

Correct author citations for class and some subclass names of the Bryophyta

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Systematic searching through the botanical and bryological literature has clarified correct author citation for the names of the four main classes of division Bryophyta: Sphagnopsida Schimp., Andreaeopsida J. H. Schaffn., Polytrichopsida Doweld, and Bryopsida Pax. In addition, three subclasses of Bryopsida should be correctly cited as follows: Tetraphididae Doweld, Buxbaumiidae Doweld, and Dicranidae Doweld. These citations are discussed in the context of long-standing ambiguity in the I.C.B.N. in treatment of suprafamilial names.

Key words: Andreaeopsida, Bryophyta, Bryopsida, classes, high taxa, nomenclature, Polytrichopsida, Sphagnopsida, subclasses

Introduction

Over the last three decades, remarkable progress has been made in the stabilisation of the nomenclature of suprafamilial taxa of liverworts (Marchantiophyta) and hornworts (Anthocerotophyta), resulting from meticulous work by Shlyakov (1972), Stotler and Crandall-Stotler (1977), Schuster (1984), and Crandall-Stotler and Stotler (2000). In contrast, this field has remained neglected amongst muscologists and it has been very difficult to find the correct authorities of higher taxon names of Bryophyta published in various systems in the second half of the last century (e.g., Reimers 1954, Walther 1983, Vitt 1984, Buck & Goffinet 2000).

Many suprafamilial moss names have been widely used in the literature but usually priority and proper author citations for them have remained unclear. This is mainly because such names have frequently been published, not in standard bryological works, but predominantly in general treatises, textbooks and manuals of botany as well as in broad works comprising classification systems of the plant kingdom as a whole. Also, in moss literature like floras, checklists and manuals, suprafamilial classification has frequently been regarded as self-evident basis. Hence, matters such as optional priority of automatically typified suprafamilial names, and especially citation of their correct authorities, have been considered unimportant or irrelevant.

Furthermore, it is often current publication practice to avoid unnecessary citation of authors' names. In accordance with this trend, even the rewording of Art. 46.1 in Greuter *et al.* (2000b) downgraded the importance of author citations.

We feel, however, that clarity and stability of suprafamilial names and of their author citations are desirable. An attempt to set the nomenclature of high-ranked taxa of mosses in order was thus taken up by Ochyra *et al.* (2003). By definition, this was restricted to central European mosses, although most major groups of Bryophyta are present in this region. When completing the list of high-ranked taxa with the author citations for these names, Ochyra *et al.* (2003) were aware of the possibility that some names could have been published previously. A key work they were unaware of was Doweld (2001), in which this author validly published identical homotypic names for one class and three subclasses of the Bryophyta as later named by Ochyra *et al.* (2003). Therefore those names in the latter publication are later isonyms (Greuter *et al.* 2000b: Art. 6 Note 1) and have no nomenclatural standing. Moreover, Doweld (2001) demonstrated that the names of the three other major classes of mosses had been validly published much earlier; consequently the author citations of these names also require correction.

Because Doweld's (2001) publication is very rare — only 200 copies printed — and is not easily accessible (Schmid 2004), we find it useful to publicise these novelties here in order to make the author citations and bibliographic data for the four classes and three subclasses readily available to bryologists. Otherwise, erroneous citations may be perpetuated, especially as these were popularized by Buck and Goffinet (2004) in their revised classification of the Bryophyta.

General problems pertaining to suprafamilial nomenclature

The prolonged lack of precise rules pertaining to nomenclature of taxa above the rank of family has resulted in persistent debate and conflicting interpretations. One of the difficulties at higher ranks has been in the use of alternative terminations, which served only to obscure correct interpretation. At present, nomenclature of supra-

familial taxa follows the rules enshrined in Arts. 16 and 17 of Greuter *et al.* (2000b). In contrast to names at and below the rank of family, the principle of priority is not mandatory for suprafamilial names, although at the same time Recommendation 16B in Greuter *et al.* (2000b) states that authors should generally follow it. Moreover, the approval in the recent Vienna Congress of a proposal by Moore *et al.* (in Turland & Watson 2004: 1088; cf. McNeill & Turland 2005: 219–220) to amend Art. 11.9 and Art. 16 Note 2, perpetuates this trend: “The principle of priority does not apply above the rank of family...”.

A more serious problem is that the requirements for valid publication of suprafamilial names are governed solely by the general Art. 32.1 (for discussions, cf. e.g. Greuter *et al.* 2000a: 182, Turland & Watson 2004: 1087, McNeill & Turland 2005: 236). One is thus free to argue that, for example, under Art. 32.1(c) a reference to a generic or even an infrageneric description suffices. This demonstrates an apparent inconsistency with the strict conditions for valid publication in lower suprageneric ranks, defined in the precise Art. 41.1. A proposal by Moore *et al.* (in Turland & Watson 2004: 1089; cf. McNeill & Turland 2005: 236), to amend Art. 41.1 accordingly was, however, defeated in Vienna (McNeill *et al.* 2006). Indeed, as there is no mandatory priority for suprafamilial names, why should their validity be controlled? Worth mentioning in this context is Greuter's (in Turland & Watson 2004: 1087) ‘informal’ suggestion that the suprafamilial nomenclature logically “should be exempt from all requirements for valid publication, priority and author citation, but nevertheless should remain usable as ‘names’ under the *Code* (cf. Art. 6.3)”.

Another issue of continued discussion (cf. e.g. Greuter *et al.* 2000a: 192–193) and source of long-persistent confusion pertains to citation of authorities for suprafamilial (in fact all suprageneric) names. A commonly overlooked and widely misinterpreted point is that under Art. 33.3 the term ‘basionym’ covers merely name-bringing and epithet-bringing synonyms of new combinations or transfers. Hence, stem-bringing replaced synonyms of suprageneric transfers are not basionyms, and this fact necessarily affects the author citation of such transfers. Even though the letter of Art. 49.1 never applied to suprage-

neric names, parenthetical author citations have been erroneously used in many revisions. In support of this view was the argument that a citation in parentheses is needed, at least when the transfer is validated by a reference to a previously published suprageneric name. It is not, however, the purpose of an author citation to indicate the means of a name's validation; instead, this kind of important synonym should be cited in synonymy. The recent Special Committee on Suprageneric Names (Turland & Watson 2004: 1087) could not agree about proposing any amendment to Art. 49. As far as conserved family names are concerned, they (Turland & Watson 2005: 492) decided that, "in keeping with the convention adopted in the *Saint Louis Code*, parenthetical author citations in suprageneric names are not used". This *status quo* was eventually fixed at the Vienna Congress, by addition of a Note, in Art. 49.1: "Parenthetical authors must not be cited for suprageneric names, because such names cannot have basionyms..." (McNeill *et al.* 2006).

As a consequence of this decision to get rid of double author citation for suprageneric names, citation of a parenthetical author, Dumortier, for the subclass Tetrarhizidae Doweld is not permissible (cf. below). Similarly, deletion of parenthetical authors, respectively M. Fleischer, W. Frey, and Dixon, of the subclass names Diphysciidae Ochyra, Funariidae Ochyra, and Orthotrichidae Ochyra, all published by Ochyra *et al.* (2003), is necessary. In addition, double author citation is not permitted for a number of names at lower suprageneric ranks, including the order Hypnales "(M. Fleisch.)" W.R. Buck & Vitt and the families Hylocomiaceae "(Broth.)" M. Fleisch. and Plagiotheciaceae "(Broth.)" M. Fleisch.

Class and subclass names for mosses with correct author citations

Class Sphagnopsida Schimp., *Mém. Hist. Nat. Sphaignes*: 12. 1857

The class Sphagnopsida was validly published by Schimper (1857a) in the French version of his comprehensive treatment of peat mosses. He

used the name "Sphagninae" for this class ("Du moment qu'on séparer les Hépatiques des Mousses, il faut aussi en séparer les Sphaignes, dont la somme des caractères distinctifs est évidemment tout aussi grande que celle des Hépatiques. Il est vrai que les *Sphagninae*, comme je voudrais appeler les végétaux faisant partie de cette nouvelle classe, ne se composeraient que d'un seul ordre, d'une seule tribu, d'une seule famille et même d'un seul genre, si toutefois le *Sph. macrophyllum*, dont les fleurs et les fruits sont encore inconnus, ne constitue pas le type d'un second genre.") and provided its Latin description. Schimper worked on this theme for several years and preliminary information on its progress was published by Brongniart *et al.* (1854) in their report for Académie des Sciences, but the class Sphagnopsida is not recognized in this publication. It is worth noting that the French version first appeared as a preprint in February 1857 (Schimper 1857a) and a few months later as a journal article (Schimper 1857b).

New descriptions of the Sphagnopsida were published a year later in the German version of this treatment of *Sphagnum* (Schimper 1858) and in both editions of *Synopsis muscorum europaeorum* (Schimper 1860, 1876), in which this class was simply designated as Sphagna. Doweld (2001) discovered the 1860 treatment whereas the bryologists have generally overlooked Schimper's indication of the rank of class for the Sphagninae or Sphagna and therefore they have never ascribed the name Sphagnopsida to him.

Ochyra's (in Ochyra *et al.* 2003) publication of the name Sphagnopsida, by elevation of the subclass Sphagnidae Engl. to the rank of class, created a homotypic later isonym, which has no nomenclatural status.

Class Andreaeopsida J. H. Schaffn., *Ohio Naturalist* 9: 451. 1909

Schaffner (1909) described Andreaeopsida ("Andreaeae"), in English, as one of 46 classes of the plants. This name antedates the Andreaeopsida of Rothmaler (1951) who established this later isonym by elevating Limpricht's (1885) order Andreaeales to the rank of class.

Class Polytrichopsida Doweld, Prosyll. Tracheophyt.: i. 2001

Doweld (2001) provided a short Latin description of the new class (“*Zonatio caulinarum radialis, cellulae hydroideae dispositae centrale, cellulae leptoideae dispositae circum hydroideis, plasmodesmatiss*”) and indicated *Polytrichum* as its type, erroneously ascribing that name to Linné instead to Hedwig. Thus, the Polytrichopsida “Ochyra, Żarnowiec & Bednarek-Ochyra” (2003) is a later isonym and has no nomenclatural status.

Class Bryopsida Pax, Prantl’s Lehrb. Bot. Ed. 11: 220. 1900

Ochyra *et al.* (2003) ascribed the name Bryopsida to Rothmaler (1951) who elevated the order Bryales of Limpricht (1885) to the rank of class. However, it proved that Pax (1900) validly published the class Bryopsida when recognizing the “Klasse” Bryophyta within the Archegoniatae (Embryophyta zoidiogamia), apart from the second “Klasse” Pteridophyta. His class Bryopsida admittedly encompassed all bryophytes, i.e. Hepaticae, Musci and Anthocerotae, but for nomenclatural purposes the taxonomic composition of this group is unimportant since the name is automatically typified by *Bryum* Hedw.

Subclass Tetraphididae Doweld, Prosyll. Tracheophyt.: i. 2001

Validly published by reference to tribus *Tetraphideae* Dumort., Anal. Fam. Pl.: 69. 1829.

When elevating Dumortier’s (1829) tribe Tetraphideae to the rank of subclass, Doweld (2001) admittedly cited this tribe as family. But at the same time he gave the tribe name with correct bibliographic data; so this reference to the replaced synonym meets the requirements of Art. 33.3 of the *Saint Louis Code*. He also incorrectly stated that Dumortier (1829) described this tribe in Latin, although its very short description is actually in French (“Opercule se divisant en dents”). The subclass Tetraphididae “(M.

Fleisch.) Ochyra”, 2003, is a mere later isonym.

Subclass Buxbaumiidae Doweld, Prosyll. Tracheophyt.: i. 2001

Doweld (2001) designated the Buxbaumiidae as “*subcl. et stat. nov.*” and this expression suggests the change of the status of another name. However, this author recognized the Buxbaumiidae as a new taxon by providing a Latin description (“*Calyptra mitraeformis, conica, acuta, sporangium terminale, subobliquum, apophysi spuria acutum, operculum conicum, peristomium duplex, exterioris dentes sedecim, squamiformes, interius conicum, corona membranacea apice lacera interposita*”) and indicated *Buxbaumia* “L.” as type. The Buxbaumiidae “(M. Fleisch.) Ochyra”, 2003, is merely a later isonym.

Subclass Dicranidae Doweld, Prosyll. Tracheophyt.: i–ii. 2001

The case of the Dicranidae is identical to that of the preceding subclass. Doweld (2001) described it as a new subclass by providing a short Latin description (“*Sporogonia terminalia, peristomium simplex, dentes (16) apice fissidentes, basi bifidi*”) and indication of *Dicranum* Hedw. as type. Thus, the subclass name Dicranidae “(W. Frey) Ochyra”, 2003, is to be considered merely as a later homotypic isonym.

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