



Nomenclatural and taxonomic study in species of *Viola* (Violaceae) from Argentina

MARCELA VIVIANA NICOLA^{1*}, LUCIANA SALOMÓN¹ & FERNANDO OMAR ZULOAGA¹

¹ Instituto de Botánica Darwinion, Labardén 200, C.C. 22, C.P. B1642HYD, San Isidro, Buenos Aires, Argentina

* Author for correspondence (mnicola@darwin.edu.ar).

Abstract

During the revision of *Viola* for the Flora of Argentina project we detected names which need an exhaustive nomenclatural and taxonomic study. As a result of our analysis 43 lectotypes and three neotypes are designated for accepted names and synonyms of the genus as currently recognised by the present authors. Moreover, we encountered a *nomen nudum*, and present here a new combination and five new synonyms.

Keywords: Lectotypes, neotypes, nomenclature, taxonomy, Violaceae

Introduction

Viola Linnaeus (1753: 933) is the most diverse genus of family Violaceae; it includes about 580–620 species distributed all over the world, mainly in temperate zones of the Northern Hemisphere and at high elevations in tropical mountain systems of the Southern Hemisphere (Ballard *et al.* 1999; Wahlert *et al.* 2014; and the literature cited therein). The primary centers of morphological diversity are located in the South American Andes and Patagonia, in the Alps and the Mediterranean region, as well as in the Himalayas and mountainous regions in eastern Asia (Ballard *et al.* 1999). The genus includes herbs, rarely shrubs or subshrubs, with solitary, axillary, bisexual, and zygomorphic flowers usually noteworthy and of varying colors, five subequal sepals basally auriculate, five unequal petals, the lowest petal usually larger than the remaining and with a spur of variable length and shape, five stamens, anthers with apical membranous appendages, the two lower anthers with basal nectariferous appendages extending into the spur, a single style usually with an style crest bearing appendages of variable shape and size, and three-valved capsules (Becker 1925a; Rossow 1988; Little & McKinney 2015; Chen *et al.* 2007; Wahlert *et al.* 2014).

Argentina harbours a great taxonomic and morphological diversity of species of the genus *Viola* with 44 species (Rossow 1988; Rossow *et al.* 2003; Sanso *et al.* 2008; Watson & Flores 2009; Watson & Flores 2011; Watson & Flores 2012–2013; Watson & Flores 2013; Nicola 2017). Of those, 21 species are endemic, 19 are native of South America, and four are introduced. *Viola* section *Andinium* W. Becker (1925a: 374) is the richest section in Argentina including 33 species, followed by section *Chilenium* W. Becker (1925a: 376) with five species, and finally sections *Nomimium* Gingins (1823: 28) and *Tridens* W. Becker (1925a: 376) with one species each. Species of section *Andinium* have a peculiar habit: they are acaulescent rosettes, sometimes suffrutescent, with imbricate hard leaves, but as the altitude decreases, the leaves are softer and looser and the imbricate shape disappears. The flowers stand out briefly from the foliage and often they form a ring on the top of the rosette or around its circumference (Gay 1845; Becker 1925a; Watson & Flores 2007).

The Argentinian species of *Viola* are little known, some of them only through the type specimen. They are rarely collected probably due to the inaccessible locations where they grow, the small size of their highly localized populations, the mimetic appearance and small size of the plants, and their hidden flowers. The genus has been poorly addressed in our country, only existing the checklist for Argentina and the Southern Cone (Xifreda & Sanso 1999; Sanso *et al.* 2008), a few small-scale regional floristic works (e.g. Rossow 1988; Rossow *et al.* 2003), new records for the country (Sanso *et al.* 2003), and some recent descriptions of new endemic species (e.g. Watson & Flores 2009, Watson & Flores 2012–2013, Watson & Flores 2013) and adventitious species (Sanso *et al.* 2005). Therefore, an extensive taxonomic scrutiny of the species of *Viola* from Argentina is necessary.

In the course of the revision of *Viola* for the Flora of Argentina (<http://www.floraargentina.edu.ar/>) we found

it important to typify names and review some nomenclatural and taxonomic problems in the genus. Therefore, the purpose of this contribution is to designate 43 lectotypes and three neotypes accompanied by nomenclatural notes; also to include five new synonyms and to explain how a *nomen nudum* was detected, leading to the necessity for a new combination. Figures of specimens are provided for all neotypes and two lectotypes, as these are not yet available at the website of JSTOR Global Plants (2000–2017).

Materials and Methods

We examined relevant literature and specimens kept in the following public herbaria (acronyms according to Thiers 2017): A, B, BAB, BAF, BM, CORD, E, G, GH, GOET, HAL, K, L, LIL, LINN, LP, M, MA, MO, MOL, MPU, NDG, NY, P, PH, PUL, S, SGO, SI, SP, UPS, US, and W. Digitalized specimens were searched for in the website of JSTOR Global Plants (2000–2017) and in the online catalogues of the herbaria cited above. History of some species' authors was searched for at the website of Taxonomic Literature II (<http://www.sil.si.edu/DigitalCollections/tl-2/index.cfm>). For each taxon we list the type specimen citation exactly transcribed from its original label, relevant data as indicated in the protologue of the original publication, the geographic distribution with emphasis on the basic distribution within Argentina following Sanso *et al.* (2008) with updates, and nomenclatural or taxonomic notes when correspond. Typifications follow the International Code of Nomenclature for algae, fungi, and plants (McNeill *et al.* 2012).

Taxonomic treatment

Viola argentina W. Becker (1922a: 184)

Type:—[ARGENTINA.] La Rioja: Chilecito, Sierra Famatina, alrededores de Mina San Juan, 3050–3200 m., 21 February–3 March 1906, *F. Kurtz 13582* (holotype, B [destroyed]; **lectotype, designated here** CORD 00003342 [digital image!], isolectotype, CORD 00003343 [digital image!]).

Protologue citation:—“Argentina: Anden, leg. F. Kurtz, ohne genauere Stand-ortsangabe (Herb. Mus. bot. Berol); wahrscheinlich aus dem Gebiete westlich von Córdoba.”

Distribution:—Endemic of La Rioja province, Argentina.

Notes:—Wilhelm Becker explains in the protologue that the collection was made by Fritz Kurtz in the Andes of Argentina, but there is no indication of a precise location. Becker cites the herbarium of Berlin and that the collection was probably done in the territory to the west of Córdoba. However, the species was actually collected in La Rioja province; one specimen was deposited at CORD and another one at B. Several type specimens of *Viola* were noted by Becker in his publications as having been deposited at the Berlin herbarium (B), but the pre-1943 collection of pressed specimens was lost almost entirely during the destruction of the herbarium in the course of World War II (Hiepko 1987). We therefore selected the specimen with the barcode number CORD 00003342 as the lectotype because it is located in the herbarium where Kurtz deposited much of his original material, is an abundant and complete specimen, agrees with the protologue, includes a clear handwritten field note by Kurtz, and possesses a label with the identification of the specimen made by Becker, indicating that the latter must surely have examined this specimen.

Viola atropurpurea Leybold (1858: 158)

Type (lectotype, designated here):—[CHILE. XIII Región:] Valle del Maipo arriba, *F. Leybold s.n.* (SGO 000003269 [digital image!]).

Protologue citation:—“En los cumbres del Mapocho.—Cerro Colorado.—En el Portillo del viento, entre el Descabezado del Maule i el cerro azul.”

Distribution:—Native of Argentina and Chile. In Argentina it is registered for San Juan, Mendoza, and Neuquén provinces.

Notes:—Friedrich Leybold was a German botanist but he settled in Chile from 1855 onwards (Stafleu & Cowan 1979). It is not known where he deposited his herbarium material and types, but type materials collected by Leybold between 1854 and 1890 were deposited at SGO (Stafleu & Cowan 1979; Muñoz-Schick *et al.* 2012) without evidence

that duplicates were sent or not to other herbaria. Given the uncertainty that duplicates may exist in other herbaria, we found the specimen with the barcode number SGO 000003269 in the National Museum of Natural History, Santiago, Chile, and selected it as the lectotype since fully agrees with the protologue of the species. The specimen includes four labels; three seems to be original and the fourth was added later, on April 1972, by Carlos Muñoz Pizarro, who compared specimens deposited at SGO with original publications (Muñoz-Schick *et al.* 2012). One of the original labels only bears the identification “*Viola atropurpurea* Leyb.” The second of the original labels, in addition to the identification “*Viola atropurpurea* Leyb.”, indicates the location “Valle del Maipo arriba, Leybold” in agreement with the protologue information. The third original label instead bears the identification “*Viola sempervivum* Gay” and indicates the location “Cordill. Santiago ad limit nivis perpet. Febr. 1854”. However, the identification “atropurpurea Leyb.” it is written above this same label.

Viola auricolor Skottsberg (1916: 260)

Type (lectotype, designated here):—[ARGENTINA. Santa Cruz:] Montañas altas al oeste del Río Zeballos, 16 December 1908, C. Skottsberg *s.n.* (SGO 000003272 [digital image!]; possible isolectotype, UPS [missing]).

Protologue citation:—“Andines Patagonien: Hochgebirge s. vom Lago Buenos Aires, Abhang w. vom Rio Zeballos, c. 1300 m (Heide), zw. 1400 und 1600 m (Schutthalden), Bl. 2, 16. 12. 08; Nordseite des Zeballos—Gio-Passes, 1400–1500 m (Bl. 2, 17. 12. 08); im Tarde—Belgrano-Pass, n. Vom Lago Belgrano (Bl. 2, 22. 12. 08).”

Distribution:—Endemic of Argentina; known for Chubut and Santa Cruz provinces near de politic boundary between Argentina and Chile.

Notes:—Watson *et al.* (2010) were able to trace one Carl Skottsberg syntype at UPS and they suspected that it could be the only remaining extant type collection of this taxon. These authors strongly suspected that all Skottsberg syntype material related with *Viola auricolor* and two other Andean *Viola* described by Skottsberg may have been permanently lost due to 95 *Viola* specimens loaned out from UPS have never been returned (Watson *et al.* 2010). However, we have traced a further Skottsberg specimen with the barcode number SGO 000003272, and we select it as the lectotype of *Viola auricolor* because it agrees with the original diagnosis and is a complete specimen with various flowers and clearly represents one of the syntypes of the species. The label, inscribed in Skottsberg’s handwriting, indicates: “Patagonia, montañas altas al oeste del Río Zeballos, 16/12/1908, Carl Skottsberg, muestra original”.

In relation with the type locality, Skottsberg (1911) reported in his book “The wilds of Patagonia” that on 16 December 1908 he and his fellow travelers camped at Rio Zeballos and “above the forests we climbed over rattling heaps of loose slates; numbers of charming Alpine plants were in flower among debris and snowfields, and from a crest of 5700 feet we had a splendid view: to the east the mighty basalt-covered meseta; to the north we cast a last glance at Lake Buenos Aires [...]; to the west deep, forest-clad valleys and summits, not yet found on any map; to the south the Zeballos pass, our battlefield for the coming day.” According to the description, they were on the Argentine side of the Andes, in Santa Cruz province. Furthermore, all subsequent records of *Viola auricolor* were made in the provinces of Chubut and Santa Cruz, Argentina.

Viola boliviana Britton (1889: 18)

Type (lectotype, designated here):—BOLIVIA. [La Paz:] Mapiro, 5000 ft, May 1886, *H.H. Rusby 843* (NY 97618 [digital image!]; isolectotypes, BM 000513340 [digital image!], GH 00067168 [digital image!], K 000370252 [digital image!], NDG 32610 [digital image!], NY 97619 [digital image!], PH 00029052 [digital image!], US 00114545 [digital image!]).

Protologue citation:—“Mapiro, 5000 ft. (843)”

Distribution:—Native of Bolivia and Perú. This species was excluded from the Flora of Argentina (see note below).

Notes:—In the cited publication, Nathaniel Lord Britton enumerated the plants collected by Henry Hurd Rusby in South America between 1885 and 1886. A set of these collections was deposited at MICH, but 6000 specimens went to NY (Stafleu & Cowan 1983). Furthermore, Britton worked in NY (Stafleu & Cowan 1976). We found two specimens of the collection *H.H. Rusby 843* at NY and selected the specimen with the barcode number NY 97618 as lectotype because it fully agrees with the protologue.

This species was erroneously cited in the checklist of the Southern Cone (Sanso *et al.* 2008) for Jujuy province, Argentina, under *Viola bangiana* W. Becker using as reference material one specimen collected by M. Medinaceli without collection number on February 1946 (BAF!). This specimen is in fact *Viola flavicans* Weddell (1864: 292).

= *Viola bangiana* W. Becker (1907: 89).

Type (lectotype, designated here):—PERU. [Puno:] San Gaban, in humidis, July 1854, *W. Lechler 2241* (G 00343428 [digital image!]; isolectotypes, G 00343429 [digital image!], K 000370255 [digital image!], P 00426150 [digital image!], P 00426151 [digital image!], W [missing]).

Protologue citation:—“Exsicc.: Lechler, Pl. peruv. 2241.—Bang, Pl. boliv. (1891) 882. - Gay, Pl. peruv. (1839–40) 1785. Blütezeit: Juli. Verbreitung: Bolivia, Peruvia. Standorte: Cochabamba, Boliv. (K, P, B); San Povan, Peru, leg. W. Lechler (W, DC). Die geographische Lage des letzten Standortes vermochte ich nicht festzustellen.”

Notes:—According to the protologue, the description of *Viola bangiana* was based on material collected by Wilibald Lechler (collection number 2241), Miguel Bang (collection number 882), and Claude Gay (collection number 1785). Wilhelm Becker cited in parentheses two locations and the herbaria where the material was deposited. One set was from Cochabamba, Bolivia deposited at K, P, and B, and the other was from San Povan, Peru deposited at W and DC (the herbarium of De Candolle has been incorporated into G [http://www.ville-ge.ch/cjb/herbier_phanero02_en.php]), but he was unable to determine the geographic position of the last location. We could not find the material of Gay, and Lechler is the only one of the three collectors whom Becker cited again, detailing the locality where the collection was made and the herbarium in which it was deposited. Lechler probably misspelt the name of the locality on the label of the specimen, and meant San Gaban, a jungle district in southeastern Peru. Consequently, we selected the specimen with the barcode number G 00343428 collected by Lechler as lectotype because it is a complete specimen of the DC collection, is located at one of the main herbaria where he deposited much of his original material, fully agrees with the protologue, and possesses a label indicating the location and date “S. Povan in humidis July 1854” and a first identification as “*Viola dombeyana* DC.” handwritten by Lechler. Another label was added later in 1942 by R. Weibel, a specialist in *Viola*, with the identification “*Viola bangiana* W. Becker” and the data of its original publication “in Bot. Centralbl. Beih. XXII, 2, 94 (1907). The following specimens are isosyntypes cited in the protologue: BOLIVIA. *Sine loco*, September 1897, *M. Bang 882* (K 000370270 [digital image!]); Bolivian Plateau, 1891, *M. Bang 882* (BM 000810713 [digital image!], E 00326825 [digital image!], G 00343427 [digital image!], M 0112888 [digital image!]); Vicinity of Cochabamba, 1891, *M. Bang 882* (CORD 00003344 [digital image!], G 00343426 [digital image!], GH 00067165 [digital image!], K 000370256 [digital image!], MO 279853 [digital image!], NDG 33056 [digital image!], PUL 00000355 [digital image!], US 00114541 [digital image!]); Yungas, 1890, *M. Bang 704* (BM 000513316 [digital image!])).

= *Viola huanucoensis* W. Becker (1922b: 186), new name for ≡ *Viola truncata* W. Becker (1907: 94), nom. illeg. non Meyen (1834: 314).

Type:—PERU. Huánuco: Huamalies, cerros al sudoeste de Monzón, 2400–2500 m, *A. Weberbauer 3715* (holotype, B [destroyed]; **lectotype, designated here** MOL 00002771 [digital image!]). (Fig. 1)

Protologue citation:—“Exsicc.: Weberbauer, Fl. V. Peru 3715. Verbreitung: Peruvia centralis. Berge südwestlich von Monzon (Dep. Huánuco, Prov. Huamalies), zwischen Hartlaubgehölz, 2400–2500 m., leg. Dr. A. Weberbauer, 20.X.1903 (B).”

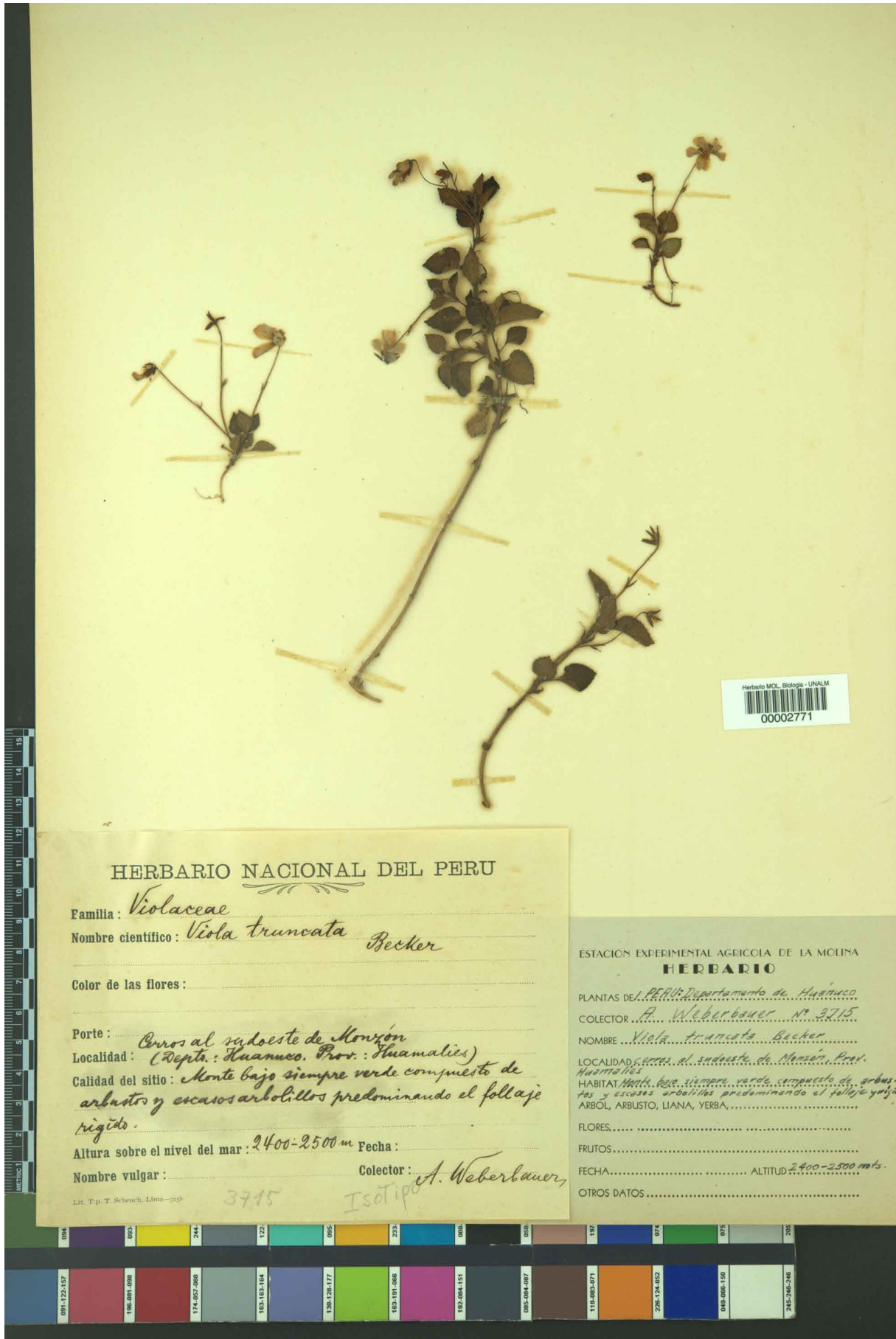
Notes:—According to the protologue, the type specimen of *Viola truncata* W. Becker was collected by Augusto Weberbauer and deposited at B, but has been destroyed during World War II (Robert Vogt pers. comm.; Hiepko 1987). We selected the specimen with the barcode number MOL 00002771 as the lectotype of the species as it agrees with the protologue, it is a complete specimen, and it provides two labels with the same information indicating the location and identification.

Viola calchaquiensis W. Becker (1926a: 226)

Type (lectotype, designated here):—ARGENTINA. Tucumán: Cumbres Calchaquíes, 4500 m, 7 January 1908, *L. Castillón 269* (ex herbario Lillo n° 8262) (LIL 001870 [digital image!]; isolectotypes, B [destroyed], BAF [missing]).

Protologue citation:—“Argentina borealis: Prov. Tucumán, Cumbres Calchaquies, 4500 m, 7. I. 1908 leg M. Lillo sub no. 8262. Typus in herb. W. Bckr. et Inst. Bot. et Farmacol. Buenos Aires.”

Distribution:—Endemic of Argentina; known only for the northwest of Tucumán province.



HERBARIO NACIONAL DEL PERU

Familia: *Violaceae*
 Nombre científico: *Viola truncata* Becker

Color de las flores:

Porte: *Cerros al sudoeste de Monzón*
 Localidad: *(Dept.: Huancayo. Prov.: Huamalíes)*
 Calidad del sitio: *Monte bajo siempre verde compuesto de arbustos y escasos arbolillos predominando el follaje rígido.*

Altura sobre el nivel del mar: *2400-2500 m* Fecha:

Nombre vulgar: Colector: *A. Weberbauer*

Isotipo

Lit. T. P. T. Scheuch, Lima-219

ESTACION EXPERIMENTAL AGRICOLA DE LA MOLINA
HERBARIO

PLANTAS DEL PERU: Departamento de Huancayo
 COLECTOR *A. Weberbauer N° 3715*
 NOMBRE *Viola truncata* Becker
 LOCALIDAD *cerros al sudoeste de Monzón, Prov. Huamalíes*
 HABITAT *Monte bajo siempre verde, compuesto de arbustos y escasos arbolillos predominando el follaje rígido*
 ARBOL, ARBUSTO, LIANA, YERBA,

FLORES:

FRUTOS:

FECHA: ALTITUD *2400-2500 mts.*

OTROS DATOS:

Herbario MOL, Biología - UNALM
 00002771

FIGURE 1. *Viola huanucoensis* W. Becker, new name for *Viola truncata* W. Becker, nom. illeg. non Meyen (synonym of *V. boliviana* Britton), digital image of the lectotype A. Weberbauer 3715 (MOL 00002771).

Notes:—According to the protologue, types were deposited at B (the Wilhelm Becker *Viola* herbarium, “herb. W. Bckr.”, which was acquired by the Botanical Museum Berlin- Dahlem, B, in 1929 [Hiepko 1987]), BAF (the herbarium of the Faculty of Pharmacy and Biochemistry of the University of Buenos Aires, which Becker referred to as “Inst. Bot. et Farmacol. Buenos Aires”), and LIL (the herbarium of the Miguel Lillo Foundation, which Becker referred to as “M. Lillo”); the first was destroyed during World War II (Robert Vogt pers. comm.; Hiepko 1987) and the second was not located at BAF. We found the specimen deposited at LIL as “ex herbario Lillo n° 8262”; it was collected by León Castellón, not Miguel Lillo. We selected the specimen with the barcode number LIL 001870 as lectotype because it is an abundant and complete specimen, agrees with the protologue, and has two labels from BAF and LIL with clear notes handwritten by Castellón indicating its identification, location, and date of collection; it also has a label with the identification made by Becker in 1926.

Viola canobarbata Leybold (1866: 285)

Type (lectotype, designated here):—CHILE. [VI Region:] Rancagua, Piedra lisa in hacienda del Principal, 9000 ft, February, *F. Leybold s.n.* (SGO 000003277 [digital image!]; isolectotype, SI 004355!).

Distribution:—Native of Argentina and Chile. In Argentina it is a dubious taxon until locate the specimen identified as *Viola canobarbata* Leybold (1866: 285) var. *albiflora* W. Becker (1925b: 360), collected by Carlos Spegazzini at Cerro de los Cordobeses, Mendoza, Argentina, on January 1906.

Protologue citation:—“Mense Febrero capsulas maturas floresque simul exhibit; circiter 9000’ supra mare in glareosis ad locum, “Piedra lisa” dictu, in “hacienda del Principal” prov. “Rancagua”.

Notes:—Friedrich Leybold settled in Chile from 1855 onwards (Stafleu & Cowan 1979). It is not known where he deposited his herbarium material and types, but type materials collected by Leybold between 1854 and 1890 were deposited at SGO (Stafleu & Cowan 1979; Muñoz-Schick *et al.* 2012) without evidence that duplicates were sent or not to other herbaria. Given the uncertainty that duplicates may exist in other herbaria, we found the specimen with the barcode number SGO 000003277 in the National Museum of Natural History, Santiago, Chile, and selected it as the lectotype since is a vigorous and complete specimen, agrees with the protologue, and has a label with clear notes handwritten by Leybold himself indicating the location and the identification.

Following the International Code of Nomenclature (Art. 60.9; the use of a hyphen in a compound epithet is treated as an error to be corrected by deletion of the hyphen), the correct spelling of the specific epithet is “canobarbata” and not “cano-barbata” as in its original publication (Leybold 1866). Many competent modern authors of basic reference works spell the epithet correctly without the hyphen (e.g. Marticorena & Quezada 1985; Hoffmann *et al.* 1998; The Plant List 2013). However, it is still published with the erroneous hyphen in a few influential works and by many sources (e.g. Sanso *et al.* 2008; The International Plant Names Index 2012).

Viola columnaris Skottsberg (1916: 261)

Type (lectotype, designated here):—[ARGENTINA. Chubut:] Patagonia andina, sandy meseta north of Frías [or Cisnes] valley, 1000 m, 17 November 1908, *C. Skottsberg 584* (S07-15250 [digital image!]).

Protologue citation:—“Subandines und andines Patagonien: trockene Meseta n.ö. Vom Valle Frías c. 1000 m (Bl. 2, 17. 11. 08); Valle Frías, Abhang des Cerro Cáceres, c. 800 m (Bl. 19. 11. 08); Terr. Chubut, 44° 24’ s., 71° 22’ w., leg. J. Högberg, Herb. Holm. s.n. *V. portulacea*.”

Distribution:—Endemic of Argentina; known for the provinces of Chubut, Mendoza, Neuquén, and Río Negro.

Notes:—Carl Skottsberg gave a detailed diagnosis of *Viola columnaris*, and he mentioned three collections, two by himself and another by Johan Högberg. Of these, we selected as lectotype the specimen collected by Skottsberg which bears the barcode number S07-15250, as it is located at one of the herbaria where he deposited his type material (Stafleu & Cowan 1985), it matches the protologue, and it possess several flowers in good condition. Additionally, this specimen was seen and identified by Wilhelm Becker, the main specialist of *Viola*, in 1925. The other syntype we examined was: ARGENTINA. Chubut: [Dept. Tehuelches, near Río Pico], 600 m, 28 January 1902, 44° 24’ S, 71° 22’ W, *J. Högberg s.n.* (S-R-11463 [digital image!], SI 003780!).

In relation with the type locality, the Frías river (or Cisnes river as alternatively known) communicates Argentina with Chile through the Río Frías-Río Cisnes international border crossing. According to the report of Skottsberg (1911) in his book “The wilds of Patagonia” it is difficult to state whether this collection was made on the Argentine or the

Chilean side of the Andes since he and his fellow travelers were exploring the valleys from one side to another during various days. It is worth noting that all subsequent records of *Viola columnaris* were made in the provinces of Chubut, Mendoza, Neuquén, and Río Negro, in Argentina, and no new collections are known for Chile. Because of this, we define that the type locality is on the Argentine side of the Andes.

Viola comberi W. Becker (1928: 136)

Type:—ARGENTINA. [Neuquén:] Cerro Colohuincul, between San Martín de los Andes and Lago Huechulafquen, 2100 m, December 1926, *H.F. Comber 882* (holotype, K [missing]; **lectotype, designated here** E 00322371 [digital image!]).

Protologue citation:—“Argentina, 40° S: Cerro Colohuincul, between San Martín de los Andes and Lago Huechulafquen, 2100 m., Dec. 1926, *H. F. Comber 882* (type in Herb. Kew.)”.

Distribution:—Endemic of Argentina; known only for the southwest of Neuquén province.

Notes:—The type collection of this species at K is actually lost (Mariel Sanso and Cecilia Xifreda pers. comm.). Therefore, we selected as lectotype the specimen with the barcode number E 00322371, which is in perfect condition and fully agrees with the protologue of *Viola comberi*.

Rosow (1988) erroneously synonymized *Viola comberi* under *V. cotyledon*. These two taxa are quite distinct as *V. comberi* is a species with small corollas less than 1 cm long, which are yellow with purple veins, while *V. cotyledon* has bigger corollas more than 1 cm long, whitish to purplish. We consider *V. comberi* as an independent species although similar to *V. coronifera*, both with yellow flowers of similar size.

Viola cotyledon Gingins (1824: 300)

Type:—Holotype, G (not extant). **Neotype, designated here:** CHILE. [IX Region:] Cautín, Volcan Llaima, 1100 m, February 1927, *E. Werdermann 1261* (neotype, SI 141876!; isoneotype, SI 141877!). (Fig. 2)

Protologue citation:—“in montibus excelsis Chili. Née. [...] (v. s. in herb. Roux, nunc Mus. Genev.)”

Distribution:—Native of Argentina and Chile. In Argentina it is known for registers in Mendoza, Neuquén, and Río Negro provinces.

Notes:—According to the protologue, Luis Née collected this specimen in the high mountains of Chile, and Frédéric Gingins de la Sarraz revised it at the herbarium of Honoré Roux, at that time already sold to the herbarium of Geneva (G; Stafleu & Cowan 1983). This latter material is lost (Lorenzo Ramella pers. comm.) and no specimen of Née was found at MA either, where he used to deposit his type collection (Stafleu & Cowan 1981). Therefore, we here designate the specimen *E. Werdermann 1261* (with the barcode number SI 141876) as the neotype of this species since it fully agrees with the protologue, is a complete, vigorous, and well preserved specimen from Chile, and was also identified in 2001 as *Viola cotyledon* by John M. Watson, a *Viola* specialist from Chile. An isoneotype (SI 141877) is also being kept at SI.

= *Viola petraea* W. Becker (1925b: 354)

Type (lectotype, designated here):—ARGENTINA. Neuquén: Patagonia andina septentrional, alrededores de Bariloche, in rupibus secus Rio Correntoso, Nahuel Huapi, January 1898, *C.L. Spegazzini s.n.* (BAF!; isolectotypes, LP 006738!, LP 006739!, LP 006740!).

Protologue citation:—“Patagonia: in rupibus secus Rio Correntoso, Nahuel Huapi (Patagon. andin. septentr.), I. 1898, leg. Carlos Spegazzini.”

Notes:—According to the protologue, Wilhelm Becker based his new species on a specimen collected by Carlos Spegazzini. We found one syntype at BAF and three at LP and selected the specimen of BAF as the lectotype of *Viola petraea* because it fully agrees with the protologue.

Rosow (1988) synonymized *Viola petraea* under *V. columnaris*. However, Becker (1925b) remarked that the concept of *V. petraea* resembles the description of *V. cotyledon* specifically by the presence of lateral petals with abundant claviform hairs. Therefore, we consider *V. petraea* as a synonym of *V. cotyledon*.

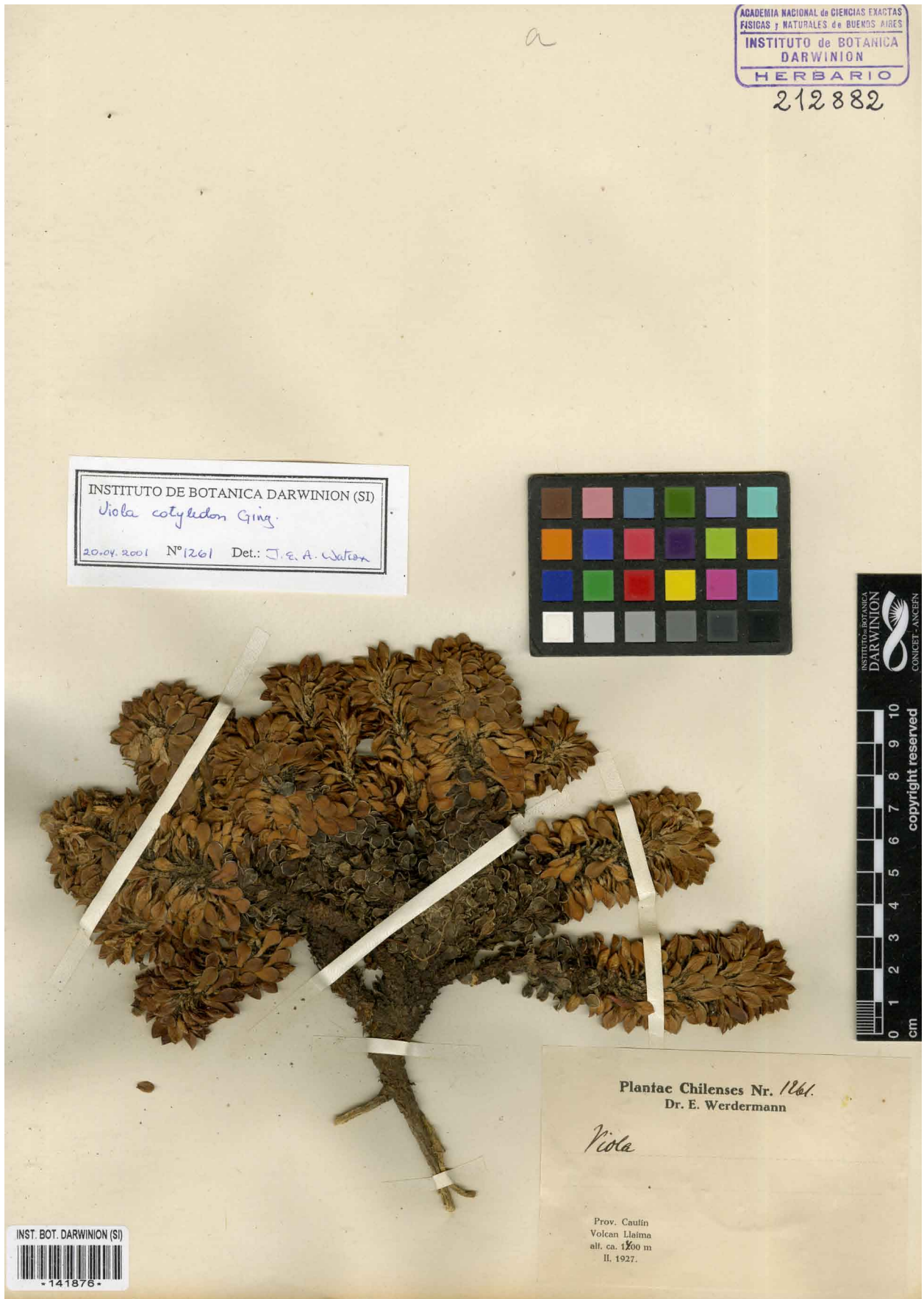


FIGURE 2. *Viola cotyledon* Gingins, digital image of the neotype E. Werdermann 1261 (SI 141876).

Viola dasyphylla W. Becker (1928: 135)

Type:—ARGENTINA. [Neuquén:] Cerro Colohuincul, 7000 ft, 17 December 1926, *H.F. Comber 884* (holotype, K 000535087 [digital image!]; isotype, E 00322383 [digital image!]).

Protologue citation:—“Argentina, 40° S: Cerro Colohuincul, between San Martin de los Andes and Lago Huechulafquen, 2100 m., Dec. 1926, *H. F. Comber 884* (type in Herb. Kew.); [...] *Ibid.*, *H. F. Comber 883* [...]”

Distribution:—Endemic of Neuquén province, Argentina.

= *Viola lologensis* (W. Becker 1928: 135) J.M. Watson (2011: 302), *syn. nov.*

Basionym: *Viola cotyledon* Gingins (1824: 300) subsp. *lologensis* W. Becker (1928: 135).

Type:—ARGENTINA. Neuquén: Vega Lolog, 810 m, 5 December 1926, *H.F. Comber 816* (holotype, K 000535079 [digital image!]; isotype, E 00322370 [digital image!]).

Protologue citation:—“ARGENTINA, 40° S: Vega Lolog, 810 m., Dec. 1926, *H. F. Comber 816* (type in Herb. Kew.) [...] Hill near Vega Lolog, 1380 m., Dec. 1926, *H. F. Comber 853* [...]”

Notes:—After studying the material, including types, of *Viola dasyphylla* and *V. cotyledon* subsp. *lologensis*, we concluded that there are no critical diagnostic characters to support either *V. cotyledon* subsp. *lologensis* or *V. lologensis* as valid taxa. Consequently, *V. lologensis* is reduced here to the synonymy of *V. dasyphylla*. Wilhelm Becker (1928) judged the specimens of Harold F. Comber from Lago Lolog to be a subspecies (subsp. *lologensis*) of *V. cotyledon*. Nevertheless, *V. cotyledon* has large, long-spurred flowers (over 1.5 cm wide), violet petals (sometimes white, sometimes with relatively inconspicuous dark lines), the lowermost and lateral petals always with claviform hairs, while *V. lologensis* and *V. dasyphylla* have medium size, short-spurred flowers (under 1.5 cm wide), white, completely glabrous petals with violet or blue guide lines. In addition *V. lologensis* was only gathered at its type locality. Characters used to distinguish *V. lologensis* from *V. dasyphylla*, such as imbrication of leaves and color of leaves and calyx, do not possess sufficient diagnostic value to enable *V. lologensis* to be recognized as a distinct species.

Viola domeikoana Gay (1845: 220)

Type (lectotype, designated here):—CHILE. [IV Region:] los Patos, Coquimbo provintia, 1240 ft, February 1843, *C. Gay s.n.* (P 00756163 [digital image!]).

Protologue citation:—“Esta muy pequeña violeta que dedico al Señor Domeiko, profesor de química y mineralogía en el instituto de Coquimbo, se cria en los llanos húmedos de las cordilleras de los Patos á una altura de 1240 pies.”

Distribution:—Native of Argentina and Chile. In Argentina it is known for registers in Mendoza and San Juan provinces.

Notes:—We selected the specimen with the barcode number P 00756163 as lectotype since it agrees with the protologue and is a complete specimen.

Considering the spelling “domeikoana” presented by Gay (1845) and the incorrect orthographical rendering of it by later authors, we clarify here that the exact spelling of the specific epithet according to the author of the species in the original publication and following the International Code of Nomenclature (Art. 60.1; the original spelling of a name or epithet is to be retained [...]) is “domeikoana” with “i”, and not with “y” as “domeykoana”. Few sources of basic reference spell the epithet correctly (e.g. The International Plant Names Index 2012). However, it is still published with “y” in many influential works and by many sources (e.g. Marticorena & Quezada 1985; Rossow *et al.* 2003; Sanso *et al.* 2008; The Plant List 2013).

Viola evae Hieronymus ex W. Becker (1922a: 182)

Type:—ARGENTINA. La Rioja: Sierra Famatina, Cueva de Pérez, 26–28 January 1879, *G. Hieronymus & G. Niederlein 370* (holotype, B [destroyed]; **lectotype, designated here** G 00354840 [digital image!]; isolectotypes, CORD 00003347 [digital image!], CORD 00003348 [digital image!], K 0005350089 [digital image!], SI 003777!).

Protologue citation:—“Exs.: G. Hieronymus et G. Niederlein, Flora Argentina no. 370: Cueva de Perez, Sierra Famatina, Prov. de la Rioja, fl. 26–28. I. 1879 (Herb. Mus. bot. Berol.)”

Distribution:—Endemic of Argentina; it is known for the provinces of La Rioja and Salta.

Notes:—Wilhelm Becker cited as type of this species a collection deposited at the herbarium of Berlin (“Herb. Mus. bot. Berol.”) but this specimen was destroyed (Robert Vogt pers. comm.; Hiepko 1987). We therefore selected the specimen with the barcode number G 00354840 as lectotype because it is an abundant and complete specimen, agrees with the protologue, presents a label with clear handwritten field notes by Georg Hieronymus, and in particular because it includes a label with the identification made in 1927 by Becker.

≡ *Viola flos-evae* Hieronymus, *nomen nudum*, *pro syn.*

Notes:—The collection *G. Hieronymus & G. Niederlein 370* consisted at least of two specimens labeled as “*Viola flos-evae* Hieron. n. sp.” deposited at CORD and SI plus three specimens labelled as “*Viola evae* Hieron. n. sp.” deposited at B, G, and K. Georg Hieronymus dedicated his new species to his wife, Eva, but he died in 1921 without ever having formally presented the taxon in print under any epithet. Wilhelm Becker examined the specimen at B in 1922 or before (and later at G in 1927), and described and published it validly as *Viola evae* Hieronymus ex W. Becker. Subsequently, Benkt Sparre in 1950 and Luis Ariza Espinar in 2010 examined the specimens at CORD and correctly labelled them as “*Viola evae* Hieron. ex Becker”.

Viola evae Hieronymus ex W. Becker (1922a: 182) var. *flossdorfii* (Hicken 1922: 31) Nicola, *comb. nov.*

Basionym: *Viola flos-evae* Hieronymus *nomen nudum*, *pro syn.* var. *flossdorfii* Hicken (1922: 31).

Type:—ARGENTINA. La Rioja: Sierra Famatina, Quebrada Enrucijada, 3500–5000 m, March 1913, *A. Flossdorf 39* (holotype, SI 003757!).

Protologue citation:—“En la Quebrada.”

Distribution:—Endemic of La Rioja province, Argentina.

Notes:—Cristóbal Hicken published “*Viola flos-evae* Hieronymus var. *flossdorfii* Hicken” and mentioned that he never found the original description of “*Viola flos-evae* Hieronymus”. In fact, as explained above, that description never existed. Consequently, we effect the new combination herein.

Viola flavicans Weddell (1864: 292)

Type:—BOLIVIA. Cinti: Dept. Chuquisaca, in graminosis alpinis, *H.A. Weddell 3937* (lectotype, P 00169062 [digital image!], designated by Ballard *et al.* [2014]; isolectotype, P 00169061 [digital image!]).

Protologue citation:—“Hab. Bolivia (Wedd.)”

Distribution:—Native of Argentina and Bolivia. In Argentina it is known for the provinces of Jujuy, Salta, and Tucumán.

Notes:—Harvey Ballard first selected the lectotype of *Viola flavicans* in two labels added in the specimen with the barcode number P 00169062. In one of the labels he mentioned: “Violets of South America, *Viola flavicans* Wedd. Harvey E. Ballard, Jr. 2000 Ohio University (BHO)” and in the other label he mentioned: “LECTOTYPE *Viola flavicans* Wedd. 1864. Ann. Sci. Nat. Ser. V. 1: 292. Harvey E. Ballard, Jr. (BHO)”. Later, Ballard *et al.* (2014) published the lectotype of *Viola flavicans* in the “Catálogo de las Plantas Vasculares de Bolivia”.

= *Viola exigua* W. Becker (1906a 590).

Type:—BOLIVIA. [Tarija:] Calderillo, 3000–3400 m, 10 January 1904, *K. Fiebrig 2880* (holotype, B [destroyed]; **lectotype, designated here** G 00354849 [digital image!]; isolectotypes, BM 000513319 [digital image!], GH 00067169 [digital image!], K 000327892 [digital image!]).

Protologue citation:—“Süd-Bolivia: Calderillo, gesellig in einer Höhe von 3000–4000 m sowohl an felsigen Hängen, als auch in der Talebene zwischen Gräsern, blühend am 10 Januar 1904 (Fiebrig n. 2880. Herb. Berol.)”

Notes:—According to the protologue, the type material of *Viola exigua* was examined at B. However, this specimen is destroyed (Robert Vogt pers. comm.). We then selected the specimen with the barcode number G 00354849 as

lectotype since it is an abundant and complete specimen, agrees with the protologue, and it presents a label with the identification handwritten in 1927 by Becker.

= *Viola castillonii* (W. Becker 1926b: 222) Xifreda & Sanso (1999: 1246), *syn. nov.*

Basionym: *Viola exigua* W. Becker (1906a: 590) var. *castillonii* W. Becker (1926a: 222).

Type (lectotype, designated here):—ARGENTINA. Tucumán: Cumbres de Lara, camino al Agua Blanca, 4000 m, January 1915, *L. Castellón 3691* (LIL 000985 [digital image!]; isolectotypes, B [destroyed], BAF [missing], A 00067170 [digital image!], LIL 000986 [digital image!]).

Protologue citation:—“Argentina borealis: Prov. Tucumán, Cumbre de Lara, 4000 m, I. 1915 leg. Castillon (ex herb. M. Lillo sub no. 3691); typus in herb. W. Bckr. et Inst. Bot. et Farmacol. Buenos Aires; fl. amarilla.”

Notes:—Wilhelm Becker (1926a: 222) cited one collection of León Castellón deposited at B and BAF. Xifreda & Sanso (1999) cited “holotipo LIL, isotipo BAF”. The specimen at B was destroyed during World War II (Robert Vogt pers. comm.; Hiepkö 1987), the specimen at BAF is not actually at BAF (Gustavo Giberti pers. comm.), and the specimen at LIL consist of two sheets, A and B, with two different barcode numbers. Therefore, we reinterpreted Xifreda & Sanso (1999) and selected the specimen with the barcode number LIL 000985 as lectotype because it is an abundant and complete specimen, agrees with the protologue, and it includes a label with clear handwritten annotations about location and identification.

Xifreda and Sanso (1999) changed the status of *Viola exigua* var. *castillonii* and establish *V. castillonii* in the checklist of Argentina. Later, Ballard *et al.* (2014) treated *V. exigua* as a synonym of *V. flavicans* in the checklist of Bolivia. Until now, *V. castillonii* was treated as an endemic species of northern Argentina and *V. flavicans* restricted to Bolivia, with no subsequent taxonomic study performed comparing both taxa. Characters that differentiate them, according to the original descriptions, are leaf shape (oblong in *V. castillonii* and ovate in *V. flavicans*) and pilosity (pubescent in *V. castillonii* and glabrescent in *V. flavicans*). After examining material of both taxa, including types of *V. castillonii* and *V. flavicans*, we concluded that there are no diagnostic characters to maintain *V. castillonii* as valid taxa; consequently, the latter is here reduced to the synonymy of *V. flavicans*.

Viola flos-idae Hieronymus (1881: 5)

Type (lectotype, designated here):—ARGENTINA. San Juan: Cerro del Tontal, January 1876, *S. Echegaray s.n.* (CORD 00003349 [digital image!]).

Protologue citation:—“Se halla en el cerro del Tontal y en las orillas del arroyo de las Cabezeras cerca del Leoncito. En Enero con flores y frutos.”

Distribution:—Endemic of Argentina; known for the provinces of Mendoza, Neuquén, and San Juan.

Notes:—Georg Hieronymus based his publication of 1881 on plants collected by Saile Echegaray in San Juan province, Argentina. In the protologue Hieronymus cited two localities which coincide respectively with two specimen sheets, each containing a single plant. These were deposited at the Córdoba herbarium, Argentina. Both specimens match the protologue and include clear handwritten notes by Hieronymus. We selected the specimen with the barcode number CORD 00003349 as the lectotype because it presents more flowers in good condition. The other syntype cited in the protologue was: ARGENTINA. San Juan: arroyo de las Cabeceras en Leoncito, *S. Echegaray s.n.* (CORD 00003350 [digital image!]).

= *Viola flos-idae* Hieronymus (1881: 5) var. *pseudovolcanica* Hieronymus (1881: 7).

Type:—Holotype, probably CORD (not extant). **Neotype, designated here:** ARGENTINA. San Juan: Iglesia, Parque Nacional San Guillermo, El Alero, 3500 m, 29° 14' 52" S, 69° 22' 53" W, 28 January 2013, *L. Salomón 72* (neotype, SI 107035!). (Fig. 3)

Protologue citation:—“Esta variedad se halla con la forma genuina en el Cerro del Tontal [...]”

Notes:—Georg Hieronymus deposited his types collected in Argentina between 1872 and 1883 mainly at B and CORD, but also at GH, L, MO, NY, P, SP (Stafleu and Cowan 1979). We were not able to locate any original material of this variety. Therefore we are designating a neotype, collected in the same province, San Juan, Argentina, which agrees with the protologue of *Viola flos-idae* var. *pseudovolcanica*.



FIGURE 3. *Viola flos-idae* Hieronymus var. *pseudovolcanica* Hieronymus (synonym of *V. flos-idae* Hieronymus), digital image of the neotype L. Salomón 72 (SI 107035).

Viola fluehmannii Philippi (1892a: 346)

Type (lectotype, designated here):—CHILE. [VIII Region: Laguna del Laja National Park, Pitronquines estuaries,] Pitronquines, February 1882, *G. Flühmann s.n.* (SGO 000003286 [digital image!]; isolectotype, SGO 000003285 [digital image!]).

Protologue citation:—“Orn. Gustavus Flühmann in Araucania loco dicto “Pitrusquenes” february 1882 inventit.”

Distribution:—Native of Argentina and Chile. In Argentina it is known for the province of Neuquén.

Notes:—The locality cited in the protologue by Rudolf A. Philippi (“Pitrusquenes”) is almost identical to the locality written as “Pitronquines” (referring to the Pitronquines estuaries located at Laguna del Laja National Park in the VIII Region of Biobío) for two specimens collected by Gustavo Flühmann and deposited at the herbarium of Santiago, Chile. Both specimens agree with the protologue. We selected the specimen with the barcode number SGO 000003286 as the lectotype because it is more complete and in better condition.

We clarify here that the correct orthography of the specific epithet, which is derived from the surname of the person to whom this plant was dedicated, Gustavo Flühmann, is “fluehmannii” as presented in The Plant List (2013) and in The International Plant Names Index (2012) and not “flühmanni” as presented in the original publication (Philippi 1892a) or “flühmannii” as presented in the Flora of Patagonia (Rossow 1988) and the checklist of the Southern Cone (Sanso *et al.* 2008). The International Code of Nomenclature Art. 60.6 states that diacritical signs are not to be used in scientific names.

Viola frigida Philippi (1860: 183)

Type (lectotype, designated here):—CHILE. [III Region:] Río Frio, February 1854, *R.A. Philippi s.n.* (SGO 000003287 [digital image!]; isolectotype, HAL 0117794 [digital image!]).

Protologue citation:—“Fissurae rupium trachyticarum prope Río Frio (24°50’ lat. mer. et 10600 p.s.m.) panca specimina obtulerunt.”

Distribution:—Native of Argentina and Chile. In Argentina it is known for the provinces of La Rioja and San Juan.

Notes:—We selected the specimen with the barcode number SGO 000003287 because it agrees with the protologue and is located at the herbarium where Rudolph A. Philippi deposited most of his type specimens when he settled in Chile, although he sent further material to many other herbaria (Stafleu & Cowan 1983).

= *Viola molfinoana* W. Becker (1926b: 351).

Type (lectotype, designated here):—ARGENTINA. San Juan: [Calingasta,] Cordillera del Espinazito, Valle Hermoso, in arenosis, 14–16 February 1897, *F. Kurtz 9732* (CORD 003356 [digital image!]; isolectotypes, B [destroyed], BAF 6336!, CORD 003357 [digital image!]).

Protologue citation:—“Argentina: prov. San Juan, cordillera del Espinalito, valle Hermosa, 2900 m in arenosis II. 1897, Kurtz Herb. Argentinum no. 9732 (typus); herb. W. Bckr. et Inst. de Bot. et Farmacol. Buenos Aires.”

Notes:—According to the protologue, the type of Fritz Kurtz 9732 was deposited at “Herbarium Argentinum” (currently CORD; <http://museobotanico.unc.edu.ar/historia>), with duplicates (isotypes) deposited at B (the Wilhelm Becker *Viola* herbarium, “herb. W. Bckr.”, which was acquired by the Botanical Museum Berlin-Dahlem, B, in 1929 [Hiepko 1987]) and BAF (the herbarium of the Faculty of Pharmacy and Biochemistry of the University of Buenos Aires, referred to by Becker as “Inst. Bot. et Farmacol. Buenos Aires”). The collection at CORD consists of two sheets, each one with an original label, from which we selected the specimen with the barcode number CORD 003356 as lectotype since it fully agrees with the protologue, it is an abundant, complete, and well preserved specimen, and has a label handwritten by Kurtz. The material from B is destroyed (Robert Vogt pers. comm.), but other isolectotype is housed at BAF.

Viola hieronymi W. Becker (1922a: 185)

Type:—ARGENTINA. La Rioja: Sierra Famatina, en las cercanías de la Mina Jareta, 25 January 1879, *G. Hieronymus & G. Niederlein 804* (holotype, B [destroyed]; **lectotype, designated here** CORD 00003354 [digital image!]; isolectotype, SI 003773!).

Protologue citation:—“Exs. Hieronymus et Niederlein Flora Argentina no. 804: Prov. de la Rioja, Sierra Famatina 1. en las cercanías de la mina Jareta, fl. 25. I. 1879; 2. entre la mina la Jareta y la altura del Espiritu Santo, fl. 25. I. 1879 (Herb. Mus. bot. Berol.)”

Distribution:—Endemic of La Rioja province, Argentina.

Notes:—Evidently there were three specimens with the same number which were deposited in different herbaria, as we have also found specimens at CORD and SI. The B holotype is destroyed (Robert Vogt pers. comm.), so we selected the specimen with the barcode number CORD 00003354 as the lectotype of the species because it is an abundant and complete specimen, agrees with the protologue, and provides a label with clear annotations handwritten by Georg Hieronymus.

Viola huidobrii Gay (1845: 214)

Type (lectotype, designated here):—CHILE. [XIV Region:] Valdivia, in pratis San José, September 1835, *C. Gay s.n.* (P 00756161 [digital image!]; isolectotype, G 00354843 [digital image!]).

Protologue citation:—“Esta linda Violeta se cria en los prados naturales de la provincia de Valdivia, particularmente en los llanos de San José y de la Villa Rica [...] Florece en setiembre.”

Distribution:—Native of Argentina and Chile; in Argentina it is known for the provinces of Chubut and Neuquén.

Notes:—We selected the specimen with the barcode number P 00756161 as the lectotype of *Viola huidobrii* because it is housed in the herbarium where Claude Gay deposited much of his type material (Stafleu & Cowan 1976), is a vigorous and complete specimen, agrees with the protologue, and presents a label with clear notes handwritten by Gay. Also, it has a label with the same identification made in 1927 by Wilhelm Becker. Possible isolectotypes of *C. Gay s.n.* for *V. huidobrii* are specimens with barcode numbers GH 00067173 [digital image!] and K 000535030 [digital image!].

= *Viola lechlerii* Grisebach (1856: 116).

Type (lectotype, designated here):—CHILE. [XIV Region:] ad fl. Futa in prov. Valdivia, 3 December 1850, *W. Lechler 305* (GOET 008940 [digital image!]; isolectotype, K 000535026 upper left plant [digital image!]).

Protologue citation:—“Valdivia: ad fl. Futa flor. m. Dec. leg. Lechler (coll. ej. nr. 305).”

Notes:—We selected the specimen with the barcode number GOET 008940 as the lectotype of *Viola lechlerii* because it agrees with the protologue, is a complete specimen, and possesses labels with notes indicating the location and identification which were written both by Wilibald Lechler, the collector, and August Grisebach, the author of the taxon. The latter worked at Göttingen, the herbarium where his original collections are housed (Stafleu & Cowan 1976).

Viola lilloana W. Becker (1926a: 225)

Type (lectotype, designated here):—ARGENTINA. Tucumán: El Cajón, 4400 m, 17 January 1914, *L. Castellón 3311* (M. Lillo sub. No. 16166) (BAF 6305!; isolectotypes, B [destroyed], LIL 001871 [digital image!], LIL 001872 [digital image!]). (Fig. 4)

Protologue citation:—“Argentina: Prov. Tucumán, El Cajón, 4400 m, 17. I. 1914 leg. M. Lillo sub. No. 16166. Typus in herb. W. Bckr. et Inst. Botan. et Farmacol. Buenos Aires.”

Distribution:—Endemic of the province of Tucumán, Argentina.

Notes:—According to the protologue, Wilhelm Becker mentioned type material deposited at B (the Becker *Viola* herbarium, “herb. W. Bckr.”, which was acquired by the Botanical Museum Berlin-Dahlem, B, in 1929 [Hiepko 1987]) and BAF (the herbarium of the Faculty of Pharmacy and Biochemistry of the University of Buenos Aires, which Becker referred to as “Inst. Brot. et Farmacol. Buenos Aires”). The material deposited at B was destroyed (Robert Vogt pers. comm.). In consequence, we selected the specimen with the herbarium reference number BAF 6305 as the lectotype of *Viola lilloana* because it is a discrete but complete specimen, agrees with the protologue, possesses an original label with clear notes handwritten by Castellón indicating the location and date of collection, and a label added later with the identification made in 1926 by Becker.

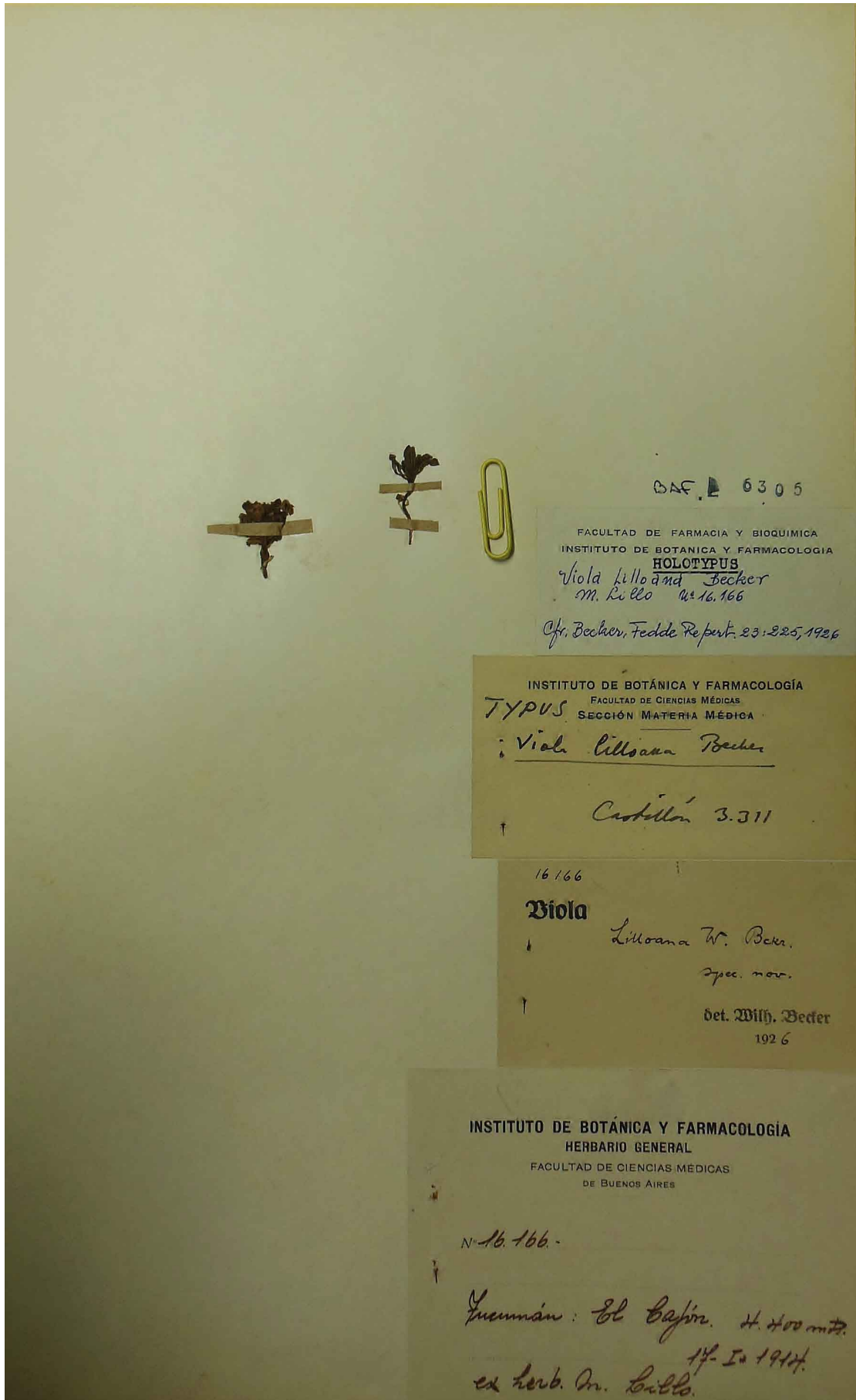


FIGURE 4. *Viola lilloana* W. Becker, digital image of the lectotype *L. Castillón 3311* (BAF 6305).

Viola maculata Cavanilles (1801: 20) var. *maculata* Cavanilles (1801: 20)

Type:—[FALKLAND ISLANDS. Saunders Island: / ISLAS MALVINAS. Isla Trinidad:] Insulis Maclovianis, Port Egmont, *L. Née s.n.* (holotype, MA 82810 [digital image!]; isotype, MPU 023594 [digital image!]).

Distribution:—Native of Argentina and Chile. In Argentina it is known for the provinces of Chubut, Neuquén, Río Negro, Santa Cruz, and Tierra del Fuego, and for the Falkland Islands (Islas Malvinas).

= *Viola maculata* Cavanilles (1801: 20) var. *megaphylla* De Candolle ex Gingins (1824: 297).

Type (lectotype, designated here):—[CHILE. XII Region: Strait of Magellan, in the neighborhood of Bahía Agua Fresca,] Magellan, 1767, *P. Commerson s.n.* (MPU 023947 [digital image!]).

Protologue citation:—“in sylvis bahiae Duclos ad fretum Magellanicum. *V. pyrolaefolia* var. *α*. Poir! dict. 8. p. 636 excl. patriâ. *V. glandulosa* Dombey! herb. *V. lutea megaphyllos* Commers. (DC. v. s. sp. in h. Mus. Par.)”.

Notes:—Philibert Commerson circumnavigated the world with Louis A. Bougainville. In 1767 they were at the Strait of Magellan in southern Chile (Bougainville 1772), where Commerson must surely have collected this specimen. Commerson deposited most of his material at the National Museum of Natural History in Paris (P; Stafleu & Cowan 1976), and according to the protologue Frédéric Gingins examined this material there (“h. Mus. Par.”). However, we could not find the P specimen, but located a duplicate at MPU, one of the herbaria in which Commerson deposited his duplicates (Stafleu & Cowan 1976). We therefore selected the specimen with the barcode number MPU 023947 as the lectotype because it agrees with the protologue, is a vigorous and complete specimen, and possess a label handwritten by Commerson. A reviewer comment, to which we are profoundly grateful mentions: “a Frenchman, Monsieur Alexandre Duclos-Guillot, was in the frigate ‘L’Aigle’ in the Strait of Magellan in 1765. The Baie Duclos cited by Commerson was obviously named for him. It is nowadays known by its Chilean name of Bahía Agua Fresca, and is situated to the south of Punta Arenas and opposite Porvenir, at 53° 40’ S 70° 98’ W.”

= *Viola maculata* Cavanilles (1801: 20) var. *buchtienii* (Gandoger 1912: 705) Weibel (1943: 80).

Basionym: *Viola buchtienii* Gandoger (1912: 705).

Type (lectotype, designated here):—CHILE. [XIV Region:] Valdivia, 11 October 1895, *O. Buchtien s.n.* (E 00322399 [digital image!]; isolectotypes, LIL 000919 [digital image!], SI 003770!).

Protologue citation:—“Chili, prope Valdivia (*O. Buchtien* sub. nom. *V. maculatae*).”

Notes:—Otto Buchtien deposited duplicates in many herbaria (Stafleu & Cowan 1976). We found three syntypes that coincide with the protologue and selected the specimen with the barcode number E 00322399 as lectotype because it agrees with the protologue and is a specimen in good conditions.

= *Viola maculata* Cavanilles (1801: 20) f. *constitucionensis* Sparre (1949: 397).

Type (lectotype, designated here):—CHILE. [VII Region:] Constitución, November 1893, *K. Reiche 14a* (SGO 000003301 [digital image!]).

Protologue citation:—“Localities: CHILE: Prov. de Talca, Laguna de Mondaca (about 1400 m alt.), 18 II-1879, *F. Philippi n°134 d.* (Stgo). Prov. de Maule: Constitución, X-1891, zwischen Gebüsch, cop. und cop. greg., (K.) *R(eiche) w/n°* (Stgo); the same, XI-1893; *K. Reiche w/n°* (Stgo); Between Constitución and Empedrado, Alto de Pantanillo, *Nothofagus obliqua*-forest, 500 m alt., 18-IX-1892, *K. Reiche w/n°* (Stgo).”

Notes:—We found all the syntypes cited by Benkt Sparre at SGO and selected the specimen *K. Reiche 14a* (SGO 000003301) as the lectotype of *Viola maculata* f. *constitucionensis* because it agrees with the protologue, is a complete and vigorous specimen, the form is called after the locality where it was collected (Constitución) and it possesses a label with the identification handwritten by Benkt Sparre. The following specimens were also examined: CHILE. Talca. Laguna de Mondaca, 1400 m, 18 February 1879, *F. Philippi 134d* (SGO 000003299 [digital image!]). Maule, between Constitución and Empedrado, Alto de Pantanillo, *Nothofagus obliqua*-forest, 500 m, 18 September 1892, *K. Reiche 134g* (SGO 000003300 [digital image!]).

Viola maculata Cavanilles (1801: 20) var. *microphyllus* (Poiret 1808: 628) De Candolle ex Gingins (1824: 297) ≡ *Viola maculata* Cavanilles (1801: 20) subsp. *microphyllus* (Poiret 1808: 628) Weibel (1943: 83)

Basionym: *Viola microphyllus* Poiret (1808: 628).

Type (lectotype, designated here):—[CHILE. XII Region:] Détroit de Magellan, au fond de la Baie Boucault, October 1767, *P. Commerson s.n.* (P 00756157 [digital image!]; isolectotypes, MPU 023592 [digital image!], MPU 023593 [digital image!]).

Protologue citation:—“Cette plante a été recueillie, par Commerson, au detroit de Magellan, sur la côte des Patagons, dans le fond de la baie Boucault, sur les collines. (V. s. in herb. Juss.)”

Distribution:—Native of Argentina and Chile. In Argentina it is known for the provinces of Chubut, Neuquén, Río Negro, Santa Cruz, and Tierra del Fuego.

Notes:—Jean Louis Marie Poiret examined the original material at the herbarium of Laurent de Jussieu (P-JU, a historic herbarium of the de Jussieu family at P, with some types also present in the main P herbarium; <http://grbio.org/institution/museum-national-d-histoire-naturelle-paris-mnhn-vascular-plants>). We found three specimens which agree with the protologue and selected the one with the barcode number P 00756157 as the lectotype, in the herbarium where the collector, Philibert Commerson, deposited his types (Stafleu & Cowan 1976). Furthermore, the author of the species, Poiret, and the author of the subsequent combination, Frédéric Gingins, examined the original material at P. It is a complete and vigorous specimen, and includes labels with notes containing identification, location, and collection data handwritten by Philibert Commerson himself.

= *Viola buchtieniana* W. Becker (1906b: 2).

Type (lectotype, designated here):—[ARGENTINA. Río Negro:] San Carlos de Bariloche, Lago Nahuel Huapi, 900 m, 3 February 1905, *O. Buchtien s.n.* (S-R-11351 [digital image!]; isolectotype, E 00322401 [digital image!]).

Protologue citation:—“Patagonia borealis, San Carlos de Bariloche (lago Nahuelhuapi, 41° lat. merid.), 900 m, ubi Dr. O. Buchtienius (Valdivia) 3.II 1905 legit. Patagonia meridionalis, Magellanes, Punta-Arenas, ubi Dr. F. C. Naumannius mortuus 7.II.1876 legit.”

Notes:—We selected the specimen *O. Buchtien s.n.* with the barcode number S-R-11351 as the lectotype because it agrees with the protologue and has a label with the identification handwritten by Wilhelm Becker.

Viola magellanica Georg Forster (1787: 41)

Type (lectotype, designated here):—[ARGENTINA. Tierra del Fuego: / CHILE. XII Region:] Tierra del Fuego, *G. Forster s.n.* (K 000535037 lower left plant [digital image!]; isolectotype, B W 04902 -01 0 [digital image!]).

Protologue citation:—“Habitat in uliginosis.”

Distribution:—Native of Argentina and Chile. In Argentina it is known for the provinces of Santa Cruz and Tierra del Fuego.

Notes:—It is not possible to state where the original Forster herbarium is preserved (Stafleu & Cowan 1976), but we found specimens in different herbaria which might correspond to the original material of *Viola magellanica* collected by Johann Georg Adam Forster during the second voyage of Captain James Cook. We selected the specimen with the barcode number K 000535037 as the lectotype because it agrees with the protologue, possesses a label belonging to the Forster herbarium, and has another label with the name of the species. The following specimen is a possible isolectotype: *G. Forster s.n.* (S11-34254 [digital image!]).

With respect to the ambiguous information of the locality of the type material, we clarify that Forster (1777) wrote about various aspects of Tierra del Fuego such as climate, flora, fauna, and native humane populations without specifying if he was situated on the Argentine or the Chilean side of the big island of Tierra del Fuego. At the time the specimen was collected boundaries between Argentina and Chile were not established; both countries were part of the same territory, the “Virreinato del Río de La Plata”. It was not until 1881 that Chile and Argentina signed a treaty of limits (<https://www.dipublico.org/3634/tratado-de-limites-con-chile-de-1881/>). Therefore, this specimen was gathered either in Argentina or Chile, following the present delimitation.

Viola montagnei Gay (1845: 222)

Type (lectotype, designated here):—CHILE. [IV Region:] Coquimbo, Cordillera de Los Patos, January 1837, *C. Gay 666* (P 00756151 [digital image!]).

Protologue citation:—“[...] se cria en los sitios pedregosos de las grandes cordilleras de los Patos á una altura de 10500 pies [...]”

Distribution:—Native of Argentina and Chile. In Argentina it is known for the provinces of Mendoza and San Juan.

Notes:—We found two specimens at SGO and P which were collected by Claude (Claudio) Gay under different collection numbers. Both agree with the protologue, but we selected the specimen with the barcode number P 00756151 as lectotype since it agrees with the protologue and is discrete but well preserved. The following specimen might correspond to an isosytype of *Viola montagnei*: CHILE. Coquimbo, Cordillera de Los Patos, January 1837, C. Gay 1267 (SGO 000003306 [digital image!]).

= *Viola flos-mariae* Hieronymus (1881: 8).

Type (lectotype, designated here):—ARGENTINA. San Juan: Cerro del Tontal, January 1876, S. Echegaray s.n. (CORD 00003351 [digital image!]; isolectotype, SI 003776!).

Protologue citation:—“Se halla en el Cerro del Tontal y en las orillas del arroyo de las Cabezeras cerca de Leoncito.”

Notes:—Georg Hieronymus based his publication of 1881 on plants collected by Saile Echegaray in San Juan province, Argentina. We found specimens at CORD and SI that fully agree with the protologue. We selected the specimen with the barcode number CORD 00003351 as lectotype since Hieronymus deposited much of his material at CORD (Stafleu & Cowan 1979), it is complete and vigorous, and has a label with clear handwritten notes by Hieronymus himself. The other specimen cited in the protologue was: ARGENTINA. San Juan: arroyo de las Cabeceras en Leoncito, January 1876, S. Echegaray s.n. (CORD 00003352 [digital image!]).

= *Viola flos-mariae* Hieronymus (1881: 8) var. *virescens* Hieronymus (1881: 10).

Type (lectotype, designated here):—ARGENTINA. San Juan: Cerro del Tontal, January 1876, S. Echegaray s.n. (CORD 00003353 [digital image!]).

Protologue citation:—“Igualmente en el Cerro del Tontal; en Enero con flores y frutos.”

Notes:—Georg Hieronymus based his publication of 1881 on plants collected by Saile Echegaray in San Juan province, Argentina. We selected the specimen with the barcode number CORD 00003353 as lectotype since Hieronymus deposited much of his material at CORD (Stafleu & Cowan 1979), it is a discrete but complete specimen which fully agrees with the protologue, and it possesses a label with clear notes handwritten by Hieronymus.

Viola niederleinii W. Becker (1922a: 184)

Type:—Holotype, B (not extant). **Neotype, designated here:** ARGENTINA. La Rioja: Sierra Famatina, Ampallado, January 1911, O. Bodenbender s.n. (neotype, CORD 15856 [digital image!]). (Fig. 5)

Protologue citation:—“G. Hieronymus et G. Niederlein Flora Argentina no. 370b: Prov. de la Rioja, Sierra Famatina, Cueva de Perez, fl. 26-28. I. 1879 (Herb. Mus. bot. Berol.)”

Distribution:—Endemic of La Rioja province, Argentina.

Notes:—The specimen cited by Wilhelm Becker in the protologue of this species and deposited at B was destroyed during the destruction of the herbarium in the course of World War II (Robert Vogt pers. comm.; Hiepko 1987). We were not able to locate extant duplicates of *Hieronymus & Niederlein 370b* and, consequently, a neotype is designated here for *Viola niederleinii*. We selected the specimen O. Bodenbender s.n. at CORD since it fully agrees with the protologue, has also been collected at Sierra Famatina (La Rioja, Argentina), and is a complete, vigorous, and well preserved specimen. It was later cited by Becker (1927: 364) as *V. niederleinii* and has been examined and accepted by Benkt Sparre, a specialist in *Viola*, in 1950.

Viola philippii Leybold (1859: 681), new name for ≡ *Viola microphylla* Philippi (1856: 611), nom. illeg. hom., non Willdenow ex Roemer & Schultes (1819: 361)

Type (lectotype, designated here):—CHILE. [XIII Region:] Cordillera of Santiago near Las Arañas Mine, December 1854, P. Germain s.n. (SGO 000003304 bottom left plant [digital image!]; isolectotype, SI 004361! fragment ex SGO).

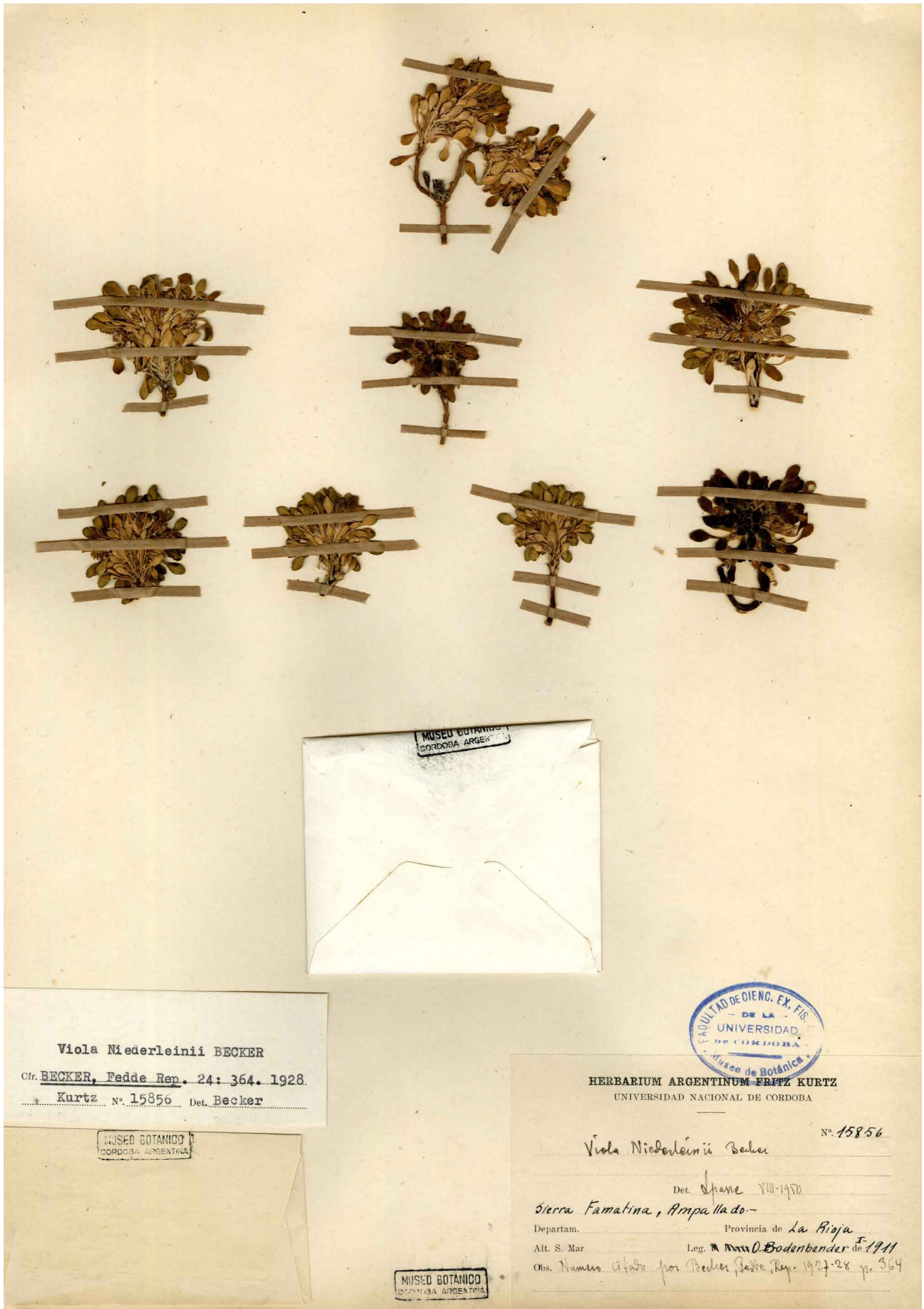


FIGURE 5. *Viola niederleinii* W. Becker, digital image of the neotype *O. Bodenbender s.n.* (CORD 15856).

Protologue citation:—“In cordillera provinciae Santiago prope minam Las Arañas Decembri 1854 legit orn. Germain.”

Distribution:—Native of Argentina and Chile. In Argentina it is known for the province of Mendoza.

Notes:—*Viola philippii* Leybold (1859) was published as a new name for *V. microphylla* Philippi (1856). The protologue of *V. microphylla* Phil. consists of a short diagnosis and the information that the specimen was collected by Germain in the province of Santiago, near the mine of Las Arañas in 1854. There is a single specimen sheet with the barcode number SGO 000003304, which includes a mixture of material and several labels. These are: 1) “*V. philippii* Leyb., Cordillera de Santiago, Casa de Piedra, 2800 m, January 1892, *Reiche s.n.*”, 2) “*V. philippii* Leyb., Las Choicas, Cord. San Fernando, January 1872, *E. Reed s.n.*”, 3) “*V. rugosa* Ph., Cord. Linares, *P. Germain, 1856*”, and 4) “*Viola microphylla* Ph., Cord. de las Arañas, December 1854, *P. Germain s.n.*”. Clearly, the last label and plant agree with the protologue and characteristics of *V. microphylla* and accordingly it is here designated as the lectotype of the species. Another possible isolectotype examined is: CHILE. Cordillera provincia Santiago, 1854, *P. Germain s.n.* (HAL 0117787 [digital image!]).

Viola portulacea Leybold (1865: 381)

Type (lectotype, designated here):—[CHILE. XIII Region:] Entre el Malpaso y Portillo (de los Piuquenes), por los arenales, *F. Leybold s.n.* (SGO 000003323 [digital image!]).

Protologue citation:—“ein noch unbeschriebenes Veilchen aus der Cordillera des Portillo-Passes zwischen Santiago de Chile und Mendoza (Ostseite der Andes)”.

Distribution:—Native of Argentina and Chile. In Argentina it is known for the provinces of Mendoza and Neuquén.

Notes:—Friedrich Leybold settled in Chile from 1855 onwards (Stafleu & Cowan 1979). It is not known where he deposited his herbarium material and types, but type materials collected by Leybold between 1854 and 1890 were deposited at SGO (Stafleu & Cowan 1979; Muñoz-Schick *et al.* 2012) without evidence that duplicates were sent or not to other herbaria. Given the uncertainty that duplicates may exist in other herbaria, we found the specimen with the barcode number SGO 000003323 in the National Museum of Natural History, Santiago, Chile, and selected it as the lectotype since agrees with the original description and it is a well preserved and complete specimen of this species.

Viola rodriguezii W. Becker (1926b: 350)

Type (lectotype, designated here):—ARGENTINA. Salta: Sierra del Cajón, 4280 m, flor azul-violácea, 16 February 1914, *F.M. Rodríguez 1361* (BAF 00000307!; isolectotypes, B [destroyed], BAF 00000305!, BAF 00000306!, SI 003266!, SI 003267! SI 003768!).

Protologue citation:—“Argentina: prov. Salta, Sierra del Cajón, 4250 m, leg. F. M. Rodríguez 15.II.1914 no. 1361 (typus); herb. W. Bckr. et Inst. Bot. y Farmacol. Buenos Aires.”

Distribution:—Endemic of Argentina; known for the provinces of Salta and Tucumán.

Notes:—The protologue of *Viola rodriguezii* consists of a detailed description and an account of where this species had been collected, including that its types were deposited at B (the Wilhelm Becker *Viola* herbarium, “herb. W. Bckr.”, which was acquired by the Botanical Museum Berlin-Dahlem, B, in 1929 [Hiepko 1987]) and BAF (the herbarium of the Faculty of Pharmacy and Biochemistry of the University of Buenos Aires, which Becker referred to as “Inst. Bot. et Farmacol. Buenos Aires”). The specimen at B has been destroyed (Robert Vogt, pers. comm.), but we were able to examine several types at BAF and SI, which differ in the initials of the name of the collector of the species. The BAF specimens were attributed to F.M. Rodríguez, as also in the protologue, the collector who gathered this material in northeastern Argentina, while the SI specimens were attributed to D. Rodríguez, the different initial presumably being an error. We selected the specimen with the herbarium reference number BAF 00000307 as lectotype because it is a well preserved, abundant, and complete specimen and fully agrees with the protologue published by Becker (1926b).

= *Viola munozensis* W. Becker (1926a: 226), *syn. nov.*

Type (lectotype, designated here):—ARGENTINA. Tucumán: Tafí, Cerro Muñoz, pratis alpinis, 3900 m, January 1907, *M. Lillo 5911* (LIL 001873 [digital image!]; isolectotypes, B [destroyed], BAF [missing]).

Protologue citation:—“Argentina borealis: Prov. Tucumán, Cerro Muñoz, 3900 m, in pratis alpinis, I. 1907 leg. M. Lillo sub. no. 5911. Typus in Herb. W. Bckr. et in Inst. Bot. y Farmacol. Buenos Aires.

Notes:—According to the protologue, types were deposited at B (the Wilhelm Becker *Viola* herbarium, “herb. W. Bckr.”, which was acquired by the Botanical Museum Berlin-Dahlem, B, in 1929 [Hiepko 1987]) and BAF (the herbarium of the Faculty of Pharmacy and Biochemistry of the University of Buenos Aires, which Becker referred to as “Inst. Bot. et Farmacol. Buenos Aires”). The material deposited at B has been destroyed (Robert Vogt pers. comm.; Hiepko 1987). The BAF specimen was not located (Gustavo Giberti pers. comm.), but we were able to examine a specimen at LIL which is here designated as the lectotype of *Viola munozensis* since fully agrees with the protologue, is an abundant and complete specimen, is housed in the main herbarium where Miguel Lillo deposited his types (Stafleu & Cowan 1981), and has a label with clear notes handwritten by Lillo indicating collection, identification, and location data.

There is no doubt that *Viola munozensis* (only known for the type material) is a synonym of *V. rodriguezii*. Becker (1926a) pointed out the similarity between both taxa in the original publication of *V. munozensis*. He differentiated them by the arrangement of the leaves in the rosettes (more lax in *V. munozensis* vs. more compact in *V. rodriguezii*), the shape of the leaves (ovate-subrhombic in *V. munozensis* vs. oblong-spatulate in *V. rodriguezii*) and the indumentum of the pseudopetioles and pedicels (glabrous in *V. munozensis* vs. hairy in *V. rodriguezii*). However, these differences are not diagnostic for considering both entities as different species and seem to be due to environmental conditions.

Viola sacculus Skottsberg (1916: 266)

Type (lectotype, designated here):—[ARGENTINA. Chubut: / CHILE. XI Region:] Patagonia andina, sandy meseta no. om Valle Frias / Patagonia, meseta al NE del río Cisnes, ca. 1000 m, 17 November 1908, C. Skottsberg 585 (S07-16851 [digital image!]; isolectotype, S11-34267).

Protologue citation:—“Andines und subandines Patagonien, in der alpinen Region. Terr. Chubut, Meseta n. vom Valle Frias, c. 1000 m (Bl. 2, 17.11.08); Terr. Sta. Cruz im Pass zw. dem Koslowsky- und Fenix-Tal, c. 1100 m (Bl. 2, 8.12.08); Schutthalden in den Gebirgen w. vom Río Zeballos, 1400–1450 m; Nordseite des Zeballos-Passes, 1400–1500 m.”

Distribution:—Native of Argentina and Chile. In Argentina it is known for the provinces of Chubut, Neuquén, Río Negro, and Santa Cruz.

Notes:—Of the several syntypes mentioned by Carl Skottsberg, we designated as the lectotype the specimen with the barcode number S07-16851, which is complete, agrees with the protologue, and has a label handwritten by Skottsberg with its location and identification. There is another specimen at S with the barcode number S11-34267, which is identified as collected on the same date by Skottsberg, and also bears the same number 585, but the locality given is “Patagonia, meseta al NE del Río Cisnes, c. 1000 m.s.m.” Since “Río Cisnes” is the alternative name for “Río Frias” we interpret this collection as represent an isolectotype of the species. The Frías river (or Cisnes river) communicates Argentina with Chile through the Río Frias-Río Cisnes international border crossing. According to the report of Skottsberg (1911) in his book “The wilds of Patagonia” it is difficult to state whether this collection was made on the Argentine or the Chilean side of the Andes since he and his fellow travelers were exploring the valleys from one side to another during several days.

= *Viola patagonica* Becker (1925b: 356)

Type (lectotype, designated here):—ARGENTINA. Neuquén: In pratis alpinis, prope Laguna Blanca, Patagonia Andina Central, ca. 1000 m, January 1898, C.L. Spegazzini s.n. (LP 011391!; isolectotypes, BAF!, SI 003769!).

Protologue citation:—“Patagonia: in fissuris rupium prope “Laguna Blanca” (Patagon. central. andin.), leg. C. Spegazzini I.1898; etiam in pratis alpinis ± 1000 m. s. m.)”.

Notes:—When describing this species, Wilhelm Becker (1925b) did not mention where the type was located. We selected the specimen at LP as lectotype since it fully agrees with the protologue, is a well preserved collection, and has a label with the identification made by Becker in 1924. Isolectotypes are housed at BAF and SI.

Viola sempervivum Gay (1845: 226)

Type (lectotype, designated here):—CHILE. [IV Region:] Provincia Coquimbana, in andibus de los Patos, Valle del Toro, 3191 m, 1836, *C. Gay* 343 (P 00756147 [digital image!]).

Protologue citation:—“La *Viola sempervivum* se cría en las cordilleras de Aconcagua, de Coquimbo, en el Valle del Toro, etc., á una altura de 9400 pies. Florece en diciembre.”

Distribution:—Native of Argentina and Chile. In Argentina it is known for Mendoza province.

Notes:—Gay (1845) did not indicate, when describing this species, where the type was deposited. We therefore selected as lectotype the specimen *Gay* 343 deposited at P, which agrees with the protologue and is well preserved.

Viola tridentata Smith (1819: *Viola* n. 76)

Type (lectotype, designated here):—[ARGENTINA. Tierra del Fuego:] Staten Land [Isla de los Estados,] February 1787, *A. Menzies* s.n. (LINN. HS1380-75 [digital image!]; isolectotype, BM 000513338 [digital image!]).

Protologue citation:—“Gathered by Mr. Menzies, in February 1787, on the mountains of Staten Land, growing among the snow.”

Distribution:—Native of Argentina and Chile. In Argentina it is known for Santa Cruz and Tierra del Fuego provinces.

Notes:—We found two well preserved specimens that fully agree with the protologue of *Viola tridentata*, one deposited at BM and another at LINN. When describing this species, James E. Smith (1819) did not mention where the type material was located. We selected the specimen at LINN as lectotype since Smith worked at LINN (Stafleu & Cowan 1985) and some materials collected by Archibald Menzies were deposited there (Stafleu & Cowan 1981).

Viola triflabellata W. Becker (1925b: 357)

Type:—ARGENTINA. Salta: Cachipampa, prope Amblayo, 2500 m, January 1897, *C.L. Spegazzini* s.n. (holotype, BAF 6308!).

Protologue citation:—“Argentina: in altiplanitie boratífera Cachipampa vocata prope Amslaio, Salta, 2500 m, leg. Carlos Spegazzini I.1897 (typus); Arcas-Trancas inter Tucuman et Salta 2000 m leg. idem II.1897; in alpinis 3000 m Pirhua del Sol, Pampa grande inter Tucuman et Salta, leg. idem II.1897.”

Distribution:—Endemic of Argentina; known for the provinces of Catamarca, La Rioja, Salta, and Tucumán.

= *Viola tucumanensis* W. Becker (1926b: 352), *syn. nov.*

Type (lectotype, designated here):—ARGENTINA. Tucumán: Lara, 3200 m, 30 February 1912, *F.M. Rodríguez* 291 (BAF 00000304!; isolectotypes A 00067185 [digital image!]), B [destroyed], SI 003763!, SI 003764!).

Protologue citation:—“Argentina: prov. Tucumán, Lara, 3200 m, leg. F. M. Rodríguez 30.II.1912, no. 291 (Typus); herb W. Bckr. et Inst. de Bot. y Farmacol. Buenos Aires.”

Notes:—According to the protologue, types were deposited at B (the Wilhelm Becker *Viola* herbarium, “herb. W. Bckr.”, which was acquired by the Botanical Museum Berlin-Dahlem, B, in 1929 [Hiepko 1987]) and BAF (the herbarium of the Faculty of Pharmacy and Biochemistry of the University of Buenos Aires, which Becker referred to as “Inst. Bot. et Farmacol. Buenos Aires”). The B specimen has been destroyed (Robert Vogt pers. comm.; Hiepko 1987), but we were able to examine the specimen at BAF, which is designated herein as the lectotype of *Viola tucumanensis* since it is an abundant and complete specimen, agrees with the protologue, has labels with clear notes handwritten by Rodríguez indicating its location, and was identified by Becker.

Becker (1926b) differentiated *V. tucumanensis* from *Viola triflabellata* by a combination of characters. Nevertheless, the differences are minimum and probably due to the environment. The width of the rosette overlaps between both species. Leaf blades were differentiated by being glabrous in *V. triflabellata* and with hairy margins in *V. tucumanensis*; however, *V. tucumanensis* also presents blades with glabrous margins in the same plant. The presence of entire or fimbriated margins in the stipules is a variable character. Finally, the difference between the style crest of both entities is subtle; the three flabeliform appendages of *V. tucumanensis* would be distinctly stipulated, while the three flabeliform appendages of *V. triflabellata* would be gently dilated. No decisive, diagnostic differences are observed to identify both entities as distinct species.

= *Viola joergensenii* W. Becker (1926b: 353), *syn. nov.*

Type (lectotype, designated here):—ARGENTINA. Catamarca: [Tinogasta,] Cerro Negro, February 1917, *P. Jörgensen 1173* (BAF 6340!; isolectotypes, A 00067174 [digital image!], B [destroyed], GH 00067175 [digital image!], LIL 001929 upper plant [digital image!], MO 2267111 [digital image!], SI 003775!, US 00114572 [digital image!]).

Protologue citation:—“Argentina: prov. Catamarca, Cerro Negro, leg. P. Jörgensen II. 1917, no. 1173 (Typus); herb. W. Bckr. et Inst. de Bot. y Farmacol. Buenos Aires.”

Notes:—According to the protologue, original type material was deposited at B (Wilhelm Becker’s *Viola* herbarium, “herb. W. Bckr.”, which was acquired by the Botanical Museum Berlin-Dahlem, B, in 1929 [Hiepko 1987]) and BAF (the herbarium of the Faculty of Pharmacy and Biochemistry of the University of Buenos Aires, which Becker referred to as “Inst. Bot. et Farmacol. Buenos Aires”). The specimen deposited at B was destroyed (Robert Vogt pers. comm.). We have therefore selected the specimen with the herbarium reference number BAF 6340 as lectotype since it is a discrete but complete specimen, agrees with the protologue, possesses an original label with clear notes handwritten by Peter Jörgensen indicating location, date of collection, and identification, and a label added later with the identification handwritten in 1926 by Becker. The herbarium labels of the lectotype and the isolectotypes were either erroneously printed, or the text was mistakenly transcribed as: “dep. de Andalgalá, prov. de Catamarca”. The precise and handwritten locality is “Cerro Negro”, located in the Tinogasta department of the same Catamarca province.

Becker (1926b) differentiated *V. joergensenii* from *Viola triflabellata* by a combination of characters, although the differences are subtle and probably due to the environmental conditions. The width of the rosette overlaps between both species. Leaves were differentiated by being glabrous in *V. triflabellata* and with hairy margins in *V. joergensenii*; however, *V. joergensenii* also has leaves with glabrous margins in the same plant. *Viola joergensenii* was differentiated by having small blackish circular glands on the abaxial surface of the leaves, although they are sometimes scarce and even absent (for example, in the US isolectotype). The presence of entire or fimbriated margins in the stipules is a variable character. Finally, there are no differences between the style crest of both entities; the three flabeliform appendages of *V. joergensenii* and *V. triflabellata* are gently dilated. No diagnostic differences are observed to identify both entities as independent species.

Viola volcanica Gillies ex Hooker & Arnott (1833: 145)

Type (lectotype, designated here):—ARGENTINA. Mendoza: among loose pumice stones, near summit of volcanic mountain called Cerro del Diamante, *J. Gillies s.n.* (K 000535076 [digital image!]); isolectotypes, BM 000513321 [digital image!], E 00322407 [digital image!]).

Protologue citation:—“Among loose pumice-stones near the summit of the volcanic mountain Cerro del Diamante, *Dr. Gillies*.”

Distribution:—Native of Argentina and Chile. In Argentina it is known for the provinces of Mendoza and Neuquén.

Notes:—Several specimens are mounted on the same sheet of this species at K and are identified by three different barcode numbers. The two upper right hand plants with the barcode number K 000535077 possess a label with the identification *Viola volcanica* and the collection data “Dr. Gilies 78”; without having any locality information we can not assure that it corresponds with the protologue of the species. The two bottom right hand plants with the barcode number K 000535078 possess two labels; one label has the identification *Viola volcanica* and the locality data “Cord. de Talca”, and the second label possesses the collection data “Plantae Chilenses-Comm. R. A. Philippi. Central Chili”. Furthermore, the note “cf. *V. congesta* Hook. Not *volcanica*” is handwritten next to these labels. This specimen does not agree with the protologue. The two upper left hand plants with the barcode number K 000535076 have a label with the exact transcription of the protologue handwritten by Gillies himself, fully agrees with the protologue, and are herein selected as the lectotype of *Viola volcanica*. Isolectotypes were also examined at BM and E.

Acknowledgments

We deeply appreciate the help provided by curators, technicians, and collaborators at the herbaria consulted: Robert Vogt (B), Renée Fortunato (BAB), Gustavo Giberti, Hernán Bach, and Fabián Font (BAF), Gloria Barboza and Jimena Ponce (CORD), Laurence Loze and Lorenzo Ramella (G), Sue Zmarzty (K), Nora Muruaga (LIL), Laura Iharlegui and

Marisa Prado (LP), Gladys Tello (MOL), Norma Deginani, Manuel Belgrano, Soledad Nomdedeu, and Amalia Suárez (SI). Sincerely thanks are also due to John McNeill (Royal Botanic Garden, Edinburgh) for his extensive explanations and substantial discussion about nomenclature issues. We also acknowledge the valuable suggestions and corrections made by the anonymous reviewers and the associated editor to improve the earlier version of the manuscript. Financial support was provided by Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET).

References

- Ballard, H.E., Paula-Souza, J. & Seidel, R. (2014) Violaceae. In: Jørgensen, P.M., Nee, M.H. & Beck, S.G. (Eds.) Catálogo de las plantas vasculares de Bolivia. *Monographs in Systematic Botany from the Missouri Botanical Garden* 127 (2): 1253–1256.
https://doi.org/10.1007/978-3-642-39417-1_25
- Becker, W. (1906a) *Violae Andinae*. *Botanische Jahrbücher für Systematik, Pflanzengeschichte und Pflanzengeographie* 37: 587–592.
- Becker, W. (1906b) Beitrag zur Veilchenflora Südamerikas. *Allgemeine botanische Zeitschrift für Systematik, Floristik, Pflanzengeographie* 12: 2–4.
- Becker, W. (1907) Systematische Bearbeitung der Violen-Sektion *Leptidium* (Ging. pro parte maxima) W. Becker. *Beihefte zum botanischen Centralblatt* 22 (2): 78–96.
- Becker, W. (1922a) *Violae novae Americae Meridionalis*. *Repertorium Specierum Novarum Regni Vegetabilis* 18: 180–186.
- Becker, W. (1922b) *Viola huanucoënsis* W. Beckr. und *Viola truncata* Meyen. *Repertorium Specierum Novarum Regni Vegetabilis* 18: 186–187.
- Becker, W. (1925a) *Viola* L. In: Engler, A. & Prantl, K. (Eds.) *Die Natürlichen Pflanzenfamilien* 21. Verlag von Wilhelm Engelmann, Leipzig, pp. 363–376.
- Becker, W. (1925b) Beiträge zur Kenntnis der südamerikanischen *Violae*. *Repertorium Specierum Novarum Regni Vegetabilis* 21: 349–361.
- Becker, W. (1926a) Beiträge zur Violenflora Argentiniens und Chiles. *Repertorium Specierum Novarum Regni Vegetabilis* 23: 222–227.
- Becker, W. (1926b) Beiträge zur Violenflora Argentiniens. *Repertorium Specierum Novarum Regni Vegetabilis* 22: 350–354.
- Becker, W. (1927) Ein Beitrag zur Violenflora Argentiniens und Chiles. *Repertorium Specierum Novarum Regni Vegetabilis* 23: 363–366.
- Becker, W. (1928) On some violets from the Andes. *Bulletin of Miscellaneous Information (Royal Botanic Gardens, Kew)* 1928 (4): 133–140.
<https://doi.org/10.2307/4107120>
- Bougainville, L.A. (1772) *Voyage autour du monde par la frégate du Roi La Boudeuse et la flute l'Etoile en 1766, 1767, 1768, et 1769*, 2 vols. Saillant & Nyon, Paris, 96 pp. Available from: <https://archive.org/details/voyageautourdumo00boug> (accessed 17 February 2017)
- Britton, N.L. (1889) An enumeration of the plants collected by Dr. H. H. Rusby in South America. 1885–1886. IV. *Bulletin of the Torrey Botanical Club* 16: 13–20.
<https://doi.org/10.2307/2477166>
- Cavanilles, A.J. (1801) *Icones et Descriptiones Plantarum* 6, Madrid, 97 pp.
- Chen, Y.S., Yang, Q.E., Ohba, H. & Nikitin, V.V. (2007) *Viola* Linnaeus. In: Wu, Z.Y. & Raven, P.H. (Eds.) *Flora of China* 13. Science Press, Beijing & Missouri Botanical Garden Press, St. Louis, pp. 74–111.
- Forster, G. (1777) *A voyage round the world in his Britannic Majesty's sloop, resolution, commanded by Capt. James Cook, during the years, 1772, 3, 4, and 5*, London, 607 pp.
- Forster, G. (1787) *Plantarum Magellanicarum*. *Commentationes Societatis Regiae Scientiarum Gottingensis* 9: 13–45, 8 plates.
- Gandoger, M. (1912) *Manipulus plantarum novarum praecipue Americae australioris*. *Bulletin de la Société Botanique de France* 59: 704–710.
<https://doi.org/10.1080/00378941.1912.10832498>
- Gay, C. (1845) *Historia Física y Política de Chile, Botánica* 1 (2), Paris and Chile, 496 pp.
- Gingins de la Sarraz, F.C.J. (1823) Mémoire sur la famille des Violacées. *Mémoire de la Société de physique et d'Histoire Naturelle de Geneve* 2: 1–28.
- Gingins de la Sarraz, F.C.J. (1824) *Violarieae*. In: De Candolle, A.P. (Ed.) *Prodromus Systematis Naturalis Regni Vegetabilis* 1. Paris, pp. 287–316.
- Grisebach, A. (1856) Systematische Bemerkungen über die beiden ersten Pflanzensammlungen Philippi's und Lechler's im südlichen Chile und an der Maghellans-Strasse. *Abhandlungen der Königlich-Gesellschaft der Wissenschaften zu Göttingen* 6: 89–138.

- Hicken, C.M. (1922) *Plantae Flossdorffianae in monte Famatina lectae et a C. M. Hicken determinatae. Darwiniana* 1: 22–42.
- Hiepko, P. (1987) The collections of the Botanical Museum Berlin-Dahlem (B) and their history. *Englera* 7: 219–252.
- Hieronimus, G. (1881) Sertum Sanjuaninum ó descripciones de plantas fanerógamas y criptógamas vasculares recolectadas por el Dr. D. Saile Echegaray en la Provincia de San Juan. *Boletín de la Academia Nacional de Ciencias de Córdoba* 4 (1): 1–73.
- Hoffmann, A.E.J., Arroyo M.K., Liberona F., Muñoz M., Watson J. (1998) *Plantas altoandinas en la Flora Silvestre de Chile: Zona araucana*. Fundación Claudio Gay, Santiago, Chile.
- Hooker, W.J. & Arnott, G. A. W. (1833) Contributions towards a Flora of South America and the Islands of the Pacific. *Botanical Miscellany* 3: 129–212.
- JSTOR Global Plants (2000–2017) JSTOR Global Plants, ITHACA, New York. Available from: <http://plants.jstor.org> (accessed February 2017)
- Leybold, F. (1858) Dos nuevas plantas chilenas encontradas por don Federico Leybold: *Viola atropurpurea*, i *Berneoudia domeykoana*. Descripción hecha por el mismo Sr. Leybold en 20 i 21 de Enero de 1858, i comunicada a la Facultad de Ciencias Físicas de la Universidad de Chile. *Anales de la Universidad de Chile* 16 (1): 158–159.
- Leybold, F. (1859) Cinco plantas nuevas de la Flora de Chile, encontradas i descritas por don Federico Leybold, a saber: *Psycrophila holophylla*, *Draba stenophylla*, *Viola rhombifolia*, *Viola microphylla* Philippi, i *Ceratophyllum chilense*. *Anales de la Universidad de Chile* 16 (7): 678–683.
- Leybold, F. (1865) *Viola portulacea* nov. Sp. Lbd., ein noch unbeschriebenes Veilchen aus der Cordillera des Portillo-Passes zwischen Santiago de Chile und Mendoza (Ostseite der Andes). *Flora* 48 (24): 381.
- Leybold, F. (1866) *Viola cano-barbata* nov. sp. Lbd. *Flora* 49 (18): 285.
- Linnaeus, C. (1753) *Species plantarum* 2. Laurentius Salvius, Holmiae [Stockholm], pp. 561–1200. [plus indexes and addenda, 1201–1231]
<https://doi.org/10.5962/bhl.title.669>
- Little, R.J. & McKinney, L.E. (2015) *Viola*. In: Flora of North America Editorial Committee (Eds.) *Flora of North America North of Mexico* 6. New York and Oxford, pp. 111–164.
- Martcorena, C. & Quezada, M. (1985) Catálogo de la flora vascular de Chile. *Gayana Botánica* 42 (1–2): 1–79.
- McNeill, J., Barrie, F.R., Buck, W.R., Demoulin, V., Greuter, W., Hawksworth, D.L., Herendeen, P.S., Knapp, S., Marhold, K., Prado, J., Prud'homme van Reine, W.F., Smith, G.F., Wiersema, J.H. & Turland, N.J. (Eds.) (2012) International Code of Nomenclature for algae, fungi, and plants (Melbourne Code) *Regnum Vegetabile* 154: 1–240.
- Meyen, F.J.F. (1834) *Reise um die erde ausgeführt auf dem Königlich preussischen seehandlungs-schiffe Prinzess Louise, commandirt von captain W. Wendt, in den jahren 1830, 1831 und 1832*. Conrad Feister, Berlin, 493 pp.
- Muñoz-Schick, M., Morales, V. & Moreira-Muñoz, A. (2012) La colección de tipos de plantas vasculares del Herbario Nacional de Chile (SGO). Análisis histórico, temporal y espacial. *Gayana Botánica* 69 (1): 70–81.
- Nicola, M.V. (2017) *Viola* L. In: Zuloaga, F.O. & Belgrano, M.J. (Eds.) *Flora Argentina: flora vascular de la República Argentina* 17, Buenos Aires, pp. 371–408.
- Philippi, R.A. (1856) *Plantarum novarum Chilensium. Centuria prima. Linnaea* 28: 609–660.
- Philippi, R.A. (1860) *Viage al Desierto de Atacama: hecho de orden del Gobierno de Chile en el verano 1853-54*. Halle en Sajona: Librería de Eduardo Anton, 236 pp.
- Philippi, R.A. (1892a) Plantas nuevas chilenas de las familias crucíferas, bixáceas, violáceas, poligáneas: (continuación). *Anales de la Universidad de Chile* 81 (May–Oct.): 329–347.
- Poiret, J.L.M. (1808) *Encyclopédie Méthodique Botanique* 8. Paris, 879 pp.
- Roemer, J.J. & Schultes, J.A. (1819) *Systema Vegetabilium* 5. Stuttgart, 632 pp.
- Rossow, R.A. (1988) Violaceae. In: Correa, N.M. (Ed.) *Flora Patagónica* 5. Buenos Aires, pp. 170–189.
- Rossow, R.A., Watson, J.M. & Flores, A.R. (2003) Violaceae. In: Kiesling, R. (Ed.) *Flora de San Juan* 2, Buenos Aires, pp. 139–147.
- Sanso, A.M., Simonetti, E. & Xifreda, C.C. (2003) Nuevas citas de *Viola* (Violaceae) para el noroeste argentino. *Darwiniana* 41: 87–91.
- Sanso, A.M., Xifreda, C.C. & Colasante, M. (2005) Especies de *Viola* (Violaceae) adventicias en Argentina. *Darwiniana* 43: 192–200.
- Sanso, A.M., Xifreda, C.C. & Seo, M.N. (2008) *Viola*. In: Zuloaga, F.O., Morrone, O. & Belgrano, M.J. (Eds.) *Catálogo de las plantas vasculares del Cono Sur (Argentina, Sur de Brasil, Chile, Paraguay y Uruguay). Dicotyledoneae: Fabaceae (Senna-Zygia)–Zygophyllaceae* 3. Missouri Botanical Garden Press, pp. 3158–3169.
- Skottsberg, C.J.F. (1911) *The wilds of Patagonia; a narrative of the Swedish expedition to Patagonia, Tierra del Fuego and the Falkland Islands in 1907-1909*. E. Arnold, London, 336 pp. Available from: <https://archive.org/details/ofpatagonia00skotwildsrich> (accessed 22 August 2017)
- Skottsberg, C.J.F. (1916) Botanische Ergebnisse der schwedischen Expedition nach Patagonien und dem Feuerlande 1907-1909. V. Die Vegetationsverhältnisse längs der Cordillera de los Andes s. von 41° S. Br. Ein Beitrag zur Kenntnis der Vegetation in Chiloé, Westpatagonien, den andinen Patagonien und Feuerland. *Kongliga Svenska Vetenskaps Akademiens Handlingar, Ny Följd* 56 (5):

1–366, 23 plates.

- Smith, J.E. (1819) *Viola*. In: Rees, A. (Ed.) *The Cyclopaedia; or, Universal Dictionary of Arts, Sciences, and Literature* 37 (1).
- Sparre, B. (1949) Systematical and nomenclatural studies in the genus *Viola*. I. An attempt at a revision of the section *Chilenium*. *Lilloa* 17: 377–416, 16 plates.
- Stafleu, F.A. & Cowan, R.S. (1976) *Taxonomic literature. A selective guide to botanical publications and collections with dates, commentaries and types (TL2)* 1: A-G. Ed. 2. Bohn, Scheltema & Holkema, Utrecht, 1136 pp.
<https://doi.org/10.5962/bhl.title.48631>
- Stafleu, F.A. & Cowan, R.S. (1979) *Taxonomic literature. A selective guide to botanical publications and collections with dates, commentaries and types (TL2)* 2: H-Le. Ed. 2. Bohn, Scheltema & Holkema, Utrecht, 991 pp.
<https://doi.org/10.5962/bhl.title.48631>
- Stafleu, F.A. & Cowan, R.S. (1981) *Taxonomic literature. A selective guide to botanical publications and collections with dates, commentaries and types (TL2)* 3: Lh-O. Ed. 2. Bohn, Scheltema & Holkema, Utrecht, 980 pp.
<https://doi.org/10.5962/bhl.title.48631>
- Stafleu, F.A. & Cowan, R.S. (1983) *Taxonomic literature. A selective guide to botanical publications and collections with dates, commentaries and types (TL2)* 4: P-Sac. Ed. 2. Bohn: Scheltema & Holkema, Utrecht, 1214 pp.
<https://doi.org/10.5962/bhl.title.48631>
- Stafleu, F.A. & Cowan, R.S. (1985) *Taxonomic literature. A selective guide to botanical publications and collections with dates, commentaries and types (TL2)* 5: Sal-Ste. Ed. 2. Bohn: Scheltema & Holkema, Utrecht, 1066 pp.
<https://doi.org/10.5962/bhl.title.48631>
- The International Plant Names Index (2012) Available from: <http://www.ipni.org> (accessed August 2017)
- The Plant List (2013) Version 1.1. Available from: <http://www.theplantlist.org/> (accessed August 2017)
- Thiers, B. (2017) *Index Herbariorum: A global directory of public herbaria and associated staff*. New York Botanical Garden's Virtual Herbarium. Available from: <http://sweetgum.nybg.org/science/ih/> (accessed February 2017)
- Wahlert, G.A., Marcussen, T., de Paula-Souza, J., Feng, M. & Ballard, H.E. (2014) A phylogeny of the Violaceae (Malpighiales) inferred from plastid DNA sequences: implications for generic diversity and intrafamilial classification. *Systematic Botany* 39: 239–252.
<https://doi.org/10.1600/036364414X678008>
- Watson, J.M. & Flores, A.R. (2007) *Violas rosuladas en la flora de Chile*. *Chagual* 5: 33–47.
- Watson, J.M. & Flores, A.R. (2009) A new and rare rosulate species of *Viola* (Violaceae) from Argentina. *Phytotaxa* 2: 19–23.
<https://doi.org/10.11646/phytotaxa.2.1.3>
- Watson, J.M. & Flores, A.R. (2011) Study and rehabilitation of some endemic Argentinian taxa in the genus *Viola* L. (Violaceae), and lectotypification of a Peruvian species. *Gayana Botanica* 68 (2): 297–308.
- Watson, J.M. & Flores, A.R. (2012–2013) A new species of *Viola* L. (Violaceae) from section *Andinium* W. Becker endemic to Argentinian Patagonia. *Rock Garden Quarterly* 71 (1): 54–65.
- Watson, J.M. & Flores, A.R. (2013) A new endemic Argentinian species of *Viola* L. (Violaceae) of the section *Andinium* W. Becker. *Rock Garden Quarterly* 71 (2): 160–173.
- Watson, J.M., Rojas Villegas, G. & Saldivia, P. (2010) Recent and attested historical records for Chile of three *Viola* L. (Violaceae L.) species first described by Carl Skottsberg in 1916. *Boletín del Museo Nacional de Historia Natural, Chile* 59: 9–16.
- Weddell, H.A. (1864) Plantes inédites des Andes. *Annales des Sciences Naturelles; Botanique* 5 (1): 283–296.
- Weibel, R. (1943) Nouvelle définition du *Viola maculata* Cav. *Candollea* 10: 75–85.
- Xifreda, C.C. & Sanso, A.M. (1999) Violaceae. In: Zuloaga, F. & Morrone, O. (Eds.) Catálogo de las Plantas Vasculares de la Argentina II. Fabaceae-Zygophyllaceae, Dicotyledoneae. *Monographs in Systematic Botany from the Missouri Botanical Garden* 74: 1170–1177, 1246 (Apéndice 1).