



## Typification of names in the genus *Bouchea* (Duranteae, Verbenaceae)

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### Abstract

Based on the ongoing taxonomic studies of the genus *Bouchea* and with the aim of contributing to stabilize its nomenclatural framework, ten names actually belonging to *Bouchea* were identified to need typification or proper typification remarks. As a result the names *B. agrestis*, *B. ehrenbergii*, *B. linifolia*, *B. rusbyi* and *B. spathulata* are lectotypified, a neotype is selected for the name *Stachytarpheta pseudochascanum* ( $\equiv$  *B. pseudochacacum*) and the name *Verbena fluminensis* ( $\equiv$  *B. fluminensis*) is epitypified. Updates and supporting information for three names already typified by Harold Moldenke in the year 1940 are provided: *Valerianoides boliviana* ( $\equiv$  *B. boliviana*), *B. dissecta* and *B. pseudogervao* f. *pilosa*.

### Introduction

*Bouchea* Chamisso (1832: 252) is an American genus of annual or perennial herbs, or even shrubby plants ranging from southern North America and the Caribbean to northern Argentina in South America (Grenzebach 1926; Moldenke 1940a; Troncoso 1974; Múlgura *et al.* 2012). The genus is characterized by its flowers, which are subtended by a bract and two bractlets, the presence of only four stamens with connective tissue surpassing the theca (O'Leary *et al.* 2012), and by a fruiting-calyx not fully enclosing the fruit (Múlgura *et al.* 2012). *Bouchea* has been studied in two comprehensive taxonomic treatments by Grenzebach (1926) and Moldenke (1940a, 1940b), who have estimated the genus comprises between 10 and 13 species.

During a modern taxonomic revision of *Bouchea*, several names were found to require typification, mostly since many authors have not designated a type or have designated unsuitable specimens, or the type specimen was lost. Moldenke (1940b) has solved several typifications, although many times the author denotes as “type” material that actually should be “lectotype”, and this is an error to be reinterpreted (Art. 9.9 of the ICN, McNeill *et al.* 2012).

### Materials and Methods

In order to resolve these typifications all the protologues of the published taxa were studied. Type specimens from B, BM, BR, CM, F, G, GH, H, HAL, ISCN, K, L, LD, M, MICH, MIN, MO, NY, P, PH, SI and YU (acronyms according to Thiers 2017; arranged in alphabetic order) have been analyzed from the material loaded on the JSTOR Global Plants database (ITHAKA 2016), from online access to herbaria BR (The BR Herbarium Catalogue 2016), K (The Kew Herbarium Catalogue 2016) and P (Collections du Muséum national d'Histoire naturelle 2016) or through digital images obtained by personal communication with herbaria curators from B and NY. In case of having studied a physical specimen, the barcode is presented in square brackets.

Entries in this work are arranged in alphabetical order; currently accepted names under *Bouchea* are indicated in bold italic typeface.

## Taxonomic treatment

### A. *Bouchea* taxa needing typification

#### *Bouchea agrestis* Schauer (1847: 588)

**Type** (lectotype, designated here):—BRAZIL. “Habitat in agris ad f. S. Franc. prope Joazeiro, Provinciae Bahiensis”, s.d., *C.F.P. von Martius* (Mart. obs. 2329) (M 0111826!; isolectotypes M 0111825!, M 0111824!).

**Protologue citation**:—“In agris Prov. Bahiensis Brasiliae (Mart! Blanchet! n. 3731 et 3907).”

**Notes**:—Schauer (1847) described *B. agrestis* citing three syntypes from Bahia (Brazil) in the protologue, which he had studied at the herbaria of Martius and de Candolle. The first collection was made by Martius while the other two were made by Blanchet, whose collection numbers are 3731 and 3907. Three duplicates of Martius obs. 2329 are kept in M and among the gatherings of Blanchet, ten duplicates of the collection 3731 were found at herbaria BR, G, K, MO and NY and four duplicates of the collection 3907 were found at herbaria BR, G and NY.

The handwriting of the labels on the sheets was studied following the calligraphy of Schauer in a letter that he had sent to von Schlechtendal in the year 1847. Only one of the three duplicates collected by Martius has a label with calligraphy that matches Schauer’s handwriting, with the identification of *B. agrestis*. For this reason, we preferred this material over the Blanchet’s collections since it can be affirmed that the author studied the specimen. Thus, it is here selected as lectotype of the name.

#### *Bouchea ehrenbergii* Chamisso (1832: 253)

**Type** (lectotype, designated here):—HAITI. “S. Domingo”, *C. A. Ehrenberg s.n.* (HAL 0115153!; isolectotype NY 1337397!).

**Protologue citation**:—“Ex Insula San Domingo misit Carolus Ehrenberg, prope Port au Prince lectum.”

**Notes**:—Chamisso (1832) described *B. ehrenbergii* based on a collection that was done by C. A. Ehrenberg in the island of “San Domingo”, near Port-au-Prince. Ehrenberg visited the French colony of Santo Domingo, now Haiti, from 1828 to 1831 (Urban 1901: 43), devoting his free time to plant collecting in this city and in Cap-Haïtien (Moscoso 1943: XXIX).

Moldenke (1940b: 100) cited as type material an Ehrenberg collection kept at B, indicating the geographical provenance as “Santo Domingo, Dominican Republic, Hispaniola”. It is evident that Moldenke has misinterpreted the label on the specimen, referring the material as coming from Dominican Republic instead of Haiti. He also cited a sheet collected by Ehrenberg in Port-au-Prince (Moldenke 1940b: 103), supposedly housed in the Meisner Herbarium (NY), but this material could not be traced (A. Weiss, pers. comm).

The specimen cited as type is no longer extant at B, because it was lost during the bombing of Berlin in the year 1943 (R. Vogt, pers. comm.). Fortunately, a photograph of the sheet kept at NY (A. Weiss, pers. comm.) allows us to declare that the specimen seemed to be original material since the handwriting on it matches with Chamisso’s calligraphy (Burdet 1974: 215–216). Thus, Moldenke’s statement is here interpreted according to the modern ICN (McNeill *et al.* 2012) as a lectotype designation.

Since this specimen is lost, a new lectotype is here proposed. Two specimens studied and annotated by Chamisso were located at HAL and NY; both elements agree with the diagnosis, and the locality cited in the protologue is covered by the label (Port-au-Prince was the capital of Santo Domingo in the time of Ehrenberg). Thus, these specimens are considered as original material for the name. The Ehrenberg material at HAL is annotated “*Bouchea Ehrenbergii* Cham” and “S. Domingo” by Chamisso, and contains a fertile branch with four flowers in a good state of preservation and two leaves. Despite the good state of conservation of the sheet at NY, the Ehrenberg material at HAL is here selected as the lectotype since it is more complete and agrees with the traditional and current usage of the name of this species.

#### *Bouchea fluminensis* (Vell.) Moldenke (1940b: 117) ≡ *Verbena fluminensis* Vellozo (1829: 17)

**Type** (lectotype, designated by Múlgura *et al.* (2012: 25)):—Vellozo, T. 1, Tab. 38, 1831. **Epitype** (designated here): BRAZIL. Paraná. Mun. Guaíra, Sete Quedas, 23/03/1968, *Hatschbach & Guimaraes 19109* (SI [140129!]).

**Protologue citation**:—“Habitat silvis maritimis Regii Prædii Sanctæ Crucis ad viam austum versus.”

**Notes**:—*Bouchea fluminensis* is the name applied to the most common species occurring in southern Brazil and northeastern Argentina (Múlgura *et al.* 2012). It is based on *Verbena fluminensis*, described by Vellozo in his Flora

*Fluminensis* (1829). Although it is documented that Vellozo's original specimens were sent to the Royal Museum of Lisbon (Stafleu & Cowan 1986; Pastore 2013), this material could not be located at LISU, so the illustration mentioned in the protologue of *V. fluminensis* has been selected as lectotype by Múlgura *et al.* (2012: 25). However, Vellozo's illustration is rudimentary and not clearly identifiable. Some features of the flowers illustrated do not reflect the typical characteristics of *Bouchea* but rather that of *Stachytarpheta* Vahl (1804): the flowers are drawn as sessile instead of being pedicellate, and lack the distinct bractlets. Since the illustration cannot be critically identified for purposes of the precise application of the name, an epitype is here designated in order to support the lectotype and to fix the application of the name (Art. 9.8 of the ICN, McNeill *et al.* 2012) in the sense adopted by Moldenke (1940b). The specimen Hatschbach & Guimarães 19109 matches the original description in the following characters: four stamens and a leaf blade lanceolate with serrated margins. It is worth noting that the epitype has those morphological features which distinguish the species as currently understood from the closely related *B. pseudochascanum*: leaf-blades lanceolate, thin and fragile, acute or acuminate at apex and flowers much longer.

***Bouchea linifolia*** A. Gray ex Torrey (1859: 126)

**Type** (lectotype, designated here):—UNITED STATES OF AMERICA. “Pebbly bed of the San Pedro”, 9 July 1851, *C. Wright 1509* (NY [00103907!]; isolectotypes BM 000992668!, G 00366575!, GH 00093651”, NY 00103909!, NY 00103908!, P 00713790!, US 01177635!).

**Protologue citation:**—“Valley of the San Pedro, Western Texas (Nos. 436, 449 and 1509, Wright.)”

**Notes:**—Gray (1853) noted that plants of Mr. Wright's collection (No. 449 and 1509) appear to be a new species, *B. linifolia*, but he did not provide a diagnosis of the new taxon so it was not validly published. Subsequently, Torrey (1859) published the new species based on the collections that Gray had mentioned, and he also cited as syntype the gathering Wright 436. Three sheets belonging to the collection Wright 1509 were found at NY where Torrey studied (Stafleu & Cowan 1986). Thus, the specimen which shows the best quality of preservation of the important diagnostic features of the taxon is here chosen as lectotype of the name (Art. 9.17 of the ICN, McNeill *et al.* 2012, McNeill 2014).

***Bouchea pseudochascanum*** (Walp.) Grenzebach (1926: 85) ≡ *Stachytarpheta pseudochascanum* Walpers (1845: 11)

**Type** (neotype, designated here):—BRAZIL. Rio de Janeiro, “Caminho do Lemo a Copacabana”, 1890, *A. F. M. Glaziou 18392* (P 02900800!; isoneotype K 000925074!).

**Protologue citation:**—“In Brasilia prope Bahiam.”

**Notes:**—Walpers (1845) described *S. pseudochascanum* based on a dried specimen collected by an unknown collector in Bahia, Brazil. Walpers' herbarium was sold after his death and its current location is not known (Stafleu & Cowan 1988). No specimen of *S. pseudochascanum* containing any indication of being Walpers's original material has been found in the herbaria that are known to house some of his type specimens (B, BR, G, GH, and LE). Thus, a neotype is here proposed (Art. 9.7 of the ICN, McNeill *et al.* 2012). Since no collections from the locus classicus (i.e. Bahia) were located, the neotype is designated in agreement with the material examined by Schauer (1847, 1851) and Moldenke (1940b: 117), which comes from Rio de Janeiro.

After a careful examination of the available material the specimen Glaziou 18392 is here selected as neotype since it is very typical of this species in its current usage and shows all the morphological features described in the protologue, which clearly distinguish the species from the closely related *B. fluminensis*: leaf blade coriaceous and rounded, paler beneath and obtuse at apex.

***Bouchea rusbyi*** Moldenke (1934: 8) ≡ *Bouchea incisa* Rusby (1907: 432), *nom. illeg., non* Pearson (1905: 180)

**Type** (lectotype, first-step designated by Moldenke 1940b: 114):—BOLIVIA. Yungas, 1890, *M. Bang 2226* (NY!, four sheets; second-step lectotype, designated here NY 00103932!; isolectotypes BM 000992670!, CM 1836!, F 0074239F!, G 00366108!, GH 00093657!, H 1407443!, K 000487104!, K 000487103!, LD 1559126!, M 0111817!, MICH 1108339!, MIN 1000452!, MO No. 694756!, NY 00103931!, NY 00103930!, NY [00103933!], PH 00008013!, SI [003423!], SI [003424!], US 00118892!).

**Notes:**—Moldenke (1940b) clearly indicated by direct citation that the type element is housed at NY, which is here interpreted according to the modern ICN (McNeill *et al.* 2012) as a lectotype designation. However, four sheets were found at NY, thus Moldenke's statement must be considered as a first-step typification (Art. 9.17 of the ICN, McNeill *et al.* 2012). In order to narrow Moldenke's designation the most complete specimen is here selected as a second-step lectotype (Art. 9.17 of the ICN, McNeill *et al.* 2012, McNeill 2014).

***Bouchea spathulata*** Torrey (1859: 126)

**Type** (lectotype, first-step designated by Moldenke 1940b: 127):—UNITED STATES OF AMERICA. Texas, Great Cañon of the Rio Grande near Mount Carmel, October 1852, *C. C. Parry s.n.* (NY!, two sheets; second-step lectotype, designated here NY [00103916!]; isolectotypes ISC No. 306329!, NY [00103917!], US 00118898!).

**Protologue citation**:—“Great Cañon of the Rio Grande near Mount Carmel; October; Parry.”

**Notes**:—Although Torrey (1859) did not indicate the herbarium which houses the type collection, it is well-known that his personal herbarium is kept at NY (Stafleu & Cowan 1986), as has been pointed out by Moldenke (1940b: 126). Moldenke’s statement is here interpreted according to the modern ICN (McNeill *et al.* 2012) as a lectotype designation. However, two sheets were found at NY, thus Moldenke’s statement can be considered as a first-step typification. In order to narrow Moldenke’s designation the most complete specimen is here selected as a second-step lectotype (Art. 9.17 of the ICN, McNeill *et al.* 2012, McNeill 2014). Two isolectotypes were also found, which are currently housed at herbaria ISC and US.

**B. *Bouchea* taxa needing typification remarks**

In the case of the three following names Moldenke (1940b) clearly indicated the type material by direct citation of the housing institution. Since only one specimen of the respective cited collections is present in each herbarium, clear lectotypification was effected (McNeill *et al.* 2012).

***Bouchea dissecta*** Watson (1889: 68)

**Type** (lectotype, designated by Moldenke 1940b: 125):—MEXICO. On rocky ledges at Guaymas, Sonora, October 1–22 1887, *E. Palmer 259* (GH 00093652!; isolectotypes BM 000992666!, NY 00103911!, NY [00103910!], US 00118890!, US 01100633!, YU 001915!).

***Bouchea pseudogervao* f. *pilosa*** Herzog (1916: 46)

**Type** (lectotype, designated by Moldenke 1940b: 112):—BOLIVIA. Santa Cruz, ca. 450 m., Jan. 1911, *T. Herzog 1504* (L 2762089!; isolectotypes G 00366113!, NY 00103929!).

***Bouchea boliviana*** (Kuntze) Moldenke (1933: 18) ≡ *Valerianoides boliviana* Kuntze (1898: 254) ≡ *Stachytarpheta boliviana* (Kuntze) K. Schum. (1898: 396)

**Type** (lectotype, designated by Moldenke 1940b: 112):—BOLIVIA. Santa Cruz, 340 m, June 1892, *O. Kuntze s.n.* (NY [00138153!]).

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