The illustration published by Barrelier represents a mirror image of Boccone's drawing. Boccone's illustration shows a plant without corollas (in pre-anthesis or post-anthesis), and with broad glabrous bracts in the inflorescence completely hiding the calyx (see López & Morales, l.c. 2011). The voucher or "tipotypus" of this illustration was collected in the Valencia region (eastern Spain), as was indicated by Barrelier (l.c.: 29) "In Regno Valentino observabat Barr." and by Boccone (l.c.: 50) "Viene questa Pianta dalle memorie del Padre Maestro Bareliero. Stimo la trovasse nel Viaggio della Spagna." In this sense, as already noted by Morales (l.c. 1984, 1986), the association of the name *T. cephalotos* with the endemic Portuguese species *T. lotocephalus* G. López & R. Morales (l.c. 1984) is clearly incorrect, although still sometimes claimed (e.g., by Jalas in Tutin & al., Fl. Eur. 3: 175. 1972; and Stahl-Biskup & Saez, Thyme Gen. Thymus: 6. 2002) and implied in the occurrence of *T. cephalotos* being reported as restricted to Portugal in The Euro+Med PlantBase; http://ww2.bgbm.org/EuroPlusMed/PTaxonDetail.asp?NameCache=Thymus%20cephalotes). In addition the endemic Spanish species *T. moroderi* has densely ciliate bracts and identification with it is also incorrect, although originally suggested by Morales (l.c. 1984, 1986) and more recently claimed by Bräuchler (l.c.).

In my view, Barrelier's and Boccone's illustrations can be clearly identified with *Thymus membranaceus*. This was already indicated by several authors (e.g., Pau in Mem. Real Soc. Esp. Hist. Nat. 15: 65. 1929; López & Morales, l.c. 2011), because the bracts illustrated in the drawing are clearly glabrous, as was also stated by Barrelier (l.c.: 29) "foliis […] superiora autem latiora multa & glabra spicam squammatam referunt". *Thymus membranaceus* is an endemic species in south-eastern Spain (Murcia, Granada, Alicante and Almeria provinces), and is recognised by the inflorescence possessing pale yellow bracts that are broadly ovate to elliptical, acuminate, entire, and glabrous or ciliate (Morales, l.c. 1986: 191–192; Bolòs & Vigo, Fl. Països Catalans 3: 314. 1996; Morales in Castroviejo & al., Fl. Iberica 12: 364–365. 2010; Mateo & Crespo, Claves Ilustr. Fl. Valenciana: 252. 2014).

In consequence, the well-established name *T. membranaceus* would have to be abandoned and become a later synonym of *T. cephalotos*. The name *T. membranaceus* enjoys a long tradition of usage, not only in floras, but also in books on plant conservation, as well as lists of threatened plants (e.g., Vicioso in Anales Inst. Nac. Invest. Agrar., Recursos Nat. 1: 17, 35, fig. 2. 1974; Rivas Martínez in Anales Inst. Bot. Cavanilles 34: 544–546. 1978; Rigual, Fl. Veg. Alicante. 1984; Morales, l.c. 1984, 1986, 2010; Alcaraz & al. in Itin. Geobot. 2. 1989; Peinado & al., Veg. SE. Spain: 220. 1992; Bolòs & Vigo, l.c.; Alcaraz & Delgado in Phytocoenologia 28: 427–453. 1998; Laguna & al., Fl. Endém. Rara Amenazada Comunidad Valenciana: 312. 1998; Serra in Ruizia 19: 733–734. 2007; Sánchez Gómez & Guerra, Nueva Fl. Murcia. 2011; DOGV, Order 6/2013, number 6996 [see http://www.dogv.gva.es/portal/ficha_disposicion_pc.jsp?sig=003163/2013]; Mateo & Crespo, l.c.). This species is also used in medicine (Zarzuelo & al. in Phytotherapy Res. 1: 114–116. 1987; Pérez-Tortosa & al. in Food Chem. 130: 362–369. 2012). Replacing this name by *T. cephalotos* would be destabilising.

Use of the name *T. cephalotos* in modern times, indeed almost since 1975, is very rare. It has been adopted by only very few authors and mainly for the Portuguese species currently named *T. lotocephalus* (e.g., Jalas, l.c.; Malagarriga, Subesp. Variación Geogr.: 22. 1973 & Pl. Sennen. 5: 7. 1974; Stahl-Biskup & Saez, l.c.), and its resurrection would be undesirable for stability in the nomenclature of this group. In addition, the ambiguous interpretation of the type illustration and its imprecise determination would require the epitypification of the name.

Alternatively, I could have made a proposal to conserve *T. membranaceus* over *T. cephalotos*, but I believe it is better to reject *T. cephalotos* outright, as the latter name has been applied to different species, currently named as *T. lotocephalus* or *T. camphoratus* (Portuguese species), or *T. moroderi* or *T. membranaceus* (Spanish species). Therefore, rejection of *T. cephalotos* under Art. 56 of the *ICN* seems the most effective way to establish a clear, stable nomenclature for these species of *Thymus*.

Author Information

PPF-G, http://orcid.org/0000-0001-7595-9302

Acknowledgements

Thanks to Dr. McNeill and Dr. Wiersema for the help in revising the manuscript. Thanks are given to Charo Noya (Royal Botanic Garden of Madrid) for help in the study of herbarium sheets at MA.

(2673) Proposal to conserve the name *Verbena fluminensis* (*Bouchea fluminensis*) against *V. pseudogervao* (*Duranteae, Verbenaceae*)

Pablo Moroni & Nataly O'Leary

Instituto de Botánica Darwinion (ANCEFN-CONICET), Labardén 200, CC 22, B1642HYD, San Isidro, Buenos Aires, Argentina
Address for correspondence: *Pablo Moroni, pmoroni@darwin.edu.ar*

DOI https://doi.org/10.1002/tax.12009

(2673) ***Verbena fluminensis*** Vell., Fl. Flumin.: 16. 7 Sep–28 Nov 1829 [Angiosp.: *Verben*.], nom. cons. prop.

Typus: [icon in] Vellozo, Fl. Flumin. Icon. 1: t. 38. 29 Oct 1831. Epitypus (vide Moroni & O'Leary in Phytotaxa 306:

212. 2017): Brazil, Paraná, Mun. Guaíra, Sete Quedas, 23 Mar 1968, *Hatschbach & Guimaraes 19109* (SI barcode 140129; isoepitypus: MO No. 2014605 [barcode MO-2252804]).

(=) *Verbena pseudogervao* A. St.-Hil., Pl. Usuel. Bras.: ad t. 40. 21 Dec 1825, nom. rej. prop.
Lectotypus (vide Múlgura in Anton & Zuloaga, Fl. Argent. 14: 25. 2012): Brazil, *Saint-Hilaire* (MPU barcode MPU009979).

Verbena fluminensis Vell. (Fl. Flumin.: 16. 1829), currently known as *Bouchea fluminensis* (Vell.) Moldenke (in Repert. Spec. Nov. Regni Veg. 48: 25. 1940) is the name applied to a perennial subshrub found in northeastern Argentina and southern Brazil and Paraguay (Moroni & O'Leary, in prep.). Traditionally, the plant has been a popular natural remedy in South America (Correa, Dic. Pl. Úteis Brasil: 395. 1984) for its properties of stimulating and regulating the digestive system (Delaporte & al. in J. Ethnopharmacol. 82: 127–130. 2002), as well as for its anti-inflammatory, antifungal and analgesic effects (Delaporte & al. in Acta Farm. Bonaerense 20: 39–46. 2001, l.c. 2002; Costa & al. in Fitoterapia 74: 364–371. 2003; Falcão & al. in Revista Brasil. Farmacogn. 15: 381–391. 2005; Fenner & al. in Revista Brasil. Ci. Farm. 42: 369–394. 2006; Pupo & al. in Acta Farm. Bonaerense 27: 280–285 & 364–368. 2008). The organic compounds responsible for its pharmacological effects have been also isolated (von Poser & al. in Pl. Syst. Evol. 205: 265–267. 1997; Schuquel & al. in Phytochemistry 49: 2409–2411. 1998). Recent findings (de Resende & al. in Acta Bot. Brasil. 28: 184–189. 2014) demonstrated an efficient system for in vitro propagation that could be used in conservation programs to reduce the risk of extinction of this species in the *campos rupestres* of Brazil.

In the course of preparing a modern revision of the genus *Bouchea* Cham., an overlooked threat surfaced to the long-established name for this species: the effective date of publication of Vellozo's *Florae Fluminensis*. Anyone who dealt with Vellozo's species before Carauta's work (in Vellozia 7: 26–33. 1969, in Taxon 22: 281–284. 1973), in which he reported on a detailed study of the effective date of publication of the text of *Florae Fluminensis*, failed to cite correctly the date of publication of Vellozo's work. Carauta (l.c. 1973) explained that in 1825 three-fourths of the *Florae Fluminensis* were printed, including that containing the species *V. fluminensis*, but the volumes remained stored in the Typographia Nacional do Rio de Janeiro for four years. The sale of this work only began in 1829 and the effective date of publication of Vellozo's species described in the first unfinished edition lies between 7 September and 28 November 1829, not 1825.

In her treatment of *Bouchea*, Grenzebach (in Ann. Missouri Bot. Gard. 13: 85. 1926) was the first to consider that *Verbena fluminensis* that she apparently believed to have been published only in the *Florae Fluminensis icones* (as t. 38) that she dated as 1827 (but actually published in 1831) might be a synonym of *B. pseudogervao* (A. St.-Hil.) Cham. (in Linnaea 7: 252. 1832) based on *V. pseudogervao* A. St.-Hil. (Pl. Usuel. Bras.: ad t. 40. 1825). Grenzebach adopted *B. pseudogervao* as the correct name of the species involved because she was apparently unaware of the valid publication of *V. fluminensis* in the *Florae Fluminensis* text and so wrongly believed that, with only the name in the *Icones*, it was a nomen nudum. Later Moldenke (in Repert. Spec. Nov. Regni Veg. 49: 121. 1940) noted that *V. fluminensis* was a validly published name whose type is indeed conspecific with *V. pseudogervao*. Consequently he adopted the epithet '*fluminensis*', supposing it to have priority to 1825, with *V. pseudogervao* listed as a synonym, and henceforth the species has been referred to as *Bouchea fluminensis*. This name was lectotypified on the Vellozo plate cited above by Múlgura (in Anton & Zuloaga, Fl. Argent. 14: 25. 2012).

Because Vellozo's account of *Verbena fluminensis* was only distributed in 1829, *B. pseudogervao* must, under application of the principle of priority, be adopted as the correct name for the species. Govaerts (World Checkl. Seed Pl. 2: 138. 1996, in World Checklist of Selected Plant Families [WCSP]. 2018, available at https://wcsp.science.kew.org/namedetail.do?name_id=23550) is the only modern author who appears to have been aware of this issue and accepted *B. pseudogervao* for the species. Govaerts (l.c. 1996: 138), in citing *B. fluminensis* as a synonym of *B. pseudogervao*, attributed the combination to Moldenke in Publ. Carnegie Inst. Wash. 522: 176. 20 Jun 1940, issued ahead of the main treatment of the species in Moldenke's revision of *Bouchea* (in Repert. Spec. Nov. Regni Veg. 49: 117, 121. 19 Dec 1940). However, our nomenclatural revision has evidenced an even earlier publication of the combination by Moldenke in the first part of his generic revision (in Repert. Spec. Nov. Regni Veg. 48: 25. 31 Mar 1940). In this work, as in that cited by Govaerts (Moldenke, l.c. Jun 1940), Moldenke (l.c. Mar 1940) validly published the new combination *Bouchea fluminensis* (Vell.) Moldenke through an indirect reference to *V. fluminensis* Vell. ("type species … *Verbena pseudogervaô* A. St. Hil. [= *Bouchea fluminensis* (Vell.) Moldenke]") that is in accord with Art. 41.3 (with Art. 38.4) of the *ICN* (Turland & al. in Regnum Veg. 159. 2018).

Apart from the adoption of *Bouchea pseudogervao* by Govaerts (l.c. 1996, l.c. 2018), *B. fluminensis* has been in consistent use since 1940, providing enough evidence to justify maintenance of this name. Searches using Google Scholar (accessed on 12 Nov 2018) show that the name *B. fluminensis* has been used in ca. 326 scientific papers since 1940. Soon after Moldenke's transfer, it was taken up by Erdtman (in Svensk Bot. Tidskr. 39: 281–284. 1945) in his palynological studies in *Verbenaceae*. Early floristic catalogues for South America (for the coast of Ecuador and Peru and its relation to the Galapagos Islands: Svenson in Amer. J. Bot. 33: 419, 480. 1946; for Bolivia: Foster in Contr. Gray Herb. 184: 169. 1958) accepted *B. fluminensis*, although without mention of *B. pseudogervao*. The first comprehensive floristic account for the Southern Cone that includes *B. fluminensis* was published by Troncoso (in Darwiniana 18: 348–350. 1974). Subsequent contributions include catalogues (for Argentina: Múlgura in Monogr. Syst. Bot. Missouri Bot. Gard. 74: 1139. 1997; for the Americas: Ulloa & al. in Science 358: 1614–1617. 2017; for Brazil: Forzza & al. in Cat. Pl. Fung. Brasil 2: 1673. 2010; Baumgratz & al., Cat. Fl. Estado Rio de Janeiro. 2014, available at http://florariojaneiro.jbrj.gov.br/visualizar.php?id=755498), checklists (for Brazil: Wanderley & al. in Biota Neotrop. (Campinas) 11(Supl. 1): 379. 2011) and floras (Troncoso in Colecc. Ci. Inst. Nac. Tecnol. Agropecu. 13: 115–117. 1993; Atkins in Fl. Fanerog. Argent. 84: 17–19. 2003; Múlgura, l.c.), as well as in karyological (Schnack & Fehleisen in Darwiniana 11: 244–255. 1957), morphological (Rotman & al. in Darwiniana 40:

1–15. 2002) and palynological (Raj in Rev. Palaeobot. Palynol. 39: 364. 1983) accounts. In contrast, the name *B. pseudogervao* has become practically obsolete because it has been placed in synonymy since Moldenke's monograph, with the sole exception of Govaerts's checklists (l.c. 1996, l.c. 2018). Searches using Google Scholar (accessed on 12 Nov 2018) retrieved ca. 16 articles dealing with this name, all as a synonym of *B. fluminensis*, thus revealing how widespread is the use of this latter name.

Thereby, for the sake of nomenclatural stability in accordance with Art. 14.2 of the *ICN*, we believe it would be best to retain the well-known epithet of *Verbena fluminensis* against that of the rather obscure name *V. pseudogervao*, which has been subsumed in synonymy since Moldenke's publication of *Bouchea fluminensis* in 1940. Acceptance of this proposal would prevent a name (i.e., *B. pseudogervao*) that has fallen into obscurity for over 75 years from becoming, for purely nomenclatural reasons, the correct name for the economically significant species currently widely known as *B. fluminensis*.

Author Information

PM, http://orcid.org/0000-0001-5306-476X
NO, http://orcid.org/0000-0001-7414-3416

Acknowledgements

This work has received financial support from CONICET PIP 00537/13 to the authors. We are grateful to Gustavo Hassemer for his constructive comments and to John McNeill and John Wiersema for their patient and clear advice that greatly contributed to improving this proposal.

(2674) Proposal to conserve the name *Thaumatopteris* (fossil *Pteridophyta: Dipteridaceae*) with a conserved type

Gea Zijlstra & Johanna H.A. van Konijnenburg-van Cittert

Marine Palynology, Vening Meinesz Building A, Princetonlaan 8A, 3584 CB Utrecht, the Netherlands
Address for correspondence: *Gea Zijlstra, g.zijlstra@uu.nl*

DOI https://doi.org/10.1002/tax.12010

(2674) ***Thaumatopteris*** Göpp., Gatt. Foss. Pfl. 1–2(2): 2. Jan 1841, nom. cons. prop.
Typus: *T. brauniana* Popp (in Neues Jahrb. Mineral. Geol. 1863: 409. 1863), typ. cons. prop.

Thaumatopteris was published by Göppert (Gatt. Foss. Pfl. 1–2(2): 2. 1841) with a generic description based on sterile and fertile leaf fragments, and a description of one species, *T. muensteri*. Within this species, he included three varieties, based on four *Phlebopteris* species of Münster (in Neues Jahrb. Mineral. Geognosie 1836: 511–512. 1836): *T. muensteri* α *abbreviata* based on *P. brevipinnata*, β *elongata* on *P. speciosa*, and γ *longissima* on both *P. longipinnata* and *P. serrata*. At that time, the concept of typification was not yet widespread, and Göppert did not indicate which of those four species names could provide the type of *T. muensteri*, which is an illegitimate name, since Göppert did not adopt the epithet of one of those four species names.

Since then, there has been general agreement that the four leaves, described by Münster as separate species, probably belong to a single species. The material comprises leaf fragments of very long leaves, in which there are differences in the margins and the venation at the base, midway, and near the apex. We consider *T. brauniana* var. *abbreviata* ("α"), based on *Phlebopteris brevipinnata*, the most characteristic element.

We will not make, however, a new combination in *Thaumatopteris* with the epithet *brevipinnata*, because that nomenclatural issue is not the reason for this proposal. A taxonomic problem also exists. *Thaumatopteris* has long been in use without its only original species! *Thaumatopteris muensteri* has been placed in *Dictyophyllum* Lindl. & Hutton (Foss. Fl. Gr. Brit. 2: [66]. 1834) (see below) – another genus of the *Dipteridaceae* and a name with priority over *Thaumatopteris*.

In other words, the lack of an evident type for the name of its only original species is not the biggest problem with *Thaumatopteris*. Several authors added more species to this genus. The first was Popp (in Neues Jahrb. Mineral. Geol. 1863: 409. 1863), who described (without figure) *T. brauniana* Popp. In 1867 Schenk (Foss. Fl. Keup. Frankens: 73, t. XVIII, fig. 1–3 & t. XIX, fig. 1) gave a good description and illustration of that species, after having studied some of Popp's specimens and some specimens that he himself had collected.

In 1875, after having studied the fossil flora of Pålsjö in Sweden, Nathorst (in Förh. Geol. Fören. Stockholm 2: 380. 1875) published the conclusion that *Thaumatopteris muensteri* belonged in *Dictyophyllum* and published the new combination *Dictyophyllum muensteri* (Göpp.) Nath. Moreover, he stated that *T. brauniana* probably did not belong to *Dictyophyllum*. So he already divided *Thaumatopteris*, excluding its original type, but at a time when the type concept was still scarcely used in palaeobotany, even though A.T. Brongniart (Dict. Class. Hist. Nat. 3: 350. 1823 & 9: 490, 558. 1826), for example, had already published type designations for names of some recent ferns.

In 1907, Nathorst (in Kongl. Svenska Vetenskapsakad. Handl., ser. 2, 42(3): 5–6) explained two important points of difference between *Thaumatopteris* and *Dictyophyllum*: (1) in *Thaumatopteris*, the leaflets stand almost perpendicular on the rachis, and at the rachis, they are scarcely connected to each other, whereas in *Dictyophyllum* they stand more obliquely (ca. 45°–60°) and are clearly connected at