 1881, **syn. nov.** ≡ *Pogonia caloptera* Rchb. f. & Warm. in Otia Bot. Hamburg. 2: 82. 1881. – **Lectotype (designated here):** [icon] (W 0079662 [Rchb. Herb. Orchid. No. 48046] [left-hand sheet of drawings]!).

= *Pogonia metallina* Barb. Rodr. in Revista Engen. 3: 74. 1881, **syn. nov.** ≡ *Cleistes metallina* (Barb. Rodr.) Schltr. in Arch. Bot. São Paulo 1: 179. 1926. – **Lectotype (designated here):** [icon] original illustration that was to be published by Barbosa Rodrigues in *Iconographie des Orchidées du Brésil*, deposited at the library of Jardim Botânico do Rio de Janeiro (accession no. OR/584.150981); reproduced in Barbosa Rodrigues (1996: vol. 1: 92, t. 39).

= *Pogonia lenheirensis* Barb. Rodr. in Contr. Jard. Bot. Rio de Janeiro 1: 47. 1901, **syn. nov.** ≡ *Cleistes lenheirensis* (Barb. Rodr.) Hoehne, Fl. Bras. 12(1): 232. 1940. – **Lectotype (designated here):** [icon] “*Pogonia lenheirensis*”, Barbosa Rodrigues in Contr. Jard. Bot. Rio de Janeiro 1: t. VI, fig. D: 1–8. 1901.

– “*Bacamania speciosa*” (Gardner, in sched.), nom. inval.

Remarks — During the study of *Epistephium monanthum* we found additional nomenclatural problems in the heterotypic *Cleistes monantha*. Initially we thought that the latter name should be the correct heterotypic name to be used instead of *C. metallina*, as indicated by Pansarin (2005). This author pointed out that *C. caloptera* and *Pogonia lenheirensis* are conspecific, a position we agreed with. However, we studied the original specimens of *C. speciosa* collected by George Gardner in the Brazilian central plateau. The study of this material led us to the conclusion that this name also is conspecific with *P. monantha* Barb. Rodr. Because *C. speciosa* was published 35 years earlier than *P. monantha* Barb. Rodr., the former should be used for this species. Consequently, *C. caloptera*, *P. lenheirensis*, *P. metallina*, and *P. monantha* Barb. Rodr. are heterotypic synonyms of *C. speciosa*.

The original specimens of *Cleistes speciosa* were labelled by Gardner as being from the province of Goyaz, near Natividade. However, Goiás State (the current spelling) has been divided into two states in 1988 and currently the specific locality is in Tocantins State. “*Bacamania speciosa* Gardn.” was merely a name in schedula, i.e. an unpublished name handwritten by Gardner on the label of the lectotype specimen of *C. speciosa* in K. Neither “*Bacamania*” nor “*B. speciosa*” is a validly published name because a handwritten label on a herbarium specimen does not constitute effective publication (Turland & al. 2018: Art. 29–30, 32.1(a)).

Pansarin (2005) stated that only the name *Pogonia caloptera* was proposed in the protologue, and the combination under *Cleistes* was made later by Schlechter (in Schlechter & Hoehne 1926). However, both names *C. caloptera* and *P. caloptera* are alternative names by simultaneous publication in the protologue (Turland & al. 2018: Art. 36.3).

The illustration of *Pogonia metallina* published in the protologue (Barbosa Rodrigues 1881: t. II C) depicts only a dissected perianth. However, the original illustration of the complete specimen, which includes the identical elements illustrated in the protologue, was kept unpublished until it was later reproduced by Barbosa Rodrigues (1996: vol. 1: 92, t. 39). Hence, the original illustration of the complete specimen is designated here as the lectotype of *P. metallina*. The illustration published in the protologue was miscaptioned as “*Pogonia montana*”. We speculate that this mistake was induced by the publication of a second name with an identical specific epithet, i.e. *Galeandra montana* Barb. Rodr. in the same article

(Barbosa Rodrigues 1881: 73). As for *P. lenheirensis*, the whereabouts of its original illustration is unknown, therefore the one depicted in the protologue is designated here as the lectotype.

Additional specimens examined — BRAZIL: Bahia: Serra dos Lençóis, 26 May 1980, R. M. Harley & al. 22654 (CEPEC, K). Distrito Federal: Brasília, 25 Jan 1997, J. A. N. Batista 672 (CEN). Goiás: Chapada dos Veadeiros, 16 Mar 1969, H. S. Irwin & al. 24496 (IAN, NY, UB). Minas Gerais: Miguel Burnier, 19 Apr 1957, E. Pereira & G. F. J. Pabst 3014 (RB).

Gomesa stricta and its identity

Pleurothallis quadrifida (Lex.) Lindl. in Edwards's Bot. Reg. 21: sub t. 1797. 1835 ≡ *Dendrobium quadrifidum* Lex. in La Llave & Lexarza, Nov. Veg. Descr. 2(Orchid. Opusc.): 40. 1825 ≡ *Humboltia quadrifida* (Lex.) Kunth, Rev. Gen. Pl. 2: 668. 1891 ≡ *Stelis quadrifida* (Lex.) Solano & Soto Arenas, Icon. Orchid. 5–6: 11. 2003 ≡ *Specklinia quadrifida* (Lex.) Luer in Monogr. Syst. Bot. Missouri Bot. Gard. 95: 263. 2004 ≡ *Loddigesia quadrifida* (Lex.) Luer in Monogr. Syst. Bot. Missouri Bot. Gard. 105: 251. 2006 ≡ *Lalexia quadrifida* (Lex.) Luer in Harvard Pap. Bot. 16: 358. 2011. – **Neotype (designated here)**: Mexico, Michoacan, Coalcoman, 4 Apr 1939, G. B. Hilton 13643 (ARIZ accession no. 12480!).

= *Gomesa stricta* Spreng., Syst. Veg. 3: 730. 1826 ≡ *Rodriguezia stricta* (Spreng.) Steud., Nomencl. Bot., ed. 2, 2: 463. 1841. – **Lectotype (designated here)**: Jamaica, s. loc., Jun 1821, C. L. G. Bertero 1676 (TO s.n.!).

– “*Phyanthera callistachys*” (Sprengel, Syst. Veg. 3: 730. 1826), nom. inval.

Remarks — *Gomesa stricta*. is a name proposed for a Jamaican species that has been cited for a long time in the literature as being of unknown application to a biological entity. It drew the attention of one of us (T.E.C.M.) during the revision of the genus *Gomesa*, which is restricted to South America and has its main diversity centred in eastern Brazil. We confirm the identity of *G. stricta* as a heterotypic synonym of *Pleurothallis quadrifida*.

Gomesa stricta was described by Sprengel (1826: 730) solely based on a specimen from “Jamaica” and collected by “Bertero”. We contacted all herbaria cited in *Index herbariorum* (Thiers 2020+) which claimed to have Carlo Luigi Giuseppe Bertero's specimens in their collections. Ackerman (2014) cited the type specimen as deposited at herbarium G, although he had not studied it. It seems it had been a misattribution because it was not located. The only herbarium that returned a positive answer for a specimen labelled as *G. stricta* or any of its denominations was the Università degli Studi di Torino (TO). This specimen is designated here as the lectotype and seems to have been signed and dated by Sprengel

himself, or at least it could be attributed as a reference to him because we were not able to confirm the handwriting was by Sprengel. The lectotype consists of two stems bearing inflorescences, but the leaves are lacking.

“*Phyanthera callistachys* Bert.” was cited as a synonym in the protologue of *Gomesa stricta*, and later “*Phyanthera Berter.*” and “*P. callistachys* Bert[er].” were cited as synonyms of *Rodriguezia* and *R. stricta*, respectively, by Steudel (1841: 330, 463). These were subsequently frequently cited in botanical literature incorrectly as validly published names, e.g. by Govaerts & al. (2020), but they are not validly published because they were merely cited as synonyms (Turland & al. 2018: Art. 36.1(b)). The only validly published names are the basionym *G. stricta* and the new combination *R. stricta*, the latter mostly probably following Lindley's (1827) treatment uniting *Gomesa* and *Rodriguezia*.

Cogniaux (1909–1910: 621) considered *Rodriguezia stricta* as a doubtful name in his treatment for the Antilles. However, he did cite a specimen collected by Bertero under *Pleurothallis longissima* Lindl. (Cogniaux 1909–1910: 398), and a corresponding specimen was virtually untraceable by the supplied internal data. Fawcett & Rendle (1910) and Adams (1966) made no mention of this debatable name in their treatments of the orchid flora of Jamaica and neither did Nir (2000) for the whole of the Antilles. In the orchid flora of the Greater Antilles, Ackerman (2014: 573) kept it as an excluded taxon and believed that it could be a mislabelled specimen from somewhere else that Bertero had collected in the Neotropics.

Ormerod (2006) made a risky assumption based on circumstantial evidence on the identity of *Gomesa stricta* as a new synonym of *Pleurothallis quadrifida*. He referred to the just-mentioned Bertero specimen by Cogniaux (1909–1910), considered *P. longissima* a synonym of *P. quadrifida*, and Sprengel's (1826) diagnosis as a good and reliable enough description. From a modern perspective this diagnosis would be considered too vague and could be applied to numerous orchid species. Despite this, our study of the lectotype of *G. stricta* agrees on its conspecificity with *P. quadrifida*. We revised the protologues, the list of synonyms presented by Luer (2000) and Ackerman (2014), and their respective types to confirm the synonymy. To consolidate the synonym status and because the type designation for *Dendrobium quadrifidum*, the basionym of *P. quadrifida*, was not done by previous authors, we designate here a neotype from a locality as close as possible to the one of the original specimens because it has not been collected from the type locality again (López Ferrari & Serna 2000; Luer 2000; Nir 2000; Ackerman 2014; Ormerod 2016).

The generic circumscriptions in *Pleurothallidinae* have been rather controversial and unstable over the last couple of decades. For the species discussed here, the monotypic genus *Loddigesia* Luer (2006: 251), nom. illeg. (non *Loddigesia* Sims; *Leguminosae*), was described

and later renamed as *Lalexia* Luer (2011: 358). In the current study, we follow a more conservative circumscription that places this species in *Pleurothallis* because *P. quadrifida* is phylogenetically placed as a sister group of *Pleurothallis* (Karremans & al. 2013). Hence, “*Physanthera*” is a synonym of *Pleurothallis*, not of *Rodriguezia* as listed by Steudel (1841). However, under a splitting approach, “*Physanthera*” would be a synonym of *Lalexia*.

Additional specimens examined — COSTA RICA: Guanacaste, 3 Jan 1964, L. O. Williams & al. 26550 (F). — JAMAICA: Fairfield, s.d., H. R. Wullschügel 1383 (M). — VENEZUELA: Portuguesa, 15 Nov 1951, O. Renz 7359 (RENZ).

The chimeric artefact *Maxillaria spathacea*

Bifrenaria harrissoniae (Hook.) Rchb. f. in Bonplandia (Hanover) 3: 217. 1855 ≡ *Dendrobium harrissoniae* Hook., Exot. Fl. 2: t. 120. 1824 ≡ *Maxillaria harrissoniae* (Hook.) Lindl., Bot. Reg. 11: t. 897. 1825 ≡ *Colax harrissoniae* (Hook.) Lindl. ex Spreng., Syst. Veg. 3: 727. 1826 ≡ *Stanhopea harrissoniae* (Hook.) P. N. Don in Donn, Hortus Cantabrig., ed. 13: 607. 1845 ≡ *Lycaste harrissoniae* (Hook.) P. N. Don in Donn, Hortus Cantabrig., ed. 13: 721. 1845. – Lectotype (designated by Koehler & Amaral 2004: 327): [icon] “*Dendrobium harrissoniae*” in Hooker, Exot. Fl. 2: t. 120. 1824.

= *Maxillaria spathacea* Lindl., Gen. Sp. Orchid. Pl.: 151. 1832. – **Lectotype (designated here)**: Brazil, s. loc., s.d., Boaz [sic] W. Boog s.n. (K K000879747! flowers only, excluding vegetative part [*Cattleya* sp.] of K K000879700!).
– “*Bifrenaria harrissoniae* var. *typica*” (Hoehne in Arq. Bot. Estado São Paulo 2: 116. 1950), nom. inval.

Remarks — In late 2012, while handling specimens at K, we faced a very peculiar and curious specimen stored as an unidentified species of *Bifrenaria*. Our first examination along with annotations on the herbarium sheet, and later literature inspection, revealed it to be the chimeric original specimen of the name *Maxillaria spathacea*. It consists of an assemblage of flowers of *B. harrissoniae* and vegetative parts of an unidentified species of *Cattleya* subg. *Intermediae* (Cogn.) Withner sensu van den Berg (2014). *Maxillaria spathacea* was not cited by Koehler & Amaral (2004) in their revision of *Bifrenaria*.

The specimen of *Maxillaria spathacea* was part of William Jackson Hooker’s personal herbarium later incorporated into K in 1867. The only presented information is a locality “Brazil” and a collector whose name is discussed below. It is annotated by John Lindley as “*Maxillaria*”, and by a third person as “*Max. spathacea* Lindl. Mss. [?] Orch. p. 151”, and by Reichenbach filius, more or less as quoted from his work (Reichenbach 1856): “*Maxillaria spathacea*: est artefactum ex *Bifrenaria Harrisoniae* et *Cattleya* quadam. (Vid. sp. typ. in

hb. Hook.)” [*M. spathacea* is an artefact of *B. harrissoniae* and a *Cattleya* (I have seen the type specimen in the Hooker herbarium); our translation and adaptation]. Additionally, Eric A. Christenson in April 1994 annotated the specimen as “Plant = *Cattleya* [:] Flowers = *Bifrenaria*”.

Lindley (1832) described the name *Maxillaria spathacea* with a diagnosis including both vegetative and reproductive parts. On the specimen at K he credited the collector as being “Mr. Boog”, but the handwritten name is slightly unclear and could easily be read as “Mr. Boaz” or “Mr. Booz”. We consider that it refers to William Boog, who extensively sent botanical specimens to Hooker (Kew Archives, Director’s Correspondence, item KMDC1677). Lindley also expressed doubt by including a question mark next to the new species name, but the nature of such uncertainty has not been detailed. Apparently, Reichenbach (1856) was the first to indicate the chimeric nature of the specimen, but he did not undertake any taxonomic action. Cogniaux (1898) resolved it by synonymizing *M. spathacea* under *Bifrenaria harrissoniae*. Curiously, the vegetative part is here confirmed by us as belonging to some species of *Cattleya* subg. *Intermediae*. The specimen also carries an inflorescence enclosed by a spathaceous bract (from which the original flowers were removed), after which the specific epithet was probably coined. Exactly in the axil of each floral bract of the *Cattleya* inflorescence, the *B. harrissoniae* flowers identified by Reichenbach (1856) have been skilfully attached as to appear somewhat natural. Because the preparation is undoubtedly an admixture, we designate as the lectotype the flowers that can be unequivocally identified at specific level (Turland & al. 2018: Art. 8.2 and 9.14). Consequently, *M. spathacea* is confirmed as a heterotypic synonym of *B. harrissoniae*, and the vegetative *Cattleya* part is excluded from the lectotype.

Among the synonyms of *Bifrenaria harrissoniae* we detected an additional nomenclatural matter to be clarified. “*Bifrenaria harrissoniae* var. *typica*” (Hoehne 1950: 116) is not a validly published name (Turland & al. 2018: Art. 24.3 and 26.2) because it was applied to a variety that contained the typical element of *B. harrissoniae*, yet its final epithet was “*typica*” rather than “*harrissoniae*”, which would have been correct for the autonymic variety.

The specimen itself as an artefact received much attention and opened room for questions. The specimen could simply be regarded as an unwanted result of a mixture of specimens of two different and phylogenetically unrelated species. Or perhaps, it could be seen as a trick played on botanists, that caught Hooker and Lindley unawares, and just remained without solution.

Additional specimens examined — BRAZIL: Minas Gerais, Caldas Range, 17 Oct 1876, A. F. Regnell III 4410 (S). Paraná, Balsa Nova, 4 Oct 2003, J. M. Silva & al.

3792 (ALCB, MBM). Rio de Janeiro, Rio de Janeiro, Nov 2015, *G. Cattan 117* (RB). São Paulo, Bocaina Range, 11 Aug 1968, *D. Sucre & P. I. S. Braga 3497* (RB).

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