

Nomenclatural pitfalls in the protologue of *Hypnum lycopodioides* Brid. (*Musci*)

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The nomenclatural history of *Hypnum lycopodioides* Brid., a widespread European peatland moss that is currently known as *Drepanocladus lycopodioides* (Brid.) Warnst. or *Pseudocalliergon lycopodioides* (Brid.) Hedenäs, is presented. The placement of two neglected and poorly known names, “*Hypnum rugosum* Sm.” and *H. diastrophyllum* Lam. & DC., in the protologue of *H. lycopodioides* created some nomenclatural pitfalls. It is shown that *H. rugosum* sensu Dickson (1801), Withering (1801), Smith (1804) and Smith & Sowerby (1811) are all isonyms of *H. rugosum* Hedw. [= *Rhytidium rugosum* (Hedw.) Kindb.] and they have no nomenclatural status. *Hypnum diastrophyllum*, a species described in 1805, is considered not to be definitely included in the concept of *H. lycopodioides*, but the latter name is strongly endangered by *H. diastrophyllum*, if both species are conspecific. Of several specimens cited in the protologue of *H. diastrophyllum* only one specimen originating from Sweden is available for typification, and it is here selected as lectotype. It makes *H. diastrophyllum* conspecific with *Palustriella commutata* (Hedw.) Ochyra, and this taxonomic conclusion saves the current usage of *H. lycopodioides*. The oldest synonyms and type specimens of *H. lycopodioides* are listed.

KEYWORDS: *Amblystegiaceae*, *Bryophyta*, *Hypnales*, *Hypnum lycopodioides*, *H. diastrophyllum*, *H. rugosum*, isonyms, nomenclature, *Palustriella commutata*, typification, taxonomy.

INTRODUCTION

Hypnum lycopodioides Brid. is the basionym of *Pseudocalliergon lycopodioides* (Brid.) Hedenäs which is better known as *Drepanocladus lycopodioides* (Brid.) Warnst. It is a well-known European paludicolous moss species which is frequent in the boreal (strictly hemiboreal or boreo-nemoral) zone in northern Europe (Hedenäs, 1992) and decreases in its frequency in Central Europe. The species is very distinct and unmistakable, and it has gained wide acceptance since its description (Bridel, 1812: 227). The best evidence of its univocal interpretation is the lack of any heterotypic synonyms at the species level, and only three varietal taxa have been recognized within it during nearly two centuries of its history (Hedenäs, 1992).

Although *Hypnum lycopodioides* was formally described in 1812, the species had been known to botanists under the name *H. rugosum* for about two decades previously, and this name was commonly ascribed to Smith (1804). In Wijk & al. (1964, 1969), *H. rugosum* Sm. (1804) was considered to be an illegitimate later homonym of *H. rugosum* Hedw. (1801), i.e., *Rhytidium rugosum* (Hedw.) Kindb. of modern moss taxonomy. Under that interpretation, Bridel's (1812) *H.*

lycopodioides was a replacement of the illegitimate *H. rugosum* Sm., which was cited in synonymy. However, a perusal of the protologue of *H. lycopodioides* as well as a thorough study of the nomenclatural history of *H. rugosum* revealed that this seemingly smooth and straightforward case is in fact quite complex and intricate. Moreover, it has commonly been overlooked that in the list of synonyms of *H. lycopodioides*, Bridel (1812) placed *H. diastrophyllum*, a validly published species name proposed seven years earlier by Lamarck & Candolle (1805). The latter name heavily affects *H. lycopodioides*, and its interpretation has serious nomenclatural consequences for the retention of the current usage of this species name.

The present article intends to resolve all the pitfalls associated with *Hypnum lycopodioides* which emerged owing to the placement in the protologue of two older names, *H. rugosum* and *H. diastrophyllum*.

THE PROBLEM OF *HYPNUM RUGOSUM*

History of the name. — The first historical specimen of *Hypnum lycopodioides* was collected in a

marshy habitat at Loch Rannoch in Scotland; it was recognized by Dickson (1790) as *H. rugosum*. Unfortunately, this specimen is missing from the personal herbarium of Dickson at BM, and one may speculate about its identity only from the ecological situation in which it was observed. It is remarkable that Dickson (1785, 1790, 1793, 1801) for the overwhelming majority of species in the *Fasciculi Plantarum Cryptogamarum Britanniae* gave his own diagnoses or descriptions which are sometimes accompanied by illustrations. One of very few exceptions is *H. rugosum* for which he cited the Linnaean diagnosis, along with a reference to Linnaeus' (1767) *Mantissa Plantarum*; the latter also included habitat data, collector and further descriptive data. Additionally, both Linnaeus (1767) and Dickson (1790) cited in synonymy of *H. rugosum* the specimens from continental Europe which were described as *Hypnum lutescens crispum*, *Lycopodii facie* by Dillenius (1741) and presented in figure 24 on table 37 in his *Historia Muscorum*. This Dillenian species is a mixture of two species of dry habitats, *Rhytidium rugosum* (Tab. 37, f. 24A–B, D) and *Hypnum cupressiforme* (Tab. 37, f. 24C) (Lindberg, 1883; De Sloover, 1995). Thus, the only new thing added by Dickson (1790) to the concept of *H. rugosum* is actually a new specimen from a different habitat. This implies that Dickson introduced at the very beginning a serious confusion with regard to interpretation of *H. rugosum* and evidently amalgamated three different species to which the same epithet *rugosum* was applied.

In the first three fascicles of his cryptogamic plants of Britain, Dickson (1785, 1790, 1793) described a number of new species of mosses. The names of some of them were validated by Hedwig (1801) and are now generally accepted as good species, for example *Pleuridium alternifolium* (Hedw.) Schimp., *Entosthodon fascicularis* (Hedw.) Müll. Hal. and *Seligeria calcarea* (Hedw.) Bruch & Schimp., although Dickson's name is not associated with these names formally. Additionally, Karttunen (1988) found that many new names proposed earlier by Dickson (1785, 1790, 1793) in the pre-1801 fascicles were validated by him in the index of the *Fasciculus Quartus Plantarum Cryptogamicarum Britanniae* (Dickson, 1801) which was published on 4 Oct 1801 (Sayre, 1959). *Hypnum rugosum* is listed in the index and because Dickson (1790) cited the earlier descriptions of this species by Dillenius (1741) and Linnaeus (1767), his index would have provided validation of the Linnaean name had not Hedwig's work been published several months earlier: 1 Jan 1801. *Hypnum rugosum* was actually validated by Hedwig in his *Species Muscorum Frondosorum*, which since the Brussels Botanical Congress in 1910 serves as the starting point for mosses (the *Sphagnopsida* excepted), and it was recently lectotypified by Hedenäs & Geissler (1999).

It is not possible to treat Dickson's "*Hypnum rugosum*" as a later homonym because there is no description by Dickson, nor is there a specimen left; all his data (except locality and habitat) are citations that are included by Hedwig as well. We think it is most appropriate to consider Dickson's name as an isonym of *H. rugosum* Hedw., even though this concept does not quite fit such a name from the circumscription period that was based on pre-starting point elements. The term isonym is used (but not indexed) in the *Code* (Greuter & al., 2000) in Art. 6, Note 1 (and associated examples) for designation of the same name, based on the same type, which has been published independently at different times by different authors.

Current status of the name. — It has generally been assumed (Wijk & al., 1964, 1969) that the pre-Hedwigian *Hypnum rugosum* sensu Dickson (1790) was validated by Smith (1804). He provided a short description of this species and cited in synonymy, among others, Dillenius (1741), Linnaeus (1767) and Dickson (1790). In addition, two specimens from Scotland were listed, namely that from Loch Rannoch, Perthshire, which is the same plant which had been mentioned by Dickson (1790), and another specimen from Forfar collected by Mr. G. Don in 1802 as visible on the label in the Hooker herbarium at BM. In fact, the description of *H. rugosum* with the citation of the Scottish specimen from Loch Rannoch was earlier made by Withering (1801) whose work was published on 26 Dec 1801 (Greene, 1962), thus clearly predating Smith's (1804) treatment. It is worth noting that before the description of *H. lycopodioides* by Bridel (1812), *H. rugosum* sensu British authors was again redescribed and illustrated in Smith & Sowerby (1811) in *English Botany*. They cited one more specimen collected in 1804 by Mr. Winch from Prestwick Car, Northumberland, which is currently preserved in the Turner herbarium at BM.

Hypnum rugosum as used by Withering (1801), Smith (1804) and Smith & Sowerby (1811) also must be considered as isonyms of *H. rugosum* Hedw. Only the earliest of the isonyms has nomenclatural status; in the case of *H. rugosum* this is obviously the name published by Hedwig (1 Jan 1801), the basionym of *Rhytidium rugosum*.

Bridel (1812) was the first author who distinguished *Hypnum rugosum* Hedw. (p. 228, Hedwig not mentioned, Dillenius' fig. A and B correctly included) and *H. lycopodioides* for "*H. rugosum*" in the sense of various authors, of which Smith 1804 was mentioned (p. 227, Dillenius' fig. C and D wrongly included).

It is worth noting that later Hooker & Taylor (1818) reduced *Hypnum rugosum* to a variety of *H. aduncum* and they placed *H. lycopodioides* in synonymy. In addition, they cited *H. rugosum* sensu Smith & Sowerby

(1811) as a synonym but clearly rejected the earliest and nomenclaturally accepted name of Hedwig (1801). Thus, the correct citation of this name should be *H. aduncum* var. *rugosum* Hook. & Taylor.

THE INTERPRETATION OF *HYPNUM DIASTROPHYLLUM*

Nomenclatural and taxonomic history. —

The name *Hypnum diastrophyllum* was published for the first time by Hedwig (1795). He used it for a plant obtained from Linnaeus f. and determined in the dissertation of his disciple Swartz (1781) as *H. halleri*. Hedwig (1795) discussed this new species under *H. molluscum* with which it shared the strongly falcate leaves which, however, were distinctly uncostate as seen on plate XXII in this opus. This new species was accepted by Swartz (1799) who placed it between *H. scorpioides* and *H. revolvens* in the group of species with “*surculis teretiusculis*” and in the subgroup with “*ramis circinalibus, foliis secundis*”, which consisted mostly of amblystegiaceous mosses, as presently understood (De Sloover, 1999).

Hypnum diastrophyllum is missing from the major opus of Hedwig (1801), *Species Muscorum Frondosorum*, and after 1801 this species was first mentioned by Turner (1804) as a synonym of *H. filicinum* Hedw., thus invalidly published (De Sloover, 1998). A year later *H. diastrophyllum* was validly published by Lamarck & Candolle (1805) who provided a description, in French, and cited two specimens from France as well as referring to the works of Hedwig (1795), Swartz (1799) and Bridel (1801).

Hypnum diastrophyllum Lam. & DC. was subsequently accepted as a good species by Wahlenberg (1812, 1814). Interestingly, he associated this species with *H. commutatum* Hedw. [= *Palustriella commutata* (Hedw.) Ochyra] which name, despite clear priority, was placed in synonymy with the former. Finally, Bridel (1812) presented a dual interpretation of *H. diastrophyllum*. First (p. 211), he placed this name in synonymy with *H. commutatum* and ascribed it to Swartz (1799) and, next (p. 227), he considered it as a synonym of *H. lycopodioides* and referred it to Lamarck & Candolle (1805).

It should be added that Bridel (1827) recognized a new variety within *Hypnum commutatum* which, by strange coincidence, was also called var. *diastrophyllum* Brid. Nevertheless, it was based upon material collected in Sabaudia and Valesia by Thomas and has nothing in common with *H. diastrophyllum*.

The placement of *Hypnum diastrophyllum* by Bridel (1812) in synonymy with *H. lycopodioides* does not make the latter illegitimate because the final phrase of

Art. 52.2 of the *Code* (Greuter & al., 2000) can be applied: the type of *H. diastrophyllum* is at the same time excluded by implication. This becomes evident upon typification of *H. diastrophyllum*.

Typification and identity. — In the protologue of *Hypnum diastrophyllum*, Lamarck & Candolle (1805) reported two specimens from France (‘près Abbeville, Cisteron’) and one from Sweden which was quoted in two earlier publications by Hedwig (1795) and Swartz (1799). Additionally, they cited in synonymy *H. scorpioides* Hedw. [= *Scorpidium scorpioides* (Hedw.) Limpr.] of Bridel (1801) from which, however, they excluded all synonyms. Thus, in total at least four specimens were originally considered in the description of *H. diastrophyllum* by Lamarck & Candolle (1805).

In the Candolle herbarium in Geneva there are no collections of *Hypnum diastrophyllum* from Abbeville (N France, département de la Somme, probably collected by Boucher) and Cisteron (S France, département des Alpes de Haute Provence, probably collected by Deleuze). Nor could these specimens be traced in PC. Apparently these specimens have been lost. In the Bridel herbarium at B there is a sheet bearing two specimens of *H. lycopodioides*, which he had obtained from Candolle. One of these has no locality and bears the year 1822, whereas the second one originates from “Helvetia”, so neither of them appears to be suitable for typification of *H. diastrophyllum*. It is very likely that Lamarck & Candolle (1805) based the description of *H. diastrophyllum* on the aforementioned specimens from France because the description fits perfectly Bridel’s concept of *Hypnum lycopodioides* and this probably induced the dual interpretation of *H. diastrophyllum* by Bridel (1812, 1827).

Lamarck & Candolle (1805) cited in synonymy of their *Hypnum diastrophyllum* some specimens reported by Bridel (1801) as *H. scorpioides* but excluding synonyms. Alas, no pre-1801 specimens matching either *H. diastrophyllum* or *H. lycopodioides* could be traced in the Bridel herbarium on the sheets with *H. scorpioides*.

Finally, in the Hedwig/Schwägrichen herbarium in Geneva there is a single original specimen that is suitable for typification of *Hypnum diastrophyllum* (Fig. 1). It was collected by O. Swartz in Sweden and subsequently communicated to J. Hedwig by Linnaeus f. upon which Hedwig (1795) introduced his *H. diastrophyllum*, a name which was later approved by Swartz (1799). This specimen, the only one available for lectotypification, is here selected as the lectotype of *H. diastrophyllum*. This is *H. diastrophyllum* sensu Swartz, a pre-starting point ‘name’ that was implicitly excluded by Bridel (1812) under *H. lycopodioides*, because he cited *H. diastrophyllum* sensu Swartz under *H. commutatum*.

The lectotype specimen consists of a few shoots with a single sporophyte. The leaves are strongly falcate to



Fig. 1. The lectotype of *Hypnum diastrophyllum* Lam. & DC. from the Hedwig/Schwägrichen herbarium at G.

circinate and often secund. The costa is single and extends to the acumen. The leaf margin is serrulate all around and the laminal cells are prosenchymatous, oblong-hexagonal to linear, and distinctly prorate on the upper ends. The alar cells are enlarged, hyaline-yellowish to yellow, pellucid and form distinct decurrent auricles extending to the costa. The stems and branches are densely covered with filiform paraphyllia. These features are all diagnostic of the typical expression of *Palustriella commutata* and accordingly both names have to be considered synonymous as, inferentially, suggested by Wahlenberg (1812, 1814).

Palustriella commutata (Hedw.) Ochyra, J. Hattori Bot. Lab. 67: 224. 1989. ≡ *Hypnum commutatum* Hedw., Spec. Musc. Frond.: 284. 1801. – Lectotype (fide Ochyra 1989: 224): the left upper specimen collected by Herr Frölich “in der algauer Sümpfen” perfectly corresponding to the illustration in Hedwig (1795, plate XXVI) (G-Hedw/Schwägr!).

= *Hypnum diastrophyllum* Lam. & DC., Fl. Franç. ed. 2, 2: 528. 1805 [*Hypnum diastrophyllum* Hedw., Descr. Micr.-Anal. Musc. Frond. 4(3): 58, pl. 22, f. a–b. 1795, nom. inval.; *H. diastrophyllum* Hedw. ex Sw., Disp. Musc. Suec.: 58. 1799, nom. inval.; *H. diastrophyllum* Sw. ex Turner, Musc. Hib. Spic.: 197. 1804, nom. inval. in synon.], **syn. nov.** – Lectotype (selected here): “*Hypnum diastrophyllum* Suec. a Linneo fil. acceptum, nomine H. Halleri” (G-Hedw/Schwägr!).

For the sake of stability of the current moss nomenclature, the above taxonomic conclusion is very convenient because it warrants preservation of the current usage of *Hypnum lycopodioides*. The other solution, i.e. assuming the conspecificity of *H. diastrophyllum* and *H. lycopodioides*, would be both disturbing and difficult to accept because either the totally forgotten older name *H. diastrophyllum* would need to replace the firmly rooted *H. lycopodioides* or a proposal to conserve *H. lycopodioides* with a conserved type would need to be made.

TIPIFICATION AND THE OLDEST SYNONYMS OF *HYPNUM LYCOPODI-OIDES*

Hypnum lycopodioides was lectotypified by Hedenäs (1989) with a specimen from the Bridel herbarium (Fig. 2) which, according to that author, was the only extant specimen suitable for typification of this name. This is not entirely correct because in the Bridel herbarium at least one other specimen cited in the protologue is present on the same sheet with the lectotype. Moreover, the inclusion of *H. diastrophyllum* and especially *H. rugosum* in the synonymy of *H. lycopodioides*, which was not commented on by Hedenäs at all, yielded additional specimens in other herbaria which are also suitable for lectotypification of this early name.

In a short discussion Bridel (1812) stated that *Hypnum lycopodioides* is distributed throughout Europe on marshy meadows and in swampy forests and he listed no less than four specimens from Germany, one from France and one from the Pyrenees. Additionally, at least three specimens are inferentially cited from Britain in the works of Smith (1804) and Turner (1804).

The lectotype specimen is accompanied on the same sheet by a specimen from Mecklenburg communicated to S. E. Bridel by C. F. Schultz which was reported as *Hypnum scorpioides* in *Prodromus Florae Stargardiensis* (Schultz, 1806) (Fig. 2). Moreover, in the Hooker and Hooker/Turner herbaria at BM there are two additional syntypes. These specimens are better preserved and more luxuriant than the lectotype specimen. Nonetheless, all the diagnostic characters of this species are nicely observable on the lectotype material and so the first lectotypification of *H. lycopodioides* proposed by Hedenäs (1989) must be retained. Consequently, the remaining aforementioned specimens have to be considered as syntypes.

The oldest synonyms and type specimens of *Hypnum lycopodioides* are as follows:

Hypnum lycopodioides Brid., Spec. Musc. 2: 227. 1812.
≡ *Drepanocladus lycopodioides* (Brid.) Warnst.,

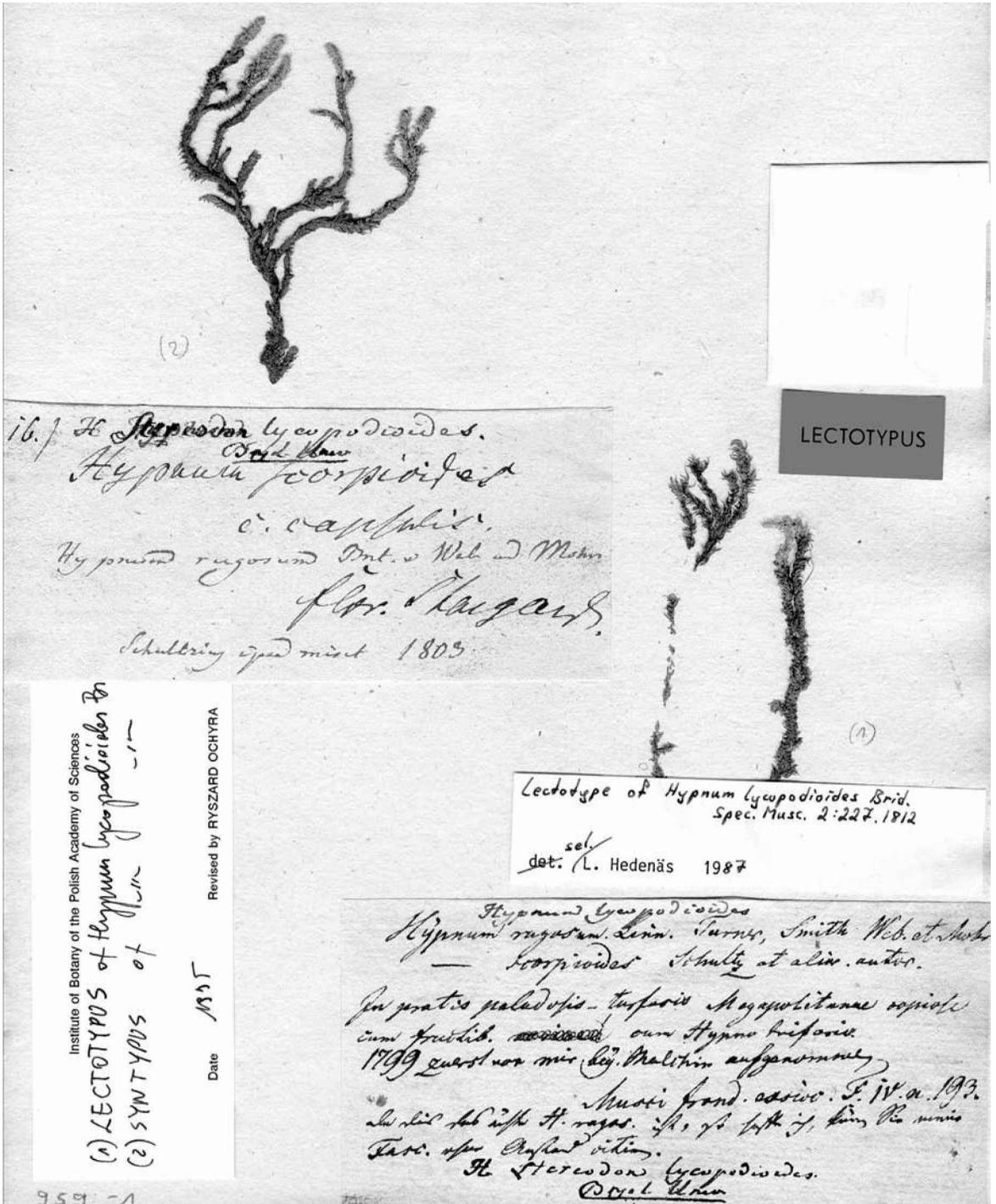


Fig. 2. The lectotype and syntype of *Hypnum lycopodioides* Brid. from the Bridel herbarium at B.

Beih. Bot. Centralbl. 14: 401, 413. 1903. ≡ *Pseudocalliergon lycopodioides* (Brid.) Hedenäs, Lindbergia 16: 88. 1992. – Lectotype (fide Hedenäs 1989: 33–34): “*Hypnum lycopodioides* *Hypnum rugosum* Linn. Turner, Smith Web. et Mohr. — [*Hypnum*] *scorpioides* Schultz et aliis autor. In pratis

paludosis-turfosis Megapolitanae copiose cum fructib. cum Hypno trifario. 1799 zuerst vor mir bey Malchin aufgenommen Musci frond. exsicc. F. IV. n. 193. Da dies das ächte *H. rugos.* ist, so hoffe ich, können Sie meine Fasc. ohne Anstand vidieren. *H. Stereodon lycopodioides* Bryol. Univ.” (B-Brid!).

- Syntypes: (1) “16. *H. Stereodon lycopodioides*. Bryol. Univ. *Hypnum scorpioides* c. capsulis *Hypnum rugosum* Bot. Web. und Mohr Flor. Stargard. Schultzius ipse misit 1803” (B-Brid!); (2) “*Hypnum rugosum* Sm. Mr G. Don 1802 *Hypnum* I suppose this may prove to be the *flagellare* found by Mr Dickson on bogs near Loch Rannoch Perthshire. This agrees with the figure quoted if I remember right. Open bogs near Forfar but not common” – (BM-Hook!); (3) “*H. rugosum* ... (illegible) Dill. Musc. t. 37 f. 24A” (BM-Hook/Turn!).
- = *Hypnum aduncum* Hedw. var. *rugosum* Hook. & Taylor, Musc. Brit.: 111. 1818. – Lectotype (*vide* Hedenäs 1991: 88): “*Hypnum rugosum* Fl. Br. non Hedw. aquo omnio distinctum est. Ex. Anglia. Hooker – (S-Swartz, not seen); isolectotype: (BM-Hook!); actually it is the specimen indicated above as the syntype No. 2 of *H. lycopodioides*).
- *Hypnum rugosum* sensu Dicks., Fasc. Pl. Crypt. Brit. 4: [30]. 4 Oct 1801, p.p.; *H. rugosum* sensu With., Syst. Arr. Brit. Pl. Ed. 4, 3: 838. 26 Dec 1801, p.p.; *H. rugosum* sensu Sm., Fl. Brit. 4: 1325. 1804, p.p.; *H. rugosum* sensu Sm. & Sowerby, Engl. Bot. 32: pl. 2250. 1811, p.p.

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