

Typifications of names in South American species of *Gutierrezia* (Asteraceae, Astereae)

F. RATTO, D. J. SCHIAVINATO & A. BARTOLI

Cátedra de Botánica Sistemática, Facultad de Agronomía, Universidad de Buenos Aires, av. San Martín,
4453, AR-1417 Buenos Aires, Argentina

ORCID iD. F. RATTO: <https://orcid.org/0000-0002-7440-365X>, D. SCHIAVINATO:
<https://orcid.org/0000-0002-7494-4122>, A. BARTOLI: <https://orcid.org/0000-0002-2044-7833>

Author for correspondence: F. Ratto (ratto@agro.uba.ar)

Editor: A. Susanna

Received 12 April 2017; accepted 3 December 2018; published on line 13 May 2019

Abstract

TYPIFICATIONS IN *GUTIERREZIA* (ASTERACEAE, ASTEREA).— During the course of the revision of the South American species of *Gutierrezia*, we have detected names that require typification. After the analysis of the protologues and the herbarium specimens, we designated eight lectotypes and one neotype for nine names of the *Gutierrezia* genus and we assigned the category of holotype to one specimen. A detailed discussion is provided for each case.

Key words: Asteraceae; *Gutierrezia*; holotype; lectotype; neotype; taxonomy.

Resumen

TIPIFICACIÓN EN *GUTIERREZIA* (ASTERACEAE, ASTEREA).— Durante el transcurso de la revisión de las especies sudamericanas de *Gutierrezia*, hemos podido hallar nombres que requieren tipificación. Luego del análisis de los protólogos y especímenes de herbario, hemos designado ocho lectótipos y un neótipo para nueve nombres del género *Gutierrezia*. Además, se asignó la categoría de hóloto a un espécimen. Se provee una discusión detallada para cada nombre.

Palabras clave: *Asteraceae*; *Gutierrezia*; hóloto; lectótipo; neótipo; taxonomía.

Cómo citar este artículo / Citation

Ratto, F., Schiavinato, D. J. & Bartoli, A. 2019. Typifications of names in South American species of *Gutierrezia* (Asteraceae, Astereae). *Collectanea Botanica* 38: e001. <https://doi.org/10.3989/collectbot.2019.v38.001>

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INTRODUCTION

Gutierrezia Lag. (Lagasca, 1816) is an American genus that has a disjunct distribution in North America and South America. In North America 17 species inhabit in xerophytic or halophytic areas from the Midwest of the United States to the Southern

Mexico (Nesom, 2006). In South America 17 species were found: one in Bolivia, in the departments of La Paz and Santa Cruz (Solbrig, 1966); six in Chile, from the Region I to the Region XII (Zuloaga *et al.*, 2008); and eight in Argentina recognized by Zuloaga & Morrone (1999) and Zuloaga *et al.* (2008). Some years later three new species

were described for Argentina: one was found in the province of Mendoza, another in the province of Chubut, and the last in the provinces of Salta and Jujuy (Ratto & Bartoli, 2015a, 2016a, b). Recently, the same authors (Ratto & Bartoli 2015b, 2016c) rehabilitated one species from the province of Santa Cruz and another from the provinces of Buenos Aires and La Pampa, raising to 11 the number of Argentine species, 10 of which are endemic.

During the review of the South American species of *Gutierrezia*, we have identified names that require clarification in the state of their type materials, to ensure the correct assignation of specimens in future research.

MATERIALS AND METHODS

In order to proceed with the typification, we analyzed all the protologues and specimens (common and types) and photographs of the following herbaria: B, BAA, CORD, E, F, G, GH, K, LP, NY, P, S, SI, SGO, and US (acronyms of Thiers, 2013); whenever the type specimen could not be studied, its photograph from <http://plants.jstor.org> was obtained or was requested to the corresponding herbarium. In the text, the information quoted for each type specimen refers to that provided in the labels of said material.

RESULTS AND DISCUSSION

After the analysis of the original material, we were able to designate eight lectotypes and one neotype, for nine taxa names related to *Gutierrezia*. In addition, we assigned the category of holotype to a specimen previously considered isotype. The typified names are listed below in an alphabetical list, also indicating their accepted name:

Brachyris floribunda Phil., *Linnaea* 33(2): 137 (1864).

Ind loc.: “San Felipe de Aconcagua”.

Lectotype (**designated here**): [Chile, Region of Valparaíso] “San Felipe de Aconcagua, 1863, R. A. Philippi s. n.” (S-R-711 photo!; isolectotypes, B [destroyed] [Field Museum Series negative 14813!], K 000221365 photo!, LP 000854!, NY 00162726 photo!).

Notes: Philippi (1864: 137) indicates in the protologue of *Brachyris floribunda* that the original material was collected in the Chilean locality of San Felipe de Aconcagua. Most Chilean specimens of Philippi are deposited in the SGO herbarium, with duplicates in several herbaria worldwide, which Philippi distributed without any particular system (Stafleu & Cowan, 1983; Taylor & Muñoz-Schick, 1994). Material from this collection could be found in the herbaria K, LP, NY and S, as well as a specimen sent to B which was destroyed during World War II. In the herbarium F a negative of this specimen is conserved (Field Museum Series No. 14813).

As a lectotype of *Brachyris floribunda*, the specimen S-R-711 is then designated, since it is complete and well-preserved.

This species is considered a synonym of *Gutierrezia resinosa* (Hook. & Arn.) S. F. Blake

Brachyris gayana J. Rémy in Gay, *Fl. Chil.* 4(1): 36, tab. *Fanerogamia* 44 (1849).

Ind loc.: “raised in the hills of Coquimbo”.

Lectotype (**designated here**): [Chile, Region of Coquimbo] “Coquimbo, M. Cl. Gay. 206, 1838” (P 00742779 photo!; isolectotypes, B [destroyed] [Field Museum Series negative 14814!], GH 00004314 photo!, K 000221366 photo!, K 000221367 photo!, P 00742781 photo!, P 00742782 photo!).

Notes: *Brachyris gayana* was published, along with many other Chilean species, in *Historia Física y Política de Chile*, an extensive work directed by the botanist and French traveler Claude Gay, which deals with the history, flora, fauna and other aspects of the Republic of Chile. In the protologue, Gay (1849: 36, tab. *Fanerogamia* 44) gives a description of the new species, referring to a sheet commissioned by Jules Rémy (1826–1893), who collaborated in the development of Asteraceae and other families, in volumes 3 to 5 (Stafleu & Cowan, 1983). This sheet includes an illustration of the plant, next to the name *Odontocarpa gayana* Rémy, which is corrected in the protologue by Gay, who indicates that the name of the new species is *Brachyris gayana*.

In this description, it is pointed out that *Brachyris gayana* “is raised in the hills of Coquimbo”. The Chilean herbarium of Gay, which served to elaborate the whole work, is currently in P (Stafleu &

Cowan, 1976). In this herbarium three specimens collected in this region could be found, which should be considered syntypes since it cannot be established that the author relied on only one of them to describe the new name (Article 9.3 *ICN*, Turland *et al.*, 2018; McNeill, 2014). Therefore, the specimen P 00742779 is designated as lectotype of *Brachyris gayana*, because it is complete and well-preserved.

This species is considered a synonym of *Gutierrezia gayana* (J. Rémy) Reiche.

Brachyris paniculata DC., Prodr. 5: 313 (1836).

Ind. loc.: “in Chili circa Coquimbo legit cl. Gaudichaud et circa Acapulco cl. Hamke”.

Lectotype (**designated here**): [Chile, Region of Coquimbo] “Coquimbo, 1834, C. Gaudichaud 105” (G 00455653 photo!; isolectotypes, GH 00004318 photo!, GH 00004319 photo!, P 00742785 photo!, P 00742787 photo!, P 00742788 photo!, P 00742790 photo!).

Notes: In the protologue of *Brachyris paniculata*, Candolle (1836) quotes material collected by three different collectors: (1) Gaudichaud, near Coquimbo, Chile; (2) Haenke, in Acapulco; and (3) Néé, without locality.

Coquimbo is a town located in the center of Chile, in Region IV. On the other hand, Acapulco is in Mexican territory, reason why it has hardly been able to be the collection site of *Brachyris paniculata*. Both Haenke and Néé were crew members of the Malaspina Expedition, whose extensive tour included the Pacific Coast of the entire American continent (Stafleu & Cowan, 1979, 1981). This fact, added to the search without results of a possible Chilean locality called Acapulco, would indicate that the label of the Haenke specimen is wrong, and that both this specimen and the one of Néé surely have been collected in Chilean territory.

The Gaudichaud collection, besides being well identified and with accurate data, presents numerous duplicates, located in different herbaria. Among all these syntypes, the specimen G 00455653 is designated as a lectotype of *Brachyris paniculata*, since it belonged to the personal herbarium of Candolle (Stafleu & Cowan, 1976) and presents abundant material in good state of conservation.

This species is considered a synonym of *Gutierrezia resinosa* (Hook. & Arn.) S. F. Blake.

Brachyris spathulata Phil., Anales Univ. Chile 2: 336 (1865).

Ind. loc.: “Mendoza, prope la Guardia”.

Lectotype (**designated here**): [Argentina, Mendoza] “prope la Guardia. M. Landbeck s.n.” (SGO44787!; isolectotypes, LP 002064!, SGO65124!).

Notes: Philippi (1865) indicates that the type material of *Brachyris spathulata* was collected by Landbeck in the locality of La Guardia, in the Argentine province of Mendoza. This collector sent copies to Philippi, who deposited them in SGO (Stafleu & Cowan, 1983; Taylor & Muñoz-Schick, 1994). In that herbarium, two specimens from that collection could be found, in addition to a duplicate in LP. Since both SGO specimens were identified as R. A. Philippi’s personal herbarium, they are to be considered syntypes (Art. 40. Note 1. *ICN*, Turland *et al.*, 2018; McNeill, 2014). For these reasons, the specimen SGO44787 is designated as a lectotype of *Brachyris spathulata*, since it is well-preserved.

This species is considered a synonym of *Gutierrezia spathulata* (Phil.) Kurtz.

Galinsoga resinosa Hook. & Arn., Bot. Beechey Voy.: 32 (1830).

Ind. loc.: “Hab. Coquimbo.-We possess it also from the Viña de la Mar, near Valparaíso, sent by Mr. Bridges”.

Lectotype (**designated here**): [Chile, Region of Valparaíso] “Viña del Mar, T. C. Bridges s. n.” (US 00124483 photo!; isolectotype, E 00301764 photo!).

Notes: *Galinsoga resinosa* was first published by Hooker and Arnott in *The Botany of the Captain Beechey’s Voyage ...*, an extensive work in which these authors list all the plants collected during the H.M.S. Blossom expedition. This vessel toured the Pacific Coast of the American continent between 1825 and 1828, under the command of Captain F. W. Beechey (Hooker & Arnott, 1841). In the protologue of this species, the authors indicate that they possess material from Coquimbo, Chile. They also quote material from Viña del Mar, near Valparaíso, collected by “Mr. Bridges”.

In the search for these specimens, the GL and K herbariums, which include the personal herbaria of Arnott and Hooker, respectively (Stafleu & Cowan, 1976, 1979) were consulted. In neither of the herbaria could these specimens be found, but some material was indeed found in the E and US herbariums. In E there is a fragment of the collection

of Coquimbo, provided by Beechey (or more likely one of his crew members), that consists only of a branch with few capitula. In US there are two branches with capitula, collected by Mr. Bridges, presumably in Viña del Mar. Both specimens should be considered syntypes, therefore the lectotype of *Galinsoga resinosa* is referred to as the specimen US 00124483, which consists of more well-preserved material.

This species is considered a synonym of *Gutierrezia resinosa* (Hook. & Arn.) S. F. Blake.

Gutierrezia espinosae Acevedo, Bol. Mus. Nac. Hist. Nat., Santiago de Chile 24: 82, figs. 1-2 (1949).

Ind. loc.: “Quebrada de la Chimba, Chile”.

Holotype: [Chile, Region of Antofagasta] “Quebrada de La Chimba. 10 Nov 1941. M. R. Espinosa Burgos s. n.” (GH00008515 photo!; isotypes, SGO 000005596 [70854]!, SGO 000005597 [70857]!, SGO 000005598 [70455]!, SGO 000005599 [70456]!, SGO 000005600 [70454]!).

Notes: Acevedo de Vargas (1949) points out in the protologue of *Gutierrezia espinosae* that the type specimen, collected in Quebrada de la Chimba, Chile, is deposited in SGO. In addition, the author provides a photograph of this specimen in the original work, accompanied by a legend in which it states that this specimen is the “type”.

In the SGO herbarium five specimens from this collection could be found. In addition, a specimen was identified as isotype in GH, with original herbarium label of the National Museum of Natural History of Chile. This specimen matches entirely with the photograph provided by Acevedo de Vargas, only differing in the position in which it is mounted. Having been pointed out by the author of the name, the specimen GH00008515 must be considered the holotype of *Gutierrezia espinosae*, and the specimens deposited in SGO, isotypes.

Gutierrezia laricifolia D. Don in Hook. & Arn., Companion Bot. Mag. 2: 51. (1836: 51).

Ind. loc.: “Coquimbo, Mr. Caldcleugh”.

Neotype (**designated here**): [Chile, Region of Coquimbo] “Guaqueros. F. Ratto et al. 4” (BAA 00004813!). Fig. 1.

Notes: In the protologue of *Gutierrezia laricifolia*, Hooker & Arnott (1836) assign the authorship

of this species to D. Don. The original material, from Coquimbo, Chile, was collected by Alexander Caldcleugh (1795–1858), a Scottish botanist who toured South America between 1819 and 1825, collecting plants for the Royal Botanic Garden of Kew. In the herbarium K, that belongs to that institution, no specimen was found that could have served as a reference to found this species. Nor was original material found in other herbaria that have Don specimens, such as LINN, BR and P (Staffleu & Cowan, 1976).

In the absence of a type specimen, the neotype of *Gutierrezia laricifolia* is designated to the BAA 00004813 specimen, which fits the original description and was collected in the same region indicated by the authors in the protologue.

This species is considered a synonym of *Gutierrezia resinosa* (Hook. & Arn.) S. F. Blake.

Gutierrezia leucantha Cabrera, Revista Mus. La Plata, Secc. Bot. 4: 61, fig. 16. (1941).

Ind. loc.: “Sierra de la Ventana, A. L. Cabrera 4475”.

Lectotype (**designated here**): [Argentina, Buenos Aires] “Sierra de la Ventana, entre las peñas, A. L. Cabrera 4475, 23-V-1938” (LP 000269!; isolecotypes, K 001097231 photo!, LP 000270!, SI!).

Notes: Cabrera (1941) indicates in the protologue of *Gutierrezia leucantha* that the type collection comprises three specimens, located in three different herbaria: “Cabr., LP and LPD”. The first specimen, which belonged to the personal herbarium of A. L. Cabrera, is currently deposited in LP (Staffleu & Cowan, 1976) under the number LP 000269. The second specimen was also found in LP, with the number LP 000270, while the third, originally pertaining to the LPD herbarium of the Laboratorio de Botánica de la Dirección de Agricultura, was transferred to SI (Thiers, 2013). In addition, a fourth duplicate of this collection could be found in K.

In the absence of a single specimen designated as type by the author of the name, the three quoted specimens must be considered as syntypes (Article 40. Note 1. *ICN*, Turland *et al.*, 2018; McNeill, 2014). For this reason, the lectotype of *Gutierrezia leucantha* is designated to the LP 000269, since it is in an excellent state of conservation.



Figure 1. Neotype of *Gutierrezia laricifolia* D. Don.

Gutierrezia pulviniformis Cabrera, Darwiniana 4: 135, Fig. 2 (1940).

Ind. loc.: “Mendoza, Cerro Nevado, Carette”.

Lectotype (**designated here**): [Argentina, Mendoza] “Dpto. San Rafael, Cerro Nevado, E. Carette s. n., Enero 1916” (LP 000272!; isolectotype: MERL [ex Ruiz Leal 2488!]).

Notes: In the protologue of *Gutierrezia pulviniformis*, Cabrera (1940) points out as type of this name a collection held in two different herbaria, “Herb. A. Ruíz Leal” [MERL] and “Herb. Cabrera”, the latter currently deposited in LP (Stafleu & Cowan, 1976; Thiers, 2013). In the absence of a single specimen designated as type by the author of the name, both specimens must be considered as syntypes (Art. 40. Nota 1. *ICN*, Turland *et al.*, 2018; McNeill, 2014). For this reason, the specimen LP 000272 is designated as lectotype of *Gutierrezia pulviniformis*, because it belonged to the personal herbarium of Cabrera and is well-preserved.

This species is considered a synonym of *Gutierrezia spathulata* (Phil.) Kurtz.

Gutierrezia spathulata (Phil.) Kurtz var. *ochroleuca* Kurtz, Bol. Acad. Nac. Ci. 13: 186 (1893).

Ind. loc.: “Mendoza, inter arroyo Papagayos et arroyo Hondo, F. Kurtz 7431”.

Lectotype (**designated here**): [Argentina, Mendoza] “inter arroyo Papagayos et arroyo Hondo, F. Kurtz 7431, 27 Dic 1892” (CORD 00005398!; isolectotypes, CORD 00005399!, LP 002065!; LP 002066!).

Notes: In the protologue of *Gutierrezia spathulata* var. *ochroleuca*, Kurtz (1893) points out that it is found very frequently in Mendoza, between the streams Papagayo and Hondo, although he does not indicate the herbarium where these collections are held. According to Stafleu & Cowan (1979), Kurtz’s herbarium is deposited in CORD, where two specimens that are a part of that collection, made by the author of the name, could be located. In addition, two duplicates were found in LP.

As the type collection is not represented by a single specimen, it is necessary to designate a lectotype for *Gutierrezia spathulata* var. *ochroleuca* (Art. 40. Nota 1. *ICN*, Turland *et al.*, 2018; McNeill, 2014), being selected as such the specimen CORD 00005398, since it is complete and in excellent state of conservation.

This species is considered now a synonym of *Gutierrezia spathulata* (Phil.) Kurtz.

ACKNOWLEDGMENTS

The authors would like to thank the curators of the herbaria BA, BAB, CORD, LP, MERL, SGO and SI for their assistance. We would also like to thank N. Garcia-Jacas and R. D. Tortosa for their comments and suggestions on the manuscript of this paper. Also to A. Gentile for her help to improve the English of this paper. This work was financed by the University of Buenos Aires.

REFERENCES

- Acevedo de Vargas, R. 1949. Contribución a la Flora Cordillerana del Norte de Chile, dos nuevas especies de Compuestas. *Boletín del Museo Nacional de Historia Natural de Chile* 24: 81–91.
- Cabrera, A. L. 1940. Cuatro compuestas nuevas de la América Austral. *Darwiniana* 4: 133–140.
- Cabrera, A. L. 1941. Compuestas bonaerenses. Revisión de las compuestas de la provincia de Buenos Aires, la Capital Federal y la Isla Martín García. *Revista del Museo de La Plata (Nueva Serie)* 4, Sección Botánica 16: 1–450.
- Candolle, A. P. de 1836. *Prodromus systematis naturalis regni vegetabilis* 5. Treuttel & Würtz, Paris.
- Gay, C. 1849. *Historia física y política de Chile según documentos adquiridos en esta república durante doce años de residencia en ella y publicada bajo los auspicios del Supremo Gobierno*. Botánica [Flora chilena] 4. Editorial Faine & Thunot, Santiago & Paris.
- Hooker, W. J. & Arnott, G. A. W. [1830–] 1841. *The botany of the Captain Beechey’s voyage; comprising an account of the plants collected by Messrs Lay and Collie, and other officers of the expedition, during the voyage to the Pacific and Bering’s Strait, performed in His Majesty’s Ship Blossom, under the command of Captain F. W. Beechey, R. N., F. R., & A. S., in the years 1825, 26, 27 and 28*. H. G. Bohn, London.
- Hooker, W. J. & Arnott, G. A. W. 1836. Contributions towards a Flora of South America and the islands of the Pacific. *Companion to the Botanical Magazine* 2: 41–52.
- Kurtz, F. 1893. Dos viajes botánicos al Río Salado Superior (Cordillera de Mendoza), ejecutados en los años 1891–92 y 1892–93. *Boletín de la Academia Nacional de Ciencias en Córdoba, República Argentina* 13: 171–210.
- Lagasca, M. 1816. *Genera et species plantarum, quae aut novae sunt aut nondum recte cognoscuntur*. Ex Typographia Regia, Madrid.
- McNeill, J. 2014. Holotype specimens and type citations: General issues. *Taxon* 63: 1112–1113. <https://doi.org/10.12705/635.7>
- Nesom, G. L. 2006. *Gutierrezia*. In: Flora of North America Editorial Committee (Eds.), *Flora of North America North of Mexico* 20. Oxford University Press, New York & Oxford: 88–94.
- Philippi, R. A. 1864. Plantarum novarum chilensium. Centuriae inclusis quibusdam Mendocinis et Patagonicis. *Linnaea* 33: 1–308.
- Philippi, R. A. 1865. Excursión Botánica en Valdivia desde los Cuneos en el departamento de La Unión, a través de la Cordillera de la Costa, hasta el mar. *Anales de la Universidad de Chile, Santiago* 27: 289–351.
- Ratto, F. & A. Bartoli. 2015a. *Gutierrezia mendocina* (Asteraceae, Astereae), a new South American species. *Collectanea Botanica* 33: e002. <https://doi.org/10.3989/collectbot.v33.002>

- Ratto, F. & Bartoli, A. 2015b. The resurrection of *Gutierrezia ameghinoi* Speg. (Asteraceae, Astereae, Solidagininae), a species from Patagonia Argentina. *Phytotaxa* 220: 295–300. <https://doi.org/10.11646/phytotaxa.220.3.8>
- Ratto, F. & Bartoli, A. 2016a. Reinstatement of *Gutierrezia leucantha* Cabrera (Asteraceae, Astereae). *Webbia* 71: 249–251. <http://doi.org/10.1080/00837792.2016.1180756>
- Ratto, F. & Bartoli, A. 2016b. A new species of *Gutierrezia* (Asteraceae, Astereae) from Argentina. *Collectanea Botanica* 35: e004. <http://doi.org/10.3989/collectbot.2016.v35.004>
- Ratto, F. & Bartoli, A. 2016c. A new species of *Gutierrezia* (Asteraceae, Astereae, Solidagininae) from Argentinian Patagonia. *Phytotaxa* 266: 157–160. <https://doi.org/10.11646/phytotaxa.266.2.11>
- Solbrig, O. 1966. The South American species of *Gutierrezia*. *Contributions from the Gray Herbarium* 197: 3–42.
- Stafleu, F. A. & Cowan, R. S. 1976–1983. *Taxonomic Literature* 1–4 (2nd edition). Bohn, Scheltema & Holkema, Utrecht. Retrieved September, 2018, from <http://www.sil.si.edu/DigitalCollections/tl-2>
- Taylor, C. M. & Muñoz-Schick, M. 1994. The botanical works of Philippi, father and son, in Chile. *Annals of the Missouri Botanical Garden* 81: 743–748. <https://doi.org/10.2307/2399918>
- Thiers, B. 2013. *Index Herbariorum: A global directory of public herbaria and associated staff*. The New York Botanical Garden, New York. Retrieved September, 2018, from <http://sweetgum.nybg.org/science/ih>
- Turland, N. J., Wiersema, J. H., Barrie, F. R. *et al.* (Eds.) 2018. *International Code of Nomenclature for algae, fungi, and plants (Shenzhen Code)*. (Regnum Vegetabile, 159). Koeltz Botanical Books, Glashütten. <https://doi.org/10.12705/Code.2018>
- Zuloaga, F. O. & Morrone, O. 1999. *Catálogo de plantas vasculares de la República Argentina* 1. Missouri Bot. Garden Press, St. Louis.
- Zuloaga, F. O., Morrone, O. & Belgrano M. J. (Eds.) 2008. *Catálogo de las plantas vasculares del Cono Sur (Argentina, Sur de Brasil, Chile, Paraguay y Uruguay)* 2 (Monographs in Systematic Botany from the Missouri Botanical Garden, 107). Missouri Botanical Garden Press, St. Louis.