On the identity of two hybrids in the genus *Brachypodium* (Brachypodieae, Poaceae): typification of the names *B. ×cugnacii* and *B. ×paui*

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Editor: N. Nualart

Received 15 November 2022; accepted 28 February 2023; published on line 9 June 2023

Abstract

**ON THE IDENTITY OF TWO HYBRIDS IN THE GENUS BRACHYPODIUM (BRACHYPODIEAE, POACEAE): TYPIFICATION OF THE NAMES B. ×CUGNACII AND B. ×PAUI.**— The typification of the names *Brachypodium ×cugnacii* and *B. ×paui* (Brachypodieae, Poaceae) is discussed. All relevant sources, as well as specimens, illustrations, and references cited in the protologues are carefully examined for the purpose to fix the application of the names. The two names above mentioned are lectotypified using specimens preserved at P and BC herbaria, respectively. Finally, a comment on the nomenclatural type of *Brachypodium retusum* is reported.

Key words: Bromus retusus; Gramineae; Iberian Peninsula; lectotype; nomenclature; Sennen.

Resumen

**SOBRE LA IDENTIDAD DE DOS HÍBRIDOS DEL GÉNERO BRACHYPODIUM (BRACHYPODIEAE, POACEAE): TIPIFICACIÓN DE LOS NOMBRES B. ×CUGNACII Y B. ×PAUI.**— Se discute la tipificación de los nombres *Brachypodium ×cugnacii* y *B. ×paui* (Brachypodieae, Poaceae). Todas las fuentes de información, como son los especímenes de herbario, ilustraciones y referencias relevantes citadas en los protólogos, se han evaluado cuidadosamente con el fin de fijar la aplicación precisa de los nombres. Los nombres mencionados se han lectotipificado utilizando especímenes conservados en los herbarios P y BC, respectivamente. Finalmente, se aporta un comentario sobre el tipo nomenclatural de *Brachypodium retusum*.

Palabras clave: Bromus retusus; Gramineae; lectotipo; nomenclatura; Península Ibérica; Sennen.

Cómo citar este artículo / Citation


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INTRODUCTION

Brachypodium Palisot de Beauvois (1812: 100, 155) (Brachypodioideae, Pooidae) is a genus of temperate grasses distributed worldwide (Smith, 1980; Schippmann, 1991; Catalán & Olmstead, 2000; Piep, 2007) and comprises 15–20 species (Schippmann, 1991; Catalán et al., 1995, 2012; 2015; Díaz-Pérez et al., 2018; POWO, 2023). The genus Brachypodium represents a model system that is advancing our knowledge of the biology of grasses in the postgenomics era (Draper et al., 2001; IBI, 2010).

For the Iberian Peninsula, the most recent treatment of this genus has been generated by López González (2021). This author recognized only a remnant of this genus has been generated by López González, 2021). This author recognized only a remnant of this genus, and comprised 15–20 species (Schippmann, 1991; Catalán et al., 1995, 2012; 2015; Díaz-Pérez et al., 2018; POWO, 2023). The genus Brachypodium represents a model system that is advancing our knowledge of the biology of grasses in the postgenomics era (Draper et al., 2001; IBI, 2010).

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continental climates and reaches higher latitudinal limits in East-Central Asia than *B. sylvaticum*, which grows in areas with more oceanic climates (Tzvelev, 1976; Catalán et al., 2016). *Brachypodium pinnatum* typically grows in more open areas, such as calcareous grasslands. It is extensively rhizomatous, usually erect, leaves 3–6 mm wide, raceme with (3–)6–15 spikelets, lemmas 6–11 mm, often glabrous, with awn 1–5 mm (Tzvelev, 1976; López González, 2021). It is morphologically similar to *B. rupestre* (Host) Roem. & Schult. which also apparently has the same cytotypes as its close congener (2n = 2x = 18; 2n = 4x = 28) (see Stace, 2019) and could also have been involved in the hybridization with *B. sylvaticum*.

The present paper is a further step of our contributions to *Brachypodium* nomenclature (see, e.g., Fabado & Ferrer-Gallego, 2021; Ferrer-Gallego & Martínez Labarga, 2022a, b), the purpose of this paper is to contribute to the stability of the nomenclature of *B. × paui* and *B. × cugnacii* through the lectotypification of each of these two names.

**MATERIALS AND METHODS**

This work is based on the analysis of protologues, examination of relevant literature and study of the specimens conserved in the herbaria B, BC, BCN, DR, FR, MA, MPU, P, US, and VAL (acronyms follow Thierrs, 2023). The identity of the designated types has been verified with the current use of their respective names. The typified names are arranged in alphabetic order, followed by their homotypic synonyms (indicated with the symbol “≡”). The names in current use are indicated in bold italics typeface.

**RESULTS AND DISCUSSION**

*Brachypodium × cugnacii*

The protologue of *Brachypodium × cugnacii* (Camus, 1931) includes the name “×* Brachypodium Cugnacii A. Camus” and the hybrid formula “*B. pinnatum* P.B. × *Brachypodium* silvaticum R. et S. var. *villosum* Lej. et Court.”, and a complete diagnosis followed by the geographical provenance and gathering “Seine-et-Oise: Verrières (A. de Cugnac, 1930)”. This citation represents a syntype according to the Art. 9.6 of Shenzhen Code (hereafter as “ICN”; Turland et al., 2018). The protologue also includes a diagnosis and a table with several features to distinguish this hybrid and their parents.

Saint-Yves (1934: 435) synonymized the name *Brachypodium × cugnacii* with *B. pinnatum var. glauccivreins* (this taxon is currently recognized as an independent species by several authors, see e.g., Catalán et al., 2015; POWO, 2023). Schippmann (1991) treated *B. × cugnacii* as a synonym of *B. sylvaticum* subsp. *sylvaticum*, and reported “typum non vidi”.

We have found two specimens at P (P03471271 and P03628878) for *Brachypodium × cugnacii*. P03471271 is part of the original material, bearing a plant, with leaves and spikelets, and an original label handwritten by A. Camus annotated as “Herbier E. G. Camus & A. Camus // S-et-O: Verrières / 1930 / Legit de Cugnac / A. Camus” (Fig. 1). P03628878 bears a complete specimen, with leaves and flowers, and a handwritten label annotated as “× *Brachypodium Cugnacii* // S-et-O: Verrières / 7-VII-1931 / R. de Cugnac”. Since the year of collection (1931) is not that reported in the protologue, P03628878 cannot be considered as part of the original material for *B. × cugnacii*. As a consequence, P03471271 is here designated as the lectotype for the name *B. × cugnacii*. This specimen and the rest of the material match the traditional concept and current use of the name (Camus, 1931; López González, 2021).


**Lectotype** (designated here): [France] Seine-et-Oise: Verrières, 1930, Cugnac s.n. (P03471271 [photo!]; Fig. 1).

*Brachypodium × paui*

Sennen’s protologue (1911: 133) of *Brachypodium × paui* (a taxon numbered with “409”) includes the hybrid formula “(*B. ramosum × distachyon*)” followed by a complete diagnosis and the geographical provenances “Hab.: Garrigues et olivettes à Llers, Pont-de-Molins, Figueras; pentes du Tibidabo, près Barcelone; Benicarló à Bóbola!”.

Schippmann (1991) reported: “syntypi: “Plantes d’Espagne no. 409, Brachypodium Paui Sen..?
Figure 1. Lectotype of *Brachypodium ×cugnacii* Camus (P03471271). Image courtesy of the herbarium P, reproduced with permission.
Typification in the genus *Brachypodium*

(B. *ramosum* + *distachyon*) Sen., Cataloque: Llers et Pont de Molins, olivettes, Juin 1907" (B!, FR!, LD!, M!); “Plantes d’Espagne no. 1046, *Brachypodium* Pauli Sen., (B. *ramosum* + *distachyos*)? Sen., Cat-

tologne: Barcelone, pentes du Tibidabo, VI.1910” (B!, FR!, LD!); specimen scheda manu scripta in-

strueta: “Catalogne, Llers, olivettes, 19.VI.1905, F. Sennen” (B!); specimen scheda manu scripta in-

strueta: “Catalonia, Figueras, champs, VI.[19]10, F. Sennen” (B!); specimen scheda manu scripta in-

structa: “Catalogne, Llers, olivettes, 19.VI.1905, (B!, FR!, LD!, (B Typification in the genus

*Brachypodium* show intermediate characters between anatomically and morphologically examined plants.

Material is available in many duplicates. Some of the material of this type and plant that “Das Typusma-

tes ist in vielen Doubletten vorhanden. Einige der anatomisch und morphologisch untersuchten

Pflanzen zeigen zwischen *B. distachyon* und *B. retusum* intermediäre Merkmale, bei anderen handelt
	es sich eindeutig um *B. retusum*” [The type material is available in many duplicates. Some of the

anatomically and morphologically examined plants show intermediate characters between *B. distachy-

on* and *B. retusum*, others are clearly *B. retusum* and “Sennen weist auf den Hybridcharakter dieses

Taxons hin” [Sennen points out the hybrid character of this taxon]. Therefore, not all the specimens

are syntypes.

We traced several original specimens of *Brachypodium* ×*pauli* at B, BC, BCN, DR, FR, MA, MPU, P, US,

and VAL herbaria. Among them, several (BC61312, BC616227, BC118838, BC71120, BC-Sennen with-

out number), BCN 78982, DR061516, FR0031230, P02569267, P03139060, P03218686, P03218691,

MA14348, MA14350, MA163576, MPU027893, MPU027892, VAL72458) are number with “409”

as reported in the protologue, and collected in “Catalogne: Barcelone, pentes du Tibidabo, VI.1910”

(Sennen, 1911; López González, 2021): plants extensively branched, erect or geniculately ascending

stems, glabrous; leaves up to 10 cm × 2–4 mm, with prominent spaced veins, flat, tough, becoming convo-

lute when dry, acute, the cauline patent, distichous; ligule ca. 1 mm; raceme 4–9 cm, dense, stiffly erect,

with 1–5(–7) spikelets; spikelets (12–)20–30 mm, linear, glabrous, glaucous, with (6–)10–15 florets;

glumes acute, the lower 4–5 mm, the upper 6–7 mm;

lemma 7–8 mm, ovate-lanceolate, abruptly narrowed to the apex.

*Brachypodium* ×*pauli* Sennen, Bull. Géogr.

Bot. 21(259): 133. 1911 [= *B. distachyon* complex (probably *B. hybridum*) × *B. retusum*]

≡ *Brachypodium distachyon* subsp. *pauli* (Sennen) Malagarriga in Act. Phytotax. Barcinon. 18:

10. 1977

**Lectotype** (designated here): [Spain] Catalogne, Llers et Pont de Molins, June 1907, *F. Sennen* 409 (BC616227 [photo!]: Fig. 2). **Isolectotypes**:

BC616312, BC118838, BC71120, BC-Sennen [without number], BCN 78982, DR061516, FR0031230,

MA14348, MA14350, MA163576, P02569267, P03139060, P03218686, P03218691, MPU027893,

MPU027892, VAL72458.

**Note on the nomenclatural type of *Brachypodium retusum***

The specimen now barcoded as L0043873 is the “holotype” of *Bromus retusus* Pers. according to Schippmann (1991: 106), who stated: “holoty-

GOET, LD, LG und NY haben auf Anfrage mitgeteilt, daß sie kein Typus-Material dieser Art be-
sitzen.” [Herbaria BM, E, G, GOET, LD, LG and NY have indicated upon request that they do not

have any material of this type]. Thus, Schippmann unintentionally or “inadvertently” lectotypified the

name. Moreover, we have also not found any further herbarium sheet with Persoon’s original mate-

rial of *B. retusus* and, probably, the specimen at L is the only original material used by the author for

the description of this plant. However, as we cannot exclude that there would be more than one spec-

imen of this taxon in his collection, we consider the specimen L0043873 as the lectotype (corrected

here according to Art. 9.10 of the *ICN*) of the name *B. retusus*, admitting that the specimen might well be the holotype.

*Brachypodium retusum* (Pers.) P. Beauv., Ess. Agrostogr.: 155, 156, 101. 1812

**Lectotype** (designated by Schippmann in Boissiera 45: 106. 1991, corrected here according to Art. 9.10 of the *ICN*): [France] in Gall.

meridion, s.d., Persoon s.n., (L0043873; image

Collectanea Botanica vol. 42 (enero-diciembre 2023), e005, ISSN-L: 0010-0730, https://doi.org/10.3989/collectbot.2023.v42.e005
Figure 2. Lectotype of *Brachypodium ×paui* Sennen (BC616227). Image courtesy of the herbarium BC, reproduced with permission.

ACKNOWLEDGEMENTS

Thanks to Dr. Ginés López González and Dra. Pilar Catalán for their advice, assistance, and valuable comments that improved this work. Thanks to Neus Ibáñez (Institut Botànic de Barcelona) for his help in the study of the specimens in the herbarium BC.

REFERENCES


