



Typification of the liverwort Linnaean name *Jungermannia dilatata* (Frullaniaceae)

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Abstract

The liverwort Linnaean name *Jungermannia dilatata*, is investigated and typified on a specimen preserved at LINN (No. 1267.22). The previous proposed lectotypification is incorrect since the designated specimen (a Dillenius' collection preserved at OXF) is not original material.

Keywords Dillenius · *Frullania* · Lectotype · Linnaeus · Typification

Introduction

The genus *Frullania* Raddi (Frullaniaceae Lorch, Marchantiidae Engl.) comprises about 600 species (classified in 11 subgenera) predominately epiphytic with worldwide distribution and centers of diversity in the humid tropics and warm temperate regions of the world (see e.g., Hentschel et al. 2009; Söderström et al. 2015; WFO 2025).

Linnaeus (1753) described two species which are currently recognized under the genus *Frullania*, i.e. *Jungermannia dilatata* L. and *J. tamarisci* L. Both these names were typified, respectively, by Grolle (1970: 613) and Stotler (1968: 637). However, Grolle's proposal is not correct since the designated specimen is not part of the original material and therefore, not eligible as lectotype; the name *Jungermannia dilatata* needs to be typified.

The present research is part of ongoing studies of Italian mosses (see e.g., Aleffi et al. 2023) and the Linnaean names in bryophytes (see e.g., Iamónico and Iberite 2013, 2014).

Material and methods

This research is based on the analysis of relevant literature (protologues included), cited below, and on the examination of specimens preserved at LINN and OXF (code according to Thiers 2026. Nomenclature articles cited throughout the text follow the International

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Code of Nomenclature for algae, fungi, and plants (hereafter the ICN), in its current *Madrid Code* edition (Turland et al. 2025).

Typification of the name

Linnaeus (1753: 1133–1134) validly published the name *Jungermannia dilatata* providing a short diagnosis (“JUNGERMANNIA furculis repentibus, foliis inferne auriculatis duplicato-imbricati, rais apice latioribus”) which was taken directly from his *Flora Suecica* (Linnaeus 1745: 919). In addition, the protologue includes the provenance (“*Habitat in Europa, America, ad arborum truncos*”), as well as three polynomials (synonyms) from Dillenius (1742: 497, “*Lichenastrum imbricatum minus, squamis convexo-concavis*”), Vaillant (1727: 99, “*Hepaticoides, surculis & foliolis thuyae instar compressis, minor*”), and Micheli (1729: 10, “*Muscoides minimum, foliis alternis: superioribus circinnatis, inferioribus cucullatis, flore pediculo ferme carente*”). All these three latter authors published illustrations which are part of the original material for the Linnaean name (Dillenius 1742: t. 72, f. 27 [image at <https://bibdigital.rjb.csic.es/idviewer/10744/664>], Vaillant 1727: t. 19 f. 10 [image available at <https://www.biodiversitylibrary.org/page/628726>], Micheli 1729: t. 6 f. 6 [image available at <https://bibdigital.rjb.csic.es/idviewer/11953/264>]).

Grolle (1970: 613) designated a specimen included in Dillenian’s herbarium at OXF (image available at https://herbaria.plants.ox.ac.uk/bol/MUSCORUM/image/HM-sheet_159a.jpg?Zoom?width=800px&height=800px) as the lectotype of *Jungermannia dilatata*; it should be noted that, although more individuals occur on the OXF sheet, Grolle added a label that clearly identifies four of them as the lectotype (those originally numbered as “27a”). According to Jarvis (2007: 602) and other authors (see e.g., Särkinen & al., 2018: 62), this collection was never studied by Linnaeus since he never saw Dillenius’ herbarium; as a whole, following Jarvis (2007: 126), voucher material in OXF can only support the interpretation of Dillenius’ illustrations. Therefore, OXF specimen would not be original material for the name *Jungermannia dilatata*. At this point, it is important to highlight that the Note 2 of Art. 9.4 of ICN states that “Original material under Art. 9.4(a)–(c) has not necessarily been seen by either the author of the validating description or diagnosis or the author of the name”. So, based on this Note, Grolle’s proposal could be correct [note that another author, Isoviiita (1970: 8, 19), accepted Grolle’s lectotypification]. Further, the footnote 1 to Art. 9.4(b) of ICN reports: “Duplicate specimens of a syntype, lectotype, neotype, and epitype are isosyntypes, isolectotypes, isoneotypes, and isoeptypes, respectively”. The question, therefore, is whether the OXF specimen is a duplicate or not of existing original material. We traced two specimens at LINN (nos. 1267.22! and 1267.23!) bearing some thalli and the following annotations (see Savage 1945: 194): “420” (by Dillenius, on the top-right corner of LINN-1267.22), “*Lichenastrum imbricatum minus R.S. 111*” [by Dillenius, on the left side of LINN-1267.22; “R.S.” refers to Ray’s (1724: 111) *Synopsis methodica stirpium britannicarum*] and “*14 dilatata*” (on the bottom-center of LINN-1267.22; by Linnaeus father), “*Ehrard*” (by Linnaeus son) and “*jungermannia dilatata*” (by Linnaeus father; LINN-1267.23). Since Linnaeus’ father annotation is lacking on specimen LINN-1267.23, we cannot regard it as original material. On the contrary, LINN-1267.22, which includes the *Species Plantarum* number (“14”, annotated by Linnaeus father) is clearly part of the original material and eligible as lectotype. Another interesting and important annotation on LINN-1267.22 is that by J. E. Smith, namely “*non Herb. Dill.*”

No. 27" (just below the exsiccata), which would mean that this specimen is not part of Dillenius' herbarium. This annotation is particularly noteworthy in light of the limited representation of bryophytes in the LINN herbarium. In fact, according to Jarvis (2007: 201), just about 25 specimens of bryophytes occur at LINN; also, the part no. 1 of Savage's Catalogue ("Preface, Introductory sections and Index"; The Linnaean Society of London 2026: xxxi), indicates that only few pieces of specimens are conserved there all referring to the genus *Hypnum* Hedw.

To summarize: 1) The Linnean specimen LINN-1267.22 is original material for *Jungermannia dilatata*; 2) it is not part of the Dillenius herbarium, as annotated by J. E. Smith; 3) the sheet bears an annotation attributable to J. Dillenius, corresponding to part of his original polynomial ("Lichenastrum imbricatum minus"), likely made before the incorporation of the specimen into the Linnaean herbarium. These observations prevent to establish that the liverworts occurring on specimens LINN 1267.22 and OXF are duplicates originating from the same gathering (see Art. 8.2 of ICN). Accordingly, Art. 9.4 of the ICN, and specifically Note 2, does not apply. Therefore, the lectotypification of Grolle (1970) cannot be retained. We here designate LINN-1267.22 as the lectotype of the name *Jungermannia dilatata*. It morphologically corresponds with the current concept of *Frullania dilatata* (L.) Dumort. (Bisang & al., 1988), fully confirming the application of this name.

Frullania dilatata (L.) Dumort., Recueil Observ. Jungerm.: 13. 1835 $\equiv$ *Jungermannia dilatata* L., Sp. Pl. 2: 1134. 1753.

Lectotype (here designated): Herbarium Linneanum (LINN No. 1267.22 Digital image available on: https://linnean.access.preservica.com/uncategorized/IO_692f4e09-fe8b-4d32-b850-507c9dfb5584/).

Author Contributions D.I. prepared the first draft of the paper, searched the relevant literature, and examined the material found. M.A. and L.N.C. read the draft and provided comments and suggestions to reach to the final version.

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Data Availability No datasets were generated or analysed during the current study.

Declarations

Competing interests The authors declare no competing interests.

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References

- Aleffi M, Cogoni A, Poponessi S (2023) An updated checklist of the bryophytes of Italy, including the Republic of San Marino and Vatican City State. *Plant Biosyst* 157:1259–1307. <https://doi.org/10.1080/11263504.2023.2284136>
- Bisang I, Schumacker R, Sérgio C, Grolle R (1988) Clé d'identification des espèces du genre *Frullania* Raddi (Hepaticae) en Europe et en Macaronésie. *G Bot Ital* 122(5–6):255–266. <https://doi.org/10.1080/11263508809429406>
- Dillenius JJ (1742) *Historia muscorum*. Theatro Sheldoniano, Oxonii
- Grolle R (1970) Zur Kenntnis der Frullanien in Europa und Makaronesien. *Wiss z Friedrich-Schiller-Univ Jena, Math-Naturwiss. Reihe* 19:307–319
- Hentschel J, von Konrat MJ, Pócs T, Schäfer-Verwimp A, Shaw AJ, Schneider H, Heinrichs J (2009) Molecular insights into the phylogeny and subgeneric classification of *Frullania* Raddi (frullaniaceae, porellales). *Mol Phylogenet Evol* 52(1):142–156. <https://doi.org/10.1016/j.ympev.2008.12.021>
- Iamonico D, Iberite M (2013) Lectotypification of the Linnaean name *Marchantia hemisphaerica* L. (Aytoniaceae). *Cryptogamie Bryol* 34(1):89–91. <https://doi.org/10.7872/cryb.v34.iss1.2013.89>
- Iamonico D, Iberite M (2014) Lectotypification of the Linnaean names *Riccia fluitans* and *R. natans* (Ricciaceae). *Taxon* 63(2):394–395. <https://doi.org/10.12705/632.9>
- Isoviita P (1970) Dillenius' 'historia muscorum' as the basis of hepatic nomenclature, and S. O. Lindberg's collection of dilleniian bryophytes. *Acta Bot Fenn* 89:4–28
- Jarvis CE (2007) Order out of chaos: Linnaean plant names and their types. Linnean Society of London with the Natural History Museum, London
- Linnaeus C (1745) *Flora Suecica*. Sumtu & literis Laurentii Salvii, Stockholmiae. <https://doi.org/10.5962/bhl.title.714>
- Linnaeus C (1753) *Species Plantarum*, vol. 1. Laurentii Salvii, Holmiae
- Micheli PA (1729) *Nova plantarum genera*. Typis Bernardi Paperini, Florentiae
- Ray J (1724) *Synopsis methodica stirpium britannicarum*. Impensis Gulielmi & Joannis Innys Regiae Societatis Typographorum, in Area Occidentali D. Pauli, Londini
- Särkinen T, Poczei P, Barboza GE, van der Weerden GM, Baden M, Knapp S (2018) A revision of the Old World Black Nightshades (moreloid clade of *Solanum* L., solanaceae). *PhytoKeys* 106:1–223. <https://doi.org/10.3897/phytokeys.106.21991>
- Savage S (1945) *Linnaean Herbarium*. Linnaean Society, London
- Söderström L, Hagborg A, von Konrat M, Bartholomew-Began S, Bell D, Briscoe L, Brown E, Cargill DC, Costa DP, Crandall-Stotler BJ, Cooper ED, Dauphin G, Engel JJ, Feldberg K, Glenn D, Gradstein SR, He X, Heinrichs J, Hentschel J, Ilkiu-Borges AL, Katagiri T, Konstantinova NA, Larraín J, Long DG, Nebel M, Pócs T, Puche FF, Reiner-Drehwald E, Renner MAM, Sass-Gyarmati A, Schäfer-Verwimp A, Moragues JGS, Stotler RE, Sukkharak P, Thiers BM, Uribe J, Váña J, Villarreal JC, Wigginton M, Zhang L, Zhu R-L (2015) World checklist of hornworts and liverworts. *PhytoKeys* 59:1–828. <https://doi.org/10.3897/phytokeys.59.6261>
- Stotler RE (1968) The typification of the genus *Frullania* (hepaticae). *Taxon* 17(6):635–638
- The Linnaean Society of London, 2026. *Herbaria Catalogue*. [accessed 03 April 2026] <https://www.linnean.org/research-collections/herbaria-catalogues>
- Thiers B. 2026-onward [continuously updated]: Index herbariorum. New York Botanical Garden [online]. [accessed 18 March 2026] <http://sweetgum.nybg.org/science/ih/>
- Turland NJ, Wiersma JH, Barrie FR, Gandhi KN, Gravendyck J, Greuter W, Hawksworth DL, Herendeen PS, Klopfer RR, Knapp S, Kusber W-H, Li D-Z, May TW, Monro AM, Prado J, Price MJ, Smith GF, & Zamora Señoret JC. 2025. International Code of Nomenclature for algae, fungi, and plants (Madrid Code). *Regnum Vegetabile* 162. Chicago: University of Chicago Press. <https://doi.org/10.7208/chicago/9780226839479.001.0001>
- Vaillant S. 1727. *Botanicon Parisiense*. A Leide & A Amsterdam: chez Jean & Herman Verbeek & Balthazar Lakeman. <https://doi.org/10.5962/bhl.title.738>
- WFO 2025. World Flora Online. *Frullania* Raddi. [accessed 18 March 2026] from: <http://www.worldfloraonline.org/taxon/wfo-4000015089>