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Short note

On the original material of *Senecio dombeyanus* (Compositae), an interesting case linking the herbaria G, MA, and P

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Abstract. The name *Senecio dombeyanus* DC. has disparately been treated over time depending on the authors because of the uncertainty concerning the provenance of the original material, which was collected during the "Expedición Botánica al Virreinato del Perú", namely by Joseph Dombey. This issue is clarified here, as well as its implications on the Bolivian flora. Furthermore, a lectotype is designated for the name *S. cremeiflorus* Mattf., and the name *S. amplus* J.Rémy is synonymized with *S. smithii* DC.

Keywords. Andes, Asteraceae, Dombey, history of botany, lectotypification, Ruiz and Pavón, Senecioneae.

Resumen. El material original de *Senecio dombeyanus* DC. fue recolectado durante la Expedición Botánica al Virreinato del Perú, a saber, por Joseph Dombey. El desconocimiento de la procedencia del material, sin embargo, ha motivado que este nombre haya sido tratado de forma dispar a lo largo del tiempo y según los autores. Este asunto se trata y esclarece aquí, junto a sus implicaciones en el catálogo de la flora de Bolivia. Además, se designa un lectótipo para *S. cremeiflorus* Mattf. y el nombre *S. amplus* J.Rémy se sinonimiza a *S. smithii* DC.

Palabras clave. Andes, Asteraceae, Dombey, historia de la botánica, lectotipificación, Ruiz y Pavón, Senecioneae.

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Title in Spanish: Sobre el material original de *Senecio dombeyanus* (Compositae), un caso interesante que relaciona los herbarios G, MA y P.

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Senecio dombeyanus DC. (Compositae, Senecioneae) was named after the French naturalist Joseph Dombey (1742–1794), who participated in the "Expedición Botánica al Virreinato del Perú" (1777–1788) until 1784, when, presumably, he was obliged to return to Europe because of his poor health (Ruiz 1940: 244; Tepe 2018: 35, fig. 1). The species was described by Augustin-Pyramus de Candolle in 1838 on the basis of material collected by Dombey somewhere undetermined in Austral America ("in Amer. austr. legit cl. Dombey sed locus propr. ign."). In Candolle's Herbarium at G there is a single specimen corresponding to this species that lacks any locality information as indicated in the protologue [G00487202, Fig. 1a]. This specimen was the only element upon which Candolle based the description, and therefore, it is considered here as the holotype. This specimen arrived at G from P in June 1833 as a donation, along with 65 other Dombey's Compositae collections (Archives de Candolle, Genève).

Rémy (1849: 197) included the species in his "Flora Chilena" and stated that, according to Candolle, the plant thrives in Chile "[…] se halla en Chile según De Candolle", which is not indicated in the protologue as aforementioned but otherwise included in the "Prodromus" within the series XII Chilenses (Candolle, 1838). Other authors such as Steudel (1840–1841) also compiled the name, but it was not until the mid-twentieth century that the name was treated in the frame of a taxonomic and comprehensive revision of the Chilean *Senecio* L. In this work, Cabrera (1949) treated *S. dombeyanus* as a synonym of *S. fistulosus* Poepp. ex Less. var. *fistulosus*, a species from central and southern Chile growing in boggy places. A few years later, however, when revising the Bolivian *Senecio*, Cabrera (1985) treated *S. dombeyanus* as an accepted species from Cochabamba and Tarija; oddly, he provided no general distribution as usually did in much other species such as *S. breviscapus* DC. or *S. rhizomatus* Rusby. This leads one to think that Cabrera restricted the area of this species to Bolivia; accordingly, Beck & Ibáñez (2014) recorded it from the Bolivian departments of Chuquisaca, Cochabamba, Santa Cruz, and Tarija in the "Catálogo de las Plantas Vasculares". In contrast, Freire & al. (2014) in "Flora Argentina" and Rodríguez & al. (2018) in "Catálogo de Chile", followed Cabrera (1949) and placed *S. dombeyanus* under *S. fistulosus* var. *fistulosus*, extending its distribution area to southwestern Argentina. However, Freire & al. (2014) indicated Peru (without locality) as the provenance of Dombey's original material.

Fig. 1. Type material of *Senecio dombeyanus* DC.: **a,** holotype: the label at the left reads "n. 59. / herb. Dombey / Musée de Paris 1833" (G00487202) [© Conservatoire et Jardin botaniques de Genève]; **b,** isotype, the label at the bottom right reads: "Senecio paco / in paludosis Chile / Dec.bri / Floret [J]annuario" (MA816570) [© Real Jardín Botánico]; the second part of the specimen (MA816571) is available at <http://colecciones.rjb.csic.es>.

Dombey's collections were allegedly divided in two parts, one to be sent to Paris and the other to Madrid. However, it seems that such partition was unequal. In an epistle dated 24 November 1780 (Ruiz 1931: 423), Gómez Ortega (Expedition's Director) addressed the following words to José de Gálvez (Minister of Indies): "Tambien hé notado que Mr. Dombey no envia á España un Herbario tan enteramente completo, como el que remite destinado para Francia, y que aun la mayor parte de los esqueletos [pliegos] vienen sin nombre […]" [I have also noticed that Mr. Dombey does not send to Spain a herbarium as complete as that sent to France, and that most of the specimens come with no name]. In this regard, Álvarez López (1957: 70) quoted: "[…] el ministro de Indias se quejó al virrey del Perú de que el herbario enviado para España era mucho menos completo que el remitido a Francia, y que en lo sucesivo corrigiera Dombey estas diferencias." [the Minister of the Indies complained to the Viceroy of Peru that the herbarium sent to Spain was much less complete than the one sent to France, and that Dombey should henceforth correct such differences]. Although Stafleu & Cowan (1976) stated that the fate of the Spanish set of Dombey's collections was unknown, there is no doubt that part of his collections had their final destination in Madrid.

Due to Ruiz's relate, it is known that Dombey collected alone in Chiuchín (NE Lima Department, Central Peru) from March to September 1779: "El 11 de Marzo de 79 salio Dn José Dombey acompañando hasta Cheuchin a una Sra. Oidora de Lima que iba a tomar los baños de aquellas aguas termales." [On March 11, 1779 Dn. José Dombey left us to accompany Sra. Oydora from Lima, who was going to the baths at the thermal waters of Chiuchín] (Ruiz 1931: 42). From this locality, sever-

al Compositae specimens are currently kept at MA (e.g., MA816414, MA816417, MA816540) and attributed to Ruiz and Pavón by means of printed labels entitled "Plantae a 'Ruiz et Pavón' in vice-regno Peruviano et Chilensi lectae". Others are certainly annotated in Dombey's handwritting (e.g., MA816566, MA816581, MA816683). Since neither Ruiz nor Pavón visited Chiuchín, these collections should belong to Dombey. Then, it is clear that some Dombey's specimens at MA were generically ascribed to Ruiz and Pavón and likely relabeled afterward since most of them arrived unnamed (see Gómez Ortega's words above). Another possibility is that Dombey gave duplicates to Ruiz and Pavón during the voyage, but if this material was labeled or not by Dombey himself is unknown. Facing such conjuncture, duplicates of the same collection attributed to Dombey in Paris and to Ruiz and Pavón in Madrid would be expected. This is probably the case of the holotype of *Senecio hyoseridifolius* Wedd., which is kept at P and lacks the original label, and the putative isotype MA816292 that bears a Dombey label (part in darker ink). Although none of the two specimens have a locality indicated (except for "Cordillera" on the MA specimen), their phenology, size, and preservation conditions indicate that they probably correspond to the same collection.

Another interesting case is the material identified under the nomen nudum *Senecio frutescens* [= *Acrisione denticulata* (Hook. & Arn.) B.Nord.]; the specimen MA816560 bears a label handwritten by Ruiz and Pavón (or by one of the two artists that integrated the first part of the Expedition) that reads: "Senecio frutescens / Chile in humidis / Floret Nobri [November]", whereas P03730649 contains an identical plant with the information "Senecio frutescens / in humidis" in Dombey's handwriting. Likewise, there are two specimens at MA corresponding to *S. tocornalii* Phil. that one would easily attribute to the same gathering due to the plant phenology and the label information; MA816579 has a Dombey label indicating "Senecio. 1782. / in arenosis. / Concepcion de chile" and MA816568 has a Ruiz and Pavón label reading "Senecio multifida / juxta Concepc. ion in ha- / renosis Floret Martio". Although Dombey and Ruiz and Pavón processed separately their gatherings, both the label information and specimen conditions reveal that these specimens were collected in the same place and time. We do not know the procedure that they followed in the field, but it seems clear that they shared material and information in situ when botanizing together. These materials are considered then as part of a single collection.

The original material of *Senecio dombeyanus* appears to have befallen similar vicissitudes. As had been the practice, Dombey's material sent to Geneva from Paris (see above) corresponded to duplicates of material retained at P. The search undertaken in P was fruitful and three Dombey's specimens that most probably belong to the same collection were located. One of them, P03781601 (Fig. 2a), bears a label handwritten by Dombey with the following information: "Senecio paco / in paludosis chili – Xbre janvier" [Xbre or Xbri, i.e. tenth month, corresponds to December according to the Roman calendar]. The other two only show the collector and the number "481" in different handwritings. However, because of their phenology, size, and preservation conditions there is no reason to doubt that they correspond to the same collection. Another duplicate has been located at G [G00398336, Fig. 2b], which is a specimen originated from Boissier Herbarium (and previously from Ruiz and Pavón) that was acquired by Reuter in 1841 during a trip to Spain sponsored by Boissier (Briquet 1940; Jacquemoud 2011). It has a label handwritten by Dombey that reads: "Senecio paco / habitat in paludosis chili floret decembro / e januarii". The information of both P03781601 and G00398336 links these specimens with a collection at MA [2-part specimen: MA816570 (Fig. 1b), MA816571] that shows a Ruiz and Pavón label with identical information: "Senecio paco / in paludosis Chile / Dec. bri / Floret [J]annuario". Leaving aside if the specimen at MA was collected by Dombey (and relabeled by Ruiz and Pavón) or by Ruiz and Pavón along with Dombey, it seems feasible to treat them as duplicates considering the homogeneity of the material.

On the other side, it is interesting to note that the label information of all these specimens fits well with Ruiz's chronicle: "El 3 de Mayo de 1782 regresamos a La Concepción donde continuamos nuestras excursiones y trabajos botánicos hasta el mes de Diziembre, en cuyo tiempo desecamos y dibuxamos muchos arboles y plantas de los quales describí los siguientes […] *Salpiglosis sinuata*. *Senecio capus*. *Oenothera mitis* y *oblonga*." [On May 3rd, 1782 we returned to Conception, where we continued our excursions and botanical work until the month of December; during this time we dried and sketched many plants and trees, of which I described the following. […] *Salpiglossis sinuata*. *Senecio capus*. *Oenothera mitis* and *oblonga*.] (Ruiz 1931: 190–196). The mentioned *Senecio capus* (nomen nudum) might correspond to a confusion with the name "Senecio paco" written on the labels. If one accepts such assumption, as I do, then there is little doubt that the material used by Candolle to describe *Senecio dombeyanus* had come from the area of Concepción in southern Chile.

Therefore, there is evidence enough to conclude that (1) the material at G (one specimen acquired by Reuter in Madrid, see above), MA (one specimen), and P (three specimens) are isotypes of the name *Senecio dombeyanus*, i.e. duplicates of Dombey's specimen sent to Candolle; (2) the provenance of the original material of *S. dombeyanus* is southern Chile; (3) *Senecio dombeyanus*

Fig. 2. Isotypes of *Senecio dombeyanus* DC.: **a,** the label at the bottom left in Dombey's handwriting reads "Senecio paco / in paludosis chili – Xbre janvier" (P03781601) [© Collection du MNHN-Paris]; **b,** the label at the center in Dombey's handwriting reads "Senecio paco / habitat in paludosis chili floret decembro / e januarii" (G00398336) [© Conservatoire et Jardin botaniques de Genève].

is a later heterotypic synonym of *S. fistulosus* var. *fistulosus*. These conclusions agree with the fact that (4) *Senecio fistulosus* is not rare in the Biobío Region (whose capital is Concepción) and, indeed, "paco" is one of the vernacular names attributed to this species (Rodríguez & al. 2018); (5) both taxa cannot be morphologically separated as Cabrera (1949) stated.

Accordingly, the populations from Bolivia ascribed to *Senecio dombeyanus* (Cabrera 1985; Beck & Ibáñez 2014) have to be addressed to *S. cremeiflorus* Mattf., a species morphologically very similar but having smaller involucres and whitish ray florets (vs. yellow in *S. fistulosus*). It is distributed in northwestern Argentina from Catamarca to Jujuy (Cabrera 1978) and extends its distribution area northward to the Bolivian departments of Cochabamba, Chuquisaca, Santa Cruz, and Tarija. This species might also be confused with *S. bonariensis* Hook. & Arn., a species from northern and central Argentina, Uruguay, and southern Brazil. It also displays white ray florets but has larger capitula with longer ray florets.

Senecio fistulosus Poepp. ex Less. var. ***fistulosus***, Linnaea 6: 246 (Lessing 1831). Ind. loc.: "In paludosis ad 'Lagunas de Quintero' Aug. Poeppig; pr. Talcaguano cel. de Chamisso". Type: [Chile], in paludos. ad "Lagunas de Quintero", s.d., E.F. Poeppig 230 [pl. Chil. I.] (lectotype, designated by Freire & al. 2014: 112: P [P01816804] image!; isolectotypes: HAL [HAL0111053] image!, NY [NY00259169] image!, P [P01816803] image!).

Senecio dombeyanus DC., Prodr. 6: 418 (Candolle 1838). Ind. loc.: "in Amer. austr. legit cl. Dombey sed locus propr. ign.". Type: [Chile], [Concepción, according to the isotype], [Dec 1782], J. Dombey s.n. (holotype: G-DC [G00487202]!; isotypes: G [G00398336]!, MA [2-part specimen: MA816570, MA816571] image!, P [P03781600, P03781601, P03781602]!).

Notes.—See Cabrera (1949) for the complete synonymy. The name *Senecio amplus* J.Rémy is excluded from the synonymy of this taxon and placed under *S. smithii* DC. Cabrera (1949) synonymized *S. amplus* with *S. fistulosus* var. *fistulosus* because he considered Dombey's material at P as the type material of the former name: "Chile: leg. Dombey (Typus a *S. amplo* Remy.: P.; Fot.: LP.)"; these specimens are the isotypes of *S. dombeyanus*. In contrast, *S. amplus* was described on the basis of Gay's material at P (P02296472, P02296473, P02296474). Freire & al. (2014) lectotypified the name *S. amplus* on P02296473 but kept the name under *S. fistulosus* var. *fistulosus*. Because of the 10–14 mm long involucres, the 1–5 cm long, arachnoid pedicels, and the white ray florets, the name *S. amplus* is synonymized with *S. smithii* (see below).

The recognition of two varieties within *Senecio fistulosus* was established by Cabrera (1949) and later adopted by most botanists working on the group. Considering the high variability of the species, the recognition of such varieties is doubtful and additional studies should be addressed to elucidate this issue.

Distribution.—Argentina (provinces of Chubut, Mendoza, Neuquén [Freire & al. 2014]) and Chile (regions of Coquimbo, Valparaíso, Metropolitana, O'Higgins, Maule, Ñuble, Biobío, Araucanía, Los Ríos, Los Lagos, Aysén [Rodríguez & al. 2018]).

Senecio cremeiflorus Mattf., Ostenia: 323, 325 (Mattfeld 1933). Ind. loc.: "Argentinien: Sierra de Tucumán, La Cienaga, Typus Hb. Berol. (Lorentz und Hieronymus no. 678, bl. 10-17 Januar 1874)". Type: Argentina, Tucumán, sierra de Tucumán, cerca de La Ciénega, 10–17 Jan 1874, P.G. Lorentz & G.H.E.W. Hieronymus 678 (lectotype, **designated here:** CORD [CORD00005502] image!; isolectotypes: CORD [CORD00005503, CORD00005504] image!, G [G00398337]!). Holotype: B, no longer extant.

Notes.—Since the holotype of *Senecio cremeiflorus* was most probably destroyed in B during the Second World War (Merrill 1943; Robert Vogt, pers. comm.), a lectotype is designated among the extant isotypes (Turland & al. 2018, ICN Art. 9.3).

Distribution.—Argentina (Catamarca, Tucumán, Salta, Jujuy [Freire & al. 2014]) and Bolivia (Chuquisaca, Cochabamba, Santa Cruz, Tarija [Beck & Ibáñez 2014]).

Senecio smithii DC., Prodr. 6: 412 (Candolle 1838), replacement name, *Cineraria gigantea* Sm., Exot. Bot. 2: 11 (Smith 1805) non *Senecio giganteus* Desf., Fl. Atlant. 2: 273 (Desfontaines 1799). Ind. loc.: "Our kind friend Thomas Evans, Esq. has favoured us with this plant from his garden at Stepney, where it flowered in July 1805. It was imported from Cape Horn in 1801". Type: [Argentina / Chile], ["it was imported from Cape Horn"] (holotype: LINN [LINN-HS1321-25] image!).

Senecio amplus J.Rémy, Fl. Chil. [Gay] 4(2): 195 (Rémy 1849). Ind. loc.: "Se cria en la República". Type: [Chile], Chili Austral, 1839, C. Gay s.n. (lectotype, designated by Freire & al. 2014: 113: P [P02296473] image!; isolectotypes: F-974698 image!, P [P02296472, P02296474] image!), **syn. nov.**

Notes.—See Cabrera (1949) for further details on the complete synonymy.

Distribution.—Argentina (Chubut, Neuquén, Río Negro, Santa Cruz, Tierra del Fuego [Freire & al. 2014]) and Chile (Araucanía, Los Ríos, Los Lagos, Aysén, Magallanes [Rodríguez & al. 2018]).

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