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Notes on Early Land Plants Today. 40. Notes on Cephaloziellaceae (Marchantiophyta)

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Abstract

The family Cephaloziellaceae is here defined in a very broad sense based mainly on molecular studies and includes morphologically diverse elements. Necessary new combinations are made in addition to some transfers and new synonyms in *Cylindrocolea* and *Cephaloziella*.

Delimitation of Cephaloziellaceae

A number of genera traditionally included in Scapaniaceae Migula (1904: 479), Lophoziaceae Cavers (1910: 293), or recently Anastrophyllaceae Söderström *et al.* (2010: 48), are shown not to be related to those families, but rather to an unresolved region including Cephaloziellaceae. Molecular studies are few and in most cases the taxa shown to belong here have been used as parts of more general studies, as outgroups or believed to be members of the family of interest. The only molecular study dedicated to this group including a fair number of taxa is Feldberg *et al.* (2013), but as it is a study of divergence time and does not include confidence values, it is difficult to draw too many conclusions from it.

Davis (2004) placed *Herzogobryum* far outside Gymnomitriaceae Klinggräff (1858: 16) in an unresolved relation within Cephaloziineae Schljakov (1972: 503). He-Nygrén *et. al.* (2004) and He & Glenny (2010) indicated that *Chaetophyllopsis* may belong here. De Roo *et al.* (2007) demonstrated that *Gymnocoleopsis* is closely related to *Cephaloziella* and placed *Oleolophozia, Obtusifolium, Lophonardia* and *Gottschelia* on long branches basal to Cephaloziellaceae, but not within Lophoziaceae or Anastrophyllaceae. Vilnet *et al*. (2010) placed *Obtusifolium* and *Protolophozia elongata* (Stephani 1902: 41) Schljakov (1979: 204) here although their position was not stable across their trees. Recent investigation of abundant material of *Anastrophyllopsis involutifolia* (Gottsche *et al.* 1844: 81) Váňa & L.Söderstr. in Váňa *et al*. (2013: 15) by one of us (JV) shows that it is morphologically very similar to *Gottschelia*. That genus should thus also be referred to the "Cephaloziellaceae" region.

As circumscribed here, Cephaloziellaceae is morphologically heterogeneous and is probably best treated as a 'superfamily'. Morphologically it is difficult to defend such a diverse family and it should probably be separated into further families. However, this requires more molecular and morphological study. Genera preceded by a * in the following list do not belong to the core Cephaloziellaceae.

Cephaloziellaceae Douin, *Rév. Gén. Bot*. 26: 179, 1914 (Douin 1914a). Type:—*Cephaloziella* (Spruce) Schiffn.

Allisoniella* E.A.Hodgs.**, *Trans. & Proc. Roy. Soc. New Zealand, Bot.* 3: 80, 1965 (Hodgson 1965). ***Amphicephalozia* R.M.Schust.**, *Nova Hedwigia* 22: 131, 1971 [1972] (Schuster 1972). ***Anastrophyllopsis

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(R.M.Schust.) Váňa et L.Söderstr., *Phytotaxa* 81: 15, 2013 (Váňa *et al.* 2013). Basionym: *Anastrophyllum* subgen. *Anastrophyllopsis* R.M.Schust., *Beih. Nova Hedwigia* 119: 310, 2002 (Schuster 2002). ***Cephalojonesia* Grolle**, *Rev. Bryol. Lichénol.* 37: 763, 1971 (Grolle & Vanden Berghen 1971). ***Cephaloziella* (Spruce) Schiffn.**, *Hepat. (Engl.-Prantl)*: 98, 1893 (Schiffner 1893). Basionym: *Cephalozia* subgen. *Cephaloziella* Spruce, *Cephalozia*: 62, 1882 (Spruce 1882). ***Cephalomitrion* R.M.Schust.,** *Nova Hedwigia* 61: 550, 1995 (Schuster 1995). ***Cephaloziopsis* (Spruce) Schiffn.**, *Hepat. (Engl.-Prantl)*: 85, 1893 (Schiffner 1893). Basionym: *Jungermannia* sect. *Cephaloziopsis* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 511, 1885 (Spruce 1885). ****Chaetophyllopsis* R.M.Schust.,** *J. Hattori Bot. Lab.* 23: 69, 1960 [1961] (Schuster 1961). ***Cylindrocolea* R.M.Schust.**, *Bull. Natl. Sci. Mus. Tokyo* 12: 664, 1969 (Schuster 1969). ****Gottschelia* Grolle**, *J. Hattori Bot. Lab.* 31: 13, 1968 (Grolle 1968). ***Gymnocoleopsis* (R.M.Schust.) R.M.Schust.**, *Phytologia* 39: 243, 1978 (Schuster 1978). Basionym: *Gymnocolea* subgen. *Gymnocoleopsis* R.M.Schust., *Bryologist* 70: 111, 1967 (Schuster 1967). ****Herzogobryum* Grolle**, *Rev. Bryol. Lichénol.* 32: 160, 1963 [1964] (Grolle 1964a). ***Kymatocalyx* Herzog**, *Memoranda Soc. Fauna Fl. Fenn.* 25: 55, 1950 (Herzog 1950a). ****Lophonardia* R.M.Schust.**, *Phytologia* 39: 244, 1978 (Schuster 1978). ****Nothogymnomitrion* R.M.Schust.**, *J. Hattori Bot. Lab.* 80: 43, 1996 (Schuster 1996). ****Obtusifolium* (H.Buch) S.W.Arnell**, *Ill. Moss Fl. Fennosc. Hep.*: 309 (Arnell 1956). Basionym: *Barbilophozia* subgen. *Obtusifolium* H.Buch, *Memoranda Soc. Fauna Fl. Fenn.* 17: 289, 1942 (Buch 1942). ****Oleolophozia* L.Söderstr., De Roo et Hedd.**, *Phytotaxa* 3: 50, 2010 (Söderström et al. 2010). ****Protolophozia* (R.M.Schust.) Schljakov**, *Novosti Sist. Nizsh. Rast.* 16: 204, 1979 (Schljakov 1979). Basionym: *Lophozia* subgen. *Protolophozia* R.M.Schust., *Nova Hedwigia* 15: 474, 1968 (Schuster 1968).

New combinations and synonyms

A number of taxa originally described under *Anthelia, Jungermannia* or *Cephalozia* belong to *Cephaloziella* and are without being transferred or synonymized with any taxon. We make some necessary transfers and new synonyms below.

The format of this note follows Söderström *et al.* (2012) except that we use the Melbourne International Code of Nomenclature for algae, fungi, and plants (ICN; McNeill *et al.* 2012) instead of the Vienna International Botanical Code of Nomenclature (ICBN; McNeill *et al.* 2006).

Cylindrocolea abyssinica (Gola) Váňa, *comb. nov.*

Basionym:—*Cephaloziella abyssinica* Gola, *Ann. di Bot*. 13: 68, 1914 (Gola 1914).

Type:—ETHIOPIA. Amhara-Dembià: a Gondar sui tronchi di *Phytolacca* e *Codia*, 6. IX. 1909, *Chiovenda 2758* (holotype FT!).

= *Cephalozia atroviridis* Sim, *Trans. Roy. Soc. South Africa* 15: 84, 1926 (Sim 1926), **syn. nov.** Type:—SOUTH AFRICA. Natal: Hilton Road, *Sim 8983* (lectotype [**here designated]** PRE!) ≡ *Cephaloziella atroviridis* (Sim) S.W.Arnell, *Bot. Not.* 108: 309, 1955 (Arnell 1955). ≡ *Cylindrocolea atroviridis* (Sim) Váňa, *Lejeunia, n.s.* 98: 7, 1979 (Váňa *et al*. 1979).

Cylindrocolea kiaeri (Austin) Váňa, *comb. nov.*

Basionym:—*Jungermannia kiaeri* Austin, *Bull. Torrey Bot. Club* 6: 18, 1875 (Austin 1875).

Type:—AFRICA. "with *Dicranella Borgeni*, Hampe, com. F. Kiaer of Norway" (MANCH).

≡ *Cephalozia kiaeri* (Austin) Pearson, *Skr. Vidensk.-Selsk. Christiana, Math.-Naturvidensk. Kl.* 1887(9): 8, 1887 (Pearson 1887). ≡ *Cephaloziella kiaeri* (Austin) Douin, *Mém. Soc. Bot. France* 29, 69 (Douin 1920).

= *Cephalozia minutissima* Kiaer et Pearson, *Christiania Vidensk.-Selsk. Forh.* 1892 (14): 7, 1893 (Pearson 1893), syn. fide Váňa (1988).

= *Cephalozia lilae* C.M.Cooke, *Trans. Connecticut Acad. Arts* 12: 36, 1904 (Cooke 1904), ***syn. nov.*** Type:—HAWAII. Nuuanu Oahu 1000 ft., July 1898, *C.M. Cooke Jr.* (lectotype [**here designated**] BISH-500093!) ≡ *Cephaloziella lilae* (C.M.Cooke) Douin, *Mém. Soc. Bot. France* 29: 80, 1920 (Douin 1920).

= *Cephalozia willisana* Steph., *Bull. Herb. Boissier ser. 2*, 8: 430 (*Sp. Hepat. [Stephani]* 3: 306), 1908 (Stephani 1908a), syn. fide Váňa *et al.* (1979). ≡ *Cephaloziella willisana* (Steph.) N.Kitag., *J. Hattori Bot. Lab*. 32: 295, 1969 (Kitagawa 1969).

= *Cephaloziella pentagona* Schiffn. ex Douin, *Mém. Soc. Bot. France* 29, 79 (Douin 1920), syn. fide Kitagawa (1969).

= *Cephalozia andreana* Steph., *Sp. Hepat*. (*Stephani*) 6: 434 (Stephani 1924), syn. fide Udar & Kumar (1985)

= *Cephalozia aspera* Steph., *Sp. Hepat*. (*Stephani*) 6: 440 (Stephani 1924), syn. fide Váňa *et al.* (1979). ≡ *Cephaloziella*

pentagona var. *aspera* (Steph.) Douin, *Mém. Soc. Bot. France* 29: 80, 1920 (Douin 1920).
= *Cephalozia radicans* Sim, *Trans. Roy. Soc. South Africa* 15: 85, 1926 (Sim 1926), syn. fide Váňa (1988).
= *Cephaloziella minutifolia* Horik., *J. Sci. Hiroshima Univ., Ser. B., Div. 2, Bot*. 2: 175, 1934 (Horikawa 1934), syn. fide Furuki (1989).

Cephaloziella granatensis (J.B.Jack ex Steph.) Fulford

Basionym:—*Cephalozia granatensis* J.B.Jack ex Steph., *Bull. Herb. Boissier ser. 2*, 8: 500 (*Sp. Hepat. [Stephani]* 3: 330), 1908 (Stephani 1908b).
Type:—COLOMBIA. Páramo de San Isabel, 12,600', 1874, *Wallis ex herb. Jack,* Stephani herb. no. 16442 (lectotype [**here designated**] G-00067742!) (Fig. 1).
≡ *Cephalozia evansioides* Douin, *Bull. Soc. Bot. France* 60: 480, 1913 [1914] (Douin 1914b), *nom. inval*. (ICN Art. 52.1; based on the same type).
Note:—Douin wrote "Dans l'herbier Boissier, grace à l'amabilité de M. Beauverd; elle provident de la Nouvelle-Grenade, Páramo de San Isabel (leg. Wallis)". This is the same specimen as Stephani based his *Cephalozia granatensis* on although it is not stated on the package. There is no other specimen in G under *Cephalozia* collected by Wallis from the same locality (M. Price, pers. comm.).

Cephaloziella tenuissima (Lehm.) Steph., *Hedwigia* 32: 318, 1893 (Stephani 1893).

Basionym:—*Jungermannia tenuissima* Lehm., *Linnaea* 4: 367, 1829 (Lehmann 1829).
Type:—SOUTH AFRICA. Western Cape: Cape of Good Hope, *Ecklon* (lectotype [**here designated**] S-B29229!).
= *Anthelia africana* Steph., *Hedwigia* 31: 121, 1892 (Stephani 1892), ***syn. nov.*** Type:—SOUTH AFRICA. Transvaal: near Lydenburg, 1887, *Wilms*, Stephani herb. no. 3729 (lectotype [**here designated**] G-00045034!).

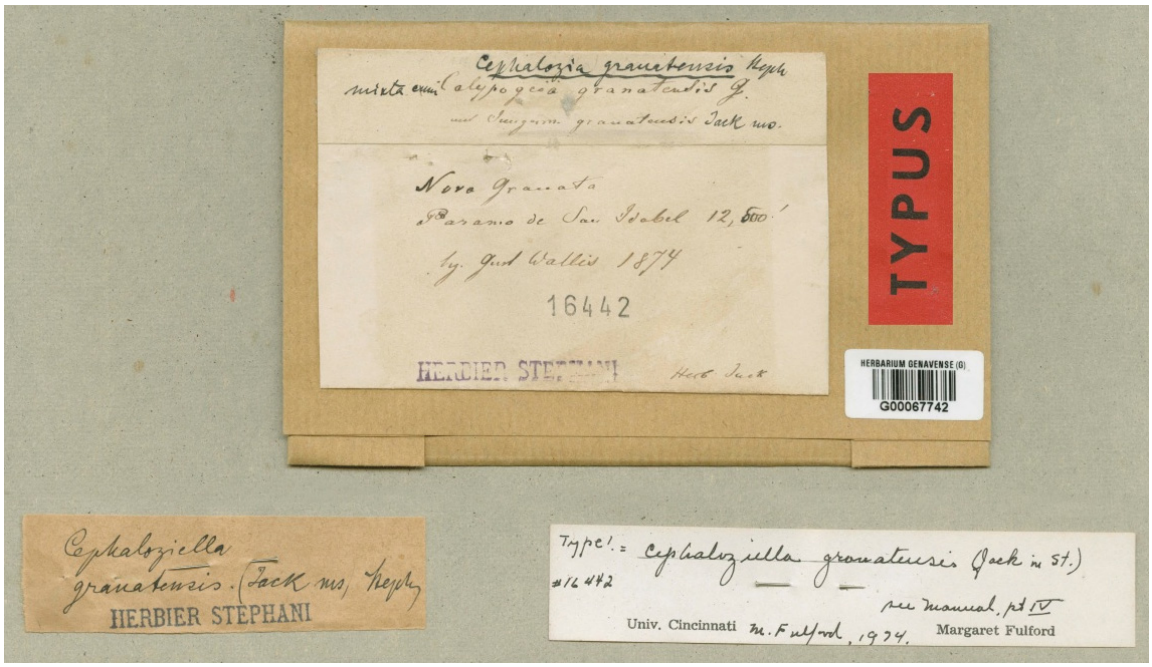

FIGURE 1. Label and annotations of the type specimen of *Cephaloziella granatensis* in G. This specimen was used by Douin describing his *Cephalozia evansioides*. Published with permission from G.

Cephaloziella villaumei (Steph.) Váňa, *comb. nov.*

Basionym:—*Cephalozia villaumei* Steph., *Sp. Hepat. (Stephani)* 6: 437, 1924 (Stephani 1924).
Type:—MADAGASCAR. *Villaume*, Stephani herb. no. 18329 (lectotype [**here designated**] G-00060628!).
Note:—Probably closely allied to *Cephaloziella anthelioides* S.W.Arnell (which was also noted by R. Grolle 1994 in an annotation to the type specimen).

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