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Typification and synonymy of the Atlantic Forest endemic species *Napeanthus primulifolius* (Gesneriaceae)

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Abstract. During the nomenclatural revision of Acanthaceae names described by Friar J.M.C. Vellozo in his *Florae fluminensis*, we realized that *Pedicularis acaulis* Vell. was conspecific with *Napeanthus primulifolius* (Gesneriaceae), a Brazilian Atlantic Forest endemic species. This study presents the complete and updated synonymy of *N. primulifolius*, including two new synonyms: *Pedicularis acaulis* and *Oreocharis notha* C.B. Clarke. We also propose a lectotype for *N. primulifolius* based on G. Raddi's specimens and *P. acaulis* based on Vellozo's original plate.

Keywords: *Florae fluminensis*, Giuseppe Raddi, historical plant collections, Vellozo.

INTRODUCTION

Napeanthus Gardner is a Neotropical genus of Gesneriaceae comprising 20 species (and possibly another ten undescribed ones) occurring in tropical rainforests of Central and South America (Leeuwenberg 1958; Weber 2004; Wiehler 1983). The genus shows a conspicuous number of species confined to the Andean foothills (Bolivia, Colombia, Peru, and Venezuela) and the Guiana Shield (Suriname, Guyana, French Guiana, and northern Brazil), besides two disjunct species in the Atlantic Forest of eastern Brazil (based on Leeuwenberg 1958; 1971; Skog 1974; Feuillet and Skog 2002). *Napeanthus* had already been previously pointed out by Leeuwenberg (1958) as a unique genus among New World Gesneriaceae, later allocated by Wiehler (1983) in its own tribe, Napeantheae Wiehler. Recently molecular phylogenetic studies support this monogeneric tribe as the first diverging lineage in the subfamily Gesnerioideae Burnett, recovered as sister to clade consisting of tribes Beslerieae Bartling & Wendl.f. + Titanotricheae Yamaz. ex W.T. Wang (Smith 2000; Möller and Clark 2013; Luna et al. 2019; Ogutcen et al. 2021). Species of *Napeanthus* are distinguished from other New World Gesneriaceae by being rosette herbs, generally acaulescent, with grouped stomata (in islands), calyx generally accrescent in fruit, stamens typically 4 (plus a staminodium), nectary absent, and dry capsules with loculicidal or septicial dehiscence (Leeuwenberg 1958; Wiehler 1983; Weber 2004).

Napeanthus was described by Gardner (1843) to accommodate a peculiar species from the Atlantic Forest of Serra dos Órgãos, in the State of Rio de Janeiro, Brazil, named *N. brasiliensis* Gardner. Nonetheless, an obscure species described in Oxalidaceae ca. 20 years before *Napeanthus* by Raddi (1820), *Oxalis primulifolia* Raddi [as “*primulaefolia*”], was pointed out by Sandwith (1956) as conspecific with *N. brasiliensis*, being the accepted and correct name for this species. Alongside *N. reitzii* (L.B.Sm.) Burt ex Leeuwenb., they are the only known species of *Napeanthus* distributed in the Brazilian Atlantic Forest (Leeuwenberg 1958; Chautems 1991; Chautems 2003; Hinoshita et al. 2018).

During the preparation of the nomenclatural revision of Acanthaceae names described by Vellozo (1829, 1831) in his “*Florae fluminensis*,” we detected that one of the names under *Pedicularis* L. (genus in which Vellozo described some Acanthaceae, following the Linnean arrangement “Didynamia, Angiospermia”) did not match any taxa of this family known to Brazil. This intriguing species (i.e., *Pedicularis acaulis* Vell.) represented a species of *Napeanthus* (i.e., *N. primulifolius*, Gesneriaceae) based on the habit, leaves arrangement, leaf-blade morphology, indumentum color in the young leaves and other vegetative structures, and inflorescence and calyx morphology described and depicted by Vellozo (1829, 1831). In this study, we discuss the similarities between both names and justify the inclusion of *P. acaulis* as a synonym of de *N. primulifolius*. Additionally, when investigating the identity of *N. primulifolius*, we also found another synonym (i.e., *Oreocharis notha* C.B. Clarke) for this name, with the type specimen erroneously cited as being from the Philippines.

TAXONOMIC TREATMENT

Napeanthus primulifolius (Raddi) Sandwith, *Webbia* 12(1): 332. 1956

Type: Brazil, [Rio de Janeiro]: [Mun. Magé], “[...] nei Boschi di Mandioca vicino ai torrenti” [woods of Fazenda Mandioca, close to streams], [1817–1818], G. Raddi s.n. (lectotype, first-step designated by Leeuwenberg (1958, p. 347) as “holotype” and “isotype,” second-step designated here PI barcode PI006250! = K negative No. 2697; isolectotypes: FI barcode FI005344!, FI barcode FI005345!, PI barcode PI006251! = K negative No. 2696). Figures. 1, 2A.

(=) *Oxalis primulifolia* Raddi [as “*primulaefolia*”], *Mem. Mat. Fis. Soc. Ital. Sci. Modena*, Pt. Mem. Fis. 18: 400. 1820

(=) *Acetosella primulifolia* (Raddi) Kuntze, *Revis. Gen. Pl.* 1: 93. 1891

(=) *Pedicularis acaulis* Vell., *Fl. Flumin.*: 270. 1829 [1825, publ. 7 Sep–28 Nov 1829]; *Fl. Flumin. Icon.* 6: t. 107. 1831 [1827, publ. 29 Oct 1831], *nom. illeg. non Pedicularis acaulis* Scop. (1771), **syn. nov.**

Type: Brazil, [Rio de Janeiro], [Mun. Paraty], “[...] silvis maritimis Pharmacopolitanis,” [1782–1790], [preserved specimen presumably not extant] (lectotype [icon] original parchment plate of *Florae fluminensis* in the Manuscript Section of the Biblioteca Nacional, digital object cat. No. mss1198655_111; later published in Vellozo, *Fl. Flumin. Icon.* 6: tab. 107, 1831). Fig. 2B.

(=) *Napeanthus brasiliensis* Gardner, *London J. Bot.* 2: 14. 1843

Type: [Brazil] Brasiliæ, [Rio de Janeiro] Provinciæ Rio de Janeiro, “in sylvis densis primævis in montibus vulgo Serra dos Organos,” February 1838, G. Gardner 581 (lectotype designated by Leeuwenberg (1958, p. 348) as “holotype” K barcode K000601592 ex herb. Hook.!, isolectotypes BM barcode BM000992330 ex herb. Gardner!, BM barcode BM000992331 ex herb. Gardner!, CGE [cited by Leeuwenberg (1958)], E barcode E00155094!, FI barcode FI009832 ex herb. Webbium!, G barcode G00365564!, G barcode G00365565 ex herb. Moric.! = F negative No. 26253!, K barcode K000601593 ex herb. Benth.! [annotated by Leeuwenberg (1958) as “isotype”], NY barcode NY00312996 ex herb. Meisner, comm. Schuttlenworth!, NY barcode NY00312997 ex herb. British Museum!, P barcode P00606336 ex herb. E. Drake!, W [cited by Leeuwenberg (1958)]).

(=) *Oreocharis notha* C.B. Clarke, *Monogr. Phan.* 5: 64. 1883, **syn. nov.**

Type: Brazil, [probably Rio de Janeiro] Manille? [on the original label, referring to Manila, Philippines], S.loc. indicato, s.d., [probably A. Saint-Hilaire s.n.] (holotype P barcode P04060096 ex herb. Bory! = E photo barcode E00155095!).

Description

Terrestrial perennial herbs, 10–25 cm high. *Stems* short, 3–15 mm long, cylindrical, glabrous, rhizomatous. *Leaves* rosulate, grouped at the apex of the stem; leaf blade sessile, 5.0–23.0 × 1.5–6.5 cm, oblong-spathulate or oblanceolate, apex acute, base subcordate, margin slightly crenate-serrate, sinuate, glabrous adaxially, sparsely

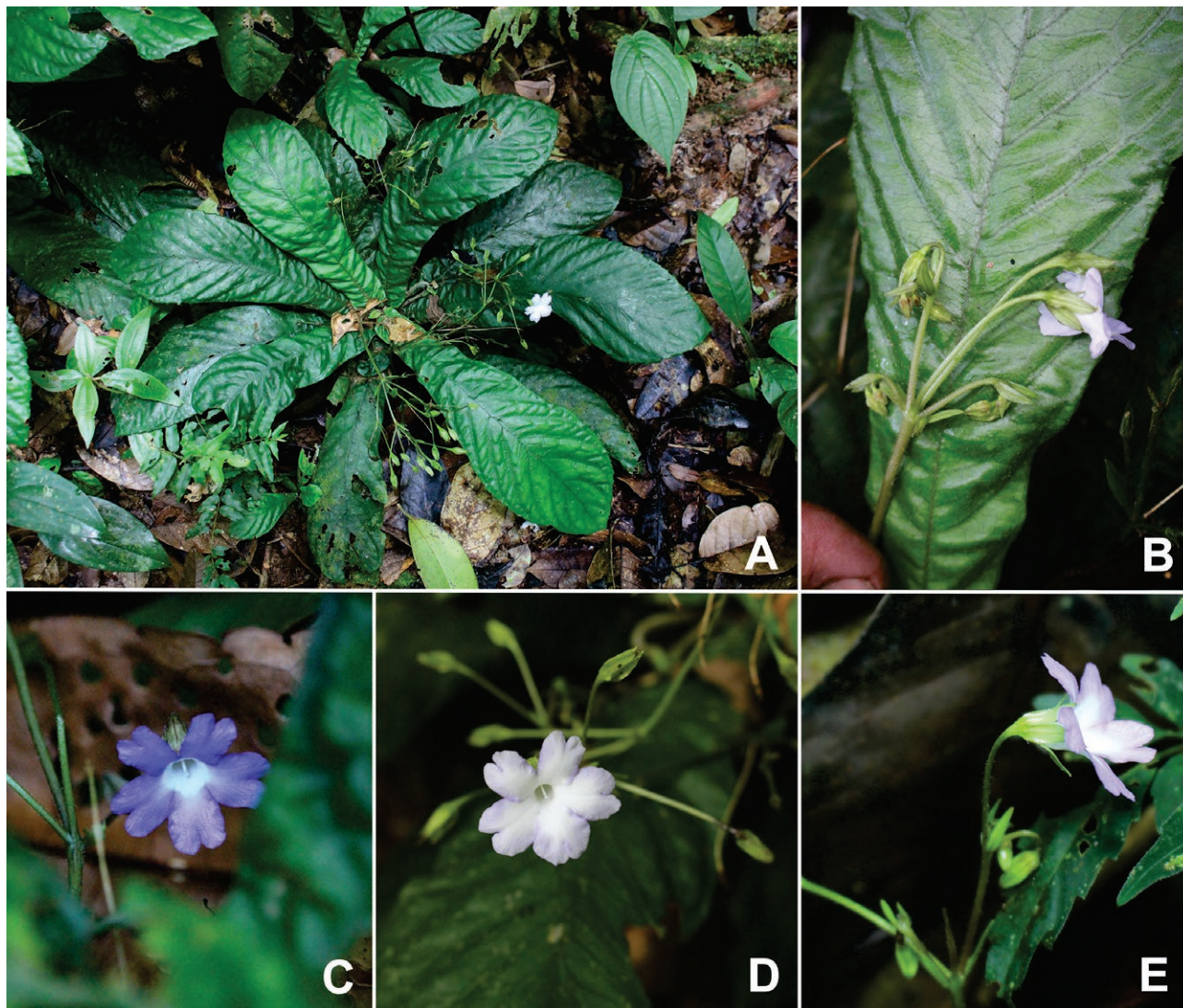


Figure 1. *Napeanthus primulifolius* (Raddi) Sandwith. A. Habit. B. Inflorescence detail. C. Flower at full anthesis. D. Older flower. E. Flower, lateral view showing the calyx lobes. Photographs taken by Nicco L. Faria.

pilose abaxially, trichomes concentrated on the veins, crass (papyraceous when dry); enervation with 6–9 pairs of secondary veins. Inflorescences simple, 4(–6)-flowered, or compound, with at least one of the lateral flowers replaced by a new peduncle; peduncles (or peduncles segments on compound inflorescences) 0.4–1.4 cm long, glabrescent; bracts 2, 3.0–12.0 × 1.0–4.0 mm, linear, oblong or lanceolate, apex acute or acuminate, puberulous on both surfaces, green; pedicels 1.5–6.0 cm long, slender, glabrescent. Calyx campanulate, green; lobes 5, 7.0–15.0 × 3.0–5.0 mm, equal, connate for $\frac{1}{3}$ to $\frac{1}{2}$ of their length, oblong, elliptic or lanceolate, spreading, inconspicuously veined, apex acuminate, margin entire, glabrous adaxially, puberulous abaxially, slightly fleshy, chartaceous when

fresh, membranaceous when dry. Corolla early caducous, tubular, 10.0–15.0 × 5.0–6.0 mm, glabrous on both surfaces; tube 6.0–8.0 mm long, whitish; limb zygomorphic, spreading, lobes 5, 5.0–7.0 × 4.0–6.0 mm, unequal, obovate, apex 2-lobate, margin slightly crenate-serrate, sinuate, bluish or pale lilac, whitish at age. Stamens 4, included, didynamous; filaments 3.0–3.5 mm long, glabrous; anthers oblong-reniform, ca. 0.75 mm long; staminode 1, 0.8–1.0 mm long, glabrous. Ovary ovoid, glabrous; style 3.8–5.0 mm long, erect, glabrous; stigma obscurely 2-lobed; disk absent. Capsule 4.0–6.0 mm long, apiculate, 2-valved, loculicidal; valves glabrous; accrescent calyx erect, enlarged, becoming thicker, conspicuously veined. Seeds ellipsoid, brown, shining.



Figure 2. *Napeanthus primulifolius* (Raddi) Sandwith and its synonym *Pedicularis acaulis* Vell. A. The lectotype of *Oxalis primulifolia* Raddi, the basionym of *N. primulifolius*, at PI (barcode PI006250). Photograph courtesy of the Herbarium Horti Botanici Pisani (PI), Università di Pisa, reproduced with permission. B. The lectotype of *Pedicularis acaulis* from Biblioteca Nacional.

Iconography

Vellozo (1831, vol. 6: tab. 107), as *Pedicularis acaulis* Vell.; Hoehne (1970: tab. 189 and tab. 190), as *Napeanthus brasiliensis* Gardner; Chautems (2003: figure J, plate 1); Hinoshita et al. (2018: figure 1d–h).

Distribution and habitat

Napeanthus primulifolius is endemic to eastern Brazilian Atlantic Forest understories, especially on steep banks near streams where plants are rooted in earth among rocks. It was recorded in southern Bahia and in Serra do Mar Mountain Range (from Rio de Janeiro to northeastern Paraná).

Specimens examined

BRAZIL: Bahia: Mun. Arataca, Serra das Lontras, 12 February 2005 (fl, fr), J.G. Jardim et al. 4375

(CEPEC, NY, RB); ibidem, RPPN Caminho das Pedras, 22 July 2005 (fr), J.G. Jardim et al. 4726 (CEPEC); ibidem, Serra do Peito de Moça, 12 October 2005 (fr), A.M.A. Amorim et al. 5283 (CEPEC); ibidem, Serra do Peito de Moça, 14 April 2006 (fr), A.M.A. Amorim et al. 5781 (CEPEC); ibidem, Serra das Lontras, 29 April 2006 (fl, fr), A.M.A. Amorim et al. 5978 (CEPEC); ibidem, 21 January 2007 (fl, fr), R.A.X. Borges et al. 596 (CEPEC, NY); Mun. Buerarema, rod. São José da Vitória – Una, 12 May 1999 (fr), A.M.A. Amorim et al. 3065 (CEPEC, NY); Mun. Camacã, 21 January 1971 (fl, fr), T.S. Santos 1384 (CEPEC, US); ibidem, RPPN Serra Bonita, 2 February 2005 (fr), A.M.A. Amorim et al. 4770 (CEPEC, NY); ibidem, 29 October 2005 (fr), A.M.A. Amorim et al. 5427 (CEPEC); ibidem, 4 December 2007 (fl), M.M.M. Lopes et al. 1557 (CEPEC); Mun. Santa Luzia [= Mun. Camacã], Serra da Onça, 21 November 1996 (fl, fr), W.W. Thomas et al. 11382 (CEPEC); Mun. Una,

Serra dos Quatis, 21 February 1986 (fr), *T.S.Santos & E.J.Judziewicz* 4103 (CEPEC); *ibidem*, Serra Javi, 10 March 1986 (fr), *T.S.Santos et al.* 4226 (CEPEC, US). **Paraná:** Mun. Guaraqueçaba, Rio do Costa, 4 February 1971 (fr), *G.Hatschbach* 26267 (MBM, MO); *ibidem*, Salto Morato, 15 November 1993 (fl), *G.Hatschbach & J.M. Silva* 59775 (MBM); *ibidem*, Morro do Bronze, 12 February 2002 (fl), *J. Carneiro* 1309 (MBM). **Rio de Janeiro:** S. loc. indicato, s.d. (fl), *Glaziou* 1075 (P); S.loc. indicato, 1821 (fl), *Langsdorff s.n.* (P barcode P03509121 ex herb. Richard); [Mun. Duque de Caxias], estrada Rio – Petropolis, 5 May 1972 (fl), *D.Sucre & T.Soderstron* 9095 (RB); *ibidem*, Xerém, 22 March 1950 (fl, fr), *Brade & A.P. Duarte* 20252 (RB); [Mun. Engenheiro Paulo de Frontin], Palmeiras, 13 January 1877 (fl), *Glaziou* 8835 (P – 2 sheets); Mun. Guapimirim, Granja Monte Olivete, 18 January 1995 (fl, fr), *J.M.A.Braga et al.* 1709 (RB), *ibidem*, Estrada das Andorinhas, 20 December 1995 (fr), *J.A.LiraNeto et al.* 189 (RB); Mun. Lídice, estrada Angra dos Reis – Lídice, 16 March 1978 (fr), *V.F. Ferreira et al.* 326 (RB); [Mun. Magé], [Fazenda] Madiocca, s.d., *Riedel s.n.* (LE, NY); *ibidem*, [...] prés Mandioca, 1816–1821 (fl), *A.Saint-Hilaire s.n.* (P barcode P03509114); *ibidem*, Serra dos Órgãos, 16 July 2017 (fr), *J.M.A.Braga* 17-042 (RB); Mun. Mangaratiba, Reserva Ecológica Rio das Pedras, 30 November 1996 (fl, fr), *M.G.Bovini et al.* 1104 (RB); *ibidem*, 9 December 1997 (fl, fr), *R.C.Lopes et al.* 86 (RB); *ibidem*, 16 March 2001 (fr), *T.C.C.Lopes et al.* 11 (RB); [Mun. Nova Friburgo], [Macaé de Cima] Alto Macahé, 15 June 1891 (fl), *Glaziou* 18412 (P, R); *ibidem*, 30 November 1891 (fl), *Glaziou* 19745 (P); [Mun. Nova Iguaçu], Serra do Tinguá, 11 February 1943 (fl, fr), *F.Guerra s.n.* (RB 47949); *ibidem*, Reserva Biológica do Tinguá, 17 January 2002 (fl), *M.G.Bovini et al.* 2143 (RB); *ibidem*, 22 October 2002 (fl), *L.C.Giordano et al.* 2585 (RB); Mun. Paraty, estrada Paraty – Cunha, 19 June 1978 (fr), *G.Martinelli* 4652 (RB); *ibidem*, Fazenda São Roque, 2 August 1988 (fr), *M.C. Marques* 72 (RB); *ibidem*, divisa dos estados Rio de Janeiro – São Paulo, 12 April 1991 (fr), *L.S.Sarahyba et al.* 812 (RB); *ibidem*, Patrimônio, 7 July 1992 (fr), *L.C. Giordano et al.* 1478 (RB); *ibidem*, Laranjeiras, 8 December 1993 (fr), *T.Konno et al.* 388 (RB); *ibidem*, Morro do Corisco, 8 March 1994 (fr), *C.Duarte* 21 (RB); *ibidem*, Apa-Cairuçu, 12 February 2003 (fr), *M.G.Bovini & M.Nadruz* 2259 (RB); Mun. Petrópolis, Serra da Estrela, 16 June 1937 (st), *J.G.Kuhlmann* 123 (RB); Mun. São Fidélis, Poço Parado, 11 May 2012 (fr), *M.Perret et al.* 73 (VIES); [Mun. Teresópolis], Serra dos Órgãos, 10 December 1948 (fl), *A.P.Duarte & E.Pereira s.n.* (RB 65302). **São Paulo:** Mun. Cunha, Parati – Cunha, 1 March 1984 (fl, fr), *A.Chautems & G.Martinelli* 123 (US); Mun. Peruíbe,

Estação Ecológica Juréia-Itatins, 29 May 1996 (fr), *L.P.Queiroz & R.Belinello* 4526 (HUEFS, SP); [Mun.] Santos, May 1875 (fr), *Mosén* 3789 (P ex herb. Glaz.); Mun. São Miguel Arcanjo, Parque Estadual Carlos Botelho, 20 April 2002 (fr), *S.Bortoleto et al.* 49 (ESA); *ibidem*, 8 December 2004 (st), *A.O. Araujo* 470 (ESA); Mun. São Sebastião, Parque Estadual da Serra do Mar, 20 April 2000 (fr), *J.P.Souza et al.* 3312 (ESA, MBM, SPF, UEC); Mun. Sete Barras, Parque Estadual de Carlos Botelho, 21 April 2002 (fr), *R.Farias et al.* 655B (ESA); Mun. Ubatuba, 1987 (fr), *Edna (SUDELPA) s.n.* (SPF 67679); *ibidem*, Parque Estadual da Serra do Mar, 15 January 1990 (fl), *F.C.P.Garcia et al.* 549 (ESA, IAC); *ibidem*, Picinguaba, 13 November 1990 (fl, fr), *R.Maquete et al.* 287 (IBGE, HRB, RB); *ibidem*, 2 December 1993 (fl), *L.Rossi & G.L.Esteves* 1373 (SP, PMSP); *ibidem*, Estação Experimental do IAC, 17 November 1997 (fl), *C.Kameyama et al.* 113 (SPF); *ibidem*, Parque Estadual da Serra do Mar, 21 January 2001 (fl), *P.Fiaschi & A.Lobão* 583 (SPF); *ibidem*, Picinguaba, 29 May 2014 (fl, fr), *G.Colletta et al.* 1707 (ESA); 29 May 2014 (fl), *G.Colletta et al.* 1708 (ESA); *ibidem*, 29 May 2014 (fl), *G.Colletta et al.* 1719 (ESA).

Taxonomic and nomenclatural notes

Vellozo (1829) described four species under *Pedicularis* L. (currently placed in Orobanchaceae) in his “*Florae fluminensis*” following the Linnaean arrangement “Didynamia, Angiospermia.” Three of them corresponded to species of Acanthaceae, and one of them, *Pedicularis acaulis* Vell., which was annotated by Vellozo (1829) as of doubtful placement and possibly belonging to a different genus, does not. *Pedicularis acaulis* Vell. is a later homonym of *P. acaulis* Scop., an accepted name in Orobanchaceae for an alpine species from the Italian Alps to the northwestern mountains of the Balkan Peninsula (Mayer 1972). Since the description of *P. acaulis* Vell., this name has never been mentioned in any taxonomic treatment for Brazilian Lamiales and remained forgotten until this moment (pers. observ.). However, when we analyzed the original description (Vellozo 1829) and the later published original plate (Vellozo 1830) hosted at Biblioteca Nacional [National Library of Brazil] (Fig. 1B), we realized that some morphological characters, i.e., rosette habit, acaulescent stems, sessile leaves, cymose inflorescence simple or compound (with at least one of the lateral flowers replaced by a new peduncle), and the calyx lobes overlapping in the margin, matched those from the small gesneriad genus *Napeanthus*. Of the only two *Napeanthus* species in eastern Brazil, i.e., *N. primulifolius*, which occurs from Bahia to northeastern Paraná, and *Napeanthus reitzii* (L.B.Sm.) B.L.Burt ex Leeuwenb.,

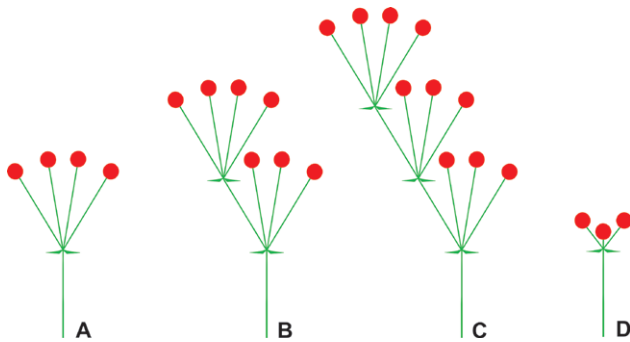


Figure 3. Inflorescences schemes of the two species of *Napeanthus* Gardner from Eastern Brazil. A–C. *Napeanthus primulifolius* (Raddi) Sandwith. D. *Napeanthus reitzii* (L.B.Sm.) Burt ex Leeuwenb.

from Paraná and Santa Catarina], *P. acaulis* Vell. is conspecific with *N. primulifolius*, due to their rosette habit, acaulescent, pseudovercillate leaves grouped at the stem apex, cymose inflorescences simple (often 4-flowered) or compound (with at least one of the lateral flowers replaced by a new peduncle) (Fig. 3A–C), flowers with long pedicels, and calyx lobes elliptical. *Napeanthus reitzii* is a herb with elongated stems, leaves distributed along the stem (with relatively short internodes), inflorescence cymose simple, 3-flowered (dichasium) (Fig. 3D), flowers with short pedicels, and calyx lobes trullate. Based on these morphological characters and geographic distribution, we propose the synonymy of *P. acaulis* Vell. under *N. primulifolius*. Furthermore, because there are no preserved specimens of Vellozo’s names published in “*Florae fluminensis*” (see Lima 1995) and the illustrations (i.e., Vellozo 1831) were published after the protologue (i.e., Vellozo 1829) and are not considered part of the author’s original material, in accordance with the Art. 9.4 and related of the International Code of Nomenclature for algae, fungi, and plants (Shenzhen Code) – ICN (Turland et al. 2018), we chose Vellozo’s original plate as the lectotype.

Leeuwenberg (1958) referred to G. Raddi’s specimens deposited at PI herbarium only as a “holotype” and “isotype,” without any reference to the herbarium catalog number or even without any explicit indication in the sheets. Thus, we chose one of these specimens as a second-step lectotype, according to Art. 8.1 and 9.17 of the ICN (Turland et al. 2018).

When Clarke (1883) described *Oreocharis notha*, he was unsure of where this specimen was collected (possibly from Manila, Philippines) and the generic placement of this species, indicated in the protologue with a question mark. This author also pointed out that the long calyx and ovoid ovary in this species were different from other *Oreocharis* Benth. In fact, the calyx with

long lobes accrescent in fruit is not found in any known species of *Oreocharis* s.str., not even in genera recently synonymized by Möller et al. (2011), which had calyx lobes shorter than the corolla. On the label of the specimen studied by Clarke (1883), housed at P herbarium, there is the following handwriting, possibly written after this author: “*Napeanthus*, ex h. Bory, A.S.-H. [August Saint-Hilaire], *Brasilia!*.” It is likely to be a duplicate of a gathering of A. Saint-Hilaire incorporated into Bory’s collection for being an endemic species to eastern Brazil and unlikely cultivated as ornamental in the Philippines. Also, the *Napeanthus* specimen in the Saint-Hilaire collection and the type of *Oreocharis notha* in Bory’s collection, both at P, show inscriptions with the same handwriting.

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REFERENCES

- Chautems A. 1991. A família Gesneriaceae na região cacau-eira da Bahia, Brasil. *Revista Brasil Bot.* 14: 51–59.
- Chautems A. 2003. *Napeanthus* Gardn.; p. 81–82. In: Gesneriaceae. In: Chautems A, coordinator. In: Wanderley MGL, Shepherd GJ, Giulietti AM, Melhem TS, Kirizawa M, editors. *Flora fanerogâmica do Estado de São Paulo*, vol. 3. São Paulo: FAPESP/RiMa; p. 75–103. https://www.infraestruturameioambiente.sp.gov.br/institutodebotanica/wp-content/uploads/sites/235/2016/06/FFESP-Volume-III_06_24.pdf
- Feuillet C, Skog LE. 2002. *Novae Gesneriaceae Neotropiarum XII. New Species of Gesneriaceae from the Guianas.* *Brittonia.* 54(4): 352–361. [https://doi.org/10.1663/0007-196X\(2003\)54\[352:NGNXNS\]2.0.CO;2](https://doi.org/10.1663/0007-196X(2003)54[352:NGNXNS]2.0.CO;2)
- Gardner G. 1843. Descriptions of four new genera of plants from the Organ Mountains. *London J. Bot.* 2: 9–15.
- Hoehne FC. 1970. *Iconografia das Gesneriaceas do Brasil.* São Paulo: Secretaria da Agricultura/Instituto de Botânica.

- Lima HC. 1995. Leguminosas da *Flora fluminensis* – J.M. da C. Vellozo – Lista atualizada das espécies arbóreas. *Acta Bot Bras.* 9(1): 123–146. <https://doi.org/10.1590/S0102-33061995000100006>
- Hinoshita LKR, Araújo AOA, Goldenberg R. 2018. Os gêneros *Besleria*, *Codonanthe*, *Gloxinia*, *Napeanthus*, *Nematanthus* e *Seemannia* (Gesneriaceae) no estado do Paraná. *Rodriguésia.* 69(2): 631–647. <https://doi.org/10.1590/2175-7860201869226>
- Leeuwenberg AJM. 1958. Revision of *Napeanthus*; p. 340–354. In: The Gesneriaceae of Guiana. *Acta Bot Neerl.* 7: 291–444. <https://doi.org/10.1111/j.1438-8677.1958.tb00624.x>
- Leeuwenberg AJM. 1971. Notes on American Gesneriaceae VI. A new species of *Napeanthus* Gardn. *Acta Bot Neerl.* 20(3): 367–369. <https://doi.org/10.1111/j.1438-8677.1971.tb00719.x>
- Luna JA, Richardson JE, Nishii K, Clark JL, Möller M. 2019. The family placement of *Cyrtandromoea*. *Systematic Botany* 44(3): 616–630. <https://doi.org/10.1600/036364419X15620113920653>
- Mayer E. 1972. *Pedicularis* L. In: Tutin TG, Heywood VH, Burges NA, Moore DM, Valentine DH, Walters SM, Webb DA, editors. *Flora Europaea*, vol. 3 (Dipsacaceae to Myoporaceae). Cambridge, UK: Cambridge University Press; p. 269–276.
- Möller M, Middleton D, Nishii K, Wei YG, Sontag S, Weber A. 2011. A new delineation for *Oreocharis* incorporating an additional ten genera of Chinese Gesneriaceae. *Phytotaxa.* 23: 1–36. <https://doi.org/10.11646/phytotaxa.23.1.1>
- Möller M, Clark JL. 2013. The state of molecular studies in the family Gesneriaceae: A review. *Selbyana.* 31 (2): 95–125. <https://journals.flvc.org/selbyana/article/view/123017>
- Ogutcen E, Christe C, Nishii K, Salamin N, Möller M, Perret M. 2021. Phylogenomics of Gesneriaceae using targeted capture of nuclear genes. *Molec Phylogenet Evol.* 157: 107068. <https://doi.org/10.1016/j.ympev.2021.107068>
- Raddi G. 1820. Quaranta piante nuove del Brasile raccolte e descritte da Giuseppe Raddi. *Atti della Società Italiana delle Scienze* [in Modena]. 18: 1–35.
- Sandwith NY. 1956. The identity of *Oxalis primulaefolia* Raddi. *Webbia.* 12(1): 331–333. <https://doi.org/10.1080/00837792.1956.10669664>
- Skog LE. 1974. New Peruvian Gesneriaceae. *Phytologia.* 28(3): 233–240.
- Smith JF. 2000. A phylogenetic analysis of tribes Beslerieae and Napeantheae (Gesneriaceae) and evolution of fruit types: Parsimony and Maximum Likelihood Analyses of *ndhF* sequences. *Systematic Botany* 25(1): 72–81. <https://doi.org/10.2307/2666674>
- Turland NJ, Wiersema JH, Barrie FR, Greuter W, Hawksworth DL, Herendeen PS, Knapp S, Kusber W-H, Li D-H, Marhold K, May TW, McNeill J, Monro AM, Prado J, Price MJ, Smith GF [editors]. 2018. International Code of Nomenclature for algae, fungi and plants (Shenzhen Code) adopted by the Nineteenth International Botanical Congress Shenzhen, China, July 2017. Glashütten: Koeltz Botanical Books. (Regnum Vegetabile 159). <https://doi.org/10.12705/Code.2018>
- Vellozo JMC. [1825] 1829. *Floræ fluminensis* [...]. *Flumine Janeiro* [Rio de Janeiro]: Typographia Nationali. <https://doi.org/10.5962/bhl.title.745>
- Vellozo JMC. [1827] 1831. *Floræ fluminensis Icones* [...], vol. 6. Parisiis [Paris]: Officina lithographica A. Senefelder. <https://doi.org/10.5962/bhl.title.70380>
- Weber A. 2004. Gesneriaceae. In: Kubitzki K, editor. *The Families and Genera of Vascular Plants*, vol. 7 (Dicotyledons. Lamiales (except Acanthaceae including Avicenniaceae), Kadereit J, volume editor). Berlin: Springer; p. 63–158. <https://doi.org/10.1007/978-3-642-18617-2>
- Wiehler H. 1983. A synopsis of the Neotropical Gesneriaceae. *Selbyana.* 6(1/4): 1–129. <https://journals.flvc.org/selbyana/article/view/123017>