

## THE CORRECT NAME FOR *DIDYMODON VALIDUS* (BRYOPHYTA, POTTIACEAE) AT VARIETY RANK

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**Abstract.** *Didymodon validus* Limpr. is not universally recognised as a species in its own right but it is often considered a variety, *D. rigidulus* Hedw. var. *validus* (Limpr.) Düll. The epithet *validus* was used at varietal rank only in 1923, as *Barbula rigidula* (Hedw.) Mitt. var. *valida* (Limpr.) Broth., but this taxon was actually recognised as a variety, *B. rigidula* var. *gigantea* Schlieph. ex Warnst., already in 1904, and this name is lectotypified herein. Accordingly, the transfer of this variety to *Didymodon* Hedw., as *D. rigidulus* var. *giganteus* (Schlieph. ex Warnst.) Ochyra & Bednarek-Ochyra, *comb. nov.*, is effected. This is the correct name for this Central European–Central Asian montane taxon at variety rank. *Didymodon validus* is considered a new synonym of *D. rigidulus* var. *giganteus*.

**Key words:** *Barbula*, *Didymodon rigidulus*, Musci, nomenclature, priority, taxonomy, typification, varietal status

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*Didymodon validus* was described as a new species by Limpricht (1888) but Möller (1907a, b) transferred it to the broadly conceived genus *Barbula* Hedw., which then served as an all-encompassing genus for most *Barbula*-like species of the Pottiaceae. Three specimens are cited in the protologue, two of which were collected in Austria and one in present-day Slovenia. This species name was lectotypified by J. Kučera in 1999 in his unpublished doctoral thesis (Jiménez 2006) but this lectotypification has apparently never been validly published, since the provisions of Art. 7.10 of the ICN (McNeill *et al.* 2012) have not been fulfilled. The lectotype of *D. validus* was designated only by Ochyra *et al.* (2011).

*Didymodon validus* is closely related to *D. rigidulus* Hedw.; the two species share similar leaf shape, curvature of the leaf margins, leaf areolation, the same shape of the axillary gemmae, and colour of the laminal cells in reaction with KOH. The only real differences between these species are the smooth laminal and entirely unistratose leaf margins in *D. validus*. Therefore it has not

gained universal acceptance as a species in its own right, and in many Floras and taxonomic treatments *D. validus* is considered a subspecies (Amann 1918; Loeske 1934; Podpěra 1954) or variety (Brotherus 1923; Düll 1984a, b, 1992; Düll & Meinunger 1989; Kučera 1998, 2000, 2002; Grimms 1999; Cortini Pedrotti 2001) of *D. rigidulus*. Less often, *D. validus* is treated as a separate species (Nyholm 1956; Pilous & Duda 1960; Schlüsslmayr 2005; Jiménez 2006; Meinunger & Schröder 2007; Ochyra *et al.* 2011). It is also worth noting that this taxon has been entirely ignored in the latest checklist of European mosses (Hill *et al.* 2006).

*Didymodon validus* was reduced to subspecies rank by Amann (1918) in the catch-all genus *Barbula* as *B. rigidula* (Hedw.) Mitt. subsp. *valida* (Limpr.) J. J. Amann, and subsequently it was given the same taxonomic status in *Didymodon* Hedw. by Loeske (1934) as *D. rigidulus* Hedw. subsp. *validus* (Limpr.) Loeske. On the other hand, Brotherus (1923) reduced *D. validus* to variety within *Barbula* as *B. rigidula* var. *valida* (Limpr.) Broth. Düll (1984a) transferred this variety to *Didymodon* as *D. rigidulus* var. *validus* (Limpr.)

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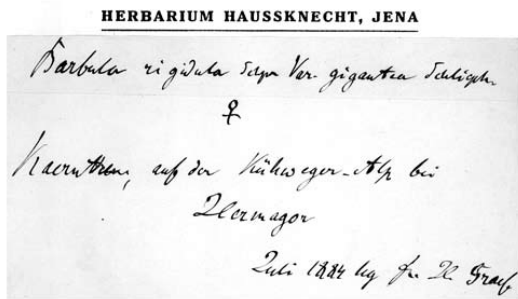


Fig. 1. The label of the lectotype of *Barbula rigidula* (Hedw.) Mitt. var. *gigantea* Warnst. (JE).

Düll. This name has unanimously been used by all aforementioned adherents of the varietal status of this taxon.

*Didymodon rigidulus* is not the oldest available name for this taxon at varietal rank. In 1885 K. Schliephacke annotated the specimen collected in 1884 by Graef in the Alps of Carinthia as *Barbula rigidula* var. *gigantea* Schlieph. In 1888 he sent this specimen to K. G. Limpricht, who determined it as *Didymodon validus* and included it as one of three syntypes in the protologue of this new species. Another duplicate was studied by C. Warnstorf who annotated it 'in litt. 1885' and subsequently briefly described and validated the epithet *gigantea* as *Barbula rigidula* var. *gigantea* Schlieph. ex Warnst. (Warnstorf 1904). He characterised it as a large, salient moss, to 4 cm tall, with the leaves to 2 mm long and 0.5 mm wide and incrassate walls of the laminal cells. In addition, he suggested its possible identity with *Didymodon rigidulus* var. *major* Podp., a variety described by Podpěra (1899) from the present-day Czech Republic. Later (Podpěra 1954) considered it to be a transitional form, *Barbula rigidula* subsp. *rigidula* fo. *major* (Podp.) Podp., between the type subspecies and *Barbula rigidula* subsp. *valida*.

*Barbula rigidula* var. *gigantea* has remained a neglected taxon; it was overlooked by the compilers of *Index muscorum* (Wijk et al. 1962, 1969). This name was formally considered a heterotypic synonym of *Didymodon validus* by Jiménez (2006), who erroneously ascribed it to K. Schliephacke. This decision concurs with the original concept of Limpricht (1888), who included the type of

this variety in his concept of *D. validus*, but this name is lectotypified by another specimen originally used by this author for the description of this species. Nevertheless, *Barbula rigidula* var. *gigantea* is the oldest available name, published in 1904, for *Didymodon validus* at varietal rank, and it antedates *Barbula rigidula* var. *valida* which was given varietal rank only in 1923. The transfer of *B. rigidula* var. *gigantea* to *Didymodon* necessitates the following nomenclatural change.

***Didymodon rigidulus* Hedw. var. *giganteus***  
(Schlieph. ex Warnst.) Ochyra & Bedn.-Ochyra,  
**comb. nov.**

BASIONYM: *Barbula rigidula* (Hedw.) Mitt. var. *gigantea* Schlieph. ex Warnst., Krypt.-Fl. Brandenburg 2 (Laubm.): 256. 1904 (18 Oct) [*B. rigidula* var. *gigantea* Schlieph. ex Limpr., Laubm. Deutschl. 1: 558. 1888 (May), *nom. nud. in synon.*]. TYPE CITATION: no specific specimen cited but an indirect reference by the authorship of *B. rigidula* var. *gigantea* 'Schlieph. [acke] in litt. 1885' to the specimen cited by Limpricht (1888) is given: 'Kärnten: auf der Kühweger-Alp bei Hermagor leg. Graeff, comm. Schliephacke als *Barbula rigidula* var. *gigantea* Schlieph. in litt. 1888.' LECTOTYPE (*designated here*): 'Barbula rigidula Schpr var. *gigantea* Schlieph. ♀ Kaernten, auf der Kühweger-Alp bei Hermagor Juli 1884 leg. Hr. H. Graeff' – JE! (Fig. 1); ISOTYPES: C, WB, not seen (*vide* Jiménez 2006: p. 270).

*Didymodon validus* Limpr., Laubm. Deutschl. 1: 557. 1888 (May) ≡ *Barbula valida* (Limpr.) H. Möller, Bot. Not. 1907: 142. 1907 (15 May) ≡ *B. rigidula* subsp. *valida* (Limpr.) J. J. Amann, Fl. Mouss. Suisse 2: 104. 1918 ≡ *B. rigidula* var. *valida* (Limpr.) Broth., Laubm. Fennosk.: 134. 1923 ≡ *Didymodon rigidulus* Hedw. subsp. *validus* (Limpr.) Loeske, Sitzungsber. Naturhist. Vereins Preuss. Rheinl. 1932–1933(D): 17. 1934 ≡ *D. rigidulus* var. *validus* (Limpr.) Düll, J. Hattori Bot. Lab. 55: 263. 1984 ≡ *Barbula acuta* (Brid.) Brid. fo. *valida* (Limpr.) Nyholm, Ill. Fl. Nord. Mosses 2: 99. 1989, *comb. inval. basion. not citat.* TYPE CITATION: Wurde von P. Hieronymus Gander am 27. Juli 1882 an Kalkfelsen bei „Kalachstein“ nächst Innervillgraten in Tirol entdeckt. – Gebiet von Görz: An Strassenmauern bei Flitsch 400 m, Breidler am 17. August 1884. Kärnten: auf der Kühweger-Alp bei Hermagor leg. Graeff, comm. Schliephacke als *Barbula rigidula* var. *gigantea* Schlieph. in litt. 1888. – LECTOTYPE (*designated by* Ochyra et al. 2011: p. 58): 'Barbula rigidula Hedw. [Austria] Tirol: Innervillgraten an Kalkfelsen

bei „Kalchstein“ 27/7 1882 Breidler schreibt über dies Moss: ‘üppige form, von *B. viridiosa* nur durch die lange stielrunde Blattspitze verschieden! Sehr interessante Uebergangsform. ‘*Didymodon validus* n. sp.’ – BP-Limpricht! SYNTYPES: (1) ‘Aus dem Herbarium von A. Geheeb *Didymodon validus* Limpr. (plant female) Flora: von Görz. Fundort: an Strassenmauern bei Flitsch, 400 m, leg. J. Breidler, 17.8.84, com. Limpricht 1888’– JE-Herzog! (2) ‘*Barbula rigidula* Schpr var. *gigantea* Schlieph. o Kaernten, auf der Kühweger-Alp bei Hermagor Juli 1884 leg. Hr. H. Graeff’ – JE!, *syn. nov.*

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## REFERENCES

- AMANN J. (with collaboration of CH. MEYLAN & P. CULMANN). 1918. *Flore des mousses de la Suisse. Deuxième partie. Bryogeographie de la Suisse*. Imprimeries Réunies S.A., Lausanne.
- BROTHERUS V. F. 1923. *Die Laubmoose Fennoskandias*. Societas pro Flora et Fauna Fennica, Helsingfors.
- CORTINI PEDROTTI C. 2001. *Flora dei muschi d'Italia. Sphagnopsida, Andreaeopsida, Bryopsida (I parte)*. Antonio Delfino Editore, Medicina-Scienze, Roma.
- DÜLL R. 1984a. Taxonomy and distribution of some critical taxa of the genus *Didymodon* in Europe. *J. Hattori Bot. Lab.* **55**: 259–266.
- DÜLL R. 1984b. Distribution of the European and Macaronesian mosses (Bryophytina). Part I. *Bryol. Beitr.* **4**: 1–113.
- DÜLL R. 1992. Distribution of the European and Macaronesian mosses (Bryophytina). Annotations and progress. *Bryol. Beitr.* **8/9**: 1–223.
- DÜLL R. & MEINUNGER L. 1989. *Deutschlands Moose. Die Verbreitung der deutschen Moose in der BR Deutschland und in der DDR, ihre Höhenverbreitung, ihre Arealentypen, sowie Angaben zum Rückgang der Arten. I. Teil: Anthocerotae, Marchantiatae Bryatae: Sphagnidae, Andreaeidae Bryidae: Tetrarhiales – Pottiales*. IDH-Verlag, Bad Münstereifel – Ohlerath.
- GRIMMS F. (with collaboration of H. KÖCKINGER, R. KRISAL, A. SCHRIEBL, M. SUANJAK, H. ZECHMEISTER & F. EHRENDORFER) 1999. *Die Laubmoose Österreichs. Catalogue Florae Austriae, II. Teil, Bryophyten (Moose), Heft 1, Musci (Laubmoose)*. Österreichische Akademie der Wissenschaften, Wien.
- HILL M. O., BELL N., BRUGGEMANN-NANNENGA M. A., BRUGUÉES M., CANO M. J., ENROTH J., FLATBERG K. I., FRAHM J.-P., GALLEGO M. T., GARILLETI R., GUERRA J., HEDENÄS L., HOLYOAK D. T., HYVÖNEN J., IGNATOV M. S., LARA F., MAZIMPAKA V., MUÑOZ J. & SÖDERSTRÖM L. 2006. An annotated checklist of the mosses of Europe and Macaronesia. *J. Bryol.* **28**: 198–167.
- JIMÉNEZ J. A. 2006. Taxonomic revision of the genus *Didymodon* Hedw. (Pottiaceae, Bryophyta) in Europe, North Africa and Southwest and Central Asia. *J. Hattori Bot. Lab.* **100**: 211–292.
- KUČERA J. 1998. Determination key to the Czech species of the genus *Didymodon* Hedw. with notes on their ecology and distribution. *Bryonora* **22**: 2–8 (in Czech with English abstract).
- KUČERA J. 2000. Illustrierter Bestimmungsschlüssel zu den mitteleuropäischen Arten der Gattung *Didymodon*. *Meylantia* **19**: 2–48.
- KUČERA J. 2002. Illustrerad bestämningsnyckel till *Didymodon* i norra Europa. *Myrinia* **12**: 2–40.
- LIMPRICHT K. G. 1888. Die Laubmoose Deutschlands, Oesterreichs und der Schweiz. I. Abtheilung: Sphagnaceae, Andreaeaceae, Archidiaceae, Bryineae (Cleistocarpaceae, Stegocarpaceae [Acrocarpaceae]). In: *Dr. L. Rabenhorst's Kryptogamen-Flora von Deutschland, Oesterreich und der Schweiz*. Ed. 2. **4(9)**: 513–576. Verlag von Eduard Kummer, Leipzig.
- LOESKE L. 1934. Ueber einige rheinische *Didymodon*-Formen. Sitzungsber. *Naturhist. Vereins Preuss. Rheinl.* **1932/1933(D)**: 16–19.
- MCCNEILL J., BARRIE F. R., BUCK W. R., DEMOULIN V., GREUTER W., HAWKSWORTH D. L., HERENDEEN P. S., KNAPP S., MARHOLD K., PRADO J., PRUD'HOMME VAN REINE W. F., SMITH G. F., WIERSEMA J. H. & TURLAND N. J. (eds) 2012. *International Code of Nomenclature for algae, fungi, and plants (Melbourne Code), adopted by the Eighteenth International Botanical Congress Melbourne, Australia, July 2011*. *Regnum Vegetabile* **154**. Koeltz Scientific Books, Königstein.
- MEINUNGER L. & SCHRÖDER W. 2007. *Verbreitungsatlas der Moose Deutschlands. Band 2. Akrokarpe Laubmoose: Andreaeaceae bis Splachnaceae*. Oliver Dürhammer für die Regensburgische Botanische Gesellschaft von 1790 e.V., Regensburg.
- MÖLLER H. 1907a. Ett par upplysningar angående den snart utkomande förteckningen öfver Skandinaviens mossor. *Bot. Not.* **1907**: 141–145.
- MÖLLER H. 1907b. *Förteckning öfver Skandinaviens växter utgifven af Lunds Botaniska Förening. 2. Mossor*. C.W.K. Glerup, Lund.

- NYHOLM E. 1956. *Illustrated moss Flora of Fennoscandia*. II. *Musci*. Fasc. 2. CWK Gleerup, Lund.
- OCHYRA R., STEBEL A. & BEDNAREK-OCHYRA H. 2011. *Grimmia teretinervis* (Grimmiaceae) and *Didymodon validus* (Pottiaceae), two moss species new to Poland. In: B. ZEMANEK (ed.), *Geobotanist and taxonomist. A volume dedicated to Professor Adam Zajac on the 70<sup>th</sup> anniversary of his birth*, pp. 47–67. Institute of Botany, Jagiellonian University, Cracow.
- PILOUS Z. & DUDA J. 1960. *Klíč k určování mechorostů ČSR*. Nakladatelství Československé Akademie Věd, Praha.
- PODPĚRA J. 1899. Bryologische Beiträge aus Südböhmen. *Sitzungsber. Königl. Böhm. Ges. Wiss., Math.-Naturwiss. Cl.* **1899**: 1–28.
- PODPĚRA J. 1954. *Conspectus muscorum europaeorum*. Nakladatelství Československé Akademie Věd, Praha.
- SCHLÜSSMAYR G. 2005. Soziologische Moosflora des südöstlichen Oberösterreich. *Stappia* **84**: i–xi + 1–695.
- WARNSTORF C. 1904. Laubmoose. In: BOTANISCHE VEREIN DER PROVINZ BRANDENBURG (ed.), *Kryptogamenflora der Mark Brandenburg und angrenzender Gebiete*. **2**(2): 241–432. Verlag von Gebrüder Borntraeger, Leipzig.
- WIJK R. VAN DER, MARGADANT W. D. & FLORSCHÜTZ P. A. 1962. *Index muscorum*. **2** (D–Hypno). Regnum Vegetabile **26**. International Bureau for Plant Taxonomy and Nomenclature of the International Association of Plant Taxonomy, Utrecht.
- WIJK R. VAN DER, MARGADANT W. D. & FLORSCHÜTZ P. A. 1969. *Index muscorum*. **5** (T–Z, Appendix). Regnum Vegetabile **65**. International Bureau for Plant Taxonomy and Nomenclature of the International Association of Plant Taxonomy, Utrecht.