

NOMENCLATURE

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New typifications and synonyms in *Tortula* sect. *Pottia* (*Pottiaceae*, *Musci*)

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Lectotypes are designated for nineteen names applicable to species of *Tortula* sect. *Pottia* (Ehrh. ex Rchb.) Kindb. and one found to refer to *Microbryum starkeanum* (Hedw.) R.H. Zander. Our results show that *Desmatodon gasilienii* Vent., *Pottia lanceolata* var. *lejolisi* Corb., *P. lanceolata* var. *papillosa* Corb., and *Tortula lindbergii* Kindb. ex Broth. are all referable to the species currently known as *Tortula lanceola* R.H. Zander, which must, therefore, be replaced by *Tortula lindbergii*, published a hundred years earlier. *Pottia fleischeri* Warnst. is here considered to be a synonym of *Tortula viridifolia* (Mitt.) Blockeel & A.J.E. Smith and not of *Tortula wilsonii* (Hook.) R.H. Zander as proposed elsewhere. *Pottia littoralis* Mitt., *P. notarisii* Schimp., and *P. propagulifera* Herzog are conspecific with *Tortula pallida* (Lindb.) R.H. Zander. *Pottia lanceolata* var. *leucodonta* Schimp. is synonymized with *Microbryum starkeanum* (Hedw.) R.H. Zander. Another important change involves *Tortula caucasica* Lindb. ex Broth., which is considered to be conspecific with *Tortula modica* R.H. Zander, and must replace that name.

KEYWORDS: *Bryophyta*, lectotypes, *Microbryum*, nomenclature, *Pottia*, *Pottiaceae*, *Tortula*, *Tortula caucasica*, *Tortula lindbergii*

INTRODUCTION

The genus *Pottia* (Ehrh. ex Rchb.) Fűrnr. was considered a heterogeneous assembly of taxa by Zander (1993), who segregated the species with conic opercula (conostegiae) into the genus *Microbryum* Schimp. and treated those with rostrate opercula (rhynchostegiae) as *Tortula* sect. *Pottia* (Ehrh. ex Rchb.) Kindb., where he also included other species of *Tortula* Hedw. not previously associated with *Pottia*. According to Zander, the diagnostic features for this section are leaves with usually acute apices and short yellow-brown awns (rarely hyaline-awned); large (ca. 15–20 µm wide) upper leaf cells, usually smooth, rarely weakly papillose; costa (as seen in cross section) with guide cells and 2–3 ventral epidermal cells that are commonly bulging individually or arranged in longitudinal rows as low lamellae and are usually smooth or with one or two simple papilla; and the peristome often rudimentary or absent. Although these morphological features are more variable than indicated by Zander (1993), especially the upper leaf cells, which can be larger (ca. 30 µm wide in *T. viridifolia*) and conspicuously papillose (up to 7(10) bifurcate papillae in *T. viridifolia* and *T. wilsonii*), or the sporophyte, which can have a fully developed peristome (e.g., *T. lindbergii*), molecular data by Werner & al. (2002, 2004) have confirmed the polyphyletic origin

of the taxa previously included in *Pottia*, and support the new classification proposed by Zander (1993).

For this work we have studied the nomenclatural types of the names of the European species included by Warnstorf (1916) in his monograph of *Pottia*, treated here as members of *Tortula* sect. *Pottia*. Only three species names in the group had been typified previously: *Pottia lanceolata* (Hedw.) Müll. Hal. and *P. truncata* (Hedw.) Bruch & Schimp. by Margadant & Geissler (1995), and *P. pallida* Lindb. by Guerra & Ros (1988). We have also studied the types of the names of the more frequently treated infraspecific taxa in European floras, for which type specimens were available. The goals of this study are thus (1) to typify the names in the group for which no types have been designated previously, (2a) if the name was in current use, to check that the type refers to the taxon concerned, (2b) if the name has been synonymized or otherwise fallen into disuse, to establish the taxon to which it should be referred, and (3) in the latter case, propose the appropriate synonymy according to the rules of nomenclature.

The names being typified (i.e., the basionyms) are listed in alphabetical order, followed by all the published homotypic synonyms in chronological order of publication; where our taxonomic study showed that the name typified is a taxonomic synonym of another name, the correct name for the taxon is in boldface.

■ TYPIFICATION

1. *Desmatodon gasilienii* Vent. in Rev. Bryol. 21: 75. 1894 ≡ *Desmatodon nervosus* var. *gasilienii* (Vent.) Husn., Muscol. Gall.: 434, Tab. 125. 1894 ≡ *Pottia lanceolata* var. *gasilienii* (Vent.) Corb. in Rev. Bryol. 22: 34. 1895 ≡ *Tortula atrovirens* var. *gasilienii* (Vent.) Limpr., Laubm. Deutschl. 3: 703. 1901 ≡ *Barbula atrovirens* var. *gasilienii* (Vent.) Cas.-Gil, Fl. Ibér. Brióf., Musg.: 293. 1932 ≡ *Desmatodon convolutus* var. *gasilienii* (Vent.) Wijk & Margad. in Taxon 8: 73. 1959 – Type: [France] Bords de la mer Boulogne, Juillet 1894 *Frère Gasilien* (lectotype, designated here, TR!; isolectotype, CHE!) (= *Tortula lindbergii* Broth. in Acta Soc. Sci. Fenn. 19(12): 44. 1893 **syn. nov.**).

The specimen in Venturi's herbarium (TR) perfectly matches the protologue. In Corbière's herbarium (CHE) there is a small duplicate with an attached letter from Venturi in which he justified the description of a new species. In this letter Venturi stated that the peristome is not much different from that of *Barbula atrovirens*, but the shape and anatomy of the leaves, as well as their rigidity when dry, justify its segregation as a new species. A year later, and although some authors had considered the taxon related to *Tortula atrovirens*, Corbière (1895) published a note in which he treated it as *Pottia lanceolata* var. *gasilienii* (Vent.) Corb. After studying the types in TR and CHE, we agree with Corbière that the taxon is more similar to *Tortula lanceola* (≡ *Pottia lanceolata*) (here considered a synonym of *T. lindbergii*) than to *T. atrovirens*. Indeed, we think that the differences used to justify its varietal status (smaller size, stiffer habit, and leaves more densely arranged, shorter, oblong-obovate to subspathulate, disposed in eight ranks) do not merit recognition at any taxonomic level, as they are also found usually in *Tortula lindbergii* growing in dry habitats.

2. *Encalypta lanceolata* Hedw., Sp. Musc. Frond.: 63. 1801 ≡ *Bryum lanceolatum* (Hedw.) With., Syst. Arr. Brit. Pl. (ed. 4) 3: 807. 1801 ≡ *Grimmia lanceolata* (Hedw.) F. Weber & D. Mohr, Index Mus. Pl. Crypt.: 2. 1803 ≡ *Weissia lanceolata* (Hedw.) D. Mohr in Ann. Bot. (König & Sims) 2: 545. 1806 ≡ *Coscinodon lanceolatus* (Hedw.) Brid., Muscol. Recent. Suppl. 4: 49. 1819 [1818] ≡ *Anacalypta lanceolata* (Hedw.) Nees & Hornsch., Bryol. Germ. 2(2): 141. 1831 ≡ *Dermatodon lanceolatus* (Hedw.) Huebener, Muscol. Germ.: 112. 1833 ≡ *Didymodon lanceolatus* (Hedw.) Bals.-Criv. & De Not., Syn. Musc. Mediol.: 18. 1833 ≡ *Desmatodon lanceolatus* (Hedw.) Bruch ex De Not., Syl-lab. Musc.: 205. 1838 ≡ *Pottia lanceolata* (Hedw.) Müll. Hal., Syn. Musc. Frond. 1: 548. 1849 ≡ *Tortula lanceolata* (Hedw.) Lindb., Musci Scand.: 21. 1879, nom. illeg., non (Hedw.) P. Beauv. (1805) ≡ *Tortula*

lanceola R.H. Zander in Bull. Buffalo Soc. Nat. Sci. 32: 223. 1993 – Type: “*Leersia lanceolata* Hedw. St. Crypt. Vol. II p. 66 t. 23. Lips. lect.” (lectotype, designated by Geissler in Margadant & Geissler 1995, G!) (= *Tortula lindbergii* Broth. in Acta Soc. Sci. Fenn. 19(12): 44. 1893).

This taxon is better known as *Pottia lanceolata*, the name used in most floras, or *Tortula lanceola*, the name created by Zander (1993) to avoid homonymy with *T. lanceolata* (Hedw.) P. Beauv. (= *Barbula unguiculata* Hedw.) when transferred to *Tortula*. Our study of the relevant types confirms the application of this name, but shows that *Tortula lindbergii* is referable to the same species, for which it is, therefore, the correct name (see n° 21 below).

3. *Entosthymenium mucronifolium* Bruch in F.A. Müller in Flora 12(2): 387. 7 Jul 1829 ≡ *Anacalypta lanceolata* var. *angustata* Bruch & Schimp., Bryol. Eur. 2: 48, Tab. 125 III figs. 1–13. 1843 ≡ *Pottia lanceolata* var. *angustata* (Bruch & Schimp.) Müll. Hal., Syn. Musc. Frond. 1: 549. 1849 ≡ *Pottia wilsonii* var. *mucronifolia* (Bruch) Warnst. in Hedwigia 58: 129. 1916, nom. superfluous ≡ *Tortula lanceola* var. *angustata* (Bruch & Schimp.) R.H. Zander in Bull. Buffalo Soc. Nat. Sci. 32: 223. 1993 ≡ *Tortula wilsonii* var. *mucronifolia* (Bruch) R.H. Zander in Bull. Buffalo Soc. Nat. Sci. 32: 227. 1993, nom. superfluous. Type: [Turkey] bei Smyrna, *Fleischer*, 1827 (lectotype, designated here, BM-Bruch!) (= *Tortula wilsonii* (Hook.) R.H. Zander in Bull. Buffalo Soc. Nat. Sci. 32: 227. 1993).

Entosthymenium mucronifolium and *Anacalypta lanceolata* var. *angustata* are unequivocally based on the same type: the former was cited as a synonym in the protologue of the latter and both were based by Bruch on the same material collected by Fleischer in Smyrna in 1827. The locality, collector, and some of the distinguishing morphological characters mentioned in both protologues (e.g., “peristomii dent. obsoletis” or “capsula graciliore”), as well as “var. β”, are handwritten in the label of the selected lectotype. Although the epithet *mucronifolium* has priority over *wilsonii* (7 July vs. September 1829, see species n° 5 below) it cannot be adopted in *Tortula*, as the name is pre-occupied (by *T. mucronifolia* Schwägr.). Zander (1993), when transferring the species from *Pottia* to *Tortula* was not aware of the homotypic nature of *E. mucronifolium* and *A. lanceolata* var. *angustata* and proposed two new combinations: *Tortula wilsonii* var. *mucronifolia* (Bruch) R.H. Zander and *Tortula lanceola* var. *angustata* (Bruch & Schimp.) R.H. Zander; the former is superfluous, but not illegitimate as the basionym (*E. mucronifolium*) is legitimate.

The specimen designated as lectotype (BM 000670328) has leaves that are ovate-oblong to ovate-

lanceolate or more rarely spatulate, upper leaf cells 12–14 µm wide, abundantly papillose, capsules with a rudimentary peristome, and spores 16–20 µm in diameter. It matches *Tortula wilsonii*, but not *T. lindbergii*, the species of which *T. lanceola* is now shown to be a synonym, which has smooth or nearly smooth leaf cells, sometimes with only 1–2(3) papillae per cell, and capsules with a well developed peristome. According to Warnstorf (1916: 129), *Pottia wilsonii* var. *mucronifolia* differs from typical *T. wilsonii* only by the leaves—“auffallend kurze, oval-zungenförmige Schopfbblätter”, that is, by the oval-lingulate, markedly short upper leaves. However, leaf length is such a variable feature in *T. wilsonii* that, in our opinion, specimens with oval-lingulate leaves do not deserve recognition at any taxonomic level, and therefore *Entosthymenium mucronifolium* is reduced entirely to synonymy under *Tortula wilsonii*.

4. *Gymnostomum intermedium* Turner, Musc. Hibern. Spicil.: 7, pl. 1 figs. a–c. 1804 ≡ *Gymnostomum truncatum* var. *majus* F. Weber & D. Mohr, Bot. Taschenbuch: 81. 1807 ≡ *Pottia intermedia* (Turner) Fűrnr. in Flora 12(2) Ergänzungsblätter: 13. 1829 ≡ *Gymnostomum truncatum* var. *intermedium* (Turner) Hartm., Handb. Skand. Fl. ed. 3: 263. 1838 ≡ *Pottia truncata* var. *major* (F. Weber & D. Mohr) Bruch & Schimp., Bryol. Eur. 2: 37, Tab. 121b (fasc. 18–20 Mon. 9. 5 b). 1843 ≡ *Pottia truncata* var. *intermedia* (Turner) Ångström, Summa Veg. Scand. 1: 94. 1845 ≡ *Pottia eustoma* var. *major* (F. Weber & D. Mohr) Müll. Hal., Syn. Musc. Frond. 1: 554. 1849 ≡ *Pottia lanceolata* var. *intermedia* (Turner) Milde, Bryol. Siles.: 98. 1869 ≡ *Pottia truncatula* var. *major* (F. Weber & D. Mohr) Brockm., Arch. Vereins Freunde Naturgesch. Mecklenburg 23: 72. 1870 ≡ *Pottia lanceolata* var. *gymnostoma* Schimp., Syn. Musc. Eur. ed. 2: 158. 1876, nom. illeg. incl. var. prior. ≡ *Tortula intermedia* (Turner) Lindb., Musci Scand.: 21. 1879, nom. illeg., non (Brid.) De Not. (1838) ≡ *Tortula truncatula* subsp. *intermedia* (Turner) Kindb., Bih. Kongl. Svenska Vetensk.-Akad. Handl. 7(9): 134. 1883 ≡ *Pottia truncatula* subsp. *intermedia* (Turner) Dixon, Stud. Handbook Brit. Mosses: 170. 1896 ≡ *Pottia truncata* subsp. *intermedia* (Turner) Bouvet in Bull. Soc. Étud. Sci. Angers 26: 86. 1896 ≡ *Pottia lanceolata* subsp. *intermedia* (Turner) Kindb., Eur. N. Amer. Bryin. 2: 282. 1897 ≡ *Tortula modica* R.H. Zander in Bull. Buffalo Soc. Nat. Sci. 32: 226. 1993 – Type: [no locality indicated] *Hemsley*, March 1803” (neotype, designated here, BM-Hooker!) (= *Tortula caucasica* Broth. in Acta Soc. Sci. Fenn. 19(12): 43. 1893 **syn. nov.**).

In the protologue, *G. intermedium* is said to have been found near Yarmouth (“... nisi abundatèr utrumque prope Yarmouth reperiatur...”). Nevertheless, no collection

from this locality was found in BM. We have selected one specimen in Hooker’s herbarium collected before Turner’s publication. The specimen matches the morphological features described in the protologue, especially those related to the capsule, described as “... ore vix dilatate, truncatae;...” [mouth scarcely widened, truncate].

Since Zander’s (1993) monumental monograph of *Pottiaceae*, the name used for this species in the genus *Tortula* has been *T. modica* because of the pre-existing *T. intermedium*. Our results show that this species is conspecific with *T. caucasica* (see n° 20 below), published a hundred years earlier, and so a name with priority when the species is treated in *Tortula*. Because of this need to change a name in current use, we considered the possibility of conservation of *T. modica*, but the name was coined only 14 years ago and its usage has been limited and exclusively taxonomic, for which reasons we do not think that conservation of the name is justified and so we adopt *T. caucasica*.

The distinction between *Tortula caucasica* and *T. truncata* is not always clear. They mainly differ in capsule shape, which is cylindrical in *T. caucasica* and cyatiform in *T. truncata*. However, there are collections and even single specimens where both forms of capsule are intermingled without correlation to any other morphological feature. Chen (1941), based on the degree of peristome development, considered that both *T. truncata* and *T. caucasica* derived from *T. lindbergii*, *T. caucasica* being a transitional expression between the other two (as *Pottia truncatula*, *P. intermedia*, and *P. lanceolata*, respectively). The peristome is fully developed in *T. lindbergii*, which was interpreted by Chen as a primitive character, whereas the reduced peristome of *T. caucasica* and the absent or almost absent peristome of *T. truncata* were considered derived characters, originated by reduction in response to environmental conditions. His views were supported by Zander (1993), who considered that, in the *Pottiaceae*, the degree of reduction of the peristome was as easily influenced by selection as traits of the gametophyte.

5. *Gymnostomum wilsonii* Hook., Bot. Misc. 1: 143, pl. 41 figs. 1–8. 1829 [Sep] ≡ *Pottia wilsonii* (Hook.) Bruch & Schimp., Bryol. Eur. 2: 39, Tab. 122 figs. 1–15. 1843 ≡ *Pottia mittenii* Corb. in Mém. Soc. Sci. Nat. Cherbourg 26: 234. 1889, nom. illeg. incl. sp. prior. ≡ *Pottia crinita* subsp. *wilsonii* (Mitt.) Kindb., Eur. N. Amer. Bryin. 2: 281. 1897 ≡ *Tortula wilsonii* (Hook.) R.H. Zander in Bull. Buffalo Soc. Nat. Sci. 32: 227. 1993 – Type: [United Kingdom] Over in Cheshire, *W. Wilson* (lectotype, designated here, BM!).

Two localities are mentioned in the protologue: “In Anglia ad terram, prope ‘Over’ in comitatu Cheshire. *D. Gul. Wilson*. In arvis apud Forfar, Scotiae. *Drummond*. Fruct. fert. Jan.” In BM there is only one specimen matching the information in the protologue, and this specimen

has been selected as lectotype. Although we could not find any specimen from Forfar collected by Drummond, any such would in fact pertain to *Tortula viridifolia* (cf. Wilson 1855, sub *Pottia crinita*).

The diagnostic characters commonly used to separate this species from other closely related are the reduced or incomplete peristome teeth, with 3 joints or less and shorter than 180 µm, and sometimes just reduced to the basal membrane, upper laminal cells 10–18 µm wide and distinctly papillose, and spores 16–24.5 µm in diameter.

6. *Pottia asperula* Mitt. in J. Bot. 9: 4. 1871 ≡ *Pottia crinita* subsp. *asperula* (Mitt.) Kindb., Eur. N. Amer. Bryin. 2: 281. 1897 ≡ *Pottia mittenii* var. *asperula* (Mitt.) Corb. in Mém. Soc. Sci. Nat. Cherbourg 26: 236. 1889 ≡ *Tortula wilsonii* var. *asperula* (Mitt.) R.H. Zander in Bull. Buffalo Soc. Nat. Sci. 32: 227. 1993 – Type: [United Kingdom] Penzance, Curnow 12/71. (lectotype, designated here, NY 714739!, isolectotype BM!) (= *Tortula wilsonii* (Hook.) R.H. Zander in Bull. Buffalo Soc. Nat. Sci. 32: 227. 1993).

The protologue indicates several syntypes: “Henfield, Sussex, near Penzance, in several places, *Mr. Curnow*; Jersey, *M. Piquet*; also in Wilson’s Musc. Brit. with *P. truncata* n. 90.” In Mitten’s original herbarium at NY three syntype specimens were found: two of them collected by W. Curnow in Penzance (NY 714738 and NY 714739) and the third, a specimen of Wilson’s “Musci Britannici” n. 90 exsiccata (NY 714737). Any of the two latter are appropriate for lectotypification, although NY 714737 (Wilson’s “Musci Britannici” n. 90), as stated in the protologue, mostly contains *Pottia truncata* (= *Tortula truncata*) with only a few stems of *Pottia asperula*.

In the protologue, Mitten (1871) compared *P. asperula* to *P. truncata*, stating that the former had more obscure leaves due to the roughness of the cells. He also pointed out that *P. asperula* could be confused with gymnostomous expressions of *P. lanceolata*, although he stated that both are too different to be mistaken. Nevertheless, he did not discuss its differences with *T. wilsonii*, morphologically its closest relative.

Contrary to Zander (1993), who treated this taxon as *Tortula wilsonii* var. *asperula*, our observations on the syntype specimens supports the treatments of Corley & al. (1981) and Smith (1978) in not distinguishing *P. asperula* from *P. wilsonii* at any rank.

7. *Pottia crinita* Bruch & Schimp., Bryol. Eur. 2: 43, Tab. 123 figs 1–14 (fasc. 42 Monogr. Suppl. 1: 1, Tab. suppl. 1). 1849 ≡ *Pottia mittenii* var. *crinita* (Bruch & Schimp.) Corb. in Mém. Soc. Sci. Nat. Cherbourg 26: 236. 1889 ≡ *Pottia wilsonii* var. *crinita* (Bruch & Schimp.) Warnst. in Hedwigia 58: 128. 1916 ≡

Tortula wilsonii var. *crinita* (Bruch & Schimp.) R.H. Zander in Bull. Buffalo Soc. Nat. Sci. 32: 227. 1993 – Type: [United Kingdom] Coast of Scotland, near Aberdeen, Mar 1844, *Wilson* (lectotype, designated here, BM-Schimper 000670340a!) (= *Tortula viridifolia* (Mitt.) Blockeel & A.J.E. Sm. in J. Bryol. 20: 66. 1998).

The protologue indicates “In terra humoso-arenosa ad littus scoticum prope *Aberdeen*, ubi auctumno 1843 et vere 1844 clar. W. Wilson legit, ad littus cornvallense (Ralfs).” In Schimper’s herbarium (BM) are three collections agreeing with the protologue. Two of them were collected in Aberdeen by Wilson, one in December 1843 and the other in March 1844. Both include several small envelopes containing one to few plants each. We have selected as lectotype one of the small envelopes included in BM 000670340, collected in March 1844, and that we have annotated with the letter “a”. It is impossible to ascertain if the other samples within this envelope are duplicates of the lectotype, so we have annotated them as syntypes. The other collection from Aberdeen (BM 000670342) also contains several small envelopes, which have been considered syntypes, as also Ralph’s collection from Cornwall (BM 000670341).

The epithet *crinita* is pre-occupied in *Tortula* by *T. crinita* (De Not.) De Not. (= *Syntrichia intermedia* Brid., cf. Ochrya 1994), which makes it unavailable for *Pottia crinita*.

8. *Pottia cuneifolia* Solms ex Schimp., Syn. Musc. Eur. ed. 2: 154. 1876 ≡ *Tortula zoddæ* R.H. Zander in Bull. Buffalo Soc. Nat. Sci. 32: 226. 1993 – Type: [Portugal] “Tavira” *H. GR. Z. Solms*, 1866 Flora Lusitanica Algarve (lectotype, designated here, BM-Schimper!) (= *Tortula pallida* (Lindb.) R.H. Zander in Bull. Buffalo Soc. Nat. Sci. 32: 226. 1993).

The locality mentioned in the protologue is *Alvira* Algarviae, what seems to be a misspelling for Tavira, because the latter one is a known locality in Algarve (southern Portugal), whereas Alvira cannot be found as a place name.

The morphological features of the lectotype point to *Tortula pallida*: plants reddish-yellowish, leaf apex acute to obtuse, upper laminal cells smooth, seta yellowish, at least above, and capsules cylindrical. Also the collection locality is near the coast, as is typical for this taxon. Warnstorf (1916) suggested that this species could be only an expression of *P. pallida* (= *Tortula pallida*), although he did not synonymize it formally because he did not see any original material. Roth (1904–1905) considered *P. cuneifolia* closely allied to *T. viridifolia*, but the papillose leaves of the latter precludes any real relationship between them. Sérgio (2002) studied the original material of *Pottia cuneifolia* in BM and concluded that it corresponds to

Pottia pallida, not to *Pottia crinita* as suggested by Corley & al. (1981) following Roth (1904–1905), but she did not lectotypify the name.

Zander (1993) transferred this name to *Tortula* as *T. zoddae* R.H. Zander without studying its type, and consequently he did not realize that this name and *T. pallida* should be applied to the same taxon, for which *T. pallida* is the earliest available name.

9. *Pottia fleischeri* Warnst. in Beih. Bot. Centralbl. 16: 237, Tab. 10 fig. 2. 1904 – Type: [France] Corsica: Ajaccio, an Grabenrändern, *M. Fleischer* 24. 2. 1894, Fleischer & Warnstorf, *Bryotheca europaea meridionalis* n° 23 p.p. [plants with papillose upper laminal cells] (lectotype, designated here, FH!) (= *Tortula viridifolia* (Mitt.) Blockeel & A.J.E. Sm. in J. Bryol. 20: 66. 1998 **syn. nov.**).

The materials distributed as *Bryotheca europaea meridionalis* n° 23 were first described as *Pottia intermedia* var. *corsa* M. Fleisch. & Warnst. (Fleischer & Warnstorf, 1896; see next name treated in this paper), and characterized as having smooth upper leaf cells. Later, Warnstorf realized that *Bryotheca europaea meridionalis* n° 23 included in fact a mixture of plants with smooth or papillose cells, and segregated the plants with papillose upper leaf cells to his new *P. fleischeri*. Afterwards he (Warnstorf, 1916) considered it to be a synonym of *Pottia wilsonii*, a view followed by Wijk & al. (1967), which resulted in that the name has not been considered in any sense in the bryological literature. We have, however, identified these papillose plants as *Tortula viridifolia*, which can be distinguished from *Tortula wilsonii* (= *Pottia wilsonii*) by its wider upper laminal cells ([12]18–28 µm vs. 10–18 µm) and bigger spores ([18]22–32 µm vs. 16–24,5 µm).

10. *Pottia intermedia* var. *corsa* M. Fleisch. & Warnst. in Bot. Centralbl. 65: 299. 1896 ≡ *Tortula modica* var. *corsa* (M. Fleisch. & Warnst.) R.H. Zander in Bull. Buffalo Soc. Nat. Sci. 32: 226. 1993 – Type: [France] Corsica: Ajaccio, an Grabenrändern, *M. Fleischer* 24. 2. 1894, Fleischer & Warnstorf, *Bryotheca europaea meridionalis* n° 23 p.p. [plants with smooth upper laminal cells] (Lectotype, designated here, FH!) (= *Tortula pallida* (Lindb.) R.H. Zander in Bull. Buffalo Soc. Nat. Sci. 32: 226. 1993).

This was the name originally used for the material distributed by Fleischer and Warnstorf in their exsiccata *Bryotheca europaea meridionalis* n° 23, described as having smooth upper leaf cells, although subsequently Warnstorf (1904) realized that they also included plants with papillose leaf cells that were described as *P. fleischeri* (see above under that entry). Paris (1905: 91) misspelled the name as “*P. intermedia* var. *corsica*” which has no

nomenclatural status. Later, Warnstorf (1916: 108, 111) considered *P. intermedia* var. *corsa* to be a synonym of *P. notarisii*, but also included this name among the synonyms of *Pottia pallida*. In spite of this incongruence, we concur with his view, and consider both *P. intermedia* var. *corsa* and *P. notarisii* to be synonyms of *Tortula pallida* (see also below, under n° 15 *P. notarisii*).

The plants selected as lectotype are the most abundant in *Bryotheca europaea meridionalis* n° 23, and fit the description in the protologue. However, they are indistinguishable from typical *Tortula pallida*: pale in color, with lingulate to spatulate leaves, costa shortly excurrent (up to 200 µm) or rarely ending below the apex, margins recurved in the basal 3/4 of leaf length, upper laminal cells smooth or slightly papillose, paroicous sexual condition, cylindrical gymnostomous capsules, and papillose spores 26–28 µm in diameter. The upper leaves, considered in the protologue to be wider and longer than the “Normalform”, also match those usually found in typical *Tortula pallida*.

Zander (1993) transferred this taxon to *Tortula* as *T. modica* var. *corsa* without studying its type.

11. *Pottia lanceolata* var. *lejolisia* Corb. in Mém. Soc. Sci. Nat. Cherbourg 26: 238. 1889 ≡ *Tortula lanceola* var. *lejolisia* (Corb.) R.H. Zander in Bull. Buffalo Soc. Nat. Sci. 32: 223. 1993 – Type: [France] Vauville, sur un mur de clôture dans un champ – 27/1-1887 (lectotype, designated here, CHE!) (= *Tortula lindbergii* Broth., Acta Soc. Sci. Fenn. 19(12): 44. 1893 **syn. nov.**).

The specimen selected as lectotype is the only one of this taxon found at CHE, where Corbière’s original herbarium is kept. The locality and collection date indicated in the label is one of the two mentioned in the protologue. No collector was mentioned either in the specimen or in the protologue.

According to Corbière, his new taxon was distinguished from the typical variety mainly by the scabrous calyptra. The only remarkable characters observed by us in the type are the papillose upper laminal cells, with 0–1(2) papillae. Nevertheless, from our experience calyptra and laminal papillosity are not of taxonomic value for this species, and we include this taxon in the range of usual variability of *Tortula lindbergii* (= *T. lanceola*).

Zander (1993) made the combination *Tortula lanceola* var. *lejolisia* (Corb.) R.H. Zander without studying its type.

12. *Pottia lanceolata* var. *leucodonta* Schimp., Syn. Musc. Eur. ed. 2: 158. 1876 ≡ *Pottia lanceolata* subsp. *leucodonta* (Schimp.) Boulay, Musc. France 1: 473. 1884 ≡ *Tortula lanceola* var. *leucodonta* (Schimp.) R.H. Zander in Bull. Buffalo Soc. Nat. Sci. 32: 223. 1993 – Type: [France] “Hyères (Var.) au pied du fenouil-

let, 25–3.65, talus argileaux (lectotype, designated here, BM-Schimper 000852993!) (= *Microbryum starkeanum* (Hedw.) R.H. Zander in Bull. Buffalo Soc. Nat. Sci. 32: 240. 1993 **syn. nov.**).

This name was first published without description (and thus not validly so), by Bescherele (1865: 135), who made public Schimper's opinion ("Schp. in litt.") about "*Pottia leucodonta*" being a new species. Eleven years later, Schimper himself validly published the new taxon as a variety of *Pottia lanceolata*, but without stating a definite locality ("...in Europa meridionali."). There are three specimens in Schimper's and Bescherele's original herbaria (BM) named *Pottia leucodonta* from "Hyères", the locality in Bescherele's original publication: BM 000852985, BM 000852990, and BM 000852993. The three are all referable to *Microbryum starkeanum* by their wide ovate-lanceolate leaves, basal cells of leaf not inflate, numerous c-shaped papillae in the upper laminal cells, conic operculum, and wavy spores in outline with protuberances regularly distributed; we have selected the number BM 000852993 as lectotype because it is the most abundant and best preserved specimen.

13. *Pottia lanceolata* var. *papillosa* Corb. in Mém. Soc. Sci. Nat. Cherbourg 26: 237. 1889 ≡ *Tortula lanceola* var. *papillosa* (Corb.) R.H. Zander in Bull. Buffalo Soc. Nat. Sci. 32: 226. 1993 – Type: [France] Pieux, Sciotot, haies du littoral, 7/3-1886 (lectotype, designated here, CHE!) (= *Tortula lindbergii* Broth. in Acta Soc. Sci. Fenn. 19(12): 44. 1893 **syn. nov.**).

The specimen selected as lectotype is the only one of this taxon found at CHE. The locality in the label is one of the two mentioned in the protologue, although it does not include collection date. No collector is indicated either on the specimen label or in the protologue.

In the original description the author stated that this taxon is intermediate between the typical variety and *P. lanceolata* var. *lejolissii*, and stressed some diagnostic features (e.g., leaf cells very chlorophyllose and papillose, very papillose and barely excurrent costa, capsules half the size, and calyptra smooth). The study of the lectotype shows that the most conspicuous character is that of strongly papillose upper laminal cells, having 1–3 conic, simple papillae each one. Nevertheless, all the characters exhibited by the lectotype, including leaf papillosity, are, from our experience, within the range of variability of *Tortula lindbergii* (= *T. lanceola*). Leaf cells in this taxon range from smooth to papillose. The papillae, when present, are 1–3 per cell, and always simple. *Tortula lindbergii* can be confused with *Tortula guepinii* (Bruch & Schimp.) Broth., but the latter has upper cells with 4–6 bifurcate (C shaped) papillae per cell, and a peristome of 16 teeth pairs, with filiform regular segments, sometimes anastomosed but without perforations or interruptions. In contrast, *T.*

lindbergii has an irregularly cleft peristome, with 2(3) longitudinal segments, very often anastomosed, perforated and interrupted (Ros & Werner, 2005).

Zander (1993) made the combination *Tortula lanceola* var. *papillosa* (Corb.) R.H. Zander, without seeing the type.

14. *Pottia littoralis* Mitt. in J. Bot. 9: 4. 1871 ≡ *Pottia lanceolata* subsp. *littoralis* (Mitt.) Kindb., Eur. N. Amer. Bryin. 2: 282. 1897 ≡ *Pottia intermedia* var. *littoralis* (Mitt.) Corb. in Mém. Soc. Sci. Nat. Cherbourg 26: 232. 1889 ≡ *Pottia truncata* var. *littoralis* (Mitt.) Warnst. in Hedwigia 58: 117. 1916 ≡ *Pottia truncatula* subsp. *littoralis* (Mitt.) J.J. Amann, Fl. Mouss. Suisse 2: 89. 1918 ≡ *Tortula truncata* var. *littoralis* (Mitt.) R.H. Zander in Bull. Buffalo Soc. Nat. Sci. 32: 226. 1993 – Type: [United Kingdom] "on the beach between Aldrington and Kingston near Brighton" (lectotype, designated here, NY 607519!, isolectotypes, NY 607516!, NY 607517!, NY 607518!, BM 000725105!) (= *Tortula pallida* (Lindb.) R.H. Zander in Bull. Buffalo Soc. Nat. Sci. 32: 226. 1993 **syn. nov.**).

Mitten's original herbarium (NY) includes a sheet with five syntypes, four from Aldrington and one from Hastings. We have selected as lectotype one of the specimens collected by Mitten and illustrated by him in the herbarium sheet to show all the diagnostic characters of *P. littoralis*. In BM there is one specimen from Aldrington and another from Hastings, another locality mentioned in the protologue, but the latter is *Tortula truncata* and is not considered suitable as type.

Warnstorf (1916) distinguished *Pottia pallida* from *P. littoralis* (as *P. truncata* var. *littoralis*) by the shape of the leaves widely spatulate with rounded apex, plane to narrowly recurved margins, cylindrical capsules, seta 5–8 mm long, yellowish when young, and paroicous sexual condition. However, all these characters can be also found in *Pottia littoralis*. Consequently, we conclude that there are not stable morphological differences allowing the separation of the two taxa.

Zander (1993) considered *Tortula pallida* different from *T. truncata* var. *littoralis*, although this could be due to the fact that he did not study the type of the latter.

15. *Pottia notarisii* Schimp., Syn. Musc. Eur. ed. 2: 851. 1876 – Type: [Italy] Sardinien, Müller (lectotype, designated here, "*Pottia crinita* Wils/Sardinia/leg: Müller [illegible]/aus *Pottiam ovatam* DN.", RO-De Notaris!) (= *Tortula pallida* (Lindb.) R.H. Zander in Bull. Buffalo Soc. Nat. Sci. 32: 226. 1993 **syn. nov.**).

Schimper (1876) described *Pottia notarisii* from Sardinian specimens treated by De Notaris (1869) as *Pottia crinita* Wils. Both De Notaris and Schimper mentioned three different specimens, one collected by Franz

August Müller in 1827 during *Unio Itineraria* botanizing expeditions between 1826 and 1828 to southern Europe, another by Giuseppe De Notaris in 1835, and a third one by Patricio Gennari in 1858, all located in De Notaris's original herbarium at RO. The herbarium sheet labeled *Pottia notarisii* contains four specimens, all of them belonging to the same species. We have selected as lectotype the specimen in the lower right corner, one of the best preserved. Although no date is indicated, the collector and the locality fits with one of the syntypes mentioned in the protologue.

De Notaris (1869) identified all the syntypes as *Pottia crinita*, and Roth (1904–1905) also considered them closely related to this species, but he did not synonymize the two names. The latter opinion was supported by Corley & al. (1981), who considered *T. notarisii* a doubtful species. From Schimper's precise description it can be deduced that these plants correspond in fact to *Tortula pallida*, which was confirmed after the study of the type. The plants are paroicous or autoicous, pale in color, have leaves spatulate, ovate-lanceolate or lingulate, very often obtuse or rounded at apex, smooth upper laminal cells, cylindrical gymnostomous capsules, and always grow near to the sea coast. Warnstorf (1916) mentioned as an important character in this species, also found in the type material of *Pottia intermedia* var. *corsa*, the presence of long marginal cells in the lower half of leaves. However, these are also often observed in *Tortula pallida* and thus cannot be used as a distinguishing trait for *Pottia notarisii*.

16. *Pottia pallida* Lindb. in Öfvers. Förh. Kongl. Svenska Vetensk.-Akad. 21: 220. 1864 (“*Pottia pallida* var. *brevicuspis* Warnst.” in Hedwigia 58: 113. 1916, non rite publ. [Art. 26.2; type variety for *P. pallida*]) ≡ *Tortula pallida* (Lindb.) R.H. Zander in Bull. Buffalo Soc. Nat. Sci. 32: 226. 1993 – Type: [Spain] La Cortadura pr. Cadiz, Febr. 1852, *J. Lange* (lectotype, designated here, H-SOL n° 2018 001!; isolectotype, BM-Wilson!).

The specimen selected as lectotype is the only one in H-SOL labeled *Pottia pallida* and collected by Lange in La Cortadura (Cádiz, Spain). Although the protologue states 1851 as collection year, this is in error. Lange's collecting trip through Spain started in the Pyrenees in July 1851, and he collected in Andalusia (S-Spain) around Dec 1851–Apr 1852, which agrees with the date in the label. Guerra & Ros (1988) had selected a specimen in BM-Wilson (Cádiz Hispania rarius, 1852, *Lange*) as topotype of *Pottia pallida*, as at that time no original material was found in H-SOL.

Although the lectotype only includes very young capsules, most of the distinctive characters of this species, including those mentioned in the protologue, are easy to confirm: paroicous plants, leaves yellowish, spatulate

and obtuse, with long-excurrent costa, clear and smooth upper laminal cells, setae long and golden-yellowish, and capsules oblong-cylindric.

17. *Pottia propagulifera* Herzog in Ber. Zürcherischen Bot. Ges. 9: 59. 1905 – Type: [Italy] Auf lehmig-sandigem Boden der Punta (N. Spitze von San Pietro), ca. 5 m, *Th. Herzog*, 24 März (lectotype, designated here, JE!, isolectotype B-Warnstorf!) (= *Tortula pallida* (Lindb.) R.H. Zander in Bull. Buffalo Soc. Nat. Sci. 32: 226. 1993 **syn. nov.**).

The specimen selected as lectotype is in Herzog's original herbarium at JE. The data in the label exactly match those in the protologue, with the exception that the year of collection is lacking, which is nevertheless indicated (24. III. 04) on the isolectotype at B.

The protologue describes gemmae of different shapes on the ventral side of the apical leaves of the fertile stems (translated from German: “...it can be found together with protonema-like simple filaments, in addition with a propaguliferous pluricellular apex and also true leaved gemmae, that form rhizoids while still joined with the leaf...”). In the lectotype all these structures can be observed, but only on a few leaves of some isolated plants. This rarity was also considered to be important by Warnstorf (1916), who raised doubts about the constancy of these structures, whether they are present only on isolated leaves or are common structures found on most leaves. In the Berlin isolectotype they are scarcer, as only gemmae with leaf primordia on the ventral side of one leaf were observed. This kind of gemma, with leaf primordia and basal rhizoids, is very often present in some members of *Tortula* sect. *Pottia* e.g., *Tortula caucasica*, *T. lindbergii*, *T. pallida*, *T. truncata*, and *T. viridifolia* (Ros & Werner, 2005), and these gemmae are apparently effective in asexual reproduction. Those observed in *P. propagulifera* clearly correspond to different development stages of this kind of gemma, especially those observed in the isolectotype. In our opinion, the structures described by Herzog correspond to an anomalous growth of vegetative reproduction structures of no taxonomic value. On the other hand, other features of these type specimens clearly indicate that this name does not represent a different taxon from *Tortula pallida*: lingulate to spatulate leaves with obtuse to rounded and mucronate to apiculate apex, smooth upper laminal cells, cylindrical capsules without peristome or with a very short peristomial membrane that does not project beyond capsule mouth, and the terricolous habitat near the sea coast.

Pottia propagulifera was reported from Japan by Sakurai (1954), but Saito (1975) did not include it in his monograph of the Japanese *Pottiaceae*. Noguchi (1988) mentioned that it had been reported for Japan previously and that the vouchers were not available, and Iwatzuki (2004) included it in his catalogue of the mosses of Japan.

Since *Tortula pallida* is at the moment a species with a Mediterranean distribution, extended to the European Atlantic coast, we think that the Japanese plants identified as *Pottia propagulifera* should be reevaluated.

18. *Pottia venusta* Jur. in Unger & Kotschy, Ins. Cypern: 167. 1865 ≡ *Pottia pallida* var. *longicuspis* Warnst. in Hedwigia 58: 113. 1916 ≡ *Pottia pallida* var. *venusta* (Jur.) Giacom. in Ist. Bot. Reale Univ. Lab. Crittog. Pavia, Atti ser. 5, 4: 212. 1947, nom. superfluous ≡ *Tortula pallida* var. *longicuspis* (Warnst.) R.H. Zander in Bull. Buffalo Soc. Nat. Sci. 32: 226. 1993 – Type: [Cypern] Hagia-Napa auf Cypern, *Fr. Unger*, 1862 (lectotype, designated here, BM!; isolectotypes B!, FI!, H-BR 3121458!) (= *Tortula pallida* (Lindb.) R.H. Zander in Bull. Buffalo Soc. Nat. Sci. 32: 226. 1993).

This species was described to accommodate plants with leaves with poorly chlorophyllose to hyaline apices and capsules with a revoluble annulus. However, study of the type gathering demonstrates morphological identity with *Tortula pallida*, which has leaves with usually decolorated apices. The mention of an annulus by Juratzka is in error, as there is no revoluble annulus in any of these type specimens.

19. *Pottia viridifolia* Mitt. in J. Bot. 9: 5. 1871 ≡ *Pottia mittenii* var. *viridifolia* (Mitt.) Corb. in Mém. Soc. Sci. Nat. Cherbourg 26: 235. 1889 ≡ *Pottia crinita* subsp. *viridifolia* (Mitt.) Kindb., Eur. N. Amer. Bryin. 2: 281. 1897 ≡ *Tortula viridifolia* (Mitt.) Blockeel & A.J.E. Sm. in J. Bryol. 20: 66. 1998 – Type: [United Kingdom] Wilson's Musc. Brit. 92 (lectotype, designated here, NY 714735!, isolectotype NY 714734!).

The protologue indicates “Plymouth, *Mr. Holmes*; also in Wilson's Musc. Brit., among additional specimens of *P. crinita*.” In Mitten's original herbarium (NY) there are four specimens. We have selected NY 714735 as lectotype of the name because it contains the best preserved and abundant material (although mixed with *Weissia controversa* Hedw.). Handwritten on the labels of NY 714733 and NY 714734, both including only small pieces, is “same as Wilson Musci Brit. 92”. The syntype, NY 714736 (“*Pottia pallida* Ldbg., Devonport, 3/70 Holmes, fide Braithwaite”), is an extremely poor specimen, consisting only of 2–3 sterile stems. There is a fourth specimen (NY 714732) with a label without identification and locality, but reads “More of supposed *Pottia pallida* – Kindly let me know from your opinion if it is only *P. wilsoni*.” This material has the morphological characteristics of the rest of specimens, and was probably studied by Mitten and send to other bryologists, but because no precise data are given about its origin, it is unclear if it is a type or not.

Mitten (1871) stated that *P. viridifolia* differs from *P. crinita* “...in its larger and wider leaves with the up-

per cells less obscure and less evidently tuberculated, the lower cells less elongated, and the short and slender nerve.” We have studied these characters in the types of both names. In all the syntypes of *P. viridifolia* the middle and upper leaves are 1.6–1.9 × 0.8–0.9 mm, whereas in the type of *P. crinita* they are somewhat smaller, (0.6)0.8–1.5 × (0.3)0.4–0.5 mm; the basal cells are up to 70 μm long in the type of *P. viridifolia* and 88 μm long in that of *P. crinita*; the costa is 70 μm wide at base and excurrent in an apiculus (0.15)0.25–0.85 mm long in the type of *P. viridifolia*, whereas in that of *P. crinita* the costa is 50–60 μm wide at base and the apiculus is (0.2)0.4–0.8 mm long; finally, the number of papillae per cell is 5–6(8) in all those syntypes. Furthermore, the type specimens of *P. viridifolia* show the same characters that Smith (2004) and Ros & Werner (2005) considered diagnostic for the species they termed *Pottia crinita*: wider upper laminal cells, (14)18–28 μm wide, and bigger spores, 22–32 μm in diameter. We conclude that the observed differences between the types of *P. crinita* and *P. viridifolia* are not worth taxonomic recognition, and therefore we treat them as belonging to a single species for which the correct name is *Tortula viridifolia*, because although *Pottia crinita* is the earlier name (1849), the name *T. crinita* already exists for another species (see under n° 7 *Pottia crinita*, above).

20. *Tortula caucasica* Lindb. ex Broth. in Acta Soc. Sci. Fenn. 19(12): 43. 1893 ≡ *Pottia caucasica* (Broth.) Paris, Index Bryol.: 1020. 1898 ≡ *Barbula caucasica* (Broth.) Müll. Hal., Gen. Musc. Frond.: 429. 1900 – Type: [Georgia] Caucasus: inter Michailovo et Borschom pr. fl. Kura, ad rupes 1881.VII. *V. F. Brotherus* (lectotype, designated here, H-SOL!).

Although S.O. Lindberg never published the new name formally, he considered the *Brotherus* collection to be a new species, as stated in the label of the selected lectotype, which also matches the locality information in the protologue (“*Carthalia*, in fissuris rupium schistosarum inter Michailovo er Borschom regionis silvaticae inferioris parce”).

Brotherus (1893) compared his new species with *Tortula lanceolata* (Hedw.) Lindb. (≡ *Tortula lanceola* R.H. Zander), although he stated that *T. caucasica* could be distinguished by having smooth, bigger upper leaf cells. In addition, the rudimentary or incompletely developed peristome consisting of truncate short teeth, smooth upper leaf cells, cylindrical capsule, and its habitat between rocks, not saline soil, separates *Tortula caucasica* from that species, for which our studies show the earliest name to be *T. lindbergii*. Our study of the type of *Tortula caucasica* shows that it is conspecific with the species long known as *Pottia intermedia*, but which in *Tortula* is called *T. modica*. *Tortula caucasica* is a forgotten name that since its inception was only included in Savicz-Lyubitskaya &

Smirnova (1970, as *Pottia caucasica*), who simply presented Brotherus's original description and discussion, but no new specimens. Latter, the name was recorded in checklists, either under *Pottia* (Ignatov & Afonina, 1992) or *Tortula* (Ignatov & al., 2006), but without further discussion or inclusion of new specimens. Further evidence of its oblivion is that *T. modica* (as *Pottia intermedia*) is known from the Caucasus (Savicz-Lyubitskaya & Smirnova, 1970; Ignatov & Afonina, 1992; Ignatov & al., 2006). The name in current use for this taxon, *T. modica*, is only 14 years old (see above, under n° 4 *Gymnostomum intermedium*), and for the reasons noted there, we do not think that conservation of *T. modica* is justified and so we adopt *T. caucasica* for the combined species.

21. *Tortula lindbergii* Kindb. ex Broth. in Acta Soc. Sci. Fenn. 19(12): 44. 1893 ≡ *Barbula lindbergii* (Kindb. ex Broth.) Müll. Hal., Gen. Musc. Frond.: 440. 1900 ≡ *Pottia pungens* Broth. in Engler, Nat. Pflanzenfam. 1(3): 423. 1902, nom. illeg. incl. sp. prior. ≡ *Pottia lindbergii* (Kindb. ex Broth.) Warnst. in Hedwigia 53: 283. 1913 – Type: [Georgia] Imeretia: Tsessi, add rupes calcar. sicciss. 1877 28 Iunium, V. F. Brotherus (lectotype, designated here, H-SOL!).

Brotherus formally described this species that had been identified with the herbarium name “*Tortula pungens*” by Lindberg, who never published it. Kindberg (1888: 42) had published “*Barbula lindbergii*” for the species, but without a validating description. Lindberg's original epithet, “*pungens*”, was pre-occupied in *Tortula*, and Brotherus validated the name proposed by Kindberg and included Lindberg's designation in his synonymy. As in the previous entry, *T. lindbergii* has been a forgotten name since its inception, never applied since Brotherus (1893) to a recolonized species, and simply known from its type. Only Savicz-Lyubitskaya & Smirnova (1970, as *Pottia*) repeated Brotherus original description and discussion, but no new information or specimens were added, as did the checklists treating the mosses of the area (Ignatov & Afonina, 1992, as *Pottia*; Ignatov & al., 2006, as *Tortula*).

Wijk & al. (1967), included *Tortula lindbergii* under *Pottia wilsonii* (≡ *Tortula wilsonii*), but the type (and only specimen) of *T. lindbergii* exhibits a yellowish, well-developed peristome with anastomoses and perforations, slightly papillose upper laminal cells, strongly protuberant ventral cells in the upper portion of the leaf, and ovate to ovate-lanceolate leaves. These characters better correspond to what has been known as *Tortula lanceola* (≡ *Tortula lanceola* R.H. Zander), whereas *T. wilsonii* has an incompletely developed peristome, leaf upper cells with 3–7(10) bifurcate papillae, slightly protuberant in the ventral side, and oblong to lingulate or spatulate leaves. Hence, *Tortula lindbergii* cannot be separated from *T. lanceola* on a morphological basis, and both are here con-

sidered to represent the same species, for which the former name have to be applied. As in the case of *T. modica*, the name *T. lanceola* is only 14 years old (see above, under n° 2 *Encalypta lanceolata*), and its usage since then has been limited and exclusively taxonomic, for which reasons we do not think that conservation of *T. lanceola* is justified and so we adopt the change of name to *T. lindbergii*.

According to Brotherus, *Tortula lindbergii* could be separated from *Tortula lanceolata* var. *aciphylla* (Wahlenb.) Lindb. by a wider costa excurrent as a longer arista, and also by its papillose leaves. The study of the lectotype shows that the costa is 50–60 µm wide at base and excurrent as a reddish awn to 650 µm long, well within the range of variability observed in *Tortula lanceolata*. The upper leaf cells have 0–2 simple papillae each, which is also found occasionally in *Tortula lanceolata*, that more frequently has smooth cells.

NOMINA NUDA

“*Pottia leucostoma* Schimp. ex Besch.” in Bull. Soc. Bot. France 12: 135. 1865, nom. nud.

Bescherelle's publication of “*Pottia leucostoma*” lacks a description and although Bescherelle quotes “*Anacalypta lanceolata* Röhl. var. β” as a synonym, which might validate the name (ICBN-Vienna 32.5–6), this is clearly an error as no such variety is cited by Röhling (1800), who only recognized one taxon—the species *Anacalypta lanceolata*. Further confirmation that Röhling did not accept any variety under *Anacalypta lanceolata* is his statement about Pollich's (1777) *Bryum pulvinatum* var. β: “Hr. Bridel nimmt es für gewiss an, dass die Varietät, die Pollich l. c. anführt, keine andere, als vorbeschriebene Pflanze sey.” [“Bridel states that the variety mentioned by Pollich l. c. is indeed the plant described above” i.e., *Anacalypta lanceolata*. cf. Röhling 1800: 109–111].

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