

Typification of three names in the genus *Galium* (Rubiaceae)

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Abstract

TIPIFICACIÓN DE LOS TRES NOMBRES EN EL GÉNERO *GALIUM* (RUBIACEAE).— The typification of three names in the genus *Galium* described from the eastern Iberian Peninsula: *G. valentinum*, *G. valentinum* var. *idubedae*, and *G. capillare*, is discussed. The designation of the nomenclatural types is based on the consultation of original material and the literature cited in the respective protologues. The names are lectotypified using specimens from C (John Lange herbarium), JE, and a Cavanilles' original illustration published in 1793.

Key words: Cavanilles; lectotype; nomenclature; taxonomy.

Resumen

TIPIFICACIÓN DE TRES NOMBRES EN EL GÉNERO *GALIUM* (RUBIACEAE).— Se discute la tipificación de tres nombres en el género *Galium* descritos para el este de la Península Ibérica: *G. valentinum*, *G. valentinum* var. *idubedae* y *G. capillare*. La designación de los tipos de nomenclaturales se basa en la consulta del material original y la literatura citada en los respectivos protólogos. Los nombres se lectotipifican utilizando especímenes conservados en C (herbario John Lange), JE y una ilustración original de Cavanilles publicada en 1793.

Palabras clave: Cavanilles; lectotipo; nomenclatura; taxonomía.

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INTRODUCTION

Galium L. is one of the largest genera of the Rubiaceae (subfamily Rubioideae), with about 650 species and approximately 780 taxa placed in 16 sections, including perennial and annual herbs that are distributed in temperate and tropical regions of the world, but also in alpine and arctic regions

(Willis, 1985; Mabberley, 1987; Ehrendorfer *et al.*, 2005; Tao & Ehrendorfer, 2011).

Typification should be the starting point of any taxonomic study especially in a difficult genus such as *Galium*. Several species of *Galium* are very difficult to identify correctly because the plants present seasonal changes in the morphology of vegetative parts (Ehrendorfer *et al.*, 1994, 2014; Soza & Olmstead, 2010).

As a further contribution in our studies to the nomenclature in the genus *Galium* and *Asperula* L. (see e.g. Ferrer-Gallego, 2015, 2020; Ferrer-Gallego & Laguna, 2018; Ferrer-Gallego *et al.*, 2019), I here discuss the nomenclatural types of three names: *G. capillare* Cav., *G. valentinum* Lange, and *G. valentinum* var. *idubedae* Pau ex Debeaux. The purpose of this paper is to contribute to the stability of the nomenclature by the lectotypification of these three names. The combination *G. valentinum* var. *idubedae* is currently accepted with species rank as *G. idubedae* (Pau ex Debeaux) Pau, and the name *G. capillare* is treated as a synonym of *G. setaceum* Lam. (see Ehrendorfer *et al.*, 1976; Ortega Olivencia & Devesa, 2007).

MATERIALS AND METHODS

The names are arranged in alphabetic order, followed by homotypic synonyms (indicated with the symbol \equiv) and/or heterotypic synonyms (with the symbol $=$). Currently accepted names are set in bold italic typeface. Herbarium acronyms follow Thiers (2020).

RESULTS AND DISCUSSION

Galium capillare

The protologue of *Galium capillare* includes a complete description followed by a provenance “Habitat in montes S. Michaëlis iuxta Orcellitanam urbem, copiosus vero in colle vulgo Montaña Verde prope oppidum Pego”; a comment “Floret Maio, hicque etiam Teucrium botrys, Anagallis tenella, Cistus laevipes, [...]”; an excellent illustration of this plant and its explanation (Cavanilles, 1793: 73, tab. 191, fig. 1). The drawing included in the protologue illustrates a complete plant, with leaves, flowers, and fruits, including several details of the flowers and fruits (see Fig. 1). Therefore, this illustration can be considered original material of *G. capillare*.

Garilleti (1993: 206) indicated that he did not find original material in the Cavanilles Herbarium at MA and LINN. In this sense, I have not been able to locate any Cavanilles’ original material of *G. capillare* in these two herbaria. However, I

have found two relevant specimens of this species at MPU. The specimen with barcode MPU024396 bears a complete plant, with leaves and fruits, and a label, partially handwritten by Cavanilles: “*Galium capillare* Cavanilles / *Setaceum* Vahl / dedit Cavanilles [perhaps handwritten by Cavanilles]” (image available at <https://herbier.umontpellier.fr/zoomify/zoomify.php?fichier=MPU024396>). The specimen with barcode MPU024395 bears a stem, with leaves and fruits, and a label: “*Galium capillare* Cav.! Icon. / Dedit Cavanilles” (image available at <https://herbier.umontpellier.fr/zoomify/zoomify.php?fichier=MPU024395>).

Unfortunately, these two specimens at MPU lack relevant information such as provenance and date of collection. Therefore, although they may be original material, it is not possible to accredit this statement, so I do not recommend their choice as a lectotype.

In conclusion, the excellent illustration “*Galium capillare*” published by Cavanilles (1793: tab. 191, fig. 1) is designated as the lectotype of the name *Galium capillare*. This illustration matches the traditional concept of the name *G. capillare*, which is currently treated as a heterotypic synonym of *G. setaceum* Lam. (see Ortega Olivencia & Devesa, 2007).

Galium capillare Cav., Icon. 2: 73, tab. 191, fig. 1. 1793

Ind. loc.: “Habitat in montes S. Michaëlis iuxta Orcellitanam urbem, copiosus vero in colle vulgo Montaña Verde prope oppidum Pego”

Lectotype (designated here): [illustration] “*Galium capillare*” in Cavanilles (1793: tab. 191, fig. 1) (Fig. 1).

= *G. setaceum* Lam. in Lam. & Poir., Encycl. 2: 584. 1788

Galium valentinum

Lange (1882: 95) described *Galium valentinum* providing a complete description in Latin, followed by a diagnosis, the geographical locality, and a particular gathering “In declivibus montis Mariolae supra Alcoy regn. Valent. 15 Maj 1878 legit cl. Prof. Hegelmaier”.

In the personal herbarium of John Lange at C there is an original sheet related to this name that belong to the gathering cited in the protologue.



Figure 1. Lectotype of *Galium capillare* Cav.; [illustration] “*Galium capillare*” in Cavanilles (1793: tab. 191, fig. 1).

This syntype, with barcode C10023594, bears several plants, with leaves, flowers, and fruits, and has a label annotated as “Herb. Joh. Lange / *Galium valentinum* Lge / Hispania. Prov. Alicante / In declivibus montis Mariola supra / Alcoy / F. Hegelmaier 1878. 15 Mai / corollae luteae” (Fig. 2).

I have not been able to locate any further original material in any consulted herbaria, and possibly the specimen at C is the only specimen of the gathering and the only original material that was used by Lange in the description of this name. However, as I cannot exclude that there are more than one specimen of this taxon, I consider the specimen as the lectotype of the name *Galium valentinum*, admitting that the specimen might well be the holotype (see McNeill, 2014). This specimen matches the traditional concept and the current use of the name, showing some diagnostic features (e.g. stems slender, retrorsely aculeolate; leaves with upper surface and margin antrorsely scabridulous; hyaline apex short; inflorescence many-flowered, ovoid; pedicels divaricate; corolla 1.7–2 mm in diameter, yellowish, fruit ca. 1 mm, shining, papillose; cf. Ehrendorfer *et al.*, 1976; Ortega Olivencia & Devesa, 2007).

Galium valentinum Lange in Vidensk. Meddel. Dansk Naturh. Forenh. Kjobenh. 1881: 95. 1882
Ind. loc.: “In declivibus montis Mariolae supra Alcoy regn. Valent.”

Lectotype (designated here): SPAIN, Alicante, “In declivibus montis Mariolae supra Alcoy”, 15 May 1878, *F. Hegelmaier s.n.*, C (barcode C10023594 [photo!]; Fig. 2).

Galium valentinum* var. *idubedae

In the protologue of *Galium valentinum* var. *idubedae* (Debeaux, 1897: 153–154) is indicated “Var. β *Idubedae* C. Pau in *Herb. ined.* (1895); *G. valentinum* E. Rev. *Plant T rue l exs.* n  664 (1891 et 1895); Willk. *Suppl. fl. hispan.* p. p.”, followed by a brief description in French “Cette vari t  a  t  rapport e   tort au type *G. valentinum* par quelques auteurs. Elle s’en s pare par son port plus robuste, ses tiges plus  lev es (30–40 centim.), ses feuilles 2–3 fois plus allong es, lin aires,  troites, arqu es, mucronul es au sommet, brillantes   la surface, par ses p doncules fructif res plus longs, pauciflores,   rameaux  tal s dress s”. The provenance was also reported: “La Sierra d’Espadan (*Idubeda* des

anciens), dans les pr s et les maquis, sur le calcaire (E. Rev., C. Pau); Pico de Pe agolosa, Sierra de Javalambre (E. Rev. 1891)”.

Debeaux explicitly cited in the protologue several gatherings, with detailed localities, collection dates, and authors “*G. valentinum* E. Rev. *Plant T rue l exs.* n  664 (1891 et 1895)”, “La Sierra d’Espadan [...] (E. Rev., C. Pau)”, and “Pico de Pe agolosa, Sierra de Javalambre (E. Rev. 1891)”, and also a particular herbarium material “C. Pau in *Herb. ined.* (1895)”.

In this sense, Pau (1898: 85) indicated “Fundado en estas consideraciones, he comunicado   mis correspondientes las muestras de Espad n, que recog  en los alcornocales, como *G. Idubedae* (Reverch. exs. 1891, n. 14)” [Based on these considerations, I have communicated to my correspondents the specimens of Espad n, which I collected in the cork oaks, as *G. Idubedae* (Reverch. exs. 1891, n. 14)].

I have found some relevant specimens of this species at several herbaria. In the Pau herbarium at MA there are two specimens relevant for typification, MA00431617 and MA00117705. The specimen MA00431617 was collected by Pau in Pe agolosa in June 1891. The specimen MA00117705 was collected by Pau in Sierra de Espad n in June 1875 and matches with the specimen indicated by Debeaux in the protologue “La Sierra d’Espadan [...] (E. Rev., C. Pau)”. These two specimens are undoubtedly syntypes of *G. valentinum* var. *idubedae*.

In the herbarium JE there is a specimen, JE00009734, that can be treated as original material of the name. The sheet bears a complete plant, with leaves, flowers and fruits, and a printed label from the Reverchon exsiccatum [*G. valentinum* E. Rev. *Plant T rue l exs.* n  664 (1891 et 1895)] cited in the protologue by Debeaux. This printed label is annotated as “Elis e Reverchon – Plantes d’Espagne – 1891 / Province de Valence / N  664 / *Galium Valentinum* Lge. / Willkomm. / Sierra de Espadan, m quis herbeux, sur le calcaire triasique. / 1.800 m tres / Juillet” (Fig. 3). In addition, two duplicate specimens of this material are preserved at WU (barcode WU0033772) and G (barcode G00436208 [two sheets]). These sheets bear well-developed plants and also the same printed label that the sheet JE00009734. These three specimens (at JE, WU, and G) are therefore syntypes.



Figure 2. Lectotype of *Galium valentinum* Lange; C10023594. Image courtesy of the herbarium C, reproduced with permission.

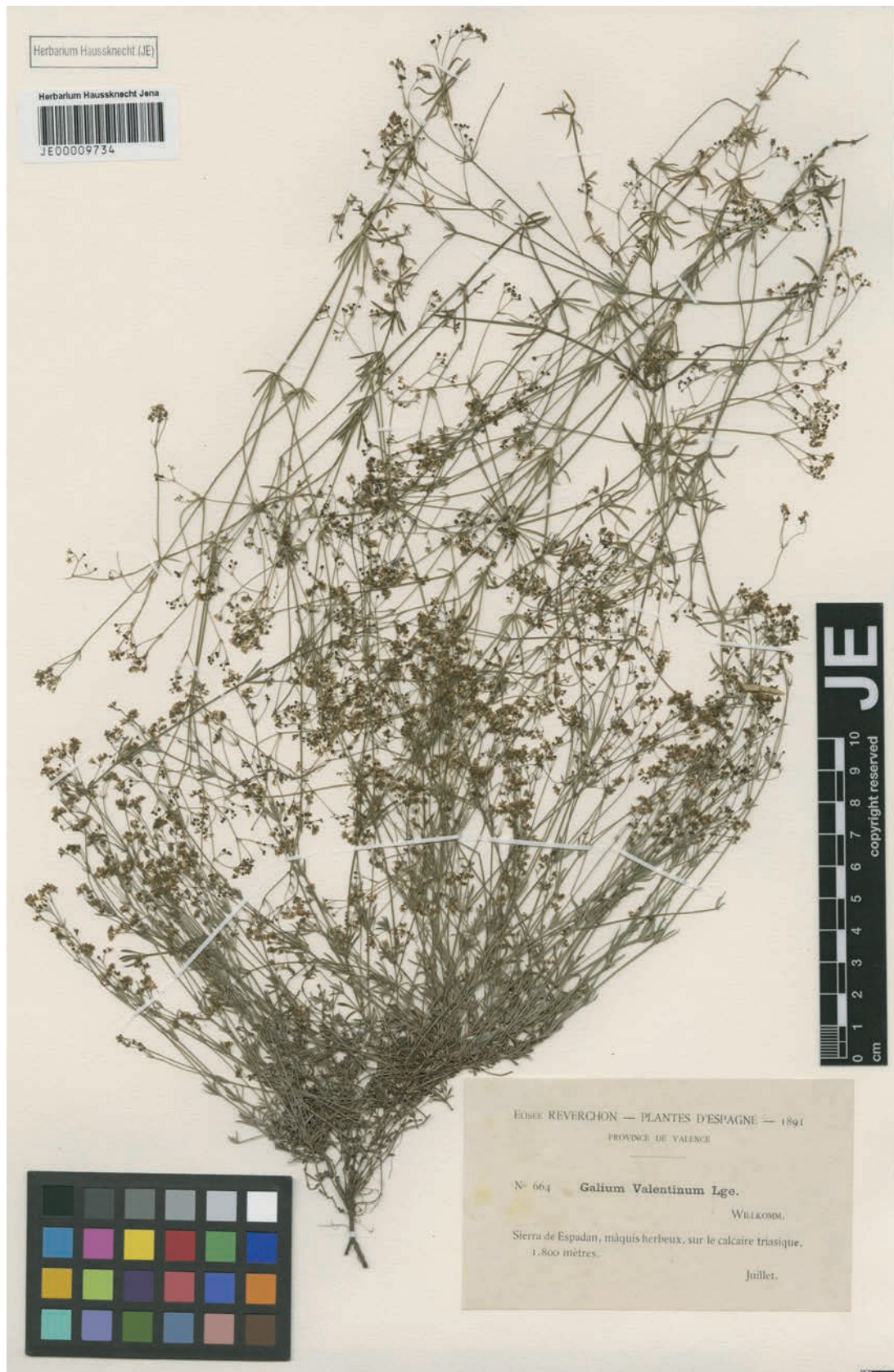


Figure 3. Lectotype of *Galium valentinum* var. *idubedae* Pau ex Debeaux; JE00009734. Image courtesy of the herbarium JE, reproduced with permission.

In conclusion, in all cases the specimens match with the traditional concept and the current use of the name, showing important diagnostic features (e.g. stems with middle internodes shorter than or up to twice as long as the leaves; leaves acicular, 13–20 times as long as wide; margin more or less thickened, flat; midrib somewhat thickened, hyaline apex; inflorescence more or less corymbose; corolla 2–2.5(–3.5) mm in diameter; fruit 1–1.5 mm, weakly papillose; cf. Ehrendorfer *et al.*, 1976; Ortega Olivencia & Devesa, 2007). I designate as the lectotype of the name *Galium valentinum* var. *idubedae* the specimen JE barcode JE00009734 because it is a complete specimen that also has two duplicates.

Galium valentinum var. *idubedae* Pau ex Debeaux in Rev. Bot. Bull. Mens. 15: 153. 1897

≡ *G. idubedae* (Pau ex Debeaux) Pau in Actas Soc. Esp. Hist. Nat. 27: 85. 1898

≡ *G. pusillum* subsp. *idubedae* (Pau ex Debeaux) Vigo in Arxius Secc. Ci. Inst. Estud. Catalans 37: 91. 1968

Ind. loc.: “La Sierra d’Espadán (Idubeda des ancients), dans les prés et les maquis, sur le calcaire (E. Rev., C. Pau); Pico de Peñagolosa, Sierra de Javalambre (E. Rev. 1891)”

Lectotype (designated here): [SPAIN. Castellón] Sierra de Espadán, 1800 m, July 1891, *E. Reverchon* 664, JE (JE00009734 [photo!]) (Fig. 3). Isolectotypes: WU0033772 [photo!], G00436208 [photo!].

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