

## A type catalog and a checklist of *Dicranella s.l.* (Dicranellaceae, Bryophyta) species from the Neotropics

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**Abstract:** Carmo, D.M. & Peralta, D.F. (2026): A type catalog and a checklist of *Dicranella* (Dicranellaceae, Bryophyta) species from the Neotropics. *Frahmia* 51:1-21.<sup>1</sup>

The Neotropical encompasses great diversity of plant species, but the flora of some bryophyte species remains uncertain due to a lack of studies. This study verified the taxonomic status of *Dicranella s.l.* species occurring in the Neotropics through loans provided by many international herbaria and bibliographies. A total of 57 Neotropical species were studied, with 22 lectotypes being designated and probable holotypes being indicated. Furthermore, information on the Neotropical distribution of *Dicranella* species, type specimens, basynonyms, synonyms and taxonomic status was provided and updated.

### 1. Introduction

The Neotropical biogeographic region is a territorial unit that covers South and Central America, extending as far north as central Mexico (Sclater 1858; Wallace 1876; Morrone 2014). Despite its large area, there are few registries of bryophytes with brief assessments of their general taxonomic and conservation status (Crosby et al. 1999; Gradstein et al. 2001; Ellis and Price 2013). However, this pattern has started to change in the last sixty years or so, with the emergence of several floristic surveys and regional floras (Crum and Steere 1957; Crum and Bartram 1958; Crum and Steere 1958; Florschütz 1964; Pursell 1973; Hermann 1976; Gradstein and Weber 1982; Buck 1995; Robinson 1986; Menzel 1992; Allen 1994; Churchill 1994; Sharp et al. 1994; Churchill and Linares 1995; Delgadillo et al. 1995; Duarte-Bello 1997; Buck 1998; Churchill 1998; He 1998; Churchill et al. 2000; Matteri 2003; Ochyra et al. 2008; Larraín et al. 2010; Costa et al. 2011; Yano 2011; Carmo and Peralta 2016; Costa et al. 2016; Cañiza et al. 2017; Santos et al. 2017; Carmo et al. 2018; Carmo and Peralta 2020).

The knowledge of type registers is an important characteristic for taxonomists, as it helps them to understand the correct location, identification and nomenclature rules applied to type specimens (Frahm 1994; Câmara et al. 2014). This kind of information is scarcely known within the *Dicranella s.l.* genus since the type citations were often brief or rather vague (Ellis and Price 2013). Discovering, studying and identifying type specimens can be difficult for several reasons and requires a large amount of time and experience to check all the herbarium specimens, as well as good library facilities, in order to confirm the status of the type specimens with the protologue (Frahm 1999). Furthermore, difficulties that could be encountered in taxonomic studies include locating duplicates in herbaria, finding type specimens that match the species

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description protologue and lost collections due to herbaria destruction as a result of wars, fires or disregard for herbaria conditions (Merrill 1943; Câmara et al. 2014; Bordin et al. 2018).

Efforts are needed to revise the taxonomy of the *Dicranella s.l.* genus, as there are unresolved issues in its nomenclatural history (Fedosov et al. 2023). For example, the names of many *Dicranella s.l.* species remain without suitable indications of their type specimens, since the genus name itself was proposed through the designation of a lectotype to conserve its name. (Margadant and Geissler 1995). However, some species of *Dicranella s.l.* have had their names validly published in accordance with the International Code of Nomenclature for algae, fungi and plants (McNeill et al. 2012). The aim of this work is therefore to list and compile type specimens of Neotropical *Dicranella s.l.* species that have been validly named. Moreover, this work will provide information on the types of species present, where they are deposited and how they are distributed in the Neotropics. Thus, future studies on new combinations and synonyms can be based on these findings. In addition, this catalogue and checklist includes the designation of some lectotypes when required.

## 2. Material and Methods

The catalogue is presented in alphabetical order by the name of the Neotropical *Dicranella s.l.* species, along with the abbreviations used to identify the basionym, homotypic and heterotypic synonyms and new combinations. The types are according to Frahm (1994) and the herbarium codes follow the Index Herbariorum (NYBG). The species names, basionyms and type information were taken from the primary literary references for describing Neotropic *Dicranella* species, such as: Hedwig (1801), Schimper (1856) and Mitten (1869). To compile this catalogue, searches were conducted on specific taxonomic websites such as TROPICOS and JSTOR. In addition, the locations where the types were deposited and the way in which the authors' names were abbreviated were in accordance with Stafleu & Cowan's compilation (1976; 1979; 1981; 1985; 1986; 1988). Moreover, some specimen and type specimen loans were taken to verify the taxonomic status, such as the indication of the type specimen, and to check that the information given on the exsiccate labels is consistent with the protologue and the publication in which these species were described.

This work is based on available literature and exsiccates and types specimen loans from herbaria that were consulted. The references used to complete the checklist and the Neotropical distribution are as follows: Crum and Steere (1957), Crum and Bartram (1958), Crum and Steere (1958), Florschütz (1964), Pursell (1973), Hermann (1976), Gradstein and Weber (1982), Buck (1995), Robinson (1986), Menzel (1992), Allen (1994), Churchill (1994), Crum (1994), Churchill and Linares (1995), Delgadillo et al. (1995), Duarte-Bello (1997), Buck (1998), Churchill (1998), He (1998), Crosby et al. (1999), Churchill et al. (2000), Gradstein et al. (2001), Matteri (2003), Ochyra et al. (2008), Larraín et al. (2010), Costa et al. (2011), Yano (2011), Carmo and Peralta (2016), Carmo et al. (2016), Costa et al. (2016), Cañiza et al. (2017), Santos et al. (2017), Carmo et al. (2018) and Carmo and Peralta (2020).

The herbariums consulted were Universidade Federal da Bahia (ALCB), The Natural History Museum (BM), Conservatoire et Jardin botaniques de la Ville de Genève (G), Universität Göttingen (GOET), H-Br, Jena University (JE), Museu Paraense Emílio Goeldi (MG), New York Botanical Garden (NYBG), Muséum National d'Histoire Naturelle (P), Pontificia Universidad Católica del Ecuador (QCA), Jardim Botânico do Rio de Janeiro (R), Swedish Museum of Natural History (S), Instituto de Pesquisas Ambientais (SP) and Universidade Federal de Pernambuco (UFP). The countries marked with an asterisk (\*) correspond to new occurrences verified through our sample survey and analyses. The voucher is available in Appendix 1 at the end of this manuscript and checklist.

## 3. Results & Discussion

According to this study, 22 lectotypes were designated and the probable holotype of 12 species was indicated, with specimens corresponding to the protologue description of the species in their original literature. In total, twenty-one species names did not have specimens matching the original herbarium specimens indicated by the authors (Stafleu and Cowan 1976; 1979; 1981; 1983; 1985; 1986; 1988) and their original herbarium deposits could not be consulted. Comments about the original herbaria and type specimen of the species that presented these conditions were discussed following their protologue presentation.

Following our revision, we could not find the material type or specimens voucher for eight *Dicranella s.l.* species cited for the Neotropical region, since a material type specimen has not yet been designated or indicated for these species. These materials were not designated as a type specimen because some of the necessary information was missing, such as where it was collected, which herbaria it was deposited in, who collected it and when, and the correct collector number. Some of these information were completed and provided between brackets in the protologue of the species. The list containing the published valid name, material type designation, protologue, herbaria of deposit, new combinations, heterotypic synonyms and geographic distribution in the Neotropics, as well as discussions and comments about types or new lectotype designations, is available in the next checklist section.

#### 4. Checklist of *Dicranella s.l.* species occurring in the Neotropics

1. *Dicranella affinis* Ångström, Öfvers. Förh. Kongl. Svenska Vetensk.-Akad. 3(4): 3. 1876. Type: Brasiliae, Minas Gerais, qui ad Caldas, *J.F. Widgren s.n.* (prob. Holotype S179564!).

Neotropical Distribution: Brazil.

The specimen housed at the S herbarium (the original herbarium of this author, according to Stafleu and Cowan 1976) is probably the holotype. The specimen has a label indicating that it could correspond to the holotype and match the protologue information of this species exactly.

2. *Dicranella angustifolia* Mitt., J. Linn. Soc., Bot. 12: 35. 1869. Type: [Colômbia], Andes Bogotensis, in sylva supra Pacho (6000 ped.) ad viam, *J. Weir 138* (lectotype NY01093616! designated by Carmo and Peralta (2020), syntypes BM000879278!, BM000879279!, NY01093614!, NY01093615!, E00429158!, E00429159!, BM000724667!); [Ecuador] Andes Quitensis, in sylva Canelos, Spruce 38b (syntypes NY01093613!, BM000724669!, E00429160!).

Neotropical Distribution: Brazil, Bolivia, Colombia, Ecuador, Venezuela.

3. *Dicranella apolensis* R.S. Williams, Bull. New York Bot. Gard. 3(9): 106. 1903. Type: Bolivia, on sand along stream, Apolo, 1 July 1902, *Williams 1743* (lectotype BM000879280! designated by Carmo and Peralta (2020), syntypes BM000879281!, F0001106C!, JE04000616!, NY01093617!).

Neotropical Distribution: Brazil, Bolivia and Peru.

4. *Dicranella bicolor* (Müll. Hal.) Mitt., J. Linn. Soc., Bot. 12: 35. 1869 ≡ *Aongstroemia bicolor* Müll. Hal., Syn. Musc. Frond. 1: 444. 1848. Type: [Colombia] Columbia, ubi in in colonia Germanica, Toval altitudine 5500 ped., *Moritz 21b* (lectotype BM000879276!, here designated, syntype BM000879277!).

Neotropical Distribution: Colombia, \*Ecuador and Venezuela

In accordance with the original herbarium of this species, the type specimen should be found or deposited in the B herbarium (Herbarium of the Botanical Museum Berlin-Dahlem, Germany ) (Stafleu and Cowan 1981). However, this herbarium and the specimens deposited in it were destroyed in the Second World War in 1943 (Merrill 1943). Therefore, the main Müll. Hal.'s species copies, which were used for new species descriptions, were sent to other herbaria around the world, primarily FI and JE, but also BM, S, H and NY (Stafleu and Cowan 1981). However, a sample corresponding to the original description of this species, as well as its morphological characteristics, was found in the BM herbarium as sample 000879276. This sample has been proposed for designation as a lectotype.

5. *Dicranella bogotensis* (Hampe) Mitt., J. Linn. Soc., Bot. 12: 37. 1869 ≡ *Aongstroemia bogotensis* Hampe, Ann. Sci. Nat., Bot., sér. 5, 3: 357. 1865. Type: [Colombia] Bogota, altit. 2800 metr., ad Barrancas, inter alias, martio deoperculatam parce leg. *A. Lindig. [s.n.]* (prob. Holotype BM000879275!).

Neotropical Distribution: Colombia.

6. *Dicranella boliviana* Herzog, Biblioth. Bot. 87: 165. 1916. Type: Bolivia, [Prov. Cochabamba], Auf Edre am Wegrand bei Incacorral, ca. 2200 m, Januar 1908, *Herzog 289* (prob. Holotype JE04000630!).

Neotropical Distribution: Bolivia and \*Ecuador.

7. *Dicranella caldensis* Ångström, Öfvers. Förh. Kongl. Svenska Vetensk.-Akad. 3(4): 3. 1876. Type: Brasiliae, Minas Gerais, qui ad Caldas, *J.F. Widgren s.n.* (prob. Holotype SB240901!).

Neotropical Distribution: Brazil.

8. *Dicranella callosa* (Hampe) Mitt., J. Linn. Soc., Bot. 12: 36. 1869 ≡ *Aongstroemia callosa* Hampe, Linnæa 32: 134. 1863. Type: [Colombia, Nova Granada], In locis humidis umbrosus, Sinche Salto, 2600 metr. Febr. [1860, *Lindig. 2060*] (lectotype BM000873157!, here designated, syntypes BM000879264!, BM000879265!, BM000879266!, GOET012234!, NY01914667!, NY01917505!, PC0128971!, PC0128972!, PC0128973!).

Neotropical Distribution: Bolivia and Colombia.

9. *Dicranella capituligera* (Müll. Hal.) Paris, (Index Bryol.) 227. 1896 ≡ *Anisothecium capituligerum* (Müll. Hal.) Thér. Na. Bryol. Lichénol. 7: 170. 1935 ≡ *Dichodontium capituligerum* (Müll. Hal.) Paris, Index Bryol. Suppl. 114. 1900 ≡ *Aongstroemia capituligera* Müll. Hal., Linnæa 42: 308. 1879. Type: [Argentina] *Argentina cordobensis*, regionibus Las Penas, Sn. Francisco, Sn. Bartolo, Janeiro 1871, cum fructibus nonnullis vetustis et aliis paucis junioribus, [*Dr. P.G. Lorentz s.n.*] (lectotype JE04000600! here designated, syntype BM000879348!).

Neotropical Distribution: Argentina.

According to Stafleu and Cowan (1981), the original herbaria of the type species designated by this author should be found or deposited in the B herbarium (Herbarium of the Botanical Museum Berlin-Dahlem, Germany). However, the existing specimens were destroyed in the Second World War in 1943 (Merrill 1943). Therefore, the main Müll. Hal.'s species copies, which were used for new species descriptions, were sent to other herbaria around the world, primarily FI and JE, but also BM, S, H and NY (Stafleu and Cowan 1981). The sample chosen for the new lectotypification process was JE04000600, this specimen contains the morphological characteristics and protologue information described in the publication of the species name.

10. *Dicranella circinata* Herzog, Na. Bryol. Lichénol. 23: 41. 1954. Type: Chile, Fl. V. Südchile Calbuco, Westküste, 28.8.1937. leg. *G.H. Schwabe 167* (lectotype LIL not seen designated by Larraín et al. (2010), syntype JE04002236!).

Neotropical Distribution: Chile.

In Larraín et al. (2010), this species was given a lectotype based on the discovery of samples with fertile plants, a characteristic that aids the identification of many *Dicranella* species (Allen 1994; Crum 1994; Ochyra et al. 2000; Crum 2007; Ochyra et al. 2008; Larraín et al. 2010; Ellis & Price 2013).

11. *Dicranella consimilis* (Hampe) Mitt., J. Linn. Soc., Bot. 12: 32. 1869 ≡ *Aongstroemia consimilis* Hampe, Ann. Sci. Nat., Bot., sér. 5, 5: 336. 1866. Type: [Colombia], Bogota, Tequendama, 2500 met., in societate Conomitrii Lindigii parce ab *Lindigio [s.n.]* (prob. Holotype BM000879261!).

Neotropical Distribution: Colombia and Ecuador.

12. *Dicranella crenulata* Broth., Bih. Kongl. Svenska Vetensk.-Akad. Handl. 26 Afd. 3(7): 7. 1900 ≡ *Leptotrichella crenulata* (Broth.) Ochyra, Fragm. Florist. Geobot. 42: 561. 1997 ≡ *Microdus crenulatus* (Broth.) Paris, Index Bryol. (ed. 2) 3: 235. 1905. Type: Paraguay: Villa Rica, ad terram sub humidam [*C.A.M. Lindman*] 275 (prob. Holotype H2719015!, Hb-Brotherus).

Neotropical Distribution: Paraguay.

13. *Dicranella crinalis* Geh. & Hampe, Flora 64: 339. 1881 ≡ *Aongstroemia crinalis* (Geh. & Hampe) Müll. Hal., Gen. Musc. Frond. 324. 1900. Type: [Brasiliae], [S. Paulo] Prope Apiahy, Augusto 1879, [J.J. Puiggari s.n.] (prob. Holotype BM000879253!).

Neotropical Distribution: Brazil.

Most of the original samples described by Geh. & Hampe were deposited at the B herbarium (Stafleu and Cowan, 1976). However, many original specimens were transferred to other herbaria around the world, including the BM, after the destruction of the B herbarium during the Second World War (Merrill 1943). The BM is the original herbarium of the second author responsible for this species description. Thus, a sample corresponding to the morphological characteristics, protologue information and type location was found at the BM herbarium with the number code selected above, and is considered a lectotype.

14. *Dicranella ditissima* (Hampe) Mitt., J. Linn. Soc., Bot. 12: 34. 1869 ≡ *Aongstroemia ditissima* Hampe, Linnaea 32: 134. 1863. Type: [Colombia], in sylv. Manzanos ad Barrancos, 2800 metr., April. [1860] [Lindig. 2062] (lectotype BM000879252!, here designated, syntypes BM000879250!, BM000879251!, GOET012233!, NY01086230!, PC0129022!, PC0129023!, PC0129024!).

Neotropical Distribution: Colombia and \*Equador.

We chose sample BM000879252 because it contains a large number of gametophytes and sporophytes compared to the other BM herbarium samples of this species, which is the corresponding original author's herbarium of this species name (Stafleu and Cowan 1979).

15. *Dicranella elata* Schimp. Ex Mitt., J. Linn. Soc., Bot. 12: 33. 1869 ≡ *Aongstroemia elata* (Schimp. Ex Mitt.) Müll. Hal., Gen. Musc. Frond. 324. 1900. Type: [Peru]. Peruvia, prope San Govan in rupibus humidis, [1854]. *Lechler 2280* (lectotype BM000724679! here designated, syntypes BM000724672!, BM000724673!, BM000873156!, GOET012232!, NY01093621!, PC0128985!, PC0128986!, PC0128987!), [Ecuador] Andes Quitenses, in sylv. Canelos (3000 ped.), *Spruce 41* (syntypes BM000724671!, BM000724674!, BM000724675!, PC0128988!); Fl. Amazon, in praeruptis secus Obidos, [sin. Leg.] (syntypes BM000724677!, BM000724678!, BM000724680!, BM000724681!).

Neotropical Distribution: Brazil, Ecuador and Peru.

We designated sample BM000724679 as a lectotype because it contains a large number of gametophytes and sporophytes compared to other samples in the BM herbarium, which is the original author's corresponding herbarium for this species name (Stafleu and Cowan, 1979).

Regarding the geographic distribution of this species in Brazil, Churchill (1998) cited it in the Brazilian Amazon in the state of Pará. However, the sample of specimens used for this occurrence is a collection of Spruce without a collector's number, deposited at the New York Botanical Garden Herbarium (NY). Therefore, we could not locate this sample to verify the geographic distribution, and it was not identified in our analyses as occurring in Brazil.

16. *Dicranella exigua* (Schwägr.) Mitt., J. Linn. Soc., Bot. 12: 30. 1869 ≡ *Leptotrichella exigua* (Schwägr.) Ochyra, Fragm. Florist. Geobot. 42: 562. 1997 ≡ *Microdus exiguus* (Schwägr.) Besch., (Index Bryol.) 803. 1897 ≡ *Leptotrichum exiguum* (Schwägr.) Mitt., (J. Proc. Linn. Soc., Bot., Suppl.) 1: 9. 1859 ≡ *Aongstroemia exigua* (Schwägr.) Müll. Hal., (Syn. Musc. Frond.) 1: 444. 1848 ≡ *Weissia exigua* Schwägr., Sp. Musc. Frond., Suppl. 2(2): 93. Pl. 179. 1827. Type: Brasilia, in Serra d'Estrella, [I.II.1823] *Beyrichii* [4] (lectotype BM000879320! here designated, BM000879319!, BM000879321!, BM000879322!, JE04002367!).

Neotropical Distribution: Brazil, Caribbean, Cuba and Peru.

The sample used to designate the lectotype was BM000879320. The original author's herbarium corresponds to the Conservatoire et Jardin botaniques de la Ville de Genève in Switzerland (G) (Stafleu and Cowan 1985). However, we could not find any sample that matched this species' basionym or the protologue description.

17. *Dicranella fuegiana* Cardot & Broth., Kongl. Svenska Vetensk. Acad. Handl., n.s. 63 (10): 12. 1923. Type: Chile, Terre de Feu: Sierra Valdivieso, in trajectu Paso de las Lagunas, alt. c. 700 m. s.m. 12.III.1908. *C.J.F. Skottsberg 747* (prob. Holotype PC0132004!).

Neotropical Distribution: Chile.

18. *Dicranella fusca* Broth., Acta Soc. Sci. Fenn. 19(5): 5. 1891  $\equiv$  *Aongstroemia fusca* (Broth.) Müll. Hal., Gen. Musc. Frond. 324. 1900. Type: [Brasilia], Prov. Minas Gerais, Caraça, ad rupes, [1885] *E. Wainio s.n.* (lectotype H1155033! Hb-Brotherus, designated by Carmo and Peralta (2020), syntype TUR00634!).

Neotropical Distribution: Brazil.

19. *Dicranella glaziovii* (Hampe) Hampe, Vidensk. Meddel. Dansk Naturhist. Foren. Kjøbenhavn ser. 4, 1: 87. 1879  $\equiv$  *Aongstroemia glaziovii* Hampe, Vidensk. Meddel. Dansk Naturhist. Foren. Kjøbenhavn 9: 253. 1877. Type: BRAZIL, Rio Preto, *Glaziou 9073* (lectotype BM000879248! designated by Costa et al. (2016), syntypes BM000879249!, P0071883!, P0128997!, P0709286!).

Neotropical Distribution: Brazil.

20. *Dicranella gymna* (Müll. Hal.) Broth., Nat. Pflanzenfam. I(3): 309. 1901  $\equiv$  *Leptotrichella gymna* (Müll. Hal.) Ochyra, Fragm. Florist. Geobot. 42: 562. 1997  $\equiv$  *Microdus gymnus* (Müll. Hal.) Paris, Index Bryol. Suppl. 244. 1900  $\equiv$  *Aongstroemia gymna* Müll. Hal., Bull. Herb. Boissier 6: 43. 1898. Type: Brasilia, Serra Itatiaia, 1700 m. alta, in declivibus, Martio 1894, *E. Ule 1806* (lectotype H2719028! Hb-Brotherus, designated by Carmo and Peralta (2020)).

Neotropical Distribution: Brazil.

21. *Dicranella harrisii* (Müll. Hal.) Broth., Nat. Pflanzenfam. I(3): 309. 1901  $\equiv$  *Microdus harrisii* (Müll. Hal.) Paris, Index Bryol. Suppl. 244. 1900  $\equiv$  *Aongstroemia harrisii* Müll. Hal., Bull. Herb. Boissier 5: 554. 1897. Type: Jamaica, Blue Mountains Peak, 7420 ped. Alta, in solo, [31] Martio 1896, *W. Harris 10068* Hb-Jamaicense (lectotype BM000879247! designated by Carmo and Peralta (2020), isotype: NY00615187!, NY00615188!, NY00615189!, PC0129007!, PC0129008!).

Neotropical Distribution: Brazil, Caribbean, Costa Rica, Ecuador, Guatemala, Honduras, Jamaica, Nicaragua and Panama.

22. *Dicranella hawaiiica* (Müll. Hal.) Broth., Nat. Pflanzenfam. I(3): 310. 13. 1901  $\equiv$  *Microdus hawaiiicus* (Müll. Hal.) Paris, Index Bryol. Suppl. 245. 1900  $\equiv$  *Aongstroemia hawaiiica* Müll. Hal., (Flora) 82: 446. 1896. Type: [Hawai] Insulae Hawaiicae, sine loco speciali, Wheeler, 1879, *Boswell [s.n.]* Hb-Geheeb. (prob. Holotype H2722003! Hb-Brotherus).

Neotropical Distribution: Hawaiian.

The sample found at the University of Helsinki in Finland, represented by the herbarium and number code H2722003, was the only extant sample observed that presented the morphological characteristics and protologue information of the species' publication. According to Stafleu & Cowan (1981), the original samples of Müll. Hal.'s species description should have been deposited at the Herbarium of the Botanical Museum Berlin-Dahlem, in Germany, represented by (B), currently known as Botanischer Garten und Botanisches Museum, Freie Universität Berlin. However, as a consequence of the Second World War, these samples were sent to other herbaria around the world in 1943 (Merrill 1943). Primarily, they were sent to the FI and JE herbaria, but also to the BM, S, H and NY herbaria (Stafleu & Cowan 1981).

23. *Dicranella hilariana* (Mont.) Mitt., J. Linn. Soc., Bot. 12: 31. 1869  $\equiv$  *Aongstroemia hilariana* (Mont.) Müll. Hal., Syn. Musc. Frond. 1: 443. 1848  $\equiv$  *Microdus hilarianus* (Mont.) Besch., Index Bryol. 804. 1897  $\equiv$  *Dicranum hilarianum* Mont., Ann. Sci. Nat., Bot., sér. 2, 12: 52. 1 f. 2. 1839. Type: [Brasil], Ad terram, in Brasilia meridionali,

[*A. Saint-Hilaire s.n.*]. (lectotype P0146145! designated by Carmo and Peralta (2020), syntypes BM000663421!, BM000663424!, P0728963!).

= *Campylochaetium mexicanum* Besch., Mém. Soc. Sci. Nat. Math. Cherbourg 16: 168. 1872 ≡ *Aongstroemia mexicana* (Besch.) Müll. Hal., Linnaea 38: 630. 1874 ≡ *Dicranella mexicana* (Besch.) A. Jaeger, Gen. Sp. Musc. 2: 637, 1877 [78: 373, Ber. Thätigk. St. Gallischen Naturwiss. Ges. 1880] ≡ *Campylopodium mexicanum* (Besch.) Paris., Index Bryol. (ed. 2) 1: 295. 1904. Type: [Mexico] Mirador (Sartorius in Hb-Schimper) (lectotype BM000879379! here designated, BM000879378!, NY00322518!); [Mexico] in monte Orizabensi, Liebmann in Hb-Montagne (BM000879376!, NY00322517!), syn acc. Wijk et al. (1959).

= *Dicranella herminieri* Besch., Ann. Sci. Nat., Bot., sér. 6, 3: 180. 1876. Type: Guadeloupe (F. L'Herminier, in herb. Mus. Par., sub *Dicranella guilleminii* Montg.) [*s.n.*] (lectotype P0129009! here designated, BM000879246!, NY00606261!, PC0129010!, PC0129011!), syn acc. FNA (2007).

= *Dicranum debile* Hook. & Wilson, Musci Amer., S. States 51, 52. 1841, non *Dicranum debile* R. Br., Trans. & Proc. New Zealand Inst. 29: 456. 30 f. 7. 1897, hom ileg. ≡ *Cynodontium debile* (Hook. & Wilson) A. Jaeger, Gen. Sp. Musc. 1: 65 1870–71: 361., Ber. Thätigk. St. Gallischen Naturwiss. Ges. 1872 ≡ *Dicranella debilis* (Hook. & Wilson) Lesq. & James, Man. Mosses N. America 66. 1884 ≡ *Microdus debilis* (Hook. & Wilson) Besch., Index Bryol. 803. 1897 ≡ *Aongstroemia debilis* (Hook. & Wilson) Müll. Hal., Gen. Musc. Frond. 324. 1900. Type: [U.S.A.] Banks of ditches and roadsides, South Carolina to Florida, [*T. Drummond s.n.*] (lectotype BM000965549! here designated, syntypes BM000965544!, BM000965549!, BM000965553!, BM000965554!, BM000965555!, BM000965550!, BM000965559!, DUKE0329760!, NY00339519!, NY00339520!), syn acc. Wijk et al. (1959).

= *Dicranum tenuirostre* Kunze ex Schwägr., Sp. Musc. Frond., Suppl. 4, 308<sup>a</sup>. 1842 ≡ *Aongstroemia tenuirostris* (Kunze ex Schwägr.) Müll. Hal., Syn. Musc. Frond. 1: 441. 1848 ≡ *Dicranella tenuirostris* (Kunze ex Schwägr.) Mitt., J. Linn. Soc., Bot. 12: 30. 1869 ≡ *Microdus tenuirostris* (Kunze ex Schwägr.) Besch., Index Bryol. 806. 1897. Type: [Chile] In Chile Australi, “Pr. Kunze in collectione plantarum siccarum, *Poeppigi 233* (BM not seen), syn acc. Wijk et al. (1959).

= *Dicranella laxiretis* Renaud & Cardot., Na. Bryol. 20: 30. 1893, non *Dicranella laxiretis* Herzog, Biblioth. Bot. 87: 14. 1916, hom. ileg. ≡ *Microdus laxiretis* (Renaud & Cardot) Paris., Index Bryol. (ed. 2) 3: 237. 1905, non *Microdus laxiretis* Broth., Symb. Sin. 4: 16. 1929, hom ileg. Type: [U.S.A., Iowa] *Langlois s.n.* (prob holotype NY00299728!), syn acc. FNA (2007).

= *Dicranella leptotrichoides* Renaud & Cardot., Bot. Gaz. 19: 237. 21<sup>a</sup>. 1894 ≡ *Microdus leptotrichoides* (Renaud & Cardot) Paris., Index Bryol. (ed. 2) 3: 237. 1905. Type: Louisiana: on slopes, Rivière Tchiffouté, Abita Springs, Covington, Fontainebleau near Mandeville, 1891-1892, *A.B. Langlois s.n.* (prob. Holotype NY00300126!), syn acc. FNA (2007).

= *Dicranella recurvata* Ochyra, Arts & Lewis-Smith., Polish Polar Stud., 25th Int. Polar Symp. 166. 1998, invalid, no latin description. Type: (not seen), syn acc. Ochyra et al. (2000).

= *Dicranella subserrulata* R.S. Williams., Bull. New York Bot. Gard. 3(9): 106. 1903. Type: [Bolivia] On sandy cut-bank, Huainachoirisa river, July 28, 1902 [*R.S. Williams 1741*] (lectotype NY01093686! here designated, BM000879387!, F0001111C!, JE04004295!), syn acc. Hermann (1976).

= *Dicranum innovans* Müll. Hal., Bot. Zeitung (Berlin) 2: 709. 1844. Type: [Brazil] *G. Gardner 19* (syntype JE04004296!), syn acc. Wijk et al. (1962).

= *Dicranum sellowii* Hornsch., Fl. Bras. 1(2): 14. 1840. Type: [Uruguai], In campis montevidensibus, *Sellow s.n.* (not seen); [Brazil, Rio de Janeiro] prope Sebastianopolis, julio et Augusto, *Merkel s.n.* (not seen), syn acc. Wijk et al. (1962).

Neotropical Distribution: Bolivia, Brazil, Belize, Colombia, Costa Rica, Cuba, Ecuador, Guatemala, Guianas, Honduras, Jamaica, Mexico, Panama, Peru, Puerto Rico, Uruguay and Venezuela.

24. *Dicranella hookeri* (Müll. Hal.) Cardot, Bull. Herb. Boissier, sér. 2, 6: 4. 1906 ≡ *Anisothecium hookeri* (Müll. Hal.) Broth., Nat. Pflanzenfam. (ed. 2) 10: 178. 1924 ≡ *Aongstroemia hookeri* Müll. Hal., Syn. Musc. Frond. 2: 607. 1851. Type: [Chile], Insula Eremitae ad Cap. Horn, Ab. A. pellucida simillima notis datis differt. *J.D. Hooker s.n.* (lectotype BM000879334! here designated, syntypes BM000879336!, BM000879339!).

= *Aongstroemia patagonica* Müll. Hal., Hedwigia 36: 98. 1897 ≡ *Dichodontium patagonicum* (Müll. Hal.) Paris., Index Bryol. Suppl. 114. 1900 ≡ *Dicranella patagonica* (Müll. Hal.) Broth., Nat. Pflanzenfam. I(3): 311. 1901. Type: [Argentina] Patagonia, inter 50°-52° lat. Austr.: Moreno et Tonini in Museo de La Plata. (lectotype NY01086207! here designated), syn acc. Ochyra (1999).

= *Aongstroemia perdivaricata* Müll. Hal., Hedwigia 37: 115. 1898 ≡ *Dicranella perdivaricata* (Müll. Hal.) Paris, Index Bryol. Suppl. 117. 1900. Type: [Australia] Tasmania, Mt. Wellington, St. Crispins Well, 2000 ped. Alt., Nov. 1890, W. A. Weymouth (not seen), syn acc. Wijk et al. (1959).

= *Aongstroemia redunca* Müll. Hal., Hedwigia 37: 115. 1898. Type: (not seen), syn acc. Wijk et al. (1959).

= *Dicranella subclathrata* Lorentz., Moosstudien 159. 1864 ≡ *Dichodontium subclathratum* (Lorentz) Paris, Index Bryol. 324 1894 ≡ *Aongstroemia subclathrata* (Lorentz) Müll. Hal., Gen. Musc. Frond. 325. 1900. Type: Chile [*Krausse s.n.*] (syntypes BM000879332!, BM000879333!), syn acc. Wijk et al. (1959).

= *Aongstroemia subredunca* Müll. Hal., Hedwigia 37: 114. 1898 ≡ *Dicranella subredunca* (Müll. Hal.) Paris, Index Bryol. Suppl. 118. 1900. Type: Ad terr. Humid. Pac. Nov. Zeland austr. [sin col.] (not seen), syn acc. Wijk et al. (1959).

= *Leptotrichum jamesonii* Mitt., non *Dicranum jamesonii* Taylor, nom illeg., later homonym. Original material: (BM not seen), syn acc. Wijk et al. (1962).

= *Dicranum waimakaririense* R. Br. Bis, Trans. & Proc. New Zealand Inst. 35: 330. 36 f. 10. 1903. Type: [New Zealand] On wet precipitous rocks in the gorge of the River Waimakariri, growing in company with *D. tasmanicum*, which it approaches in all its characters except size. August, 1899, *Robert Brown [s.n.]* (not seen), syn acc. Wijk et al. (1962).

Neotropical Distribution: Argentina, Bolivia, Caribbean, Chile, Colombia, Ecuador and Venezuela.

25. *Dicranella itatiaiae* (Müll. Hal.) Broth., Nat. Pflanzenfam. (3): 309. 1901 ≡ *Microdus itatiaiae* (Müll. Hal.) Paris, Index Bryol. (ed. 2) 3: 237. 1905 ≡ *Leptotrichella itatiaiae* (Müll. Hal.) Ochyra, Fragm. Florist. Geobot. 42: 562. 1997 ≡ *Seligeria itatiaiae* Müll. Hal. Bull. Herb. Boissier 6: 45. 1898. Type: Brasilia, Serra Itatiaia, 2000 m. alta, in solo rupestri, Martio 1894: *E. Ule 1807* [Bryotheca brasiliensis 388] cum Cladastomo Ulei et Psilopilolo Ulei associata viget. (lectotype SP451505! here designated, syntypes R000080364!).

Neotropical Distribution: Brazil.

26. *Dicranella juliformis* Broth., Bih. Kongl. Svenska Vetensk.-Akad. Handl. 26 fd. 3(7): 6. 1900. Type: Brazil, Minas Gerais, S. João d'El-Rei, ad terram sub rupibus, *C.A. Lindman 1* (lectotype SB62519! designated by Carmo and Peralta (2020)).

Neotropical Distribution: Brazil.

27. *Dicranella lindigiana* (Hampe) Mitt., J. Linn. Soc., Bot. 12: 30. 1869 ≡ *Leptotrichella lindigiana* (Hampe) Ochyra, Fragm. Florist. Geobot. 42: 563. 1997 ≡ *Microdus lindigianus* (Hampe) Besch., Index Bryol. 804. 1897 ≡ *Seligeria lindigiana* Hampe, Ann. Sci. Nat., Bot., sér. 5, 3: 353. 1865. Type: [Colombia], Bogota, Socorro et Pic de Cuesta, altit. 1200-1400 metr., ad Barrancas in umbrosis, sept. 1863 leg. *A. Lindig [s.n.]* (lectotype GOET013544! designated by Carmo and Peralta (2020), syntypes BM000879481!, BM000879482!, BM000879483!, BM000879484!, BM000879485!, BM000879486!, BM000879487!, BM000879488!, BM000879489!, BM000879480!, GOET013541!, GOET013542!, GOET013543!, GOET013544!, PC0129057!, PC0695522!).

= *Dicranella sphaerocarpa* Cardot., Na. Bryol. 36: 69. 1909 ≡ *Microdus sphaerocarpus* (Cardot) Broth., Nat. Pflanzenfam. (ed. 2) 10: 181. 1924. Type: [Mexico] Etat de Jalisco: Etzatlan [6500 feet., 6.X]. 1908, *C.G. Pringle 10614* (lectotype P0129085! here designated, syntypes E00108445!, JE04001134!, JE04001135!, MO406056!, MO406057!, NY00597233!, NY00597236!, PC0129086!, PC0695512!, VT031842!), syn acc. Allen (1994).

Neotropical Distribution: \*Brazil, Caribbean, Costa Rica, Colombia, Honduras and Mexico.

28. *Dicranella lorentzii* (Müll. Hal.) Broth., Nat. Pflanzenfam. I(3): 311. 1901 ≡ *Anisothecium lorentzii* (Müll. Hal.) Broth., Nat. Pflanzenfam. (ed. 2) 10: 178. 1924 ≡ *Dichodontium lorentzii* (Müll. Hal.) Paris, Index Bryol. 322. 1894 ≡ *Aongstroemia lorentzii* Müll. Hal., (Linnaea) 43: 389. 1882. Type: Argentina subtropical, Sierra de Tucumán, in alpinis, der Cienega, 1872, [Dr. P.G. Lorentz, s.n.] (lectotype BM000879344! here designated, syntypes JE04000603!, JE04000604!, JE04000605!).

Neotropical Distribution: Argentina.

The original type specimen of this species should be found at the B Herbarium, however, as previously cited, this herbarium was destroyed in the Second World War in 1943 (Merrill 1943), as was the majority of the Müll. Hal's collection, the specimens were sent to other herbaria around the world, primarily FI and JE, but also BM, S, H and NY (Stafleu and Cowan 1981).

According to Suárez et al. (2013), a lectotype of this species was identified by observing some samples during a visit to the Natural History Museum in London. The authors claimed that the BM sample was the only extant specimen for this species. However, the genera *Dicranella* and *Anisothecium* are considered synonymous, or the same taxon in a broad sense (Williams 1913; Scott and Stone 1976; Corley et al. 1981; Crum 1994; Gradstein et al. 2001; Smith 2004; Allen 2005; Casas et al. 2006; Hallingbäck et al. 2006; Crum 2007; Ochyra et al. 2008; Frey and Stech 2009). Three other specimens representing this species were also found and deposited at the JE herbaria.

Thus, after analysing and comparing it with sample JE04000603, we concluded that this species corresponds to the BM sample species proposed by Suárez et al. (2013). In this catalogue, we are supplementing the information provided in the lectotypification with the sample number representing the type specimen of this species, as previously mentioned.

29. *Dicranella luteola* Mitt., J. Linn. Soc., Bot. 12: 33. 1869 ≡ *Aongstroemia luteola* (Mitt.) Müll. Hal., Gen. Musc. Frond. 325. 1900 ≡ *Microdus luteolus* (Mitt.) Paris, Index Bryol. (ed. 2) 3: 238. 1905. Type: Ecuador. Andes Quitenses, in sylvia Canelos, loco Pueblo de Los Libaros (3000 ped.), *Spruce 44*. (lectotype BM000724682! here designated, syntypes BM000724683!, NY01093646!, NY01093647!).

Neotropical Distribution: Colombia and Ecuador.

Of all the analysed material types, we selected sample BM000724682 as the lectotype because this specimen contains a large amount of material, including both gametophytes and sporophytes. Additionally, the label of this exsiccate contains all the protologue information for this species.

According to Stafleu and Cowan (1981), the preferred material type for describing species in William Mitten's collection should be examined at the New York Botanical Garden's Herbarium (NY). However, the gametophytes and sporophytes in these samples were scarce. Furthermore, the exsiccates of these samples did not contain complete protologue information according to the publication of this species.

30. *Dicranella macrostoma* (Müll. Hal.) Paris, Index Bryol. Suppl. 117. 1900 ≡ *Anisothecium macrostomum* (Müll. Hal.) Broth, Nat. Pflanzenfam. (ed. 2) 10: 77. 1924 ≡ *Aongstroemia macrostoma* Müll. Hal., Nuovo Giorn. Bot. Ital., n.s., 4: 38. 1897. Type: Bolivia. [Cochabamba, prope Choquecamata, 1.06.1889, *Germain 1064*] (lectotype H0129020! here designated, syntypes G00265681!, NY01914582!).

Neotropical Distribution: Bolivia.

According to Stafleu and Cowan (1981), the type specimen of this author should be found in the B herbarium. However, this herbarium was destroyed in the Second World War in 1943 (Merrill 1943). Therefore, the main Müll. Hal's species copies, which were collected and used for new species descriptions, were sent to other herbaria around the world, primarily FI and JE, but also BM, S, H and NY (Stafleu and Cowan 1981).

We are designating the sample H0129020, deposited at the University of Helsinki in Finland, as the new lectotype for this species, due to its morphological traits and the information in its exsiccate. Additionally, there is a handwritten document by the author containing the same information as the protologue of the species' publication.

31. *Dicranella martiana* (Hampe) Hampe, Vidensk. Meddel. Dansk Naturhist. Foren. Kjøbenhavn ser. 4, 1: 86. 1879 ≡ *Microdus martianus* (Hampe) Besch., Index Bryol. 805. 1897 ≡ *Leptotrichella martiana* (Hampe) Ochyra, Fragm.

Florist. Geobot. 42: 563. 1997 ≡ *Aongstroemia martiana* Hampe, Vidensk. Meddel. Dansk Naturhist. Foren. Kjøbenhavn 4: 41. 1872. Type: BRAZIL, Rio de Janeiro, *Glaziou 5183* (lectotype BM000879469! designated by Costa et al. (2016), syntypes BM000879470!, BM000879471!, P0129060!, P0709297!).

Neotropical Distribution: Brazil.

32. *Dicranella nitida* Broth., Acta Soc. Sci. Fenn. 19(5): 5. 1891 ≡ *Aongstroemia nitida* (Hedw.) Mitt., Ann. Mag. Nat. Hist., ser. 2, 8: 306. 1851, non *Aongstroemia nitida* (Broth.) Müll. Hal., Gen. Musc. Frond. 324. 1900, nom inval. Type: [Brazil], Minas Geraës, [Caraça] in terra arenosa; thecis immaturis et deoperculatis, species foliis arcte imbricatis, brevibus, nitidis insignis, l.l.1885, *E.A. Wainio s.n.* (lectotype BM000879240! here designated, syntypes TUR not seen, Hb – BR not seen).

Neotropical Distribution: Brazil.

Viktor Ferdinand Brotherus's descriptions should be housed at the University of Helsinki, Finland, represented by the herbarium code (H) (Stafleu and Cowan 1976). However, we selected the sample BM000879240 as a new lectotype. This specimen contains the morphological characteristics and protologue information observed; we could not find the material type appurtenant to the H herbarium.

33. *Dicranella osculatiana* De Not., Mem., Reale Accad. Sci. Torino 18: 451. 1. 1859. Type: Colombia, Ad. fl. Naps. [1863] *Osculati s.n.* (lectotype BM000879239! here designated, syntype G00116229!).

Neotropical Distribution: Colombia and Ecuador.

The original author's specimens should be housed at the Università degli Studi di Genova, Italy, represented by the herbarium code GE. However, the samples belonging to this herbarium could not be found, therefore, we selected sample BM000879239 to illustrate the morphological characteristics of the *Dicranella osculatiana* species. This lectotype is designated according to the protologue information.

34. *Dicranella pabstiana* (Müll. Hal.) Mitt., J. Linn. Soc., Bot. 12: 31. 1869 ≡ *Aongstroemia pabstiana* Müll. Hal., Bot. Zeitung (Berlin) 15: 380. 1857. Type: Santa Catharina insula, solo limoso, ad vias et in declivibus ad flumen Rio de Velha, socio Trematodontes squarroso: *Pabst [s.n.]*. (lectotype BM000879300! designated by Carmo and Peralta (2020), syntype BM000879300!, BM000879301!, G00116225!, G00116226!, NY01917788!).

Neotropical Distribution: Brazil.

35. *Dicranella paraguensis* (Besch.) Broth., Nat. Pflanzenfam. I(3): 309. 1901 ≡ *Leptotrichella paraguensis* (Besch.) Ochya, (Fragm. Florist. Geobot.) 42: 563. 1997 ≡ *Aongstroemia paraguensis* (Besch.) Müll. Hal., Gen. Musc. Frond. 324. 1900 ≡ *Microdus paraguensis* Besch., J. Bot. (Morot) 5: 145. 1891. Type: Paraguay: Péribébui, [1.VII.1879] *Balansa 3661* (lectotype PC0129150! here designated, syntypes BM000879462!, BM000879463!, BM000879464!, G00040425!, G00040427!, G00040428!, G00040429!, G00042267!, NY01917794!, NY01917795!, PC0129151!, PC0129152!, PC0695518!).

Neotropical Distribution: Paraguay.

This lectotype was chosen because this sample contains a large number of specimens, including many gametophytes and sporophytes. Furthermore, this sample corresponds to the original author's herbarium collection. In this case, the type specimens were deposited by Émile Bescherelle at the Muséum National d'Histoire Naturelle in Paris, France, represented by the herbarium code P (Stafleu and Cowan 1976).

36. *Dicranella perrottetii* (Mont.) Mitt., J. Linn. Soc., Bot. 12: 35. 1869 ≡ *Aongstroemia perrottetii* (Mont.) Müll. Hal., Syn. Musc. Frond. 1: 434. 1848 ≡ *Campylopus perrottetii* (Mont.) M. Fleisch., Musci Buitenzorg 1: 102. 1904 ≡ *Dicranum perrottetii* Mont., Ann. Sci. Nat., Bot., sér. 2, 19: 241. 8 f. 1. 1843. Type: Ad terram humosam in insulâ Martinicensi hancce speciem invenit cl. Perrottet, [s.n.] (lectotype P0131956! here designated, syntypes BM000879235!, BM000879236!, BM000879237!).

Neotropical Distribution: Bolivia, Caribbean, Colombia, Costa Rica, Ecuador, Jamaica, Panama and Venezuela.

37. *Dicranella puiggarii* Geh. & Hampe, Flora 64: 339. 1881  $\equiv$  *Aongstroemia puiggarii* (Geh. & Hampe) Müll. Hal., (Gen. Musc. Frond.) 321. 1900. Type: Serra de Boa Vista inter Apiahy et Iporanga, statu imaturo, colore rufescente et foliis longioribus, 8.07.1879, *Puiggarii s.n.* (prob. Holotype BM000879405!).

Neotropical Distribution: Brazil.

38. *Dicranella riograndensis* Broth., Bih. Kongl. Svenska Vetensk.-Akad. Handl. 26 fd. 3(7):7. 1900. Type: Rio Grande do Sul: Silveira Martins, ad. terram marginum viarum et fossarum, 01.01.1893 *C.A. Lindman 190* (lectotype S B62688! designated by Carmo and Peralta (2020), syntypes BM000879402!).

Neotropical Distribution: Brazil.

39. *Dicranella rufipes* (Müll. Hal.) Broth., Nat. Pflanzenfam. I(3): 311. 1901  $\equiv$  *Anisothecium rufipes* (Müll. Hal.) Dusén, Rep. Princeton Univ. Exp. Patagonia, Botany 8(3): 67. 1903  $\equiv$  *Dichodontium rufipes* (Müll. Hal.) Paris, Index Bryol. 324. 1894  $\equiv$  *Aongstroemia rufipes* Müll. Hal., Linnæa 43: 388. 1882. Type: Argentina Tucumanensis, in excelsis prope Tafi, 04.1873, [*Dr. P.G. Lorentz, s.n.*] (lectotype JE04000568! here designated, syntypes JE04000567!, JE04000569!).

Neotropical Distribution: Argentina.

For this species, the original author's herbarium is represented by the Herbarium of the Botanical Museum Berlin-Dahlem in Germany (B), as detailed by Stafleu and Cowan (1981). However, this herbarium and the specimens deposited were destroyed in the Second World War in 1943 (Merrill 1943). Therefore, the main Müll. Hal.'s specimens, which were used for new species descriptions, were sent to other herbaria around the world, primarily FI and JE (Stafleu and Cowan 1981). We therefore chose to sample JE04000568, which has been proposed as a new lectotype.

40. *Dicranella sericea* E.B. Bartram, Na. Bryol. Lichénol. 33: 3. 1964 [1965]. Type: Ecuador. On moraine S of W. glacier of Antisana, 6450 m, *Grubb 2502a* (lectotype BM001231555! here designated, syntype FLAS not seen).

Neotropical Distribution: Ecuador.

According to Stafleu and Cowan (1976), the original herbarium of the author's material type specimens corresponds to Harvard University in Cambridge, Massachusetts, USA, represented by the herbarium code FH. However, we could not find a representative sample of this herbarium, so we selected BM001231555 as a new lectotype.

41. *Dicranella strumulosa* (Hampe) A. Jaeger, Ber. Thätigk. St. Gallischen Naturwiss. Ges. 1870–71: 377 (Gen. Sp. Musc. 1: 81). 1872  $\equiv$  *Aongstroemia strumulosa* Hampe, Linnæa 32: 133. 1863. Tipo: [Colombia], In sylv. Manzanos ad Barrancos, 2700 metr., Jul. Ex habitu Angstr. Subulatae C.M. A. tovariensi C.M. affinis primo ad aspectu theca strumulosa cognoscitur [*A. Lindig 2108*] (lectotype BM000879394! here designated, syntype BM000879392!, BM000879395!, BM000879396!, BM000879397!, GOET011823!, GOET012227!, GOET012228!, P0129104!, P0129105!).

Neotropical Distribution: Colombia.

42. *Dicranella submacrostoma* Broth., (Biblioth. Bot.) 87: 14 1916  $\equiv$  *Anisothecium submacrostomum* (Broth.) Broth., Nat. Pflanzenfam. (ed. 2) 10: 77. 1924. Type: Bolivia, Cerros de Málaga, in einer feuchten Rinne, 01.VI.1911, *T.C.J. Herzog 4402* (prob. Holotype JE04000614!).

Neotropical Distribution: Bolivia.

The sample represented by JE04000614 was the only specimen that we could find which corresponded to the morphological characteristics and protologue information described in the publication. According to Stafleu and Cowan

(1975), the original material used by the authors for their description should be housed at the H Herbarium, however, no samples corresponding to this herbarium can be found.

43. *Dicranella subsulcata* (Hampe) Hampe, Vidensk. Meddel. Dansk Naturhist. Foren. Kjøbenhavn ser. 4, 1: 86. 1879 ≡ *Aongstroemia subsulcata* Hampe, Vidensk. Meddel. Dansk Naturhist. Foren. Kjøbenhavn 4: 42. 1872. Type: BRAZIL, Rio de Janeiro, *Glaziou 5181* (lectotype BM000879386! designated by Costa et al. (2016), syntypes BM not seen, P0129113!, P0709291!).

Neotropical Distribution: Brazil.

44. *Dicranella tovariensis* (Müll. Hal.) Mitt., J. Linn. Soc., Bot. 12: 32. 1869 ≡ *Aongstroemia tovariensis* Müll. Hal., Syn. Musc. Frond. 1: 443. 1848. Type: [Bolivia] Columbia, ubi in colonia Tovar Germanica altitud. 5000 ped. Inter *Polytrichia* viget, *A. Fendler 31* (lectotype P0129115! here designated).

Neotropical Distribution: Caribbean and Venezuela.

According to the original author's description, this species should have been deposited in the B herbarium (Stafleu and Cowan 1981). However, many of the material type specimens deposited there were destroyed in the Second World War in 1943 (Merrill 1943). The material type of sample P0129115, cited above as the new lectotype, was the only specimen that matched the protologue description and morphological characteristics of this species.

45. *Dicranella trumpffii* (Hampe) A. Jaeger, Ber. Thätigk. St. Gallischen Naturwiss. Ges. 1870–71: 387 (Gen. Sp. Musc. 1: 91) 1872 ≡ *Aongstroemia trumpffii* Hampe, Bot. Zeitung (Berlin) 17: 215. 1859. Type: Venezuela, Mt. Galipano, 6000 ped. Alta: *A. Trumpff. s.n.* (lectotype BM01231528! here designated, syntypes BM000879382!, BM000879383!, BM000879384!, BM000879385!, BM01231529!).

Neotropical Distribution: Venezuela.

46. *Dicranella ulei* (Müll. Hal.) Broth., Nat. Pflanzenfam. I(3): 309. 1901 ≡ *Leptotrichella ulei* (Müll. Hal.) Ochyra, Fragm. Florist. Geobot. 42: 564. 1997 ≡ *Microdus ulei* (Müll. Hal.) Paris, Index Bryol. (ed. 2) 3: 240. 1905 ≡ *Seligeria ulei* Müll. Hal., Bull. Herb. Boissier 6: 45. 1898. Type: Brasilia, Minas Geraës, Serra Ouro Preto, in rupibus, Febr. 1892, *E. Ule 1435* (lectotype H2719026! H-Brotherus designated by Carmo and Peralta (2020)).

Neotropical Distribution: Brazil.

47. *Dicranella vaginata* (Hook.) Cardot, (Wiss. Erb. Schwed. Südpolar-Exp.) 4 (8): 60. 1908 ≡ *Dichodontium vaginatum* (Hook.) A. Jaeger, Ber. Thätigk. St. Gallischen Naturwiss. Ges. (Gen. Sp. Musc. 1: 67) 1870–71: 363. 1872 ≡ *Anisothecium vaginatum* (Hook.) Mitt., J. Linn. Soc., Bot. 12: 39. 1869 ≡ *Aongstroemia vaginata* (Hook.) Müll. Hal., Syn. Musc. Frond. 2: 608. 1851 ≡ *Dicranum vaginatum* Hook., Pl. Crypt., Pl. 3B. 1816. Type: [Colombia. Amérique équatoriale, In convallibus Andium Granatensium inter Almaguar et Pasto, altitud. 1200-1500 hexapod. *Bonpland, A.J.A. [s.n.]* (lectotype BM000672167! designated by Carmo and Peralta (2020), syntypes BM000672165!, BM000672166!, BM000879337!, BM000879338!, BM000879340!, BM000879341!, JE04009786!, LINN166824!, P0657690!, P0657691!).

= *Anisothecium jamesonii* Mitt., J. Linn. Soc., Bot. 12: 39. 1869. *Dicranella jamesonii* (Mitt.) Broth., Nat. Pflanzenfam. I(3): 311. 1901. *Aongstroemia jamesonii* (Mitt.) Müll. Hal., Gen. Musc. Frond. 321. 1900. *Dichodontium jamesonii* (Mitt.) A. Jaeger, Nat. Pflanzenfam. I(3): 311. 1901. Type: [Ecuador] loco Huambató in palude (9000 ped), *Spruce 34* (lectotype BM000724725! here designated, syntypes, BM000724726!, BM000724715!, BM000724720!, P0129044!, P0129045!, P0129046!, P0657693!); [Ecuador]; syntypes, Hab. Andes Quitenes, *Jameson 13* (BM000672229!, BM000724721! BM000724724!; BM000879342!, BM000879354!); [Colombia] Andes Bogotensis *Weir [s.n.]* (BM000724716!, BM000724727!); [Argentina] Fuegia, in fretu Magellan, "Sandy Point" ad ribulus, *Lechler 11161* (BM000879335!); [Chile] Hermite Island, *Hooker [s.n.]* (BM000879334!), syn acc. Greene (1986).

= *Dicranella standleyi* E.B. Bartram, Contr. U.S. Natl. Herb. 26 (3): 57. 1. 1928. Type: Costa Rica, wet bank, Yerba Buena, northeast of San Isidro, Province of Heredia, February 22 to 28, 1926, *P.C. Standley & J. Valerio 50086* (lectotype NY01093683! here designated, NY01093684!, P0657694!), syn acc. Wijk et al. (1962).

Neotropical Distribution: Brazil, Chile, Colombia, Costa Rica, Ecuador, Guatemala, Honduras, Panama and Peru.

48. *Dicranella venezuelana* (Dozy & Molk.) W.R. Buck, (Brittonia) 31: 472. 1979 ≡ *Campylostelium venezuelanum* Dozy & Molk., Prodr. Fl. Bryol. Surinam. [Natuurk. Verh. Holl. Maatsch. Wetensch. Haarlem, ser. 2, 10(3):] 38. Pl. 5 1854. Type: Venezuela, Caracas, ubi collegit doctissimus, *P.W. Korthals [s.n.]* (lectotype P0701482! here designated, syntypes BM001006977!, BM001006978!, M001006979!).

Neotropical Distribution: Venezuela.

The sample P0701482 was chosen as the new lectotype for this species, as all the information from the protologue is included on its label. Despite this, the herbarium does not correspond to the original author's herbarium (Stafleu and Cowan, 1976). The samples cited above were the only ones found for this species at the time.

49. *Dicranella weberbaueri* Broth. Bot. Jahrb. Syst. 56 (Beibl. 123): 4. 1920. Type: [Peru. Puno,] Prov. Sandia: Weg von Sandia nach Chunchumayo, in der Nähe des Tambo Tsilluma, 1000 m, [*Weberbauer, 1221*] (prob holotype H1154013! Hb-Brotherus).

Neotropical Distribution: Peru.

## 5. List of other *Dicranella s.l.* species and new combinations that were cited for the Neotropics, but for which the type material was not found

*Aongstroemia campylophylla* (Taylor) Müll. Hal., Syn. Musc. Frond. 2: 608. 1851 ≡ *Anisothecium campylophyllum* (Taylor) Mitt., J. Linn. Soc., Bot. 12: 40. 1869 ≡ *Dicranella campylophylla* (Taylor) A. Jaeger, Gen. Sp. Musc. 1: 86 (1870–71: 382). 1872 ≡ *Dicranum campylophyllum* Taylor, London J. Bot. 7: 281. 1848. Type: [Ecuador] On Pichincha, 8.VIII.1847, *W. Jameson [133]* (lectotype BM000879353! here designated, syntypes FLASB48421!, BM000879352!, G00047855!, G00047856!, G00047857!). BM000672168!, BM000672230!;

= *Aongstroemia persquarrosa* Dusén, Arkiv för Botanik 4(1): 11. 4 f. 1–10. 1905. Type: Patagonia occidentalis in valle fluminis Aysen in rupibus, Febr. 1897, *P. Dusén [s.n.]* (lectotype S not seen, Hb-Dusén, designated by Ochyra & Newton (1985), syntypes BM000672171!, H, S), syn acc. Ochyra & Newton (1985[1986]).

= *Cheilothela vaginata* H. Rob., Phytologia 23: 390. F. 1–3. 1972. Type: Venezuela. Estado Mérida, a 2 km de la Ciudad de Mérida, sobre rocas, sitio húmedo, elev 2,500 m, 22 fev 1971, *N. Faria 1* (holotype US not seen, syntype FLASB 15565!, syn acc. Ochyra & Newton (1985 [1986])).

= *Dichodontium dicranelloides* Cardot, Bull. Herb. Boissier, 2, 5: 999. 1905. Type: “Svenska Sudpolarexpeditionen 1901-03, Nr. 17. *Dichodontium dicranelloides* Card. Sp. Nov. + *Webera alticaulis* (C.M.) Par. Tierra del Fuego, Ushuaia, in silva regione inferior, 11/3 1902, C. Skottsberg, det. J. Cardot” (lectotype S not seen, Hb-Cardot, designated by Ochyra & Newton (1985)), syntype “*Dicranella Jamesoni* (Tayl.) Broth. Patagonia occ. In valle fl. Aysen in rupibus, Febr. 1897, P. Dusén 11a” (BM not seen), syn acc. Ochyra & Newton (1985 [1986]).

= *Dichodontium dicranelloides* Card. Var. *falklandicum* Card., Bull. Herb. Boiss. Ser. 2, 5: 999. 1905 ≡ *Dichodontium persquarrosus* (Dus.) Card. Var. *falklandicum* (Card.) Card., Wilss. Ergn. Schwed. Südpolar-Exp. 1901-1903, 4(8): 59. 1908. Type: “Svenska Sudpolarexpeditionen 1901-03. Nr. 198. *Dichodontium dicranelloides* Card. Var. *falklandicum* Card. Var. nova Falkland Islands, Port Louis, in rupibus maritimus, 31/7 1902, C. Skottsberg, det. J. Cardot” (lectotype S not seen designated by Ochyra & Newton (1985), syntypes H not seen, S not seen).

= *Dicranum cardotii* R. Br., Trans. & Proc. New Zealand Inst. 35: 329. Pl. 36, fig. 9. 1903 ≡ *Dicranella cardotii* (R. Br.) Dixon, New Zealand Inst. Bull. 3(3): 77. 1923 ≡ *Anisothecium cardotii* (R. Br.) Ochyra, Moss Fl. King

George Island Antarctica 114. 1998. Type: [New Zealand] On damp banks, tributary of the River Hapuka, near Koikoura, *R. Brown s.n.* (lectotype BM not seen, Hb-Dixon, designated by Ochyra et al. (2008), syn acc. Robinson (1986), Ochyra et al. (2008) and Larraín et al. (2010).

= *Dicranella symonsii* Dixon, Trans. Roy. Soc. South Africa 8: 183. 2. 1920 ≡ *Anisothecium symonsii* (Dixon) Broth., Nat. Pflanzenfam. (ed. 2) 10: 177. 1924. Type: [South Africa] On wet stones, Giant's Castle, alt. 7000 ft., Natal, 1915, *R.E. Symons 8665* (holotype BM000672219!), syn acc. Ochyra & Newton (1985 [1986]).

= *Dicranella wairarapensis* Dixon, New Zealand Inst. Bull. 3(2): 65. Pl. 4: f. 15. 1914 ≡ *Anisothecium wairarapense* (Dixon) Broth., Nat. Pflanzenfam. (ed. 2) 10: 177. 1924. Type: [New Zealand] Mauriceville, Wairarapa, North Island, December, 1908, *W. Gray 27* (prob. Holotype BM not seen, Hb-Dixon not seen, syntype H not seen), syn acc. Ochyra & Newton (1985 [1986]).

= *Dicranella watsii* Broth., Öfvers. Finska Vetensk.-Soc. Förh. 40: 162. 1898. Type: [Australia] New South Wales, Richmond River, Brooklet-Fernleigh Road, locis humidis, *W.W. Watts 1075* (BM000965633!), 1099 (P0129141!, P0129142!), ≡ *Dichodontium watsii* Broth. In Broth. Et Watts., Proc. Linn. Soc. New South Wales 37: 366. 1912 ≡ *Anisothecium watsii* (Broth. In Broth. Et Watts.) Broth., Nat. Pflanzenfam. (ed. 2) 10: 177. 1924. Type: Mixed with *Campylium subrelaxum* Broth., etc. in "Glory Hole" (8944 ex p., ster.) (Holotype: "N.S.W. Mosses, Watts 8944 NA, *Dichodontium watsii* n.sp. "Glory Hole", Yarrangobilly Cave, Ig. W.W. Watts, Jan.1906", H-Brotherus; Isotype BM000672200-Dixon), syn acc. Ochyra & Newton (1985 [1986]).

Neotropical Distribution: Argentina, Bolivia, Chile, Colombia, Ecuador, Peru and Venezuela.

We are designating BM000879353 as the lectotype for the species *Dicranella campylophylla*. We verified that the information on the label of this sample corresponded to the protologue information. Furthermore, this sample is the same as the original collection of the author's herbarium (Stafleu and Cowan, 1986). Furthermore, in spite of keep the synonymization proposed by Ochyra and Newton (1985), in this reference these authors perform a propose to the synonymization for *Dichodontium watsii* species, but with a different material types. Perhaps, something happened when Brotherus made the new combination to *Anisothecium* genus (Brotherus 1924) and further nomenclatural studies about this species name are need.

According to Fedosov et al. (2023) this species currently belongs to the *Aongstroemia* clade, thus this species actually is settled within Aongstroemiaceae family. However, we chose mainted herein in this list just for increase the knowledge about its geographic distribution in the Neotropical region.

***Calcidicranella varia* (Hedw.) Bonfim Santos, Fedosov & Jan Kučera, Plants, 12(6): 1360. 2023** ≡ *Dicranodon varium* (Hedw.) Béhéré, (Muscol. Rothom.)1826 ≡ *Dicranella varia* (Hedw.) Schimp., (Coroll. Bryol. Eur.) 13. 1856. ≡ *Aongstroemia varia* (Hedw.) Müll. Hal., (Syn. Musc. Frond.)1: 435. 1848 ≡ *Anisothecium varium* (Hedw.) Mitt., J. Linn. Soc., Bot. 12: 40. 1869 ≡ Basionym: *Dicranum varium* Hedw., (Sp. Musc. Frond.) 133. 1801. Type: [*Anon.*, 20] (isotype LINN-HS1668-20-2!).

= *Dicranum pulchellum* Blandow, Nomencl. Bot. (Steudel) 2: 153. 1824. Nom. nud in synonym (not seen), syn acc. Wijk et al. (1962).

= *Dicranella recurvata* Ochyra, Arts & Lewis Smith, Glowacki & Bednarek, Polish Polar Stud. 25 Int. Polar Symp, 166. 1998. Nom. nud in synonym (not seen), syn acc. Ochyra et al. (2008).

Neotropical Distribution: Colombia, Cuba, Guatemala, Haiti, Jamaica, Mexico and Peru.

According to Fedosov et al. (2023), this species currently belongs to a new genus described as *Calcidicranella*. This species is also categorised within the Aongstroemiaceae family. Similarly to *Aongstroemia campylophylla*, we have included it here to increase knowledge of its occurrence in the Neotropical region.

***Dicranella argentinica* (Müll. Hal.) Kindb., Index Bryol. 325. 1898.** *Aongstroemia argentinica* Müll. Hal., (Linnaea) 42: 308. 1879. Type: Argentina Cordobensis, Ascochinga, ad rupes gneissaceas "nahe dem Badeplatze" cum Bryo recoluto rarissime fertilis, April, 1871 [*Dr. P.G. Lorentz, s.n.*] (not seen, herbarium not found).

Neotropical Distribution: Argentina.

***Dicranella brasiliensis*** (Hampe) E.B. Bartram, Philipp. J. Sci., 68: 34. F. 31. 1939 ≡ *Weissia brasiliensis* (Hampe) Hampe, Vidensk. Meddel. Dansk Naturhist. Foren. Kjøbenhavn, ser. 4, 1: 86. 1879 ≡ *Oreoweisia brasiliensis* Hampe, Vidensk. Meddel. Dansk Naturhist. Foren. Kjøbenhavn ser. 3, 6: 135. 1874. Type: BRAZIL, Rio de Janeiro, *Glaziou 7052* (lectotype NY not seen designated by Griffin III (1986); syntypes BM not seen, P0029283!, P0709277!)

= *Uleopsis mamillosa* Thér., Na. Bryol. Lichénol. 9: 20. 11. 1936. Type: Ecuador, 1930-10-30, *Benoist, R. 3124* (PC0147124!), syn acc. Zander (1993).

Neotropical Distribution: Brazil

***Dicranella guilleminiana*** (Mont.) Mitt., J. Linn. Soc., Bot. 12: 32. 1869 ≡ *Aongstroemia guilleminiana* (Mont.) Müll. Hal., Syn. Musc. Frond. 1: 440. 1848 ≡ *Dicranum guilleminianum* Mont., Ann. Sci. Nat., Bot., sér. 2, 16: 267. 1841. Type: Insula Cuba, *Wright 36* (syntypes BM not seen, FLAS not seen, NY not seen): Brasilia, Herb. Montagne; in monte Corcovado, *Gardner [s.n.]* (syntypes BM not seen, FLAS not seen, NY not seen); in prov. San Paulo, in sylvis prope Itu (2200 ped.), *Weir 32* syntypes BM not seen, FLAS not seen, NY not seen).

= *Dicranum sulcatum* Müll. Hal., Bot. Zeitung (Berlin) 2: 709. 1844. Type: (not seen, herbarium not found) syn acc. Wijk et al. (1962).

Neotropical Distribution: Bolivia, Brazil, Cuba and Caribbean.

***Dicranella heteromalla*** (Hedw. Ex Brid.) Schimp., Coroll. Bryol. Eur. 13. 1856 ≡ *Cynodontium heteromallum* (Hedw.) Mitt., J. Linn. Soc., Bot. 8: 16. 1865 ≡ *Leptotrichum heteromallum* (Hedw.) Mitt., J. Proc. Linn. Soc., Bot., Suppl. 1: 11. 1857 ≡ *Aongstroemia heteromalla* (Hedw.) Müll. Hal., Syn. Musc. Frond. 1: 432. 1848 ≡ *Dicranodontium heteromallum* (Hedw.) A.W.H. Walther & Molendo, Laubm. Oberfrank. 98. 1868 ≡ *Dicranodon heteromallum* (Hedw.) Béhéré, Muscol. Rothom. 29. 1826 ≡ *Bryum heteromallum* (Hedw.) Sturm, Deutschl. Fl., Abt. II, Cryptog. 6: [9]. 1803 ≡ *Mnium heteromallum* (Hedw.) J.F. Gmel. Ex With., Syst. Arr. Brit. Pl. (ed. 4) 3: 784. 1801 ≡ *Dicranum heteromallum* Hedw. Ex Brid., Sp. Musc. Frond. 128. 1801. Type: In silvis ad truncos arborum, aggeres, vias cavas, in graminosis montium editiorum totius Europae (G not seen).

= *Aongstroemia aperula* Hampe in Müll. Hal., Gen. Musc. Frond. 323. 1900, nom inval. No description. Original Material: [China] Sino-Hymanayan [*Wilhelm Sulpiz Kurz 2117*] (BM000965501!, BM000965502!, BM000965503!, BM000965504!, BM000965505!, BM000965506!, G00265878!, HB-HAMPE), syn acc. Gangulee (1971).

= *Aongstroemia banatica* Hampe, Oesterr. Bot. Z. 11: 154. 1861. Type: Slaxruth 69 (BM000965533!), syn acc. Gangulee (1971).

= *Aongstroemia caucasica* Müll. Hal., Trudy Imp. S.-Peterburgsk. Bot. Sada 10(1): 256. 1887. Type: (not seen, herbarium not found), syn acc. Wijk et al. (1959).

= *Dicranella crassinervis* (Hampe) A. Jaeger, Ber. Thätigk. St. Gallischen Naturwiss. Ges. 1870–71: 374 (Gen. Sp. Musc. 1: 78). 1872. *Aongstroemia crassinervis* Hampe, Linnaea 32: 133. 1863. Type: [Bolivia] Nova Granada, in sylv. Manzanos ad Barrancas, 2700 mtr. Jul. Lindg. 2109 (GOET012231!, NY01917636!, NY02032450!), syn acc. Gangulee (1971).

= *Dicranella levieri* Müll. Hal. Ex Broth., Acta Soc. Sci. Fenn. 19(12): 67. 1892. *Aongstroemia levieri* (Müll. Hal. Ex Broth.) Müll. Hal., Gen. Musc. Frond. 323. 1900. Type: [Geórgia] Adjara, in regione silvarum media inter Khula et Danais Para-ul, ubi crum fructis vetusis 22. Juni. 1890, *E. Levier [s.n.]* (H-BR not seen), syn acc. Wijk (1959).

= *Bartramia perangusta* Dixon & Thér., Trav. Bryol. 1[13]: 11. 1942. Type: Japan, 1927-10-19, Sasaoka, H. 3605 (BM000965586!, PC0129020!), syn acc. Wijk et al. (1959).

= *Campylopus henrici* Renaud & Cardot, Bot. Gaz. 13: 197. 14. 1888. Type: [U.S.A.] Kansas, Saline County, on sandy ground, where it was discovered by the late Joseph Henry [s.n.] (BM000965543!, NY01086794!, PC0692374!), syn acc. Wijk et al. (1959).

= *Dicranella fitzgeraldii* Renaud & Cardot, Bot. Gaz. 13: 197. 13. 1888. *Dicranella heteromalla* var. *fitzgeraldii* (Renaud & Cardot) Grout Moss. Hand-lens Microsc. 91. 395. 1904. *Aongstroemia fitzgeraldii* (Renaud &

Cardot) Müll. Hal., Gen. Musc. Frond. 324. 1900. *Dicranella heteromalla* subsp. *Fitzgeraldii* (Renauld & Cardot) Kindb. Eur. N. Amer. Bryin. 2: 208. 1897. Type: [U.S.A.], Sterile specimens gathered in Louisiana by Mr. A.B. Langlois [s.n.] (PC not seen), syn acc. FNA (2007).

= *Dicranella fuscorufa* Stirt., Ann. Scott. Nat. Hist. 15(58): 108. 1906. Type: United Kingdom, 1904-08, Anon. S.n. (BM000965515!), syn acc. Gangule (1971).

= *Dicranella heteromalla* var. *latinervis* Cardot & Thér, Proc. Wash. Acad. Sci. 4:297. 1902. Type: [U.S.A., Alaska], Douglas Island, W. Trelease 2389 (MO407804!, NY00299909!, P0129012!), W. Trelease 2389<sup>a</sup> (MO407805!), syn acc. FNA (2007).

= *Dicranum orthocarpum* Hedw., Sp. Musc. Frond. 131. 30 f. 1-5. 1801. *Dicranella heteromalla* var. *orthocarpa* (Hedw.) A. Jaeger, Ber. Thätigk. St. Gallischen Naturwiss. Ges. 1870-71: 374 (Gen. Sp. Musc. 1: 78). 1872, non *Dicranella heteromalla* var. *orthocarpa* Broth., Classif. Mosses Japan 140, 1932. *Aongstroemia heteromalla* var. *orthocarpa* (Hedw.) Müll. Hal. Syn. Musc. Frond. 1: 433. 1848. *Dicranum subulatum* var. *orthocarpon* (Hedw.) Hampe, Flora 13: 42. 1830. *Dicranella varia* var. *orthocarpa* (Hedw.) Paris, Index Bryol. 361. 1896. Type: [unknown locality] Beauvois, A.M.D.J. 195 (syntype PH00079670!); [unknown locality] H. 63 (syntype PH00038094!), syn acc. FNA (2007).

= *Dicranella heteromalla* var. *pittieri* Renauld & Cardot, Bull. Soc. Roy. Bot. Belgique 31(1): 145. 1893. *Aongstroemia pittieri* (Renauld & Cardot) Müll. Hal., Gen. Musc. Frond. 323. 1900, Type: Colombia, 1860-07-01, [*sin leg*] 2109 (NY01917636!, NY02032450!), syn acc. Allen (1994).

= *Dicranella levieri* Müll. Hal. Ex Broth., Acta Soc. Sci. Fenn. 19(12): 6, 1892, non *Dicranella levieri* Müll. Hal., Hedwigia 53: 264. 1913. *Aongstroemia levieri* (Müll. Hal. Ex Broth.) Müll. Hal., Gen. Musc. Frond. 323. 1900. Type: [Geórgia] Cauc. Minor occ: Adjaria, in regione silvarum media inter Khula et Danais Paraul, ubi cum fructibus vetustis 22. Junii. 1890, E. Levier [s.n.] (not seen), syn acc. Gangulee (1971).

= *Dicranum pilosum* P. Beauv., Prodr. Aethéogam. 48, 54. 1805. Type: France [*sin leg*, *sin n.*] (P not seen), syn acc. Wijk *et al.* (1962).

Neotropical Distribution: Bolivia, Colombia, Costa Rica, Honduras and Panama.

***Dicranella longirostris*** (Schwägr.) Mitt., J. Linn. Soc., Bot. 12: 30. 1869 ≡ *Leptotrichella longirostris* (Schwägr.) Ochyra, Fragm. Florist. Geobot. 42: 563. 1997 ≡ *Microdus longirostris* (Schwägr.) Schimp., Mém. Soc. Sci. Nat. Math. Cherbourg 16: 162. 1872 ≡ *Seligeria longirostris* (Schwägr.) Müll. Hal., Syn. Musc. Frond. 1: 421. 1848 ≡ *Leptotrichum longirostre* (Schwägr.) Müll. Hal., Bot. Zeitung (Berlin) 5: 806. 1847 ≡ *Weissia longirostris* (Schwägr.) Schwägr., Sp. Musc. Frond., Suppl. 2, 1: 54. Pl. 117. 1823 ≡ *Coscinodon longirostris* (Schwägr.) Brid., Muscol. Recent. Suppl. 4: 51. 1819[1818] ≡ *Trematodon longirostris* Schwägr., Sp. Musc. Frond., Suppl. 1 2: 343. 1816. Type: Guadeloupe, in monte sulphurifero (4000 ped.), Richard, Parker *et* Guilding [s.n.] (syntypes G not seen, P0129058, NY not seen); Brasilia, Parahybuna, G. Gardner 19 (syntypes G not seen, P not seen and NY not seen).

= *Dicranella pseudolongirostris* Cardot, Na. Bryol. 36: 68. 1909. Type: [Mexico] etat de Morelos, pres de Cuernavaca 1908, [Cyrus G. Pringle] 10661 BM000879476!, BM000879477!, BM000879479!, E00108446!, JE04001133!, MO407806!, MO2201519!, NY00597231!, NY00597232!, PC0129075!, PC0129076!, PC0695520!, PH00002831!), syn acc. Crum (1994).

= *Dicranella sharpii* E.B. Bartram, Bryologist 50: 202. 1947. Type: [Guatemala] El Quiché, trailside bank below Nebaj, alt. 5650 ft., A.J. Sharp 2448 (prob. Holotype TENN01093682!, syntype DUKE0187608!, DUKE0187609!, MICH525400!); [Guatemala] Dept. Baja Verapaz, bank of trail, Civija, alt. 4000 ft., A.J. Sharp 5188 (syntype TENN not seen, DUKE0187610!, MO2085762!) syn acc. Allen (1994).

= *Microdus crispulus* Besch., Ann. Sci. Nat., Bot., sér. 6, 3: 179. 1876. *Dicranella crispula* (Besch.) Broth. Nat. Pflanzenfam. I(3): 309. 1901. Type: Guadeloupe ou Martinique, [*sin col.*] (P not seen, HB not seen Husnot n. 136, BM000879478!), syn acc. Crum (1994).

Neotropical Distribution: Brazil, Caribbean, Costa Rica, Guatemala, Honduras, Mexico and Panama.

***Dicranella planinervia*** (Taylor) A. Jaeger, Ber. Thätigk. St. Gallischen Naturwiss. Ges. 1870-71: 376 (Gen. Sp. Musc. 1: 80). 1872 ≡ *Anisothecium planinervium* (Taylor) Mitt., J. Linn. Soc., Bot. 12: 40. 1869 ≡ *Aongstroemia planinervia*

(Taylor) Müll. Hal., (Syn. Musc. Frond.) 2: 605. 1851 ≡ *Dicranum planinervium* Taylor, (London J. Bot.) 7: 281 1848.  
Type: [Ecuador] On Pichincha, 8.8.1847, Prof. W. Jameson [s.n.] (FH not seen, BM not seen).

Neotropical Distribution: Ecuador.

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## 7. Bibliography

- ALLEN, B. (1994) Moss flora of Central America. Part 1. Sphagnaceae-Calymperaceae. Monographs in Systematic Botany from the Missouri Botanical Garden 49: 1–242.
- ALLEN, B.H. (2005) Maine Mosses. Sphagnaceae – Timmiaceae. Memoirs of The New York Botanical Garden 93: 1–419.
- BORDIN, J., PERALTA, D.F., YANO, O. (2018) Lectotypification of *Fissidens minutipes* (Müll.Hal.) Broth. and synonymization of *F. termitarum* (Herzog) Pursell. *Journal of Bryology* 40(2): 188–191.
- BUCK, W.R. (1985) A preliminary list of the mosses of Paraguay. *Candollea* 40: 201–209.
- BUCK, W.R. (1998) Pleurocarpous mosses of the West Indies. Memoirs of the New York Botanical Garden 82: 1–400.
- CÂMARA, P.E.A.S., CARVALHO-SILVA, M., SILVA, M.S.D., PERALTA, D.F. (2014) A catalog of Bryophyta types deposited at the National Museum of Brazil. *Acta Botanica Brasilica* 28(4): 539–547.
- CAÑIZA, B.D., PERALTA, D.F., SUÁREZ, G.M. (2017). New Records and Range Extension of Bryophytes for Paraguay. *Cryptogamie, Bryologie* 38(4):393–410.
- CARMO, D.M., LIMA, J.S., AMÉLIO, L.A., PERALTA, D.F. (2016) Briófitas do Parque Estadual da Serra do Mar, Núcleo de Santa Virgínia, Estado de São Paulo, Brasil. *Hoehnea* 43(2): 265–287.
- CARMO, D.M., LIMA, J.S., SILVA, M.I., AMÉLIO, L.A., PERALTA, D.F. (2018) Briófitas da Reserva Particular do Patrimônio Natural da Serra do Caraça, Estado de Minas Gerais, Brasil. *Hoehnea* 45(3): 484–508.
- CARMO, D.M., PERALTA, D.F. (2016) Survey of bryophytes in Serra da Canastra National Park, Minas Gerais, Brazil. *Acta Botanica Brasilica* 30(2): 254–265.
- CARMO, D.M., PERALTA, D.F. (2020) Sinopse do gênero *Dicranella* (Mull. Hal.) Schimp. (Dicranellaceae, Bryophyta) para o Brasil com lectotipificações e citações de novas ocorrências. *Pesquisas, Botânica*. 74: 249–281.
- CASAS, C., BRUGUÉS, M., CROS, R.M., SÉRGIO, C. (2006). Handbook of mosses of the Iberian Peninsula and the Balearic Islands. Inst. D'Estud. Catalans, Barcelona. 46: 1-349
- CHURCHILL, S.P. (1994) The mosses of Amazonian Ecuador. AAU Reports 35: 1–211.
- CHURCHILL, S.P. (1998) Catalog of Amazonian mosses. *Journal of the Hattori Botanical Laboratory* 85: 191–238.
- CHURCHILL, S.P., LINARES, C.E.L. (1995) Prodrómus bryologiae novo-granatensis. Introducción a la flora de musgos de Colombia. Parte 1. Adolotheciaceae a Funariaceae. Instituto de Ciencias Naturales – Museo de Historia Natural. Biblioteca José Jerónimo Triana 12: 1–453.
- CHURCHILL, S.P., GRIFFIN, III D.G., MUÑOZ, J. (2000) A checklist of the mosses of the tropical andean countries. *Ruizia* 17: 1–203.
- CORLEY, M.F.V., CRUNDWELL, A.C., DÜLL, R., HILL, M.O., SMITH, A.J.E. (1981) Mosses of Europe and the Azores; an annotated list of species, with synonyms from the recente literature. *Journal of Bryology* 11: 609–689.

- COSTA, D.P., PÔRTO, K.C., LUIZI-PONZO, A.P., ILKIU-BORGES, A.L., BASTOS, C.J.P., CÂMARA, P.E.A.S., PERALTA, D.F., BÔAS-BASTOS, S.B.V., IMBASSAHY, C.A.A., HENRIQUES, D.K., GOMES, H.C.S., ROCHA, L.M., SANTOS, N.D., SIVIERO, T.S., VAZ-IMBASSAHY, T.F., CHURCHILL, S.P. (2011) Synopsis of the Brazilian moss flora: checklist, distribution and conservation. *Nova Hedwigia* 93(3–4): 277–334.
- COSTA, D.P., PERALTA, D.F., CARVALHO-SILVA, M., CÂMARA, P.E.A.S. (2016). Types of the moss names based on Glaziou's collections from Brazil. *Taxon* 65(4): 839–861.
- CROSBY, M.R., MAGILL, R.E., ALLEN, B., HE, S. (1999) A checklist of the Mosses. Missouri Botanical Garden. St. Louis: Missouri Botanical Garden. Pp. 1–315.
- CRUM, H.A. (1994) *Dicranella*. In: Sharp, A.J., Crum, H. & Eckel, P. The Moss Flora of Mexico. Memoirs of The New York Botanical Garden 69: 1–1113.
- CRUM, H.A. (2007) *Dicranella*. In: Flora of North America. – Editorial Committee (eds.): Flora of North America north of Mexico: pp. 386–393. Oxford University Press, New York.
- CRUM, H.A., BARTRAM, E.B. (1958) A survey of the moss flora of Jamaica. *Bulletin of the Institute of Jamaica Science Series* 8: 1–90.
- CRUM, H.A., STEERE, W.C. (1957) The mosses of Puerto Rico and the Virgin Islands. In: O. von S. Whitelock (ed.), Scientific Survey of Puerto Rico and the Virgin Islands. 2(4). New York, The Academy, pp. 1–207.
- CRUM, H.A., STEERE, W.C. (1958) The mosses of Puerto Rico and the Virgin Islands. In: O. von S. Whitelock (ed.), Scientific Survey of Puerto Rico and the Virgin Islands. 3(4). New York, The Academy, pp. 395–599.
- DELGADILLO, C.M., BELLO, B., CÁRDENAS, A.S. (1995) LATMOSS, A Catalogue of Neotropical Mosses. *Monographs in systematic botany from the Missouri botanical Garden* 56: 1–191.
- DUARTE BELLO, P.P. (1997) Musgos de Cuba. *Fontqueria* 47: 1–717.
- ELLIS, L.T., PRICE, M.J. (2013) Review of the type specimens for Hedwig's species of *Dicranella* (Dicranaceae). *Journal of Bryology* 35(4): 275–289.
- FEDESOV, V., FEDOROVA, A., IGNATOVA, E., KUČERA, J. (2023) New Taxonomic Arrangement of *Dicranella s.l.* and *Aongstroemia s.l.* (Dicranidae, Bryophyta). *Plants* 12(6): 1360.
- FNA (FLORA OF NORTH AMERICA EDITORIAL COMMITTEE) (2007) Bryophytes: Mosses. *Fl. N. Amer.* 27(1): i–xxi, 1–711.
- FLORSCHÜTZ, P.A. (1964) The mosses of Suriname. Part 1. Leiden: E.J. Brill. 1–271.
- FRAHM, J.-P. (1994) A type catalogue of Campyloporoideae and Paraleucobryoideae (Musci, Dicranaceae). Part I. *Fragmenta Floristica et Geobotanica* 39(1): 85–101.
- FRAHM, J.-P. (1999) A type catalogue of Campyloporoideae and Paraleucobryoideae (Musci, Dicranaceae). Part II. *Tropical Bryology* 16: 17–102.
- FREY, W., STECH, M. (2009) Marchantiophyta, Bryophyta, Anthocerotophyta. Pp.13–263. In: Frey, W. Bryophytes and seedless vascular plants. Syllabus of Plant Families ed. 13: 3: I–IX.
- GANGULEE, H.C. (1971) Mosses E. India 2. Pp. (v–xiii) + xiv + 177–566. Privately published, Calcutta.
- GRADSTEIN, S.R., CHURCHILL, S.P., SALAZAR-ALLEN, N. (2001) Guide to the bryophytes of Tropical America. Memoirs of The New York Botanical Garden 86: 1–577.
- GRADSTEIN, S.R., WEBER, W.A. (1982) Bryogeography of the Galapagos Islands. *Journal of Hattori Botanical Laboratory* 52: 127–152.
- GREENE, D.M. (1986) A Conspectus of the Mosses of Antarctica, South Georgia, the Falkland Islands and Southern South America. British Antarctic Survey, Cambridge, U.S.A. 1 – 314p.
- GRIFFIN, III D.G. (1986) *Oreoweisia* (Dicranaceae, Musci) in tropical America: an annotated key to species. *Cryptogamie: Bryologie, Lichénologie* 7: 433–438.
- HALLINGBÄCK, T., LÖNNELL, N., WEIBULL, H., HEDENÄS, L., VON KNORRING, P. (2006) Nationalnyckeln till Sveriges flora och fauna. Bladmossor: Sköldmossor – blåmossor. Bryophyta: *Buxbaumia* – *Leucobryum*. – ArtDatabanken, SLU, Uppsala.

- HE, S. (1998) A checklist of the mosses of Chile. *Journal of Hattori Botanical Laboratory* 85: 103–189.
- HEDWIG, J. (1801) *Species muscorum frondosorum*. Lipsiae [Leipzig]: sumtu Joannis Ambrosii Barthii.
- HERMANN, F.J. (1976) Recopilación de los musgos de Bolivia. *The Bryologist* 79(2): 125–171.
- LARRAÍN, J., SUÁREZ, G., BEDNAREK-OCHYRA, H., OCHYRA, R. (2010) The rediscovery of *Dicranella circinata* (Dicranellaceae, Bryophyta), with comments on other Southern South American species of *Dicranella*. *Nova Hedwigia* 91(3–4): 361–376
- MARGADANT, W.D., GEISSLER, P. (1995) Seventeen proposals concerning nomina conservanda for genera of Musci. *Taxon* 44(4): 613–624.
- MATTERI, C.M. (2003) Los musgos (Bryophyta) de Argentina. *Tropical Bryology* 24: 33–100.
- MCNEILL, J., BARRIE, F.R., BUCK, W.R., DEMOULIN, V., GREUTER, W., HAWKSWORTH, D.L., HERENDEEN, P.S., KNAPP, S., MARHOL, K., PRADO, J., PRUD'HOMME VAN REINE, W.S., SMITH, G.F., WIERSEMA, J.H., TURLAND, N.J. (2012) International Code of Nomenclature for algae, fungi and plants (Melbourne Code). *Regnum Vegetabile* 154: 1–208.
- MENZEL, M. (1992) Preliminary checklist of the mosses of Peru (Studies on Peruvian bryophytes IV.). *Journal of the Hattori Botanical Laboratory* 71: 175–254.
- MERRILL, E.D. (1943) Destruction of the Berlin Herbarium. *Science* 98(2553): 490–491.
- MITTEN, W. (1869) Musci Austro-Americani. *The Journal of the Linnean Society* 12: 31.
- MORRONE, J.J. (2014) Cladistic biogeography of the Neotropical region: identifying the main events in the diversification of the terrestrial biota. *Cladistics* 30: 202–214.
- NEWTON, M.E. (1977) A synoptic flora of South Georgian mosses: VI. *Cheilothela*, *Dicranella*, *Distichium*, *Myurella* and *Catagonium*. *British Antarctic Survey Bulletin* 46: 1–21.
- OCHYRA, R. (1999) Antipodal mosses: XI. Additional new synonyms of *Anisothecium hookeri* (Dicranaceae). *Fragmenta Floristica et Geobotanica*. 44: 233–238.
- OCHYRA, R., BEDNAREK-OCHYRA, H., ARTS, T., SMITH, R.I.L. (2000) Occurrence of the neotropical moss *Dicranella hilariana* (Mont.) Mitt. in the Antarctic. *Tropical Bryology* 18: 153–160.
- OCHYRA, R., SMITH, R.L., BEDNAREK-OCHYRA, H. (2008) *The illustrated Moss Flora of Antarctica*. Cambridge University Press. Pp. 1–683.
- OCHYRA, R., NEWTON, M.E. (1985 [1986]) The taxonomy and distribution of *Dicranella cardotii* (R. Br. Ter.) Dix., an addition to the moss flora of Antarctica. *Lindbergia* 11: 94–98.
- PURSELL, R.A. (1973) Un censo de los musgos de Venezuela. *The Bryologist* 76: 473–500.
- ROBINSON, H. (1986) Notes on the Bryogeography of Venezuela. *The Bryologist* 89(1): 8–12.
- SANTOS, E.L., CARMO, D.M., PERALTA, D.F. (2017) Bryophytes of the cloud forest of Pico do Marumbi State Park, Paraná, Brazil. *Checklist* 13(6): 959–986.
- SCHIMPER, W.P. (1856) *Corollarium Bryologiae Europaeae* 13.
- SCLATER, P.L. (1858) On the general geographical distribution of the members of the class Aves. Proceedings of the Linnean Society of London, *Zoology* 2: 130–145.
- SCOTT, G.A.M., STONE, I.G. (1976) *Mosses of Southern Australia*. Academic Press. Canberra.
- SHARP, A.J., CRUM, H., ECKEL, P. (1994) The Moss Flora of Mexico. *Memoirs of the New York Botanical Garden* 69: 1–1113.
- SMITH, A.J.E. (2004) *The Moss Flora of Britain and England*, 2nd. Edition. Cambridge University. Press, Cambridge.
- STAFLEU, F.A., COWAN, R.S. (1976) *Taxonomic Literature: A selective guide to botanical publications and collections with dates, commentaries and types*. V1 A – G. 1–1176.
- STAFLEU, F.A., COWAN, R.S. (1979) *Taxonomic Literature: A selective guide to botanical publications and collections with dates, commentaries and types*. V2 H – Le. 1–1009.

- 
- STAFLEU, F.A., COWAN, R.S. (1981) Taxonomic Literature: A selective guide to botanical publications and collections with dates, commentaries and types. V3 Lh – O. 1–991.
- STAFLEU, F.A., COWAN, R.S. (1983) Taxonomic Literature: A selective guide to botanical publications and collections with dates, commentaries and types. V4 P – Sak. 1–1221.
- STAFLEU, F.A., COWAN, R.S. (1985) Taxonomic Literature: A selective guide to botanical publications and collections with dates, commentaries and types. V5 Sal – Ste. 1–1072.
- STAFLEU, F.A., COWAN, R.S. (1986) Taxonomic Literature: A selective guide to botanical publications and collections with dates, commentaries and types. V6 Sti – Vuy. 1–932.
- STAFLEU, F.A., COWAN, R.S. (1988) Taxonomic Literature: A selective guide to botanical publications and collections with dates, commentaries and types. V7 W – Z. 1–708.
- SUÁREZ, G.M., LARRAIN, J., SCHIAVONE, M.M. (2013) Rediscovery and Lectotypification of *Dicranella lorentzii* (Dicranellaceae, Bryophyta). *Boletín de la Sociedad Argentina de Botánica* 48(1): 53–57.
- WALLACE, A.R. (1876) *The Geographical Distribution of Animals*. Macmillan, London.
- WIJK, RVD., MARGADANT, W.D., FLORSCHÜTZ, P.A. (1959) *Index Muscorum*. 1 (A–C). *Regnum Veg.* 17. Xxviii + 548 pages.
- WIJK, RVD., MARGADANT, W.D., FLORSCHÜTZ, P.A. (1962) *Index Muscorum*. 2 (Hypno). *Regnum Veg.* 26. 535 pages.
- WILLIAMS, R.S. (1913) *Dicranaceae*. *North American Flora*. 15: 77–158.
- YANO, O. (1989) An additional checklist of Brazilian bryophytes. *Journal of the Hattori Botanical Laboratory* 66: 371–434.
- YANO, O. (2011) *Catálogo de Musgos Brasileiros: literatura original, basionimo, localidade tipo e distribuição geográfica*. Publicações on line do Instituto de Botânica, Secretaria do Meio Ambiente, São Paulo, SP. Disponível em: [www.botanica.sp.gov.br/files/2013/09/virtuais\\_2musgos.pdf](http://www.botanica.sp.gov.br/files/2013/09/virtuais_2musgos.pdf).
- ZANDER, R.H. (1993) *Genera of the Pottiaceae: mosses of harsh environments*. *Bull. Buffalo Soc. Nat. Sci.* 32. Vi + 378 pages.

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**Appendix 1.** The specimens (vouchers) representing the new occurrences in the countries.

Examined materials: *Dicranella bicolor* (Müll. Hal.) Mitt., ECUADOR. Provincia Morona Santiago, Along Gualaceo-Gral. L. Plaza Gutiérrez (“Limón”) Hwy, 30.4 km SE of bridge at entrance to Maylas Reserva Ecológica Natural, 28.2 km SE of shrine at the crest of the mountain, steep cloud forest on roadbank, ca. 2°59’S, 78°25’W, ca. 2230 m, 22-V-2001, Buck W.R. 39288 (QCA!); *Dicranella boliviana* Herzog. ECUADOR. Provincia Zamora Chinchipe, Valle del Río San Francisco, Reserva Biológica “San Francisco”, bosque montano y páramo, ca. 03°58’18’’S, 79°04’44’’W, ca. 1900 – 3000 m, V-2001, Holz I. 1 (QCA!); idem, 79°04’44’’W, Holz I. 352 (QCA!); idem, Holz I. 457 (QCA!); *Dicranella ditissima* (Hampe) Mitt. ECUADOR. Provincia Zamora-Chinchipe, ca. 11 km W of Zamora, ca. 53 km E of Loja, ca. 04°03’S, 78°59’W, ca. 1512 m, steep, cleared roadbank near bridge at waterfall, 26-V-2001, Buck W.R. 39415 (QCA!);