

EARLY TAXONOMIC HISTORY OF THE MOSS GENUS *ANACAMPTODON* AND A LECTOTYPE FOR *A. SPLACHNOIDES* (AMBLYSTEGIACEAE)

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Abstract: Early taxonomic history of the pleurocarpous moss genus *Anacamptodon* Brid. is reviewed and its familial placement is discussed. A specimen from the Bridel Herbarium (B-Bridel) is designated as the lectotype of *Orthotrichum splachnoides* Froel. ex Brid., the basionym of its generic type *A. splachnoides* (Froel. ex Brid.) Brid. It was collected in June or July 1811 by Josef Aloys von Frölich in Ellwangen (Jagst) in the historic, linguistic and cultural region of Swabia in the east of the state Baden-Württemberg in south-western Germany. He recognised it as a new species on the herbarium label and sent the material to S. E. Bridel in Gotha, Germany, then the great authority on moss taxonomy, who described it as a new species in his *Muscologiae recentiorum supplementum seu Species muscorum Pars 2* in 1812. Duplicates of the original specimens of this species have been located in the Herbarium Tubingense (TUB) and in the Hedwig/Schwägrichen Herbarium (G) which are isolectotypes. Moreover, Frölich consulted the identity of this moss with Olof Swartz in Stockholm, Sweden, and four original specimens of *A. splachnoides* are present in his personal herbarium at S.

Keywords: classification of mosses, Josef A. von Frölich, knot-hole moss, Musci, nomenclature, *Orthotrichum splachnoides*, Samuel E. Bridel, typification

INTRODUCTION

Anacamptodon splachnoides (Froel. ex Brid.) Brid. is a Holarctic, amphiatlantic Euro-American temperate species clearly showing subcontinental tendencies in Europe (Bednarek-Ochyra *et al.* 1994). The main part of its geographical range is in eastern North America where it is widespread from Nova Scotia to Wisconsin in the north and extends to Florida and eastern Texas in the south (Crum 1958; Ireland 1984; Majestyk 2014). In Europe the species occurs in



mountainous and upland areas of western and central part of the continent, mainly in the lower montane belt, ascending to an elevation of about 1000 m in the Alps and Carpathians. Its continuous range extends from the Vosges in France in the west through Switzerland, Austria, southern Germany, southern Poland, the Czech Republic, Slovakia and Hungary eastwards to the Eastern Carpathians of the Ukraine and southwards to northern Italy and Slovenia, with some isolated occurrences in Romania and Serbia, as well as in the Pyrenees and the Massif Central of France (Mohan 1981; Bednarek-Ochyra *et al.* 1994; Plášek 2012; Sandron and Hugonnot 2012; Németh and Erzberger 2015; Szűcs *et al.* 2015; Hodgetts and Lockhart 2020). The easternmost locality of *A. splachnoides* is known from the Black Sea coastal area of the Caucasus in Georgia (Chikovani and Svanidze 2004). The species was also erroneously reported from Dagestan in the Eastern Caucasus in the Russian Federation but this record was later proved to represent *A. latidens* (Besch.) Broth. (Ignatova *et al.* 2021; Czernyadjeva 2022). The same refers also to the reports of *A. splachnoides* from Central Siberia (Abramova and Abramov 1968), China (Redfearn and Wu 1986) and India (Brühl 1931) which have never been later confirmed (Czernyadjeva 2022; Gao and Fu 2002; Lal 2005).

Anacamptodon splachnoides is an epiphyte growing most often on bark of deciduous trees with gnarled trunks, including beech, sycamore, maple, oak and birch and only occasionally on coniferous trees such as spruce, pine and fir. It usually thrives on moist humus in sheltered niches such as knot-holes, hollows scooped out in tree trunks, branch crotches and cracks of bark, typically high up the trunks. These ecological preferences are best expressed by the English name used for it in North America – the knothole moss (Crum 1958; Ireland 1984). However, occasionally, this species was found in quite atypical habitats, for example on rocks (Sharp and Anderson 1981) and polypores (Davis and Pursell 2007) in North America and at base of Turkey oaks, at most 0.5–1 m above the ground, in Hungary (Németh and Erzberger 2015).

Anacamptodon splachnoides is a rare species by nature, which is clearly in decline in recent decades in Europe. In almost all countries, most of its known localities date from the nineteenth or first half of the twentieth century, for example in Italy (Aleffi *et al.* 2008),

Germany (Meinunger and Schröder 2007), Poland (Bednarek-Ochyra *et al.* 1994) and Switzerland (Swissbryophytes 2004–2023). This continuing decline in the number of the localities of *A. splachnoides* is directly related to its ecological requirements and modern forestry practices, in particular the shortening of the rotation lengths of forest stands. As an epiphyte, the species decidedly prefers old trees which offer the suitable amount of substrate for colonisation and, moreover, old stands of trees shape the appropriate microclimatic conditions, especially adequate humidity.

Considering the observed rarity and the progressive decline of its sites, *Anacamptodon splachnoides* was included very early in the Red Lists of Endangered Species. In Poland, it was initially included in the Rare (R) threat category, comprising species with a limited geographical range (Ochyra 1986), but after careful revision of its distribution in the country in historical terms, its threat category was changed to Endangered (EN) (Ochyra 1992; Żarnowiec *et al.* 2004). A similar threat category has been assigned to this species throughout Europe (Schumacker and Martiny 1995; Martiny 1995). Currently, *A. splachnoides* is treated as Near Threatened (Schröck *et al.* 2019; Hodgetts *et al.* 2019; Hodgetts and Lockhart 2020), with the proviso that further observations are necessary to confirm whether its decline is actually progressing and what are the current population trends.

The authors evaluating the current status of *Anacamptodon splachnoides* hope that this species is undercollected and overlooked and “there are probably large gaps in its known distribution” (Schröck *et al.* 2019). Unfortunately, it is hard to agree with that statement. How rare this species is can be proved by the fact that it was discovered relatively late, at the beginning of the second decade of the nineteenth century in Baden-Württemberg, Germany (Bridel 1812). Until the early 1830s it was known only from three sites in Germany, including the type locality, Hestia and North Rhine-Westphalia (Hübener 1833), while in the middle of the nineteenth century only two stations were added in this country (Munich area in Bavaria and the Black Forest in Baden-Württemberg), two sites in Switzerland (Thun and the Rhaetian Alps), as well as one find each in France (Vosges), Slovenia (Julian Alps) and Austria (Vienna region) (Schimper 1850). It is worth adding that some of the areas

from which *A. splachnoides* is known were intensively studied already at the end of the eighteenth century and in the first years of the nineteenth century by such outstanding bryologists as Ch. J. Duval, D. H. Hoppe, H. Ch. Funck, J. A. Sturm and J. G. W. Voit in Germany, especially in Bavaria, A. von Haller and J. Ch. Schleicher in Switzerland, and N. Th. Host, J. A. Scopoli, F. von Paula von Schrank and J. A. Schultes in Austria, and none collected this species anywhere. In recent decades, this species has been collected at further stations in Bavaria (Schröder and Meinunger 1994, 2000) and Baden-Württemberg (Ahrens 2001), but these discoveries have not fundamentally changed the overall picture of its geographical range, only confirming that *A. splachnoides* is still extant in the areas concerned.

EARLY TAXONOMIC AND NOMENCLATURAL HISTORY

Anacamptodon splachnoides has a relatively short and plain taxonomic history. It was recognised for the first time as a species of its own by Bridel (1812) in the second supplement to his *Muscologia recentiorum*, based on a specimen (Figure 1) given to him by Josef Aloys von Frölich (1766–1841), a German physician and naturalist specialising mainly in botany and entomology (Müller 1940, Frahm and Eggers 2001, Wolf 2004). Born in Marktoberdorf near Augsburg in Bavaria, he developed his botanical interests under the guidance of outstanding botanists of the time – F. von Paula von Schrank, N. J. von Jacquin and J. Ch. D. Schreber. He lived and worked in Ellwangen (Jagst), a small town in the Jagst river valley in the historical, linguistic and cultural region of Swabia, now in the district of Ostalbkreis in the eastern part of the state of Baden-Württemberg in south-western Germany. Geographically, Ellwangen (Jagst) lies between the foothills of the Swabian Jura (Schwäbische Alb) and the Virngrund Forest, the latter being part of the Swabian-Franconian Forest (Schwäbisch-Fränkischen Waldberge). It was in this city or its vicinity that Frölich collected a moss on fir trunks, which he called *Orthotrichum splachnoides* Froel. on the herbarium label.

Frölich did not specify a collection date, but most certainly the moss was found between 1801, when the second part of the second volume (also referred to as the third volume) of *Muscologia*

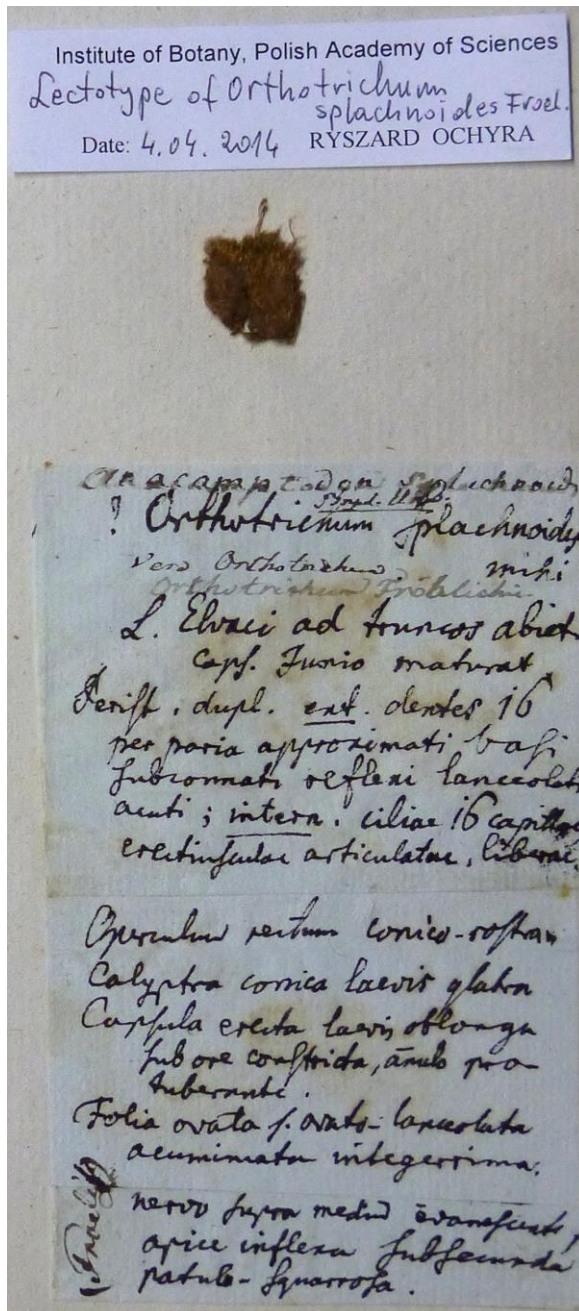


Figure 1. A fragment of the Bridel herbarium sheet (B) containing the lectotype of *Orthotrichum splachnoides* Froel. ex Brid.

recentiorum containing a treatment of the genus *Orthotrichum* Hedw. (Bridel 1801) was published, and 1811, preceding the publication of the second part of the supplement to this opus on 20 April 1812, comprising descriptions of additional 18 species and three varieties of this genus, including *O. splachnoides* Froel. ex Brid. (Bridel 1812). A letter from Olof Swartz (1760–1818), an eminent Swedish moss expert, to Frölich sheds much light on the date of collection of *O. splachnoides* (Wolf 2004). It is dated 28 July 1811 and contains a reply to a letter from Frölich, who sent him specimens of *O. splachnoides* he had collected for consultation. Swartz thanks Frölich for sending this exquisite moss, confirms its singularity, and remarks that it differs in appearance from other species of *Orthotrichum*. Since Frölich reported that this moss produced sporophytes in June and July, it can be assumed with certainty that he collected it during these months in 1811.

The placement of this newly discovered species in *Orthotrichum* seems irrational from the point of view of modern moss systematics, because gametophytically *O. splachnoides* completely deviates from all known species of this genus. When making such a decision, both Frölich and Bridel certainly took into account primarily the structure of the peristome of this new species. Bridel (1801, 1812) placed *Orthotrichum* in “Classis IV. Diperistomati”, because the vast majority of species of this broadly conceived genus have double peristomes and only sometimes it is single or rarely absent. It has 16 broadly lanceolate exostome teeth that are often recurved when dry and 8 or 16 filiform segments of the endostome alternating with the teeth. *Orthotrichum splachnoides* has also the same peristome structure, but it differs from all other congeners in its soft textured leaves with areolation of thin-walled, broad, oblong-rhombic to shortly oblong-rhomboidal cells. The specific epithet *splachnoides* doubtless refers to the reflexed peristome teeth in *Splachnum* Hedw., because it is hard to see any other similarity to the genus.

The species soon gained acceptance of Schwaegrichen (1816) who also obtained the original material from Frölich and redescribed it and illustrated it in a beautiful colour plate (*Figure 2*) in the second part of the first supplement to Hedwig's (1801) *Species muscorum frondosorum*. However, he did not accept the generic placement of this species in *Orthotrichum*, but transferred it to the genus *Neckera* Hedw. as *N. splachnoides* (Froel. ex Brid.) Schwägr.

In fact, this genus was placed by Bridel (1812) in his “Classis IV. Diploperistomati” right after *Orthotrichum*.



Figure 2. Plate from Schwaegrichen (1816 – Tab. LXXXII, Fig. 1–12) of *Neckera splachnoides* (Froel. ex Brid.) Schwägr. fig. 1. Plantae fructiferae, 2. sterilis naturali magnitudine. 3. caulis pars augm. I. fig. 4. folia augm. II. fig. 5. apex folii augm. IV. fig. 6. perichaetium, 7. eius folium interius, 8. vaginula augm. I. Fig. 9. theca, 10. calyptra augm. II. Fig. 11. thecae apex, 12. peristomii externi dentes 2, augm. IV.

The generic placement of *Orthotrichum splachnoides* did not satisfy Bridel himself, nor did Schwaegrichen’s (1816) transfer of it to the genus *Neckera*. Upon further examination of this species, he concluded that although its peristome was somewhat of the *Orthotrichum* type, the distribution of its gametangia was typical of *Neckera*, while stating that initially he had very much erred in assuming female gametangia of *O. splachnoides* to have been terminal and, additionally, the plants themselves had the habit of species of the genus *Pterigynandrum* Hedw. in the then broad sense.

Therefore Bridel (1819) decided it was best to place this species in the separate monotypic genus *Anacamptodon* Brid. for which *A. splachnoides* served as its generitype. This generic name refers to the recurved exostome teeth which he nicely illustrated (*Figure 3*) and it is derived from the Greek words *ἀνακάμπτω* (*anacampto*) meaning curved downward and *όδούς* (*odus*) meaning tooth. This concept of *Anacamptodon* was maintained by Bridel-Brideri (1826, 1827) in his *opus magnum – Bryologia universa*. He classified it in “Classis III. Pleurocarpi” and within it in “Ordo III. Peristomi” next to the genus *Neckera*. Additionally, he provided its new illustration (*Figure 4*).

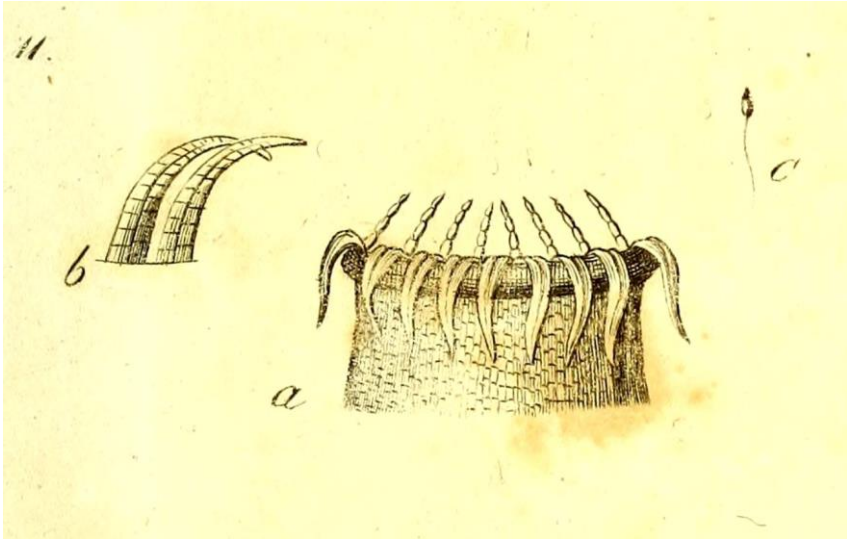


Figure 3. Plate from Bridel (1819 – Tab. II, Fig. 11) of *Anacamptodon splachnoides* (Froel. ex Brid.) Brid. **a** Pars dimidia peristomii externi et interni. **b** Dentes duo peristomii externi. **c** Capsula naturali magnitudine.

It cannot be ruled out that *Anacamptodon splachnoides* was first collected in North America by Gotthilf Heinrich Ernst Muhlenberg (1753–1815). He was a Lutheran clergyman and botanist, who intensively collected plants, including bryophytes, in Lancaster County, Pennsylvania (Heller 1908; Merrill and Hu 1949; Frahm and Eggers 2001). He presented his collections to various European botanists and many of them were described as species new to science, among others about 40 taxa by Hedwig (1801) in his fundamental opus *Species muscorum frondosorum*, which is considered to be a starting point of moss nomenclature (except Sphagnaceae). One of new species (and genera) described from a specimen collected by Muhlenberg is *Campylodontium hypnoides* (Schwaegrichen 1827). It was certainly collected before 1815 and donated to Hedwig, who appears on the list of Muhlenberg's European correspondents, but Schwaegrichen's name is absent on it (Merill and Hu 1949).

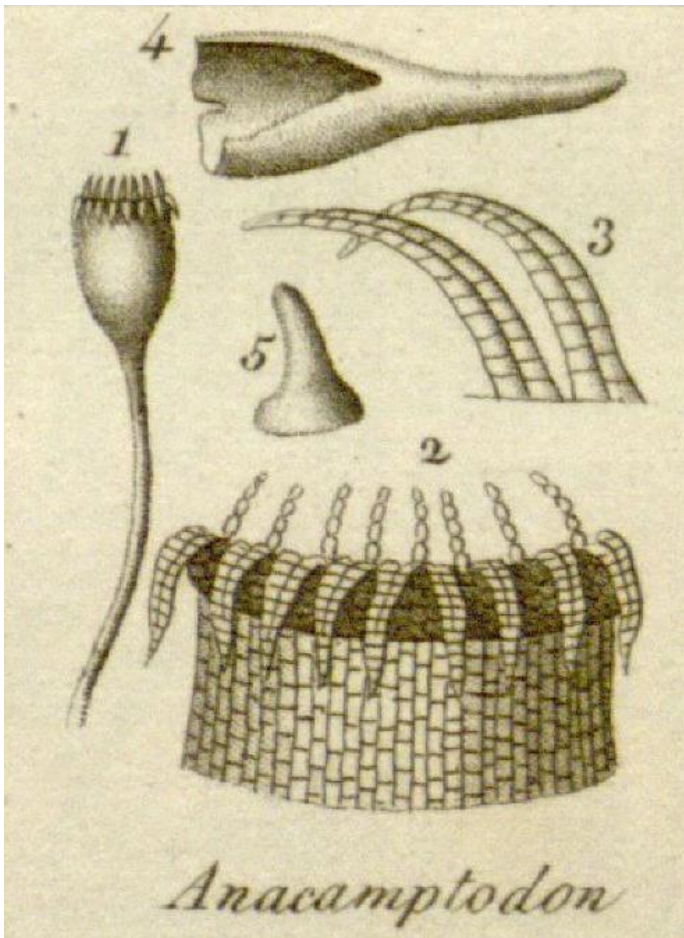


Figure 4. Plate from Bridel-Brideri (1827 – Tab. IX, Fig. VIII *Anacamptodon* in the middle of the third row) of *Anacamptodon splachnoides* (Froel. ex Brid.) Brid. **1.** Theca deoperculata cum peristomio. **2.** Pars thecae valde aucta cum peristomio exteriori reflexo et interiore inflexo. **3.** Dentes duo peristomii exterioris ad augmentum maximum. **4.** Calyptra. **5.** Operculum.

This would mean that Muhlenberg could have collected the species as late as the 1790s or early 1800s and that the unnamed specimen was among the unprocessed material in Hedwig's herbarium before it was studied, described and illustrated (*Figure 5*) by Schwaegrichen (1827) as *C. hypnoides*. A taxonomic revision of this specimen has shown that it actually represents *Anacamptodon splachnoides* (Müller 1851; Limpricht 1895; Cardot 1899). In North

America, this species was subsequently collected by John Torrey in New Jersey (Müller 1851) and by Heinrich Karl Beyrich "prope Ebenezar" (Hampe 1839), a place which cannot be precisely localised since cities bearing the name Ebenezar occur in North Carolina and South Carolina where he collected plants in 1833-1834 (Frahm and Eggers 2001).



Figure 5. Plate from Schwaegrichen (1827 - Tab. CCXI, Fig. 1-14) of *Campyodontium hypnoides* Schwägr. fig. 1. plantae naturali magnitudine. 2. caulis cum floribus auctus quater. 3. caulis deflexi pars aucta ter. 4. folium caulis auctum sexies. 5. apex folii auctus 52ies. 6. folium floris masculi auctum 16ies. 7. flos masculus, 8. anthera cum paraphysi auctae 16ies. 9. folium calycis fructiferi auctum quater. 10. vaginula, 11. capsula viva, 12. eadem sicca auctae quinques. 13. peristomium humido statu auctum octies. 14. eins dentes aucti 40ies.

The taxonomic position of *Anacamptodon* was thoroughly discussed by Hübener (1833), who pointed to its close relationship with the genus *Fabronia* Raddi, but did not propose any specific taxonomic and nomenclatural changes. His idea was taken up nearly two decades later by Müller (1851), who included *Anacamptodon* as a section in the genus *Fabronia*, *F.* sect. *Anacamptodon* (Brid.) Müll.Hal., and transferred *A. splachnoides* to this genus as *F. splachnoides* (Froel. ex Brid.) Müll.Hal. He placed this genus in tribus Hypnoideae and subtribus Neckeraceae, which can be considered as equivalents of family Hypnaceae and subfamily Neckeroideae in modern moss nomenclature. In the meantime Hampe (1839) placed *A. splachnoides* in his “Maschalocarpeen” which is an invalidly published family name being an equivalent of the Pterigynandraceae. On the other hand, Spruce (1849) recognised the separate tribe Anacamptodonteae to accommodate the genus *Anacamptodon* which he placed next to the tribe Fabroniaceae, but failed to provide any description of this taxon.

Finally, Schimper (1856) accepted definitely the placement of *Anacamptodon* in the Fabroniaceae and this concept was firmly consolidated in two editions of his *Synopsis muscorum europaeorum* (Schimper 1860, 1876). For a long time these works served as an oracle as far as taxonomy and nomenclature of European mosses are concerned and the taxonomic concepts presented in them were adopted in practically all Floras and floristic works of the time (e.g. Pfeffer 1869, 1871; Milde 1869; Boulay 1872, 1884; Molendo 1875; Limpricht 1876, 1895; Husnot 1892–1894; Breidler 1891; Amann 1912; Mönkemeyer 1927). The placement of *Anacamptodon* in the Fabroniaceae was subsequently accepted by Brotherus (1907, 1925) in his treatments of mosses in the *Die natürlichen Pflanzenfamilien* series. It was based upon a unique combination of gametophyte (slender habit, single costa; smooth, rhombic to rhomboidal mid-leaf cells; quadrate alar cells; autoicous sex condition) and sporophyte (erect and symmetric capsules; reduced nonhypnoid peristome with exostome teeth often paired or completely free, strongly recurved when dry, entirely densely papillose, very faintly trabeculate and with a faint median line on the outer surface, thin and smooth on the inner surface; endostome greatly reduced) characters.

The taxonomic position of *Anacamptodon* was completely changed when molecular methods were used in phylogenetic studies. Analyses of nuclear and chloroplast sequences provided evidence which supported the affinity of *A. splachnoides* with some amblystegialean mosses, including *Campyliadelphus chrysophyllus* (Brid.) R.S.Chopra, *Serpoleskea confervoides* (Brid.) Loeske and *Hygrohypnum luridum* (Hedw.) Jenn. (Buck *et al.* 2000; Vandenpoorten *et al.* 2002) and on the basis of these studies *Anacamptodon* has been transferred to the Amblystegiaceae (Buck and Goffinet 2000; Goffinet and Buck 2004; Goffinet *et al.* 2009; Frey and Stech 2009). This phylogenetic conclusion was based on the analysis of only two chloroplast loci and one nuclear region in just two specimens from a single species belonging to a genus that now consists of 14 species, distributed over most continents (Crosby *et al.* 2000; Czernyadjeva 2004; Buck 2016). Therefore, it is difficult to treat them as representative of the entire genus, especially since no other morphological evidence support placement of *Anacamptodon* in the Amblystegiaceae. This genus is a highly aberrant element in this family which does not have a single morphological synapomorphy. Unfortunately, this is not the only case of proposing revolutionary changes in the classification scheme of mosses based on such fragmentary and incomplete molecular data, which only leads to a deepening chaos in systematics and nomenclature.

TYPIFICATION OF ANACAMPTODON SPLACHNOIDES

The description of *Orthotrichum splachnoides* is based on a single gathering made by Josef A. von Frölich in Ellwangen in Baden-Württemberg (Bridel 1812). It was split into at least seven duplicates which are all syntypes under Art. 9.6 of the current *Shenzhen Code* (Turland *et al.* 2018). They are preserved in the following four herbaria, including the personal herbarium of Frölich at TUB, the Swartz Herbarium at S, the Bridel Herbarium at B and the Hedwig/Schwägrichen Herbarium at G.

(1) The personal collections of Josef A. von Frölich are currently preserved in the herbarium of the Eberhard Karl University of Tübingen (TUB) (Frahm and Eggers 2001, Wolf 2004). There are two sheets kept in the covers with external handwritten label data. The first sheet (*Figure 6*) consists of eleven clumps glued to the paper sheet with the external label which reads “Orthotrichum

splachnoides mihi". It is the only original textual material currently accompanying this specimen. Interestingly, Wolf (2004: p. 106) provided the following additional information for this specimen:

"L.[egi?] Elvaci ad silvarum margines in cavitate truncorum Pini hyeme nive et aqua repleta Jun. Julio", but no such annotation is actually available in the herbarium specimen at TUB (Uta Grünert, *in litteris*, 6 April 2023).

The second sheet (*Figure 7*) comprises three single shoots in the upper row and six clumps of various size, including one robust, four medium-sized and one small. On this specimens Frölich wrote: "Anacamptodon splachnoides. Brid. Meth. Musc. p. 136. Neck. splachnoides. Schwag. Suppl. 2". The use of the later names may suggest that this specimen was collected after description of the species and it is not a part of the original gathering which was used for description of the species. Therefore this specimen should be considered rather as a topotype, i.e. a specimen collected after description of a species or an infraspecific taxon at the *locus classicus*. Wolf (2004: p. 106) added the following information for this specimen: "Elvaci in cavitate truncorum Pini". Interestingly, the habitat data cited by Wolf (2004) show that the specimens were collected on the trunk of pine, whereas in the protologue of *Orthotrichum splachnoides* and on the label of the specimens in the Bridel Herbarium, the trunk of fir tree is indicated as the habitat of the specimen.

(2) Frölich sent a sample from the gathering collected in 1811 to Olof Swartz (1760–1818) for consultation. At present there are four specimens housed in the Swartz Herbarium at S bearing the accession numbers B90680, B90681, B90687, B90767 according to the botanical collection database: <https://herbarium.nrm.se/search/specimens/?query=Anacamptodon+splachnoides&name=&family=&basionym=&continent=all&year=&collector=&collectornumber=&group=&createddate>. Unfortunately, no images of the specimens are available, nor is it currently possible to access the specimens due to renovation of the Swedish Museum of Natural History.

(3) One duplicate Frölich donated to Samuel E. Bridel and it is now available in his personal herbarium at B. It consists of a single tuft permanently attached to a herbarium sheet with a label handwritten by Frölich (*Figure 1*). Next to the collecting site, Frölich

wrote the species name “*Orthotrichum splachnoides mihi*” with a question mark and a comprehensive diagnosis of this putative new species.

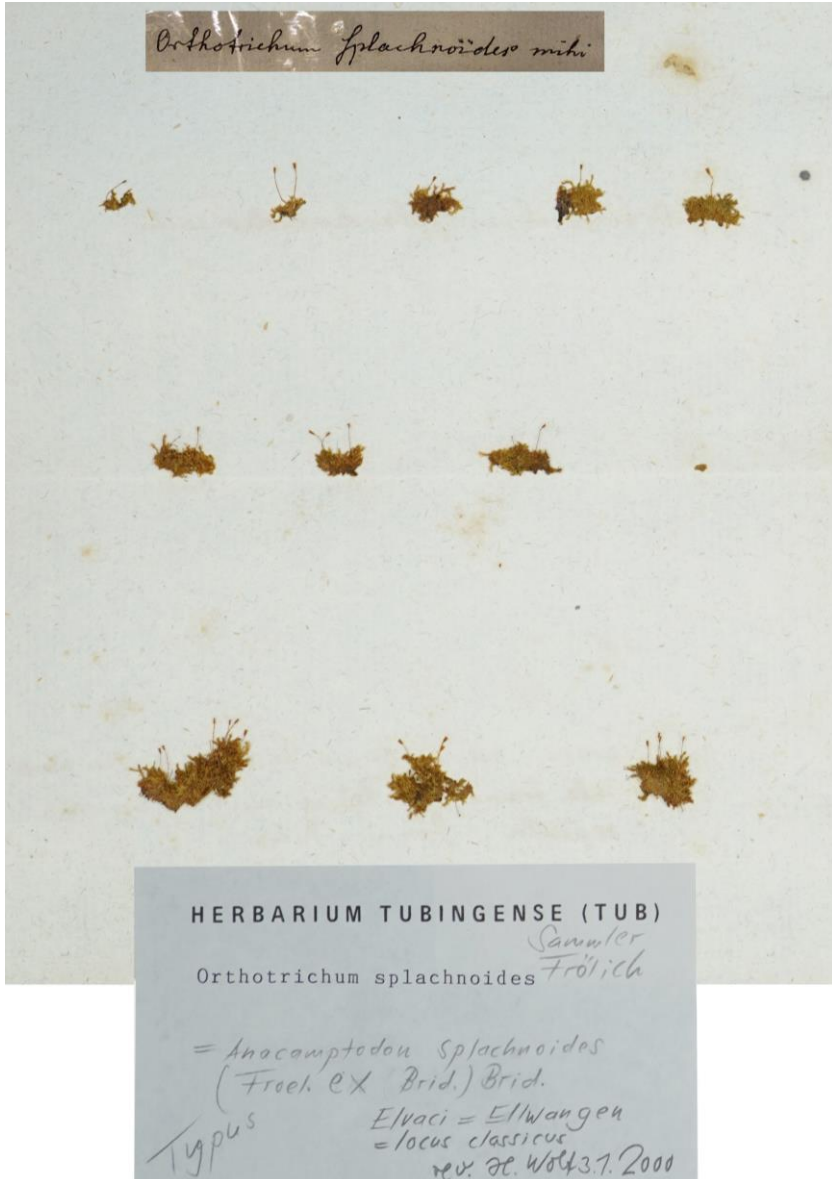


Figure 6. The isolectotype of *Orthotrichum splachnoides* Fröel. ex Brid. from the Frölich Herbarium at TUB. The handwritten species name is taken from the cover.

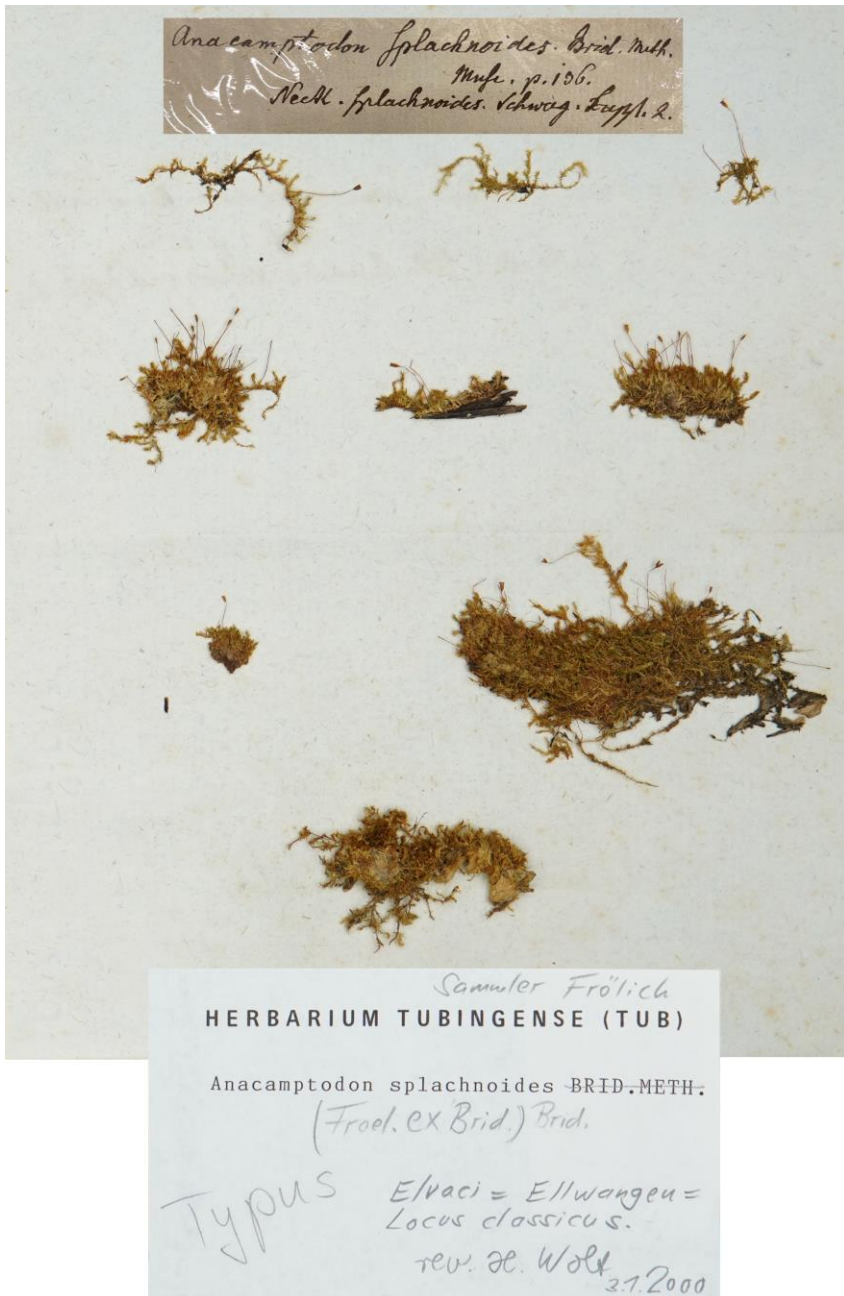


Figure 7. The topotype of *Orthotrichum splachnoides* Froel. ex Brid. from the Frölich Herbarium at TUB. The handwritten species name is taken from the cover.

(4) Finally, one duplicate which Frölich presented to Christian F. Schwägrichen in Leipzig is now housed in the Hedwig–Schwägrichen Herbarium at G. This specimen can be seen on the following link: <https://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=413244&base=img&lang=fr>. It was used by Schwägrichen (1816) for the description and illustration of his *Neckera splachnoides* (Figure 4).

Because at least seven duplicates (syntypes) of the original gathering exist, the lectotypification of *Orthotrichum splachnoides* is necessary. The specimen from the Bridel Herbarium is here designated as the lectotype of this name since it was used by Bridel (1812) for description of this species and there is no evidence that he saw and studied other syntypes.

Bridel (1812) respected the suggestion of Josef A. von Frölich, the discoverer of this new species, and accepted the name proposed by him. Additionally, he included the unpublished designation “*Orthotrichum splachnoides* Froel.” in the protologue of the newly described species. This led many earlier authors to ascribe the name of this species to Frölich alone (e.g. Pfeffer 1869, 1871; Boulay 1872; Limpricht 1895; Roth 1905; Mönkemeyer 1927; Grout 1934, 1947). This solution may also be supported by the fact that the author provided the diagnosis on the label. Unfortunately, this diagnosis was not published, and Bridel (1812) presented his own diagnosis and description of the species, although in some places he used certain phrases from Frölich’s diagnosis. Because manuscript information is not relevant for purposes of attribution of a name, only published ascriptions, Bridel has to be considered the actual author who validly published *Orthotrichum splachnoides*. However, because Frölich coined the specific epithet and proposed the generic placement of the species, the name *O. splachnoides* should be also attributed to him as an honorary author. Thus, the attribution *O. splachnoides* Froel. ex Brid. is permissible under Art. 46.3 second sentence of the *Shenzhen Code* (Turland *et al.* 2018) which reads: “An author citation associated with a *synonym* (our italic) does not constitute ascription of the accepted name, nor does reference to a basionym or a replaced synonym (regardless of bibliographic accuracy) or reference to a homonym.” The reason for acceptance of Frölich as an honorary author of this species name is that his *Orthotrichum splachnoides* Froel. is **the same “name”, not a**

synonym, that has not been validly published, as *O. splachnoides* Brid. validly published by Bridel (1812). In such situations an author citation associated with the same “name” should be considered ascription of the accepted name.

The lectotype specimen was twice illustrated by Bridel (1819, 1827) (see *Figures 2* and *3*) and it conforms to Bridel’s (1812) original description of *Orthotrichum splachnoides* and to the generally accepted modern taxonomic concept of it.

***Anacamptodon splachnoides* (Froel. ex Brid.) Brid.**

Mant. Musc.: 136, *pl. 2, f. 11*. Mar 1819 [‘15 Dec 1818’] ≡ *Orthotrichum splachnoides* Froel. ex Brid., Musc. Rec. Suppl. 2: 4–5. 27 Sep 1812 [*Orthotrichum splachnoides* Froel. in Brid., Musc. Rec. Suppl. 2: 4. 27 Sep 1812, *nom. nud.*] ≡ *Neckera splachnoides* (Froel. ex Brid.) Schwägr., Spec. Musc. Frond. Suppl. 1(2): 151, *t. 82*. Ante 9 May 1816, *hom. illeg.* [non *N. splachnoides* Sm., Engl. Bot. 36: *t. 2564*. 1 Mar 1813–Mar 1814] ≡ *Fabronia splachnoides* (Froel. ex Brid.) Müll.Hal., Syn. Musc. Frond. 2: 38. 6 Sep 1850. **Type citation:** [Germany, Baden-Württemberg] Prope Elvacum (*Elwangen*) in Suevia ad truncos abietum clar. Frölichius detexit et benigne communicavit. Caespitose vivit cortici arborum tam arcte adhaerens ut vix divellas. Thecas Junio maturat. **Lectotypus** (*hoc loco designatus*): “*Anacamptodon splachnoides* Bryol. Univ. [manu Bridel] ? *Orthotrichum splachnoides* mihi [manu Frölich] Verum *Orthotrichum Orthotrichum Fröhlichii* [manu Bridel] L. Elvaci ad truncos abietum Caps. Junio maturat Perist. dupl ext. dentes 16 per paria approximati basi subconnati reflexi lanceolati acuti; intern. ciliae 16 capillariae erectiusculae articulae liberae. Operculum rectum conico-rostratum Calyptra conica laevis glabra Capsula erecta laevis oblonga sub ore constricta, anulo [sic!] protuberante Folia ovata s. ovato-lanceolata acuminata integerrima. nervo supra medium evenescente, apice inflexa, subsecunda, patulo squarrosa (Froelich)” – B-Bridel! **Isolectotypi:** (1) “*Anacamptodon splachnoides* d. Frölich” – G-Hedwig /Schwaegrichen barcode G00281552 (*ex icone, specimen non examinatus*); (2) S-Swartz B90680, B90681, B90687, B90767 (*specimina non examinanti*); (3) “*Orthotrichum splachnoides* mihi” – TUB (*ex icone, specimen non examinatus*). **Topotypus:** “*Anacamptodon splachnoides*. Brid. Meth. Musc. p. 136. Neck. splachnoides. Schwag. Suppl. 2” – TUB (*ex icone, specimen non examinatus*).

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