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Typification of two names in the genus *Asperula* (Rubiaceae)

P. P. FERRER-GALLEGO^{1,2} & E. LAGUNA²¹ Servicio de Vida Silvestre, Centro para la Investigación y Experimentación Forestal de la Generalitat Valenciana (CIEF), av. Comarques del País Valencià, 114, ES-46930 Quart de Poblet, València, Spain² VAERSA, av. de les Corts Valencianes, 20, ES-46015 València, SpainORCID iD. P. P. FERRER-GALLEGO: <http://orcid.org/0000-0001-7595-9302>, E. LAGUNA: <http://orcid.org/0000-0002-9674-2767>Author for correspondence: P. P. Ferrer-Gallego (flora.cief@gva.es)

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Abstract

TIPIFICACIÓN DE DOS NOMBRES EN EL GÉNERO *ASPERULA* (RUBIACEAE).— The typification of two names in the genus *Asperula*, *A. cynanchica* subsp. *pyrenaica* and *A. pui* subsp. *dianensis* (Rubiaceae), applicable to species endemic to the Iberian Peninsula and France, is discussed. Specimens from UPS (Herbarium Burser, Uppsala University) and BC (Institut Botànic of Barcelona) are indicated and designated as lectotypes of, respectively, *A. pyrenaica* and *A. pui* var. *dianensis*.

Key words: *Asperula*; lectotypification; Linnaeus; nomenclature.

Resumen

TIPIFICACIÓN DE DOS NOMBRES EN EL GÉNERO *ASPERULA* (RUBIACEAE).— Se discute la tipificación de dos nombres en el género *Asperula*, *A. cynanchica* subsp. *pyrenaica* y *A. pui* subsp. *dianensis* (Rubiaceae) aplicables a especies endémicas de la Península Ibérica y Francia. Especímenes de UPS (Herbario Burser, Universidad de Uppsala) y BC (Institut Botànic de Barcelona) son indicados y designados como lectotipos de *A. pyrenaica* and *A. pui* var. *dianensis*, respectivamente.

Palabras clave: *Asperula*; lectotipificación; Linneo; nomenclatura.

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INTRODUCTION

Asperula L. (Rubiaceae Baill., Rubiaceae Juss.) includes approximately 130 species classified into 10 sections (Ehrendorfer *et al.*, 2005). The genus shows a high morphological and karyological variability and it is critical from the taxonomic point of view (Del Guacchio & Caputo, 2005, 2013; Minareci & Yıldız, 2011; Gargiulo *et al.*, 2015). *Asperula*

sect. *Cynanchicae* (DC.) Boiss. comprises about 100 mainly locally endemic taxa, which are dwarf shrubs or herbaceous perennials, growing on dry and rocky ground, with a preference for calcareous substrates. The section is predominantly distributed in the Mediterranean and Aegean areas, but its range extends to Great Britain in the north and Central Asia in the east (Ehrendorfer & Krendl, 1976; Ehrendorfer *et al.*, 2014). The type of the section is

the very polymorphic *A. cynanchica* L. (Gargiulo *et al.*, 2015), and the lectotype of this name was designated by Ferrer-Gallego (2015) on a specimen at UPS (Herb. Burser XIX: 8).

Typifications of several species of *Asperula* in this section have already been published (Rosselló & Sáez, 2000; Del Guacchio & Caputo, 2005, 2013; Peruzzi *et al.*, 2013; Ferrer-Gallego, 2015). However, the Linnaean name *Asperula pyrenaica* [currently accepted as *A. cynanchica* subsp. *pyrenaica* (L.) Nyman] and the name *A. pau* var. *dianensis* Font Quer [currently accepted as *A. pau* subsp. *dianensis* (Font Quer) Romo] (nomenclature according to Govaerts *et al.*, 2012) have not been yet investigated (see e.g. Bolòs & Vigo, 1983; De la Torre *et al.*, 1996; Jarvis, 2007) and are here typified. The purpose of this paper is to contribute to stability of nomenclature by the typification of these two names.

MATERIALS AND METHODS

The designation of the corresponding types is based on the examination of Linnaeus's and Font Quer's original material and the literature cited in the respective protologues. The acronyms of the herbarium collections are cited according to Thiers (2017). Authors of cited taxa follow IPNI (2017).

TYPIIFICATION OF THE NAMES

Asperula pyrenaica

Asperula pyrenaica group is very variable with numerous local races (Ehrendorfer & Krendl, 1976; Gargiulo *et al.*, 2015). *Asperula cynanchica* subsp. *pyrenaica* is a caespitose plant, with subterranean stolons, stems 2–20(–30) cm, weak, herbaceous throughout, stems usually shortly papillose-hairy below, often glabrescent above, lower leaves ovate or obovate, densely crowded, 8–16 × 0.3–1.3 mm, the margin weakly revolute, often shortly ciliate, bracts narrowly lanceolate, inflorescence corymbiform, corolla pink 2.8–4 mm, tube usually 1–1.5 times as long as lobes. This plant is distributed in upper montane to alpine zones in the Pyrenees (Spain and France) (Ortega-Olivencia & Devesa, 2007).

Linnaeus's protologue (1753: 104) consisted of a *nomen specificum legitimum* "ASPERULA foliis

quaternis lanceolato-linearibus, caule erecto, floribus saepius trifidis", followed by a synonym "Rubia cynanchica saxatilis", cited from Bauhin (1620: 146; 1623: 333) and the citation of a Burser specimen ("Burs. XIX. 9"). The provenance was also reported ("Habitat in Pyrenaeis versus Hispaniam & prope Valentiam Gallorum"). The protologue also includes the following description of the species: "Caules erecti, spithamaei, quadrangules. Folia omnia in caule quaterna, linearia, carinata, acuta, laevia; inferior etiam quaterna, sed breviora lanceolata obtusiora; folia summa & floralia opposita, latiora, acuta, lanceolata. Flores tubulosi, rubris, saepius trifidi".

Jarvis (2007: 326) cited as Linnaeus's original material the specimen at Herb. Burser XIX: 9 (UPS) (see also Juel, 1923; Savage, 1937). This specimen was cited by Linnaeus in the protologue, and therefore could be considered as a syntype (see just below) according to the Art. 9.5 of the International Code of Nomenclature (McNeill *et al.*, 2012). The sheet at UPS-BURSER bears a well preserved flowering specimen, and the original annotation "Rubia cynanchica saxatilis Bauh. / In Pyrenaeis versus Hispaniam, et prope Valentiam Gallorum". The UPS specimen morphologically matches the current concept and use of the name (e.g. Ehrendorfer & Krendl, 1976; Bolòs & Vigo, 1996; Ortega-Olivencia & Devesa, 2007; Aizpuru *et al.*, 2015), and it is designated as the lectotype of the Linnaean name *Asperula pyrenaica*.

However, we consider important to mention that we have been unable to locate any further original material in any Linnaean or Linnaean-linked herbaria, and the specimen at UPS-BURSER appears to be the only extant useful material. In this sense, if the specimen at UPS is the only element used by Linnaeus, it must be accepted as the holotype (Art. 9 Note 1). Accordingly, as indicated McNeill (2014), the type can be indicated as: "Lectotype, designated here (or perhaps holotype)".

Asperula cynanchica subsp. *pyrenaica* (L.) Nyman, Consp. Fl. Eur.: 333 (1879)
≡ *Asperula pyrenaica* L., Sp. Pl.: 104 (1753) [basionym].

Ind. loc.: "Habitat in Pyrenaeis versus Hispaniam & prope Valentiam Gallorum"

Lectotype (**designated here** [or perhaps holotype]): Herb. Burser XIX: 9 (UPS-BURSER!). Fig. 1.



Figure 1. Lectotype (or perhaps holotype) of *Asperula pyrenaica* L. (UPS, Herb. Burser XIX: 9). © Herbarium UPS, reproduced with permission.

Asperula pau var. *dianensis*

Asperula pau subsp. *dianensis* is distributed only in the Alicante province (Spain), and it differs from the subspecies type (endemic to Western Balearic Islands) by the longer corolla, up to 4.2–7.7 mm (2.5–4.7 mm in subsp. *pau*), pink or yellow on the inner side of the lobes (pink or white in subsp. *pau*), longer style, up to 5.8 mm (up to 1.6 mm in subsp. *pau*), and stigmas reaching the upper level of the anthers (and not reaching the upper level of the anthers in subsp. *pau*) (Laguna *et al.*, 1998; Ortega-Olivencia & Devesa, 2007).

The lectotype of *A. pau* was designated by Rosselló & Sáez (2000: 156) from a specimen at BC (barcode BC109680!) [the specimen was mounted on three herbarium sheets] from “Cala de les Torretes (Eivissa)” and collected by E. Gros on 8 July 1920, another original material is preserved at B, with barcode B 10 0278134!, collected on 9 July 1920 also by E. Gros in “Hispaniae: Ebuso” (image available at http://plants.jstor.org/stable/viewer/10.5555/al.ap.specimen.b_10_0278134).

The protologue of *A. pau* var. *dianensis* (Font Quer, 1926: 57) includes a diagnosis (“*A typo foliis angustioribus, corolla tubo elongato, differt. Planta minus intricato ramosa, foliis tenuioribus*”) and the geographical provenance (“*Hab. in rupestribus calcareis orae valentinae, Hifac; Barranc de Mascarat, pr. Calp; Cap de S. Antoni; etc. circa Dianium*”).

We traced three herbarium sheets at BC (barcodes BC-82578!, BC-82520! and BC-82521!) which are part of the original material used by Font Quer (1926) to describe the new variety. The BC-82578 bears five fragments of a plant and the printed label “Institutus Botanicus Barcinonensis / Flora Iberica Selecta / Cent. I / Dec. 1934 / 86. *Asperula Pau* Font Quer / Butll. Inst. Cat. Hist. Nat., 1920, p. 188. / var. *dianensis* Font Quer / l.c., 1926, p. 57. / Valentia: in rupibus calcareis, l. Barranc de Mascarat dicto, prope / Calp, ad 50 m alt. Cotypus¹. / Leg. Font Quer, 13 maji 1923”.

¹ The term “cotypus” is not defined in the *International Code of Nomenclature of algae, fungi, and plants* (ICN, McNeill *et al.* 2012), and it has not an official status. A cotypus [incl. clastotype (see Swingle, 1912)] is a fragment or duplicate specimen of the type [i.e. isotype, isolectotype, isoneotype or isoeptotype according to Rec. 9C.1 of the ICN].

The BC-82521 bears three plant fragments mounted in two sheets, and the BC-82520 bears two plant fragments mounted in two sheets, these four sheets with the same printed label of BC-82578. All the specimens at BC are part of a gathering that includes the Font Quer’s original material, for which there are some duplicates in others herbaria (see just below).

One of these duplicates is deposited at MA (barcode MA 117109!, image of the specimen available at <http://plants.jstor.org/stable/viewer/10.5555/al.ap.specimen.ma117109?loggedin=true>). Some fragments are beared on the sheet and they are very well developed and preserved; the same label of the BC sheets occur on the MA sheet.

A second duplicate is preserved at JE (barcode JE00008314!, image available at: <http://plants.jstor.org/stable/viewer/10.5555/al.ap.specimen.je00008314>) and it bears a plant well developed and preserved, and the same label of the Font Quer’s exsiccata at BC and MA.

Among the elements selected for the typification of *Asperula pau* var. *dianensis* (at BC, MA, and JE), we here designate the BC-82578 as the lectotype of the name, since it appears to be the better preserved. Moreover, it matched the traditional concept and current use of the name (e.g. Bolòs & Vigo, 1996; De la Torre *et al.*, 1996; Laguna *et al.*, 1998; Ortega-Olivencia & Devesa, 2007; Mateo & Crespo, 2014). The duplicate specimens at BC, MA and JE are isolectotypes.

Asperula pau subsp. *dianensis* (Font Quer) Romo, Fl. Silv. Baleares: 282 (1994)

≡ *Asperula pau* var. *dianensis* Font Quer in Butll. Inst. Catalana Hist. Nat. 26: 57 (1926) [basonym]

≡ *Asperula cynanchica* var. *dianensis* (Font Quer) O. Bolòs & Vigo in Collect. Bot. (Barcelona) 14: 100 (1983); *Asperula pau* subsp. *dianensis* (Font Quer) De la Torre, Alcaraz & M. B. Crespo, Lazaroa 16: 154 (1996), comb. superfl.

Ind. loc.: “*Hab. in rupestribus calcareis orae valentinae, Hifac; Barranc de Mascarat, pr. Calp; Cap de S. Antoni; etc. circa Dianium*”.

Lectotype (designated here): Valentia: in rupibus calcareis, l. Barranc de Mascarat dicto, prope Calp, ad 50 m alt., Font Quer, 13 maji 1923, BC, barcode BC-82578! (Fig. 2). Isolectotypes: BC, barcodes 82520! and 82521!; JE, barcode JE00008314!; MA, barcode MA-117109!

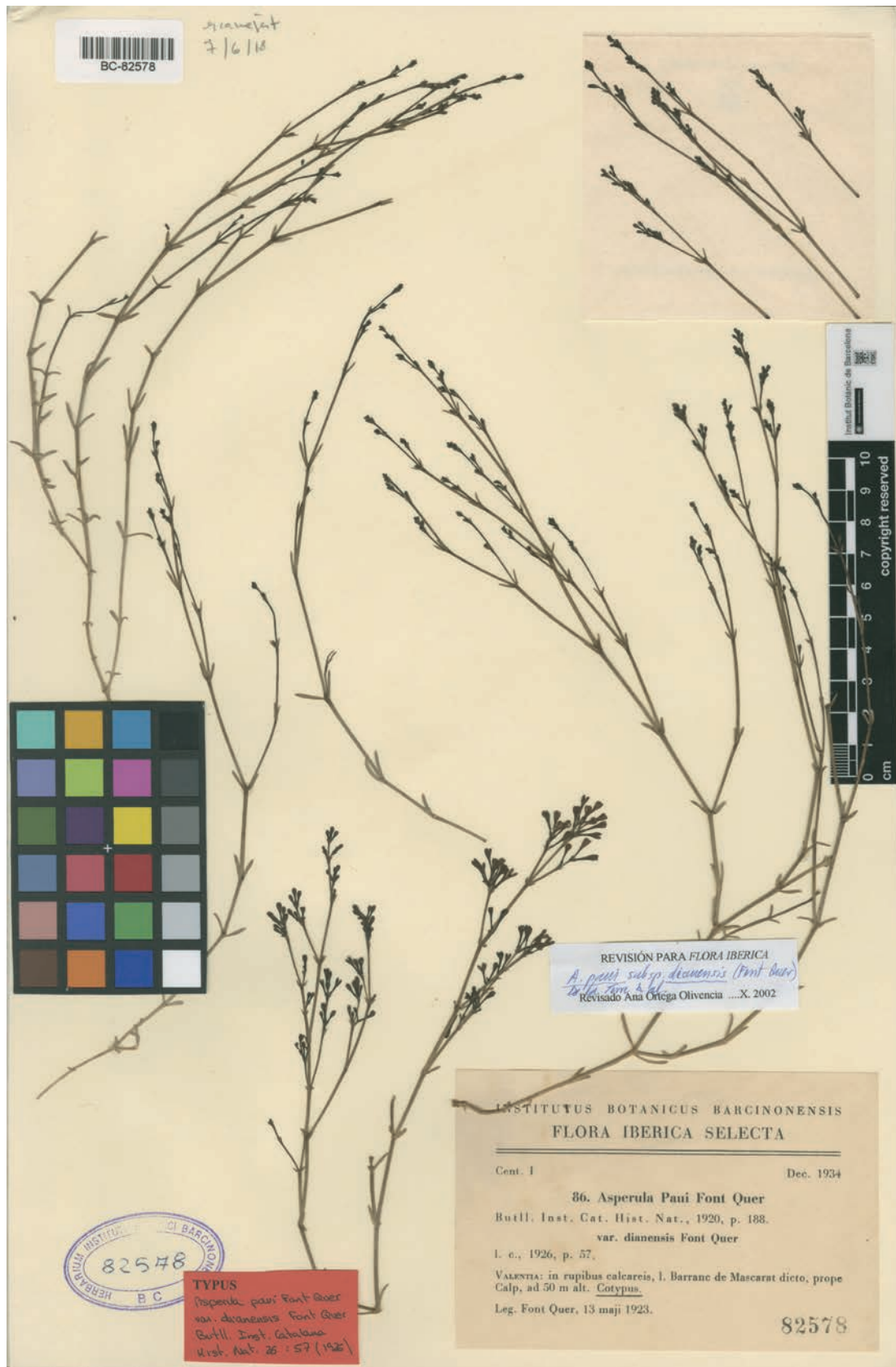


Figure 2. Lectotype of *Asperula paui* var. *dianensis* Font Quer (BC, barcode BC-82578). © Herbarium BC, reproduced with permission.

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